# A STUDY OF WORKING CONDITIONS AND THEIR EFFECT ON MOTIVATION OF WASTE PICKERS IN PUNE CITY.

**A Thesis**

**Submitted to**

**Tilak Maharashtra Vidyapeeth, Pune**

**For the degree of**

**Doctorate in Philosophy (Ph.D)**

**In the subject – Management**

**Under the Board of Management studies**

Estd. 1921


**By**

**Ms. Lazree Sudhir Gokhale**

**PRN:15821002654**

**Under the Guidance of**

**Dr. C. Sunanda Yadav**

**Department of Management**


**December, 2024**

## Undertaking

I Lazree Sudhir Gokhale am a Ph.D scholar of Tilak Maharashtra Vidyapeeth in Human Resource Management subject. Thesis entitled "A Study Of Working Conditions And Their Effect On Motivation Of Waste Pickers In Pune City." under the supervision of Dr. C. Sunanda Yadav solemnly affirm that the thesis submitted by me is my own work. I have not copied it from any source. I have gone through an extensive review of literature of the related published/unpublished research works and the use of such references has been acknowledged in my thesis. The title and the content of research is original and I understand that, in case of any complaint, especially plagiarism, regarding my Ph.D research from any party, I have to go through the enquiry procedure as decided by the Vidyapeeth at any point of time. I understand that if my Ph.D thesis (or part of it) is found duplicate at any point of time, my research degree will be withdrawn and in such circumstances, I will be solely responsible and liable for any consequences arising thereby I will not hold the TMV, Pune responsible and liable in any case.

I have signed the above undertaking after reading carefully and knowing all the aspects therein.

**Signature:**

Address: 10 Rasta Peth, near Apollo theatre, Pune 411011

Mobile number: 9850380909 Email: lazree28gokhale@gmail.com

Date: Place:

*In loving memory of….*

*Late Mr. Mohan Singh Tirath Singh Rajpal*

*And*

*Late Mrs. Jasbir Kaur Mohan Singh Rajpal*

## CERTIFICATE OF THE SUPERVISOR

It is certified that the work incorporated in the thesis titled **"A Study Of Working Conditions And Their Effect On Motivation Of Waste Pickers In Pune City."** is an original research work done by Ms. Lazree Gokhale under my supervision for the degree of Doctor of Philosophy in Management to be awarded by Tilak Maharashtra Vidyapeeth, Pune. To the best of my knowledge this thesis

- Embodies the work of candidate herself
- Has duly been completed
- Fulfills the requirements of the ordinance related to Ph.D degree of TMV
- Up to the standard in respect of both content and language for being referred to the examiner.

**Place: Pune**

**Dr. C. Sunanda Yadav**

**Date:** Research Guide

## ACKNOWLEDGEMENT

It is my great pleasure to express my deep sense of gratitude to my Research Guide **Dr. C. Sunanda Yadav** for her unreserved advice, guidance, and constructive criticism starting from the very commencement up to thesis completion. Without her encouragement, insight and professional expertise, the completion of this work would not have been possible.

Heartfelt thanks to the employees of Pune Municipal Corporation and SWaCH who despite their busy schedule co-operated in recording their responses. I gratefully acknowledge the help and guidance of

Mrs. Asha Raut — Mr. Harshad Barde

Dr. Kunal Khemnar — Mrs. Mangal Pagare

Dr. Ketaki Ghadge — Mrs. Ulka Kalaskar

I am, indeed, greatly indebted to all divisional sanitation inspectors, sanitation inspectors, mukkadams of all Arogya Kothis and all respondents who have participated and supported the data collection process.

I also would like to thank my colleagues for their strong support and cooperation. A special note of thanks is to our college library, for providing me all the necessary reading and reference facilities. I would also like to thank Ms. Sonali Madikunt who helped me in data management.

My special thanks and heartfelt gratitude extend to both my parents Mr. Sudhir Gokhale and Mrs. Akshaya Sudhir Gokhale, my husband Mr. Jagjitsingh Rajpal and my kids Oreo and Gyaan for their patience, support and encouragement. I also thank all the people who assisted me in one way or another during my study period.

**List of tables**


| Chapter No | Heading | Contents | Page nos |
|---|---|---|---|
| **Chapter 2** | | **Review of literature** | |
| | 2.1 | Types of waste and their sources | 39 |
| | 2.2 | Health risks of waste pickers | 67 |
| | 2.3 | Impact pathway of common health problems | 68 |
| | 2.4 | Hygiene factors as per Fredrick Hertzberg | 76 |
| | | | |
| **Chapter 3** | | **Research Methodology** | |
| | 3.1 | List of areas under PMC | 112 |
| | 3.2 | Number of staff members to be covered from each ward office as sample | 115 |
| **Chapter 4** | | **Data Analysis** | |
| | 4.1 | Age wise bifurcation of responses | 122 |
| | 4.2 | Gender wise bifurcation of responses | 123 |
| | 4.3 | Name of ward office | 124 |
| | 4.4 | Literacy level | 126 |
| | 4.5 | Education level of respondents | 128 |
| | 4.6 | Designation of respondents | 130 |
| | 4.7 | Nature of employment | 132 |
| | 4.7.1 | Sources of income in waste picking | 133 |
| | 4.8 | Marital status of respondents | 135 |
| | 4.9 | Number of children per respondent | 137 |
| | 4.10 | Number of earning members in the family of respondents | 139 |
| | 4.11 | Tasks undertaken daily | 141 |
| | 4.12 | Ratings for task related stressors | 144 |
| | 4.12.1 | Gender wise frequency of ratings for task related stressors -1 | 146 |

| | | | |
|---|---|---|---|
| | 4.12.2 | Gender wise frequency of ratings for task related stressors -2 | 146 |
| | 4.13 | Frequency of ratings for stress arising out of work | 151 |
| | 4.13.1 | Gender wise frequency of ratings for stress arising out of work | 153 |
| | 4.14 | Frequency of ratings for activities causing physical stress | 157 |
| | 4.14.1 | Gender wise frequency for activities causing physical stress-1 | 160 |
| | 4.14.2 | Gender wise frequency for activities causing physical stress-2 | 160 |
| | 4.14.3 | Gender wise frequency for activities causing physical stress-3 | 161 |
| | 4.15 | Frequency of ratings for situational stressors | 167 |
| | 4.15.1 | Gender wise frequency of ratings situations that cause stress-1 | 169 |
| | 4.15.2 | Gender wise frequency of ratings situations that cause stress-2 | 169 |
| | 4.16 | Locations of segregation of waste | 173 |
| | 4.17 | Seasons that are challenging for job performance | 176 |
| | 4.17.1 | Frequency of work getting hampered due to extreme weather conditions | 177 |
| | 4.18 | Situations of harassment | 178 |
| | 4.18.1 | Gender wise frequency of ratings for situations of harassment-1 | 181 |
| | 4.18.2 | Gender wise frequency of ratings for situations of harassment-2 | 181 |
| | 4.19 | Frequency of climbing stairs in societies having elevators | 185 |
| | 4.19.1 | Frequency of access of facilities in the society premises if present | 186 |
| | 4.19.2 | Frequency of usage of society facilities if present and allowed | 187 |
| | 4.20 | Frequency of access to intramural welfare facilities | 189 |
| | 4.21 | Frequency of access to personal protective equipment (PPE) | 192 |
| | 4.22 | Suffered from COVID -19 / Omicron | 196 |
| | 4.22.1 | Suffered from COVID -19 / Omicron owing to COVID waste | 197 |
| | 4.23 | Availability of extra mural welfare facilities | 199 |
| | 4.24 | Frequency of ratings for exposure to health hazards | 201 |
| | 4.25 | Frequency of ratings for health issues arising out of performance of job | 204 |

| | | | |
|---|---|---|---|
| | 4.26 | Risk of injury or accident because of work | 209 |
| | 4.26.1 | Frequency of risk of injury or accident because of work | 210 |
| | 4.27 | Immediacy of seeking medical assistance in case of injuries | 213 |
| | 4.28 | Feeling stressed due to work | 215 |
| | 4.29 | Mental or emotional issues due to job | 217 |
| | 4.30 | Risks to health owing to working conditions | 220 |
| | 4.31 | Addictions of respondents | 222 |
| | 4.31.1 | Gender wise frequency of addictions amongst respondents | 224 |
| | 4.32 | Attribution of addictions to working conditions | 226 |
| | 4.32.1 | One way ANOVA -Hypothesis 1 | 228 |
| | 4.32.2 | One way ANOVA -Hypothesis 1 | 228 |
| | 4.32.3 | Post-Hoc Test Hypothesis 1 | 229 |
| | 4.32.4 | One way ANOVA -Hypothesis 2 | 230 |
| | 4.32.5 | One way ANOVA -Hypothesis 2 | 230 |
| | 4.32.6 | Post-Hoc Test Hypothesis 2 | 231 |
| | 4.33 | Fear of job loss | 233 |
| | 4.34 | Timeliness of fixed wages | 235 |
| | 4.34.1 | Denial in the payment of DTDC fees | 236 |
| | 4.34.2 | Average DTDC fees charges | 237 |
| | 4.35 | Number of hours of daily work | 240 |
| | 4.35.1 | Frequency of working above your normal working hours | 241 |
| | 4.36 | Provision of weekly offs | 243 |
| | 4.36.1 | Provision of sufficient breaks during work | 244 |
| | 4.36.2 | Provision for paid leaves | 245 |
| | 4.37 | Provision of benefits | 247 |
| | 4.38 | Trainings received from PMC/SWaCH | 250 |
| | 4.39 | One way ANOVA -Hypothesis 3 | 252 |
| | 4.39.1 | One way ANOVA -Hypothesis 3 | 252 |

| | | | |
|---|---|---|---|
| | 4.39.2 | Post-Hoc Test Hypothesis 3 | 253 |
| | 4.39.3 | Summary of statistical analysis | 254 |

## List of figures


| Chapter No | Heading | Contents | Page nos |
|---|---|---|---|
| **Chapter 2** | | **Review of literature** | |
| | 2.1 | Organogram at SwaCH | 55 |
| | 2.2 | Organogram of Solid waste management in PMC | 59 |
| | 2.3 | The movement of waste from households in Pune | 60 |
| | 2.4 | Abraham Maslow's Need Hierarchy theory | 72 |
| | 2.5 | Clayton Alderfer's ERG Theory | 73 |
| | 2.6 | McClelland's Need theory | 74 |
| | 2.7 | Herzberg's view of satisfaction and dissatisfaction | 74 |
| | 2.8 | Porter's satisfaction Model | 80 |
| | | | |
| **Chapter 3** | | **Research Methodology** | |
| | 3.1 | Political map of Pune city | 111 |
| | 3.2 | DMC -Zone wise list of ward offices | 113 |
| | 3.3 | Number of kothis per ward office | 114 |
| | | | |
| **Chapter 4** | | **Data Analysis** | |
| | 4.1 | Age wise bifurcation of responses | 122 |
| | 4.2 | Gender wise bifurcation of responses | 123 |
| | 4.3 | Name of ward office | 124 |
| | 4.4 | Literacy level | 126 |
| | 4.5 | Education level of respondents | 128 |
| | 4.6 | Designation of respondents | 130 |
| | 4.7 | Nature of employment | 132 |
| | 4.7.1 | Sources of income in waste picking | 133 |

| | | | |
|---|---|---|---|
| | 4.8 | Marital status of respondents | 135 |
| | 4.9 | Number of children per respondent | 137 |
| | 4.10 | Number of earning members in the family of respondents | 139 |
| | 4.11 | Tasks undertaken daily | 141 |
| | 4.12 | Ratings for task related stressors | 144 |
| | 4.12.1 | Gender wise frequency of ratings for task related stressors -1 | 146 |
| | 4.12.2 | Gender wise frequency of ratings for task related stressors -2 | 146 |
| | 4.13 | Frequency of ratings for stress arising out of work | 151 |
| | 4.13.1 | Gender wise frequency of ratings for stress arising out of work | 153 |
| | 4.14 | Ratings for activities causing physical stress | 157 |
| | 4.14.1 | Gender wise for activities causing physical stress-1 | 160 |
| | 4.14.2 | Gender wise for activities causing physical stress-2 | 160 |
| | 4.14.3 | Gender wise for activities causing physical stress-3 | 161 |
| | 4.15 | Ratings for situational stressors | 167 |
| | 4.15.1 | Gender wise frequency of ratings situations that cause stress-1 | 169 |
| | 4.15.2 | Gender wise frequency of ratings situations that cause stress-2 | 169 |
| | 4.16 | Locations of segregation of waste | 173 |
| | 4.17 | Seasons that are challenging for job performance | 176 |
| | 4.17.1 | Frequency of work getting hampered due to extreme weather conditions | 177 |
| | 4.18 | Situations of harassment | 179 |
| | 4.18.1 | Gender wise frequency of ratings for situations of harassment | 181 |
| | 4.18.2 | Gender wise frequency of ratings for situations of harassment | 181 |
| | 4.19 | Frequency of climbing stairs in societies having elevators | 185 |
| | 4.19.1 | Frequency of usage of society facilities if present and allowed | 186 |
| | 4.19.2 | Frequency of usage of facilities if present and allowed | 187 |
| | 4.20 | Access to intramural welfare facilities | 189 |
| | 4.21 | Frequency of access to personal protective equipment (PPE) | 192 |

| | | | |
|---|---|---|---|
| | 4.22 | Suffered from COVID -19 / Omicron | 196 |
| | 4.22.1 | Suffered from COVID -19 / Omicron owing to COVID waste | 197 |
| | 4.23 | Availability of extra mural welfare facilities | 199 |
| | 4.24 | Ratings for exposure to health hazards | 201 |
| | 4.25 | Ratings for health issues arising out of performance of job - 1 | 205 |
| | 4.25 | Ratings for health issues arising out of performance of job - 2 | 205 |
| | 4.26 | Risk of injury or accident because of work | 209 |
| | 4.26.1 | Frequency of risk of injury or accident because of work | 210 |
| | 4.27 | Immediacy of medical assistance | 213 |
| | 4.28 | Feeling of stress due to work | 215 |
| | 4.29 | Mental or emotional issues due to job -1 | 217 |
| | 4.29 | Mental or emotional issues due to job -2 | 218 |
| | 4.30 | Health risks owing to working conditions | 220 |
| | 4.31 | Addictions of respondents | 222 |
| | 4.31.1 | Gender wise frequency of addictions in respondents | 224 |
| | 4.32 | Attribution of addictions to working conditions | 226 |
| | 4.33 | Fear of job loss | 233 |
| | 4.34 | Timeliness of wages | 235 |
| | 4.34.1 | Denial in the payment of DTDC fees | 236 |
| | 4.34.2 | Average DTDC fees charges | 237 |
| | 4.35 | Number of hours of daily work | 240 |
| | 4.35.1 | Frequency of working above normal working hours | 241 |
| | 4.36 | Provision of weekly offs | 243 |
| | 4.36.1 | Provision of sufficient breaks during work | 244 |
| | 4.36.2 | Provision for paid leaves | 245 |
| | 4.37 | Provision of benefits | 247 |
| | 4.38 | Trainings offered by PMC/SWaCH | 250 |

## List of abbreviations

| | |
|---|---|
| **ANOVA** | Analysis Of Variance |
| **CBO** | Community Based Organisation |
| **COVID-19** | Corona Virus Disease identified as a global pandemic in 2019 |
| **CSR** | Corporate Social Responsibility |
| **DMC** | Deputy Municipal Commissioner |
| **DSI** | Deputy Sanitation Inspector |
| **DTDC** | Door-To-Door Collection Services |
| **DVD** | Digital Versatile Disc |
| **ESI** | Employee State Insurance |
| **E-Waste** | Electronic Waste |
| **G25** | Plan of waste management in action from 2017-2025 |
| **HIV** | Human Immunodeficiency Virus Infection |
| **ILO** | International Labour Organisation |
| **IWWs** | Informal Waste Workers |
| **JNNURM** | Jawaharlal Nehru Urban Renewal Mission |
| **KKPKP** | Kagad Kach Patra Kashtakari Panchayat |
| **MoU** | Memorandum Of Understanding |
| **MSW** | Municipal Solid Waste |
| **NAPCC** | National Action Plan For Climate Change |
| **NCEUS** | National Commission For Enterprises In The Unorganised Sector |
| **NGO** | Non-Government Organisation |
| **NGT** | National Green Tribunal |
| **NSS** | National Service Scheme |
| **PCMC** | Pimpri Chinchwad Municipal Corporation |
| **PMC** | Pune Municipal Corporation |
| **PPE** | Personal Protective Equipment |
| **RTI** | Right To Information |
| **SDG** | Sustainable Development Goals |

| | |
|---|---|
| **SI** | Sanitation Inspector |
| **SNDT** | Shreemati Nathibai Damodar Thackersey Women's University |
| **SWaCH** | Solid Waste Collection and Handling Co-operative Society |
| **SWM** | Solid Waste Management |
| **TAT** | Thematic Appreciation Test |
| **ULB** | Urban Local Bodies |
| **UNDP** | United Nations Development Programme |
| **WPO** | Waste Pickers Organisation |

## Glossary

| | |
|---|---|
| **Aarogya Kothi** | Sub - division of a ward office for health and sanitation activities |
| **Accusatory Behaviour** | As per Collins advanced dictionary; an at of blaming someone of wrongdoing |
| **Adar Poonawalla clean city initiative** | Initiative for improving the environment and waste management in Pune city. |
| **Apathy** | As per American Medical Association; the feeling of not being interested in or enthusiastic about anything. |
| **Autoclaving** | A sterilization method that uses high-pressure steam |
| **Bigari workers** | Class of workers who lift garbage and dead animals from the roadside. |
| **Burnout** | As per American Medical Association; a state of complete mental, physical, and emotional exhaustion. |
| **Central Advisory Board for Harijan Welfare** | Subcommittee appointed under Pandit Gobind Ballabh Pant |
| **Employee state insurance** | Benefits as mentioned in The Employees State Insurance Act, 1948 |
| **Fuel palletization** | Process of production of fuel pellets from solid waste. |
| **Incineration** | The destruction of something, especially waste material, by burning |
| **Irradiation** | Exposure to radiation such as X-rays or alpha particles |
| **Jarda, Ganja, Chillum** | Intoxicants used for inhalation, also termed as psychoactive drugs |
| **Kaka Kalelkar Commission** | First backward classes Commission which was appointed in 1953 |
| **Maternity benefit** | Benefits as mentioned in The Maternity Benefit Act, 1961 |
| **Migraines** | As defined by American Medical Assciation; long bouts of persistent headaches also causing blinding of vision. |
| **Mukkadam** | A word of Marathi origin indicating group leader for unorganised labour |
| **Pandya Committee** | Subcommittee appointed under Shri Bhanu Prasad Pandya in 1968 |

| | |
|---|---|
| **Provident fund** | Benefits as mentioned in The Provident Fund Act, 1952 |
| **Putrefaction** | The process of decay or rotting in a body or other organic matter. |
| **Pyrolysis** | The heating of an organic material, such as biomass, in the absence of oxygen |
| **Red Dot initiative** | An awareness programme for the safe disposal of sanitary pads and diapers |
| **Safai Karamacharis** | Sweepers or sanitation and cleaning workers who are not manual scavengers |
| **Sexual harassment** | Defined as per The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013 |
| **Tobacco, Pan, Pan Masala, Mishri** | Tobacco based products used as addictions |
| **Tonne** | 1 Tonne is equal to 1000 kilograms |
| **Un Habitat** | The United Nations Human Settlements Programme to promote socially and environmentally sustainable towns and cities. |
| **Wasteland** | An area of land that cannot be used or is used for building or growing things on |

**Table of contents**


| Chapter No | Heading | Contents | Page nos |
|---|---|---|---|
| **Chapter 1** | | **Introduction** | |
| | 1.1 | Introduction | 26 |
| | 1.2 | Need and relevance of the study | 28 |
| | 1.3 | Statement of the problem | 30 |
| | 1.4 | Objectives of the research | 30 |
| | 1.5 | Limitations of research and scope of further studies | 30 |
| **Chapter 2** | | **Review of literature** | |
| | 2.1 | Definitions of important terms | 34 |
| | 2.1.1 | Definitions of other important terms | 34 |
| | 2.1.2 | Distinction between Manual Scavengers and Safai Karamchari | 35 |
| | | **Part A: Introduction to waste and its management** | 35 |
| | 2.2 | Definitions of waste | 36 |
| | 2.3 | Types of waste | 36 |
| | 2.3.1 | On the basis of origin | 36 |
| | 2.3.2 | On the basis of nature | 38 |
| | 2.3.3 | On the basis of degradation | 38 |
| | 2.4 | Concept of waste management | 40 |
| | 2.4.1 | Techniques of waste management | 41 |
| | 2.5 | Governance and legal structure for solid waste management | 43 |
| | | **Part B Waste Picking: An occupation and its challenges** | |
| | 2.6 | Policy directives for integration of the informal waste sector | 45 |
| | 2.6.1 | National environment policy, 2006 | 45 |
| | 2.6.2 | National Action Plan for Climate Change, 2009 | 45 |
| | 2.6.3 | National Labour Commission, 2002 | 45 |

| | | | |
|---|---|---|---|
| | 2.7 | Committees established for rehabilitation and working conditions of sweepers and scavengers | 46 |
| | 2.7.1 | Kaka Kalelkar Commission | 46 |
| | 2.7.2 | Pandya Committee | 46 |
| | 2.7.3 | Central Advisory Board for Harijan Welfare | 46 |
| | 2.8 | Contribution of informal waste workers towards economy and environment | 47 |
| | 2.9 | Waste pickers and Sustainable development Goals (SDG s) | 48 |
| | 2.10 | Environmental impacts of waste picking | 48 |
| | 2.11 | Contribution to circular economy | 49 |
| | 2.12 | Evolution literature on waste pickers | 50 |
| | 2.13 | Role of waste pickers organizations | 51 |
| | 2.14 | Solid Waste Management in Pune City prior to KKPKP's Interventions | 52 |
| | 2.15 | Evolution of Kagad Kach Patra Kashtakari Panchayat (KKPKP) | 53 |
| | 2.15.1 | Formation of SWaCH | 54 |
| | 2.15.2 | SWaCH-PMC Partnership | 56 |
| | 2.15.3 | Fallout of SWaCh with PCMC | 56 |
| | 2.15.4 | SWaCH terminates MoU | 57 |
| | 2.15.5 | Responsibility of PCMC towards waste pickers | 57 |
| | 2.16 | Waste management system in Pune city | 58 |
| | 2.16.1 | Job profiles | 59 |
| | 2.17 | Demographic profile of the waste pickers | 61 |
| | 2.18 | Task related stressors | 62 |
| | | **Part C: Motivation and performance** | |
| | 2.19 | Definitions of the term Motivation | 69 |
| | 2.20 | Type of motivation | 69 |
| | 2.21 | Theories of motivation | 71 |

| | | | |
|---|---|---|---|
| | 2.21.1 | Classification of theories of motivation | 71 |
| | | **Part D: Summarization of reviewed literature** | |
| | 2.22 | Review of related literature | 84 |
| | 2.23 | Research gap | 98 |
| **Chapter 3** | | **Research Methodology** | |
| | | **Part A: Theoretical concepts in research** | |
| | 3.1 | Definitions of research | 100 |
| | 3.2 | Research design | 100 |
| | 3.2.2 | Definitions of research design | 101 |
| | 3.3 | Types of research/ research design | 101 |
| | 3.3.1 | Research designs on the basis of application | 101 |
| | 3.3.2 | Research designs on the basis of objectives | 101 |
| | 3.3.3 | Research designs on the basis of extent of theory | 103 |
| | 3.3.4 | Research designs on the basis of methodology | 103 |
| | 3.3.5 | Other research/ research designs | 104 |
| | 3.6 | Sampling | 104 |
| | 3.6.1 | Definitions of sampling | 104 |
| | 3.7 | Types of sampling | 105 |
| | 3.7.1 | Probability sampling techniques | 105 |
| | 3.7.2 | Non – probability sampling techniques | 107 |
| | | **Part B: Research methodology adopted** | |
| | 3.8 | Research questions | 110 |
| | 3.9 | Hypotheses of the study | 110 |
| | 3.10 | Universe under the study | 111 |
| | 3.11 | Scope of the study | 114 |
| | 3.12 | Justification of sampling methods | 115 |
| | 3.13 | Classes of respondents | 116 |

| | | | |
|---|---|---|---|
| | 3.14 | Types and sources of data | 116 |
| | 3.14.1 | Primary data | 116 |
| | 3.14.2 | Framework of questionnaire | 118 |
| | 3.14.3 | Secondary data | 119 |
| **Chapter 4** | | **Data Analysis** | |
| | 4.1 | Age wise bifurcation of responses | 122 |
| | 4.2 | Gender wise bifurcation of responses | 123 |
| | 4.3 | Name of ward office | 124 |
| | 4.4 | Literacy level | 126 |
| | 4.5 | Education level of respondents | 128 |
| | 4.6 | Designation of respondents | 130 |
| | 4.7 | Nature of employment | 132 |
| | 4.7.1 | Sources of income in waste picking | 133 |
| | 4.8 | Marital status of respondents | 135 |
| | 4.9 | Number of children per respondent | 137 |
| | 4.10 | Number of earning members in the family of respondents | 139 |
| | 4.11 | Tasks undertaken daily | 141 |
| | 4.12 | Ratings for task related stressors | 144 |
| | 4.12.1 | Gender wise frequency of ratings for task related stressors -1 | 146 |
| | 4.12.2 | Gender wise frequency of ratings for task related stressors -2 | 146 |
| | 4.13 | Frequency of ratings for stress arising out of work | 151 |
| | 4.13.1 | Gender wise frequency of ratings for stress arising out of work | 153 |
| | 4.14 | Frequency of ratings for activities causing physical stress | 157 |
| | 4.14.1 | Gender wise for activities causing physical stress-1 | 160 |
| | 4.14.2 | Gender wise for activities causing physical stress-2 | 160 |
| | 4.14.3 | Gender wise for activities causing physical stress-3 | 161 |
| | 4.15 | Frequency of ratings for situational stressors | 167 |
| | 4.15.1 | Gender wise frequency of ratings situations that cause stress-1 | 169 |

| | | | |
|---|---|---|---|
| | 4.15.2 | Gender wise frequency of ratings situations that cause stress-2 | 169 |
| | 4.16 | Locations of segregation of waste | 173 |
| | 4.17 | Seasons that are challenging for job performance | 176 |
| | 4.17.1 | Frequency of work getting hampered due to extreme weather conditions | 177 |
| | 4.18 | Situations of harassment | 179 |
| | 4.18.1 | Gender wise frequency of ratings for situations of harassment- 1 | 181 |
| | 4.18.2 | Gender wise frequency of ratings for situations of harassment- 2 | 181 |
| | 4.19 | Frequency of climbing stairs in societies having elevators | 185 |
| | 4.19.1 | Frequency of access of facilities in the society premises if present | 186 |
| | 4.19.2 | Frequency of usage of following society facilities if present and allowed | 187 |
| | 4.20 | Frequency of access to intramural welfare facilities | 189 |
| | 4.21 | Frequency of access to personal protective equipment (PPE) | 192 |
| | 4.22 | Suffered from COVID -19 / Omicron | 196 |
| | 4.22.1 | Suffered from COVID -19 / Omicron owing to COVID waste | 197 |
| | 4.23 | Availability of extra mural welfare facilities | 199 |
| | 4.24 | Frequency of ratings for exposure to health hazards | 201 |
| | 4.25 | Frequency of ratings for health issues arising out of performance of job | 204 |
| | 4.26 | Risk of injury or accident because of work | 209 |
| | 4.26.1 | Frequency of risk of injury or accident because of work | 210 |
| | 4.27 | Immediacy of seeking medical assistance in case of injuries | 213 |
| | 4.28 | Feeling stressed due to work | 215 |
| | 4.29 | Mental or emotional issues due to job | 217 |
| | 4.30 | Risks to health owing to working conditions | 220 |
| | 4.31 | Addictions of respondents | 222 |
| | 4.31.1 | Gender wise frequency of addictions amongst respondents | 224 |

| | | | |
|---|---|---|---|
| | 4.32 | Attribution of addictions to working conditions | 226 |
| | 4.32.1 | Testing of hypotheses 1 and 2 | 228 |
| | 4.33 | Fear of job loss | 233 |
| | 4.34 | Timeliness of fixed wages | 235 |
| | 4.34.1 | Denial in the payment of DTDC fees | 236 |
| | 4.34.2 | Average DTDC fees charges | 237 |
| | 4.35 | Number of hours of daily work | 240 |
| | 4.35.1 | Frequency of working above your normal working hours | 241 |
| | 4.36 | Provision of weekly offs | 243 |
| | 4.36.1 | Provision of sufficient breaks during work | 244 |
| | 4.36.2 | Provision for paid leaves | 245 |
| | 4.37 | Provision of benefits | 247 |
| | 4.38 | Trainings received from PMC/SWaCH | 250 |
| | 4.39 | Testing of hypothesis 3 | 252 |
| | 4.39.1 | Summary of statistical analysis | 254 |
| | | | |
| **Chapter 5** | | **Conclusions and suggestions** | |
| | 5.1 | Major conclusions relating to demographic details of waste pickers | 256 |
| | 5.2 | Major conclusions relating to task related stressors | 257 |
| | 5.3 | Major conclusions relating to working environment of the waste pickers | 257 |
| | 5.4 | Major conclusions relating to physical and mental health of the waste pickers | 259 |
| | 5.5 | Major conclusions relating to nature of employment | 261 |
| | 5.6 | Recommendations and suggestions | 263 |
| | 5.6.1 | Suggestions and recommendations to the Pune Municipal Corporation PMC | 263 |
| | 5.6.1.1 | Immediate interventions | 263 |

| | | | |
|---|---|---|---|
| | 5.6.1.2 | Intermediate interventions | 264 |
| | 5.6.1.3 | Long term interventions | 265 |
| | 5.6.2 | Suggestions and recommendations to SWaCH | 266 |
| | 5.6.2.1 | Immediate interventions | 266 |
| | 5.6.2.2 | Intermediate interventions | 266 |
| | 5.6.2.3 | Long term interventions | 267 |
| | | | |
| | | **Bibliography** | 268 |
| | | | |
| | | **Annexures** | 278 |

# Abstract

**Introduction:** The sustainable management of solid waste has gained global attention, emphasizing the three Rs: reduce, reuse, and recycle. While developed nations achieve these goals through mechanization and citizen participation, developing countries face challenges due to limited resources. Informal waste pickers play a vital role in collecting, sorting, and recycling waste in areas with underdeveloped waste management systems. However, this work is often relegated to socially and economically marginalized groups, plagued by stigma, poor returns, unsafe conditions, and health risks. In India, waste picking is rarely a choice and involves deplorable working conditions. Analyzing these challenges and understanding the motivations behind this occupation is crucial for designing effective rehabilitation and upliftment strategies.

- **Statement of the problem:**

The statement of the problem is ***"A study of working conditions and their effect on motivation of waste pickers in Pune city."***

- **Research Gap:**

1. Existing studies provide limited insights into the nature and scope of waste-picking activities, failing to depict the daily tasks, challenges, and responsibilities of this workforce. This research aims to explore the waste management hierarchy, job profiles, roles, and challenges to lay the groundwork for further studies.
2. While previous studies highlight the physical ailments of waste pickers, they often overlook the holistic impact of occupational stress on physical, mental, and emotional well-being. This research examines how job stress affects the overall health of waste pickers
3. Most studies on waste pickers' working conditions, motivation, and stress originate from developed nations, where environmental and socio-economic factors differ significantly. This research focuses exclusively on Pune's local context, examining demographic factors, working conditions, and specific stressors faced by waste pickers.
4. There is a lack of research on the motivations behind waste picking as a "no-choice occupation." This study delves into the socio-economic backgrounds and intrinsic and extrinsic motivators, aiming to understand why individuals continue in this hazardous occupation despite its drawbacks.

- **Research Questions:**

1.What are the challenges with regards to the nature of work and working conditions of waste pickers?

2.What are the effects of these challenges on the physical and mental health of waste pickers?

3.What are the motivating factors that urge the waste pickers to take up this occupation?

- **Objectives of the research:**

1. To know about the nature of work and the working conditions of waste pickers.
2. To know about the effects of the task related challenges on the physical and mental health of waste pickers.
3. To know about the effects of the working environment on the physical and mental health of waste pickers.
4. To measure the level of motivation of waste pickers using the two-factor theory.
5. To propose suggestions to the waste pickers, SWaCH and PMC for the regulation of working conditions of waste pickers.

- **Hypotheses of the Study:**

- H0: The task related challenges have no effect on the physical and mental health of the waste pickers.
- H1: The task related challenges have an effect on the physical and mental health of the waste pickers.

- H0: The working environment has no effect on the physical and mental health of the waste pickers.
- H1: The working environment has an effect on the physical and mental health of the waste pickers.

- H0: There is no dissatisfaction amongst the waste pickers with regards to the hygiene factors.
- H0: There is dissatisfaction amongst the waste pickers with regards to the hygiene factors.

- **Scope of the study:**

1.The research focuses on 5 ward offices and 70 kothis from the five different Deputy Municipal Commissioner zones.

2.The research is geographically limited to the jurisdiction of Pune Municipal Corporation PMC.

The Pune Municipal Corporation is divided into 5 DMC zones. Each zone comprises 3 ward offices From each DMC zone the researcher intends to cover one ward office and all Arogya kothis falling under the jurisdiction of that ward office. Each kothi has waste management staff ranging from 20 - 30 depending upon the jurisdiction of the Arogya Kothi and its location. A sample of 15 personnel per kothi has been identified by the researcher using quota sampling method making the total sample size ***1050***.

- **Types and sources of data:**

- **Primary data:**

Primary data was gathered using questionnaires for respondents proficient in reading and writing Marathi. For illiterate participants, the researcher completed schedules during direct interactions. Additionally, primary data was obtained through observation and interviews.

- **Secondary data:**

In addition to primary data, information was sourced from secondary data, including the PMC and SWaCH websites, research papers, journals, published theses, legislative acts on manual scavenging, and municipal solid waste management manuals from the Swachh Bharat Mission and PMC.

- **Summary of statistical Analysis:**

- For all three hypotheses One -way Anova test has been used.
- To find out the most significant factors Post Hoc test was applied.

Table no: 1

| Sr no. | Hypothesis No | F critical | F calculated | Hypothesis accepted |
|---|---|---|---|---|
| 1. | Hypothesis no 1 | 2.0998 | 747.75 | Alternate hypothesis |
| 2. | Hypothesis no 2 | 2.0998 | 803.94 | Alternate hypothesis |
| 3. | Hypothesis no 3 | 1.83152 | 265.078 | Alternate hypothesis |

- **Major conclusions:**

- **Major conclusions relating to demographic details of waste pickers:**

1. Most waste pickers are aged 29–50, with a nearly equal gender ratio.

2. Illiteracy is prevalent, and those literates have basic skills but struggle with documentation. Even degree holders continue waste picking for income stability.

3. The majority are married with family responsibilities, motivating their work. Many are sole earners, driven by the need for basic sustenance. Traditional mindsets persist among some, valuing male heirs or viewing children as additional labour.

- **Major conclusions relating to task related stressors**

1. Tasks like door-to-door waste collection, segregation, dumpster filling, and road sweeping are highly stressful, with most respondents rating them 4 or 5.
2. Stress from waste collection at roadside and dumping sites, handling high-risk items, and sanitary waste is also rated predominantly at 4 or 5, indicating significant physical strain.
3. Physical activities such as lifting heavy loads, climbing stairs, walking long distances, and enduring waste odours heavily impact respondents' physical health, with ratings clustering at 3, 4, and 5.
4. Situational stressors are reported as frequent or constant by most respondents, highlighting their routine and persistent nature.

- **Major conclusions relating to working environment of the waste pickers:**

1. Most respondents segregate waste roadside, with monsoon being the most challenging season, indicating weather significantly impacts their work.
2. Many face negligent citizen behavior, verbal abuse, caste discrimination, and, in some cases, physical and sexual harassment.
3. Waste pickers often climb stairs in societies with elevators, though some are allowed elevator use.
4. While basic facilities like drinking water and gloves are available, items such as heavy-duty gloves, masks, uniforms, and PPE kits are largely unavailable.
5. Few have access to healthcare or medical benefits. Pune Municipal Corporation employees receive extramural benefits, but DTDC workers, as cooperative members, lack these entitlements.

6. Respondents understand the need for medical treatment but lack immediate access during work hours.
7. Average working hours are 9–12, reflecting high workloads and inadequate workforce distribution.
8. Most get weekly offs but insufficient breaks. PMC employees receive paid leave, unlike DTDC workers, who work voluntarily without such benefits.
9. Permanent employees access provident funds, maternity benefits, and insurance, while contractual workers receive only provident funds. DTDC workers receive none of these financial benefits.

- **Major conclusions relating to physical and mental health of the waste pickers:**

1. Most respondents report significant health risks due to their working conditions, with a majority having contracted COVID-19, likely from handling related waste.
2. Occupational hazards are frequent, with most respondents indicating constant exposure to risks during their work.
3. Common health issues include body aches, nausea, dizziness, skin and eye infections, and respiratory diseases, frequently reported. Gastrointestinal and urinary tract infections are less frequent but still present. Most respondents feel at risk of injuries or accidents.
4. Many have experienced road accidents, cuts, and abrasions, while injuries from acid burns or stray animals are less common. Injuries are often addressed only at the end of the day.
5. Emotional challenges like exhaustion, frustration, apathy, and burnout are prevalent.
6. Tobacco, pan, pan masala, and mishri are the most common addictions, followed by alcohol and smoking. Ganja and other intoxicants rank lower. Most attribute these addictions to stressful working conditions, with few denying a link.

- **Major conclusions relating to nature of employment:**

1. Nearly half the workforce consists of sweepers and bigari workers, employed permanently or contractually by PMC, making them eligible for a minimum salary and benefits. The other half, door-to-door collection workers, are SWaCH cooperative members and not employed by PMC.
2. Fear of job loss varies significantly, with responses split between frequent and rare concerns, highlighting a lack of job security and dependence on daily work for livelihood.

3. While many receive timely salaries, others face delays. DTDC fees are often denied, forcing waste pickers to rely on scrap sales for survival.

➢ **Recommendations and suggestions:**

- **Suggestions and Recommendations for Pune Municipal Corporation (PMC)**

▪ **Immediate Interventions:**

1. **Extend SWaCH Contract:** Renew SWaCH contracts in 5-year intervals to provide job security and formalize the "right to waste" for waste pickers.
2. **Improve Contractual Employment:** Ensure timely and full payment of wages to contractual employees by clearing contractors' bills promptly and enforcing compliance.
3. **Provide Welfare Facilities:** Extend social security benefits like provident fund, medical aid, maternity benefits, and education scholarships to all waste pickers, regardless of employment type.
4. **Develop Welfare Programs:** Create specific welfare programs or facilitate access to national schemes under the Unorganised Labour Social Securities Act, 2008 through awareness and single-window services.
5. **Ensure PPE Compliance:** Strictly enforce the provision of PPE (e.g., gloves, jackets, masks) and basic welfare facilities in accordance with the Swachh Bharat guidelines.

▪ **Intermediate Interventions:**

1. **Support SWaCH with Resources:** Address the issue of non-payment of door-to-door collection fees by citizens through grants and funds from PMC to ensure SWaCH members' financial stability.
2. **Expand the SWaCH Model:** Scale up the SWaCH cooperative to meet the growing demands of Pune’s expanding population and geography by incorporating more self-help organizations.
3. **Raise Citizen Awareness:** Promote waste segregation and disposal awareness through campaigns involving educational institutions.

- **Long-Term Interventions:**

1. **Mechanize Waste Collection**: Invest in mechanization to enable no-touch segregation and maximize recycling, aligning with Pune's zero-waste goals under the SWM-G25 model.
2. **Encourage CSR in Waste Management**: Collaborate with corporations to support waste management initiatives, following the example of the Adar Poonawalla Clean City Initiative.

*Note: Funds for these interventions are already allocated in PMC's annual budgets; only effective execution is required. Relevant budget excerpts are attached in the annexures.*

- **Suggestions and Recommendations to SWaCH:**
- **Immediate Interventions:**

1. **Raise Awareness About Waste Pickers' Challenges:** SWaCH should organize awareness programs to educate citizens about the difficulties faced by waste pickers. These sessions could involve schools, colleges, and other educational institutions.

2. **Promote Adult Education:** SWaCH should advocate for adult education programs to improve literacy among waste pickers and help them become more self-reliant.

3. **Offer Training Programs:** SWaCH can collaborate with educational bodies to provide waste pickers with various training programs such as first aid, financial literacy, and skills for alternative employment.

- **Intermediate Interventions:**

1. **Create Alternate Employment Opportunities:** SWaCH already offers initiatives like the Red Dot campaign, paper bag making, and compost creation workshops. These programs should be expanded with the support of PMC, educational institutions, and corporate CSR initiatives.

2. **Rehabilitation Programs for Addictions:** SWaCH should organize rehabilitation programs for waste pickers dealing with issues like alcoholism and drug abuse, in collaboration with medical institutions and anti-addiction groups.

- **Long-Term Interventions:**

1. **Expand the SWaCH Model Statewide:** The SWaCH cooperative model can be extended to other municipal corporations and regions across the state to enhance the collective bargaining power of waste pickers and ensure their rights.

- **Limitations and Future Research:**

1. This study is limited to Pune; similar research could be conducted in other cities in India.
2. Sanitation workers were not included in this study due to differing working conditions; future research could focus on them.
3. The research had a two-year timeframe, limiting the sample size; future studies could involve larger sample sizes depending on time and resources.

# Chapter 1:

# Introduction

*Mangal wakes up at 3 am in the morning. She has to perform multiple tasks such as filling water from the communal taps, cleaning the house, cooking meals and then she gets ready to report to her job at 5.30 am to an aarogya kothi which is 4 kms away from her home. She has to walk all the way to work. Her work comprises of taking the dustbin from outside our homes while we sleep peacefully to collect our trash, segregate it and then further process it. At 1.30 pm when her work ends Mangal further spends 2-3 hours segregating the scrap that she has collected during the day for selling it in Juna Bazzar to earn an extra 200 rupees. Then Mangal walks back with her day's earnings reaching home at around 5 pm in the evening.*

*Mangal was illiterate, married at the age of 12 and a mother to three kids. Her kids attend school and she resents that no one should address her kids as 'Kachrewala'.*

*Arjun follows a similar routine only he works for keeping the civic areas clean and is often seen sweeping roads, collecting waste and pushing carts while we move about our daily chores' early morning. People call him 'Zaduwala'.*

*The thesis is directed at understanding the challenges, problems and stressors of all such Mangals' and Arjuns' across Pune city.*

---

**Introduction:** Effective management of solid waste has become a major challenge facing civic authorities in order to make their cities clean and livable, which is crucial for good public health and aesthetic surroundings. The health issues reported in the high-income countries are relevant to the developing countries too, but the vulnerability in the latter is manifold due to lack of or inadequate implementation of protective measures. In the middle-income countries, probably less than 25 percent of the collected waste is deposited in controlled landfills and probably less than 15 percent in modern sanitary landfills. The remaining garbage finds its way into open dumps, in humungous piles and which burn without any fire control. In the underdeveloped parts of the world, nearly all of the collected trash are deposited in open civic areas and waste lands or dumping grounds. Thus, along with the waste pickers, citizens too are exposed to risks associated with health and environment. In the developing countries, the health-related underpinnings of solid waste management still need to be addressed. Even the minimal regulatory framework that exists in most of these countries for environmental protection and occupational health and safety is often not enforced. Effective waste management is crucial in order to protect public health and sanitation, environment, and to enhance resource re-utilization. Solid waste management is one of the key areas of concern of local governments and often has a large portion of budget allotted to it (ILO 2019) Therefore, solid waste management remains a huge challenge faced by the unplanned and expanding cities in

developing economies. It has been calculated that approximately 1.8 billion tons of waste has been generated across the globe in 2012 – a number which could rise to 3.5 billion tons in 2025. (Gupta, 2021) The crisis of solid waste management is gaining momentum with all the stakeholders focusing their attention on the three R's viz. reduce, reuse and recycle. In order to achieve these goals developed economies have reverted to mechanization of processes along with citizen participation with focus on eliminating the human interventions in waste, while in the underdeveloped parts of the world this remains a challenge owing to limitations of manpower, machinery and money. Such economies strongly rely on the informal waste pickers when it comes to handling their garbage owing to the paucity of developed waste management systems and thus there is still an underlying need of a task force that deals with the garbage in order to sort, segregate, recycle and upgrade the waste generated and predominantly this is an activity relegated to the socially and economically backward classes.

Across the globe, the livelihood of millions of people relies on the recovery and sale of valuable materials previously discarded as waste. Waste picking provides impromptu yet imperative opportunities to people who have few or no skills and formal education also are deprived of basic income for existence. However, waste pickers' living conditions are pitiable, and their working conditions remain perilous due to hazardous waste. Given the societal, commercial, and environmental benefits associated with the waste pickers, and particularly their contribution to circular economy goals in developing nations, the role of waste pickers has mostly been undervalued on the development agenda.

Clubbed with social stigma associated with the job, negligent returns, lack of healthy working conditions and health hazards, waste collection is an occupational choice of a far few. In most developing countries, the waste management process lacks regulations, intervention from governing bodies, and safe working conditions for workers. (Kothari, 2013) A similar situation is present in most cities in India where waste picking is not a job of choice and is surrounded with deplorable conditions of work. While the execution of the task is itself physically laborious and mentally and emotionally taxing; a critical analysis of these working conditions is essential from the point of view of reducing the challenges faced by the taskforce involved in waste management. Also, it is imperative to understand the underlying motivation of this task force in choosing this occupation which could be instrumental in designing their rehabilitation and upliftment.

Also, formalization shall result into sizable progression for the lives of waste pickers, including legal protection, safe working conditions and robust bargaining mechanisms. Practically

however formalization policies take significantly different forms from one country to another and often fail to provide these benefits.

### 1.2 Need and relevance of the study:

Like most tier 2 cities a primary problem posed by Pune is the waste management of the city. The PMC[1] has proposed a lustrous SWM[2] plan (G25)[3] where it envisions to adopt a *zero-waste model* (Pune Municipal Corporation, 2022). The model is operational from 2017-2025 and with two years remaining to achieve its targets the PMC is way behind its vision. The following table highlights the waste collection and processing capacities

| | Waste to be processed* | Waste collected | Actual Processing Capacity | Gaps |
|---|---|---|---|---|
| Total Waste Generated | 1678 | 1291 | 733 | 945 |
| Wet waste | 537 | 441 | 333 | 204 |
| Mixed/dry Waste | 1007 | 850 | 400 | 607 |

* Waste to be processed is an estimated amount based on waste generated per household.
* The figures are to be calculated in metric tons.
*Source: SWM Strategy Plan (2017-2025) (Pune Municipal Corporation)

- Despite the a wide array of rules and regulations for inclusive management of waste, waste recycling has never been of any significant concern with ULB[4]s. The main preoccupation of these bodies regarding solid waste has been with its disposal. This is reflected in their budgets and expenditures; nearly 95 percent of the ULB waste management budgets are only for collection and transportation of waste (Ministry of Urban Development, 2020). This preoccupation with collection and transportation continues even today, as most government guidelines and legislations on solid waste management focus primarily on these aspects. As a result, there is hardly any recycling which takes place through the formal mechanisms. The Ministry of Urban Development, in its study states that ULBs are able to collect only about 50-90 per cent of the waste and recycle only 5 per cent of the total waste generated (NIUA, 2020).
- In order to achieve its objectives, it is imperative that the PMC looks into the working conditions and the challenges and the resultant motivation of the waste management

[1] PMC: Pune Municipal Corporation
[2] SWM: Solid Waste Management
[3] G25: Plan of Waste Management in action from 2017-2025
[4] ULB: Urban Local Bodies

workforce. However, PMC shows no long-term commitment for rehabilitation of workers.

- **Gaps in PMC's Approach**: Pune Municipal Corporation has certain shortcomings in achieving the zero-waste model:
  - PMC has stopped all permanent or payroll recruitment for sweepers and waste pickers since 2010. For waste collection and segregation PMC relies completely on SWaCH workers for DTDC[5] services.
  - Also, the contract with SWaCH though extended is dicey and PMC is willing to allow entry to private players in the process.
  - Though waste management completely falls under the purview of PMC the approach of outsourcing is failing to achieve the target of sustainable waste management and has been penalized by the National Green Tribunal (NGT)[6]
  - Also, PMC shows no long-term commitment for rehabilitation of workers in this unorganized sector.
- Operations of SWaCH[7] rely on DTDC fees per household which most households especially in the lower income areas deny them and the waste pickers have to rely on income from waste collected thus lacking the guarantee of a *fair living wage.* The literature available on waste management acknowledges the SWaCH Coop model and its advantages. However, studies underlining the challenges of SWaCH and its long-term sustenance are not undertaken.

- This is an unorganized sector, and hence the employment is volatile and vulnerable in nature guaranteeing neither job nor sustenance or security. *However, since waste pickers are the wheels of the waste management system and also work as agents of social change it becomes extremely important for us to know as to how their job conditions can be improved to ensure that they are not dissatisfied.* Also, research undertaken with regards to motivation of waste pickers are negligent in the Indian scenario since waste picking is not an occupation of choice.
- A plethora of studies on the working conditions, motivation and stress of waste pickers have been undertaken with developed nations however their environmental factors vary than that of ours making their stressors, and challenges different. *Thus, there is an acute need for*

[5] DTDC services: Door to door collection services
[6] NGT: National Green Tribunal
[7] SWaCH: Solid Waste Collection and Handling Co-operative Society

*studies measuring motivation, job conditions and job stress amongst such unorganized labour.*

While waste-picking brings the opportunity of livelihood, it also results in poor health owing to constant exposure to different forms of effluents. Economic development, urbanization, and change in lifestyle are resulting in the generation of higher and higher volumes of solid waste and causing a change in its composition, making it more and more hazardous in nature – an unavoidable by-product of human activities.

### 1.3 Statement of the problem:

The statement of the problem is ***"A study of working conditions and their effect on motivation of waste pickers in Pune city."*** The main focus of the study is to know about the nature of work and the working conditions of waste pickers. The study also focuses on the effects of these conditions on the waste pickers physical and mental well-being. The research is also aimed at measuring the level of motivation amongst the waste pickers using the two-factor theory.

### 1.4 Objectives of the research:

The research objectives are as follows:

1. To know about the nature of work and the working conditions of waste pickers.
2. To know about the effects of the task related challenges on the physical and mental health of waste pickers.
3. To know about the effects of the working environment on the physical and mental health of waste pickers.
4. To measure the level of motivation of waste pickers using the two-factor theory.
5. To propose suggestions to the waste pickers, SWaCH and PMC for the regulation of working conditions of waste pickers.

### 1.5 Limitations of research and scope of further studies:

1. The research is focused geographically on Pune city only; similar research can be undertaken in other cities of India.
2. The researcher has not considered the sanitation workers since their working conditions vary from the rest of the waste management team; similar research may be performed with them in focus.

3. This research is limited to a time frame of three years restricting the selection of the sample. Similar study may be undertaken with a larger number of respondents depending upon the availability of time and resources.

# Chapter 2:
# Review
# Of
# Related Literature

**Introduction:**

People often like or dislike their jobs due to the working conditions they experience. Ideally an individual spends ten hours a day six days a week and thirty years of one's working life surrounded by these conditions of employment. It is the omnipresence of these conditions that when constantly surrounded by them they could make or break the motivation of the person working therein.

While every job comes with a set of challenges and stressors; the organization strives to ensure that reasonable health, safety and sanitation of the worker is not compromised upon. Also, different stakeholders including the government ensure that there are different legislations and norms for the creation of a safe and harmonious workplace. However, across the globe there still exist jobs and commercial activities undertaken by individuals that are not only hazardous to their health and well-being but also well beyond dignity and human rights. The ILO[8] Constitution states: "Where labour conditions revolve around injustice, suffering and destitution to large numbers of people, it produces such an intense unrest that the amity and balance of the world are at a great risk." (International labour organisation, 2022) This statement underlines the critical importance of establishing humane conditions of work for sustainable and peaceful societies.

*As a part of this thesis the researcher has identified one such occupation wherein not only the physical mental and emotional well-being of the waste picking fraternity is compromised owing to the nature of the work but also the occupation is a stigma on the protection of human rights.*

Waste pickers are considered as the wheels of the waste management system and are an integral part of the societal structure. Their jobs are extremely challenging and surrounded with inhuman conditions of work, lack of education and awareness on their part about their rights as human being and citizens of the country. They also fall prey to neglect and social stigma burdened on their shoulders by the society owing to the prevalent societal discrimination. Waste pickers make crucial efforts towards maintaining public health, sanitation, and ecological balance at various levels by fostering resource movement and reducing materials that find their way to landfills. According to a study by the UN[9] Habitat, waste pickers are majorly responsible for the collection of trash in numerous cities in several countries at no cost

[8] ILO: International Labour Organisation
[9] Un Habitat: The United Nations Human Settlements Programme to promote socially and environmentally sustainable towns and cities.

to urban local bodies. Despite this phenomenal contribution towards the environment and society, waste pickers are denied legal recognition as workers. They suffer from inadequate working conditions and absence of social safeguard. (International labour organisation, 2022)

*This study is attempted at understanding the roles, responsibilities and the nature of working conditions and the associated challenges for this task force. Apart from understanding the task related challenges and the effect of the stressors on the overall well-being of the workers; the thesis also attempts to understand the underlying motivational factors that could be responsible for this task force to choose this occupation as their means of bread and butter.*

**2.1 Definitions of important terms:**

1. **Waste management:** Waste management refers collectively to the collection, transportation, handling and disposal process of dealing with removal of human waste. (Merriam Webster Dictionary)
2. **Working conditions**: According to Eurofound: "Working conditions refer to the surroundings of an induvial and the nature, rules and regulations pertaining to a person's work." (Eurofound)
3. **Working environment:** "The working environment is defined as a summation of job characteristics that define the setting in which workers perform their duties. This is an umbrella concept and encompasses a wide range of non-monetary aspects of a job, ranging from work itself, tasks assigned to every worker, to the physical and social environments where the tasks are performed, the attributes of the organization hosting the work, the work schedule, the opportunities the job offers to the workers and he intrinsic rewards it provides. This concept refers to the tangible aspects of a job as experienced by employees.
4. **Motivation**: Motivation is the willingness to do something, or something that causes such willingness.
5. **Waste pickers**: The term waste pickers can be broadly defined as people who reclaim "reusable and recyclable materials from what others have cast aside as waste" (Samson, 2009) Waste pickers can range from poor people scrounging through trash in search of food, paper and plastics, including informal private collectors of recoverable wastes who vend to middlemen or businesses, as well as sorters linked to unions, cooperatives and associations.

### 2.1.1 Definitions of other important terms:

1. **Unorganized workers:** National Commission for Enterprises in the Unorganized Sector (NCEUS)[10] "Those employees who are a part of households or unorganized sectors for earning a livelihood, excluding regular workers with social security benefits, and the workers in the formal sector without any employment/social security benefits provided by the employers." (Sector, 2007)
2. **Social Protection:** "A collection of public and private policies and programmes implemented by the governing bodies in order to address the various areas of concern that compensate for the loss or significant reduction of income from work; to provide assistance for families with children as well as provide people with health care and housing." (ILO 2003 A Bonilla Garcia and J.V. Gruat)
3. "The set of public measures evolved by the state to meet its national and international obligations to eliminate poverty, deprivation and extreme vulnerability. The term social protection must be used in conjunction with the objective of progressive realisation of basic socio-economic rights of citizens to protect themselves against exploitation, poverty and deprivation. For workers, the sources of risk arise due to changes in employment relations, rights of worker, social welfare, along with changes in the coverage of social protection measures." (Srivastava, 2012)

### 2.1.2 Distinction between Manual Scavengers and Safai Karamchari

A waste picker is a person who collects reusable or recyclable materials, thrown away by people to sell or for personal use. There are 1.15 million waste pickers earning their livelihood worldwide, particularly in developing countries. The population of waste pickers is increasing because of industrialization and migration. (Bhosale, 2016)

Safai Karamcharis[11] normally include persons engaged as 'Sweepers' or 'sanitation/cleaning workers' in municipalities, government and private offices. They may be direct employees of these bodies (municipalities, government/private sector organizations) or may be contract employees who happen to be working for these organizations. However, safai karamcharis, per se, are not manual scavengers ((LARRDIS), 2013)

[10] NCEUS: National Commission for Enterprises in the Unorganised Sector
[11] Safai Karamacharis: Sweepers or sanitation and cleaning workers who are not manual scavengers

## Part A: Introduction to Waste and Its Management

### 2.2 Definitions of Waste:

Waste is an unavoidable by-product of most human activity. Economic development and rising living standards in the Asian and Pacific Region have led to increase in the quantity and complexity of generated waste. Both industrial progression and the provision of advanced health-care facilities have added large quantities of potentially dangerous industrial waste and biomedical waste into the exiting flow of waste with severe environmental and human health consequences. Waste is generally described as useless, unwanted and trash material arising from all living beings including the vast accumulation of commercial and mineral wastes. Particularly, in urban areas, pickable waste comprises old paper, scrap rubber and plastic, household metal scrap, cotton/synthetic rags and wool, broken glass and empty glass containers, metal cuttings and shavings, automotive scrap, burnt lubricants, etc." (Bhosale, 2016)

### 2.3 Types of waste:

Waste generation is an essential element of everyday human life. Varied sources lead to the generation of waste:

**2.3.1 On the basis of origin:** At the outset origin of waste is used to determine its category. Below mentioned are types of solid waste classified based on their origin:

1. **Domestic or residential waste:** Household waste is garbage that is taken out of the home. Food, plastic, cardboard, rubber, metal, paper, wood, materials, chemicals, and more are regarded as this type of waste. Most of the wet waste generated in households is organic. Batteries, electronics, and metals are inorganic wastes. Chemicals in everyday cleaners contribute to water pollution. This is the waste that is generated from residential household activities or commercial activities is termed as domestic waste. The commercial site consists of the market of any domestic uses and vegetables stores, shops, etc. (Lam, 2001) (Dixon, 2005)
2. **Commercial waste**: Commercial waste refers to waste from commerce or commercial enterprises. With the advancement of modern cities, industries, and automobiles, commercial enterprises routinely generate large amounts of waste. This includes food, disposable medical products, textiles, and more. Garbage and waste from restaurants, food

joints, markets, or offices are all commercial waste. Food, plastic, glass, paper scrap, tissue, and even toxins are examples of commercial waste. (Buah, 2007) (White, 1995)

3. **Medical or clinical waste:** Waste generated in medical facilities such as hospitals, clinics, operating rooms, veterinary hospitals, and laboratories is called clinical/medical waste. These include surgical supplies, medicines, blood, body parts, wound dressings, needles, and syringes. This waste is produced during the diagnosis, treatment, or vaccination of living beings, as well as from research activities related to these processes, or during the manufacturing or testing of biological materials.
4. **Agricultural waste:** This waste refers to waste generated by farming activities. Unwanted material generated by agricultural activities such as floriculture, horticulture, sericulture, pisciculture livestock farming, orchards and greenhouses is called agricultural waste. Waste generated includes empty pesticide containers, old silage packages, obsolete medicines, used tires, extra milk, cocoa pods, and wheat husks. Chemicals from plants, crop waste from agricultural activities, fertilizer spillages from fields are different types of agricultural waste. Waste materials from slaughterhouses, poultry farms, feedlots, vineyards, dairy farms, and agricultural farms including organs and animal excreta and urine are also included in this category. Fertilizer spills are an important source of waste that significantly pollutes local water sources, soil, and the sea (via other bodies of water). (Williams, 2005) (Seadi, 2004)
5. **Industrial waste:** The waste from manufacturing and processing industries such as chemical plants, cement factories, power plants, textile industries, food processing industries, and petroleum industries is known as industrial waste. Sources of industrial waste are power units, metal processing enterprises, cement factories, steel manufacturing plants, leather product units, food packaging, chemicals, transportation equipment, resins, plastics, and paper. It also includes metals, chemicals, plastics, demolition materials, medical waste, ash, packaging and other hazardous materials. Industrial sludge contains toxins that are harmful to the environment. (SEPA, Estimation of commercial and industrial waste, 2008) (Ngoc, 2009)
6. **Electronic waste:** E-Waste[12] means electrical and electronic equipment, whole or in part discarded as waste by the consumer or bulk consumer as well as rejects from manufacturing, refurbishment and repair processes. DVDs[13], music players, televisions,

[12] E Waste: Electronic waste
[13] DVD: Digital versatile disc

phones, computers, vacuum cleaners, and all other household appliances that are no longer useful are electronic waste. It too is known as e-waste and some e-waste (such as televisions) contains cadmium, mercury, lead, zinc and other minerals which are harmful to living beings and the environment. (Basu, 2010)

7. **Construction and demolition waste** means the waste comprising of building materials, debris and rubble resulting from construction, re-modeling, repair and demolition of any civil structure. Concrete debris, wood, large packaging cabinets, and building materials of fiber and plastic constitute construction waste coming from the construction of roads and buildings. Demolition of old buildings and structures also produces waste, which is called demolition waste. (Poon, 2001) (SEPA, Construction and demolition waste , 2011)

**2.3.2 On the basis of their nature:** Besides the classification based on their sources of origin, waste can also be classified on the basis of its nature such as solid, liquid, gaseous waste. In general, the waste might be ordered into the accompanying classes:

1. **Solid Waste**– These are the undesirable substances that are disposed of by human culture. This includes urban, rural, biomedical, radioactive, soluble and insoluble waste.
2. **Liquid Waste**- Wastes containing fluids such as water and those which are in free flow state are called fluid wastes.
3. **Gaseous Waste** – These are the wastes delivered as gaseous emissions from various human activities such as domestic, commercial and others. They get blended in different gaseous climates and sporadically cause occasions like brown haze, smog and acid rains.

**2.3.3 On the basis of degradation:** Additionally, on the basis of ease of combining mother nature classification can be done as biodegradable and non-biodegradable:

**1. Biodegradable Waste:** The primary sources of biodegradable waste include households and certain commercial establishments like restaurants, hotels, and food processing units. Additionally, industries, animal farms, and agricultural farms can also generate biodegradable waste.

**2. Non-Biodegradable Waste:** Non-biodegradable waste cannot be broken down by microorganisms. This type of waste is a significant contributor to toxins in landfills. Examples include chemicals, metals, plastics, paints, and rubber. These materials can persist in landfills for thousands of years without decomposing. Over time, toxins from metals and plastics seep into the soil, contaminating the earth and nearby water sources.

Table 2.1 Types of waste and their sources

| Sr. No | Source | Sources of waste | Types of solid wastes |
|---|---|---|---|
| 1. | Residential | Households owned by nuclear and joint families | Food wastes, paper, cardboard, plastics, textiles, leather, yard wastes, wood, glass, metals, ashes, special wastes (e.g. bulky items, consumer electronics, white goods, batteries, oil, tires), and household hazardous wastes |
| 2. | Industrial | Small, medium and large-scale industries, refineries, power and chemical plants | Housekeeping wastes, packaging, food wastes, construction and demolition materials, hazardous wastes, ashes, special wastes |
| 3. | Commercial | Stores, food joints, restaurants, markets, office buildings, banks, commercial establishments, malls, theatres, parks, gyms, etc. | Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes |
| 4. | Institutional | Schools, colleges, orphanages, prisons, support centers, | Paper, cardboard, plastics, wood, food wastes, glass, metals, special wastes, hazardous wastes |
| 5. | Medical | Hospitals, dispensaries, clinics, pathology labs, incineration centers, morgues, blood banks | Medical waste, syringes, bandages, organs, blood and biodegradable waste. |

| | | | |
|---|---|---|---|
| 6. | Construction and demolition | New construction sites, road repair, renovation sites, demolition of buildings | Bricks, mortar, wood, steel, concrete, dirt, broken metal, etc. |
| 7. | Municipal services | Street cleaning, landscaping, parks, beaches, other recreational areas, water and wastewater treatment plants | Street sweepings, landscape and tree trimmings, general wastes from communal areas, sludge, animal excreta in public places, dead animals etc |
| 8. | Agriculture | Orchards, bunds, poultries, vineyards, dairies, animal sheds. feedlots, farms. | Spoiled food wastes, plant wastes, hazardous wastes such as chemical pesticides and insecticides. |

Source: (Lam, 2001)

**2.4 Concept of waste management:**

Management of waste includes a whole systematic relationship between interrelated aspects such as economics, public health, engineering, law, political science, city planning, geography, and demography. The goal is the most efficient and economic system possible under the constraints imposed by private industry and local government. Research, development, and demonstration of new improved concepts for one waste source may likewise be applicable to another. A unified approach will also avoid duplication of efforts. Much of the consciousness regarding environmental protection has come from the west where industrialization has reached its saturation level. The western countries have gained firsthand experience of environmental dangers. But it is eminent that the local bodies in the west are far more conscious and alert in this regard. Fortunately, their management skills are of high order, planning is superb and the infrastructure is up to the mark. On the contrary the towns in third world countries have neither that law- abiding mass of citizens, code of conduct and nor the infrastructural support as well as the essential finances. Previously, solid waste management has only revolved around collection, transportation, storage, and elimination of waste by either burning or dumping it. Today, however, it also includes reduction at source, reuse of products, recycling, and

composting. The degree to which the above processes occur varies from community to community. Perhaps the basic political fact of solid waste management is citizens response to factors and solutions regarding the problem. The citizens, together with municipal administrators and industrial executives, must be made aware of the need for a new concept of solid waste management. The management act alone can suggest the optimally efficient and least wastage alternatives while underlining the short and long-term impact, implications and results of development schemes whether sponsored by public authority or by the private individuals. This new ordering would necessitate change in constitutional status and legal jurisdiction of local bodies. The pressure on environment should be reduced to the level of natural replenishment limits or, if it exceeds, curative mechanism must get active under scientific methodology. Without an efficient controlling system in place for improving the environment the quality of life in the cities is bound to deteriorate. Thus, while citizens need proper training and education on public issues like sanitation and hygiene penal procedures are also essential to check violation of civic rules.

### 2.4.1 Techniques of waste management:

In order for waste to be effectively managed it can be subjected to the following techniques of waste management:

1. **Sanitary landfill:** This is a natural or human made depression where solid wastes are dumped, compressed, and covered with a layer of dirt every day. Since the garbage is covered daily, odor, flies, insects, rodents, and potential health problems are eliminated or drastically reduced. The landfill site when full, it would be covered with earth and converted to a park or playground. Thus, land filling was originally thought of as a alternative of upgrading *wasteland*[14] to a higher use as well as a means of disposing of trash.
2. **Composting:** Composting is the natural decomposition of municipal solid waste such as leaves, grass and scraps of food, under the controlled conditions. Rottening, putrefaction[15] etc. are natural sub processes that take place in a controlled manner during composting. Composting can greatly reduce the amount of waste that ends up in landfills or incinerators.
3. **Vermicomposting:** It means degeneration of the waste with the help of earthworms.

[14] Wasteland: An area of land that cannot be used or is used for building or growing things on.
[15] Putrefaction: The process of decay or rotting in a body or other organic matter.

4. **Biomethanation:** This is an innovative technique for treating urban solid waste in which resource recovery is in the form of biogas and organic manure.
5. **Bioremediation:** Increasingly, microorganisms are being used to clean soil that is contaminated with toxic organic compounds. This technique, which is termed bioremediation, is used primarily to treat soil that is contaminated with oil. Also it is being utilised to treat petroleum refinery and paper mill wastes.
6. **Recycling:** This method can be defined as a process by which materials otherwise destined for discarding are collected, reprocessed or remanufactured, and are reused. Recycling refers to returning of materials to manufacturers, where they can be melted down or chopped up, refashioned into the original finished material, and then incorporated into products.
7. **Source reduction:** Source reduction can be a successful method of reducing waste generation. Practices such as backyard composting, two-sided copying of paper, and transport packaging reduction by industry have yielded substantial benefits through source reduction. Source reduction emphasizes that the industrial processes should be so designed as to produce less waste during the manufacturing stage itself.
8. **Pyrolysis[16]:** The shortest route to recycling wastes may be through pyrolytic techniques, in which wastes are baked in an air free chamber at temperatures as high as 30000 fahrenheit.
9. **Incineration[17]:** It is the disposal of waste through burning in a specially designed machine called incinerator. It can render toxic wastes into less toxic substances. At sufficiently high temperatures, incineration kills 99.99% of toxic compounds by decomposing them to carbon dioxide, water and harmless gases. Incineration has been a major method for mass reduction of solid waste.
10. **Steam sterilization/autoclaving[18]:** It involves using saturated steam in a pressure vessel at adequate temperatures and for a sufficient duration to eliminate infectious agents present in the waste.
11. **Irradiation[19]:** It is a method in which wastes are exposed to ultraviolet or ionizing radiation in an enclosed and shielded chamber.

[16] Pyrolysis: The heating of an organic material, such as biomass, in the absence of oxygen
[17] Incineration: The destruction of something, especially waste material, by burning
[18] Autoclaving: A sterilization method that uses high-pressure steam
[19] Irradiation: Exposure to radiation such as X-rays or alpha particles

12. **Thermal Inactivation**: This process of solid waste management is accomplished by the applying dry heat in an electrically operated oven.
13. **Chemical decontamination**: In this method an electrolytic system is used that purports to kill any living organism by a combination of temperature, chemical activity and acidity.
14. **Fuel pelletisation[20]:** This process results in production of fuel pellets from solid waste.

### 2.5 Governance and legal structure for solid waste management:

Like most developing countries, India is also rapidly urbanizing. In 2011, nearly 32 per cent of India's population, or nearly 326 million were estimated to be living in urban areas in India (Census of India, 2021). The pattern of urbanization and commercialization of lifestyles has led to a rapid increase in the quantum of solid waste generated in urban areas. urban areas in India generated an estimated 68.8 million tons of municipal solid waste (MSW)[21] during 2011 (Annepu, 2012)

Urban Local Bodies (ULBs) are primarily tasked with managing solid waste. In India, these governing bodies have existed since the 17th century. By 1835, the Corporations Act had been enacted, leading to the establishment of functional ULBs in nearly every city, handling waste management responsibilities. The 74th Constitutional Amendment of 1992, which aimed to decentralize powers, responsibilities, and finances, formalized five categories of ULBs in India: City Councils (Nagar Panchayats), Municipal Councils (Nagar Palikas), Municipal Corporations (Nagar Nigams), Metropolitan Areas, and Industrial Townships. The type of ULB overseeing a city or town is primarily determined by its population size:

1. **Nagar Panchayats:** Nagar Panchayat are meant for transitional areas (i.e. areas which are in transition from rural to urban areas. It has more than 30,000 and less than 100,000 inhabitants.
2. **Municipal Councils:** Municipal councils are smaller urban areas. It has a population of 100,000.
3. **Municipal Corporations:** Municipal corporation are meant for larger urban areas having a population above 100,000 or more.
4. **Metropolitan Areas:** Metropolitan areas have a population of 10,00,000 or more compromised in one or more districts.

[20] Fuel pelletization: Process of production of fuel pellets from solid waste.
[21] MSW: Municipal solid waste

5. **Industrial Township:** This may be declared so by the Governor with regards to the size of the area and municipal services provided.

In terms of the provisions these bodies have been declared as the bodies of self-government. These bodies differ slightly in their roles, responsibilities, accountability mechanisms, methods of formation, relationships with the state governments and powers. Since it is these municipal agencies which are responsible for managing the waste generated in urban areas as a result of residential and commercial activities, the waste is commonly known as Municipal Solid Waste (MSW)

The Government of India enacted the Environmental Protection Act in 1986. Following this, however, there was a need to lay down the rules and responsibilities for management of specific kinds of wastes. Thus, the responsibilities of ULBs with respect to waste management have been specified in various legislations of the central and state governments. Most importantly, these include:

1. The Municipal Solid Waste (Management and Handling) Rules, 2000

2. The Plastic Waste (Management and Handling) Rules, 2011

3. The Electronic Waste (Management and Handling) Rules, 2011

4. The Batteries (Management and Handling) Rules 2010

5. The Hazardous Waste (Management and Handling) Rules, 1989 further amended in 1996, 2000 and 2003

6.The Non-Biodegradable Garbage (Control) Act, 2006

Following the central government, and state governments several municipalities also followed suit framing their own guidelines for waste management in accordance with the state government's rules.

## Part B: Waste Picking: An occupation and its challenges

### 2.6 Policy directives for integration of the informal waste sector:

The unorganised sector, constituting waste pickers/rag pickers, plays an important role in the SWM[22] value chain by recovering valuable material from waste. Integrating the informal waste sector into formal solid waste management systems offers numerous environmental and economic benefits. It enhances resource recovery, minimizes disposal needs, reduces overall system costs, and supports the local recycling industry while generating employment opportunities. Informal waste workers possess valuable expertise in sorting municipal waste, making them a crucial asset for material recovery and processing facilities. This integration can be achieved through various formal or informal partnerships between waste pickers, their organizations, or groups working with them and local authorities within their operational areas.

**2.6.1 National Environment Policy, 2006:** Acknowledges the informal waste sector and states "Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials. In particular enhance their access to institutional finance and relevant technologies"

**2.6.2 National Action Plan for Climate Change, 2009** (NAPCC)[23]: stresses the need for giving legal recognition to the informal sector, which it recognizes as the *backbone of India's highly effective recycling system.*

**2.6.3 National Labour Commission, 2002**: also recognizes the useful role played by the scrap collectors both in helping recycling activities as well as in maintaining civic hygiene. It is, therefore, essential that they should be protected from insecurity of various forms. The measures that could be thought of in this regard are providing identity cards, receipts for transactions, minimum wages when they are employed by contractors or other employers, health facilities, creation of welfare funds, prohibition of child labour from the activity and the likes. The commission fully endorses the suggestions made by the United Nations Development Programme (UNDP)[24] and the International Labour organization (ILO)".

[22] SWM: Solid waste management
[23] NAPCC: National action plan for climate change
[24] UNDP: United Nations Development Programme

**2.7 Committees established for rehabilitation and working conditions of sweepers and scavengers:** ((LARRDIS), 2013)

**2.7.1 Kaka Kalelkar Commission**[25] The first Backward Classes Commission, established in 1953 under the chairmanship of Kaka Kalelkar, submitted its report in 1955. The Commission highlighted the "sub-human" conditions faced by sweepers and scavengers. In October 1956, the Ministry of Home Affairs drew the attention of all State Governments to these findings, urging the adoption of modern, mechanical methods for cleaning latrines to eliminate the degrading practice of manual scavenging and carrying night soil on heads. Additionally, the Ministry recommended implementing targeted schemes to improve the living standards of the Bhangi community and uplift them from their "sub-human" conditions. ((LARRDIS), 2013)

**2.7.2 Pandya Committee**[26]**:** The National Commission on Labour, established by the Union Ministry of Labour, formed a sub-committee in 1968-69 under the chairmanship of Shri Bhanu Prasad Pandya to examine the working and service conditions of sweepers and scavengers. A key recommendation of this committee was that the Central Government should introduce comprehensive legislation to regulate their working, service, and living conditions, including provisions for effective inspection and enforcement mechanisms. Similar committees were also set up at the state level in Uttar Pradesh (1955), Haryana (1969), Kerala (1971), and Karnataka (1976). ((LARRDIS), 2013)

**2.7.3 Central Advisory Board for Harijan Welfare**[27]**:** In 1956, the Ministry of Home Affairs established the Central Advisory Board of Harijan Welfare, chaired by the late Pandit Gobind Ballabh Pant, who was the Minister of Home Affairs at the time. Among its responsibilities, the Board reviewed the working and living conditions of sweepers and scavengers across the country and recommended that the government implement a Centrally Sponsored Scheme to address these issues. ((LARRDIS), 2013)

[25] Kaka Kalelkar Commission: First backward classes Commission which was appointed in 1953
[26] Pandya Committee: Subcommittee appointed under Shri Bhanu Prasad Pandya in 1968
[27] Central Advisory Board for Harijan Welfare: Subcommittee appointed under Pandit Gobind Ballabh Pant

## 2.8 Contribution of informal waste workers towards economy and environment:

In July 2008, a two-day workshop was organised by Kagad, Kach, Patra Kashtakari Panchayat (KKPKP)[28] for SWaCH (now the Alliance of Indian Waste Pickers), and WIEGO (Women in Informal Employment: Globalizing and Organizing) in New Delhi to discuss a policy for community based and decentralised integrated sustainable solid waste management in the country (from now on referred to as 'the 2008 workshop'). At the workshop, Ms. Poornima Chikarmane of KKPKP spoke about the problem of non-recognition of the recycling industry. She said "Recycling constitutes a large part of SWM and is virtually an industry, yet it has not been accorded the status of an industry by the government, and is primarily a private and informal activity in India. The workers engaged in this activity include not merely waste pickers but also sorters, loaders, unloaders and traders, among others. All these occupational categories therefore need to be covered in the policy on SWM".

However, while the government has neglected this important task, the informal sector has not. An estimated 1% of the total urban population works in the informal waste recycling sector, collecting, sorting, grading, transporting, buying and selling, dismantling, loading and unloading and finally recycling scrap. The most significant and largest part of this sector is the workers who collect or buy waste, sort it, grade it, dismantle it and sell it. These workers, called here as Informal Waste Workers are the backbone of the waste recycling industry and number at around 3.26 million in India. Apart from their contribution towards recycling, these IWWs[29] also save an enormous amount of expense which the ULBs would otherwise have to bear in transportation of waste. Because of the waste that they retrieve from households, waste bins, street corners and dumpsites in the city, the ULBs have to transport a much lower quantity of waste to the landfill sites which are typically located outside the city. Since the cost of transportation is directly proportional to the amount of waste being transported, a reduction in this quantity reduces the cost of transportation. Thus, according to a study, IWWs save ULBs nearly Rs. 400 million in transportation cost alone.

Further, much of the waste that is retrieved by the IWWs is hazardous waste such electrical and electronic items, metals, plastics which, if improperly disposed mix with rain water to form hazardous leachate or produce poisonous gasses Thus, IWW efforts help in preserving the environment by preventing water contamination and air pollution.

[28] KKPKP: Kagad, Kach, Patra Kashtakari Panchayat
[29] IWWs: Informal Waste Workers

### 2.9 Waste pickers and Sustainable development Goals (SDG s)[30]:

(Singh, 2021) He has explored the link between the circular economy, the inclusion of the informal sector, and the Sustainable Development Goals (SDGs) in a review of waste picking activities in Mumbai, Bengaluru, and Pune. His paper suggests that the SDGs offer a valuable framework for understanding the role of waste pickers. For instance, their work enables impoverished individuals to earn a livelihood and support their families, thereby contributing to poverty alleviation. (SDG1) Likewise states the women are likely to play an important role in waste picking activity and this provides an opportunity for women to be economically empowered helping with gender equality (SDG5). However, there are negative aspects too, such as informal workers working in unhealthy conditions, no access to banking, working long hours, and others. (SDG 8) (Srinivas, 2020) In terms of SDG 11, Sustainable cities and communities, the services provided by waste pickers make cities more sustainable by reducing the risk of waterlogging and flooding, along with reduced costs associated with management of MSW by the urban local authorities.

**2.10 Environmental impacts of waste picking:** The work done by waste pickers is important in societies with less developed states as it provides environmental benefits, prevents MSW from accumulating in dumpsites and enables raw materials to be delivered at low cost back to industry. (Vázquez & J, 2013) (Uddin, S M N, J, Nasiruddin, & M, 2020) Highlight that waste pickers' informal recycling efforts contribute to building natural assets by recovering resources for material reuse and recycling. Moreover, waste pickers' overall performance can help to protect the environment (Navarrete-Hernández, Navarrete-Hernández, & N, 2018), contributing to resources conservation, improved resource recovery and closing the resources loop in the circular economy (Uddin, Gutberlet, & N, Livelihoods and health status of informal recyclers in Mongolia, 2018). Waste pickers are essential stake holders in an environmental system as reduce air pollution, prevent water contamination and reduce the need to build more landfills which take up valuable space (Mphaka & Moja, 2017) This has a direct relationship with SDGs 13 i.e. action and 14 i.e. Life below water and is considered as an approach for ecosystem restoration as waste pickers work helps to reduce MSW streams. This also can result in reduction of greenhouse gas emissions (Burneo, Cansino, & R, 2020), thus helping to achieve various SDG targets, in particular in the context of current climate change discussions (Uddin, Gutberlet, & N, Livelihoods and health status of informal recyclers in Mongolia, 2018)

[30] SDG: Sustainable development goals

(Singh, 2021) Collection of recyclable materials through the informal sector also contributes to environmental health and sustainability (Sembiring & Nitivattananon, 2010) (Paul, Arce-Jaque, Ravena, & Villamor, 2012) asserted that MSW collecting and recycling activities through the informal sector reduces environmental contamination caused by uncollected MSW and the propagation of disease carriers such as rats and flies. As a result, water-induced diseases and illnesses, such as malaria and dengue, which can particularly threaten children, can be reduced. Recycling activities also contribute to environmental sustainability by making secondary raw materials available for the production of new products (Paul, Arce-Jaque, Ravena, & Villamor, 2012). By enhancing the recovery of materials from dumpsites and landfills, waste pickers play a vital role in conserving virgin resources, acting as environmental stewards. Additionally, their efforts contribute to environmental protection by increasing the volume of materials recycled or reprocessed within society, which can be argued as an important reason to legitimize their work .

**2.11 Contribution to circular economy:** The circular economy has received considerable attention from scholars, governments and citizens and it is an important step for sustainable development Bender and Bilotta 2020) (Bender & and Bilotta, 2020). The circular economy refers to an economic system that replaces the ‘end-of-life’ concept with reducing, reusing, recycling and recovery of materials in the production, distribution and consumption processes. It also refers to simultaneous creation of environmental quality, economic prosperity and social equity, for the benefit of current and future generations, enabled by novel business models and responsible consumers (Gall & al, 2020). As waste pickers provide the vital and basic service of collecting MSW in places where the formal recycling sector is absent or highly ineffective (Agunwamba & J C, 2003), They help transform waste into a valuable resource, enhancing resource efficiency and promoting reuse to close the loop within a circular economy through recovery and recycling processes (Scarlat & and Dallemand, 2019). (Johansson, 2016) suggested that one approach to boosting recycling is to focus on metal stocks, which are often overlooked in discussions on resource availability and the circular economy, as landfills and dumpsites hold significant resource potential. For instance, the amount of copper metal lost to the environment globally is estimated to be on par with the current stocks in use. Recovery of these lost metals, e.g. from landfills, would increase the flows of secondary resources and thereby replace a share of the primary production (Johansson, 2016). However, the question of how much metal could be found and recovered from landfills and dumpsites in the developing countries remains largely unanswered (Graedel, 2011). Waste pickers have thus been

underlining a crucial role in bringing valuable resources that are lost back into the economy, therefore contributing to the circular economy at various levels, e.g. 'social, economic, and environmental' (Gall & al, 2020) Waste pickers' contribution to reducing waste volumes in landfills, water courses, illegal dumping sites and MSW burning in open areas is considerable (Colombijn & and Morbidini, 2017)

Despite their magnemous contribution the waste pickers face tremendous challenges in their day-to-day work posing long term threats to their physical, mental and emotional wellbeing. A review of the available literature highlights the following areas of concern.

**2.12 Evolution literature on waste pickers:**

(Porras Bulla, Rendon, & Espluga, 2021)stated that chronicled waste pickers' history, evolution, and development had boomed over the past years. The earliest academic research on waste pickers was in the nineteenth century (Melosi, 1981) Academic research on waste pickers has tended to focus on socioeconomic aspects especially related to collective action in the context of natural resource management (Van Zeeland, 2014). However, over time, literature on waste pickers picked up momentum due to various factors such as demand for recycling, lack of space in landfills, scarcity of resources, new recycling technologies, and the efforts of environmentalists (Gowan, 2010). (Gowan, 1997) stated that changes in the political environment, including the reduction of jobs in secondary sector, cutbacks in governmental job opportunities, and the pullback of the state run welfare facilities has increased the count of the poor, and homeless—thereby having more people relegated to waste picking as a full-time profession or secondary source of income. (Curry, 2018) highlighted that in the 2000s, scientists were starting to recognize the impact of waste pickers due to the increasing level of plastic waste. In 2001, countries such as Brazil created the first national waste pickers movement, and in 2002 the federal government officially recognized waste pickers, known as profession catador de material reciclável. This was one of the first results of the waste pickers' collective action and demonstrated the possibility for effective influence on public policies (Curry, 2018). In 2008, waste pickers participated in the First World Conference, which resulted in allowing waste pickers to use the term—waste picker—for English usage globally, instead of using the previous term scavenger (WIEGO, 2021). In December 2019, waste pickers joined other climate activists at the People's Summit and other alternative events at the 25th United Nations Climate Change Conference, which was originally planned for Santiago, Chile but relocated to Madrid, Spain, due to political uncertainty in the country (WEIGO,

2022). These international events provide greater exposure for waste pickers increasing their visibility at the social and political level. In recent years, extensive research has been conducted to assess whether the role of waste pickers qualifies as essential service work.

### 2.13 Role of waste pickers organizations:

Waste pickers organize themselves in different ways, such as youth groups, women groups, extended family groups, community-based organizations (CBOs)[31], cooperatives, associations, networks and micro-enterprises (Tirado-Soto & Zamberlan, 2013) (Zapata & P, 2013). These waste picker organizations (WPOs)[32] are fundamental as platforms for improving working conditions, enhancing quality of life (by raising self-esteem, health, etc.), advocating for political power and increasing responsiveness to their demands from governments and other actors (Dias & SM, 2016). WPOs might receive different forms of financial or infrastructure support and technical advice at start-up (Rutkowski, JE, & EW, 2015), many continue to depend on governmental or non-governmental organization (NGO)[33] support to access operating space, machinery, equipment and professional training, or on advertising campaigns to promote source separation of recyclables in households (Zapata & P, 2013) (Tirado-Soto & Zamberlan, 2013). Maintaining autonomy and self-governance is a challenge, particularly for groups with initial governmental support or benefitting from early public-private partnerships (Tirado-Soto & Zamberlan, 2013). Yet, waste pickers have managed to build second grade organizations (e.g. networks, federations or trade unions) playing key roles in backing demands to be recognized and formalized as recycling service providers (Marello & Helwege, 2017) Access to space, infrastructure (water, sanitation, electricity) and amenities is vital for WPOs to operate efficiently and safely. It is also important to have officially approved and controlled waste transfer points where collected waste and recyclables are stored (Gutberlet J, 2016). Good relationships with local governments are thus vital but municipalities often remain hesitant towards WPOs (Dias & SM, 2016). Also, support of WPOs clashes with the interests of powerful corporate waste management actors and other players of the private sector. Most countries still lack national regulatory frameworks recognizing WPOs as waste management actors (Akter, Mohit, & Chowdhury, 2017). Thus, local authorities tend to be reluctant to acknowledge WPOs' role in the waste system and do not fully support waste picker initiatives. WPOs habitually experience discontinuities or unfulfillment of agreements and contracts

[31] CBO: Community based organisation
[32] WPO: Waste pickers organisation
[33] NGO: Non-government organisation

established with local governments (Zapata & P, 2013) (C, 2018) In spite of the valuable environmental, social and economic contributions provided by WPOs, these are still under-researched and existing research is typically qualitative and case based. Although such studies provide context-specific insights, there are knowledge gaps in understanding how WPOs can thrive and become resilient. Recent qualitative research has revealed the knowledge, competences, innovative capacities and services developed by WPOs when designing new recycling processes and infrastructures, even though they often do not follow scientific procedures and technological standards. Yet, we do not know much about how innovative solutions are developed by WPOs, and how they are disseminated or adopted by different groups.

### 2.14 Solid Waste Management in Pune City prior to KKPKP's Interventions:

Solid Waste Management in Pune City prior to KKPKP's interventions was in a turmoil. The PMC[34] failed to adhere to the Municipal Solid Waste Handling Rules. It also flouted in meeting the December 2003 deadline set by the court for implementation of the rules. (Bajaj, 1995) The PMC lacked both a dedicated solid waste management (SWM) department and a comprehensive plan. With its own vehicles and labor, it managed to provide door-to-door waste collection to only 7% of households. Instead, 86% of municipal solid waste was collected from community bins located in public spaces. Fleet utilization was inefficient, with only 42% of the community bins being emptied daily. (Government, 2005). Municipal operations were handled by municipal employees, with waste typically entering the system in a mixed form. The formal municipal framework did not include material recovery processes. Within the municipal context, solid waste management was limited to collection, transportation, and disposal. In 2001, residents successfully petitioned the courts to shut down the Paud dumping ground. Following this, unprocessed waste was disposed of at a single landfill in Uruli village. (Gram Panchayat Uruli Devachi vs Pune Municipal Corporation Writ Petition, 2000) Beleaguered villagers sought relief from the courts. PMC spent Rs.1400 per tonne[35] the revenue generated through conservancy tax amounted to only one-tenth of the total expenditure on waste management. Alongside the formal system, a parallel informal sector operated, involving waste pickers, itinerant waste buyers, and traders. This sector recovered recyclable materials from households, shops, offices, and other establishments. High-value items were purchased by itinerant waste buyers for reuse, repair, dismantling, or resale, often using small capital and

[34] PMC: Pune municipal corporation
[35] Tonne: 1 Tonne is equal to 1000 kilograms

carts provided by traders. Waste pickers, on the other hand, collected recyclables for free from streets and landfills. As a result, not all waste ended up in landfills. However, this grueling and stigmatized work was often carried out amidst animals such as dogs, cats, cows, buffaloes, and even rodents like rats and bandicoots. Despite its integral role in supporting the formal waste management system, the informal sector remained unrecognized.

For decades after independence, waste in Pune was largely ignored unless it was visibly uncollected on the streets. Once collected, it was transported to landfills, often located in villages whose residents had little say in the matter. This neglectful practice left waste on streets, causing frustration among residents, politicians, and bureaucrats, each blaming the other. This began to change in the early 1990s. Waste pickers started organizing, environmental awareness grew following the 1992 Rio Summit, and concerned citizens and villagers turned to the courts for action. Villagers, in particular, sought relief and closure of landfills. Until then, the norm across the country had been to collect, transport, and dump waste out of sight. The courts eventually compelled the Government of India to take action, leading to the introduction of laws and regulations to manage solid waste effectively. The privatization of municipal services, the rise of industry - institute partnerships, and initiatives independent of government funding gained significant impetus. Simultaneously the Central Government too initiated its own Jawaharlal Nehru Urban Renewal Mission[36]. (Integrating Waste Pickers into Municipal Solid Waste Management in Pune, India, 2012)

### 2.15 Evolution of Kagad Kach Patra Kashtakari Panchayat (KKPKP):

The Pune Municipal Corporation, responsible for the city's solid waste management, has been recognized for its innovative and experimental approaches in the field. In 1993, the Kagad Kach Patra Kashtakari Panchayat (KKPKP) was established as a member-based trade union formed by waste workers and itinerant waste buyers. The union advocates for the rights of waste pickers, striving to improve their working conditions, ensure livelihood security, and gain recognition from municipal authorities. Since its establishment, KKPKP has been instrumental in organizing campaigns against child labor, raising awareness about the importance of waste segregation, and promoting access to healthcare and education for waste pickers. Also, it has successfully secured municipal-issued identity cards for waste pickers, enhancing their recognition and support (Gadgil, Ranjit, & Sansrit, 2018). The KKPKP has also played an integral role in establishing the cooperative Solid Waste Collection and

[36]JNNURM: Jawaharlal Nehru Urban Renewal Mission

Handling (SWaCH)[37] in 2007 which is a wholly owned worker's cooperative. One of KKPKP's most significant contributions was publishing a case study that quantified the impact of waste pickers on Pune's solid waste management. The study demonstrated that waste pickers saved the city crores of rupees annually in waste handling costs. KKPKP used this report to advocate for improved working conditions and the protection of waste pickers' rights. It also pushed for their integration into the solid waste collection system at the source of waste generation. This integration granted waste pickers access to waste directly from homes, offices, and businesses.

**2.15.1 Formation of SWaCH:** In 2000, new Municipal Solid Waste (MSW) laws and rules were introduced, mandating waste segregation, door-to-door waste collection, and waste processing instead of dumping (MSW Rules 2000). There was also a push to reduce street containers and make the city 'container-free' to promote better sanitation and cleanliness.

KKPKP saw this as an opportunity to improve the working conditions of waste pickers. In collaboration with the Pune Municipal Corporation (PMC), KKPKP helped establish SWaCH, a formal institution that integrated waste pickers into the city's door-to-door waste collection system. In 2005, KKPKP launched a pilot program with the PMC, incorporating waste pickers into the door-to-door collection (DTDC)[38] process. This initiative led to the formation of SWaCH, a worker-owned cooperative responsible for the service. The SWaCH DTDC model involved collecting user fees from service users, with infrastructure and management support provided by the municipality.

This approach significantly improved the working conditions and livelihoods of waste pickers, bridging the gap between households and municipal waste collection. The initiative aligned the interests of waste pickers—seeking improved livelihoods—and the municipality's goal of sustainable waste management. In 2008, the doorstep collection service was institutionalized under SWaCH, which was registered specifically for this purpose. Over time, SWaCH expanded into new areas and even extended its services to other cities.

The pilot program initially enabled 1,500 waste pickers to serve 125,000 households in selected wards of Pune (SWaCH 2019). Today, more than 2,700 waste pickers have been integrated into the formal system through SWaCH. This model does not require municipal payments to waste pickers; instead, residents pay for the door-to-door collection service, and waste pickers also earn additional income by selling recyclables. The model has been scaled up across nearly

[37] SWaCH: Solid waste collection and handling
[38] DTDC: Door to Door collection

the entire city and has contributed to a shift in behavior, with residents now actively segregating waste at the source. Overall, the SWaCH model has been a success, not just in terms of improving the livelihoods of waste pickers but also in creating a more effective and sustainable waste management system for Pune. It has proven to be a replicable model that can be adapted to other cities, helping to integrate the informal waste sector into the formal waste management system in ways that benefit both workers and communities.

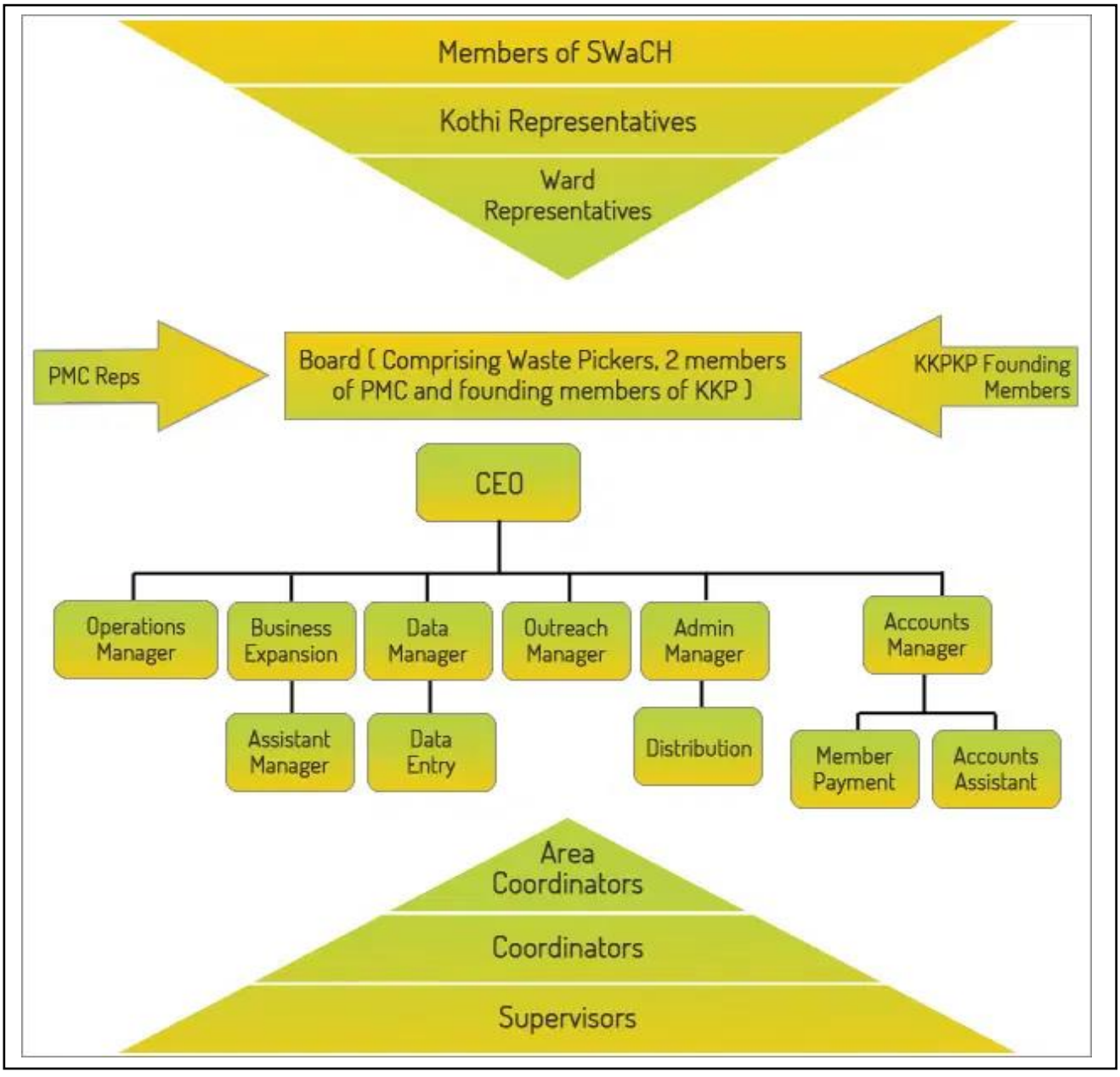



Figure: 2.1 Organogram at SwaCH

Source: **https://swachcoop.com/about/organogram**

### 2.15.2 SWaCH-PMC Partnership

In 2005, Kagad Kach Patra Kashtakari Panchayat in collaboration with SNDT's[39] Department of Adult Education implemented a pilot program to upskill 1,500 waste-pickers as service-providers for door-to-door collection (DTDC) of household waste. The pilot program not only improved the livelihoods and working conditions of waste pickers but also helped bridge the gap between households and the municipal waste collection system. In 2007, this initiative led to the formation of SWaCH Pune Seva Sahakari Sanstha. In 2008, the Pune Municipal Corporation (PMC) entered into a five-year agreement with SWaCH to decentralize door-to-door waste collection (DTDC) services. Under this arrangement, cooperative members collect segregated waste from over 2,000 households. Non-recyclable garbage is further sorted for resale, while wet/organic and non-recyclable waste are taken to PMC 'feeder points,' where municipal garbage trucks collect it for disposal in landfills.

This system helps the PMC save Rs. 20 crores annually in waste handling costs. The model is both energy-efficient and environmentally friendly, as SWaCH waste pickers recycle materials and reduce the amount of waste sent to landfills. This in turn reduces carbon and other greenhouse gas emissions responsible for global warming. SWaCH collects more than 850 tonnes of municipal solid waste (MSW) per day, of which approximately 150 tonnes is recycled and approximately130 tonnes is composted.

https://swachcoop.com/about/swach-pmc-partnership/

### 2.15.3 Fallout of SWaCh with PCMC[40]:

In 2009-2010 the Pimpri Chinchwad Municipal Corporation (PCMC) approached KKPKP and asked SWaCH to carry out door-to-door collection (DTDC) of waste in its limits. The PCMC agreed to provide annually-reducing viability gap funding, calculated on the basis of households covered for wards A and D, until the user fee payment was accepted by residents of the city. Following this, the service was expanded to cover the entire Pimpri Chinchwad area. As per the agreement (SWaCH PCMC MoU), SWaCH was responsible for primary collection (door-to-door) and transferring the waste to the secondary collection system. Waste pickers were entitled to keep the income generated from recovering and selling recyclables. The scheme was successfully launched and operated to the satisfaction of the citizens., waste pickers and PCMC.

[39] SNDT: Shreemati Nathibai Damodar Thackersey Women's University
[40] PCMC: Pimpri Chinchwad municipal corporation

**2.15.4 SWaCH terminates MoU[41]:** Yet, in 2011, PCMC invited tenders for wards B and C, and awarded an integrated contract for door-to-door collection and transport to the landfill, the payment was in proportion to the weight of waste collected and transported. Thus relieving the, service users from the payment of any user fees to the service provider. This went against SWaCH principles of waste management. This led to a situation where residents of PCMC were subject to unfair terms for waste collection, depending upon where they lived. Those in wards B and C got a free service and those in wards A and D were required to pay. Justifiably, residents refused to pay for a service that others were getting for free. Recognizing that in the long run the organisation would now be placed in an impossible situation with regard to user fee recovery, at the same time the situation was unfair fair for the citizens as well and hence consequentially SWaCH terminated its the agreement with the PCMC from October 2012. (SWaCH Termination Letter) However, despite concluding its agreement with PCMC, SWaCH maintained that the objectives and the premises on which integration of waste pickers was pushed by KKPKP, remained valid– if not even more so, given the higher costs of privatization of services and escalating costs to the municipality and citizens as taxpayers.

**2.15.5 Responsibility of PCMC towards waste pickers:** KKPKP and SWaCH made the point that since PCMC is as much responsible for poverty alleviation as it is responsible for solid waste management, it was incumbent upon the PCMC to secure the interests of waste pickers who will become unemployed.

When the PCMC invited tenders from labour contractors for door-to-door collection. SWaCH advocated for its members, waste collectors left unemployed by the new system, to be hired by contractors. They argued that with waste now collected directly from generators into trucks, reduced containers, and the privatization of the Moshi landfill, displaced workers could no longer return to waste picking. SWaCH's efforts led to their members being employed by contractors with guaranteed minimum wages and statutory benefits.

Contractors' malpractices: For a while it seemed that the waste collectors had found employment in the new system too, but a few months down the line, it became clear that there were several malpractices happening, and waste pickers were not getting their dues.

The waste collectors soon realized that the contractors paid less-than-minimum wage (Rs 50 – Rs 100 as against the required Rs 254), and were falsifying attendance records — workers were

[41] MoU: Memorandum of uderstanding

being paid for 10-12 days of work, when they had actually worked for a full month. One waste collector had worked for 23 days but her attendance record showed one day of work! If the waste pickers questioned the contractors, they were threatened into submission, transferred to distant sites, or fired. Using the RTI[42] Act, KKPKP gathered data which clearly implicated the contractors in manipulation of attendance and wage records. For over four months, KKPKP made attempts to dialogue with PCMC on the basis of this evidence, but when the corporation continued to dilly-dally, an indefinite dharna was launched – without disrupting waste collection services. After examining in great detail all the documents and the evidence, the Commissioner ordered that:

• A show cause notice was issued immediately to BVG for flouting labour laws and manipulating records.
• All workers were to be paid their wages through recognised bank accounts. (BVG use to pay its workers through Pay Direct cards, the statements for which could not be taken by the workers.)
• Joint meetings were held between KKPKP and the Labour Department frequently so that concerns raised could seek immediate redressal.

**2.16 Waste management system in Pune city:** The waste management system in Pune follows the pattern below:

The Pune Municipal Corporation is divided into five DMC[43] zones headed by one Deputy Municipal Commissioner each. Each zone comprises of three ward offices making the total number of ward offices fifteen. Ward offices are further sub divided into *Aarogya Kothis*[44] responsible for health and sanitation activities. Each ward office has minimum ten to a maximum of twenty-three *Aarogya Kothis* depending upon the geographical expanse of the ward-office. Each arogya kothi is headed by a Sanitation Inspector (SI)[45] followed by a Deputy Sanitation Inspector (DSI) who overlooks the various sanitation activities. With regards to solid waste management each kothi has a Mukkadam[46] appointed who looks after the team

[42] RTI: Right to information
[43] DMC: Deputy municipal commission zones
[44] Aarogya Kothi: Sub - division of a ward office for health and sanitation activities
[45] SI: Sanitation Inspector
[46] Mukkadam: A word of Marathi origin indicating group leader for unorganised labour

undertaking sweeping of roads, waste collection and segregation. (PMC website; interview with mukadam barve kothi)

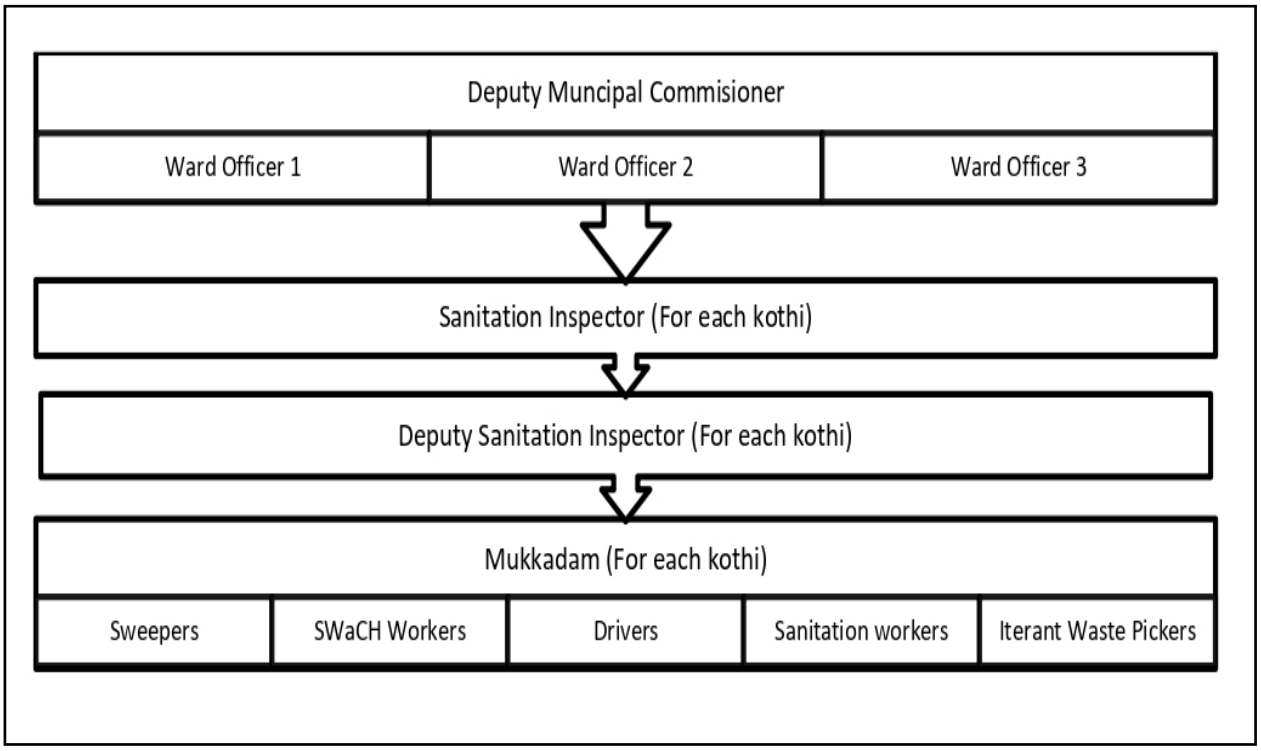


Figure 2.2 Organogram of Solid waste management in PMC

**2.16.1 Job profiles:** The employment in this sector is thoroughly unorganized with negligent job security. Waste picking involves the following job profiles the nature of employment is seen to vary in each of these. (interview with mukadam barve kothi)

1. **Mukkadam:** The mukkadams are group leaders appointed by contactors or PMC and are responsible for overseeing the activities of the waste collection process daily.
2. **Door to door waste collectors:** Waste collectors associated with SwaCH coop movement are appointed for Door-to-Door Collection services. (DTDC). These people are members of the Kagad Kach Patra Kashtakari Panchayat (KKPKP) and they have the benefits and standing of a co-operative with them. DTDC's primary service is daily door-to-door waste collection from households, offices, shops, and establishments. Organic and non-recyclable waste is handed over to the municipal transport system, while recyclables are sorted on-site, in open spaces, or in sorting sheds where available. Workers sell the recovered materials, with some storing them to secure better prices. SWaCH and PMC collaborate closely to ensure efficient primary collection and smooth transport for further processing.

3. **Sweepers:** The sweepers are responsible for the cleanliness sweeping and upkeep of the roads. Also, the garbage collected through this process its collection segregation and disposal fall under their purview. Though initially the sweepers were appointed by Pune Municipal Corporation on payroll having substantial income and security to their aid today the employment is purely contractual and third party eliminating the essence of job security and depriving them of social security benefits as well.
4. **Drivers:** The drivers either drive tempos or dumpsters mitigating the movement of waste collected from point of pickup to incineration centers, dumping grounds or recycling units.
5. **Iterant rag pickers:** These are the most affected elements due to the unorganized employment. They scrouge the waste as a family or group has no assurance of employment, income or social security.

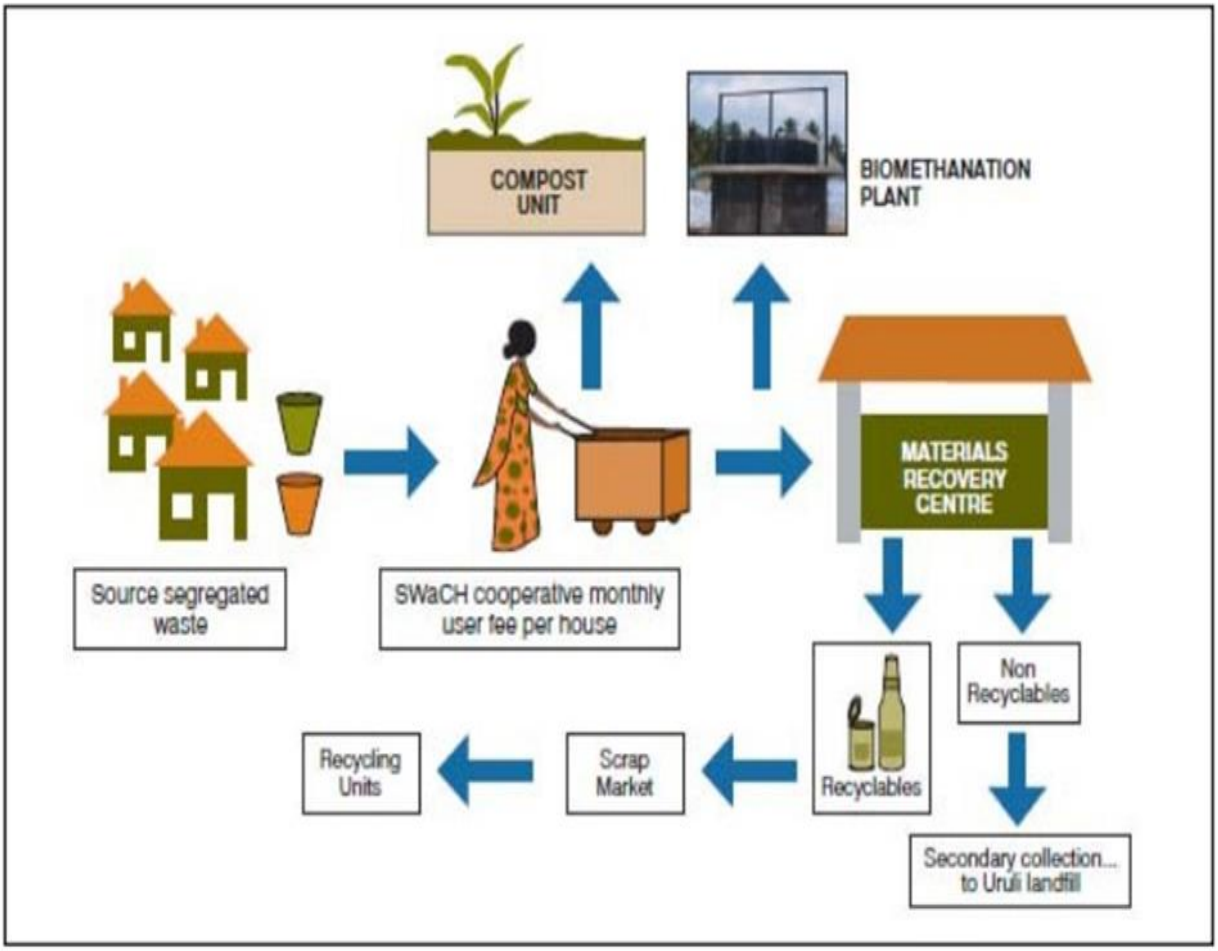



Figure 2.3 The movement of waste from households in Pune

Source: (Chikarmane, 2012)

**2.17 Demographic profile of the waste pickers:** (Malhotra (Malhotra, 2014), (Chikarmane, 2012) (V Kalyan Shankar, 2018) (Chandran, Shekar, & Abubaker, 2009)

In order to gain an in depth understanding of the nature of problems faced by the waste picking community it is imperative to understand their socio-economic status, level of literacy, family background and other demographic attributes. A critical analysis of available literature has been instrumental in framing a general structure of their demographic profile.

1. **Casteism:** The caste system in Indian society plays a significant role in shaping the country's waste management practices. Traditionally, waste handling and garbage-related work have been assigned to the lowest castes, reinforcing their low social status and perpetuating stigma against those working in the informal waste sector. (Chandran, Shekar, & Abubaker, 2009). Majority of the studies underline the fact that most pickers across India belong to some of the lowest castes. The waste pickers belong to the marginalized lower caste communities and have been performing waste picking and scavenging activities as a generation-based occupation. This varna system of occupation and economic activities dates back to centuries expecting a particular sect of the society to perform these degrading activities as income generation sources.
2. **Educational background**: Most of the waste pickers lack education altogether while some have gained basic literacy through adult education programmes or have gone through primary schooling at a young age enabling them to read and write. However available literature indicates the overall literacy in this segment of the society is dismal.
3. **Lack of job security:** Waste pickers across India face a multitude of challenges on a daily basis. In many scenarios, there is negligent or absolutely no recognition of this workforce and the positive impact they create on the surroundings and the environment. (Chengappa, 2013) They are extremely unprotected and exposed as they have no job security and are often troubled by civic authorities since they lack identification, authorization or organizational backing for their work.
4. **Lack of stable income**: Most of the waste pickers are daily wage earners and do not have a stable income source. Even those associated with co-operatives like SWaCH operate on monthly fees drawn per household ranging from 10-50 rupees which at times is denied to them. For those waste pickers who operate in isolation income is purely based on waste collection each day. This puts them in an extremely vulnerable position, as many strive to find employment that may be better in terms of pay, regular, and safe. Therefore, many families who are into waste picking experience perpetual poverty. (Chengappa, 2013)

5. **Women in the workforce:** Available literature clearly indicates that most of the employees involved are women; who are more often than not single earners in the family. Most activities such as door to door waste collection, segregation, sweeping of roads and dumping are undertaken by women whilst lifting loaded carts, tempo driving and dumpster driving are activities relegated to men.
6. **Challenges associated with waste picking:** The distinguishing characteristic of the work life of waste pickers is that they are not paid in an institutionalized or regulated manner for the waste they collect. Waste picking is an informal, unregulated, and labor-intensive activity requiring minimal technological skills and offering extremely low wages. The lack of regulation often leads to labor exploitation by recycling companies or their intermediaries. Waste pickers primarily operate at landfill sites, where large amounts of waste are deposited. As soon as disposal trucks unload, waste pickers scramble to collect recyclable items before the waste is compacted. This physically demanding work involves long hours under the sun, carrying heavy loads of recyclables, and little opportunity for rest. Despite the sector's significance, it has largely escaped official attention. Waste pickers recognize the hazards of working at landfill sites, viewing them as unsafe, yet they endure harsh conditions to support their families. Their daily toil aims to retrieve recyclable materials that can be sold to afford necessities like their children's education. However, waste pickers face significant risks to their health and physical safety, driven by the need to escape poverty.

   The public health implications are concerning, as waste pickers travel daily between landfill sites and their homes, potentially exposing their families to illnesses contracted on the job. Challenges at landfill sites demand urgent attention from all stakeholders, as proper waste management is critical. While waste pickers are technically self-employed, their welfare is crucial to both the waste

**2.18 Task related stressors:** The job of waste pickers circulates around collection and segregation of domestic waste. While mere collection itself is tiresome and stressful, the nature of the job possesses some grievous challenges for the members.

1. **Manual collection and segregation of waste:** Waste collectors are expected to not only collect trash but also to manually segregate the wet and dry waste. Though the PMC has taken initiatives to segregate waste inside the homes itself; lack of participation of the citizens in this initiative makes it necessary for the waste collectors to perform this task instead. Waste has to further be segregated as recyclable and non – recyclable waste causing

these people to be exposed to poisonous gasses, fumes unpleasant odors for most part of the day. *Whilst the international convention on acceptable conditions of work held in Ohio has termed manual scavenging as an occupation depriving human rights; most developing countries rely on this task force for waste segregation.* (Kulsum Akter, 2019)

2. **Handling high risk waste**: Waste capable of causing immediate injury, containing emissions of any kind or resulting in diseases is termed as high-risk waste. Thus, waste such as glass shards, broken glass items, rusted iron articles and medical waste increase the challenges associated with the job. Research undertaken so far has underlined the fact that waste collectors have been prone to injuries, burns, stiches and at times even have fallen prey to tetanus and HIV[47] owing to handling such waste without proper protective gear or knowledge. (Hunt, 1996) Infact, this problem came to the forefront with the pandemic of Covid- 19 where the waste workers have been expected to collect and treat waste from home quarantined families as well. (S. Parveen, 2020)

3. **Injuries, cuts, bruises:** As a result of the environment in which they work, waste pickers are also prone to other physical injuries, including cuts from sharp objects, such as pieces of glass, razor blades, scrap metal and pricks from piercing items like needles and nails. This eventually becomes the entry points for infection and exposure to bacteria (Yusuf, 2021). (African population studies , 2018) reported that most of the waste pickers in Aba do not believe that the health and safety problems they face are related to their occupation. (Chukwunonye, 2012) revealed that the waste pickers in Nigeria are not aware of the dangers of their occupation and are concerned only with the economic benefits of the occupation.

4. **Handling sanitary waste:** Also, domestic waste merely does not include kitchen waste but also human waste in the form of diapers and sanitary napkins. While the rules of discarding such a waste are in place most households disregard the same and place such garbage with kitchen waste. Many times, such a waste is open and or the cover covering the waste is torn or sodden causing it to degenerate during the segregation process. This makes the task of segregation almost inhuman. (Solomon E. Uhunamure, 2021)

[47] HIV: Human Immunodeficiency Virus Infection

5. **Physical stressors:** The collection of wastes and its segregation is a physical activity having several elements that result in physical stress and tiredness to the waste pickers. Waste picking is a physically demanding work, as it involves carrying heavy loads of recyclable materials and walking for hours without adequate rest. This could lead to the development of musculoskeletal problems, such as back, shoulder and neck pain, among others (Singh S. C., 2015)

6. **Lifting and dragging heavy loads**: The working conditions involve challenges such as lifting heavy loads of trash especially while filling trucks for land fill sites. As stated in the demographic profile mostly women are involved in the process of waste picking which makes this a challenge for them. This clubbed with the effort of pushing full carts on sloped pavements and roads results in tiredness and fatigue. (Carenbauer, 2021)

7. **Climbing stairs**: As per available literature; per day a waste collector on an average climbs 50 floors for door-to-door waste collection. Prima facie interactions undertaken with waste pickers have revealed that while old housing societies lack elevator facilities altogether, most housing societies especially the ones with a common elevator, deny them the access to the same compelling them to use the stairs. This social stigmatization causes unnecessary physical stress to hem on a daily basis. (Carenbauer, 2021)

8. **Long hours of waste segregation**: In waste management collection and segregation activities from the crux of the process. Therefore, all waste pickers and sweepers essentially spend maximum time segregating the waste. This they do either by sitting in the mound of waste of by bending down for hours at a stretch. The work of waste-pickers involves frequent static postures (Silva, 2005) and this has been previously linked with musculoskeletal pain (Putz-Anderson, 1997) Also, the itinerant scavengers use bare hands for scrounging waste. At times, they use arsenic, and heavy acids at times for drawing metals hidden under plastics and other materials since the sale of these is economically viable for them. (Carenbauer, 2021)

9. **Exposure to extreme weather conditions:** The working environment of these workers is unchanged for over a century (Tiwari, 2008) Waste picker worked throughout the year except during extreme winters and rainy season (Barki, 2013) Waste picking is one of the

most dangerous activities where waste pickers exposed to unfriendly weather conditions, enclosed by stray animals. (Niloufer, 2013)

10. **Common occurrence of situations:** Some situations are extremely common for the waste pickers, the occurrence of which make their working conditions more challenging and result in stress and fatigue both physical and mental among the waste collectors' fraternity. Most of the waste collectors have reported that they have been victims of animal bites and scratches. Also, a primary stressor emphasized by the waste collectors is that in case of waste spillage or overflowing society bins they are expected to gather the waste by hand in order to load it into the carts. It is also common knowledge that waste pickers are subjected to ill treatment by people owing to the societal stigma associated with their jobs. (Rinie Schenck, 2019)

11. **Availability of welfare facilities:** Every job is expected to have certain welfare facilities which can give reasonable comfort to the workers during the discharge of their duties. However, waste pickers are even denied such facilities and if present are ignorant about them. The availability, conditions of these welfare facilities and the level of awareness amongst the waste collectors is an important indicator of the working conditions of the waste pickers. (Helwege, 2014)

12. **Impact of coronavirus pandemic:** The COVID-19[48] pandemic has negatively affected the economic, social, and psychological aspects globally. COVID-19 can possibly spread through municipal solid waste (MSW) if it is collected, bagged, transported, and disposed inappropriately. Such a situation has posed significant challenges to MSW management (MSWM), which has led waste personnel under massive pressure. (Quing, Ye, Asmi, Azfar, & Zhou, 2021) Sanitation workers are one of the most affected groups by this pandemic. The nature of their work fundamentally makes them more susceptible to the virus. The lack of protective gear just adds to this vulnerability. In Maharashtra, the state with the highest number of COVID-19 cases, sanitation workers from Mumbai reported that they had not received any PPEs from the authorities. Meanwhile, in central Delhi, sanitation workers who work in hospitals are particularly apprehensive about their health as they clean COVID-19 bio- medical waste such as discarded face masks, used gloves,

[48] COVID-19: Corona virus disease identified as a global pandemic in 2019.

etc., without adequate protective gear. Whenever they ask for PPEs, the authorities tell them that there is a dearth of PPE[49] kits. Despite the risk of contracting COVID-19, the workers say they have no choice. No other jobs are available to them. (Bisht, 2020)

13. **Health Issues:** A range of health problems have been documented for waste workers which were caused by hazardous household waste or mismanaged household waste. Work-related disorders and injuries have been detected among the waste collectors around the world, such as respiratory problems, infectious diseases, gastrointestinal issues, muscle pain, fever, headache, fatigue, irritation of eyes and skins, mechanical trauma, pulmonary problems, chronic bronchitis, musculoskeletal damage and hearing loss, poor emotional well-being, and other specific types of injuries. (Jutta & Gutberlet, 2017) A review of occupational health problems and their possible causes shows that the health issues may be caused by the exposure of waste collectors to bio-aerosols (e.g. microorganisms) and volatile compounds (metabolites and toxins from these microorganisms) during the waste handlings Research has revealed that waste management workers also have increased incidences of accidents and musculoskeletal problems As such, household waste collectors and waste pickers are at risk of developing chronic respiratory symptoms such as cough, phlegm, wheezing, and chronic bronchitis.

14. **Emotional trauma and emotional labour:** Waste picking is a type of informal employment that occurs worldwide. Waste pickers often live in isolation as a result of stigma and may experience low self-esteem, which may negatively affect their psychological well-being (Chokhandre, 2017).Waste picking is associated with a range of risk factors for common mental disorders (Makhubele, 2019).Waste pickers often remain from morning to evening in the working place with hazardous environment. As they stay for a long time in the working place so it is quite possible that they can be ill mentally A research by (Mote, 2016) exposed that waste pickers more frequently reported physical and mental health problems. Majority of them were associated with mild depression and mild anxiety as common mental disorders. Substance abuse itself is one of the mental disorders present among waste pickers (Mote, 2016)

[49] PPE: Personal protective equipment

| Sr.No | Nature of health risks | Source | |
|---|---|---|---|
| | Direct health risks associated with collection and separation of household waste. | Biologic and chemical contamination of dirty and contaminated household waste | Risk of biologic contamination |
| 1. | | Sharp materials from packaging and discarded household items, such as broken glass, wood, or metal | Risk of cuts and perforation |
| 2. | | Contaminated plastics (soft/hard), e.g. PET, PP, and PAD containers sometimes containing urine, detergents, chlorine, food rests, etc. | Risks of infection, allergies, respiratory diseases |
| 3. | | Separating e-waste facilitating the contact with toxic substances | Allergies, respiratory diseases, and cumulative effects from heavy metal contamination |
| 4. | Indirect health risks associated to household waste | Presence of rats, cockroaches, and pigeons | Risks of transmission of disease such as Leptospirosis |
| 5. | | Lack of ventilation in recycling centers | Respiratory and pulmonary diseases |

Table 2.2 Health risks of waste pickers
Source: (Porras Bulla, Rendon, & Espluga, 2021)

| Sr. No | Health problem | Stressor | Source |
|---|---|---|---|
| 1. | General health (weakness, nausea, loss of appetite etc.) | Pungent smell | Exposed organic waste |
| 2. | Aches and body/joint pain | Long working hours without rest | Poor work environment |
| 3. | Skin disease and allergy | All types of waste | All waste sources |
| 4. | Respiratory and eye problems | Dust, fume, smoke | Burning of plastic, tyre, incineration |
| 5. | Gastro-intestinal problems and worms | Drinking water, dirty hand or utensils | Lack of sanitation; poor personal hygiene |
| 6. | Cuts and bruises, infection, physical injury | Sharp / pointed objects, heavy machineries | Hospitals and health centres, households, landfill machineries |
| 7. | Pain and inflammation | Insect / mosquito bites | Bare foot/hand |
| 8. | Fever (infection, viral, malaria, dengue etc.) | Cold, infection, mosquito bite | Poor landfill conditions |
| 9. | TB, bronchitis, hepatitis, AIDS etc. | Clinical waste | Hospitals and health centres |
| 10. | Sore, metabolic disorders, cancer | Corrosive, toxic and radioactive chemicals | Hospitals and health centres |

Table 2.3 Impact pathway of common health problems

Source: (S. Parveen, 2020)

## Part C: Motivation and performance

**2.19 Definitions of the term Motivation:** The term motivation as defined by various authors is stated below:

1. According to Stephen Robbins: "Motivation is the process that accounts for an individual's intensity, direction and persistence of efforts towards attaining a goal."
2. According to Moorhead and Griffins: "Motivation is the set of forces that lead people to behave in particular ways."
3. According to Fred Lufthans: "Motivation is a process that starts with a physiological or psychological deficiency or need that activates a behavior or a drive that is aimed at a goal or an incentive."
4. According to Stoner Freeman and Gilbert "Motivation is defined as a human psychological characteristic that contributes to a person's degree of commitment. It includes factors that cause, channel and sustain human behaviour in a particular committed direction."

**2.20 Types of motivation:** Motivation is generally based on four categories viz. positive motivation, negative motivation, intrinsic motivation and extrinsic motivation.

1. **Positive motivation**: Positive motivation refers to behavioral reinforcement driven by the reward associated with a specific action. Also called incentive motivation, it is rooted in the concept of rewards. Genuine and effective motivators play a key role in achieving high performance standards and encouraging employees to actively participate as responsible members of the community. Positive motivation is achieved by the cooperation of employees as then they have a feeling of belongingness and happiness as well.
2. **Negative motivation:** Negative motivation is defined as the use of fear, force, power and threat for the accomplishment of an objective. Thus, when an employee does not act in accordance with what is desired of him, he might be punished with the demotion or a lay off. This acts as a push mechanism for the employees to cooperate. However, this motivation does not ensure willing cooperation but rather employees work to avoid punishment. This type of motivation beyond a certain level can cause anger and frustration and may lead to industrial unrest. Punishment is successful in controlling individual misbehavior and contributes to positive performance on numerous occasions.
3. **Intrinsic motivation**: Intrinsic motivation causes people to do something because they find spontaneous satisfaction from the activity itself. Intrinsically motivated people engage in a specific behaviour because to them such behaviour is inherently enjoyable,

challenging, interesting and meaningful. When an activity is an intrinsic motivator, it is an opportunity for new learning, important contribution, autonomy and being creative.

Intrinsic motivation comes from the feeling of self-satisfaction and accomplishment and is concerned with the state of self-actualization in which the satisfaction of achieving something worthwhile motivations an employee further. This motivation is self-generated and is not associated with rewards.

4. **Extrinsic motivation**: This type of motivation is induced by external factors that are primarily financial in nature. It is based on the assumption that behavior that results in positive rewards tends to be repeated. However, the reward for the desired behavior should be sufficiently powerful and alterable so that it improves the probability of occurrence of the desired behavior.

   Extrinsic motivation therefore, requires the offer of some outcome of an act so that satisfaction comes not from the activity itself but from the outcome to which the activity leads. For an extrinsically motivated person work is merely necessary to be done with in order to receive the rewards associated with the task.

**2.21 Theories of motivation:** There is no single motivation theory that explains all aspects of human motivation, but these theoretical explanations do often serve as the basis for the development of approaches and techniques to increase motivation in distinct areas of human endeavor. Understanding human motivation is crucial for managing people. Extensive research has been performed to find out what makes people work and how to motivate them. A number of theories have been developed, even though there is no universally acceptable motivation theory.

**2.21.1 Classification of theories of motivation:** There are mainly two categories of theories of motivation which explain the psychological processes underlying employee behaviour. These two categories are content theories and process theories.

**I. Content theories of motivation**: These theories focus on identifying internal factors such as instance satisfaction and job characteristics that energize employee motivation. However, these theories do not explain how motivation is influenced by the dynamic interaction between an individual and the environment that he works in. Content theories of motivation are based on the assumption that an employee's needs influence motivation. Needs are physiological or psychological deficiency that arouse a particular behavior. The basic idea behind the need

theories of motivation is that unmet needs motivate people to satisfy them. There are four popular theories of motivation:

1. Abraham Maslow's need hierarchy theory
2. Clayton Alderfer's ERG theory
3. McClelland's Need theory
4. Herzberg's two - factor model

*Understanding these theories shall facilitate us to get a better insight into the behavior associated with the waste pickers. Our primary focus is going to be the need-based theories since these try to answer the question what are the factors that have motivated the waste because to choose their occupation.*

**1. Abraham Maslow's need hierarchy theory:**

- **Physiological needs:** These needs are taken at the first or starting step because these are the strongest needs until they are reasonably satisfied. These are basically bodily needs comprising of hunger, thirst, shelter, clothing and other necessities of life. Human beings strive to acquire these basic needs and only then they tend to move to the second level of needs.
- **Safety needs:** In the hierarchy of needs the second needs are safety and security needs. Once a reasonable level of physiological needs is satisfied, human beings tend to satisfy the second level of needs which are security and stability. Security needs prima facie deal with economic and job security provision for old age life and medical insurance to safeguard the future of the person as well as his dependents.
- **Social needs:** Once level two is satisfied it is only natural that employees strive to satisfy their social needs. Human beings have an intrinsic need for love, affection, and a feeling of belongingness. Employees seek co-operation and acceptance from their fellow colleagues and peers in order to satisfy this need.
- **Self-esteem needs:** Fourth in the hierarchy are the self-esteem or ego needs which are concerned with self-respect, confidence, recognition power and control. These needs give the person a sense of self- worth and ego satisfaction.
- **Self-actualization needs:** At the top of the hierarchy is the need for self-actualization or the need to fulfill what a person considers to be the mission in his life. After all his needs are fulfilled, a man has the desire for personal achievement. He wants to do something which is challenging and since this challenge gives him enough push and initiative to work, it is beneficial to him and the society. Thus, the sense of achievement gives him a sense of psychological satisfaction.

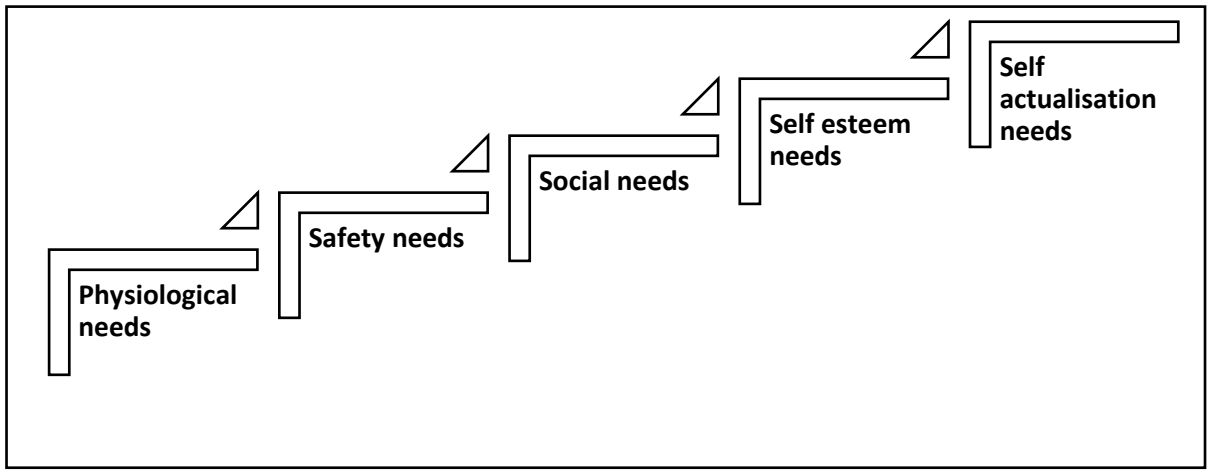



Figure 2.4 Abraham Maslow's Need Hierarchy theory

2. **Clayton Alderfer's ERG theory:** Clayton Alderfer reformulated Maslow's need hierarchy theory. The ERG need theory developed by Alderfer, condenses the five needs given by Maslow's into three needs. The ERG word is derived from the first letters of each of these levels of needs.

- **Existence needs**: The existence needs combine the physiological and safety needs of Maslow's needs. The existence needs are satisfied by material incentives. These needs include the basic survival needs of human beings, needs for physical and psychological safety from threats to peoples' existence and well-being.
- **Relatedness needs:** Relatedness needs, include Maslow's social and esteem needs, which are derived from other people. These needs are satisfied by personal relationships and social interactions.
- **Growth needs:** These needs are similar to Maslow's self-actualization needs. This need involves persons making creative efforts to achieve full potential in the existing environment. These needs will be satisfied only if an individual involves himself in the activities of the organization and searches for new challenges and opportunities.

The ERG theory also contains the frustration-regression dimension. Maslow argued that an individual would stay at a certain need level until that need was satisfied. The ERG theory counters this by noting that when a higher order need level is not fulfilled the individual desire to increase a lower-level need takes place. Inability to satisfy a need for social interaction for instance might increase the desire for more money or better working condition so frustration can lead to a regression to a lower need.

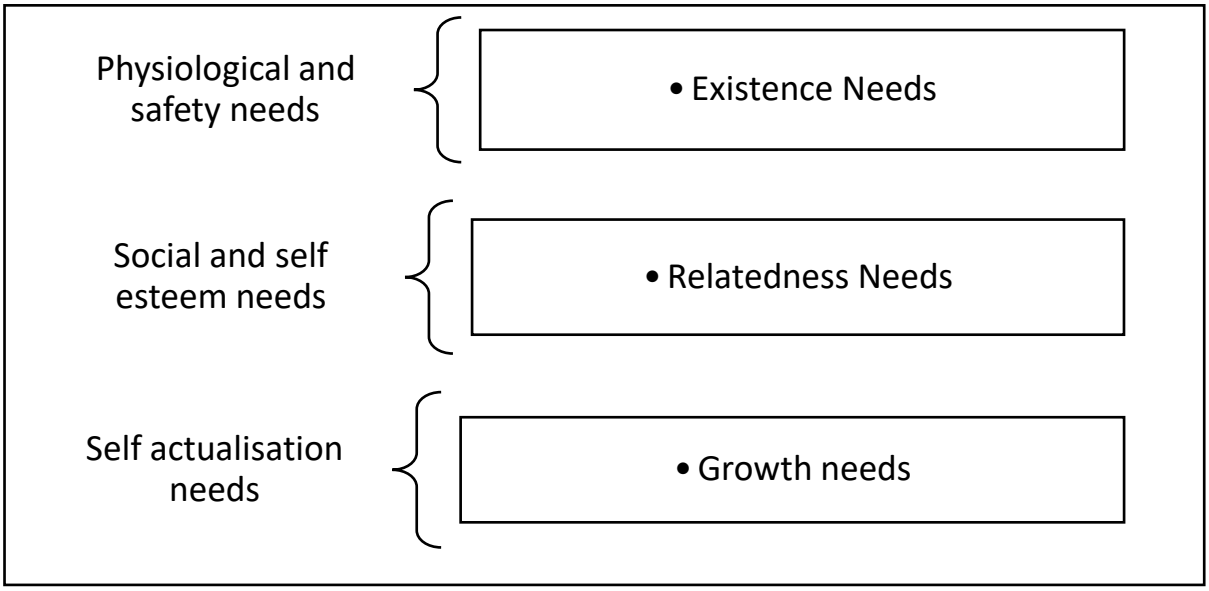



Figure 2.5: Clayton Alderfer's ERG Theory

3. **McClelland's Need theory:** In the late 1940's psychologist David McClelland began experimenting with the thematic appreciation test (TAT).[50] As a way of measuring human needs David McClelland proposed a learned needs model of motivation which prescribed that everyone has three important needs viz need for achievement, need for power and need for affiliation. Managers can motivate others if they are sensitive to the learned motives of individual employees.
   - **The Achievement motive:** People driven by a high need for achievement are self-motivated. They like to get involved in tasks that offer them higher accomplishments. They confront challenges head on.
   - **The Power motive:** People with a high need for power feel satisfied in situations where they can influence and control others. These individuals contribute to the organization by the willingness to specify organizational goals and influencing others to achieve them. While his achievement has the person realize his goals, high power enhances his capacity to be a successful manager especially in larger organizations.
   - **The Affiliation motive:** People with a high need for affiliation find satisfaction in the quality of their social and interpersonal relationships. They avoid isolation since interaction with others is very important for them. They show more concern for the

[50] TAT: Thematic Appreciation Test

feelings of others and are sympathetic to opposing point of views. However, such people generally make weak bosses.

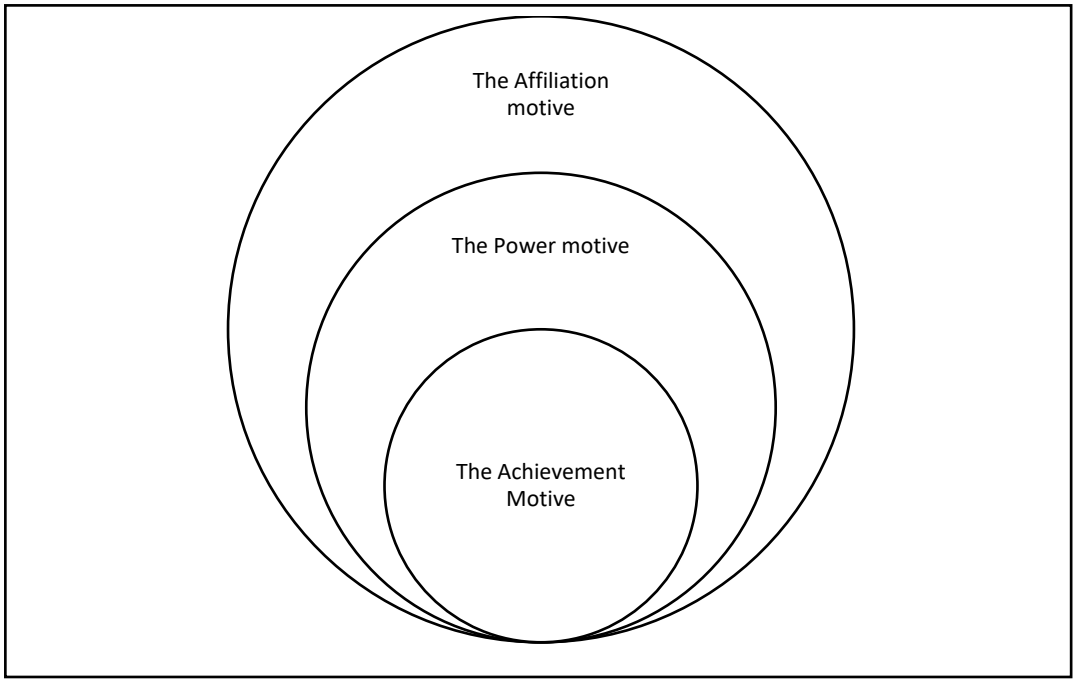



Figure 2.6: McClelland's Need theory

**4. Frederick Herzberg's two - factor theory:** According to Herzberg, (L. M. Prasad, 2010) there are some job factors that result in satisfaction while there are other job factors that prevent dissatisfaction. According to Herzberg, the opposite of *satisfaction* is *no satisfaction* and the opposite of *dissatisfaction* is *no dissatisfaction.*

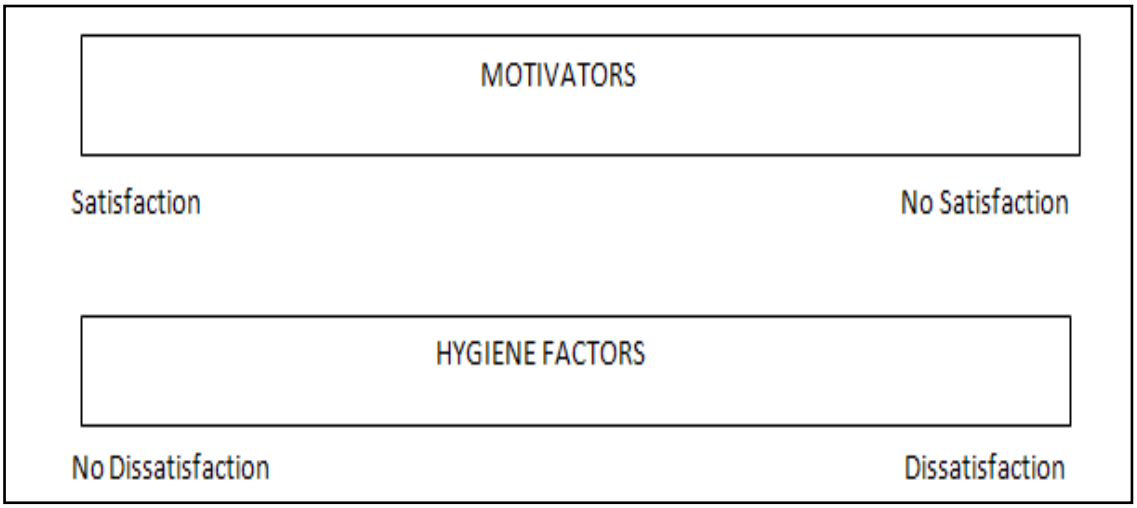



Figure 2.7 Herzberg's view of satisfaction and dissatisfaction

Herzberg classified these job factors into two categories-

- **Hygiene factors-** Hygiene factors are those job factors which are essential for existence of motivation at workplace. These factors do not contribute to long-term positive satisfaction. However, their absence or lack in the workplace can result in dissatisfaction. In essence, hygiene factors are those elements which, when sufficient or satisfactory in a job, calm employees and prevent dissatisfaction. These factors are external to the work itself. Hygiene factors are also called as **dissatisfiers or maintenance factors** as they are required to avoid dissatisfaction. These factors describe the job environment/scenario.
- **Motivational factors-** According to Herzberg, the hygiene factors cannot be regarded as motivators. The motivational factors yield positive satisfaction. These factors are inherent to work. These factors motivate the employees for superior performance. These factors are called satisfiers. These are factors involved in performing the job. Employees find these factors intrinsically rewarding.

| **Sr. no** | **Hygiene factors** |
|---|---|
| 1 | Company policy and administration |
| 2 | Technical supervision |
| 3 | Interpersonal relations with supervisors, peers, subordinates |
| 4 | Salary |
| 5 | Job security |
| 6 | Personal life |
| 7 | Working conditions |
| 8 | Work itself |
| **Sr. no** | **Motivational factors** |
| 1 | Achievement |
| 2 | Advancement |
| 3 | Possibility of growth |
| 4 | Recognition |

| | |
|---|---|
| 5 | Status |
| 6 | Responsibility |

Table 2.4 Hygiene factors as per Fredrick Hertzberg
Source: (L.M.Prasad, 2010)

The researcher shall attempt to evaluate the level of motivation of these workers keeping the *Two-Factor Theory of Motivation* as the center point. *Out of all the theories of motivation the researcher has chosen this theory since it underlines the role of working conditions as one of the factors responsible for motivation of workers.*

**II. Process theories of motivation:** Content theories of motivation focus on the impact of internal factors on motivation however process theories go one step further in explaining motivation by identifying the process by which various internal factors influence motivation these models are cognitive in nature that is, they are based on the premise that motivation is a function of employees' perception, thoughts and beliefs.

The process theories of motivation are:

1. Equity model
2. Vroom's expectancy model
3. Goal setting model
4. Porter's performance satisfaction model

1. **Equity theory of motivation:** J Stacy Adams developed equity theory of motivation. The equity theory argues that motivations arise out of a simple desire to be treated fairly. Equity can be defined as an individual's belief that he is being treated fairly relative to the treatment of others.

A person's perception of equity develops through a four-step process as shown below:

1. First an individual evaluates the way he is being treated by an organization.

2. The next step is for an individual to choose a co-worker who seems to be in a roughly similar situation and to observe how an organization treats him.

3. In the crucial step of equity theory an individual compares the two treatments.

4. In the fourth step, he evaluates a sense of equity to see if the two treatments have been similar or if they have been different.

The comparison results in three types of attitudes:

- The individual may feel equitable rewarded
- Under rewarded
- Over rewarded

This theory emphasizes the perception about pay and the importance of comparison at the workplace. it shows that the reward system must be perceived as being fair by the employees in the organisation.

2. **Vroom's expectancy theory:** According to Vroom people will be motivated to do things to achieve some goals to the extent that they expect that certain actions on their part will help them to achieve the goal.
   - **Effort to performance expectancy**: The effort - to- performance expectancy refers to an individual's perception of the profitability that effort will result in high performance. When an individual believes that effort will lead directly to a high-performance expectancy is quite strong.
   - **Performance to outcome expectancy:** The performance to outcome expectancy means an individual's perception of the probability that performance will result in a specific outcome. An individual who believes that high performance may possibly lead to a raise has a moderate expectancy, whereas an individual who believes that performance has no relationship to rewards has a low performance to outcome expectancy.
   - **Outcomes and valences:** Expectancy theory recognizes that an individual may experience a variety of outcomes as a consequence of behavior in an organizational environment. Each of these outcomes has an associated value or valence, that is an index of how much an individual desires a particular outcome. If an individual wants an outcome its valence is positive whereas if he does not the valence is negative.
   - According to Vroom’s model the personal level of effort, which is motivation will depend upon

M = (E*I*V)

Where,

M is motivational force

E is expectancy

I is instrumentality and

V is valence

As the equation showing the relationship suggests, the motivational force will be higher when expectancy, instrumentality and valance all are multiplied. Thus, in order to motivate an employee all the three components should be positively raised by the managers so that the resulting motivation is greater.

3. **Goal setting model**: The goal-setting theory of motivation was developed in the 1960s by Edwin Locke. According to this theory, goal setting is inextricably linked to the performance of the task. The goal setting theory states that goals are the most important factors affecting the motivation and behaviour of employees. Specific and challenging goals are more motivating than easy, generic and vague ones.

   - **Features of goal setting theory:**

   a. Goals that are specific and challenging give direction to the employee about what they need to do and how much effort they need to put in.
   b. Clear, specific and difficult goals lead to better performance and higher output. Realistic, measurable, and clear goals with deadlines for completion avoid misunderstanding.
   c. When an employee achieves a goal, they feel pride and triumph, and this sets them up for achieving another goal.
   d. The greater the challenge, the greater the reward, and the more passionate the employee is about achieving the goal.
   e. Good and appropriate feedback on results leads to higher performance rather than absence of performance.
   f. Feedback can have a direct impact on employee behavior and performance, as better and appropriate feedback can lead to better performance than a lack of feedback.
   g. Feedback can be used to build reputation, provide clarification, and regulate goal issues. It can also help employees to work more actively and be more satisfied with their job.

h. Participation in goal setting is not always desired, however, participation in setting goal makes it more acceptable and encourages more involvement.

**4. Porter's performance satisfaction model:** The Porter and Lawler theory of motivation is based on the assumption that rewards cause satisfaction and that sometimes performance produces reward. They hypothesize that the relationship between satisfaction and performance is linked by another variable rewards. They see good performance leading to rewards which in turn lead to satisfaction. It is a multi-variable model and explains the complex relationship between motivation, performance and satisfaction. They argue that satisfaction does not always lead to performance. Rather the reverse is true, because people can become complacent after having achieved satisfaction once. On the other hand, performance can lead to satisfaction if the reward systems are effective.

The theory proposed two types of reward:

- **Intrinsic Rewards**: Intrinsic rewards are given to an individual by himself for good performance. They include feelings of accomplishment and satisfaction of higher-level needs as defined by Maslow. Intrinsic rewards are directly related to good performance only if the job structure is varied and challenging so an individual can reward himself if he feels he has performed well.
- **Extrinsic Rewards**: Extrinsic rewards are given by the organization and satisfy mainly lower-level needs. They include such things as pay, promotion, status, and job security. extrinsic rewards are strongly connected to performance.

In the model, rewards are linked indirectly to satisfaction through perceived equitable rewards. This variable refers to the number of rewards an individual feels he should receive as a result of his performance. This variable can also be expanded to include the number of rewards an individual feels should be attached to a particular position within the organization. Therefore, Porter and Lawler view satisfaction as a deficiency measure. Satisfaction is determined by the difference between actual rewards and perceived equitable rewards. If actual reward exceeds perceived rewards, then it results in satisfaction. If opposite occurs, it results in dissatisfaction. The degree to which a person is either satisfied or dissatisfied depends on the size of the difference between the actual and perceived equitable rewards

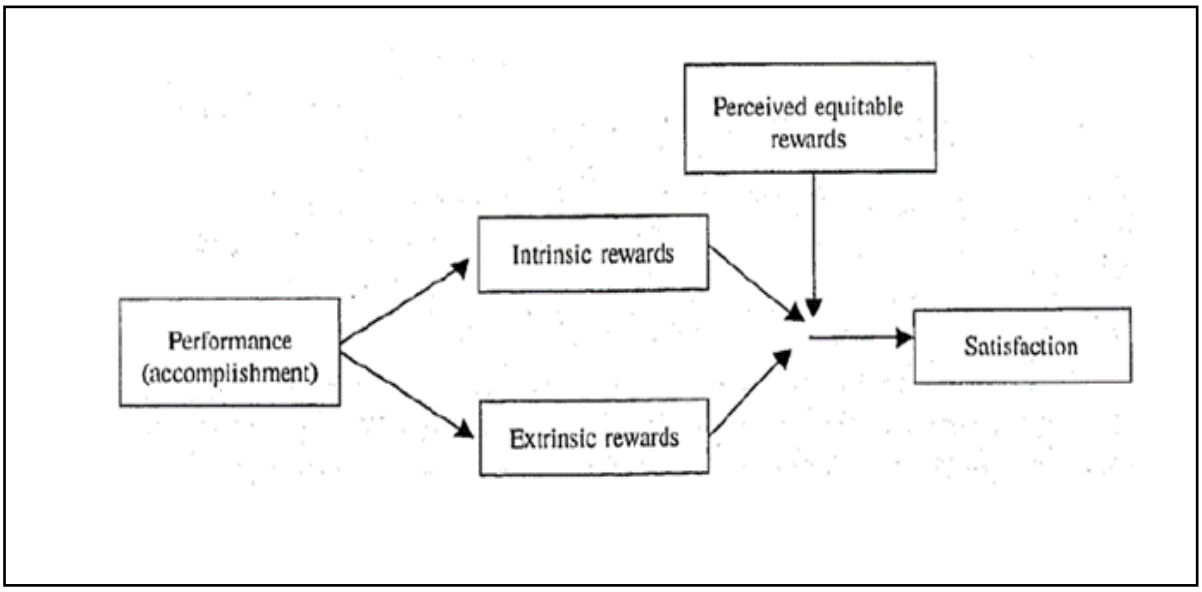



Figure 2.8 Porter's satisfaction Model

Source: (Nair, 2005)

**III. Other theories:** These theories are not included in any of the above categories and hence have been accommodated under the heading of other theories.

1. McGregor's Theory X and Theory Y

2.Theory Z

3. Argyris's Maturity - immaturity theory

**1. McGregor's Theory X and Theory Y:** Douglas McGregor introduced these two theories i.e. theory X and theory Y based on two distinct views of human beings. According to MacGregor these are intuitive decisions:

- **Theory X:** This theory is based on the traditional approach to human behaviour. The assumptions generally, held by the managers in this theory are:
  a. The average human being inherently dislikes work and will try to avoid it whenever possible.
  b. As the employees are lazy, they must be controlled, coerced, threatened with punishment to achieve goals, to which they are indifferent.
  c. Average employees will try to avoid responsibility and seek formal directions whenever possible because they have relatively little ambition.
  d. Workers place security above all other factors associated with work. These assumptions about human nature are negative in their approach. Those advocating this theory assume

that absolute control is necessary for dealing with irresponsible and immature employees.

- **Theory Y:** This approach focuses on the satisfaction of self-esteem and self-actualization needs of employees as against the basic level of needs.
  a. The average human being inherently dislikes work and will try to avoid it whenever possible. He can view work as natural or enjoyable as rest or play.
  b. Employees will exercise self-directions and self-control in the attainment of objectives to which they are committed.
  c. Given proper working conditions a person can learn to accept and even to seek responsibility.
  d. Commitment to objectives is a function of the rewards associated with achievement.
  e. Every individual is capable of making innovative and creative decisions and decision making is not the sole forte of people in management positions.

**2. Theory Z:** Much after the propositions of theories X and Y by McGregor, the three theorists Urwick, Rangnekar, and Ouchi-propounded the third theory labeled as Z theory. The two propositions in Urwicks's theory are that:

- Each individual should know the organizational goals precisely and the amount of contribution through his efforts towards these goals.
- Each individual should also know that the relation of organizational goals is going to satisfy his/her needs positively.

In Urwick's view, the above two make people ready to behave positively to accomplish both organizational and individual goals.

However, Ouchi's Theory Z has attracted the lot of attention of management practitioners as well as researchers. It must be noted that Z does not stand for anything, is merely the last alphabet in the English Language.

Theory Z is based on the following four postulates:

- Strong bond between organization and employees
- Employee participation and involvement
- No formal organization structures
- Human resource development

**3. Argyris's Maturity - immaturity theory:** Argyris has developed his motivation theory based on proposition how management practices affect the individual behavior and growth. In his view, the seven changes taking place in an individual's personality make him/her a mature one. In other words, personality of individual develops.

Argyris views that immaturity exists in individuals mainly because of organizational setting and management practices such as task specialization, chain of command, unity of direction, and span of management. In order to make individuals grow mature, he proposes gradual shift from the existing pyramidal organization structure to humanistic system; from existing management system to the more flexible and participative management.

He states that such situation will satisfy not only their physiological and safety needs, but also, will motivate them to be ready to make more use of their potential in accomplishing organizational goals.

**Researcher's Note:**

*Over the past century, various theorists have proposed elaborate theories of motivation. As discussed earlier, these theories have been categorized based on the approach taken, like need theories, process theories, cognitive theories and more. Every category has placed significance on a particular aspect of motivation. Later, proposed theories have been more refined as compared to the earlier one's incorporating ideas that were missing in the earlier theories. Every theory of motivation has been a milestone in understanding the complex concept of motivation. Every contribution has helped organizations take necessary steps towards increasing motivation, but at the same time these theories also have had various shortcomings. Every theory was a mix of strengths and weaknesses therefore not providing a complete solution to the motivation concern. Motivation as a concept has failed to evolve. Management students are still been taught various motivation theories that were proposed in the 1940s to 1960s. Not to deny the fact that these theories were ideations and research of great pioneers who surely made a significant contribution to the world of management. These theories also provide us with a plethora of knowledge, on which we can build on. Considering the present era, one should acknowledge the drastic change, right from the systems, to procedures, to workforce attitudes, nature of jobs, work culture etc. which we need to internalize in various aspects of work life. Earlier theories were often criticized because they failed to take into account individual differences, which is the core essence of human behaviour. The approach*

*of "One size fit all" was a complete failure, as every individual has unique set of expectations, needs, aspirations and motivations at every career stage. So, while one theory might do wonders motivating an individual, it might not have the same effect on the other individual. When it comes to human behaviour one should avoid generalizations, as behaviour is a product of multiple aspects. Therefore, the need of hour is to identify new methods of motivation, taking into account subjective aspects of human behaviour and avoiding oversimplification or overgeneralization by redesigning and nurturing the role of human resources.*

**Part D: Summarization of reviewed literature:**

**2.22 Review of related literature:**

Our methodology included the use of specific keywords to search for waste pickers case studies in the research publications databases, e.g. Scopus. In addition, web-based search engines, such as Google Scholar, were employed to search for both historical and recent journal articles on topics of a similar nature. Grey research publications from the media included newspaper articles, and reports from workshops and conferences. The reports and news from international institutions, such as UNEP, World Bank, and WIEGO, were also studied to gain a comprehensive understanding of global issues around the common features, challenges and opportunities faced by waste pickers within MSWM systems globally.

While we strived to comprehensively study the literature relating to motivation of waste pickers towards choosing this occupation there seems to be a paucity of such literature as a direct recourse. Therefore, as a subset of review of literature we have included the summarization of a few research papers on motivational theories from 2015 to 2023.

**1.** (Samarth, 2014): The report underlines the occupational health hazards in waste picking. Data from 1,777 randomly selected women waste pickers in Pune. It was found that there were specific risks associated with each stage of the door-to-door collection process. For the sake of analysis, the members' ailments were divided into three broad categories: injuries, diseases and physical stresses. This study aimed to pinpoint the Point of Injury/Stress/Disease in order to make it easier to take remedial measures to avoid or at least minimize these in the future.

**2.** (Samath & Sursula, 2014): The case study talks about the evolution, conceptualization and formation of SWaCH. The case study elaborates the formation of the SwaCH coop model as well as its achievements and key differentiating factors. This has helped the researcher to

understand the SWach coop model as well as critically analyze its short coming and areas for concern.

3. (Malhotra, 2014): This research is based on qualitative methods and secondary research. Individual interviews and focus group discussions were conducted with a total of thirteen women who are a part of Pune's waste management sector at various levels. Interviewees include the administration staff of SWaCH, waste-pickers and PMC sweepers. The research also involved an extensive review of relevant literature. KKPKP and SWaCH have published several works and studies, some under the banner of prominent government and international institutions. Literature based on women in informal employment, lives of waste pickers, analysis of the SWaCH and KKPKP movements and literature on the integration model between SWaCH and the Pune Municipal Corporation was also used for context development. The findings of this study have revealed sufficient indicators to plot a direction for further investigation into the assessment of the actual impact of socially motivated organizations like SWaCH.

4. (Bhaskar, 2013)This report identifies the various social protection measures available for the informal waste picking fraternity for India and Nepal. The paper has identified the meaning of the term social security as well as security measures available in India for the informal sector. The paper gives recommendations in terms of education and finance for the informal waste pickers as well as summarizes the demands of the IWWs and gives policy recommendations protection of the informal waste pickers.

5. (Bhaskar & Chikarmane, 2012)The unionization of waste pickers into the Kagad Kach Patra Kashtakari Panchayat (KKPKP) in Pune has ensured that waste pickers are recognized as workers and as important contributors to the process of solid waste management (SWM) and recycling. In 2007, KKPKP, in collaboration with the Pune Municipal Corporation (PMC), initiated the SWaCH cooperative for waste pickers to provide door-to-door waste collection services in the city. Since its establishment, 2,100 SWaCH members have been serving 350,000 households, shops, and offices, collecting user fees for their work. This paper examines SWaCH as a model of inclusive development that focuses on empowering informal workers and challenges the conventional capitalist corporate approach to development.

6. (Kothari, 2013)The news article underlines the challenges of the KKKPKP post its startup to identify the major challenge of disparity of income between those working in the lower income groups and those working in the higher income groups in Pune city. Apart from that the article underlines the role of KKKPKP in achieving the goals of sustainable development. The study identifies various stakeholders in the e-waste value-chain as well. The study also develops a profile of major dismantling and recycling areas as well as identifies and describes the current disposal and recycling practices for the above e-waste. It also assesses the capacities of existing recyclers (both formal and informal).

7. (Gupta, 2021)This paper essentially tries to understand the challenges and the plight of the sanitation workers brought on by the onslaught of the Covid -19 pandemic. The paper identifies the social economic challenges as well as the health and awareness related challenges of the sanitation workers with the special purview of the pandemic.

8. (V Kalyan Shankar, 2018) The research paper highlights the legitimization of 'right to waste'[51] for waste pickers by allowing them direct access to waste from households, and has re-conceptualized waste and work for waste pickers, while altering their engagement with other stakeholders. The paper also presents the counter-narrative of SWaCH, India's first wholly self-owned cooperative of waste pickers, which has been contracted by the Pune Municipal Corporation for door-to-door waste collection.

9. (Chikarmane, 2012) The case study series aims to highlight good examples in resilient urban waste management from across the world. Here the case study talks about the informal waste pickers and their initiatives towards sustainable and circular solutions towards waste management.

10. (Uddin, S M N, J, Nasiruddin, & M, 2020) The study contributes to the literature by mapping the concerns, risks, and challenges experienced by MSWCs in times of a health crisis. Policymakers must prioritize the safety and hygiene of the frontline workforce involved in all aspects of waste management, including outsourced Municipal Solid Waste Management (MSWM) operations. Additionally, implementing smart communication strategies with the

[51] Right to waste: A right advocated by various social activists allowing waste pickers direct access to waste from households.

frontline workers (i.e., MSWCs) is crucial to maintaining trust and preventing rumors or misconceptions during a pandemic situation.

**11.** (Quing, Ye, Asmi, Azfar, & Zhou, 2021) This paper describes the health risks to which waste pickers are exposed in their work as well as in their homes. It analyses a study on the health problems of a focus group of hundred children residing in roadside settlements in Bengluru (India) wherein the health problems of those who work as waste pickers are comparatively studied with those who do not.

**12.** (Kulsum Akter, 2019) The study discusses the various physical ailments faced by the waste pickers owing to their occupation. The result reveals that waste pickers face various health problems like injury, itching, skin diseases, cough and cold, anemia, joint pain, back pain, headache, fever, stomach pain and asthma that they suffer from more than one week. They are affected by these types of disease for not practicing good sanitation and hygiene system. This study will be helpful for policymakers and administrator to develop effective measures and safety guidelines for protecting the health of waste pickers.

**13.** (Solomon E. Uhunamure, 2021) The study adopted a cross-sectional survey with a convenience sampling method which was conducted among one hundred and fourteen waste pickers in three landfill sites in Limpopo Province of South Africa. A pretested intrument was used in garnering responses from the respondents. The statistical techniques employed include the ANOVA, simple, and multiple regression. The results presented a trend that, during the span of a year, waste pickers who have been exposed to landfill sites were 1.7 times more likely to develop a health disorder. The cofounders were adjusted for age and years worked, and the result revealed that days worked by the waste pickers enhanced their chances of occupational health risks by 1.4 times.

**14.** (Jutta & Gutberlet, 2017) Two case studies (Argentina and Brazil) demonstrate how waste pickers inform and educate the general public and raise the awareness of socio-environmental questions related to waste management. Various educational practices are employed as strategies to engage citizens with the issue of waste, encouraging them to view it as a challenge of consumption, a valuable resource, and a potential source of income. This study focuses on grassroots learning and educational efforts aimed at transforming waste management behaviors. The researchers emphasize the significant role waste pickers play in generating

knowledge to advance recycling, reduce landfilling, and recover resources more effectively. They conclude that waste pickers not only serve as environmental stewards but also act as insurgent citizens, challenging conventional norms and driving sustainable practices.

**15.** (C, 2018) This study examined the working conditions and health status of waste pickers at landfill sites within the City of Tshwane Metropolitan Municipality, specifically Ga-Rankuwa, Onderstepoort, and Hatherley. A mixed-methods approach was employed, integrating both qualitative and quantitative research methods. Among the 176 waste pickers surveyed, 43% attributed their illnesses to their work, while 34% reported not being ill. Additionally, 19% believed their health issues were unrelated to their occupation. Despite these findings, the working conditions of waste pickers remain poor and unfavorable, but their work serves as their main source of survival.

**16.** (Yusuf, 2021) The research article aimed to analyze health and work conditions of waste collectors and the association of these parameters with the length of service. The sample consisted of one hundred and twelve participants. Questionnaires addressing sociodemographic, work, and health conditions were used. The analysis of the association between health conditions and length of service was performed using Fisher's exact test. The working health conditions of waste collectors described in this study are associated with back pain, headache, and work and sick leave.

**17.** (Gall & al, 2020) This paper reviews the global literature on waste pickers, focusing on their working and living conditions, and addresses the issue of formalization. A total of 45 papers published between 1994 and 2022 were analyzed, featuring case studies from 27 different countries. The researchers examined these studies through key themes such as poverty, health, stigma, environmental factors, informality, and formalization. They conclude that the informal status of waste pickers raises the question of whether they should be integrated into the Municipal Solid Waste Management sector.

**18.** (S. Parveen, 2020) This paper examines the occupational health and safety problems faced by the child waste-pickers of Dhaka City. An extensive field survey and physical examinations of the waste-pickers have been used to collect the necessary primary data. The paper tracks down the health problems to their roots with the help of an impact-pathway based analysis. The study finds that the most prevalent types of occupational risks include: bites from insects and rats,

cuts and bruises, skin disease, respiratory and gastro-intestinal tract problems, eye irritation, body aches, general weakness, and frequent fever.

**19.** (Carenbauer, 2021) The pandemic has brought to light the nuances between challenges and opportunity for waste pickers. This research paper considers economic and societal parameters before and during COVID-19 to highlight underlying concepts of health, hygiene and sustainability and how these may shape experiences of waste pickers.

**20.** (Kanekal, 2019) Providing social security for waste pickers in terms of health insurance, education, housing, and decentralizing the city's waste management system are key strategies for creating more jobs and improving waste handling efficiency. As highlighted in this paper, informal waste pickers play a crucial role in the environmental health of cities by being a primary source of waste segregation and recycling. This contributes significantly to the opportunity for cities to recycle thousands of tons of solid waste. Their contribution is invaluable, and they deserve formal recognition within the waste management sector.

**21.** (Rinie Schenck, 2019) The aim of the study was to establish a socio-economic profile of the street waste pickers in Pretoria and to describe the social interaction and relationship dynamics between the waste pickers and their families, each other, the community and buy-back centers. This was done by conducting the first ever empirical study of the street waste pickers in Pretoria. The findings highlighted that the role of street waste pickers in the overall waste management system is a significant public concern that demands immediate attention and suitable policy actions from lawmakers.

**22.** (Ali & Yusuf, 2021) This paper investigates the occurrences of injury among waste pickers and the methods they use to treat the injuries in Bauchi city, Northeastern Nigeria. Three hundred and twenty-two waste pickers have been at random selected from eighty shops of middlemen. Primary data has been collected using interviews and questionnaire method. Based on the data presented, 1474 frequencies of injuries were reported among two hundred and forty-seven waste pickers. Provision of Personal Protection Equipment (PPE), a labor rights policy, immunization and the launch of an awareness campaign are among the recommendations made by this study.

**23.** (Kain, et al., 2022)The study shows how WPOs contribute significantly to the conomic, social, and environmental sustainability of both the communities they serve and the broader urban society is crucial. Establishing and sustaining Waste Picker Organizations (WPOs) in informal settlements, where there is a lack of infrastructure, institutional support, and investment from both public and private sectors, is a challenging task. WPOs can take various organizational structures, depending on local circumstances, ranging from well-established cooperatives to smaller self-help groups and individual microentrepreneurs.

**24.** (Mumuni, 2016) In the waste management system of Tamale, there is an invisible, unrecognized and uncompensated system of informal waste pickers who perform the significant role of waste recovery for recycling by industries This argument resonates the call by some scholars for recognition and integration of the informal sector into formal waste management systems.

**25.** (Sarkar, 2003) The paper makes use of a database, parenting to the socio-economic profile of the rag pickers including the working conditions, and their problems and expectations. This database has been developed through literature review, questionnaire survey and open-ended interviews conducted to generate data on rag pickers in Delhi. Recommendations have been made to enhance the efficiency of the government ventures in addressing the basic problems of the waste pickers, associated with deplorable working conditions, poor returns, exploitation and their everyday harassments.

**26.** (Marello & Helwege, 2014) In this paper the researchers explore the opportunities and challenges inherent in the model of cooperation between municipal solid waste systems (MWSs) and waste picker cooperatives (WPCs). Closer inspection reveals problems that emerge as cities move up an envisioned process of inclusion from supporting independent, informal waste picking to subcontracting municipal services to competitive waste picker cooperatives. Among the poorest recyclers, a lack of waste picker skills limits what can be accomplished without a significant effort to address a broader set of poverty-related needs. In wealthier cities, where waste picker cooperatives have sophisticated business operations, inclusion becomes less ‘inclusive’ as mechanized processing generate too few jobs to accommodate the vast numbers of waste pickers.

**27.** (Devi, Swamy, & krishna, 2014) The paper makes use of a database, parenting to the socio-economic profile of the rag pickers including the working conditions, and their problems and expectations. This information has been developed through literature review, questionnaire survey and open-ended interviews conducted to generate data on rag pickers in GHMC.

**28.** (Thangaswamy & D.Thiyagaraj, 2017) Job satisfaction is one of the important factors that have drawn attention of the organization as well as academicians. In view of the rising competition as a result of globalization, managers have placed great importance on the construct of job satisfaction. This may be due to the findings of many studies that job satisfaction is a significant determinant of organizational commitment. Highly satisfied employees will exert extra effort and contribute positively to the effectiveness and efficiency of their organizations. Job satisfaction will lead to better performance and the employees will be more committed towards their organization. Hence, this study is focused to consolidate the theoretical concept about job satisfaction.

**29.** (Mangi, Ahmed, Ali, & Bux, 2014) The main focus of this research is to discuss the impact of motivation on the performance of employees and its effect on organizational success. After a detailed review of literature, the research objectives were selected to study and highlight the meanings, definitions of motivation and performance its relationship that leads towards organizational practice and specific to its impact on the success of organization that is the basis for this research study. In this research study a thoroughly focus was on motivation and performance. Precisely some basic theories are discussed as Abraham Maslow's theory (Hierarchy of Needs), Fred Herzberg's (two-factor theory) and Vroom's theory (Expectancy). Alderfer's theory (ERG) is based on three categories of needs (Existence, Relatedness and Growth) which are discussed in relation with employee's motivation and performance. The aim of this research paper is to deliver a dynamic view of motivation and its impact on the organizational achievement, and also discourses the major issues and emphases on the recent work that opens new basis to move research onward. The research study supports that the motivation, spirit, working ability and performance of the employee's bring success to the organization. The various explanations, definitions, meanings, scopes, and their benefits regarding the topic motivation and performance in organizational success are highlighted.

**30.** (Khurana & Joshi, 2017) Motivation lies at the core of all managerial activities. It is an effective tool for managers to create a willingness to work so that organizational goals can be achieved.

Many thinkers and psychologists have given their own inferences on what motivation is but it all comes down to a single meaning -- desires and aspirations that urge people to give their best. Over the years, many theories on motivation have emerged and each of them has their own relevance. The aim of this study was to understand the drives of people in terms of the three motivators given by David McClelland in his Three Need Model. One hundred people from different backgrounds were surveyed on the basis of a structured questionnaire. The proportion of males and females was kept equal. The responses were recorded on a Five-Point Likert Scale. Simple statistical measures such as mean and standard deviation were used to evaluate the results. The findings have a theoretical as well as a practical relevance.

**31.** (Acquah, Nsiah, Antie, & Otoo, 2021) People possess something that machines don't – human spirit and inspiration. It is the spirit and inspiration that leads associates to apply their human capital to meet the goals of the organization, the human spirit is highly inspired through motivation. Understanding job satisfaction and work motivation can be key elements to improving productivity. This paper seeks to introduce the four major need theories areas: Maslow's Hierarchy of Needs, Herzberg's Motivation Theory, Alderfer's ERG Theory, and McClelland's Need for Achievement Theory. It also goes further to analyze these theories bringing to the fore various similarities and differences that exist amongst them.

**32.** (Mansaray, 2019) This paper explores the relationship between motivation and performance, emphasizing the central role motivation plays in driving high performance in employees within organizations. The review reveals that employers use various motivational theories in different situations to encourage superior employee performance. Motivation influences employees to perform, while performance is evaluated based on tasks, objectives, goals, and expectations linked to a role or occupation in an organization. The paper examines several widely accepted and proven motivational theories, including Maslow's hierarchy of needs, McGregor's Theory X and Y, McClelland's learned needs theory, Alderfer's ERG theory, Herzberg's two-factor theory, Vroom's expectancy theory, and both intrinsic and extrinsic motivation. It is clear from the literature that all these theories are based on experiments or observations, making them general conclusions from tested scenarios. Although situations may be similar, they will never be identical. Studies also show that highly motivated, productive, and innovative employees can guide an organization toward success by achieving its desired outcomes.

**33.** (Altymurat, Muhai, & Saparow, 2021) The use of Abraham Maslow's hierarchy of needs principle in organizations is discussed in this essay. Physiological requirements, comfort needs, the desire to be loved and respected, and the need for self-esteem are also part of the hypothesis. This is what becomes a model on how to act in an organization such that the organization's success improves in fulfilling the goal and purpose that has been set out to serve others. The company will function at its best when the requirements for confidentiality, convenience, and certainty are met, allowing the process of meeting user knowledge needs to operate smoothly. That almost all, regardless of their degree of need, desires peace, oversight, and consistent employment opportunities.

**34.** (Osabiya & Joseph, 2015) The study seeks to unravel the factors that affect construction workers' motivation and the corresponding effect of the identified motivational factors on workers' performance and overall productivity. The survey revealed that, among the top ten critical factors (teamwork, work based on contract, supervision based on leadership by example and provision of equipment) had great effect on motivation as well as impact on productivity. More so communication, love and belongingness, opportunity to undertake challenging task, identification with goal and overtime were among the critical factors.

**35.** (Osemeke & Adegboyega, 2017) In content theories of motivation, there are numerous definitions in explaining the meanings and sources of intrinsic and extrinsic motivation. Hence, this paper studies various definitions contributed by past researchers and a critical review and comparison between Maslow, Herzberg and McClelland's theory of needs. The purpose of this paper is to present a detailed review of literature of the three theories of motivation in a thematic and quasi-chronological fashion. This will permit readers to gain a thorough understanding of the many facets of motivation theories in modern literature. The literature review showed that there is a clear relationship between Maslow's hierarchy of needs theory, Herzberg's two factor theory of motivation and McClelland's need for achievement theory. This relationship shows the overlap of higher-level needs and motivators and the corresponding overlap of hygiene and lower order needs. The lower needs must be met before higher order needs can have any motivational force and Herzberg's parallel hygiene factors must be met to prevent job dissatisfaction. Maslow's higher order needs serve to motivate people and are of an intrinsic nature which corresponds to Herzberg's motivational factors that are also intrinsic in nature. The paper recommended that organizations should endeavor to adopt McClelland's theory in motivating its workforce.

**36.** (Cook & Artino, 997-1014) Motivation has been defined as the process whereby goal-directed activities are initiated and sustained. Looking across all five theories, the paper makes a note of recurrent themes of competence, value, attributions, and interactions between individuals and the learning context. The paper also suggests that to avoid conceptual confusion, and perhaps more importantly to maximize the theory-building potential of their work, researchers must therefore be careful and precise in how they define, operationalize and measure different motivational constructs.

**37.** (Badubi, 2017) The purpose of this paper is to compare and contrast various motivation theories and examine how they are applied to encourage employees to develop the drive to succeed. Motivation is crucial in organizations, as it directly influences job satisfaction and the achievement of organizational goals. The lack of motivation within an organization can lead to serious consequences, such as depression, high turnover, and burnout, all of which can hinder organizational success. For organizations to view employees as their greatest asset and ensure retention, prioritizing motivation is essential. This study offers suggestions for organizations to create supportive environments and relationships that foster positive attitudes and work engagement. A qualitative approach and theory-based application were used in this research.

**38.** (Kotni, Devi, & Venkateswarlu)The primary objective of this study is to find out the satisfiers and dissatisfiers among the salesmen motivation techniques adopted in the retail sector by applying Herzberg two-factor theory and to examine how far the theory is applicable in the emerging retail sector using multivariate analysis. The Herzberg two-factor theory of motivation for retail salesforce was tested using data from one hundred and fifty salespeople working in the fifteen leading retail outlets in the city of Visakhapatnam. Factor analysis was conducted separately for both hygiene and motivation factors to determine which motivational aspects salespersons in the retail sector were most satisfied with. The study found that retail salesmen are highly motivated by hygiene factors such as social security measures, working conditions, sales incentives, and welfare facilities. Additionally, they are motivated by factors like work-life balance, autonomy in sales, the financial stability of the organization, and management recognition of sales performance. The results indicate that salesmen in the retail sector are more satisfied with hygiene factors than with motivation factors.

**39.** (Ganguli, 1954) This research showed that the three most highly-ranked incentives are: i) adequate earning, ii) job security and iii) opportunity for promotion. He concluded that unlike in the western countries where pay was frequently ranked lower in the hierarchy of incentives, for the Indian worker, in the immediate future, income and job security would be the two most important incentives. The exact nature of work done, the magnitude of responsibility assigned to the worker and appreciation of work by others were found to be items of relatively low incentive value. The nature of supervision ranked fifth whereas in western countries, it frequently occupies the top position. 48 Andhra University, Visakhapatnam. The incentive value of medical and health insurance, housing, subsidized canteen and other fringe benefits was difficult to evaluate.

**40.** (Kalburgi & G.P., 2010) In his research concluded that there are many factors which play an important role in the concept of employee motivation and these differ as per the situation. Every organization has its own guideline for motivation. Motivation factors may be different for different set of employees. And hence these guidelines for motivation cannot have uniformity. Each organization has its own set of motivation theories. A good working environment and supervisor's assistance play a vital role in motivating employees. Success of an organization depends on how motivated their employees are.

**41.** (R & Bhavani.K, 2010) This study identified the impact of industrial relation on employee productivity and concluded that although there are new techniques as per latest technology for improving the productivity, but the importance of human resource for improving productivity, economic growth and development cannot be denied by the companies. The trade unions also play an important role to make industrial environment conducive.

**42.** (Donnelly & Ivancevich, 1984) shared that inter-group disagreement in any organization works as major source of industrial conflict and disharmony. In order to avoid strike and disparity, the government should review the existing employee's salary structure, the scale and make relevant amendment in industrial law periodically.

**43.** (Nanda & Panda, 2013) conducted a study on welfare activities for the workforce. Data was collected through structured interviews of forty respondents at Rourkela steel plant. She opined that by adopting better welfare activities for workforce there would be better productivity with

less cost which would result in higher profits, reduced conflicts among workers and reduced industrial disputes. The interviewed candidates were satisfied with the welfare schemes which were practiced in their industry. There were cordial relations between the employer and their employees.

**44.** (Thomas, 2000) examined the nature of reward in an organization. He felt that an intrinsic reward emerges from work performance itself when the work performer experiences a sense of accomplishment on doing a good work. The study revealed that employees are intrinsically motivated when they genuinely care about then work, look for better ways to do it, and are energized and fulfilled by doing it well. He also felt that intrinsic motivation is achieved when people experience feelings of choice, competence, meaningfulness, and progress.

**45.** (Shin, Hur, Moon, & Lee, 2019) Despite having conducted extensive research on job insecurity, scholars have paid little attention to the motivational processes underlying employees' reactions to job insecurity. The purpose of the present study is to examine the relationship between job insecurity, intrinsic motivation, and performance and behavioral outcomes. As predicted, job insecurity was negatively related to intrinsic motivation, which, in turn, had a positive relationship with all three outcomes. Furthermore, job insecurity exerted significant indirect effects on job performance, OCB, and change-oriented OCB through intrinsic motivation.

**46.** (Probst, 2001) Job insecurity research has focused primarily on attitudinal, behavioral and health outcomes. Moreover, research in the area of workplace safety has largely focused on ergonomic factors and personnel selection and training as primary antecedents of safety. Two cross-sectional structural equational modeling analyses and one longitudinal regression analysis of two hundred and thirty seven food-processing plant employees unite these two disparate areas of research by exploring the relatively uncharted relationship between job insecurity and safety outcomes. Results indicate that employees who report high perceptions of job insecurity exhibit decreased safety motivation and compliance, which in turn are related to higher levels of workplace injuries and accidents.

**47.** (Kuhnert & Palmer, 1991) This study extends previous work that has shown that perceived threats to the security of employees' jobs can have deleterious effects on their health. The study

examined (a) whether intrinsic work characteristics are better predictors of perceived job security than extrinsic work characteristics and (b) whether job security contributes to the prediction of employee health independent of intrinsic and extrinsic characteristics of their jobs. Participants in the study were one hundred and four employees from the central personnel office of a large state agency. Job security was found to be related to both intrinsic and extrinsic work factors, although more closely related to intrinsic factors. Perceptions of job security contributed unique and significant variance to the prediction of employee health, suggesting that job security is central to the physical and psychological well-being of employees. Implications for understanding the impact of job security on workers' lives are discussed.

**48.** (Sultan & Sarwat, 2012) The study investigated job characteristics as predictors of employees' work motivation and job satisfaction. The study made use of convenience sampling in selecting three hundred and sixty six employees from different banks in Karachi, Pakistan. Three instruments were used, namely: job diagnostic survey scale, achievement motivation scale, and general job satisfaction questionnaire. Male and female employees reported different associations of job characteristics with work motivation and job satisfaction. Results also indicated that the five core job characteristics are effective predictors of employees' work motivation and job satisfaction. On the basis of the findings, it is suggested that the appropriate combination of the five core job characteristics of skill variety, task identity, task significance, autonomy, and feedback can facilitate organizations to motivate and satisfy its employees.

**49.** (Huang & Vliert, 2003) This study sought for national characteristics that moderate the individual-level relationship between job characteristics and job satisfaction. Data from two distinct questionnaire surveys administered to 107,292 employees in forty nine countries was analyzed by employing multilevel modeling. Results showed that the link between intrinsic job characteristics and job satisfaction is stronger in richer countries, countries with better governmental social welfare programs, more individualistic countries, and smaller power distance countries. By contrast, extrinsic job characteristics are strongly and positively related to job satisfaction in all countries. In addition, we found that intrinsic job characteristics tend to produce motivating satisfaction in countries with good governmental social welfare programs irrespective of the degree of power distance, while they do not tend to work so in countries with poor governmental social welfare programs as well as a large power distance culture.

**50.** (Zhao, Ghisell, Law, & Ma, 2016) This study examined the intrinsic motivation for hospitality jobs and the effects of job characteristics on job satisfaction, job stress, and life satisfaction. Data were obtained from the survey responses of four hundred and one frontline employees working at six full-service, upscale hotels in China. Results indicated that autonomy, task identity, and task significance reduced job stress, feedback increased job satisfaction, and task significance enhanced life satisfaction. Surprisingly, skill variety was negatively associated with job satisfaction, but positively associated with job stress. The composite motivating potential score was positively associated with job satisfaction, but negatively associated with job stress. One recommendation is for hospitality organizations to analyze their service jobs to improve the intrinsic motivation of their employees.

### 2.23 Research gap:

The review of literature undertaken with regards to waste pickers, their occupational challenges and stress shows the following gaps which are attempted to be covered in this research:

1. The studies mentioned above have very limited information with regards to the nature and scope of the activities in waste picking. Thus, they fail to create a canvas of the daily activities, tasks and challenges undertaken by the waste picking fraternity. *This research has attempted to divulge into the various aspects of the waste management hierarchy, their job profiles, job roles, allotted tasks and resultant challenges creating a base for further studies in the said area.*

2. The studies mentioned in the review have commented on the physical ailments faced by the waste pickers in general. *However occupational stress does not affect the physiological health of a person in isolation but impacts the overall well –being of the individual. Therefore, this research has attempted to identify the impact of job stress on the physical, metal and emotional health of the waste picking fraternity.*

3. A plethora of studies on the working conditions, motivation and stress of waste pickers have been undertaken with developed nations however their environmental factors vary than that of ours making their stressors, and challenges different. *This research has been undertaken with the sole focus only on the local environment of Pune city, the various demographic factors, working conditions and the resultant challenges and stressors.*

4. There are no studies that can help understand the underlying motivation for those who have opted for this 'no choice occupation.' *This research studies the socio-economic background, factors that act as intrinsic and extrinsic motivators and has attempted to understand what makes the waste pickers undertake this occupation despite its drawbacks and hazards.*

# Chapter 3:
# Research Methodology

## Part A: Theoretical concepts in research

### 3.1 Definitions of research:

The definitions of research are as follows:

1. According to Merriam - Webster: Research refers to a systematic and diligent investigation or analysis, often involving experimentation or inquiry, aimed at uncovering or interpreting facts, revising existing theories or laws in light of new evidence, or applying these new or updated theories or laws in practice.

2. According to Neuman "Research is a systematic application of various methods and methodologies by researchers to generate scientifically grounded knowledge about the social world."

3. According to Clover and Balsley: "Research is a systematic process of using scientific methods to gather and interpret information in order to provide accurate answers to important and relevant questions."

4. According to John W Creswell: "Research is a systematic process involving steps to gather and analyze information, aiming to enhance our understanding of a specific topic or issue."

5. According to John Best: "Research is a structured endeavor aimed at uncovering new insights and developing a well-organized body of knowledge."

6. According to Clifford Woody "Research involves identifying and refining problems, proposing hypotheses or potential solutions, gathering, organizing, and evaluating data, drawing inferences, and reaching conclusions to assess how well they align with the proposed hypotheses."

### 3.2 Research design:

Research design is a map that guides a researcher in collecting and analyzing the data. In other words, it is a blueprint that is followed throughout the research work. However it is not only a work plan, it also specifies the type of data required to address the research problem. It ensures that the data analysis and the conclusions lead to answering the initial questions of the researcher in a simpler way. Therefore, a research design provides the structure of research in such a way that it provides relevant outcomes economically.

### 3.2.2 Definitions of research design:

1. According to William Zikmund: “A research design is a comprehensive plan outlining the methods and procedures for collecting and analyzing the required information.”

2. According to Kerlinger: “Research design is the framework, structure, and strategy of an investigation designed to answer research questions and control variability.”

3. According to Green and Tull: “A research design is the specification of methods and procedures for acquiring the information needed. It is the overall operational pattern or framework of the project that stipulates what information is to be collected from which sources by what procedures.”

4. According to Selltiz et al: “A research design is the setup of conditions for data collection and analysis, structured to align with the research objectives while ensuring efficiency in the process.”

### 3.3 Types of research/ research designs:

Depending on the research methods used the classification of research and research designs goes as follows:

### 3.3.1 Research designs on the basis of application:

Depending upon where the research is being utilized the methods are further classified as follows:

1. **Basic or pure research**: Pure research is also known as basic research or fundamental research. It is the basic form of research. The objective of this research is to provide models and theories regarding a certain phenomenon. This type of research seeks to obtain knowledge about a particular subject rather than its practical usage, testing of hypotheses and theories. Basic research is carried out to discover and gain better insight about a specific phenomenon, without considering the problem and its direct practical application.

**2. Applied research:** Applied research is also called practical research or need based research or action-based research. While basic research emphasizes on enhancing the existing knowledge without any practical application. Applied research on the other hand, applies existing knowledge, theories and methods to solve particular issue. Basically, it is the practical

application of the concepts provided by basic research. It tries to solve the existing problems faced by businesses, society and government. Applied research tries to provide the solutions to eradicate various types of practical problems related to existing situations needing immediate solutions.

### 3.3.2 Research designs on the basis of objectives:

Following research methods are classified on the basis of the objectives they serve:

1. **Exploratory research**: Exploratory research is also known as formulative research. The basic objective of this research is to explore the unknown facts or phenomena that are not previously defined. In exploratory research, researchers seek to gain better knowledge about a given situation, formulate new concepts and theories by developing and testing hypotheses. Exploratory research is needed to obtain the knowledge that is useful in developing hypotheses so that further investigation can be performed. Exploratory research helps the researchers to find out the best research methods, research design and data collection techniques for various research objectives.

2. **Descriptive research:** Descriptive research can be defined as the research that tries to explain the characteristic features of the population under study. This research is based on the concept of reflective thinking that discusses the objectives and assumptions regarding a research study. Descriptive research is concerned with answering the questions like who, what, when, where and how regarding a phenomenon or situation. It can be carried out in all those areas which are quantitative in nature. The descriptions in this research are used to calculate the frequencies, averages, central tendencies etc. Sometimes it is better to conduct a survey before carrying out the descriptive research.

3. **Experimental/ Causal research:** Experimental research also called causal research. It is a research process carried out to identify causes behind any effect. It determines the effect on dependent variables due to change in independent variables. In experimental research two similar groups are chosen for measuring the experimental effects. The group which is exposed to treatment is called the experimental group and the group which is kept constant is called the control group. The outcomes of the experimental research are always straight and direct due to variability factors.

### 3.3.3 Research designs on the basis of extent of theory:

On the basis of extent of theory research can be classified in two types:

1. **Theoretical research**: Theoretical research seeks to add new knowledge by discovering new ideas and theories with the help of existing theories and explanations. But the major emphasis is on studying rather than testing the theories and explanations. In other words, it is based on secondary data instead of primary data.

2. **Empirical research**: Empirical research is data oriented. This kind of research provides insights through observations or experiences. In this research the primary data is collected, analyzed and tested to prove some hypotheses. Empirical research can be conducted through both the qualitative and quantitative approaches. Instead of theories empirical research is based on observations and measurements. It attempts to develop new ideas by collecting primary data.

### 3.3.4 Research designs on the basis of methodology:

Based on the methodology adopted the research can be of two types:

1. **Quantitative research:** Quantitative research is a technique that attempts to analyses the data using statistical measures for concluding the outcomes of a research problem. Various researches on science, social science education etc. are conducted with the help of quantitative research. In quantitative research is carried out in a structured way to develop and test various hypotheses using mathematical and statistical techniques.

2. **Qualitative research:** Qualitative research is conducted to study and analyze human behavior. It is considered as a preliminary stage of quantitative research. Qualitative research is carried out when there is a need to develop new ideas and theories that can be tested and analyzed. Afterwards using quantitative measures, it tries to evaluate the findings on a broader level. The prime objective of qualitative research is to get an in-depth knowledge about a particular behavior by collecting fresh and new information using various techniques. The notions and understanding of the respondents about their surroundings, the impact of the environment on the behavior of the respondents etc. can be grasped with the assistance of qualitative research.

### 3.3.5 Other research/ research designs:

Apart from those mentioned above there are a few other types as follows:

1. **Historical research:** This is an organized attempt to collect the data regarding past events, analyzing them and presenting the findings regarding past occurrences to improve the current situation and even the future. Many modern practices and techniques can be developed and improved with the help of historical data however sometimes quantitative measures can also be adopted to search the phenomena that affect the present.

2. **Ex post facto research**: This is a systematic effort to trace the causes resulting in a specific effect. Causal factors that have governed the effect are then imposed on some other similar set of circumstances. Ex post facto research is a scientific analysis of independent and dependent variables. The researcher has no direct control over the independent variables causing the effects to be natural and organic.

## 3.6 Sampling:

Sampling is an essential technique of behavioral research. Since the study of total population is not possible the concept of sampling has been introduced with a view to make research findings economical and accurate. Sampling is the process of choosing units from a population of interest so that the researcher can draw conclusive evidence by studying the representative sample rather than the whole population. Although a sample is a subset of the population it is representative of the population and suitable for research in terms of cost, convenience and time.

### 3.6.1 Definitions of sampling:

1. According to Cocharn: “Sampling can be defined as the process of selecting a subset of a group or collection in order to gather information about the entire population.”

2. According to David Fox: “A sampling procedure is a method used to select a sample from a specific population.”

3. According to C.R. Kothari: “Sampling can be defined as the act, process, or method of choosing a representative portion of a population to determine the characteristics of the entire population..”

### 3.7 Types of sampling:

Sampling consists of two major categories viz. probability and non – probability sampling.

**3.7.1 Probability sampling techniques:** This is a sampling process that utilizes the principle of randomisation. In probability sampling, each unit in the population is selected with a known probability or has a non-zero likelihood of being included in the sample. This method ensures that every member of the population has a measurable, non-zero chance of selection. Techniques such as random sampling, systematic sampling, and stratified sampling fall under probability sampling, which is also referred to as chance sampling. This approach guarantees that every item in the population has an equal opportunity to be part of the sample. Selection is carried out through an objective, mechanical process, free from subjective influence, ensuring that each item has an equal, unbiased chance of being chosen. The outcomes derived from probability sampling methods tend to have fewer estimation errors and more reliable results, underscoring their advantage over deliberate sampling designs.

1. **Simple random sampling**: This is the simplest and the most popular technique of sampling. In this method, every unit of the population has an equal likelihood of being selected for the sample. Simple probability sampling ensures that each element in the population has an equal opportunity to be included, with all selections being made independently of one another. Also, each possible sample combination has an equal chance of being chosen. Prima facie this method eliminates the chance of bias or personal prejudices in the selection of unit.

2. **Systematic sampling**: In this method, a single unit is selected at random from the universe and the other units are at a specified intervals from the chosen unit. This method can be used when the population is finite and population can be categorized on the basis of any system such as alphabetically, numerically, in ascending or descending orders etc. Systematic sampling too adheres to randomization partially. In this method only the first unit is selected with the help of random numbers and the remaining are chosen according to a pre- determined pattern. A sample drawn in a systematic manner is the one in which every nth item is selected in a stratum. Thus, *n* indicates the sampling interval. This method is ideally used where the population is finite and a complete list of the elements in the population is available. Main advantage of systematic sampling is its simplicity,

operational convenience, and that the sample is spread evenly accross the population. The technique is faster and less subject to error than in simple random sampling.

3. **Stratified random sampling**: A *stratum* refers to a class or division, and stratifying involves creating these strata. When random sampling is organized based on divisions such as social classes, it is termed stratified random sampling. This method involves selecting samples randomly, not from the entire heterogeneous population as a whole, but from distinct homogeneous strata within the population. Stratified random sampling differs from random sampling in its approach. While simple random sampling selects items randomly from the entire population, stratified random sampling involves designing the process so that a separate random sample is taken from each stratum. In simple random sampling, the distribution of the sample across strata occurs purely by chance. Sampling procedure may be summarized as follows:
   - The universe to be sampled is divided or stratified into groups that are mutually exclusive and include all items in the universe.
   - A simple random sample is then chosen independently from each group of strata.

   The main objective in stratification is to secure a more reliable sample. The success and failure of the study will very much depend on the strata so it is essential that different variables in the strata must be taken note of and also that each stratum should be large enough in size so that selection of items based on random basis becomes easier. In this method the investigator has greater control over the sample.

4. **Cluster sampling:** Cluster means number of persons or objects in a small or closed group. When a sample is selected from a small or close group it is called cluster sampling. These clusters may be cities, wards, social units, income groups etc. In this method the universe is divided into some recognizable subgroups which are called clusters. After this a simple random sample of these clusters is drawn and then all the units belonging to the selected clusters constitute the sample. However, while using this method, it should be seen that clusters are as small in size as possible and the number of samples in each unit in each cluster should be more or less the same. This method is commonly used in collecting data about some common characteristics of the population. Cluster sampling reduces the cost by concentrating surveys in selected clusters. However, this is less precise than random sampling. The cluster sampling is useful when the basic sampling frame of all elementary

units is not available. However, the efficiency of cluster sampling is less as compared to sampling by elements.

5. **Multi-stage sampling:** This is a modified form of cluster sampling. While in cluster sampling all the units in a selected cluster constitute the sample, in multistage sampling the sample units are selected into three or four stages. In this system the universe is first divided into first state sample units from which the sample is selected. The selected first state samples are then subdivided into second stage units from which another sample is selected. Third stage sampling is done in the same manner if necessary. As the name implies this method refers to a sampling procedure which is carried out in several stages. Usually, multistage samples are applied to big enquiry covering a considerable geographical area so that the study can be precise and apt to the situation. Compared with simple random sampling, multistage sampling results in greater convenience and economy. The cost of the sample preparation is greatly reduced by the fact that the multi stage approach does not require a complete list of individual elements from the population. Multistage sampling leads to more precision in the study. Each successive stage results in the reduction of the sample frame.

6. **Area sampling:** Area sampling is a special form of cluster sampling in which the sample items are clustered on a geographical area basis. In this kind of sampling; maps rather than lists or registers serve as a basis. Within the area the researcher may select all the members of the area or a part of the area may be selected. In area sampling the boundaries of the area must be very well defined. Normally a given geographical area is divided into blocks and a random sample is to be chosen from these blocks. Instead of the researcher attempting to carry out this activity on his own, the divisions already existing are used for drawing this particular type of sample. Generally, government agencies use area sampling to collect information about the effectiveness and implementation of their programs. To conduct studies on a wide geographical area sampling is the best method.

**3.7.2 Non – probability sampling techniques**: This is that sampling procedure which does where there is no probability or equal chance for every element in the population to be chosen as a part of the sample. Non probability sampling is also known by different names such as deliberate sampling, purposive sampling, and judgment sampling. In this type of sampling the samples are selected based on the choice made by the researcher, his choice concerning the

item remains supreme. In other words, under non probability sampling the organizers of the enquiry purposefully choose the particular units of the universe for constituting a sample on the basis that the small mass that is selected out of a huge one will be typical or representative of the whole. Thus, non-probability sampling or judgment sampling depends upon subjective judgment. The non probability method of sampling is a process where probabilities cannot be assigned to the units objectively, thus making it difficult to determine the reliability of the sample results in terms of probability. Non-probability sampling is well suited for exploratory research intended to generate new ideas that will be systematically tested later. However, if the goal is to learn about a large population, it is imperative to avoid judgment of non-probability samples in the research. Non-probability sampling may not always be a consequence of the researcher's ignorance of the total number of elements in the population but maybe a result of the researcher's bias in the way he chooses the sample by excluding some elements.

1. **Convenience sampling:** In this selection, the researcher chooses the sampling units on the basis of convenience or accessibility. Convenience sampling is also known as accidental sampling. It is called an accidental sample because the sample units enter by accident. This is also known as a sample of the man in the street; i.e., selection of the units where they are. Sample units are thus selected because they are accessible. In this sampling the researcher selects the cases that are easily accessible to him to survey quickly. Convenience sampling is quick and economical but the representativeness is of no significance. This sampling includes participants who are readily available and agree to participate in a study and therefore this sampling is also referred to as 'no choice sampling'.

2. **Judgment sampling:** A second method of non-probability sampling that is sometimes advocated in the selection of universe items by means of an expert judgment. Using this approach, specialists in the subject matter of the survey choose what they believe to be the best sample for that particular study. This type of sample requires judgment or an *educated guess* as to who should represent the population. These samples are anticipated to be more accurate, as experts are assumed to have a deeper understanding of the population. Purposive sampling involves selecting a sample based on prior knowledge of the population, its characteristics, and the specific objectives of the research. This means that the population is non randomly selected based on a particular characteristic. Thus, the individual characteristics are selected that are necessary to answer questions about a certain matter or a product. The researcher is then able to select participants based on internal

knowledge of the said characteristics. This method is useful if a researcher wants to study a small subset of a larger population in which many members of the sub-set are easily identified but the enumeration of all is nearly impossible. Pilot studies often use this type of non-probability sampling method.

3. **Snowball sampling**: Snowball sampling is a special non probability method used when the desired sample characteristic is rare. It may be extremely difficult or cost prohibitive to locate respondents in this situation. Snowball sampling relies on references from initial subjects to generate additional subjects. It is also known as referred sampling or multiplicity sampling. It is a procedure in which initial respondents are selected randomly but where additional respondents are required then obtained from reference. It is a form of networking. As the name implies the sample grows just like a snowball grows. It is a typical non probability sampling method where the desired sample characteristic is rare. It may be extremely difficult or cost prohibitive to locate respondents in this situation. Snowball sampling relies on references from initial subjects to generate additional subjects. While this technique dramatically reduces search costs it comes at the expense of introducing bias because the technique itself reduces the likelihood that the sample will represent a good cross section from the population. Although this technique has an advantage in terms of reduced sample sizes and costs, it involves a high level of bias because sample units are not independent.

4. **Quota sampling:** One of the most commonly used non probability sample designs is quota sampling, which enjoys its most widespread use in consumer surveys, marketing research and election polls. This method is a form of stratified judgment sampling, which also applies the principle of stratification. Similar to stratified random sampling, the process starts with the creation of strata. Bases for stratification in consumer surveys are commonly demographic such as age, gender, income and so on. This is one of a kind of purposive or judgment sampling. Quota sampling is the one where the investigator is directed to collect information from an assigned number or quota of individuals. The quota sampling technique is very popular in consumer surveys, market studies as well as human resource management. Field workers are then instructed to conduct interviews with the designated quotas, with the identification of individual respondents being left to the field workers. In this sampling the population is classified according to its characteristics and a quota is fixed

according to the proportion of different classes in that population. It divides the population group into subgroups based on the proportion.

## Part B: Research methodology adopted

### 3.8 Research questions:

On the basis of the aforementioned research problem statement, the following research questions have been formulated:

1. What are the challenges with regards to the nature of work and working conditions of waste pickers?
2. What are the effects of these challenges on the physical and mental health of waste pickers?
3. What are the motivating factors that urge the waste pickers to take up this occupation?

### 3.9 Hypotheses of the study:

- H0: The task related challenges have no effect on the physical and mental health of the waste pickers.
- H1: The task related challenges have an effect on the physical and mental health of the waste pickers.

- H0: The working environment has no effect on the physical and mental health of the waste pickers.
- H1: The working environment has an effect on the physical and mental health of the waste pickers.

- H0: There is no dissatisfaction amongst the waste pickers with regards to the hygiene factors.
- H1: There is dissatisfaction amongst the waste pickers with regards to the hygiene factors.

### 3.10 Universe under the study:




Figure 3.1 Political map of Pune city

Source: **: https://www.pmc.gov.in/en/politcal map as on August 11, 2023**

The Pune Municipal Corporation (PMC) is the governing body responsible for managing the civic needs and infrastructure of Pune, India, within its municipal limits. Covering an area of approximately 484.61 square kilometers, PMC oversees one of the largest municipal regions in the state, with its total area rounding off to about 485 square kilometers.

| Areas under PMC | Village List |
|---|---|
| **Old PMC Limits** | Bhavani Peth, Budhwar Peth, Ganesh Peth, Ganj Peth, Ghorpade Peth, Guruwar Peth, Kasba Peth, Mangalwar Peth, Nana Peth, Narayan Peth, Navi Peth, Rasta Peth, Raviwar Peth, Sadashiv Peth, Shaniwar Peth, Shukrawar Peth, Somwar Peth, Aundh, Bhamburda, Bibvewadi, Bopodi, Dhankawadi, Dhanori, Erandawana, Ghorpadi, Hadapsar, Hingne BK, Kalas, Kasba Pune, Katraj, Kondhwa KH, Koregaon Park, Kothrud, Lohgaon, Mundhwa, Parvati, Pashan, |

| | |
|---|---|
| | Wadgaon Sheri, Wanawadi, Yerwada, Somwar & Mangalwar Peth, Somwar Peth TPS, TPS I, TPS III, Hadapsar TPS I, Hadapsar TPS II, Sangamwadi TPS, Somwar Peth & Mangalwar Peth TPS, SubUrban TPS, TPS I, TPS III, Yerwada TPS |
| **23 villages merged on 11-09-1997** | Baner, Balewadi, Bavdhan KH, Kothrud, Warje, Shivne, Hingne KH, Wadgaon KH, Wadgaon BK, Dhayari, Dhankawadi, Ambegaon BK, Ambegaon KH, Kondhwa KH, Kondhwa BK, Undri, Mohammadwadi, Hadapsar, Wadgaon Sheri, Kharadi, Kalas, Dhanori |
| **Yewalewadi merged on 21-12-2012** | Yewalewadi |
| **11 villages merged on 04-10-2017** | Lohgaon (remaining), Mundhwa (Keshav Nagar), Shivne (UttamNagar), Shivne, Hadapsar (SadeSataraNali), Ambegaon KH, Ambegaon BK, Undri, Dhayari, Uruli Devachi, Fursungi |
| **23 villages merged on 30-06-2021** | Mhalunge, Bavdhan Bk., Sus, Bhilarewadi, Jambhulwadi, Khadakwasla, Kirkitwadi, Kolewadi, Kondhve Dhavade, Kopre, Mangdewadi, Nanded, Nandoshi, Narhe, Nimbalkarwadi, Sanasnagar, Autade handewadi, Holkarwadi, Manjri Bk., Pisoli, Shewalewadi, Wadachiwadi, Wagholi |

Table 3.1 List of areas under PMC

**Source: https://www.pmc.gov.in/en/DP-plan as on August 5, 2023**

*This research takes Pune municipal corporation limits into consideration. While Pune city has been gradually expanding a complete and comprehensive literature on the current geographical limits of Pune city is presented above.*

The Pune Municipal Corporation is divided into 5 DMC[52] zones headed by 1 Deputy Municipal Commissioner each. Each zone comprises 3 ward offices making the total number of ward offices 15. Each ward office is further subdivided into *Aarogya Kothis*[53] responsible for health

[52] DMC: Deputy municipal commission zones
[53] Aarogya Kothi: Sub - division of a ward office for health and sanitation activities

and sanitation activities. The diagram below represents the list of ward offices under each DMC zone. The second diagram indicates the number of aarogya kothis in each ward office.

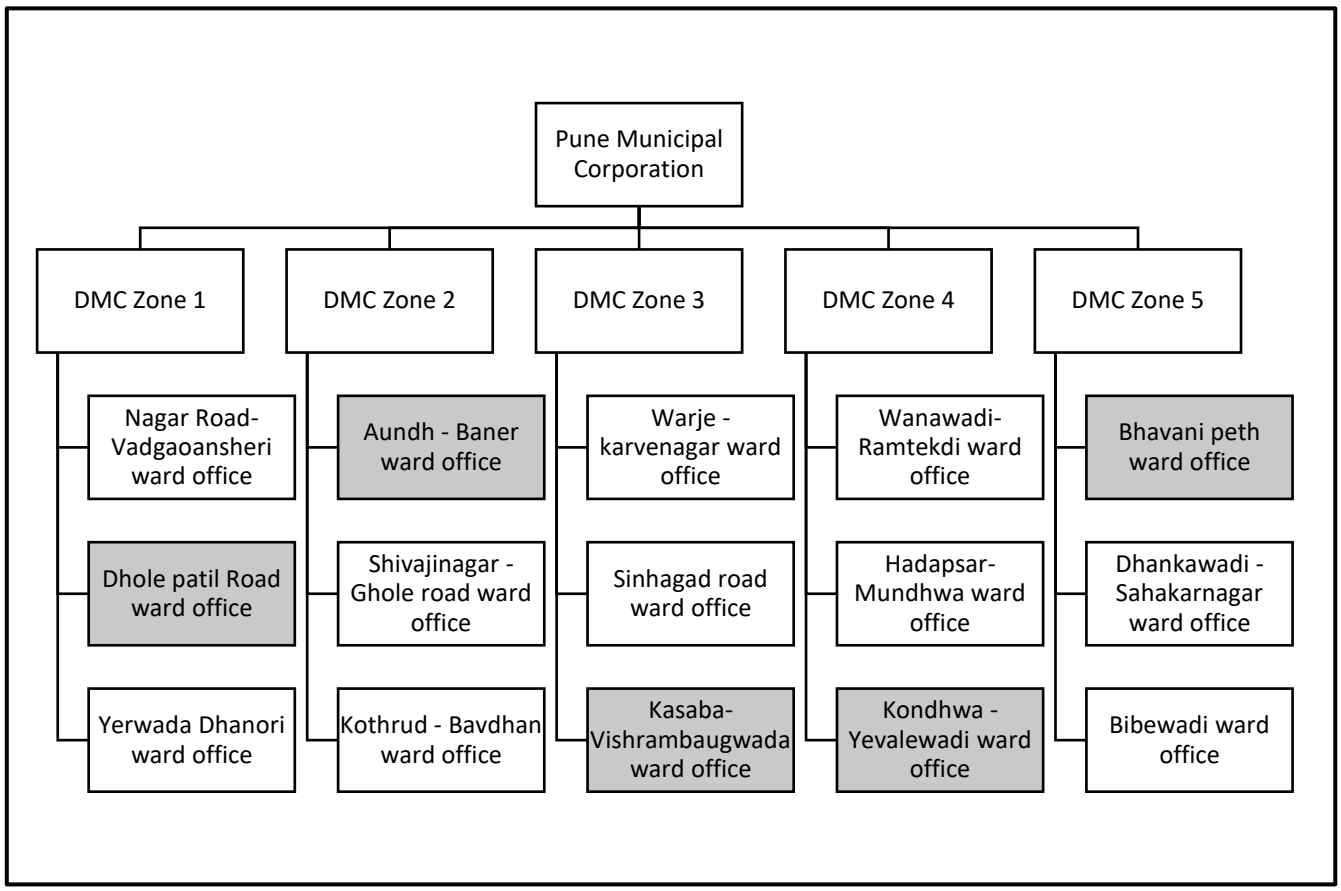



Figure 3.2: DMC -Zone wise list of ward offices

*Note: The ward offices highlighted in grey color are the ward offices selected under sampling*

.

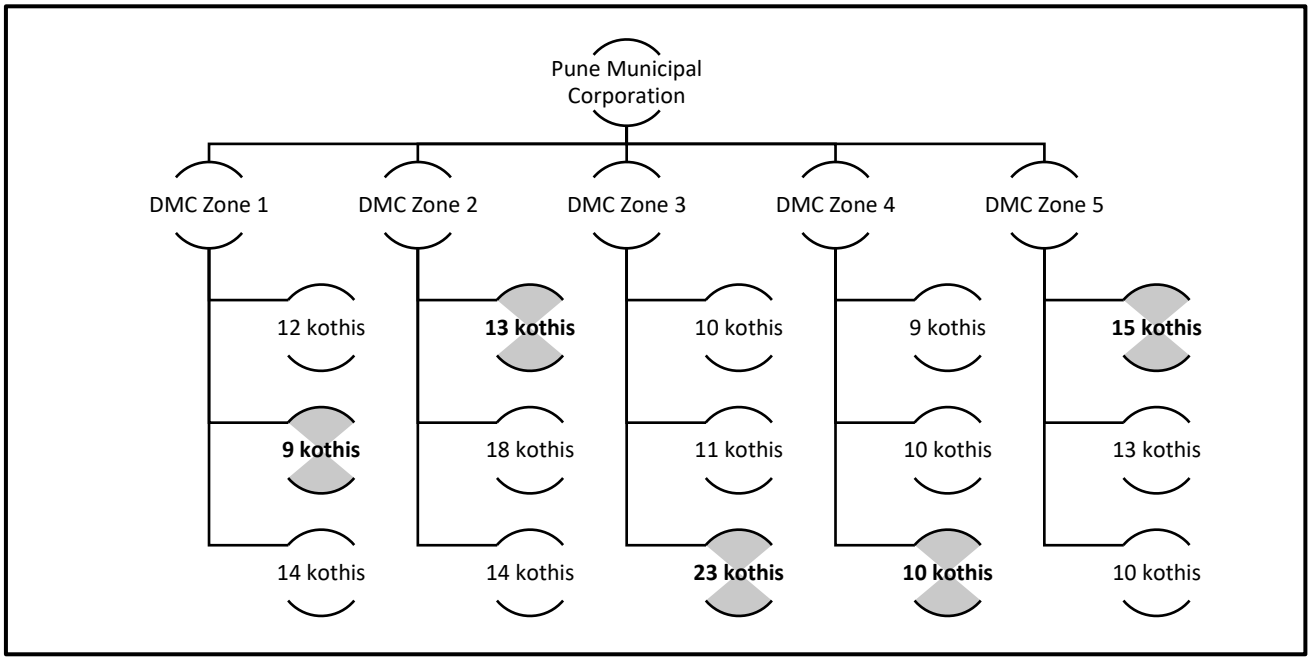


Figure 3.2: Number of kothis per ward office

*Note: The areas highlighted in grey color represent the number of kothis in the selected ward offices.*

**3.11 Scope of the study:** The research focuses on 5 ward offices and 70 kothis from the five different Deputy Municipal Commission zones.

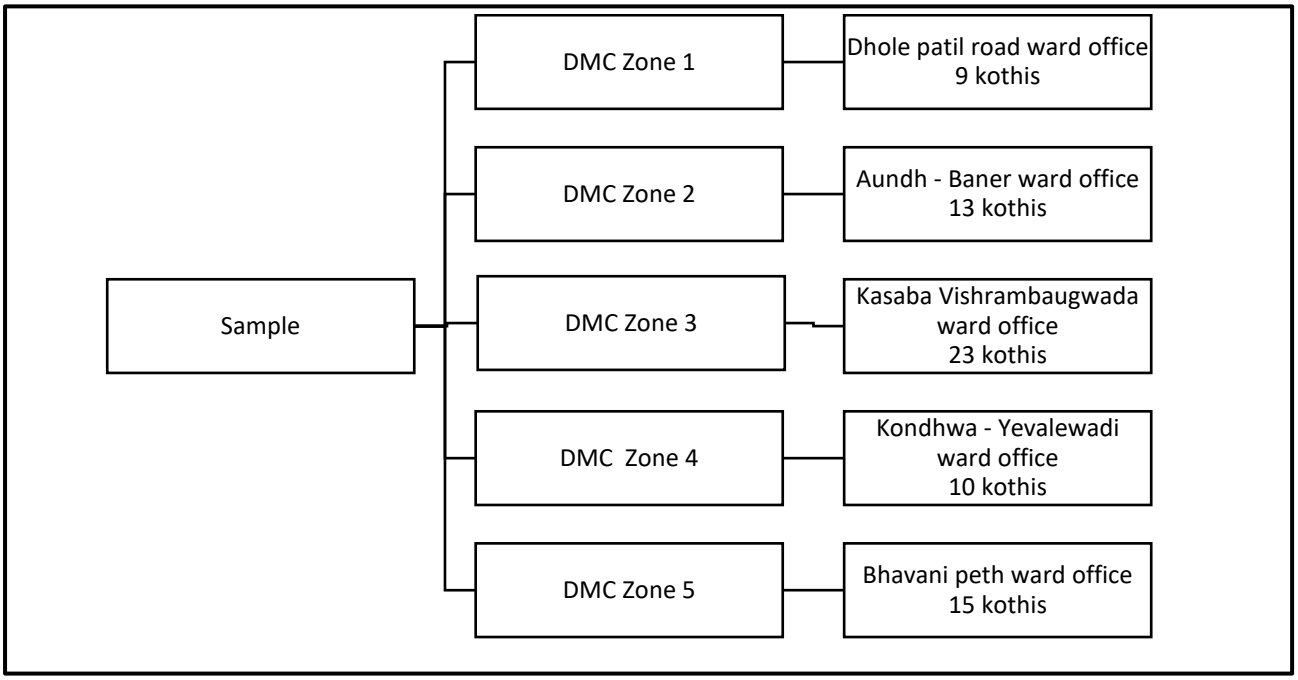



Figure 3.3: DMC zone-wise ward offices selected as sample

The research is geographically limited to the jurisdiction of Pune Municipal Corporation PMC.

From each DMC zone the researcher intends to cover one ward office and all Arogya kothis falling under the jurisdiction of that ward office. Each kothi comprises of

- Sweepers
- SWaCH Workers
- Drivers
- Bigari[54] workers
- Sanitation workers
- Itinerant Waste Pickers

However, for the purpose of the research the sanitation workers have been excluded from the sample. This is because they have a totally different set of working conditions making

[54] Bigari workers: Class of workers who lift garbage and dead animals from the roadside.

their challenges vary from that of the waste management workers. Each kothi has waste management staff ranging from 20 - 30 depending upon the jurisdiction of the Arogya Kothi and its location. A sample of 15 personnel per kothi has been identified by the researcher using a quota sampling method making the total sample size 1050. (Pune Municipal Corporation, 2022)

| **DMC Zone 1** | **DMC Zone 2** |
|---|---|
| Dhole Patil Road Ward Office | Aundh -Baner Ward Office |
| 9 Kothis * 15 =135 staff members | 13 * 15 = 195 staff members |
| **DMC Zone 3** | **DMC Zone 4** |
| Kasaba Vishrambaugwada Ward Office | Kondhwa – Yevalewadi Ward Office |
| 23 * 15 = 345 staff members | 10 * 15 = 150 staff members |
| **DMC Zone 5** | |
| Bhavani Peth Ward Office | Total sample size |
| 15 * 15 = 225 staff members | **1050** |

Table 3.2 Number of staff members to be covered from each ward office as sample

**3.12 Justification of sampling methods:**

The sampling techniques are divided into two types. These techniques are probability or representative sampling and non-probability or judgmental sampling. The researcher has opted for quota sampling which is a non-probability or judgmental sampling. Non-probability sampling focuses on sampling techniques that are based on the judgment of the researcher.

While choosing the ward offices for sample determination the researcher opted for *area sampling*. From each DMC zone ward offices that were geographically proximal to the researcher's residence and location of work have been chosen for the research. This ensured periodic visits to ward offices for communication and coordination with divisional sanitation inspectors.

For filling of questionnaires, the quota sampling method is used. The researcher has filled a pre-determined number of questionnaires from each kothi. In each kothi the number of waste management personnel ranges 20 to 30. The researcher has opted to fill 15 questionnaires from each kothi. Since the population of interest is the waste management personnel from the ranks of sweepers to drivers and the number of these personnel varies in every Arogya kothi

depending upon the total area under jurisdiction and the population of that area a fair minimum number of personnel has been proposed. Since the personnel may be on duty in absentia therefore the number of personnel for each cadre have not been specified thereby giving some freedom to the researcher during data collection. By utilizing the quota sampling method researcher has ensured that each of the kothis chosen for the study had an equal representation in terms of sample size. This facilitated cross comparison among the aarogya kothis regarding job stress level of employees.

### 3.13 Classes of respondents:

Data was collected from the following respondents

1. Sweepers, SWaCH workers, drivers, bigari workers and itinerant waste pickers from the aarogya kothis chosen for the research study.

2. Mukkadams[55] of each Aarogya Kothi chosen for the research study.

3.Divisional sanitation inspector and sanitation inspectors of each ward office.

### 3.14 Types and sources of data:

The fieldwork was conducted in Pune city. In order to address the objectives of the study, both primary and secondary data were collected.

#### 3.14.1 Primary data:

The primary data was collected through questionnaires, observations, and formal and informal interactions. Initially for researcher's understanding the research instrument viz questionnaire was drafted in English. Since at the outset the researcher had a limited understanding for the challenges in waste picking therefore for drafting of research instrument the researcher met the following people in order to gain an understanding of the following areas of concern:

[55] Mukkadam: A word of Marathi origin indicating group leader for unorganised labour

| Name of the person | Designation | Discussions undertaken |
|---|---|---|
| Mr. Pravin Walture | Mukkadam | 1. The day-to-day tasks and work routine of sweepers, waste collectors, SWaCH workers and tempo drivers.<br>2. Availability of intramural welfare facilities in Kothis in general. |
| Mr. Anand Sonavane | Mukkadam | |
| Mr. Harshad Barde | Director -SWaCH Coop | 1. The evolution, history, organogram of SWaCH.<br>2. The objectives and uniqueness of the SWaCH Coop movement.<br>3. The challenges faced by the waste pickers in terms of nature of job, income generation and governance.<br>4. The initiatives undertaken by SWaCH for the waste pickers and the society. |
| Dr. Ketki Ghadge | Health officer- Department of solid waste management; PMC | 1. The role of PMC in solid waste management.<br>2. The reliance of PMC on SWaCH Coop for waste management.<br>3. Solid waste management guidelines at national and state level and provision for welfare of waste pickers therein.<br>4. Involvement and initiatives by PMC for rehabilitation of the waste picking fraternity |

3.3 List of people interacted with for questionnaire designing.

Meetings and interactions with above people facilitated understanding of the challenges and determining the layout of the questionnaire.

### 3.14.2 Framework of questionnaire:

Basically, a detailed questionnaire was prepared for understanding the working conditions of the waste pickers. For the purpose of getting information from the waste pickers a structured questionnaire consisting of close and open-ended questions was prepared in which identical questions were asked to the respondents. This has been a basic source of information for this study. Questions were framed by adopting multiple choice/rating scale and Likert scale systems.

This questionnaire was then pretested for its validity, comprehension and to eliminate potential problems before the actual data collection. This study assumed participatory action when pre testing and administering the questionnaires. Before data collection, the questionnaire was pre-tested on waste pickers of *Barve kothi and Khadicha Maidan kothi falling under Bhavani Peth ward office and Kasba Vishrambaug Wada ward office* to evaluate the appropriateness of the design, clarity and interpretation of the questions, relevance of the questions and time taken for an interview. Hence, appropriate modifications and corrections were made on the questionnaire. The filled-in questionnaires were thoroughly checked for completeness and exactness.

Questions were asked to the waste pickers in kothis which allowed interaction viz. *Barve kothi school no 19, Doke Talim and PMC Colony no 8 kothi from Bhavani Peth ward office and Khadicha Maidan kothi from Kasba- Vishrambaug wada ward office* by creating an informal environment. Additional questions were also asked to them to collect related data. The questionnaire for waste pickers consists of two parts. The first part gathered general information about respondents' name, gender, age, and their other demographic information. The second part asked the respondents to answer forty-two questions divided in four sections viz. task related challenges in waste picking, working environment, effects of these challenges on physical and mental health of employees and motivation of employees.

Since the entire mass of respondents was illiterate or semi-literate the questionnaire was translated into Marathi. In cases where respondents could read and write the regional language with ease, they were requested to fill the questionnaires. Schedules were filled by the researcher

while interacting with the respondents in case they were illiterate. In order to collect the data in an astute and timely manner the following mechanism was followed:

Prima facie every divisional sanitation inspector (DSI)[56] had been contacted. Since every Monday is a meeting of all sanitation inspectors at the ward office for securing the weekly brief of activities; the researcher would visit the targeted ward office on Monday. This facilitated ease of interactions with all Sanitation inspectors (SI)[57]s. Thus, all of them, would be briefed together regarding the nature of the research work and the cooperation anticipated from them. Also dates for interaction with respondents per kothi under the jurisdiction of each sanitation inspector would be fixed. This ensured that the researcher could give equal attention to each kothi and in a predetermined fashion.

### 3.14.3 Secondary data:

Along with the primary data the necessary information is collected from secondary sources of data collection. Secondary sources are also used to complement preliminary information and to understand rationality behind the challenges and stressors of employees. Secondary data was collected from different sources, such as: PMC and SWaCH website and research papers, journals, published theses, bare acts of legislations on manual scavenging, municipal solid waste management manuals of Swachh Bharat mission and PMC etc. This data has been supportive in understanding the research rationale, stretching the background reading and drafting of the questionnaire as well as completing the study in detail.

[56] DSI: Divisional sanitation inspector
[57] SI: Sanitation Inspector

# Chapter 4:
# Data Analysis

This chapter contains tabulations for the data collected by the researcher through questionnaire method. The normal frequency tables for every question in the questionnaire for employees are placed first followed by cross tabulations done gender wise, Tables have been represented graphically wherever possible followed by interpretations.

- Tabulation of data shows normal frequency tables for each question of the questionnaire and the percentages of these tables are calculated out of one thousand and fifty.

- Percentages for gender wise tabulation have been done on the basis of six hundred and six for males and four hundred and forty-four for females.

- Under cross tabulation done age wise and ward office wise the percentages are calculated on the basis of number of respondents in each age group.

- The researcher has opted for cross tabulation of data age wise in order to understand effect of certain phenomena on the motivation of waste pickers as their age progresses.

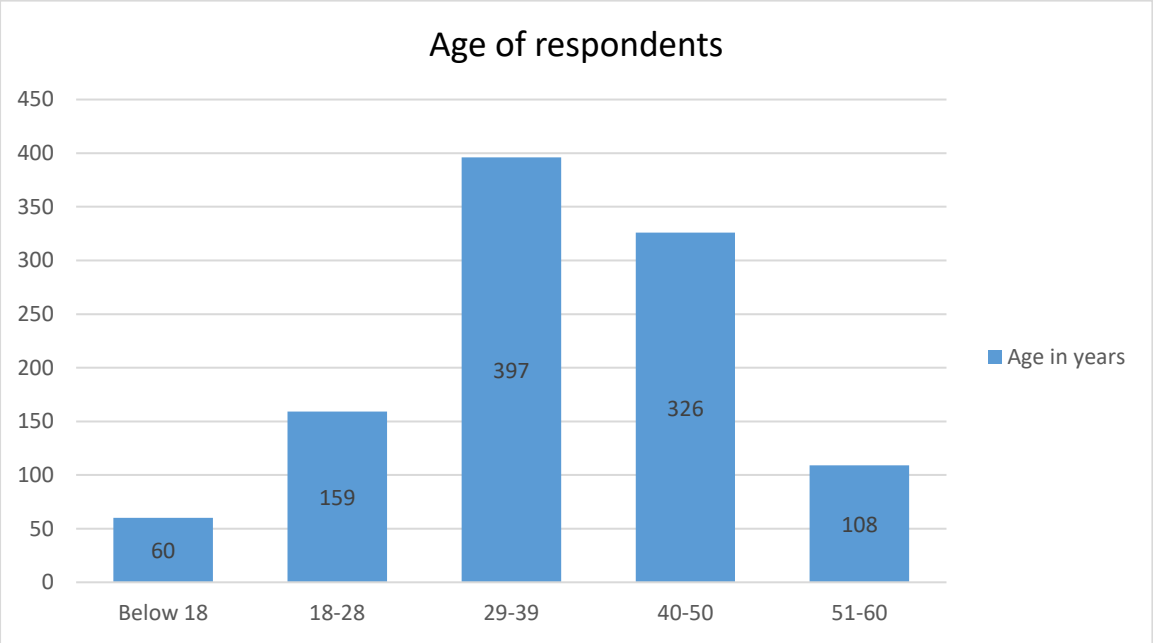
- Cross tabulation of data ward office wise has been conducted with the objective of understanding the presence of intramural and extramural facilities in the wards as well as to understand ward wise differentiation in the way the waste pickers are treated.

- Both the tabulations have not been directly represented in tabular format; however, for each question the *data trends* observed in both these tabulations as applicable has been included as *researchers' remarks.*

4.1 Age wise bifurcation of responses

Table and Figure 4.1

| Parameter | No of responses |
|---|---|
| Below 18 | 60 |
| 18-28 | 159 |
| 29-39 | 397 |
| 40-50 | 326 |
| 51-60 | 108 |
| **Total** | **1050** |




**Inference:**

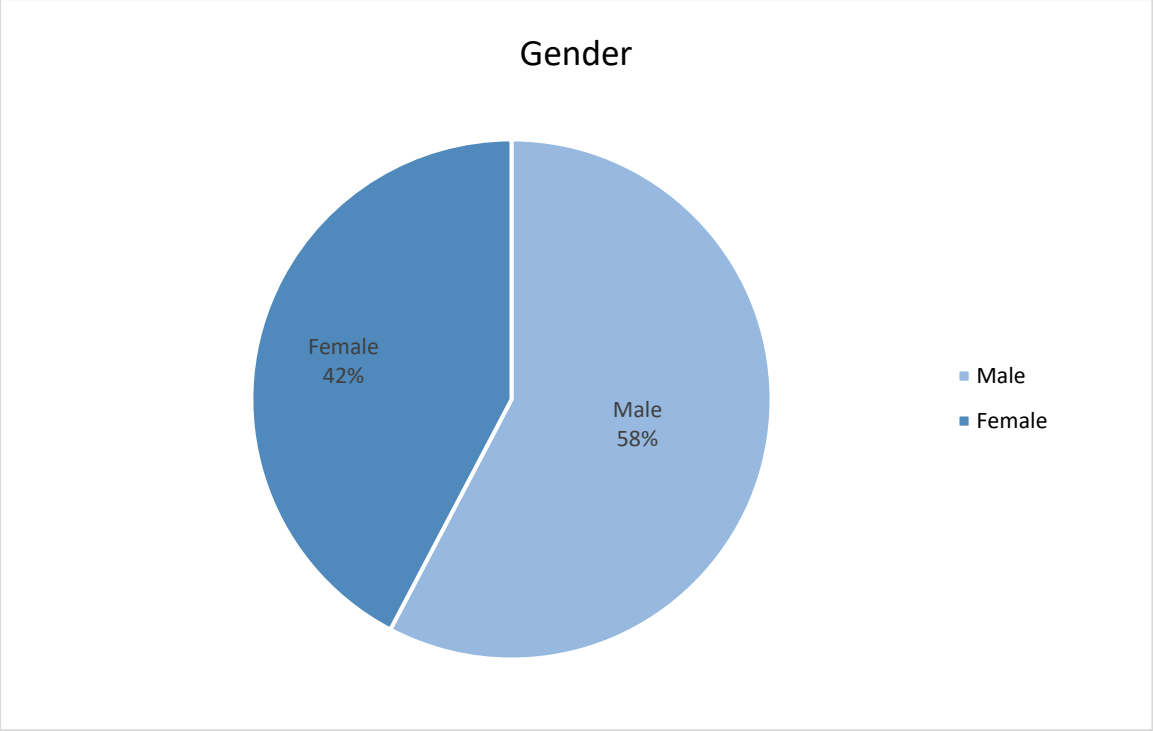
- 6% of the respondents who have filled this questionnaire are below 18 years of age,
- 15% of the respondents are in the age bracket of 18 to 28,
- 38% of the respondents are the age bracket of 29 to 39,
- 31% of the respondents are in the age bracket of 40 to 50 and
- Remaining 10% are in the age bracket of 51 to 60.

*Thus to conclude maximum task force of waste pickers falls in the age bracket of 29 to 50 years.*

4.2 Gender wise bifurcation of responses

Table and Figure 4.2

| Parameter | No of responses |
|---|---|
| Male | 606 |
| Female | 444 |
| **Total** | **1050** |




**Inference:**

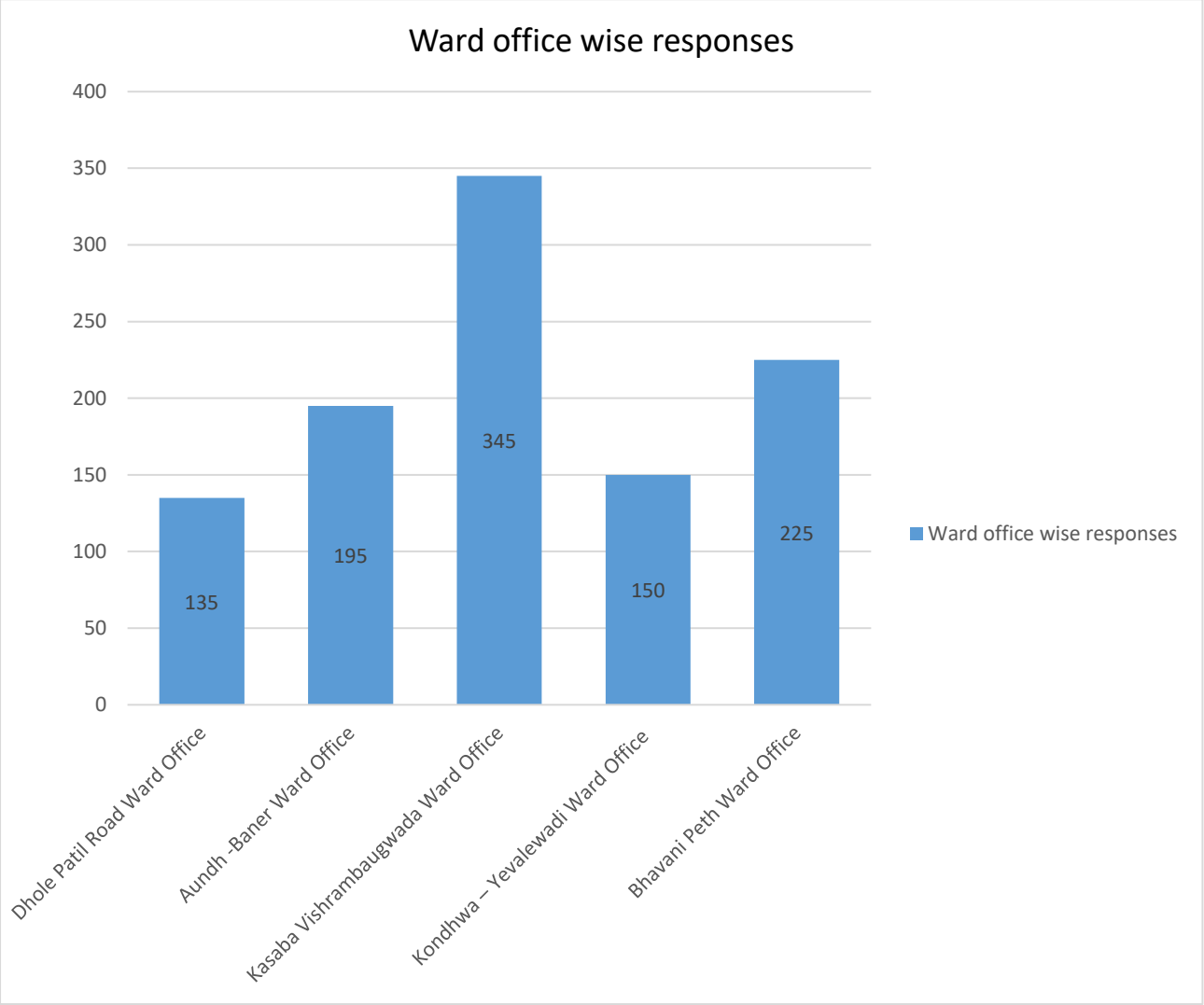
- 58% of the respondents are male and
- 42% of the respondents are females

*Thus, it can be concluded that the number of females working in this occupation are almost at par with the males.*

4.3 Name of ward office

Table and Figure 4.3

| Parameter | No of responses |
|---|---|
| Dhole Patil Road Ward Office | 135 |
| Aundh -Baner Ward Office | 195 |
| Kasaba Vishrambaugwada Ward Office | 345 |
| Kondhwa – Yevalewadi Ward Office | 150 |
| Bhavani Peth Ward Office | 225 |
| **Total** | **1050** |



**Inference:**

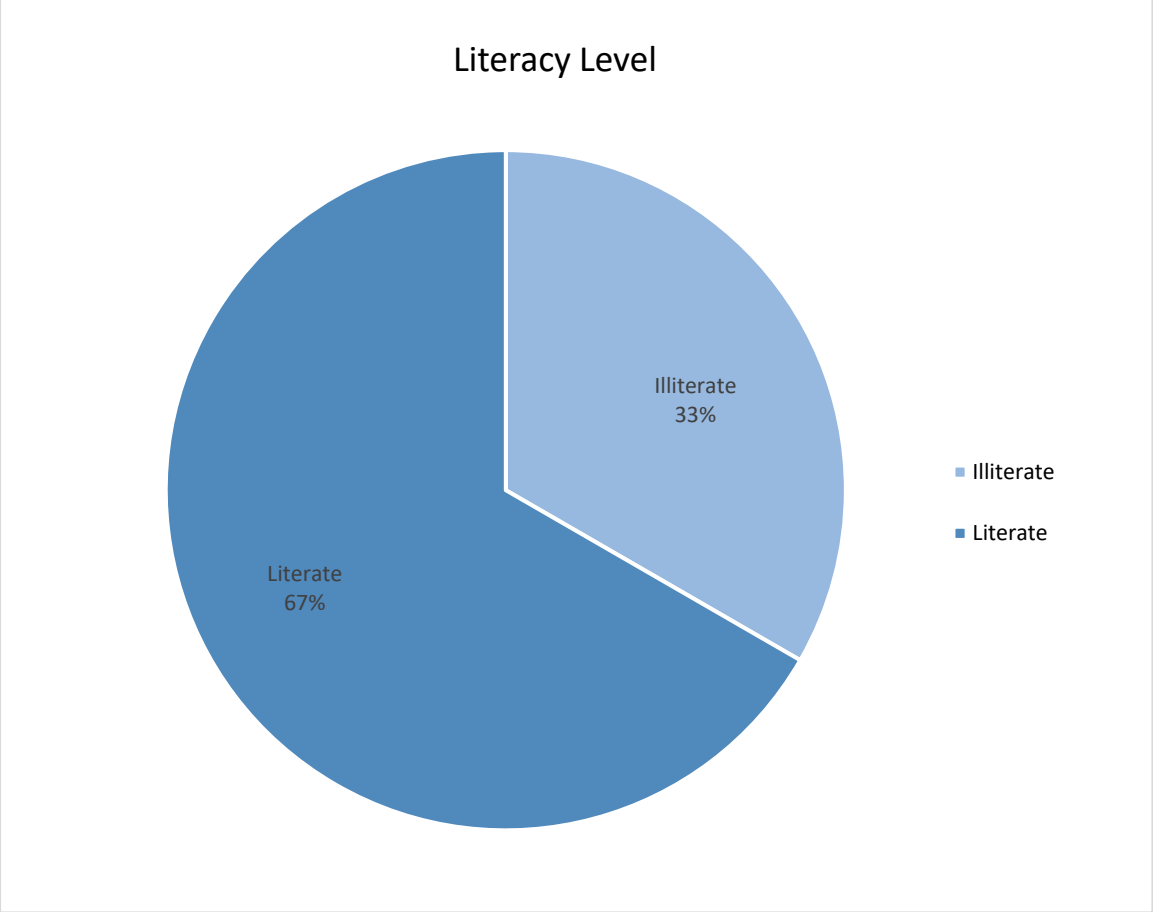
- 13% of the respondents belong to the dhole Patil ward office,
- 19% of the respondents belong to the Aundh Baner ward office,
- 33% of the respondents belong to the Kasba Vishrambagh Wada ward office,
- 14% of the respondents belong to Kondhwa Yevalewadi ward office,
- and the remaining 21% responders belong to Bhavani Pate ward office.

*Since the researcher has applied quota sampling for the purpose of data collection it can be concluded safely that Bhawani Peth ward office and Kasba Vishrambaug Wada ward office are the largest ward offices. The Kasba Vishrambaug Wada ward office comprises of 23 Arogya kothis followed by Bhavani Peth comprising of 15 Arogya kothis.*

4.4 Literacy level

Table and Figure 4.4

| Parameter | No of responses |
|---|---|
| Illiterate | 350 |
| Literate | 700 |
| **Total** | **1050** |




**Inference:**

- 33% of the total respondents are illiterate,
- 67% of the total respondents are literate.

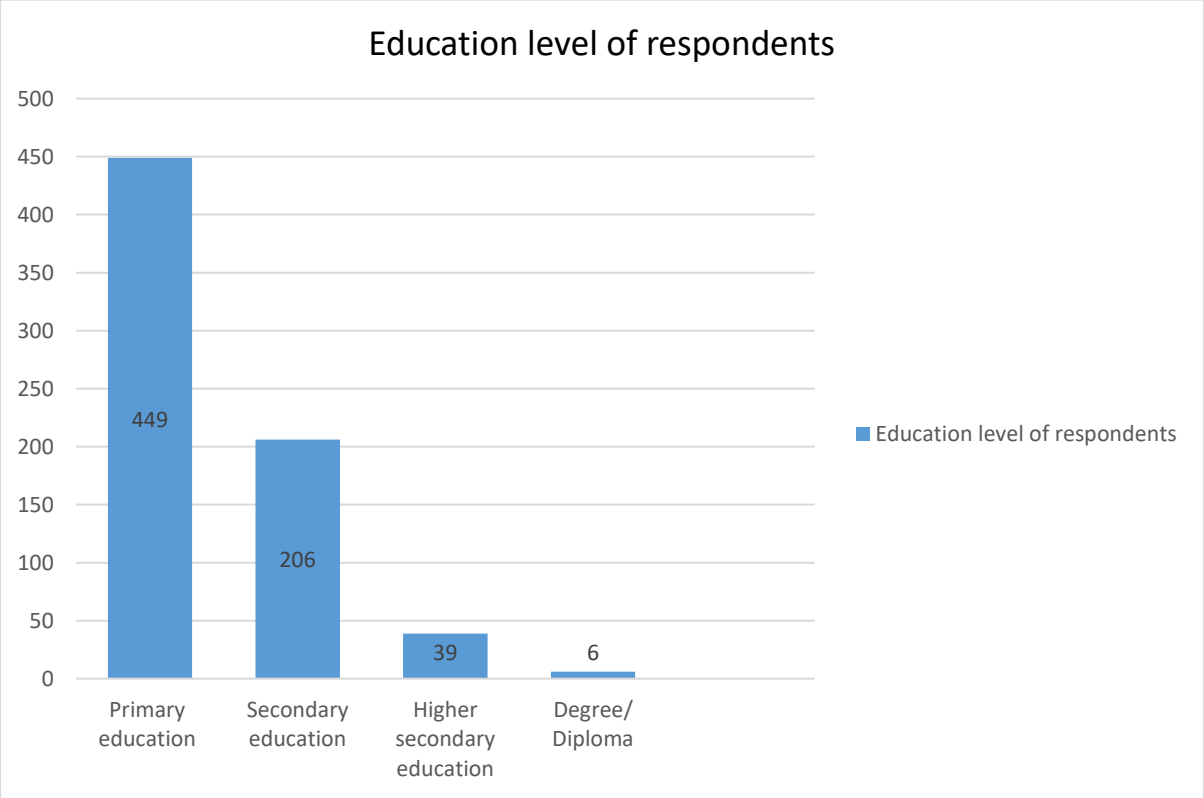
*This indicates that the illiteracy level is very high in the occupation as compared to other occupations. The researcher would also like to note that those respondents who are literate possess basic reading and writing skills and are often unable to interpret documentation even in the regional language.*

*For the purpose of this research the questionnaire has exclusively been drafted in Marathi for the convenience of the respondents with the first question attempting to know about the literacy level.* W*here ever the respondents have opted for illiteracy the questionnaire has been treated as a schedule. However, in case of respondents agreeing to be literate also they have often required reading assistance or guidance to interpret a particular question. Thus, indicating that literacy or limited literacy is a major concern for this task force.*

4.5 Education level of respondents

Table and Figure 4.5

| Parameter | No of responses |
|---|---|
| Primary education | 449 |
| Secondary education | 206 |
| Higher secondary education | 39 |
| Degree/ Diploma | 6 |
| **Total** | **700** |




Inference:

- 64% of the respondents have primary education
- 29% of the respondents have secondary education
- 6% of the respondents have pursued higher secondary education and
- Only 1% of the respondents hold a degree or diploma

*In a nutshell, those who are literate possess the basic skills of reading and writing only whereas the role of higher education in this fraternity is negligent. It is also to note that those possessing a degree or diploma instead of choosing an alternate occupation have chosen to continue waste picking as a formal source of income. Interaction with such respondents have revealed that despite higher education they have chosen to continue this occupation owing to the permanent nature of the job for which they have been eligible as a dependent.*

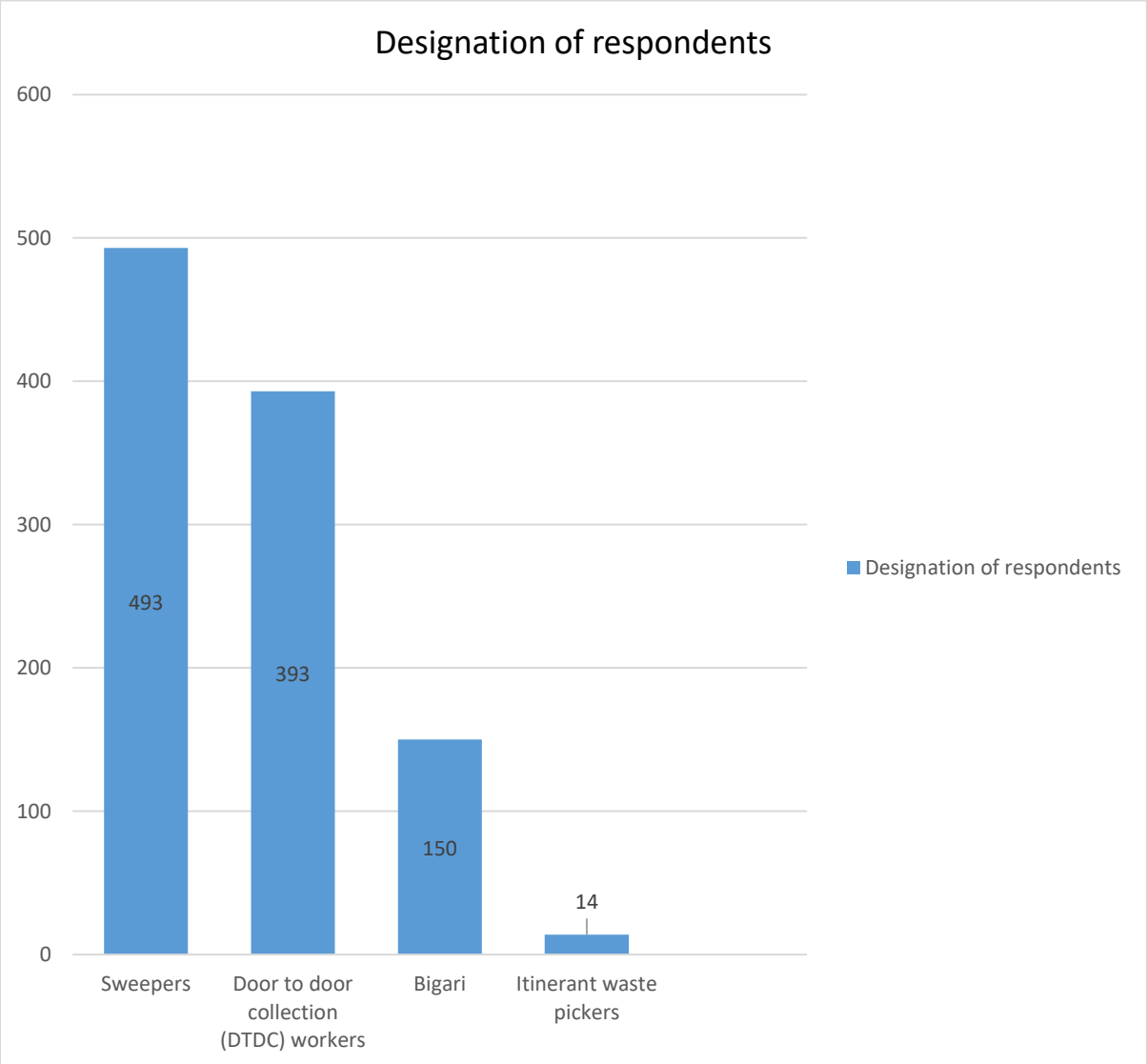
***Gender wise data trends:*** *Gender wise bifurcation of responses has revealed that the number of illiterate women is greater as compared to that of the men therefore indicating a general dismal attitude towards the education of women.*

***Age wise data trends:*** *Age wise bifurcation of responses has revealed the trend that the younger generations are seen to be more prone towards higher education opportunities as compared to their seniors.*

4.6 Designation of respondents

Table and Figure 4.6

| Parameter | No of responses |
|---|---|
| Sweepers | 493 |
| Door to door collection (DTDC) workers | 393 |
| Bigari | 150 |
| Itinerant waste pickers | 14 |
| **Total** | **1050** |



**Inference:**

- 47% of the respondents are sweepers
- 37% of the respondents are door to door (DTDC workers)
- 14% of the respondent are bigari workers
- 1% of the respondents are itinerant waste pickers.

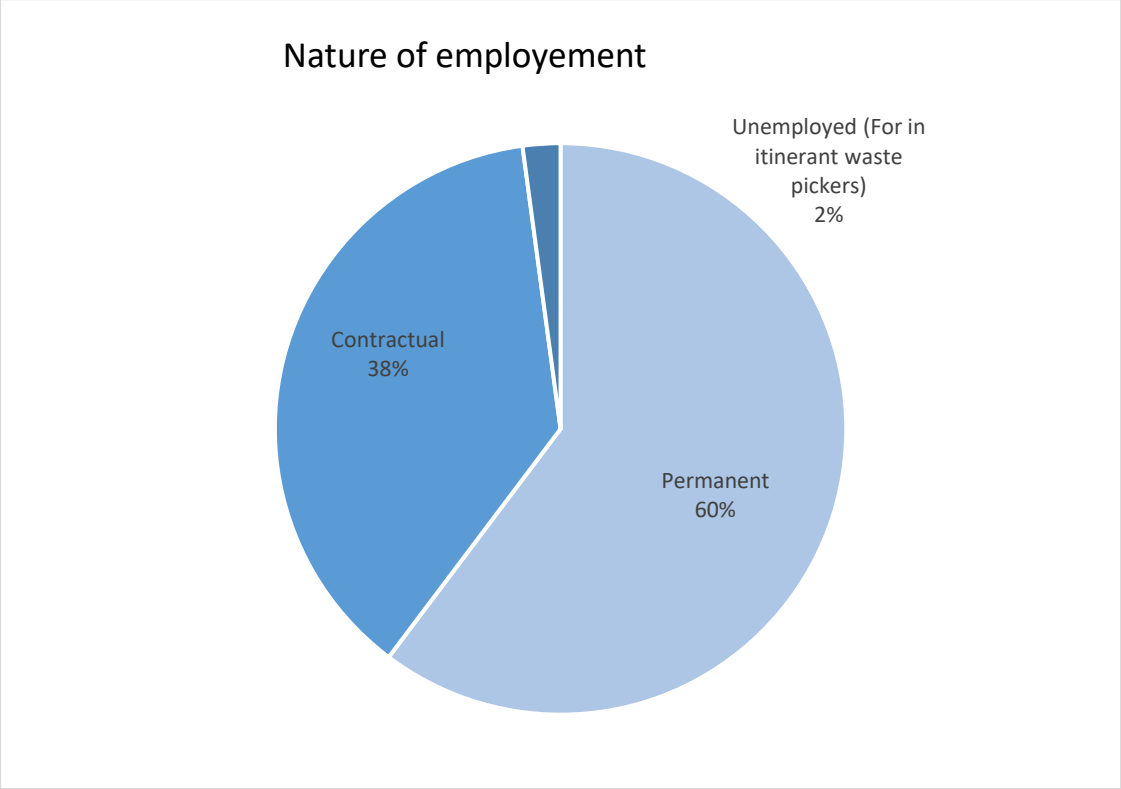
*Thus, in a nutshell the task force is majorly divided into two halves viz the sweepers responsible for the cleanliness and upkeep of civic areas and the door-to-door collection workers primarily responsible for gathering and segregation of waste generated in individual households.*

***Gender wise data trends:*** *Gender wise bifurcation of responses indicates that the door-to-door waste collection task force is predominantly female oriented. Women have agreed to the fact that door to door waste collection acts as additional source of income for their families while giving them a good work life balance.*

4.7 Nature of employment

Table and Figure 4.7

| Parameter | No of responses |
|---|---|
| Permanent | 396 |
| Contractual | 247 |
| Unemployed (For in itinerant waste pickers) | 14 |
| **Total** | **657** |



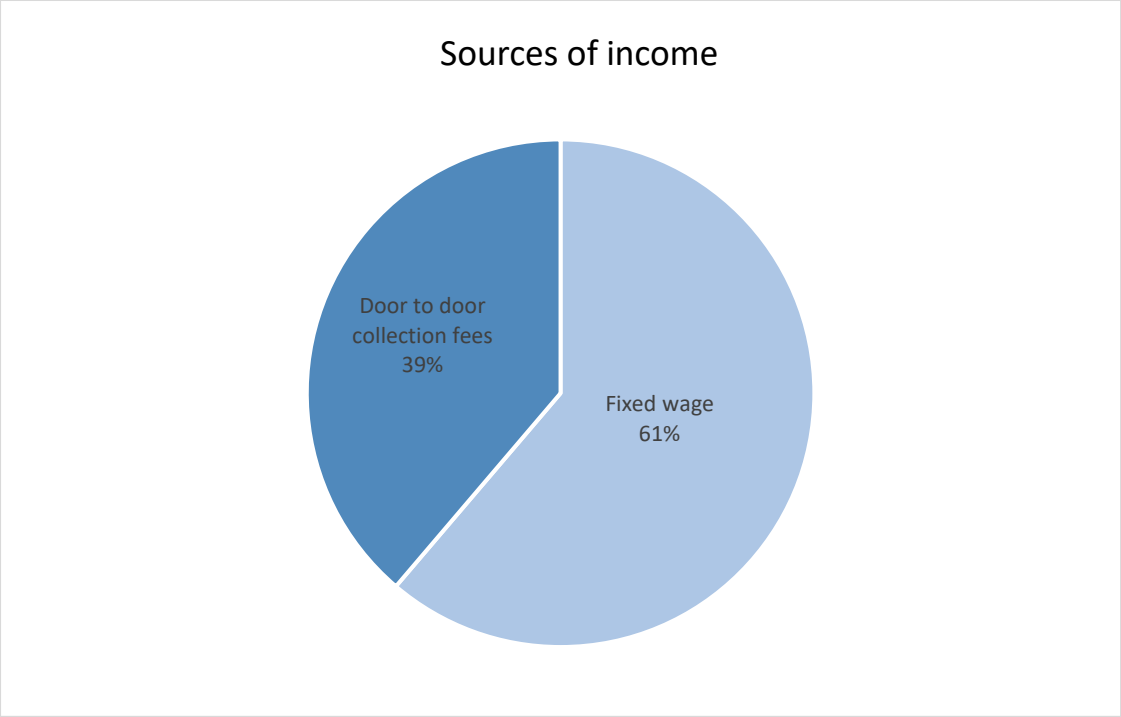

**Inference:**

- 60% of the respondents are permanent in their employment;
- 38% of respondents are on contractual employment;
- The last 2% of respondents are unemployed.

4.7.1 Sources of income in waste picking

Table and Figure 4.7.1

| Parameter | No of responses |
|---|---|
| Fixed wage | 643 |
| Door to door collection fees | 407 |
| **Total** | **1050** |




**Inference:**

- 64% of the respondents has stated that they are on fixed wages;
- 39% of the sample has stated that they rely on door-to-door collection fees.

*The above inferences indicates that almost half of the task force is recruited as sweepers. The sweepers as well as the bigari workers are either permanent or contractual in their employment which makes them eligible for a minimum take home pay and other perks as applicable.*

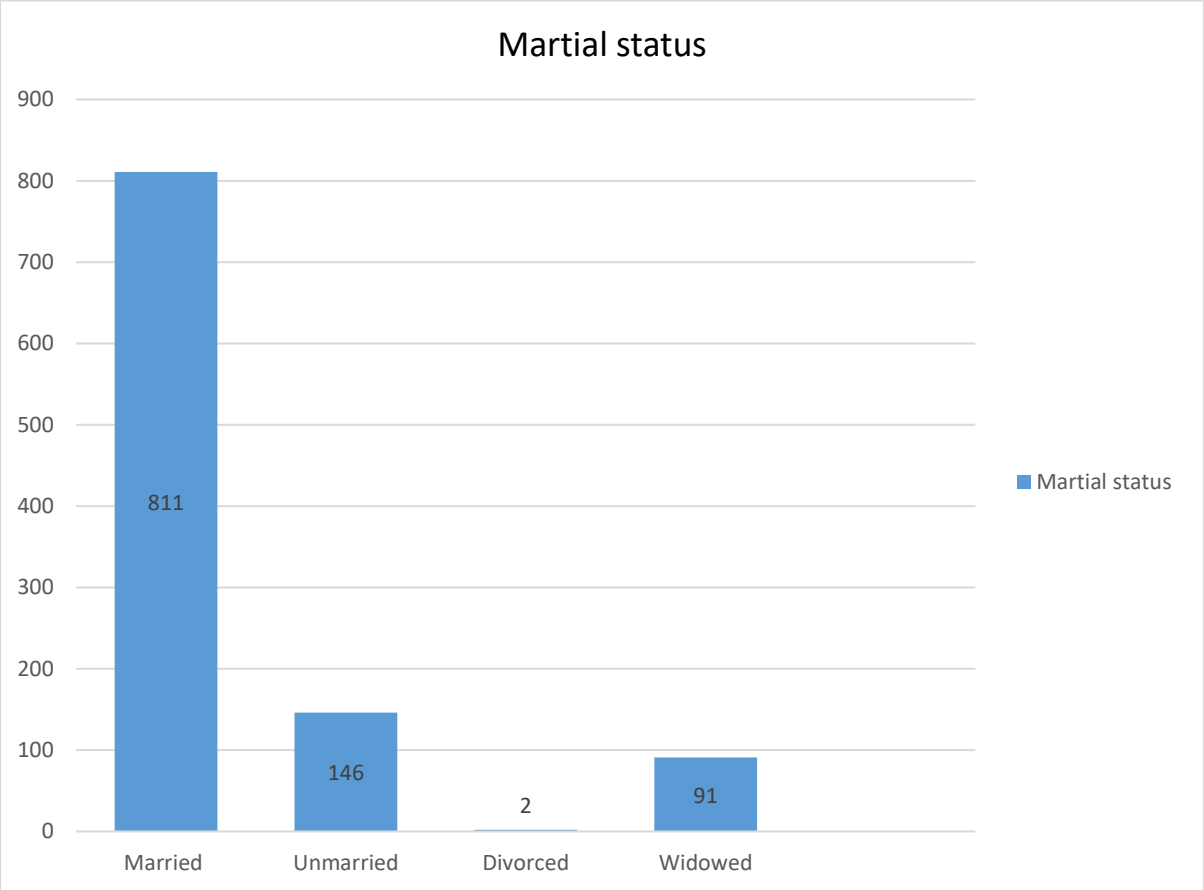
*The remaining half of the task force i.e. the door-to-door collection workers are members of the SWaCH coop cooperative and are not employed in any manner by the Pune Municipal Corporation. As members of the cooperative, they rely solely on the door-to-door collection fees paid to them by the citizens or the money earned through the sale of scrap making their position in the waste management hierarchy extremely vulnerable.*

*As for the itinerant waste pickers they prefer to operate solely and do not have even the backing of a self-help group such as SWaCH or that of the Civic body. They therefore remain totally disregarded whilst measuring the outcome towards waste management.*

4.8 Marital status of respondents

Table and Figure 4.8

| Parameter | No of responses |
|---|---|
| Married | 811 |
| Unmarried | 146 |
| Divorced | 2 |
| Widowed | 91 |
| **Total** | **1050** |




**Inference:**

- 77% of the total respondents are married
- 14% of the responders are unmarried
- only 2 respondents are divorced
- whereas 9% of the respondents are widowed.

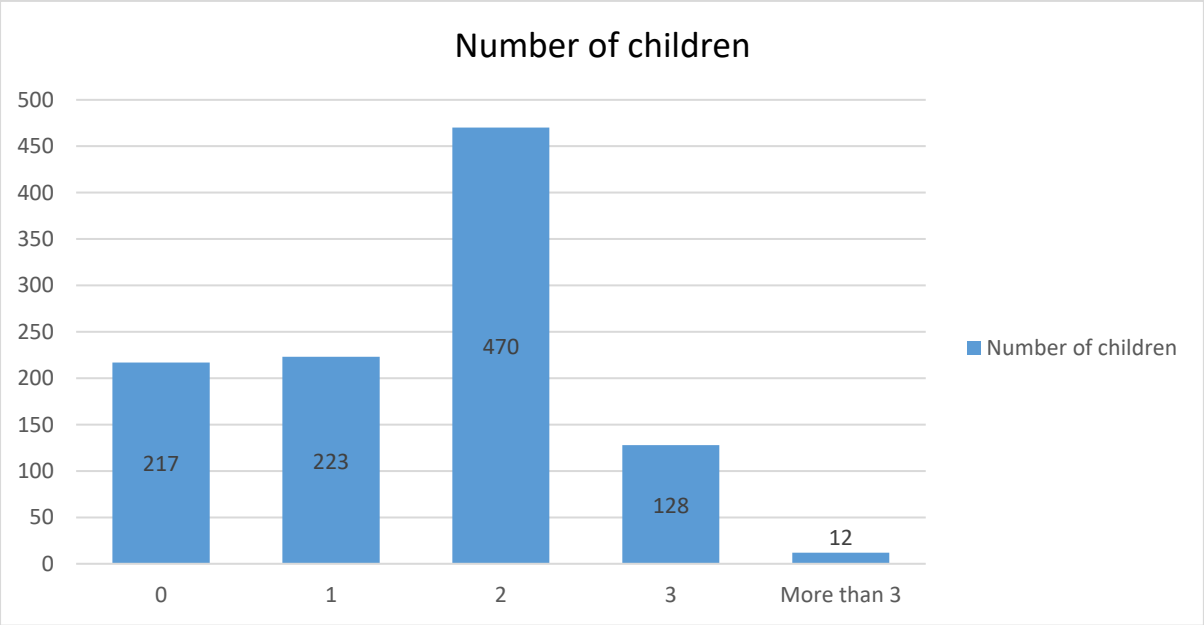
*The marital status of the respondents clearly indicates that majority of the waste pickers are married and have familial responsibilities which is the primary motivation behind the choice of this task.*

*Interactions have revealed that the respondents have chosen this occupation so as to be able to either complete solely or share their family responsibilities with their partners. They have also stated that limited or no literacy drives them to this no choice occupation with the basic objective of sustenance.*

4.9 Number of children per respondent

Table and Figure 4.9

| Parameter | No of responses |
|---|---|
| 0 | 217 |
| 1 | 223 |
| 2 | 470 |
| 3 | 128 |
| More than 3 | 12 |
| **Total** | **1050** |




**Inference:**

- 21% of the responded have no children
- 21% of the respondents have a single child
- 45% of the respondents have two children
- 12% of the respondents have three children
- 1% of the respondents have more than three children

*Interactions with respondents have revealed that while some of them are conscious about their social economic status and would like to have one or two children a few of them still have a traditional set of minds and either want a male heir or view children as additional hands in waste picking.*

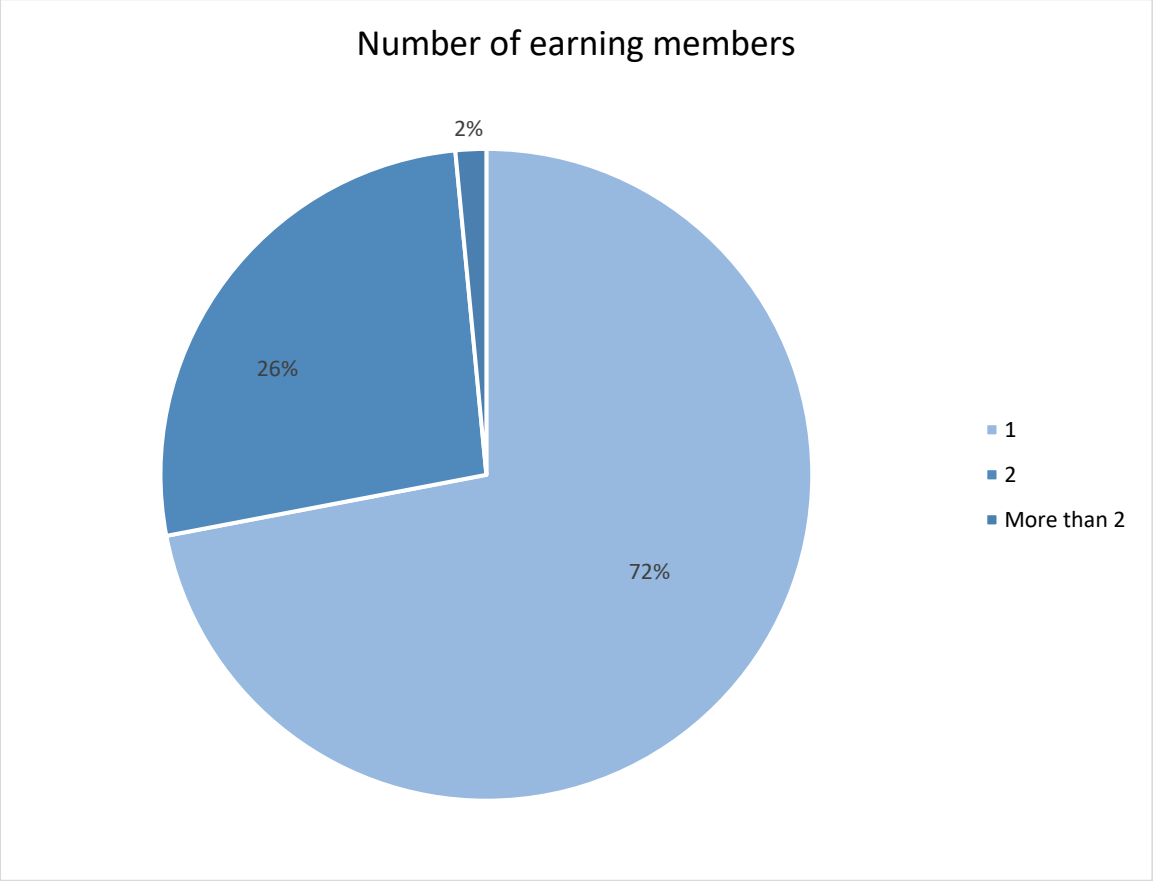
*Interactions with responders have also highlighted the fact that they would not like their children to continue with the occupation perused by them and are willing to educate them for a better life. Most of the respondents have also stated that they have enrolled their children with private schools and also refrain from disclosing their occupation so as to avoid any social stigma to their child.*

*While this seems to be the brighter side interactions with respondents have also revealed that they lack basic information about child birth control measures and do not think about planning a family.*

4.10 Number of earning members in the family of respondents

Table and Figure 4.10

| Parameter | No of responses |
|---|---|
| 1 | 756 |
| 2 | 278 |
| More than 2 | 16 |
| **Total** | **1050** |




**Inference:**

- 72% of the respondents are single earners
- 26% of the respondents are dual earners
- Only 2% of the respondents have more than two members in the family who are earning.

*While the income from waste picking and selling of scrap is already negligent a maximum portion of the population is a single earner thus left with no choice than to opt for this source of income generation from the point of view of basic sustenance for themselves and their family. Interactions with respondents has reinforced the fact that they have chosen this particular occupation also because of the social disparity associated with their cast, creed that stops them from picking up any other employment.*

*Those respondents who are dual or more than two earners in the family have stated that the income from a single person is insufficient for meeting the day-to-day expenses owing to which they also accompany their family members for waste collection.*

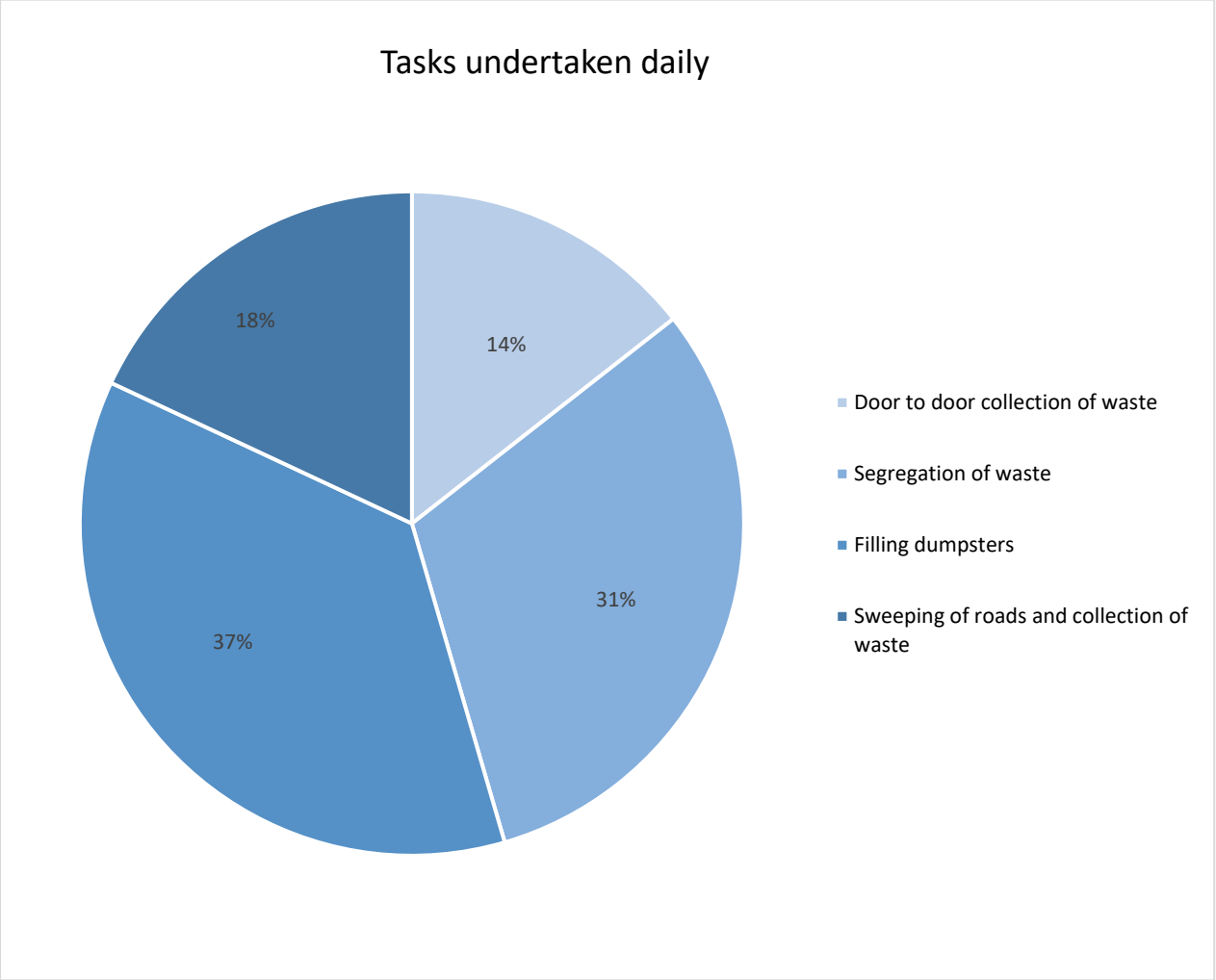
*Some of the respondents are placed on permanent or contractual employment as a dependent benefit since their father or mother is a PMC employee and is nearing retirement or have demised owing to occupational diseases*

***Gender wise data trends:*** *Gender wise bifurcation of responses show a trend that most of the women earners are single earners for their family. Interactions with such respondents have revealed that either they are widowed or if married their husbands refrain from taking up any kind of employment and are mostly addicted to different addictions.*

4.11 Tasks undertaken daily (Respondents have chosen multiple options)

Table and Figure 4.11

| Parameter | No of responses |
|---|---|
| Door to door collection of waste | 400 |
| Segregation of waste | 861 |
| Filling dumpsters | 1011 |
| Sweeping of roads and collection of waste | 500 |
| **Total** | **2772** |



**Inference:**

- 14% of the total respondents for the question have opted for door-to-door collection of waste,
- 31% of the total number of responding have opted for segregation of waste,
- 36% of the respondents have opted for filling of dumpsters,
- 18% of the respondents have opted for sweeping of roads and collection of waste as a part of their daily tasks.

*The primary structure of the tasks undertaken by various respondents as per their job roles has been summarized below:*

- *The sweepers primarily are responsible for sweeping of civic areas and collection of waste on the roadside. They also put it into their allotted community dustbins while doing this they have to bifurcate the waste as wet waste and dry waste.*
- *Door to door collection workers: These are members of the SWaCH coop movement and visit every household for collection of waste. They will fill up this waste in pushing carts and then the segregate the waste as wet waste, dry waste, recyclables and saleable scrap.*
- *Bigari workers: Filling of dumpsters is a major task undertaken by the bigari workers and in some bigger ward offices supported by sweepers and DTDC workers.*

*In this question respondents are allowed to choose multiple options depending upon their job role and therefore the total number of responses received for this question are 2772 on the basis of which the percentage has been calculated.*

**Hypothesis 1:**

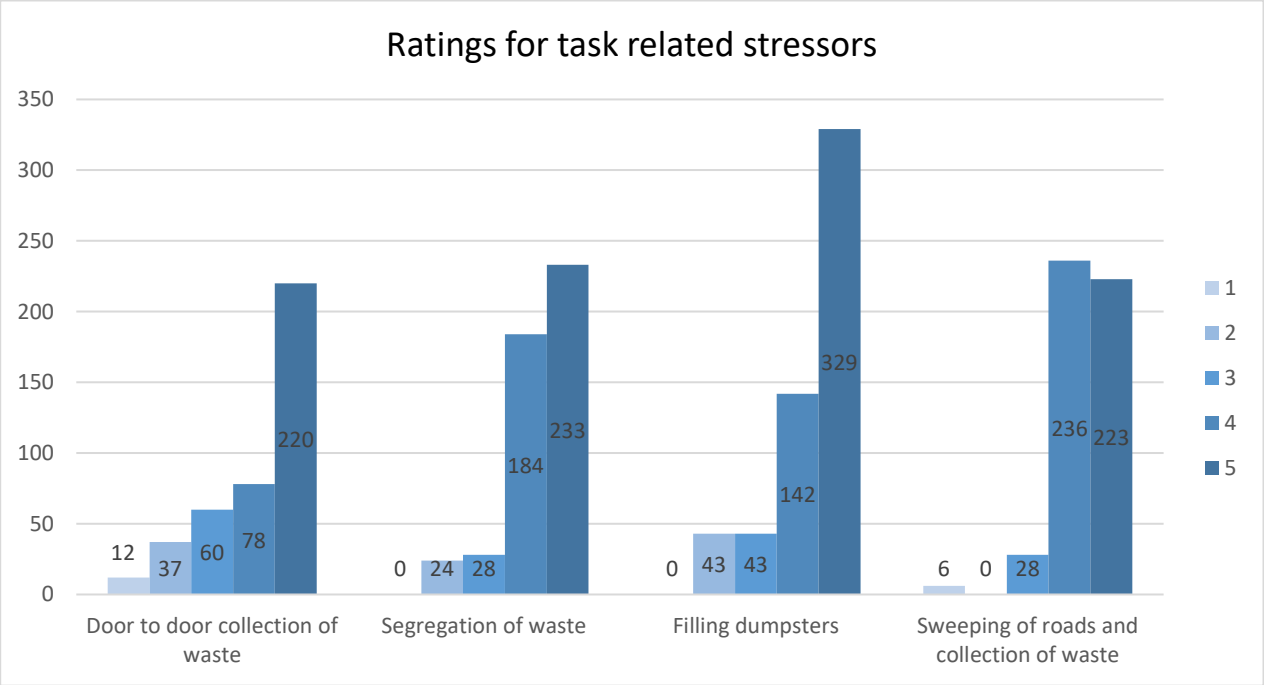
- H0: ***The task related challenges*** have no effect on the physical and mental health of the waste pickers.
- H1: ***The task related challenges*** have an effect on the physical and mental health of the waste pickers.

For Hypothesis 1 the questions from 4.12 to 4.16 have been treated as independent variables.

4.12 Frequency of ratings for task related stressors

Table and Figure 4.12

| Stress arising out of work | No of responses | | | | | **Total** |
|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | |
| Door to door collection of waste | 12 | 37 | 60 | 78 | 220 | 407 |
| Segregation of waste | 0 | 24 | 28 | 184 | 233 | 469 |
| Filling dumpsters | 0 | 43 | 43 | 142 | 329 | 557 |
| Sweeping of roads and collection of waste | 6 | 0 | 28 | 236 | 223 | 493 |




**Inference:**

1. **Door to door collection of waste:** 3% of the respondents have rated the stress arising out of door-to-door collection of waste at 1; 9% of the respondents have rated the stress at rating number 2; 15% of the respondents have rated the stress at rating number 3; 19% of the respondents have rated the rating at number 4; and 54% of the respondents have stated that they experience the highest stress out of door – to door collection of waste.

2. **Segregation of waste:** 0% of respondents have rated their stress at rating number 1; 5% of respondents have rated their stress at rating number 2; 6% of the respondents have rated

their stress at rating number 3; 39% of the respondents have rated their stress at rating number 4; and 50% of respondents have rated their stress at maximum level owing to segregation of waste.

3. **Filling of dumpsters:** 0% of respondents have rated their stress at rating number 1; 8% have rated their stress at rating number 2 and 3 respectively 25% of respondents have rated their stress at rating number 4 and 59% of respondents have rated their stress at rating number 5 for filling of dumpsters.

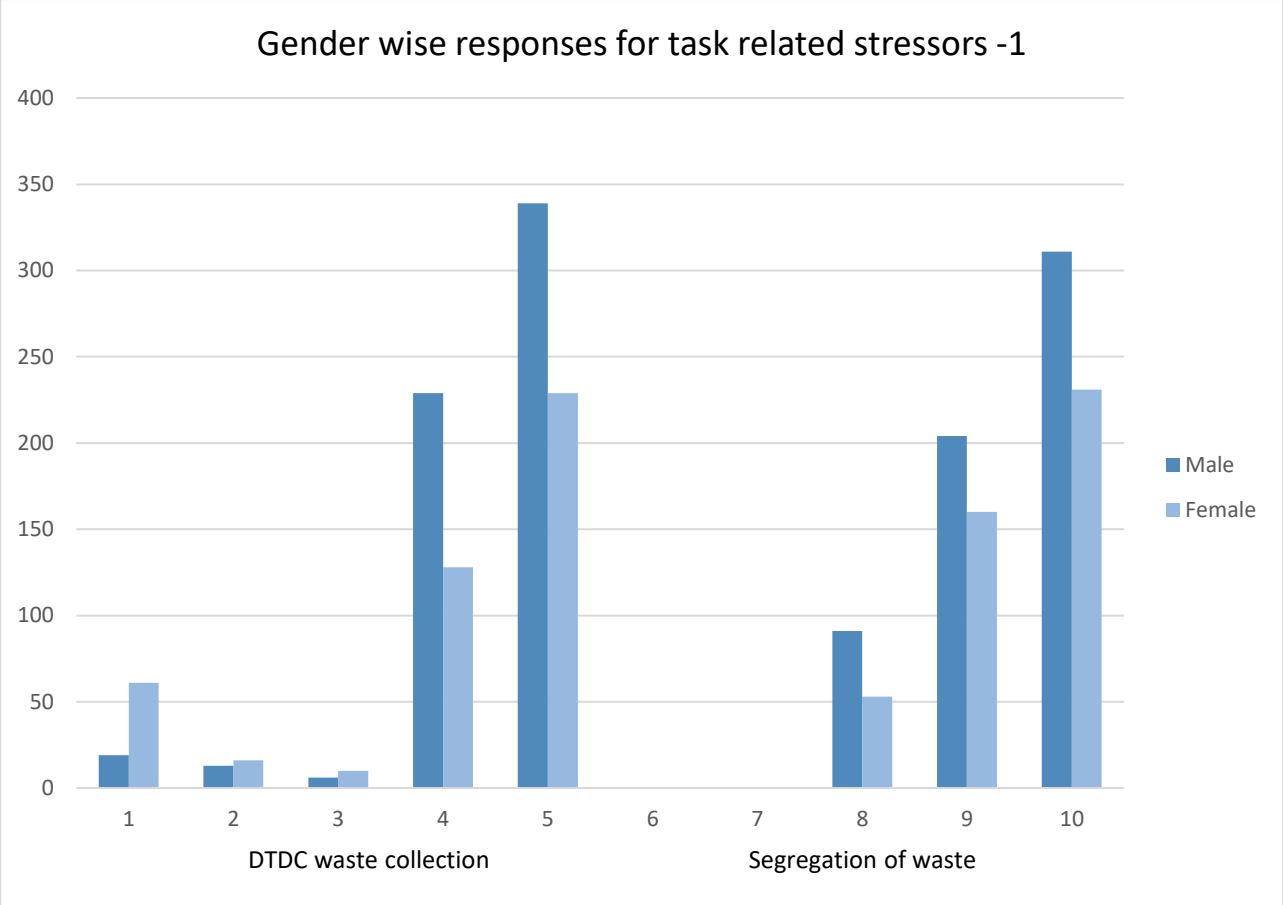
4. **Sweeping of roads and collection of waste**: 1% of respondents have rated their stress at rating number 1, 0% of respondents have rated rating number 2; 6% have rated it at rating number 3; 48% have rated at rating number 4 and 45% rating number 5.

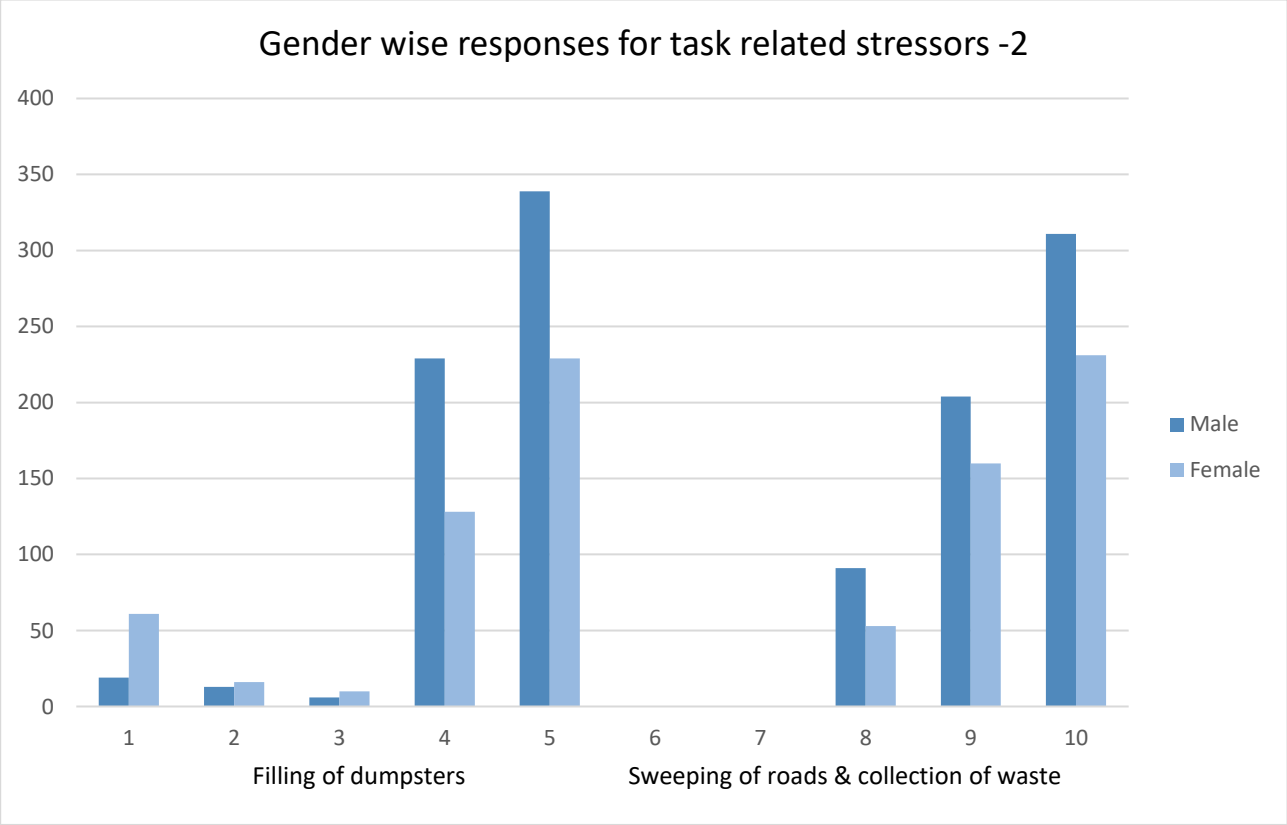
4.12.1 Gender wise frequency of ratings for task related stressors-1 Table and Figure 4.12.1

| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Door to door waste collection** | | | | | **Segregation of waste** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 10 | 29 | 40 | 52 | 97 | 0 | 16 | 17 | 114 | 132 |
| Female | 2 | 8 | 20 | 26 | 123 | 0 | 8 | 11 | 70 | 101 |
| **Total** | **12** | **37** | **60** | **78** | **220** | **0** | **24** | **28** | **184** | **233** |

4.12.2 Gender wise frequency of ratings for task related stressors-2 Table and Figure 4.12.2

| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Filling of dumpsters** | | | | | **Sweeping of roads and collection of waste** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 0 | 33 | 23 | 110 | 168 | 6 | 0 | 17 | 141 | 108 |
| Female | 0 | 10 | 20 | 32 | 161 | 0 | 0 | 11 | 95 | 115 |
| **Total** | **0** | **43** | **43** | **142** | **329** | **6** | **0** | **28** | **236** | **223** |


Gender wise responses for task related stressors -1
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
DTDC waste collection
Segregation of waste
Male
Female


Gender wise responses for task related stressors -2
400
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
Filling of dumpsters
Sweeping of roads & collection of waste
Male
Female

**Inference:**

- **Door -to-door collection of waste**

1. **Males:** 4% of males have rated the stress arising out of door-to-door collection of waste at 1; 13% of them have rated it at 2; 18% of the male respondents have rated their stress levels at 3; 23% of the male respondents have rated their stress at 4; and 43% of the respondents have indicated that they have maximum stress arising out of door-to-door collection of waste.
2. **Female:** 1% of the female respondents have stated that they have minimum stress owing to door-to-door collection of waste; 4% have rated their stress levels at 2; 11% of the female respondents have rated 3; 15% have rated their stress at 4; and 69% of the female respondents have rated the stress 5 which indicates maximum stress for door-to-door collection of waste.

The percentages for this question have been calculated out of 228 for males and 179 for females.

- **Segregation of waste**

1. **Males:** There are no responses for rating 1 for stress arising out of segregation of waste; 6 percent of the male respondents have rated their stress at 2 and 3 respectively; 41% of the male respondents have rated their stress at rating number 4; whereas 47% of the male respondents have rated their stress at rating number 5 for stress arising out of segregation of waste.
2. **Females:** There are no responses for rating 1 for stress arising out of segregation of waste; 4% of the female respondents have rated the stress at rating number 2; 6% responses are for rating number 3; 37% of women respondents have rated their stress at rating number 4 and 53% of the female respondents feel that they have maximum stress owing to segregation of waste.

The percentage is for this question has been calculated out of 279 for males and 190 for females.

- **Filling dumpsters with waste**

1. **Males:** There are no responses for rating number 1 for stress arising out of filling of dumpsters; 10% of the male respondents have rated their stress at rating number 2; 7% of them have rated it at rating number 3; 33% of the male respondents have rated their stress at rating number 4; and 50% of them have agreed that they experience maximum stress while filling dumpsters with waste.

2. **Females:** There are no responses for rating number 1 for stress caused by filling of dumpsters; 4% of the female respondents have rated their stress at rating number 2; 9% of the women respondents have rated it at rating number 3; 14% have rated it at rating number 4 and 72% of women have rated their stress at the maximum rating caused by filling of dumpsters.

The percentage is for this question has been calculated out of 334 for males and 223 for females.

- **Sweeping of roads and collection of waste**

1. **Males:** 2 % of male respondents have rated their stress at the least rating caused by sweeping of roads and collection of waste; there are no responses for rating number 2; 6% of the male respondents have rated their stress at rating number 3; 52% have rated it at rating number 4; and 40% of male respondents have rated at rating number 5 for stress caused by sweeping of roads and collection of waste.
2. **Females:** 3% of female respondents have shown minimum stress for sweeping of roads and waste collection; there are no responses for rating number 2; 8% of women have rated their stress at rating number 3; 64% of women have rated it at rating number 4 and 49% of the women have experienced maximum stress owing to sweeping of roads and collection of waste.

The percentages for this question have been calculated out of 272 for males and 221 for females.

*Thus, it can be concluded that maximum respondents experience the stress on a higher level with rating 4 and 5 for tasks such as door to door collection of waste, segregation of waste filling of the dumpsters and sweeping of roads and collection of waste.*

*Since these are the four tasks of their job profile if the respondents are experience in such high level of stress while for performing these routine tasks, it is an indicator that jobs are prima facie very stressful.*

***Gender wise data trends:*** *The gender wise bifurcation of responses for the above displays a data trend towards women being most stressed with these heavy physical activities as compared to the men. Interactions with women respondents has revealed that all their daily tasks are highly physically stressful to them and they find it straineous to perform these activities on a day today basis.*

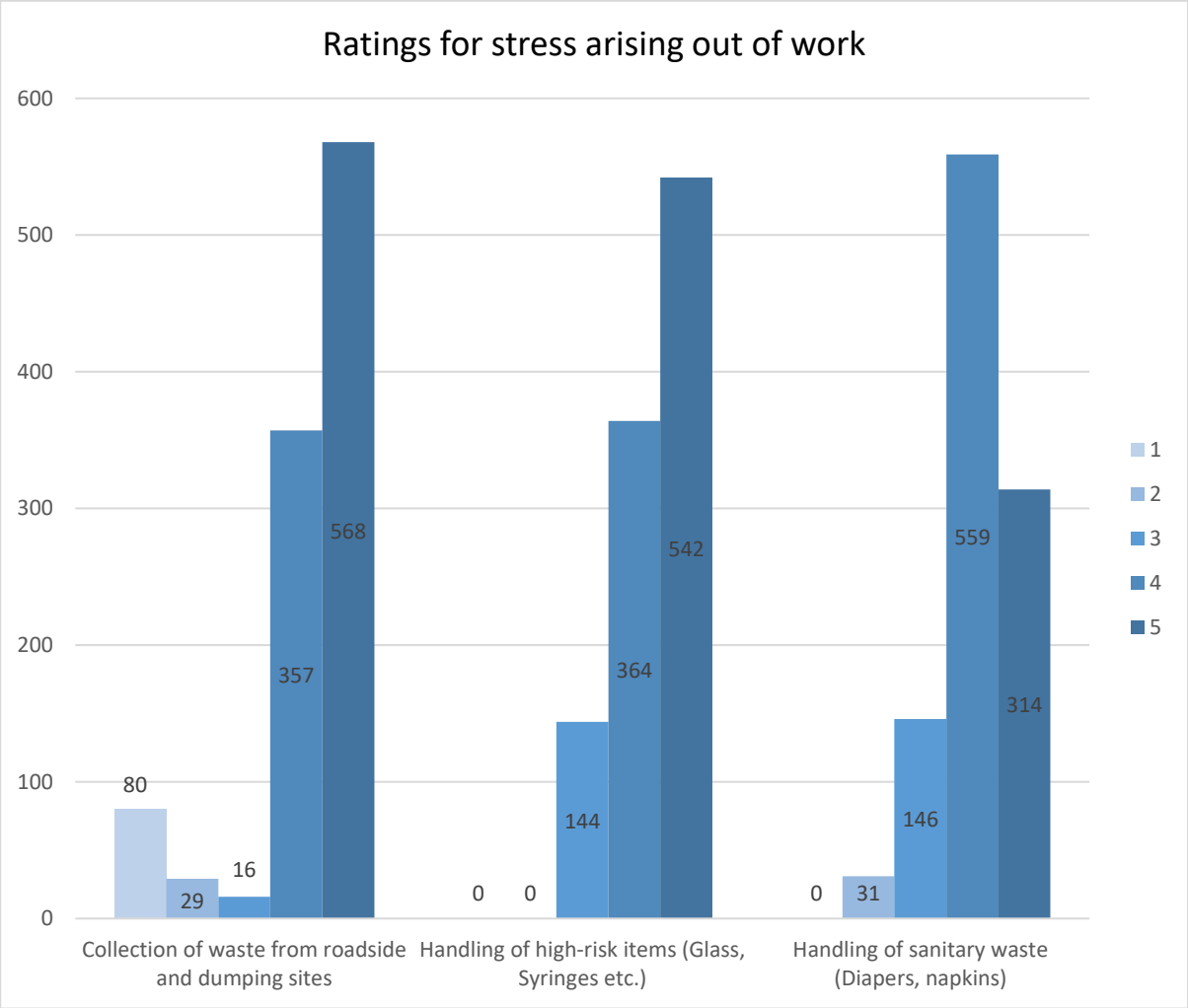
***Age wise data trends:*** *The age wise bifurcation of responses for the above question has displayed a data trend towards the middle-aged respondents from the age group of 29 to 40 being more tired with the tasks. On the contrary respondents post 40 years have rated their stress levels at ratings 2 and 3.*

*Interactions with these respondents have the highlighted the fact that their bodies have now been accustomed to handle such a stress or that the younger generation allows them a certain discount while performing the tasks there by reducing their stress levels.*

4.13 Frequency of ratings for stress arising out of work

Table and Figure 4.13

| Stress arising out of work | No of responses | | | | |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| Collection of waste from roadside and dumping sites | 80 | 29 | 16 | 357 | 568 |
| Handling of high-risk items (Glass, Syringes etc.) | 0 | 0 | 144 | 364 | 542 |
| Handling of sanitary waste (Diapers; napkins) | 0 | 31 | 146 | 559 | 314 |
| **Total** | **80** | **60** | **306** | **1280** | **1424** |



**Inference:**

1. **Collection of waste from road side and dumping site:** 8% of respondents have rated the stress at rating number 1; 3% of respondents have rated it at rating number 2; 2% of respondents have rated rating number 3; where as 34% of respondents have rated it at rating number 4 and 54% of respondents have rated it at rating number 5.

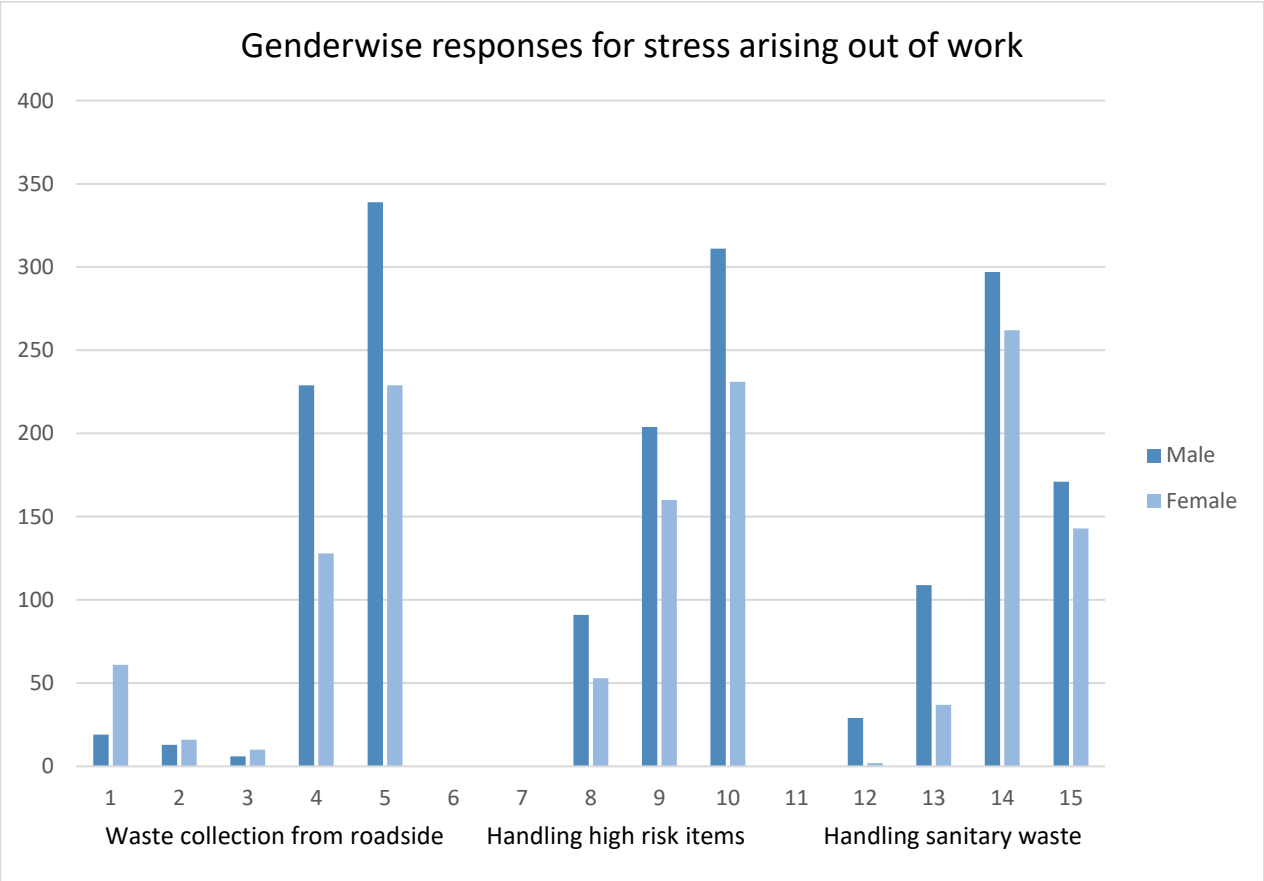
2. **Handling of high-risk items such as broken glass; syringes etc:** 0% of respondents have rated their stress at rating number 1 and 2; 14% of respondents have rated their stress for collection of high-risk items such as broken glass, syringes at rating number 3; 35% of respondents has rated their stress at rating number 4 and 52% of respondents have rated their stress at rating number 5.

3. **Handling of sanitary waste such as diaper and napkins:** 0% of respondents have rated their stress at rating number 1; 3% of respondents have rated their stress at rating number 2; 14% of respondents have rated their stress at rating number 3; 53% of respondents have rated their stress at rating number 4 and 30% of respondents have rated their stress at rating number 5.

4.13.1 Gender wise frequency of ratings for stress arising out of work.

Table and Figure 4.13.1

| Gender | No of responses | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Waste collection from road side and dumping sites** | | | | | **Handling high risk items (Broken glass, syringes)** | | | | | **Handling sanitary waste (Sanitary napkins, diapers)** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 19 | 13 | 6 | 229 | 339 | 0 | 0 | 91 | 204 | 311 | 0 | 29 | 109 | 297 | 171 |
| Female | 61 | 16 | 10 | 128 | 229 | 0 | 0 | 53 | 160 | 231 | 0 | 2 | 37 | 262 | 143 |
| **Total** | **80** | **29** | **16** | **357** | **568** | **0** | **0** | **144** | **364** | **542** | **0** | **31** | **146** | **559** | **314** |



**Inferences:**

- **Waste collection from roadside and dumping sites**

1. **Males:** 3% of male respondents have rated their stress at rating number 1 caused by collection of waste from road side and dumping site; 2 % of them have rated it at rating number 2; 1 % of them have rated it at rating number 3; 38% of the male respondents have rated their stress at rating number 4 and 56% of them have rated it at a maximum stress level.

   This indicates that collection of waste from road side as well as from dumping sites is a very stressful activity.
2. **Females:** 14% of the female respondents have rated the stress arising out of collection of waste from road side and dumping sites at 1; 4% of them have rated it at rating number 2; 2% of them have rated it at rating number 3; 29% of the women have rated the stress arising out of this activity number 4 and 52% of the female respondents experience maximum stress due to collection of waste from roadside and dumping sites.

- **Handling high risk items (Broken glass and syringes)**

Handling high risk items such as broken glass articles, syringes and rusted iron is a major stressor in the waste picking fraternity.

1. **Males:** There are no responses among the male respondents for ratings 1 and 2; 15% of the male respondents have rated the stress arising out of handling high risk items at rating number 3; 34% of them have rated it at rating number 4; whereas 51% of the male respondents have rated their stress at maximum level caused by handling broken glass, used syringes and rusted iron.
2. **Females:** There are no responses from the female respondents for rating number 1 and 2 respectively,12 % of the female respondents have rated their stress at rating number 3; 36% of them rated their stress at rating number 4 and 52% of the women respondents has stated that they experience maximum stress while handling broken glass used syringes and other high-risk items.

- **Handling sanitary waste (Diapers and napkins)**

1. **Males:** There are nil responses from the male respondents for rating number 1 for the stress caused by handling sanitary waste such as used sanitary napkins and soiled diapers; 5% of the male respondents have rated their stress at rating number 2; 18% of the respondents

have rated it at rating number 3; 49% of the male respondents have rated the stress arising out of waste at rating number 4 and 28% of the male respondents have given it a highest rating.

2. **Females:** There are nil responses for stress arising out of rating number 1 and 2 for handling sanitary waste from the female respondents; 18% of the women have rated the stress at rating number 3; 59% of the female respondents have rated the stress arising out of handling used sanitary napkins and diapers at 4; 32% of the women respondents have given this task related stress the highest rating.

*For all the three categories of task related stressors maximum responses are concentrated around ratings 4 and 5. This indicates that problems encountered by the waste picking fraternity on a daily basis add on to their physical stress caused by the performance of tasks. Interactions with respondents has revealed the following problem areas which add to their task related stress:*

1. ***Lack of society or community dustbins:*** *The door-to-door collection workers have stated that in areas where citizens do not have access to large dustbins, they often tend to dumb the waste on the roadside. Citizens also tend to throw the garbage on the roadside in order to avoid the payment of door-to-door collection fees which is a predominant practice in the economically weaker sections of the city.*
2. ***Lack of civic sense regarding segregation of waste:*** *Respondents have also revealed that citizens tend to avoid the segregation of wet and dry waste inside their homes and are often thoughtless about the way they discard high - risk waste and sanitary waste.*

*Respondents have notified the researcher about several incidents where they have experienced injury or trauma due to the handling of high risk and sanitary waste.*

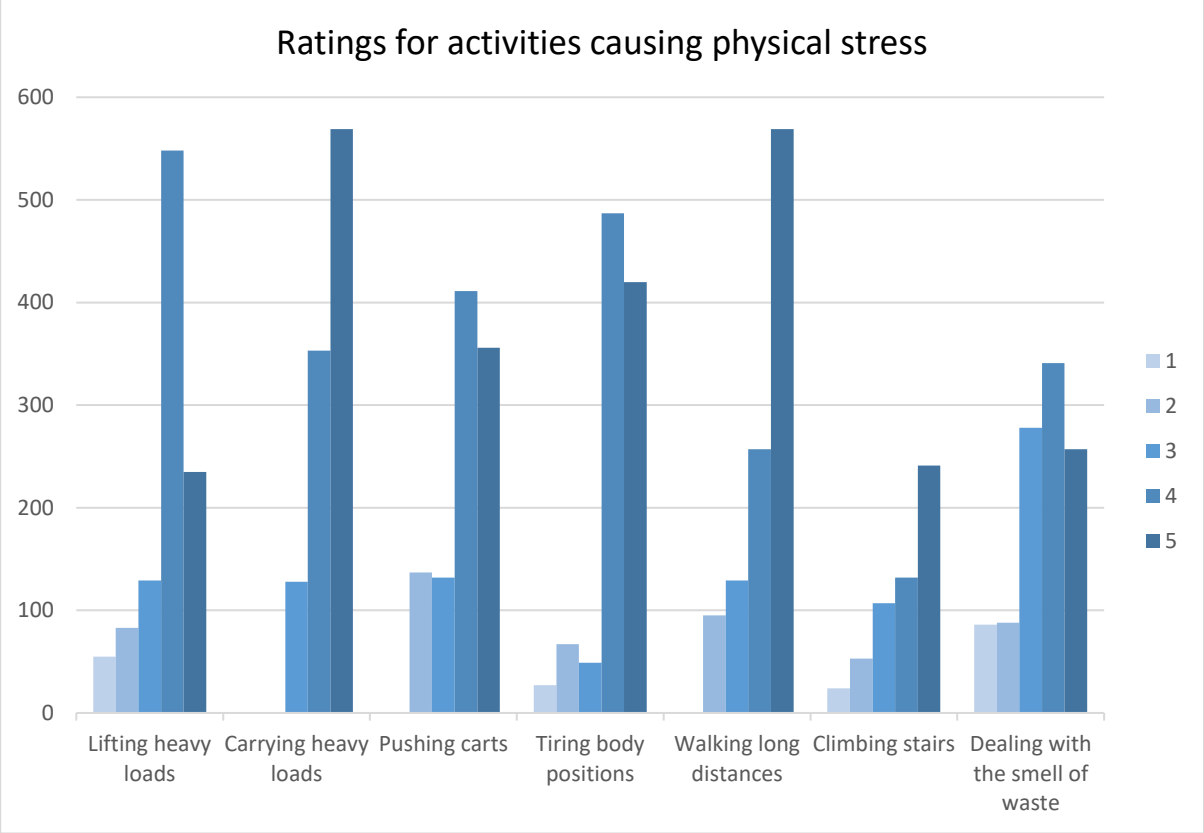
***Gender wise data trends:*** *Gender wise bifurcation of these responses has revealed the data trend that women have shown lower stress levels as compared to the men.*
*The researcher concludes that this could be attributed to women being more careful during the process of segregation of waste. Male respondents have particularly displayed high dislike for handling unpacked sanitary waste such as sanitary napkins, tampons, condoms and soiled diapers.*

***Age wise data trends:*** *Age wise bifurcation of the responses has shown a concentration of high stress among the younger respondents as compared to the older respondents. The researcher concludes that the stress decreases as the age of the respondents goes on increasing since the waste pickers seem to be becoming accustomed to these challenges over a period of time.*

4.14 Frequency of ratings for activities causing physical stress

Table and Figure 4.14

| Stress arising out of physical activities | No of responses | | | | |
|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** |
| Lifting heavy loads | 55 | 83 | 129 | 548 | 235 |
| Carrying heavy loads | 0 | 0 | 128 | 353 | 569 |
| Pushing carts | 0 | 137 | 132 | 411 | 356 |
| Tiring body positions | 27 | 67 | 49 | 487 | 420 |
| Walking long distances | 0 | 95 | 129 | 257 | 569 |
| Climbing stairs | 24 | 53 | 107 | 132 | 241 |
| Dealing with the smell of waste | 86 | 88 | 278 | 341 | 257 |
| **Total** | **192** | **523** | **952** | **2529** | **2647** |



**Inference:**

1. **Lifting heavy loads:** 5% of respondents have rated their stress at rating number 1; 8% of respondents have rated their stress at rating number 2; 12% of respondents have rated their stress at rating number 3; 52% of respondents have rated their stress at rating number 4 and 22% of respondents have stated that they experience maximum stress due to lifting heavy loads.

2. **Carrying heavy loads:** 0% of respondents have rated their stress at rating number 1 and 2 respectively; 2% of respondents have rated their stress at rating number 3; 34% of respondents separated their rating number 4; and maximum of 54% of respondents have rated at rating number 5 for stress caused by the carrying of heavy loads on their heads or backs.

3. **Pushing carts:** 0% of responded have rated their stress at rating number 1; 13% of respondents have rated their stress at rating number 2 and 3 respectively; 40% of respondents have rated their stress at rating number 4; and 34% of respondents have stated that they experience maximum stress going to pushing heavy carts for a long distance.

4. **Tiring body positions:** 3% of respondents have rated their stress at rating 1; 6% of respondents have rated at rating number 2; 5% of respondents have rated their stress at rating number 3; 46% of respondents have rated their stress at rating number 4; 40% of respondents have rated their stress at rating number 5. Thus, indicating that tiring body positions such as sitting on one's knees or bending down and working are causing maximum stress to the waste pickers.

5. **Walking long distances:** 0% of respondents have rated the stress at 1; 9% of respondents have rated the stress at rating number 2; 12% of respondents have rated the stress at rating number 3; 24% of respondents have rated their stress at rating number 4 and 54% of respondents which is the maximum response received is for rating number 5.

6. **Climbing stairs:** 4% respondents have rated their stress at rating number 1; 10% of respondents have rated their stress at rating number 2; 19% of respondents have rated their stress at rating number 3; 24% of respondents have rated their stress at rating number 4 and

43% of respondents have rated as stress at rating number 5 for climbing of stairs.

7. **Dealing with the smell of waste:** 8% of respondents have rated their stress at rating number 1 and 2 respectively; 26% of respondents have rated their stress at rating number 3; 32% of respondents have rated their stress at rating number 4 and 24% of respondents have rated their stress at rating number 5. This stress arises out of dealing with the smell of waste.

4.14.1 Gender wise frequency for activities causing physical stress-1

Table and Figure 4.14.1

| Gender | No of responses | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Lifting heavy loads** | | | | | **Carrying heavy loads** | | | | | **Pushing carts** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 41 | 81 | 59 | 325 | 100 | 0 | 0 | 83 | 213 | 310 | 0 | 75 | 81 | 246 | 197 |
| Female | 14 | 2 | 70 | 223 | 135 | 0 | 0 | 45 | 140 | 259 | 0 | 62 | 51 | 165 | 159 |
| **Total** | **55** | **83** | **129** | **548** | **235** | **0** | **0** | **128** | **353** | **569** | **0** | **137** | **132** | **411** | **356** |

4.14.2 Gender wise frequency for activities causing physical stress-2

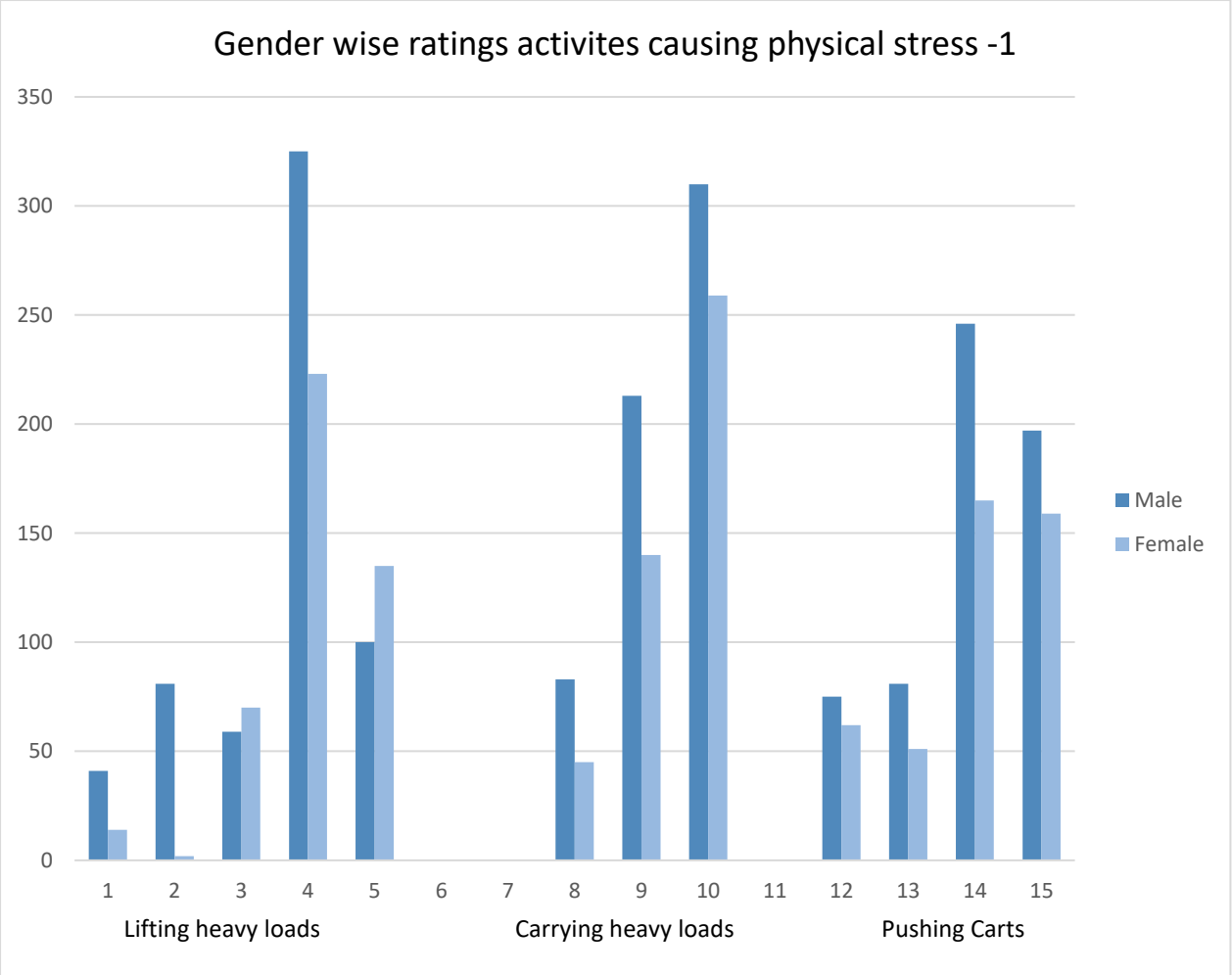
Table and Figure 4.14.2

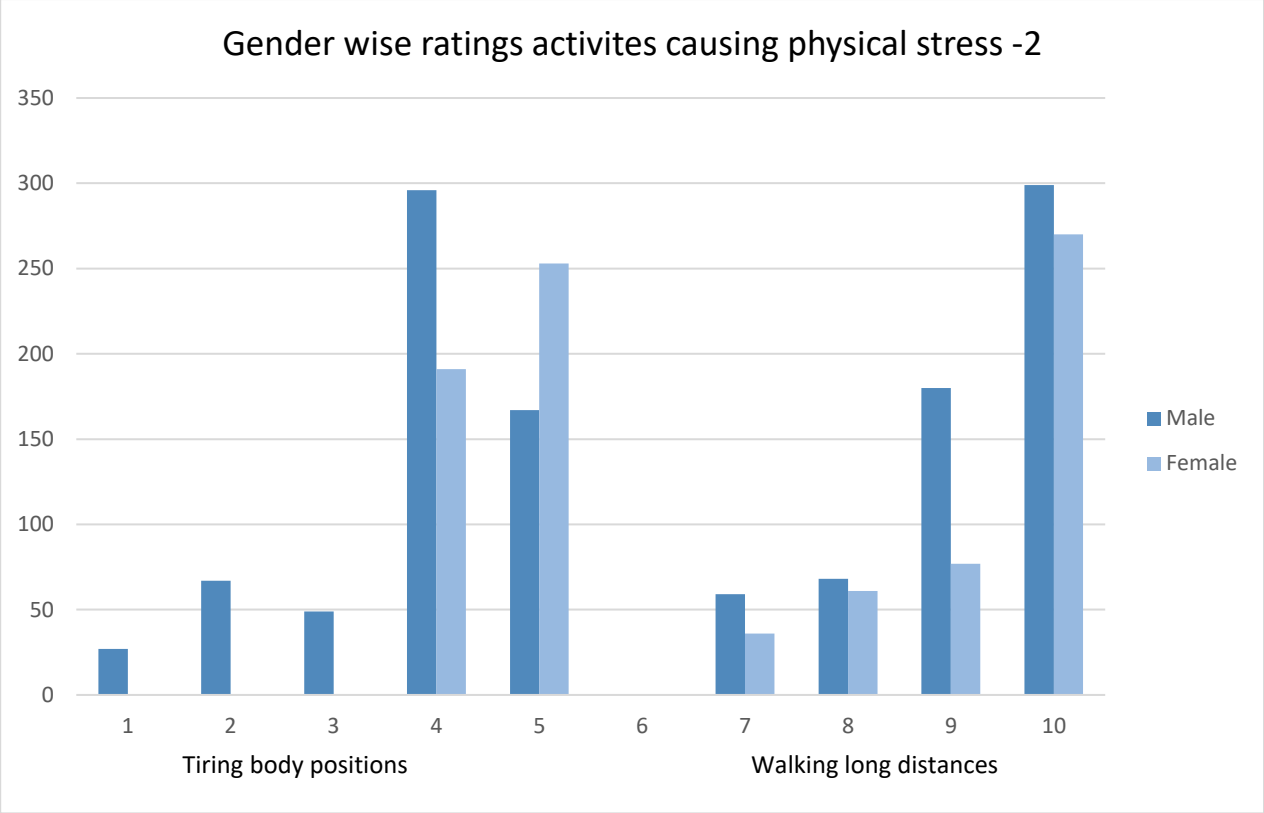
| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Tiring body positions** | | | | | **Walking long distances** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 27 | 67 | 49 | 296 | 167 | 0 | 59 | 68 | 180 | 299 |
| Female | 0 | 0 | 0 | 191 | 253 | 0 | 36 | 61 | 77 | 270 |
| **Total** | **27** | **67** | **49** | **487** | **420** | **0** | **95** | **129** | **257** | **569** |

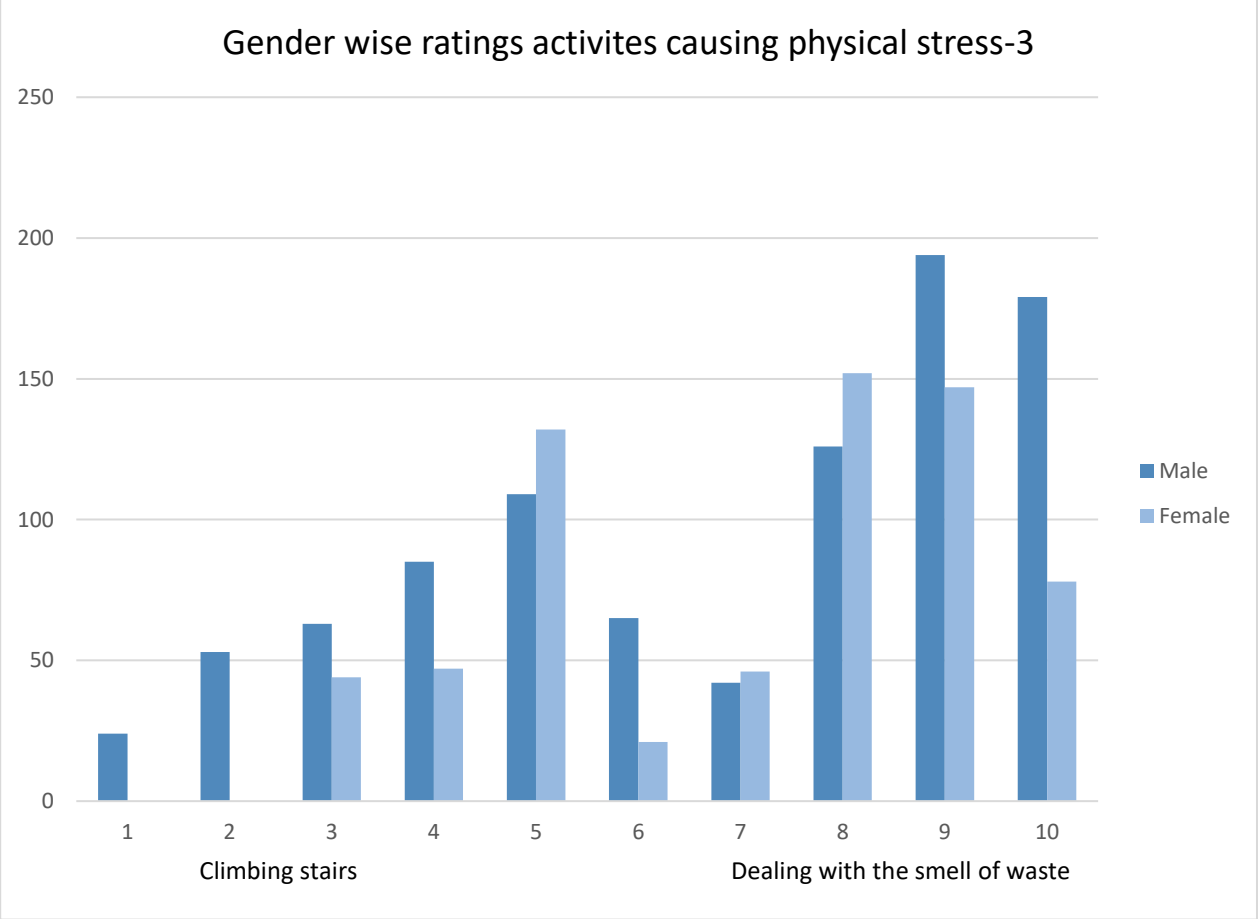
4.14.3 Gender wise frequency for activities causing physical stress-3

Table and Figure 4.14.3

| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Climbing stairs** | | | | | **Dealing with the smell of waste** | | | | |
| | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Male | 24 | 53 | 63 | 85 | 109 | 65 | 42 | 126 | 194 | 179 |
| Female | 0 | 0 | 44 | 47 | 132 | 21 | 46 | 152 | 147 | 78 |
| **Total** | **24** | **53** | **107** | **132** | **241** | **86** | **88** | **278** | **341** | **257** |




Gender wise ratings activites causing physical stress -2
350
300
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
Tiring body positions
Walking long distances
Male
Female


Gender wise ratings activites causing physical stress-3
250
200
150
100
50
0
1
2
3
4
5
6
7
8
9
10
Climbing stairs
Dealing with the smell of waste
Male
Female

**Inferences:**

- **Lifting heavy loads**

1. **Males:** 7% of the male respondents have rated the stress caused by lifting heavy loads at rating number 1; 13% of the men have rated it at rating number 2; 10% of them have rated it at rating number 3; 54% of the male respondents have rated the stress arising out of lifting heavy loads at rating number 4; and 17% of them have allotted a maximum rating to the stressor.
2. **Females:** 3% of the female respondents feel minimum stress due to lifting heavy loads; there are nil responses for rating number 2; 16% of the women have rated the stress at rating number 3; 50% of them have rated it at rating number 4 and 30% of the women have rated the stress caused by lifting heavy loads at maximum level.

- **Carrying heavy loads**

1. **Males:** There are nil responses from the male respondents for ratings 1 and 2 for stress caused by carrying heavy loads on shoulders or head; 14% of the respondents have rated the stress at rating number 3; 35% of the male respondents have rated it at rating number 4 and 51% of the men have rated it at rating number 5.
2. **Females:** There are nil responses for ratings 1 and 2 for stress arising out of carrying heavy loads; 10% of the women respondents have rated this stress at rating number 3; 32% of them rating number 4 and 58% of the female respondents have rated the stress arising out of carrying heavy loads on rating number 5.

- **Pushing carts**

1. **Males:** There are nil responses for rating number 1 for stress caused by pushing carts; 12% of the male respondents have rated this stress at rating number 2; 13% of them have rated it at rating number 3; 41% of the men have rated the stress arising out of pushing carts at rating number 4 and 33% of them have given it a maximum rating.
2. **Females:** There are nil responses for stress arising out of pushing carts by the women respondents; 14% of the female respondents have given this stressor rating number 2 ;11% of them have rated the stress at rating number 3; 37% of the women respondents have rated the stress arising out of pushing carts at rating number 4 and 36% of them have rated it at rating number 5.

- **Tiring body positions**

1. **Males:** 4% of the male respondents have rated the stress arising out of tiring body positions at rating number 1; 11% of them have rated it at rating number 2; 8% of them have rated it at rating number 3; 49% of the men have rated the stress arising out of tiring body positions at rating number 4 and 28% of men have rated the stress at the maximum rating.
2. **Females:** It is noteworthy that there are nil responses for rating numbers 1 to 3 from the female respondents; 43% of the women have rated the stress arising out of tiring body positions at rating number 4 and the rest 57% have chosen rating number 5.

- **Walking long distances**

1. **Males:** There are nil responses from the male respondents for rating number 1; 10% of the men have rated the stress arising out of walking long distances at rating number 2; 11% of them have rated it at rating number 3; 30% of the men rated the stress from walking long distances at rating number 4 and 49% of them have rated the stress at the maximum rating.
2. **Females:** There are nil responses from the female respondents for rating number 1; 8% of the women have rated their stress at rating number 2; 14% of them have rated it at rating number 3; 17% have rated at rating number 4 and 61% of the women experience maximum stress due to walking long distances every day.

- **Climbing stairs**

1. **Males:** 7% of the male respondents have rated the stress arising out of climbing stairs at rating number 1; 16% of them have rated it at rating number 2; 19% of the males have rated the stress arising out of climbing stairs every day at rating number 3; 25% of the respondents have rated it at rating number 4 and 33% of the men have rated the stress arising out of climbing stairs every day at rating number 5.
2. **Females:** 0% of them have rated the stress arising out of climbing stairs at ratings number 1 and 2 respectively; 20% of the women have rated the stress at rating number 3; 21% of the females have rated the stress arising out of climbing stairs at rating number 4 and 59% of the females have given this task a maximum stress rating.

- **Dealing with the smell of waste:**

1. **Males:** 11% of the male respondents feel the least stress caused by the smell of waste; 7% of the men have respondents to this stressor at rating number 2, 21% of them have rated it

at rating number 3, 32% of the men have rated this particular stressor at rating number 4 and 30% of the man experience maximum stress while dealing with the smell of waste.

2. **Females:** 5% of the women have rated the stress caused by the smell of waste at rating number 1; 10% of the women have rated the stress at rating number 2; 34% of them have rated it at rating number 3; 33% of the women have rated the stress at rating number 4 and 18% of the women have given the maximum rating for the stress caused by the smell of waste.

*For the above activities that cause physical stress the ratings from the respondents are concentrated around 3,4 and 5. Thus it is safe to conclude that daily physical movements such as lifting and carrying heavy loads, working in tiring body positions, climbing stairs, walking long distances, pushing carts and dealing with the smell of waste have a heavy toll on the physical health of the waste picking fraternity.*

- ***Lifting and carrying heavy loads:*** *Interactions with respondents has revealed that they have to lift heavy loads while filling of dumpsters all the bigari respondents have rated their stress for this particular factor at 5.*
- ***Walking long distances:*** *Interactions with the DTDC workers has highlighted the fact that they take away the saleable scrap from the spot of waste collection and walk up to a long distance for the sale of same either with some scrap dealers or predominantly in the Zuna Bazar area of Pune city. DTDC workers have also stated that on an average on a daily basis they climb up to 50 floors during the waste collection process.*
- ***Tiring body positions:*** *Also visits to waste collection sites by the researcher has brought fore the fact that since the waste pickers have no appropriate area for waste segregation, they often sit on their haunches straining their lower back or bend down in heaps of waste during the segregation process.*
- ***Pushing of carts:*** *Respondents have also stated that pushing of carts especially on slopes, uneven roads and broken pavements is a cumbersome activity. Combining this activity with daily traffic, maintaining road safety, and preserving physical strength is a tough task.*
- ***Smell of waste:*** *Respondents have also stated that one of the continuous stressors is the fact that they have to deal with the smell of waste.*

***Gender wise data trends****: Gender wise bifurcation of these responses has displayed a data trend of women being more affected by these challenges as compared to the men. The*

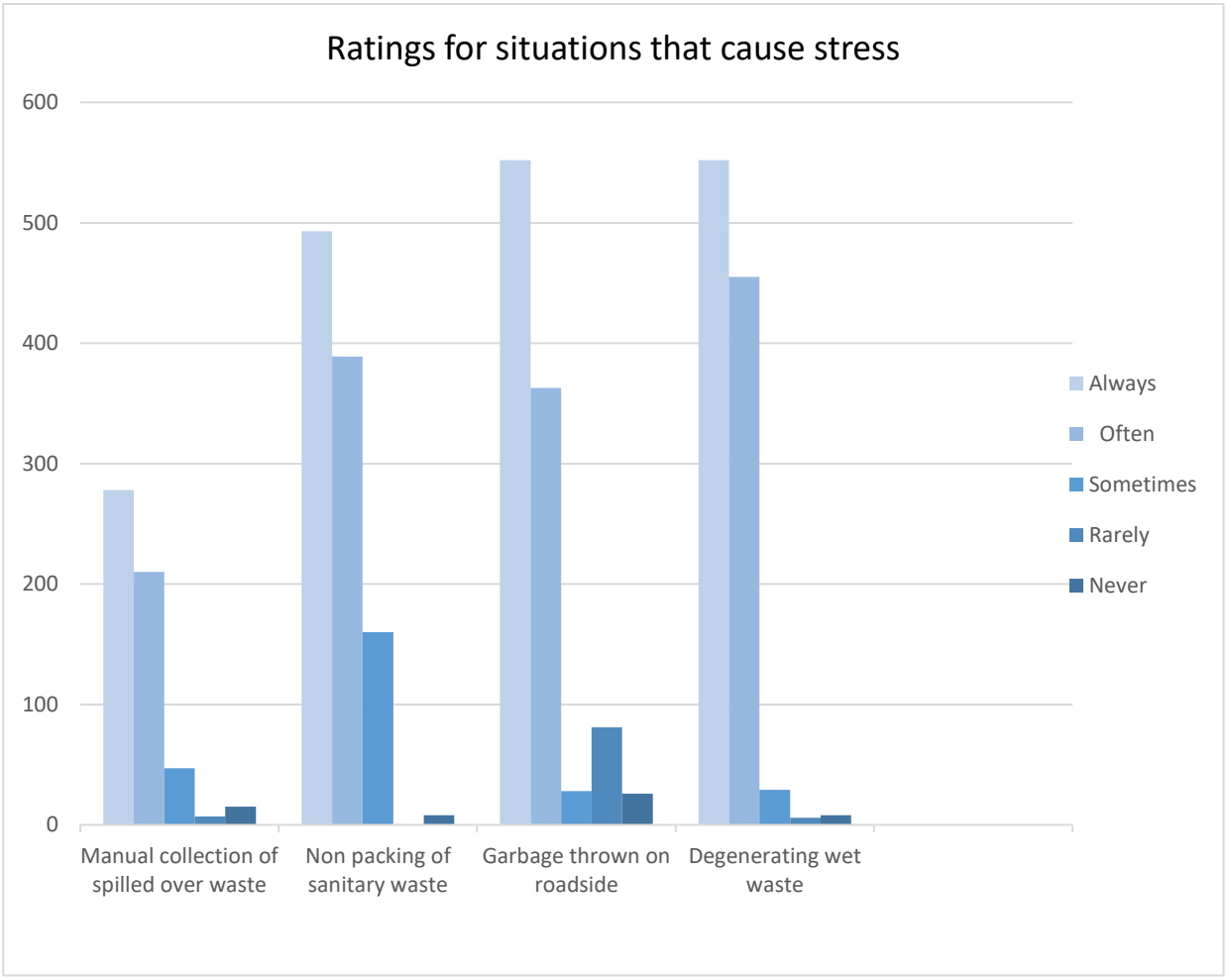
*researcher would thus like to conclude that the above mention stressors are more taxing and cumbersome to the women in the task force.*
*Female respondents have also stated with that their biological body cycles and maternity add on to their stress caused by these heavy physical activities.*

***Age wise data trends:*** *Age wise bifurcation of responses has displayed a data trend with respondents below 18 being more stressed and the stress levels gradually decreasing as the age of the respondents progresses. Thus, it can be concluded that these physically taxing activities have a heavy toll on the minor respondents. Interactions have also revealed that the older respondents have either made provisions to share their workload with the younger generations by giving them part of their salary or in some of the ward offices are voluntarily given relatively less physical labour.*

4.15 Frequency of ratings for situational stressors

Table and Figure 4.15

| Stress arising out of following situations | No of responses | | | | |
|---|---|---|---|---|---|
| | **Always** | **Often** | **Sometimes** | **Rarely** | **Never** |
| Manual collection of spilled over waste | 278 | 210 | 47 | 7 | 15 |
| Non packing of sanitary waste | 493 | 389 | 160 | 0 | 8 |
| Garbage thrown on roadside | 552 | 363 | 28 | 81 | 26 |
| Degenerating wet waste | 552 | 455 | 29 | 6 | 8 |
| **Total** | **1875** | **1417** | **264** | **94** | **57** |



**Inference:**

1. **Manual collection of spilt over waste:** 50% of respondents have stated that they *always* experience stress while collecting waste manually; 38% of the respondents have stated that they *often* experience stress; 8% of the respondents have stated that they *sometimes* experience stress; 1% of the waste pickers have stated that they *rarely* experience stress during the manual collection of spilt over waste whereas 3% of respondents have stated that they *never* find manual collection of spilt over waste stressful. *For this parameter only the DTDC workers have been considered since it their jo to pick waste around community bins.*

2. **Non packing of sanitary waste:** 47% of the respondents have stated that they are *always* stressed due to unpacked sanitary waste; 37% of the respondents have stated that they *often* find its stressful to find non packed sanitary waste; 15% of the respondents have stated that they *sometimes* find the situation stressful and 0% of respondents have stated that they *rarely* find it stressful and 1% of the respondents have stated that they *never* find it stressful to deal with unpacked sanitary waste.

3. **Garbage thrown on the roadside:** 53% of the respondents have stated that they *always* find it stressful to deal with the garbage thrown on the road side; 35% of the respondents stated that they *often* find the situation stressful 3% have rated *sometimes* and 8% have rated their stress at *rarely* while only 2% state that they *never* find garbage on the roadside as a stressor.

4. **Degenerating wet waste:** 53% of the respondents has stated that they *always* find degenerating wet waste stressful; 43% have rated their stress at *often;* 3% have rated their stress at *sometimes* and 1% percent have treated their stress at *rarely* and *never* respectively.

4.15.1 Gender wise frequency of ratings situations that cause stress-1

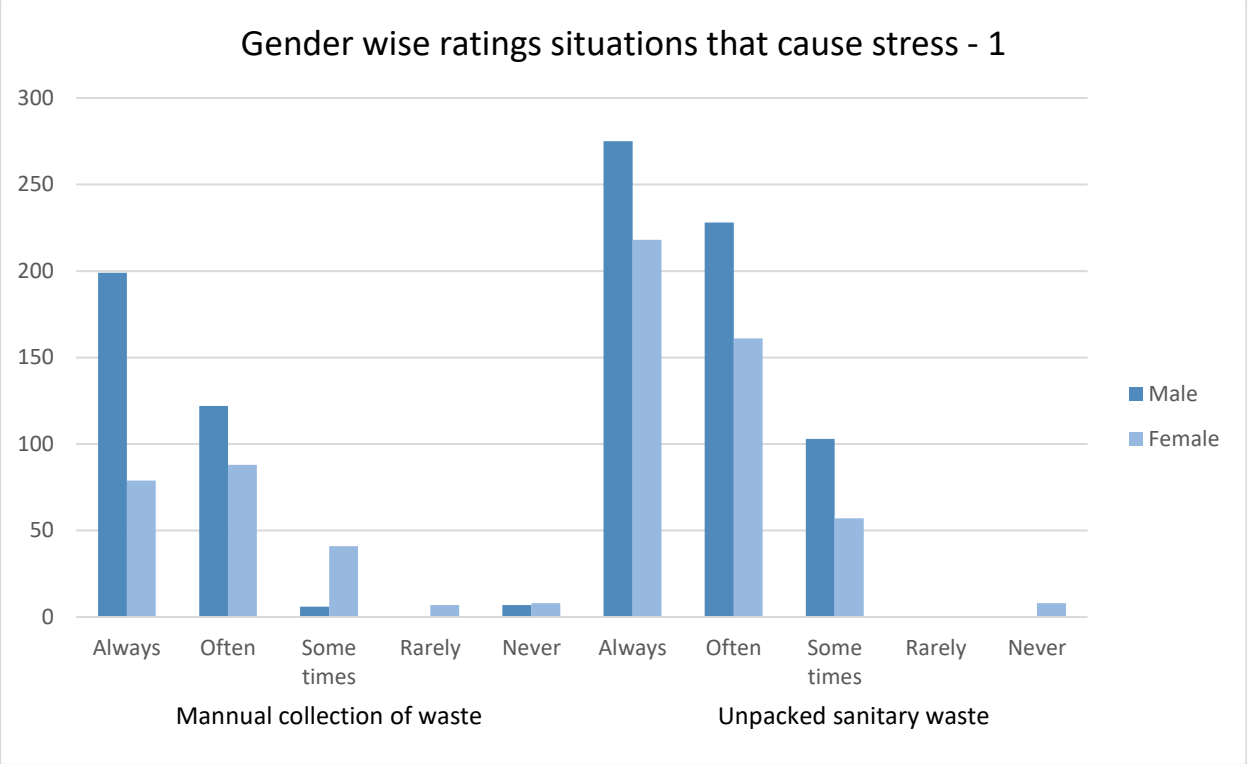
Table and Figure 4.15.1

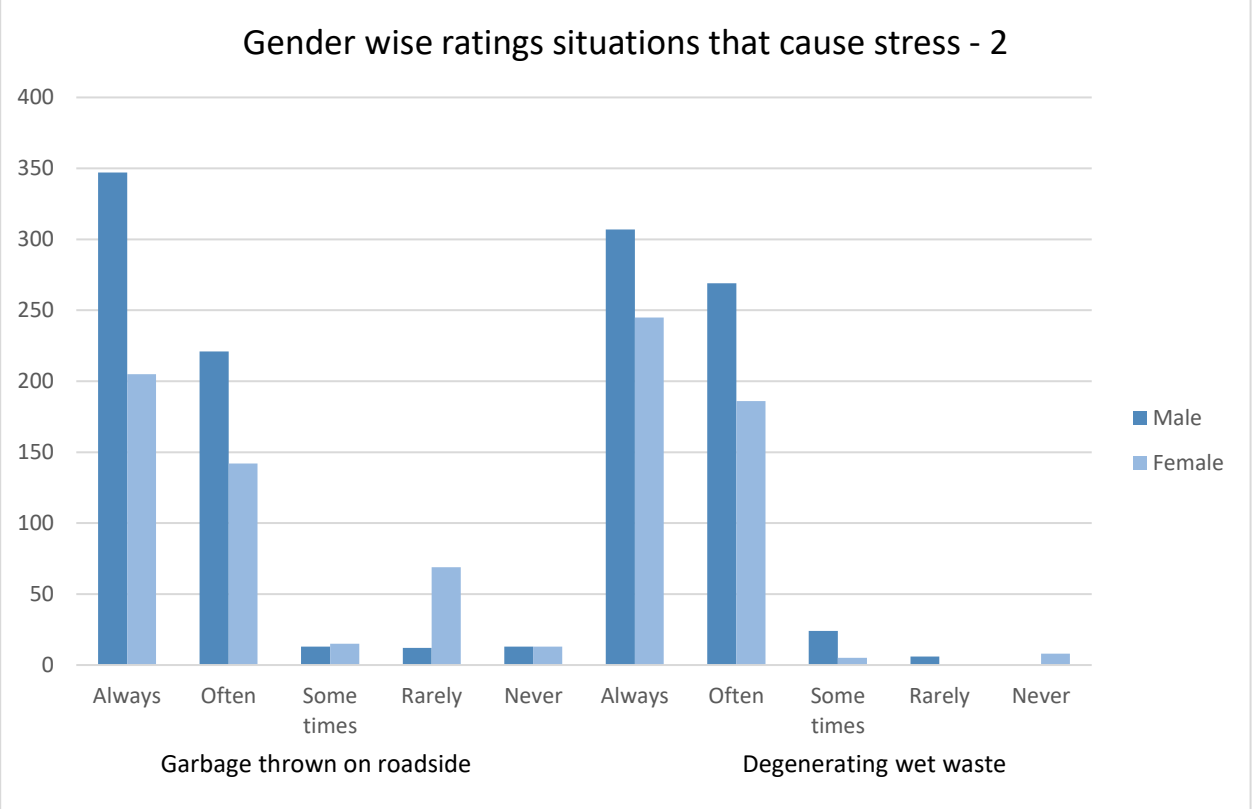
| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Manual collection of waste** | | | | | **Non packing of sanitary waste** | | | | |
| | Always | Often | Some times | Rarely | Never | Always | Often | Some times | Rarely | Never |
| Male | 199 | 122 | 6 | 0 | 7 | 275 | 228 | 103 | 0 | 0 |
| Female | 79 | 88 | 41 | 7 | 8 | 218 | 161 | 57 | 0 | 8 |
| **Total** | **278** | **210** | **47** | **7** | **15** | **493** | **389** | **160** | **0** | **8** |

4.15.2 Gender wise frequency of ratings situations that cause stress-2

Table and Figure 4.15.2

| Gender | No of responses | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Garbage thrown on roadside** | | | | | **Degenerating wet waste** | | | | |
| | Always | Often | Some times | Rarely | Never | Always | Often | Some times | Rarely | Never |
| Male | 347 | 221 | 13 | 12 | 13 | 307 | 269 | 24 | 6 | 0 |
| Female | 205 | 142 | 15 | 69 | 13 | 245 | 186 | 5 | 0 | 8 |
| **Total** | **552** | **363** | **28** | **81** | **26** | **552** | **455** | **29** | **6** | **8** |


Gender wise ratings situations that cause stress - 1
300
250
200
150
100
50
0
Always
Often
Some times
Rarely
Never
Always
Often
Some times
Rarely
Never
Male
Female
Mannual collection of waste
Unpacked sanitary waste


Gender wise ratings situations that cause stress - 2
400
350
300
250
200
150
100
50
0
Always
Often
Some times
Rarely
Never
Always
Often
Some times
Rarely
Never
Male
Female
Garbage thrown on roadside
Degenerating wet waste

**Inferences:**

- **Manual collection of waste:**

1. **Males**: 60% of the men *always* feel stressed due to manual collection of waste; 37% of them of *often* experience stress when they have to touch the waste; 2% of them feel stressed *sometimes;* there are no responses for the option *rarely* and only 2% of the men have stated that they *never* feel stressed while touching waste with their hands.
2. **Females:** 35% of the females *always* feel stressed since they have to collect the waste and segregate it manually; 39% of them of an experience this emotion *often*; 18% of them are *rarely* stressed; whereas only 4% of the women *never* experience stress while manually collecting the waste.

- **Non-packing of sanitary waste:**

1. **Males:** 45% of the men *always* feel distressed because of lack of packing of the sanitary waste; 38% of them are *often* stressed in the situation; 17% of them experience stress *sometimes* and there are no responses for *rarely* and *never*.
2. **Females:** 49% of the women are *always* distressed while handling unpacked sanitary waste; 36% of them *often* experience stress; 13% of them *sometimes* experience it; there are no responses for *rarely* and 2% of the women have stated that they do not mind handling unpacked sanitary waste.

- **Garbage thrown on the roadside:**

1. **Males:** 57% of them have stated that they *always* feel stressed while picking up and segregating the garbage thrown on the roadside; 36% of them have rated this stressor at *often* and 2% of the male respondents' experience stress *sometimes, rarely, and never* respectively.
2. **Females:** 46% of the women respondents have stated that they *always* feel stressed while picking up and segregating the garbage thrown on the roadside; 32% of them have rated this stressor at *often*; 3% of them have rated the stress at *sometimes*; 16% of the women feel that they are *rarely* stressed owing to garbage thrown on the roadside; whereas 3 % have rated this stress at *never.*

- **Degenerating wet waste:**

1. **Males:** 51% of the respondents have stated that they are *always* stressed because of degenerating wet waste; 44% of the men *often* feel stressed in this situation; 4% of them have rated the stress at *sometimes;* 1 % have rated it at *rarely* and there are no responses for the option *never.*
2. **Females:** 55% of the women *always* experience stress while handling wet waste; 42% of them have rated the stress at *often*; 1 % of the women have rated their stress at *sometimes;* there are no responses for the option *rarely;* 2 % of the women have stated that they *never* experience stress while handling degenerating wet waste.

*For the above question and the situations mentioned therein most of the respondents have recorded their ratings at always and often. Negligent number of ratings are seen to be coming for the options sometimes, rarely and never. From the above inferences it can be concluded that the situations mentioned above are everyday occurring phenomena that routinely cause stress among the waste pickers.*

*Interaction with respondents have revealed that they always find manual collection of waste materials a tedious task. The sweepers have stated that they are given merely two small pieces of tin sheet as waste picking tools. Often the sweepers tend to use their bare hands in order to fill the waste that cannot be lifted with the tin sheets.*

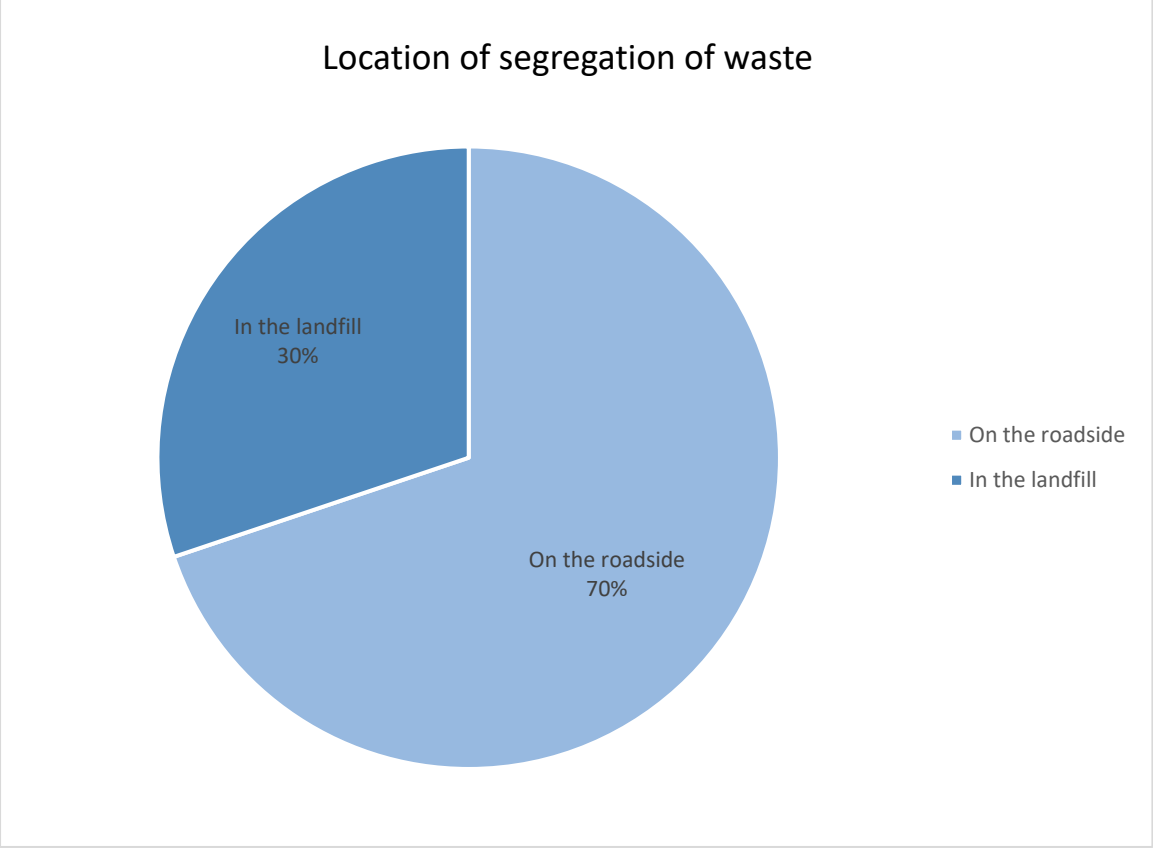
*DTDC workers on the other hand have stated that citizens are often negligent while putting their waste in community dustbin causing huge amount of spillage. This waste has to then be collected manually by the waste pickles. Also, most citizens avoid the usage of garbage liners in their dustbins causing the DTDC workers to directly touch the waste while handling.*

*Respondents have also stated that handling unpacked sanitary waste is a commonly occurring situation resulting in continuous stress. This waste when mixed with the domestic wet waste and in unpacked form has to be manually segregated for the purpose of incineration.*

4.16 Locations of segregation of waste

Table and Figure 4.16

| Parameter | No of responses |
|---|---|
| On the roadside | 389 |
| In the landfill | 168 |
| In a separate covered area | 0 |
| Other | 0 |
| **Total** | **557** |



**Inference:**

- 70% of the respondents have stated that they segregate the wet and dry waste on the roadside;
- 30% of respondents have stated that they do it in the land fill areas whereas;
- 0% responses have been received for segregation of waste in a separate covered area.

*For the above question maximum responses have been recorded for segregation of waste taking place along the roadside. Very few respondents have stated that they segregate the waste in the land fill areas.*

*Respondents have revealed that they have no separate covered areas for the segregation of waste apart from gated society communities. Also, at times their Aarogya kothis are standalone rooms on busy roads, basements of apartments or buildings, vacant classrooms in Government schools etc. These locations are not feasible for them from the point of view of carrying the waste and segregating it over there.*

*Respondents have also shared instances of methane gas leaks and situations of physical and sexual abuse in the land fill areas therefore most respondents in the interest of their safety and health choose to segregate the waste along the roadsides.*

**Hypothesis 2:**

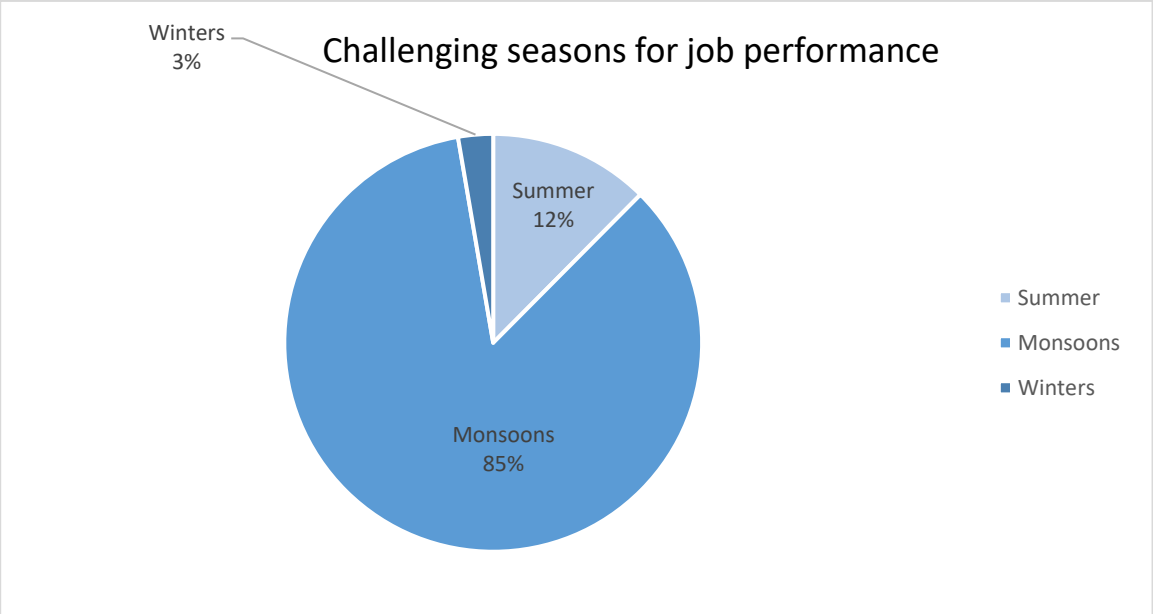
- H0: ***The working environment*** has no effect on the physical and mental health of the waste pickers.
- H1: ***The working environment*** has an effect on the physical and mental health of the waste pickers.

For Hypothesis 2 the questions from 4.17 to 4.21 have been treated as independent variables.

4.17 Seasons that are challenging for job performance (Respondents have chosen multiple options)

Table and Figure 4.17

| Parameter | No of responses |
|---|---|
| Summer | 152 |
| Monsoons | 1036 |
| Winters | 33 |
| **Total** | **1221** |




**Inference:**

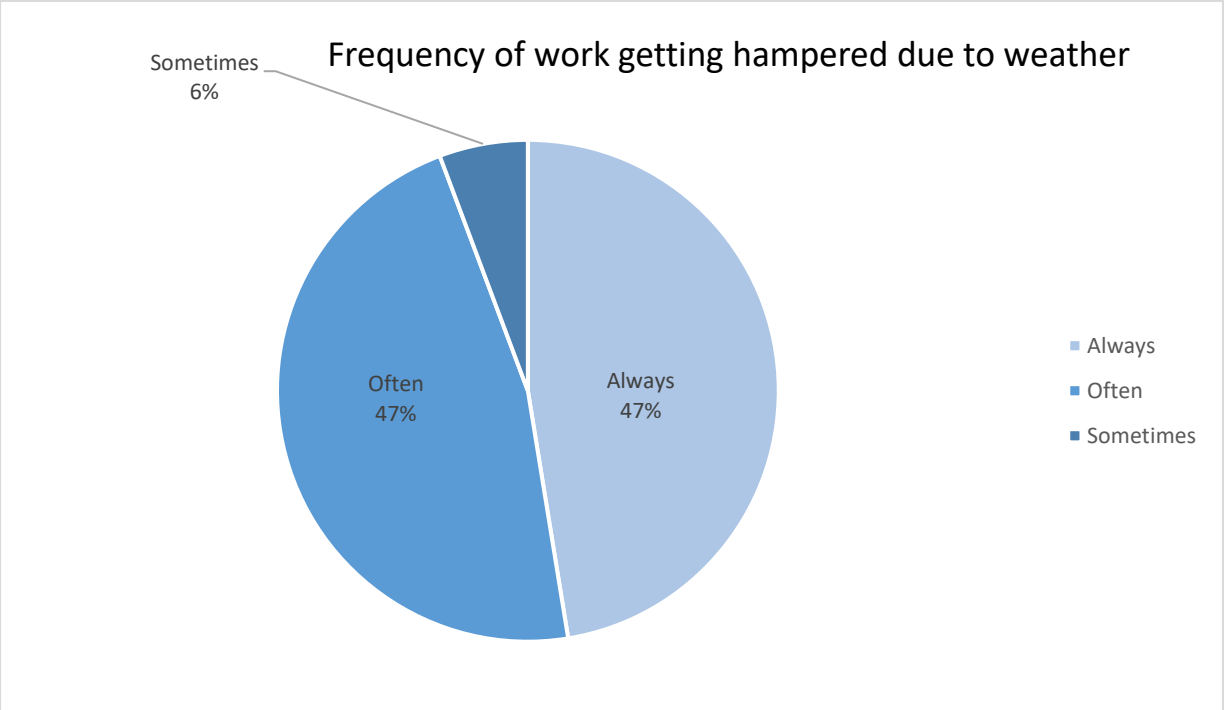
- 12% of respondents out of the total number of responses received for the question have stated that they find summer as challenging for their job performance;
- 85% of the population has stated that monsoons are the most stressful season for them and
- 3% of the respondents have stated that winters increase their challenge while performing their jobs.

This question allowed the respondents to choose multiple options and therefore the total number of responses received for this question is 1221 on the basis of which the percentage has been calculated.

4.17.1 Frequency of work getting hampered due to extreme weather conditions

| Parameter | No of responses |
|---|---|
| Always | 498 |
| Often | 492 |
| Sometimes | 60 |
| Rarely | 0 |
| Never | 0 |
| **Total** | **1050** |

Table and Figure 4.17.1




**Inference:**

- 47% of the respondents have agreed to *always* and *often* respectively regarding the work getting hampered due to extreme weather conditions whereas
- Only 6% of people have stated that *sometimes* their work gets hampered owing to extreme weather conditions;
- There have been nil responses for *rarely* and *never* options.

*In question number 4.17 maximum responses have been received by monsoon followed by summer therefore it can be concluded that monsoon is the most challenging of all seasons for the waste pickers to perform their jobs.*

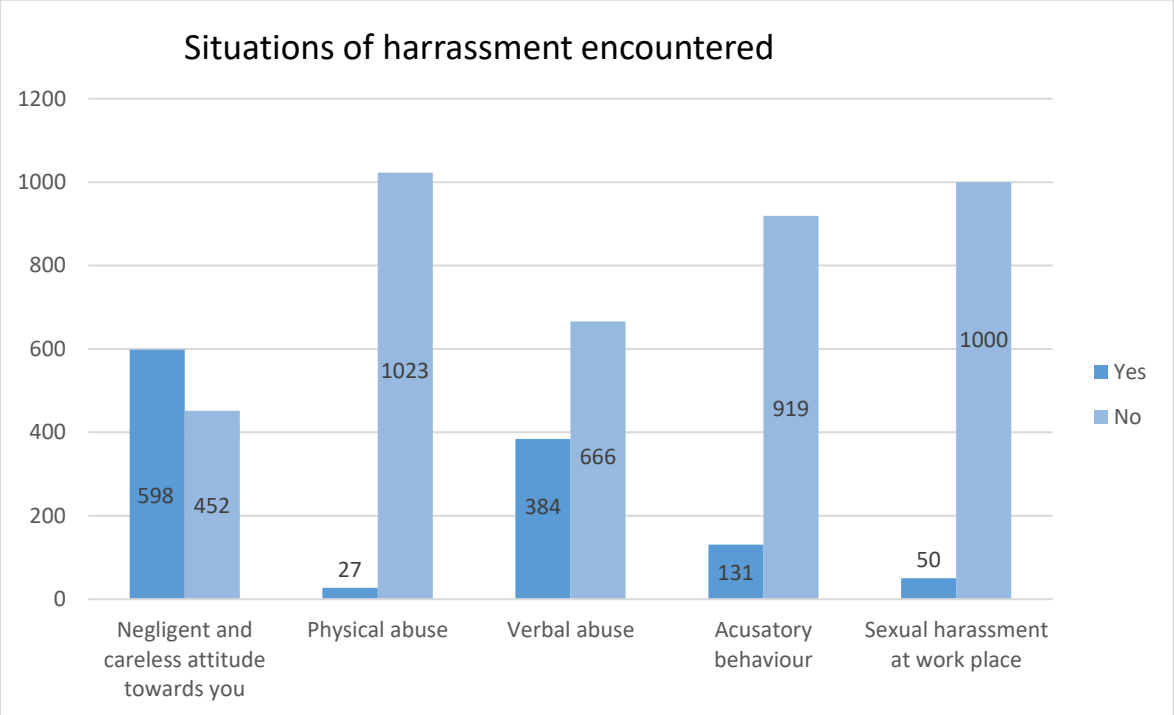
*Also, when asked about frequency of work getting hampered due to weather conditions maximum responses has been recorded at always and often. This indicates that extreme weather conditions intervene with the working of the waste pickers.*

*Respondents have stated that they have no protective gear such as jackets, gumboots or rain coats for waste collection during rains. Respondents have agreed to the fact that they get wet during the monsoons majority of times so as to avoid a loss of day's labour.*

*Also, interactions have revealed that the waste pickers find the segregation of wet and dry waste all the more challenging during this season and also the degeneration of waste is faster in the monsoons increasing their challenges.*

4.18 Situations of harassment (Respondents have chosen multiple options) Table and Figure 4.18

| Situations of harassment | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Negligent and careless attitude towards you | 598 | 452 |
| Physical abuse | 27 | 1023 |
| Verbal abuse | 384 | 666 |
| Accusatory behaviour[58] | 131 | 919 |
| Sexual harassment at workplace[59] | 50 | 1000 |
| Discrimination linked to caste | 366 | 684 |




**Inference:**

1. **Negligent and careless attitude of citizens:** 57% of the respondents have stated that *yes*, they have experienced negligent and careless attitude of the citizens towards them where

[58] Accusatory Behaviour: As per Collins advanced dictionary; an at of blaming someone of wrongdoing
[59] Sexual harassment: Defined as per The Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

as 43% of the respondents have stated a negative answer to this question.

2. **Physical abuse:** 3% of the respondents have stated an affirmation that they have been a victim of physical abuse whereas 97% of the respondents have stated that *no* they have never experience physical abuse during their working hours.

3. **Verbal abuse:** 37% of the respondents has stated that they have a faced verbal abuse either from their superiors; mukadams; or from citizens whereas 63% of the respondents has stated that they have never faced the situation.

4. **Accusatory behaviour:** 12% of respondents have stated that they have been accused of using societal facilities where not being allowed or of major or minor thefts whereas 88% of the respondents have shown a negative response to the situation.

5. **Sexual harassment:** 5% of the respondents have stated that they have faced sexual harassment either from the citizens or from their coworkers where as 95% of the respondents have denied such a situation.

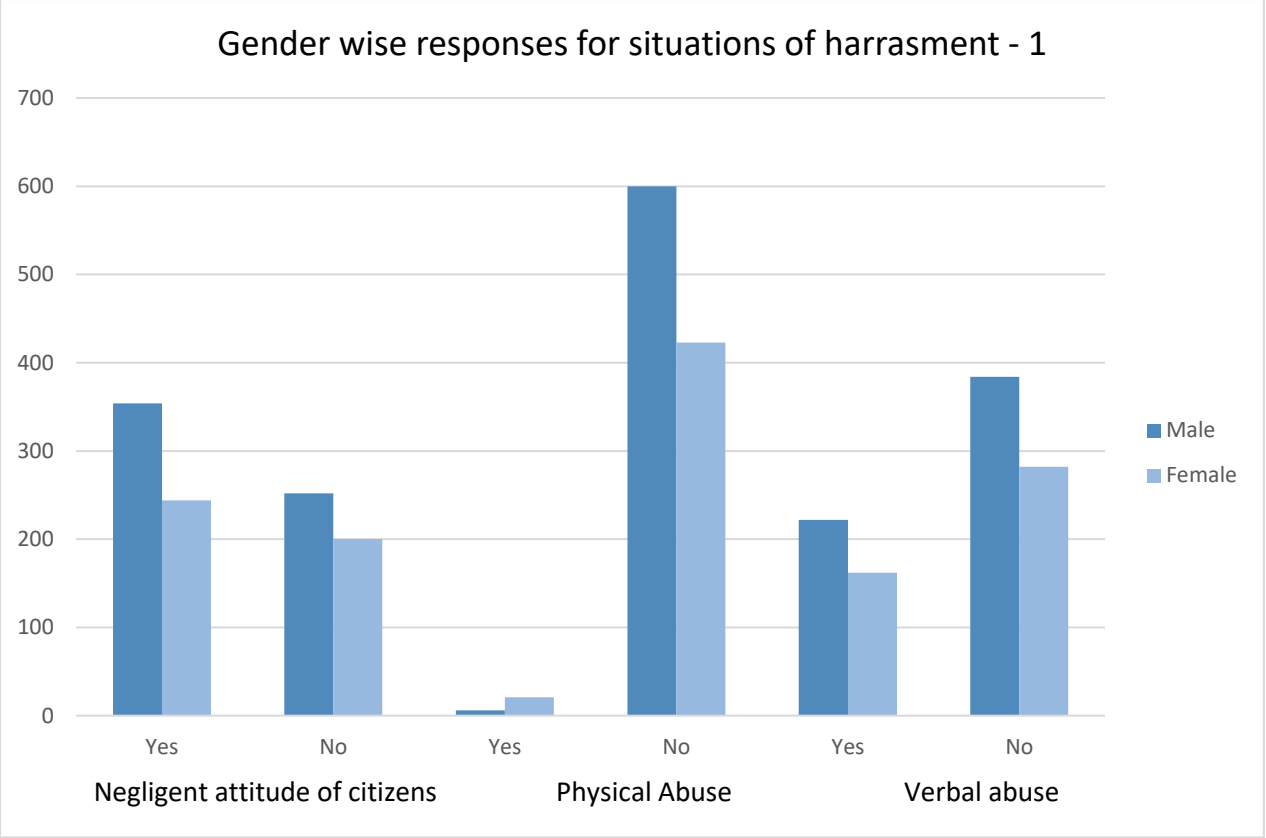
6. **Discrimination linked to caste:** 35% of the respondents have stated that they have experienced cast-based discrimination whereas 65% of respondents have denied the experience of such a situation.

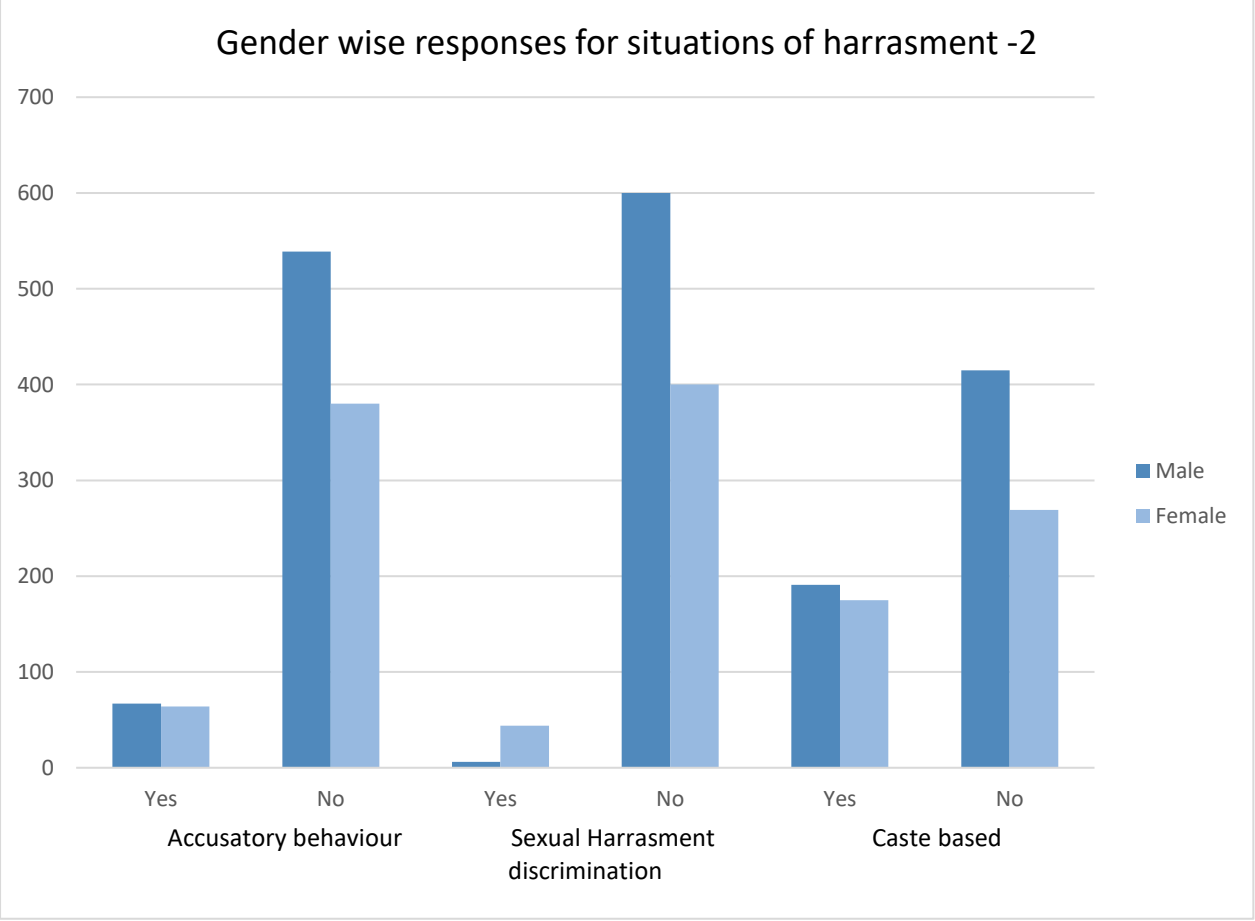
4.18.1 Gender wise frequency of ratings for situations of harassment-1 Table and Figure 4.18.1

| Gender | No of responses | | | | | |
|---|---|---|---|---|---|---|
| | **Negligent and careless attitude of citizens** | | **Physical abuse** | | **Verbal abuse** | |
| | Yes | No | Yes | No | Yes | No |
| Male | 354 | 252 | 6 | 600 | 222 | 384 |
| Female | 244 | 200 | 21 | 423 | 162 | 282 |
| **Total** | **598** | **452** | **27** | **1023** | **384** | **666** |

4.18.2 Gender wise frequency of ratings for situations of harassment-2 Table and Figure 4.18.2

| Gender | No of responses | | | | | |
|---|---|---|---|---|---|---|
| | **Accusatory behaviour** | | **Sexual Harassment** | | **Discrimination linked to caste** | |
| | **Yes** | **No** | **Yes** | **No** | **Yes** | **No** |
| Male | 67 | 539 | 06 | 600 | 191 | 415 |
| Female | 64 | 380 | 44 | 400 | 175 | 269 |
| **Total** | **131** | **919** | **50** | **1000** | **366** | **684** |


Gender wise responses for situations of harrasment - 1
700
600
500
400
300
200
100
0
Yes
No
Yes
No
Yes
No
Negligent attitude of citizens
Physical Abuse
Verbal abuse
Male
Female


Gender wise responses for situations of harrasment -2
700
600
500
400
300
200
100
0
Yes
No
Yes
No
Yes
No
Accusatory behaviour
Sexual Harrasment discrimination
Caste based
Male
Female

**Inferences:**

- **Negligent and careless attitude of citizens**

1. **Males:** 58% of the respondent has stated that they have experienced negligent and careless attitude towards them from their superiors and citizens while 42% of the men have denied such an experience.
2. **Females:** 55% of the women feel that they have been subjected to negligent and careless attitude towards them where as 45% of the women feel that they have been treated with respect.

- **Physical abuse**

1. **Males:** 1 % of the respondents have agreed that they have been subjected to physical abuse where as 99% of the male respondents have denied such a situation.
2. **Females:** 5% of the women respondents have agreed that they have been subjected to physical abuse during their working hours whereas 95% of them have denied such a situation.

- **Verbal abuse**

1. **Males:** 37% of the men have agreed that they have been subjected to verbal abuse at the hands of citizens, superiors and reporting authorities whereas 63% of them have denied such a situation.
2. **Females:** 36% of the women have agreed that often they are prey to verbal abuse whereas 64% of the women have never experienced this situation.

- **Accusatory behaviour**

1. **Males:** 11 % of the men have stated that they have been subjected to accusatory behaviour where as 89% of them have denied this situation.
2. **Females:** 14% of the women has stated that they have fallen prey to accusatory behaviour where as 86% of the women say no to it.

- **Sexual harassment**

1. **Males:** 1% of the males have agreed that they have faced sexual harassment at the hands of their seniors, supervisors or citizens where as 99% of the males have denied this possibility.
2. **Females:**10% of the females have stated that they have faced sexual harassment whereas 90% of the women have denied the occurrence of such situations.

- **Discrimination linked to caste**

1. **Males:** 32% of the men have stated that they often experience discrimination linked to the caste where as 68% of them have denied any such situation.
2. **Females:** 39% of the women have agreed that they have been subjected to caste-based discrimination whereas 61% of them have denied experiencing such a situation.

For the above question most of the respondents have agreed to the fact that they have faced negligent and careless attitude of citizens, verbal abuse, accusatory behaviour and discrimination based on caste. There have been responses recorded also for physical abuse and sexual harassment from the respondents.

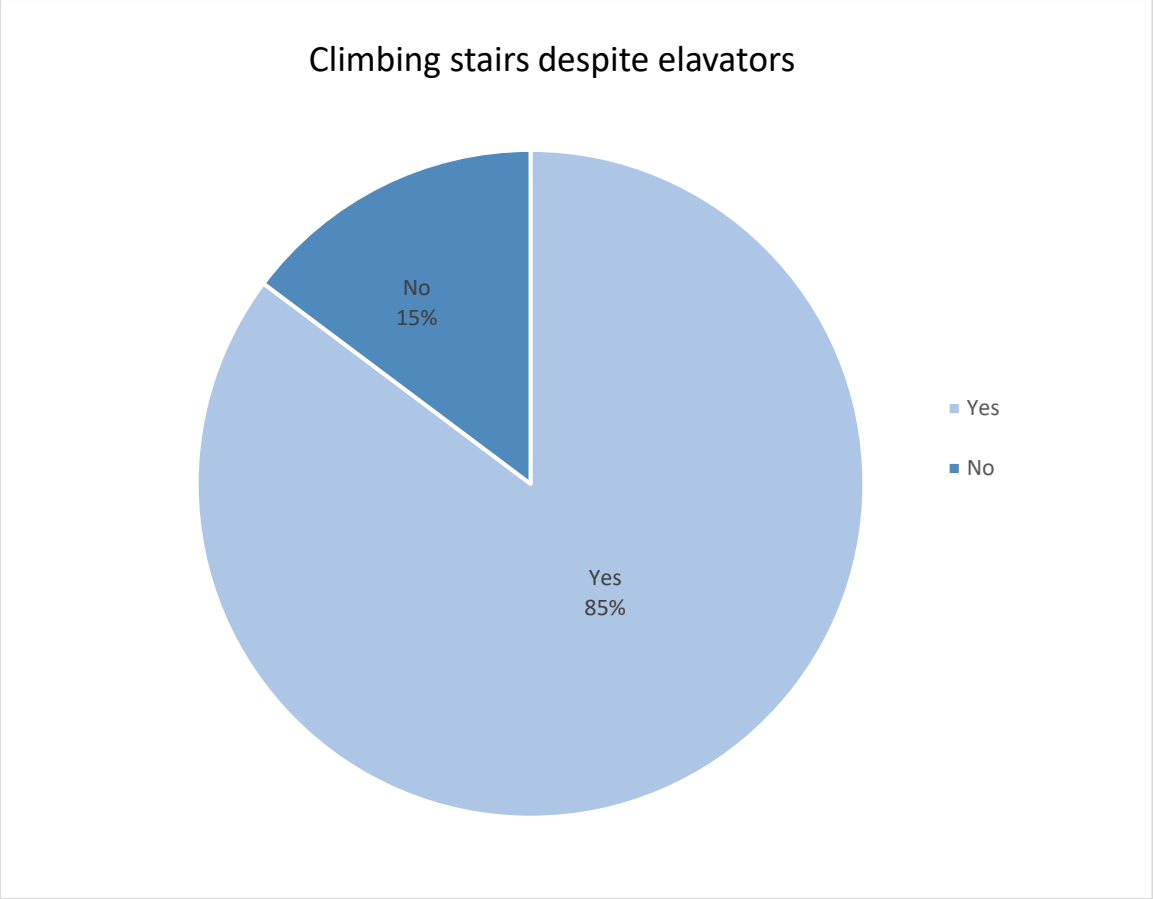
*Interactions with respondents has revealed that they are often referred to in a derogatory manner or are referred using the term* ***Kuchrewala and zhaduwali*** *in the local language translating to garbage picker and sweepers. Most respondents have also stated that despite having been working in a given locality for years citizens do not know their names or identities and display a general carelessness towards them.*

*Respondents have also shared that citizens often ask them if they would like to take away left over food, clothes or other items. Instances where the DTDC workers have been accused of minor thefts or of using society premises without permission have also been shared with the researcher. Respondents did agree to the fact that they have experienced verbal abuse at the hands of the public.*

*The situations of physical abuse and sexual harassment though showing a negligent percentage are also present. The gender wise bifurcation of these responses indicates that the women are the at the receiving end more than the men. Women respondents when questioned in this regard stated that they are often single earners and are therefore tolerant towards such behaviour.*

4.19 Frequency of climbing stairs in societies having elevators. Table and Figure 4.19

| Parameter | No of responses |
|---|---|
| Yes | 335 |
| No | 58 |
| **Total** | **393** |

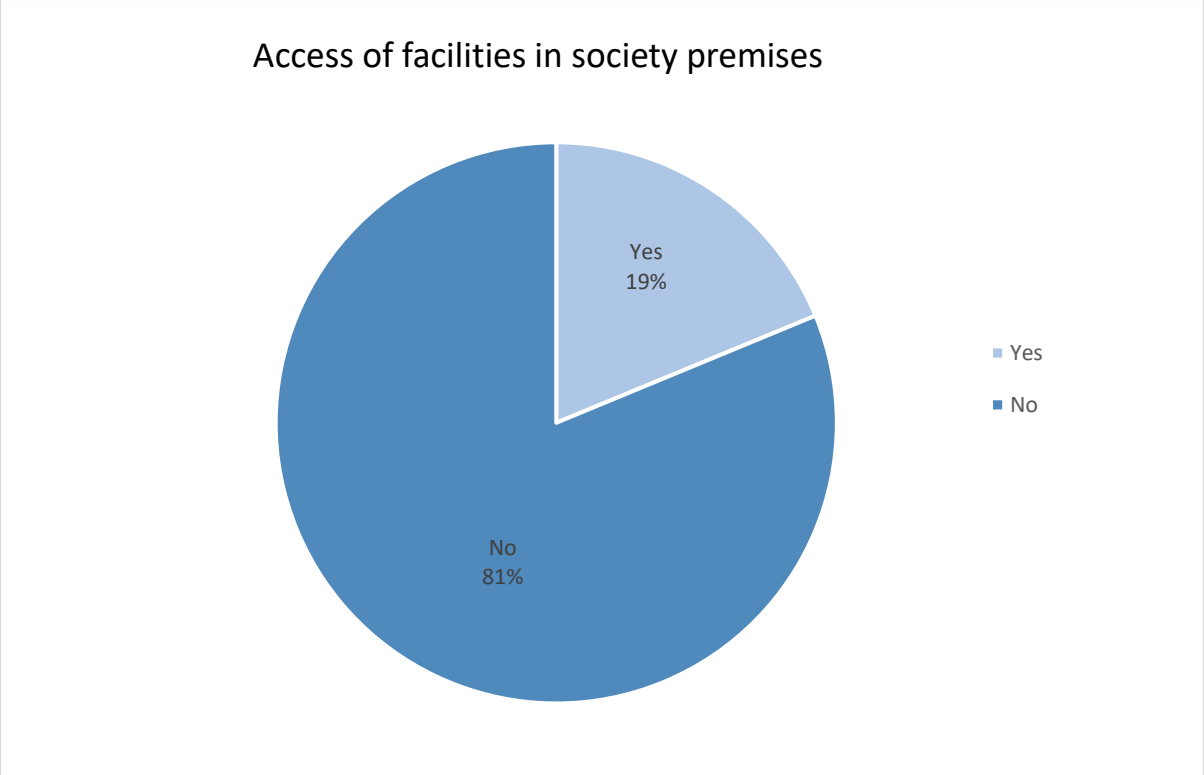



**Inference:**

- 85% of the respondents have *agreed* that they have to climb stairs in societies that have elevators;
- Only 15% of the respondents have stated that they are allowed to use the elevators rather than climbing the stairs.

4.19.1 Frequency of access of facilities in the society premises if present. Table and Figure 4.19.1

| Parameter | No of responses |
|---|---|
| Yes | 197 |
| No | 853 |
| **Total** | **1050** |



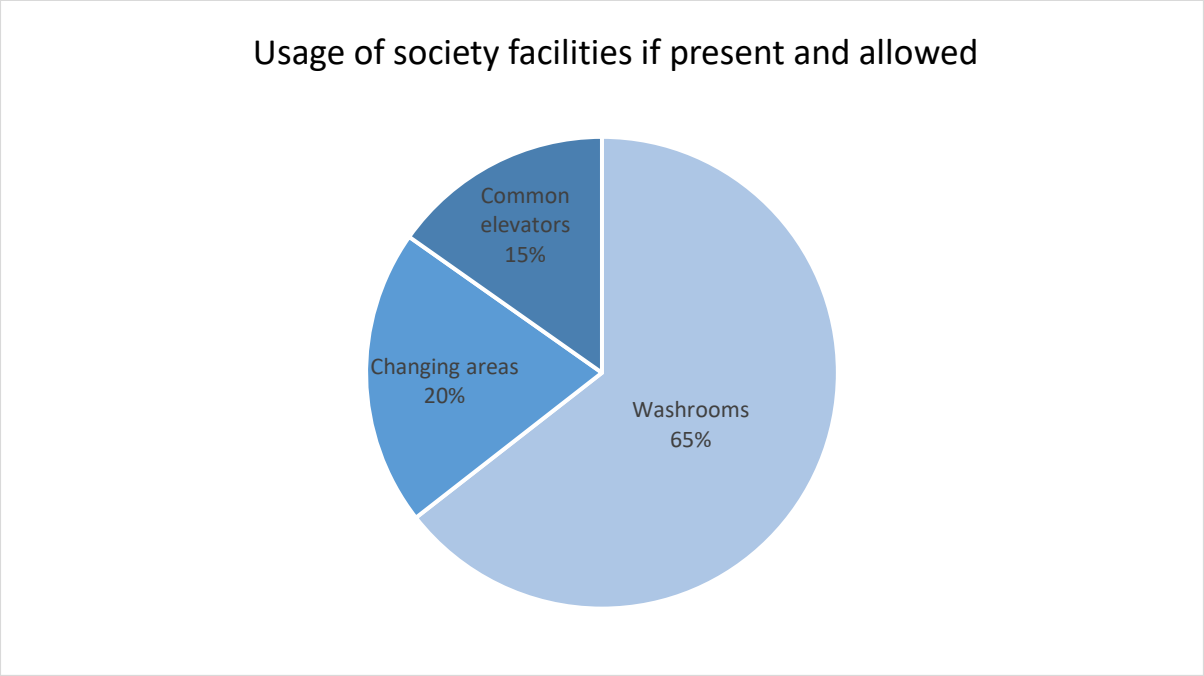

**Inference:**

- 19% of the respondents have stated that they have *access to* the society's premise facilities.
- 81% of the respondents have stated that societies *do not allow* them to access any of the facilities present within its premises.

4.19.2 Frequency of usage of following society facilities if present and allowed

Table and Figure 4.19.2

| Parameter | No of responses |
|---|---|
| Washrooms | 127 |
| Changing areas | 40 |
| Service elevators | 0 |
| Common elevators | 30 |
| **Total** | **197** |




**Inference:**

Out of those who have agreed that they are allowed to use the society premises;

- 65% of the respondents have stated that they are allowed to use the washrooms;
- 20% of the respondents have agreed that they are allowed to use the changing areas;
- Whereas there have been no responses for service elevators and
- 15% of the respondents have stated that they are allowed to use the common elevators.

*For question no 4.19 maximum respondents have agreed that they have to climb the stairs in societies which have elevators whereas a few respondents have stated that societies allow them to use the elevators rather than climbing the stairs. It has been noted by the researcher that in most areas, apartments and buildings do not have service elevators.*

*The DTDC workers have stated that societies, apartments and buildings have expressly denied them the usage of elevators during the garbage collection process. DTDC workers have shared experiences where they have been chided by society secretaries while using elevators or there are notices displayed on the notice board stating that the SWaCH workers are not supposed to be using the elevators.*

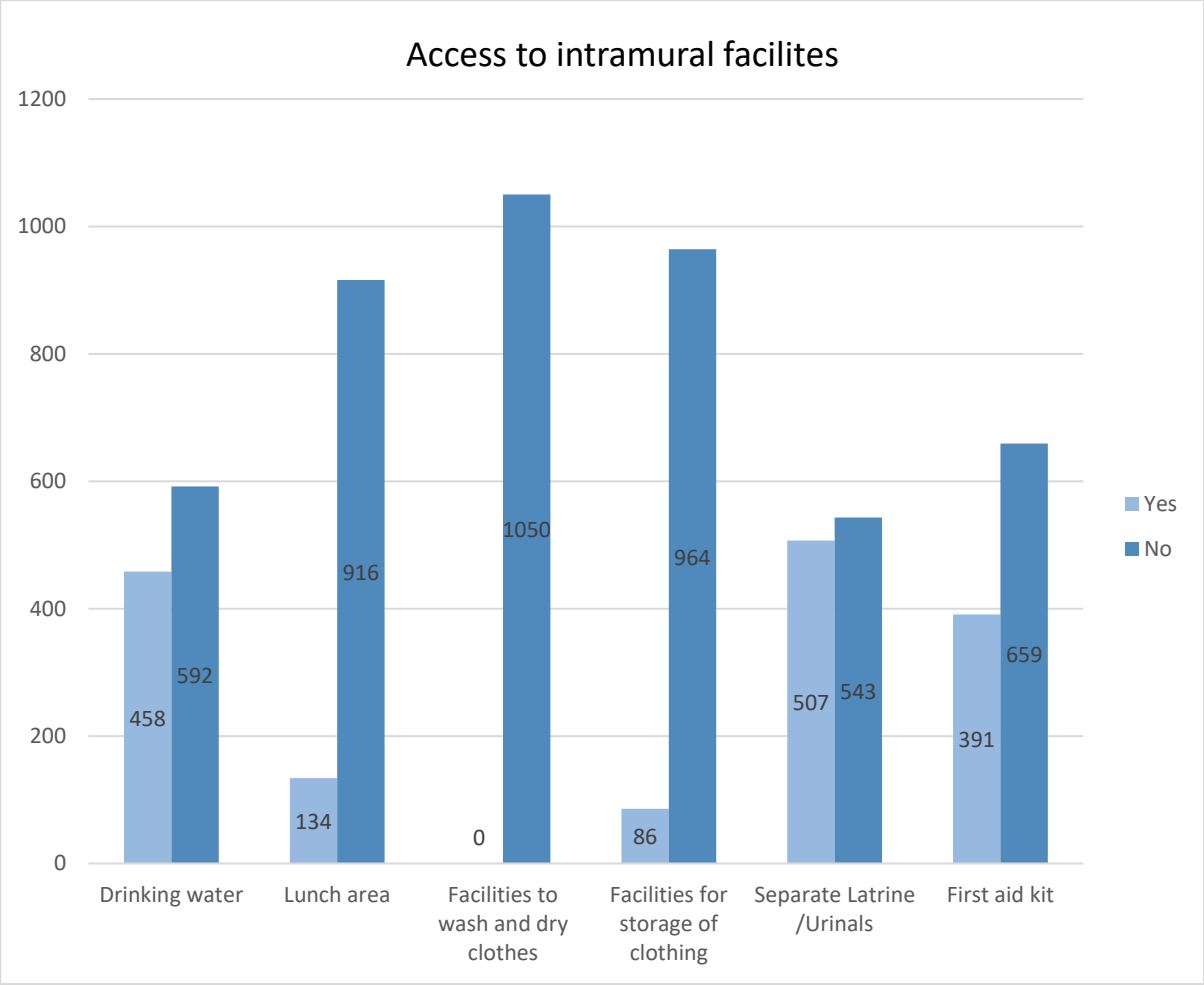
*For question number 4.19.1 maximum respondents have denied that they are not allowed to access any of the facilities present within the societies premises whereas only few of them have agreed that they are allowed to use the facilities.*

*For question no 4.19.2 since only 197 people out of the total sample size have agreed to the fact that they are allowed to use to society's premises therefore the researcher has calculated the percentage of responses out of 197 for this question in particular. Maximum responses state that the respondents are allowed to use the washrooms available for the security guards and watchmen if they wish to and very few societies have provisions for changing areas as well as allow the respondents to use the common elevators.*

4.20 Frequency of access to intramural welfare facilities

Table and Figure 4.20

| Intramural welfare facilities | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Drinking water | 458 | 592 |
| Lunch area | 134 | 916 |
| Facilities to wash and dry clothes | 0 | 1050 |
| Facilities for storage of clothing | 86 | 964 |
| Separate Latrine /Urinals | 507 | 543 |
| First aid kit | 391 | 659 |



**Inference:**

1. **Drinking water:** 44% of the respondents state that *yes;* they have drinking water available in their kothi where is 56% of the respondents have stated that there is no drinking water facility available in their kothi.

2. **Lunch area**: 13% of the respondents is stated that they have access to a lunch area in their aarogya kothi where as 87% of the respondents have stated that there is no separate area where they can eat their lunch.

3. **Facility to wash and dry clothes:** 100% respondents have stated that they do not have any facility to wash and dry their service clothes such as their full sleeves jacket and gloves.

4. **Facility for storage of clothes:** 8% of respondents have agreed that they have access to storage for clothing where as 92% of respondents have stated that they store their unused clothes in open areas in the kothi.

5. **Separate latrine and urinals:** 48% of the respondents have stated that they have access to separate latrine and urinals where as 52% of the respondents have stated that they use the common facilities available to them.

6. **First aid kit:** 47% of the respondents have stated that there is a first aid kit available in their aarogya kothi where as 63% of the respondents have stated that there is no first aid kit accessible to them.

*For this question most of the respondents have stated that they do not have access to lunch areas, facilities for washing and storage of clothes. In case of drinking water and access to separate latrines, urinals and first aid kits most respondents have agreed that they have access to the same.*

*The researcher would like to note that during the data collection process visits under taken to the aarogya kothis have revealed the following points:*

- *Drinking water facility in most kothis is mainly a running tap or an earthen pot filled with drinking water. No separate water drinking facilities including purification of water are present for the workers.*
- *There seemed to be a complete lack of lunch areas and facilities to wash and dry clothes as well as to store them. All three of these facilities are extremely crucial since the waste picking staff begins their duty at 5:00 a.m. in the morning with most of the staff members coming empty stomach. In the absence of lunch areas and total lack of space the waste pickers tend to occupy road sides or nearby public areas for food consumption.*
- *Most waste pickers carry a different set of clothes to be worn during the waste picking process and in the interim the clothes worn by them are stored in plastic/ cloth bags in the kothis. Also, the dirty clothes used every day for waste collection are carried by them back home for washing and to be worn the next day.*
- *Most aarogya kothis do not have separate access to latrine and urinals. The positive responses received from the respondents are of those kothis which are located inside other civic buildings such as schools, hospitals, Savitribai Phule Pune University etc.*

*It is the separate facilities for men and women made available in these civic buildings that are being used by the waste pickers however no such uniformity exists in all the kothis.*

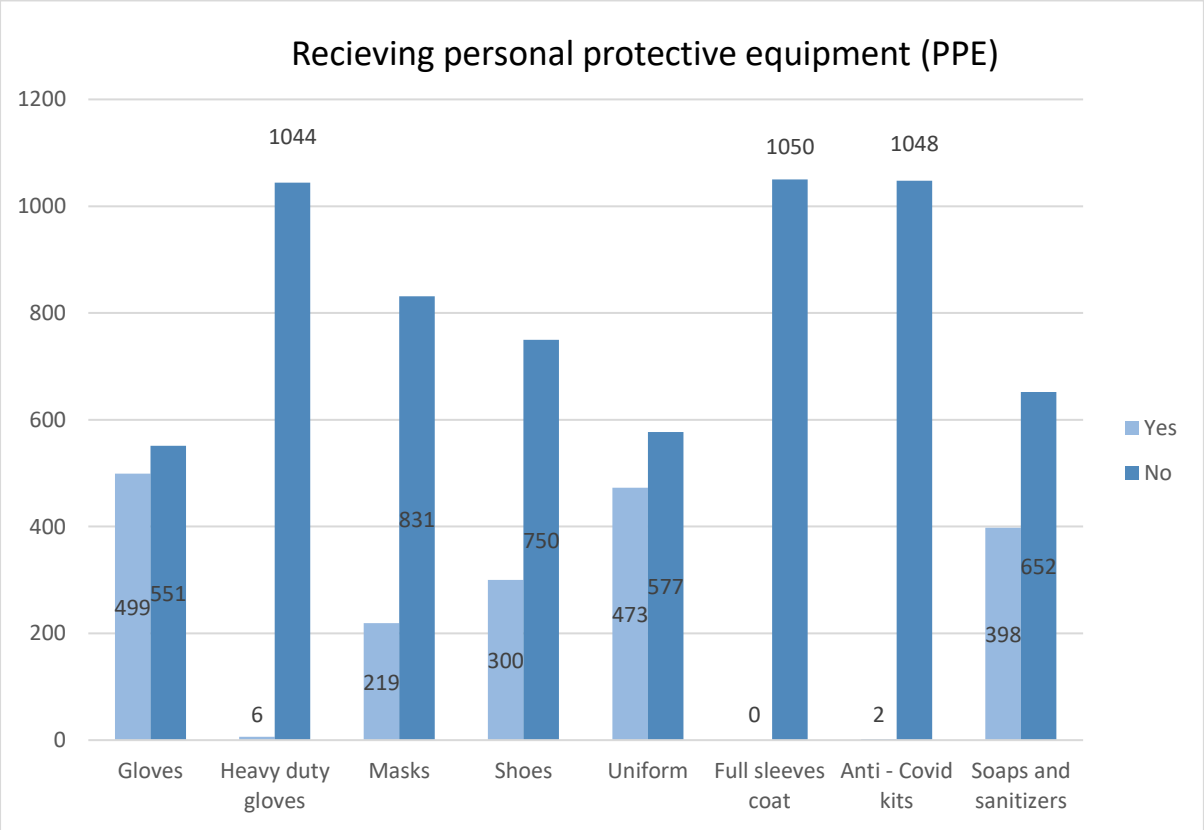
*The researcher upon request has been shown the first aid kits available with the mukadams if present. The researcher would like to note that the first aid kits either were not present at all and if present lacked the total contents to the full capacity and in some cases were kept un accessible to the staff in case of an emergency.*

***Ward office wise data trends:*** *Ward office wise bifurcation of the responses brought the Dhole Patil Road ward office to the lowest rating in terms of intramural facilities whereas the highest ranking one in terms of accessibility of intramural facilities was the Aundh Baner ward office.*

4.21 Frequency of access to personal protective equipment (PPE)

Table and Figure 4.21

| Personal protective equipment (PPE) | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Gloves | 499 | 551 |
| Heavy duty gloves | 6 | 1044 |
| Masks | 219 | 831 |
| Shoes | 300 | 750 |
| Uniform | 473 | 577 |
| Full sleeves coat | 0 | 1050 |
| PPE kits | 2 | 1048 |
| Soaps and sanitizers | 398 | 652 |



**Inferences:**

1. **Gloves:** 48% of the respondents have stated that they have access to gloves as a personal protection equipment during collection and segregation of waste whereas 52% of the total respondents have stated that they do not have access to gloves on a day - to - day basis.

2. **Heavy duty gloves:** 21% of the total respondents have stated that they have access to heavy duty gloves which are useful for handling high risk items such as broken glass; syringes and rusted articles during the waste segregation process however 79% of respondents have stated that they do not have access to heavy duty gloves at all.

3. **Masks:** 21% of respondents only stated that they have access to masks everyday where as 79% of the respondents have stated that they do not have regular access to masks.

4. **Shoes:** 29% of the respondents have stated that they have received shoes as a part of personal protection equipment however 71% of respondents have stated that they have not received shoes.

5. **Uniform:** 45% of the respondents have stated that they have been given the uniforms by Pune Municipal Corporation (PMC) or SWaCH whereas the remaining 55% of respondents have stated that they have not been provided uniforms.

6. **Full sleeves coat:** 100% respondents have stated that they have not been provided for a full sleeves coat by any of the statutory bodies.

7. **PPE kits**: 100% responses for this question have been stating *no* as an option with regards to accessibility to PPE kits.

8. **Soaps and sanitizers**: 38% of the respondents have stated that they have access to soaps and sanitizers whereas 62% of the respondent have stated that they do not have access to soaps and sanitizers in order to maintain their personal hygiene.

*For the above question maximum respondents have agreed that they have received gloves for the waste segregation process. However negligent responses have been marked for receipt of heavy-duty gloves, masks, shoes, uniform, soaps and sanitizers. 100% negative responses have been recorded for full sleeves coat and PPE kits.*

*The researcher would like to state that the Swachh Bharat Mission Manual part 2 states the guidelines for the provision of masks, uniform, full sleeves coat, heavy duty gloves, shoes and hand washing and sanitation equipment as a mandate to be provided to all waste collecting and manual scavenging fraternities across India. Despite the guidelines the above equipment is not available satisfactorily across all kothis and ward offices.*

*Interactions with respondents has revealed that posts the pandemic most waste pickers have started using disposable masks and carry their own soaps or sanitizers in order to maintain self -hygiene. In case of uniforms, shoes and full sleaves coats respondents have stated that either they have purchased it out of their own funds or have had a deduction from their salary.*

*During the pandemic the waste picking fraternity was at a great risk since they could contract the disease by handling the waste of infected citizens. However, no waste picking staff member had an access to a PPE kit for the entire duration of the pandemic.*

***Ward office wise data trends:*** *Ward office wise bifurcation of responses has shown a trend that the Aundh Baner ward office is the leading ward office in terms of providing personal protective equipment to the waste pickers whereas the absolute lack of resources has been noted with the Dhole Patil Road and Bhavani Peth ward offices.*

**Hypotheses 1 and 2:**

- H0: The task related challenges have no effect on ***the physical and mental health*** of the waste pickers.
- H1: The task related challenges have an effect on ***the physical and mental health*** of the waste pickers.

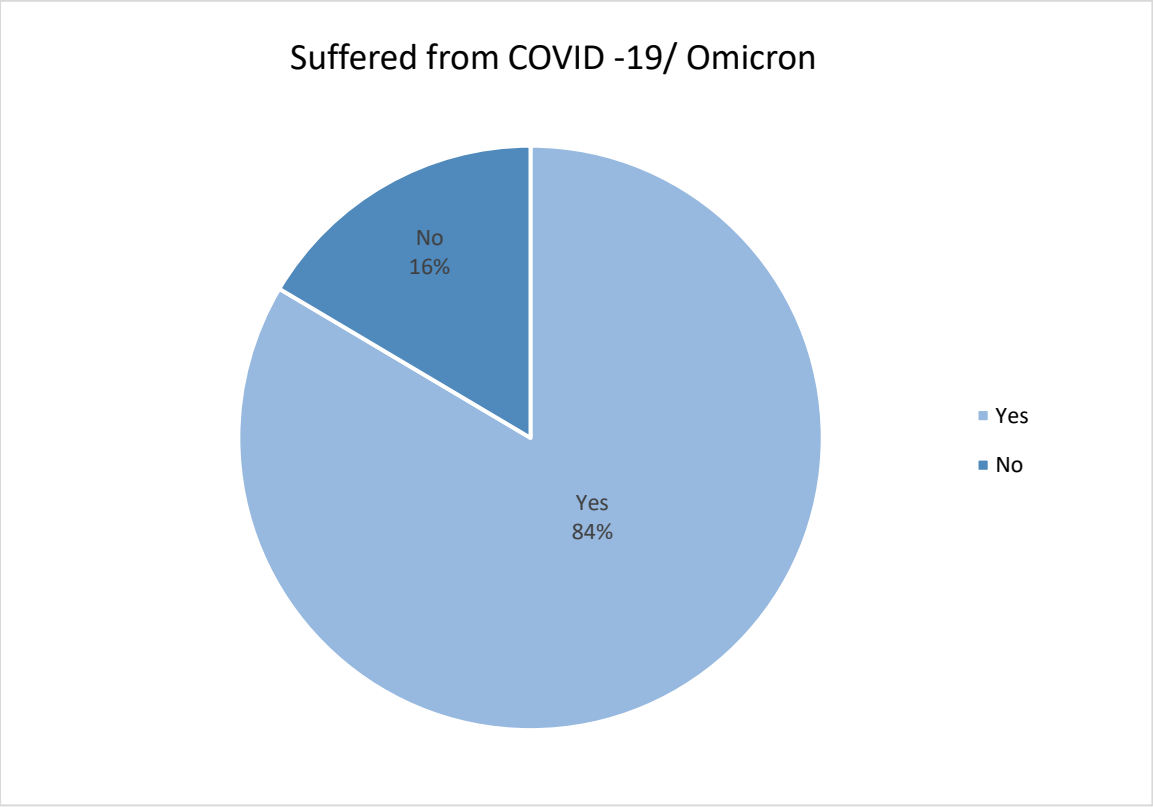
- H0: The working environment has no effect on ***the physical and mental health*** of the waste pickers.
- H1: The working environment has an effect on ***the physical and mental health*** of the waste pickers.

For hypotheses 1 and 2 the questions from 4.22 to 4.32 have been treated as dependent variables.

4.22 Suffered from COVID -19 / Omicron

Table and Figure 4.22

| Parameter | No of responses |
|---|---|
| Yes | 877 |
| No | 173 |
| **Total** | **1050** |



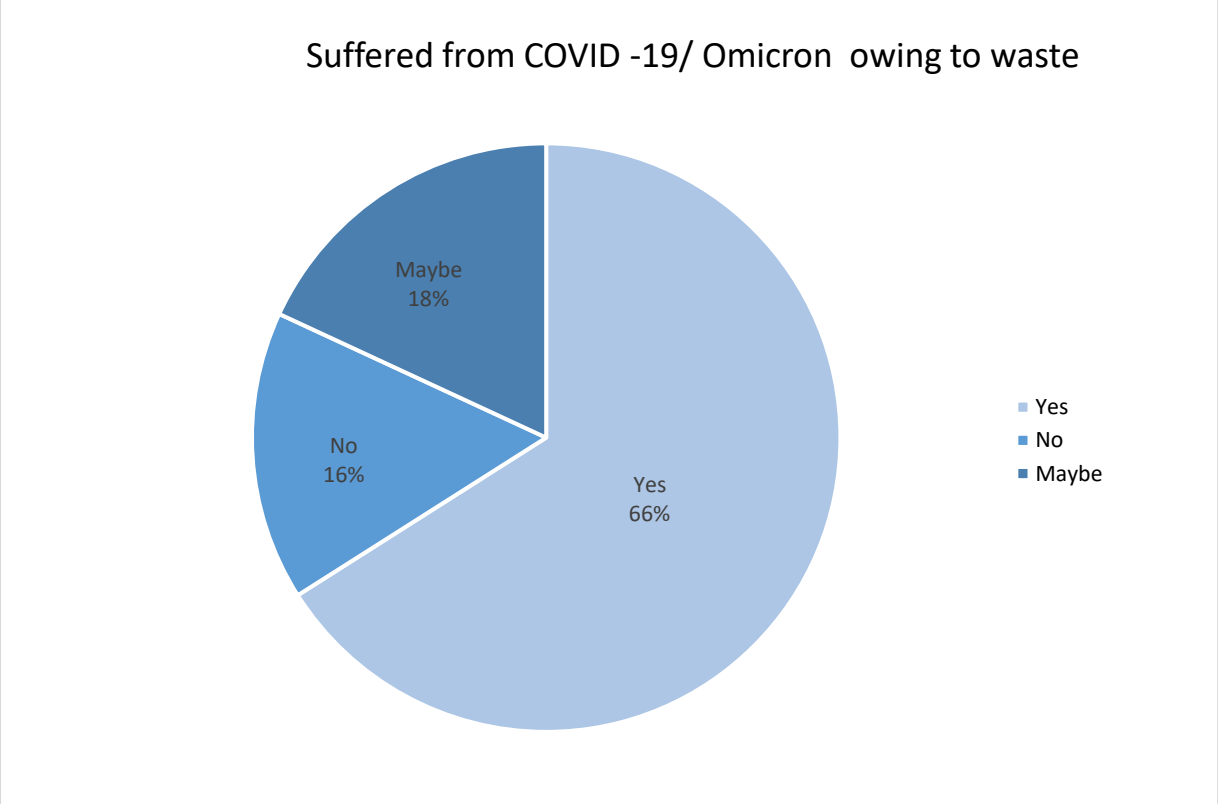

**Inference:**

- 84% of the sample size has stated that *yes* they have experienced COVID -19 or Omicron.
- 16% of the sample size has stated that they have *not* been affected by COVID -19 or Omicron.

4.22.1 Suffered from COVID -19 / Omicron owing to COVID waste

Table and Figure 4.22.1

| Parameter | No of responses |
|---|---|
| Yes | 693 |
| No | 167 |
| Maybe | 190 |
| **Total** | **1050** |




**Inference:**

- 66% of the sample size *agrees* to the fact that they might have suffered from Covid 19 or Omicron owing to handling covid waste;
- 16 % of the sample size says *no* they do not feel that handling Covid waste could be a cause for Covid;
- Remaining 18% of the sample size is unsure whether the suffered from Covid because of handling waste.

*Maximum respondents have stated in question number 4.22 that they have suffered from Covid-19 whereas only very few of them have not suffered from the disease.*

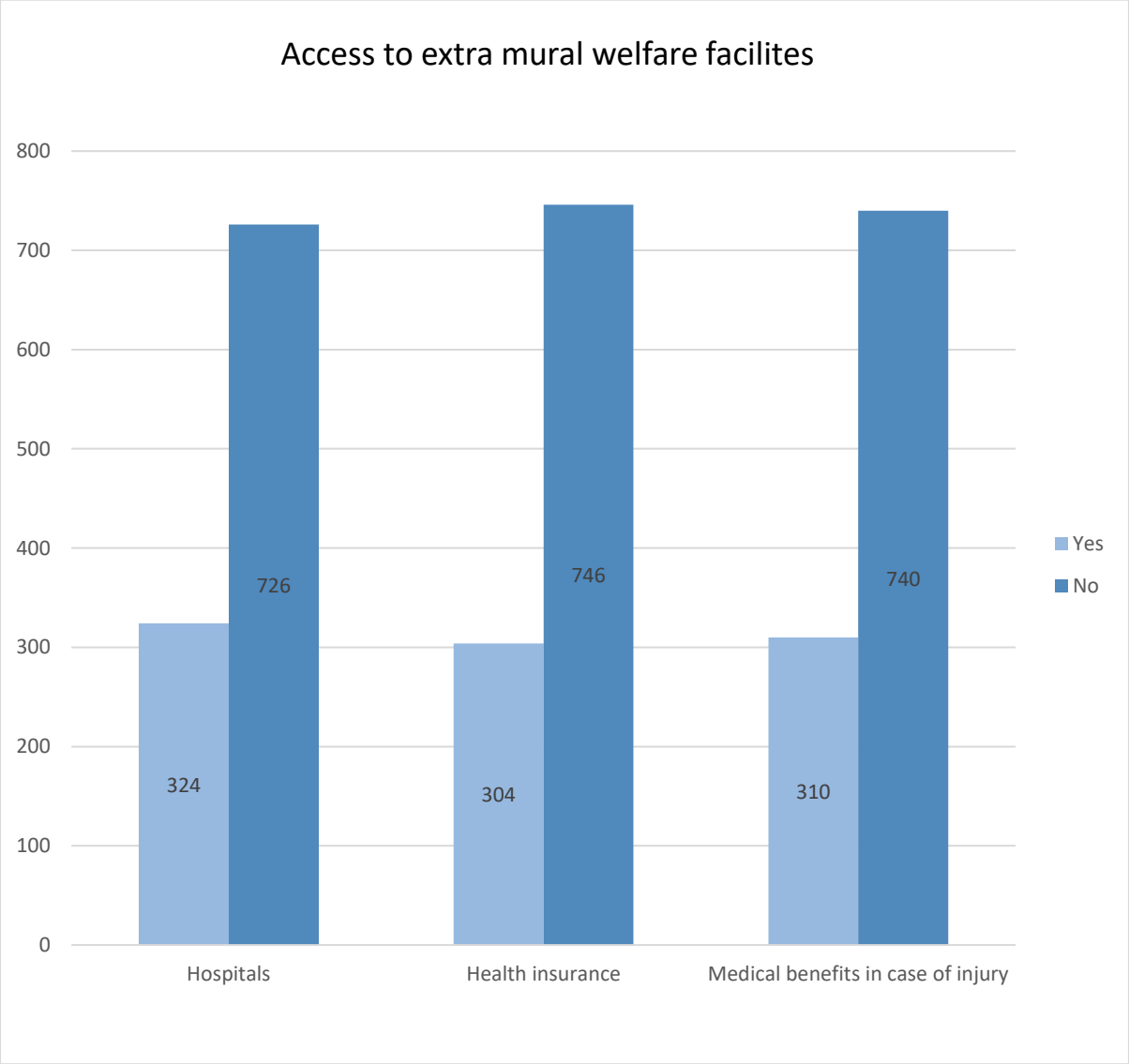
*Maximum responses for question number 4.22.1 indicate that the respondents do believe that they might have contracted Covid -19 owing to handling covid waste.*

*Interaction with respondents has revealed that during the pandemic they have often picked up waste of home quarantined families/ patients as well as waste from clinics, hospitals and Covid relief centres etc. They have handled this waste with their bare hands and without any other protective equipment. Also waste during covid times waste majorly included used masks, tissues and various other carriers.*

4.23 Availability of extra mural welfare facilities

Table and Figure 4.23

| Extra mural welfare facilities | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Hospitals | 324 | 726 |
| Health insurance | 304 | 746 |
| Medical benefits in case of injury | 310 | 740 |
| **Total** | **938** | **2212** |



**Inference:**

- **Hospitals:** 31% of the respondents have agreed that they have access to hospitals where are 69% have stated that they do not have access to this facility.
- **Health insurance:** 29% of respondents have agreed that they have medical insurance facility with them where as the remaining 71% of the respondents have stated that neither the Government nor PMC nor SWaCH have not made in such provision.
- **Medical benefits in case of injury:** 30% of the respondents have agreed that they are eligible for paid leaves and medication in case of injury owing to their work whereas 70% of the respondents have denied the access to such facilities.

*Few respondents have agreed that they have access to extra mural facilities such as hospitals health insurance and medical benefits however maximum respondents have denied the access to such extra mural welfare. The researcher would like to note that the sweepers and the bigari workers are associated with Pune Municipal Corporation and are employees of the corporation.*

*DTDC workers on the other hand associated with SWaCH are members of the cooperative society. This makes them ineligible for any kind of extramural welfare facilities since they are not paid a salary but work voluntarily for fees.*

*Itinerant waste speakers on the other hand operate in isolation and have no institutional support with them.*

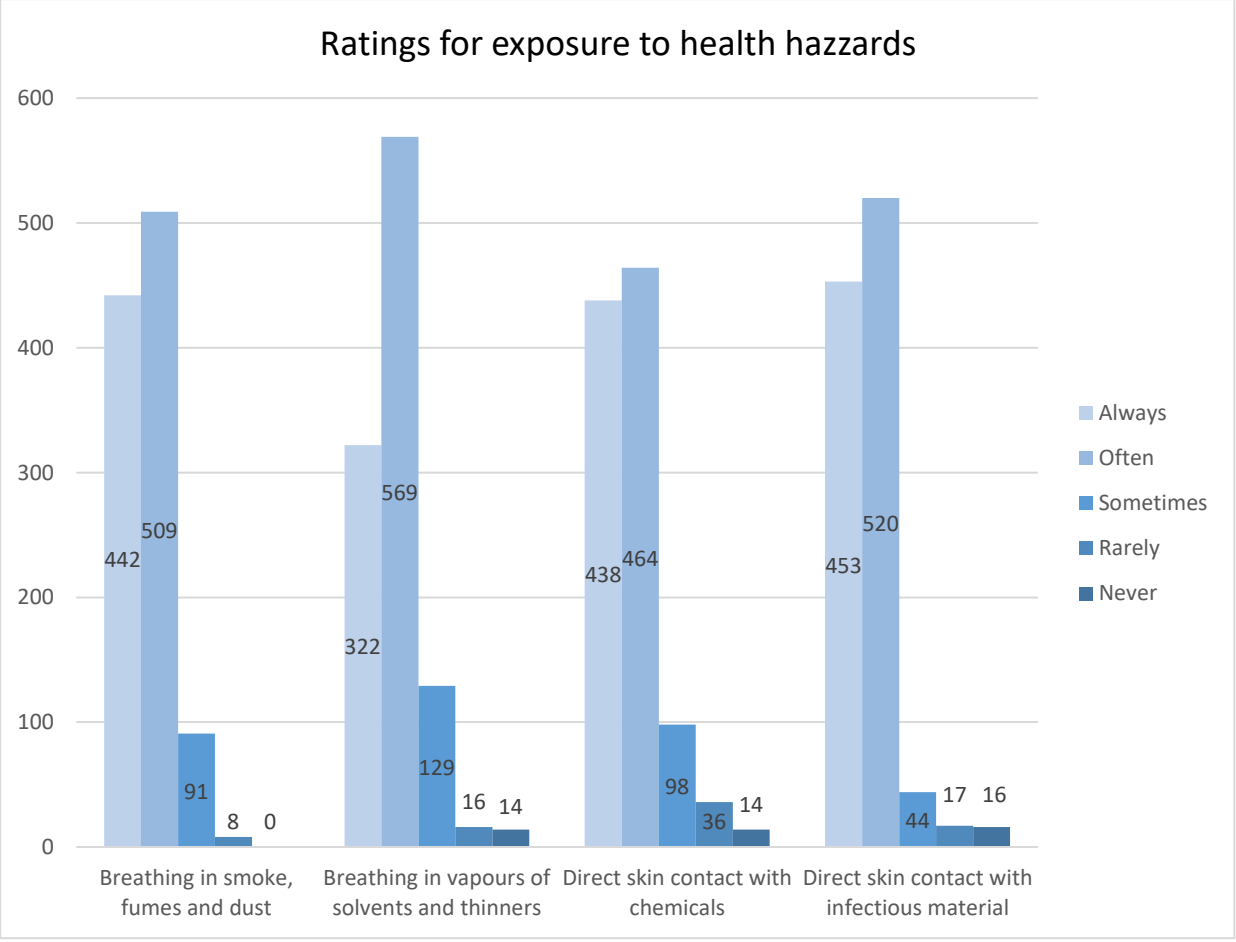
*Thus, facilities for hospitals, medical insurance and medical benefits are only granted to the PMC employees. It is also important to note over here that the employment offered by PMC to the sweeper and bigari workers is of two types which permanent and contractual. Those employed prior to 2009 are permanent employees from 2010 onwards all employments have been contractual in nature.*

*Therefore, cashless hospitalization and health insurance and medical benefit in case of injury facilities are only offered to the permanent employees who are covered under the Employees State Insurance Act, 1956. The contractual employees however are only eligible for treatment in government hospitals at reduce rates and can utilize their medical leaves as per contract.*

4.24 Frequency of ratings for exposure to health hazards

Table and Figure 4.24

| Exposure to health hazards | No of responses | | | | |
|---|---|---|---|---|---|
| | **Always** | **Often** | **Sometimes** | **Rarely** | **Never** |
| Breathing in smoke; fumes and dust | 442 | 509 | 91 | 8 | 0 |
| Breathing in vapours of solvents and thinners | 322 | 569 | 129 | 16 | 14 |
| Direct skin contact with chemicals | 438 | 464 | 98 | 36 | 14 |
| Direct skin contact with infectious material | 453 | 520 | 44 | 17 | 16 |
| **Total** | **1655** | **2062** | **362** | **77** | **44** |



**Inference:**

1. **Breathing in smoke fumes and dust:** 42% of the respondents have stated that they *always* are exposed to smoke and dust; where as 48% of respondents have stated that they *often* face the problem; 9% of the respondents have stated that *sometimes* face the situation; 1 % of the respondents have rated it at *rarely;* whereas 0% respondents are saying that they have *never* breathed in smoke; fumes or dust.
2. **Breathing in vapours of solvent and thinners:** 31% of the respondents have stated that they are *always* coming contact with solvents and thinners; where as 54% of respondents have stated that they are *often* coming contact with such abrasives; 12% of respondents have stated that *sometimes* they come in such situations; 2% of the respondents have stated that *rarely* they deal with such strong chemicals and 1% have stated that they completely avoid touching or breathing in vapours of solvents.
3. **Direct skin contact with chemicals**: 42% of the respondents have stated that they *always* come in contact with chemicals; 44% of respondents have stated that they *often* come in contact with chemicals; 9% of the respondents have rated the situation at *sometimes*; 3% has rated it at *rarely* and 1 % have rated it at *never*.
4. **Direct skin contact with infectious material:** 43% of the respondents have stated that they *always* come in contact with infectious material in the form of diapers; sanitary napkins or in the form of medical waste; 50% of the respondents have rated it as *often;* 4% of the sample has said that *sometimes* the situation occurs; 2% of the sample has stated that they *rarely* handle infectious material and only 2% of the sample has stated that they ensure to *never* come in contact with any kind of infectious material.

*The performance of tasks as a waste picker and the handling of constant waste exposes the waste picking fraternity to certain health hazards. It is important to know that for all the hazards mentioned in the above question maximum responses have been marked for always and often. This indicates that the hazards in the question are frequently exposed on the waste pickers during the performance of their jobs. Very few ratings have been given to options such as sometimes, really and never.*

*Respondents have stated that in order to reduce the quantum of waste they tend to light up large piles of waste thereby inhaling smoke and fumes in the process. This happens especially during monsoons since unsegregated waste starts degenerating making it impossible to separate wet and dry waste.*

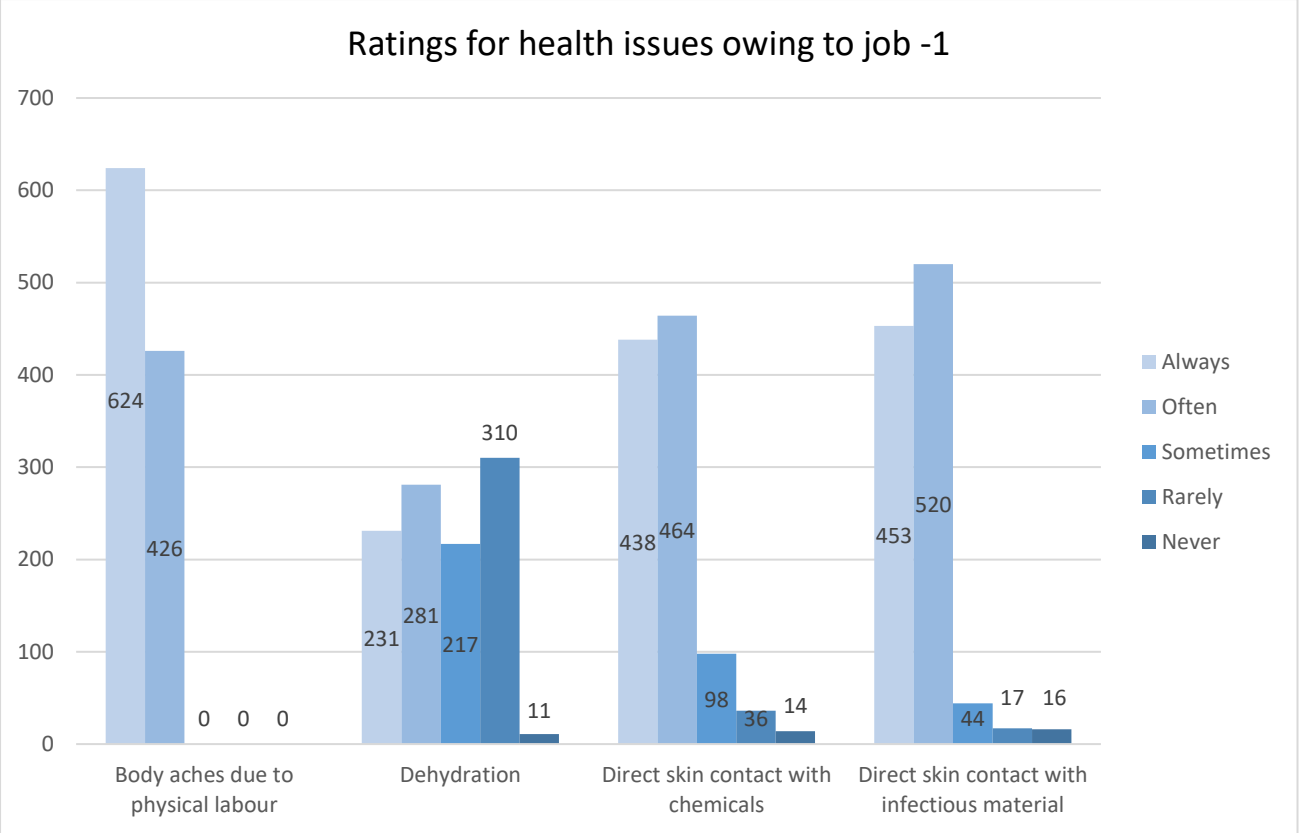
*DTDC workers often generate income through the sale of scrap that include metals and metal wires which have to be procured using thinners and solvents. Workers have agreed that they often use highly toxic chemicals in order to procure saleable scrap.*

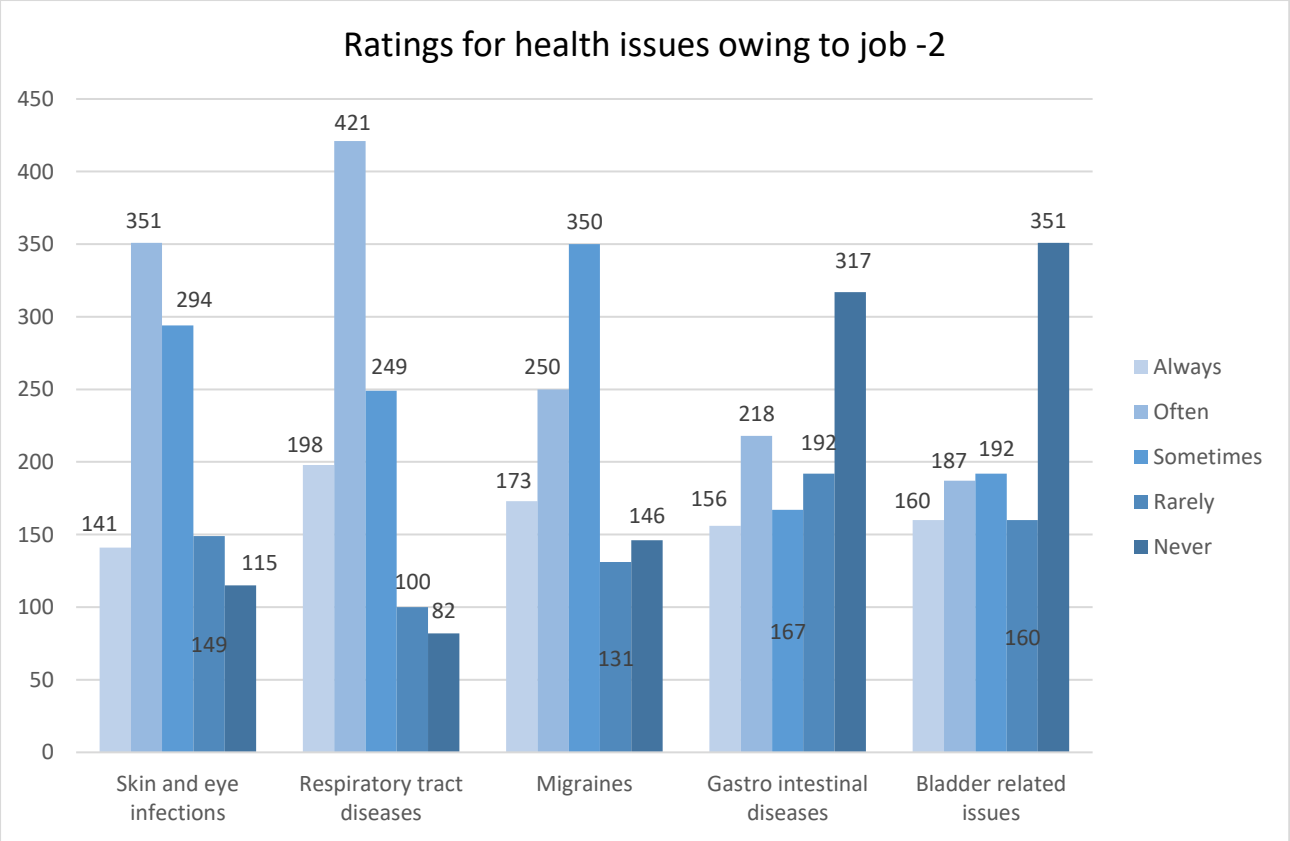
4.25 Frequency of ratings for health issues arising out of performance of job

Table and Figure 4.25

| Exposure to physical risk factors | No of responses | | | | |
|---|---|---|---|---|---|
| | **Always** | **Often** | **Sometimes** | **Rarely** | **Never** |
| Body aches due to physical labour | 624 | 426 | 0 | 0 | 0 |
| Dehydration | 231 | 281 | 217 | 310 | 11 |
| Nausea | 148 | 212 | 240 | 375 | 75 |
| Dizziness | 127 | 223 | 259 | 377 | 64 |
| Skin and eye infections | 141 | 351 | 294 | 149 | 115 |
| Respiratory tract diseases | 198 | 421 | 249 | 100 | 82 |
| Migraines[60] | 173 | 250 | 350 | 131 | 146 |
| Gastro intestinal diseases | 156 | 218 | 167 | 192 | 317 |
| Bladder related issues | 160 | 187 | 192 | 160 | 351 |
| **Total** | **1958** | **2569** | **1968** | **1794** | **1161** |

[60] Migraines: As defined by American Medical Assciation; long bouts of persistent headaches also causing blinding of vision.


Ratings for health issues owing to job -1
700
600
500
400
300
200
100
0
624
426
0 0 0
231
281
217
310
11
438
464
98
36
14
453
520
44
17 16
Body aches due to physical labour
Dehydration
Direct skin contact with chemicals
Direct skin contact with infectious material
Always
Often
Sometimes
Rarely
Never


Ratings for health issues owing to job -2
450
400
350
300
250
200
150
100
50
0
141
351
294
149
115
198
421
249
100
82
173
250
350
131
146
156
218
192
167
317
160
187
192
160
351
Skin and eye infections
Respiratory tract diseases
Migraines
Gastro intestinal diseases
Bladder related issues
Always
Often
Sometimes
Rarely
Never

**Inference:**

1. **Body aches due to physical labour**: 59% of the population have stated that they *always* suffer from body aches; 41% of the sample have stated that *often* suffer from body aches and there are zero ratings for *sometimes; rarely and never.*

2. **Dehydration:** 22% of the sample have stated that they *always* feel dehydrated; 27% of the sample has stated that they are *often* dehydrated; 21% of the sample have given their ratings to *sometimes*; 30% of the sample feel that they are *rarely* dehydrated and only 1% of the population has stated that they *never* experienced dehydration.

3. **Nausea:** 14% of the population have stated that they *always* experience nausea owing to the smell of waste; 20% have rated this phenomenon at *often*; 23% state that *sometimes* they feel nauseous while handling waste; 36% of the sample states that *rarely* they experience nausea; whereas 7% of the sample state that they do not feel nauseous the waste collection process.

4. **Dizziness:** 12% of the respondents have stated that they *always* feel dizzy owing to extreme heat and direct exposure to the sun; 21% of the respondents *often* feel dizzy during working hours; 25% of the respondents have stated that *sometimes* they experience dizziness; 36% of the respondents *rarely* experience dizziness whereas only 6% of the respondents *never* feel dizzy.

5. **Skin and eye infection:** 13% respondents have stated that they *always* suffer from skin and eye infections; 33% of the respondents have stated that they *often* suffer from skin and eye infections; 28% have rated this disease at *sometimes*; 14% of the people have rated the disease at *rarely* whereas only 11% of the population have stated that they have *never* suffered from skin and eye infections.

6. **Respiratory diseases:** 19% of the respondents have stated that they *always* suffer from respiratory diseases; 40% of the respondents have stated that they *often* suffer from respiratory diseases; 24% of the respondents have rated it at *sometimes* 10% of respondents

state that the *rarely* suffer from respiration problems whereas the remaining 8% have stated that they have never suffer from any respiratory disorders.

7. **Migraines:** 16% of the respondents have stated that they *always* suffer from migraine headaches; 40% of the respondents have rated migraines as *often*; 24% of respondents have stated that they *sometimes* experience excruciating headaches; 12% have stated that *rarely* they experience any kind of headache and 8% of the sample stated that they *never* face any headache owing to their working conditions.

8. **Gastro intestinal disease**s: 15% of the population states that they *always* suffer from gastro intestinal issues; 21% have stated that they *often* suffer from stomach problems; 16% of the sample have stated that *sometimes* they suffer from gastrointestinal problems; 18% have stated that *rarely* they have any stomach related issues; where as 30% of the sample size have stated that the *never* have any stomach related problems.

9. **Bladder related issues:** 15% of the population have stated that *always* they have bladder related issues; 18% of the sample have rated it at *often*; 18% of the sample state that they have bladder related problems and UTI *sometimes*; 15% have rated it at *rarely* and 33% of the sample have stated that they *never* suffer from any bladder related problems.

*Considering the nature of tasks performed by the waste pickers on a day-to-day basis the researcher has identified health related issues that are possibly faced by them.*
*For issues such as a body ache, nausea, dizziness, skin and eye infections, and respiratory diseases maximum respondents have chosen the rankings of always and often whereas very few people have chosen the ranking of sometimes, rarely and never. This indicates that the above health issues are very common among the waste pickers. For health problems such as gastrointestinal diseases and urinary tract infections the responses are mostly centered around sometimes and rarely. Thus, it can be concluded that these health issues though affecting the waste picking population are present in moderation.*
*The researcher has noted that long working hours involving physical labour, exposure to harsh weather conditions especially the sun and working mostly on an empty stomach are the possible causes of body aches, dehydration, dizziness and migraines. On the other hand, working in*

*unsanitary conditions and touching waste without proper protective gear is the underlining cause of nausea and skin and eye infections. The researcher would also like to note that constant exposure to dust, fumes, smoke and vapours of thinners and solvents are some of the factors responsible for respiratory diseases in the waste pickers. Also lack of sanitation and eating in unhygienic conditions could be the possible causes of gastrointestinal diseases and bladder related issues.*

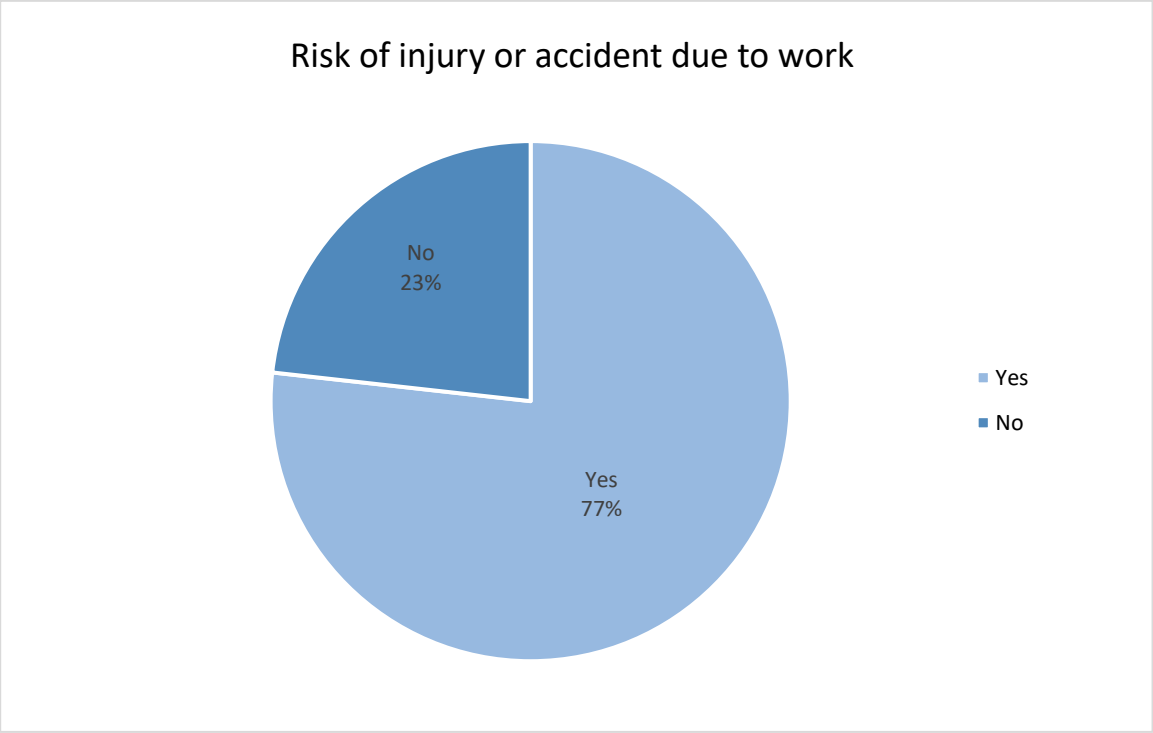
***Gender wise data trends:*** *Gender wise bifurcation of responses has indicated that women predominantly suffer from body aches, dizziness, migraines and urinary tract infections more than as compared to the men. When enquired women respondents have stated that lack of access to latrine and urinals deprives them of opportunities to drink water throughout the day. This could be an underline cause for suffering from UTIs. Male respondents predominantly suffering from skin and eye infections and respiratory diseases more than as compared to the women.*

***Age -wise data trends:*** *Age wise bifurcation of responses has shown that the frequency of skin and eye infections, respiratory tract diseases and bladder related issues is seen to rise with the increase in age of the respondents.*

4.26 Risk of injury or accident because of work

Table and Figure 4.26

| Parameter | No of responses |
|---|---|
| Yes | 806 |
| No | 244 |
| **Total** | **1050** |



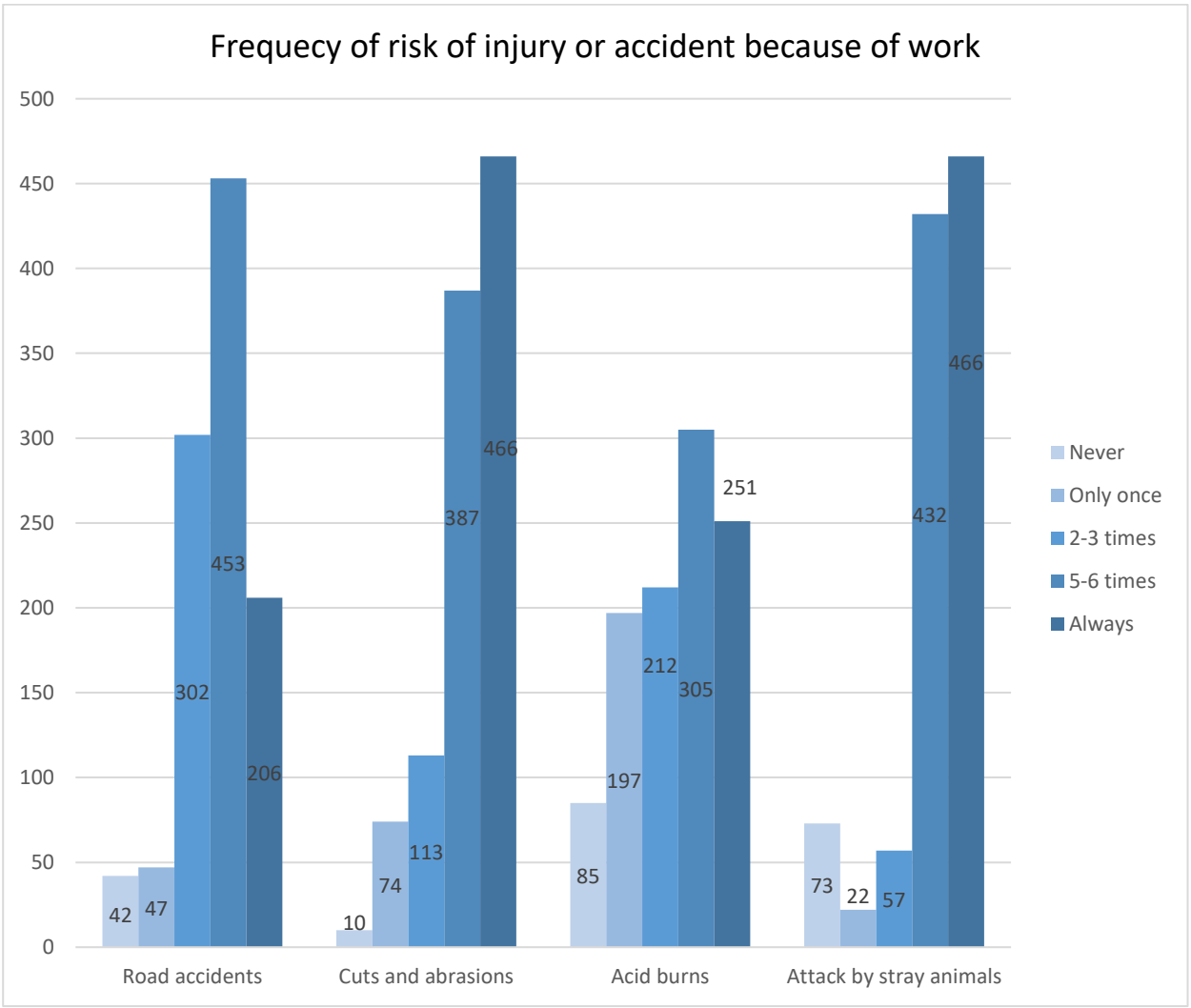

**Inference:**

- 77% of the sample size feels that they are at a risk of injury or accident because of their work.
- Only 23% of the sample size feels that they are not at a risk of injury or accident while doing their work.

4.26.1 Frequency of risk of injury or accident because of work

Table and Figure 4.26.1

| Risk of injury or accident | No of responses | | | | |
|---|---|---|---|---|---|
| | **Never** | **Only once** | **2-3 times** | **5-6 times** | **Always** |
| Road accidents | 42 | 47 | 302 | 453 | 206 |
| Cuts and abrasions | 10 | 74 | 113 | 387 | 466 |
| Acid burns | 85 | 197 | 212 | 305 | 251 |
| Attack by stray animals | 73 | 22 | 57 | 432 | 466 |
| **Total** | **210** | **340** | **684** | **1577** | **1389** |



**Inference:**

1. **Road accidents**: 4% of the sample size have stated that they have *never* faced any road accidents; 4% of the sample size have experienced road accidents while performing their job *once* 29% have faced it *2 to 3 times*; 43% have experienced it *5 to 6 times* and 20% of the respondent have stated that they have experienced road accidents *frequently*.

2. **Cuts and abrasions:** Only 1% of the sample has stated that they have *never* experienced cuts and abrasions; 7% of the sample have stated that they have experienced cuts and abrasions *only once*; 11% of the population have stated that *2-3 times* they have experienced cuts or abrasions; 37% has ranked at *5 to 6 times;* and 44% of the sample have agreed to the fact that they *always* experience cuts and abrasions during the segregation and collection of waste.

3. **Acid burns:** 8% of the sample size have stated that they have *never* experienced acid burns; 19% of the sample have stated that only *once* they have been burnt by acid; 20% of the sample stated that this incidence have happened with them *2 to 3 times*; 29% have stated that *5 to 6 times* they have been burnt by acids; where as 24% of the sample says that *always* they experience acid related burns.

4. **Attack by stray animals**: 20% of the sample have stated that they have *never* been attacked by stray cats or dogs; 32% of the sample size have stated that only *once* they had to face the stray animal attack; 65% of the sample size of stated that they have experienced stray animals attacking them *2 to 3 times;* 50% of the sample size have experienced *5 to 6 times;* whereas 44% have frequently experienced stray animal attacks.

*For question number 4.26 maximum respondents have agreed that they are at risk of injury or accident because of their work whereas very few respondents do not feel that they are at a risk of any injury or accident because of their work*

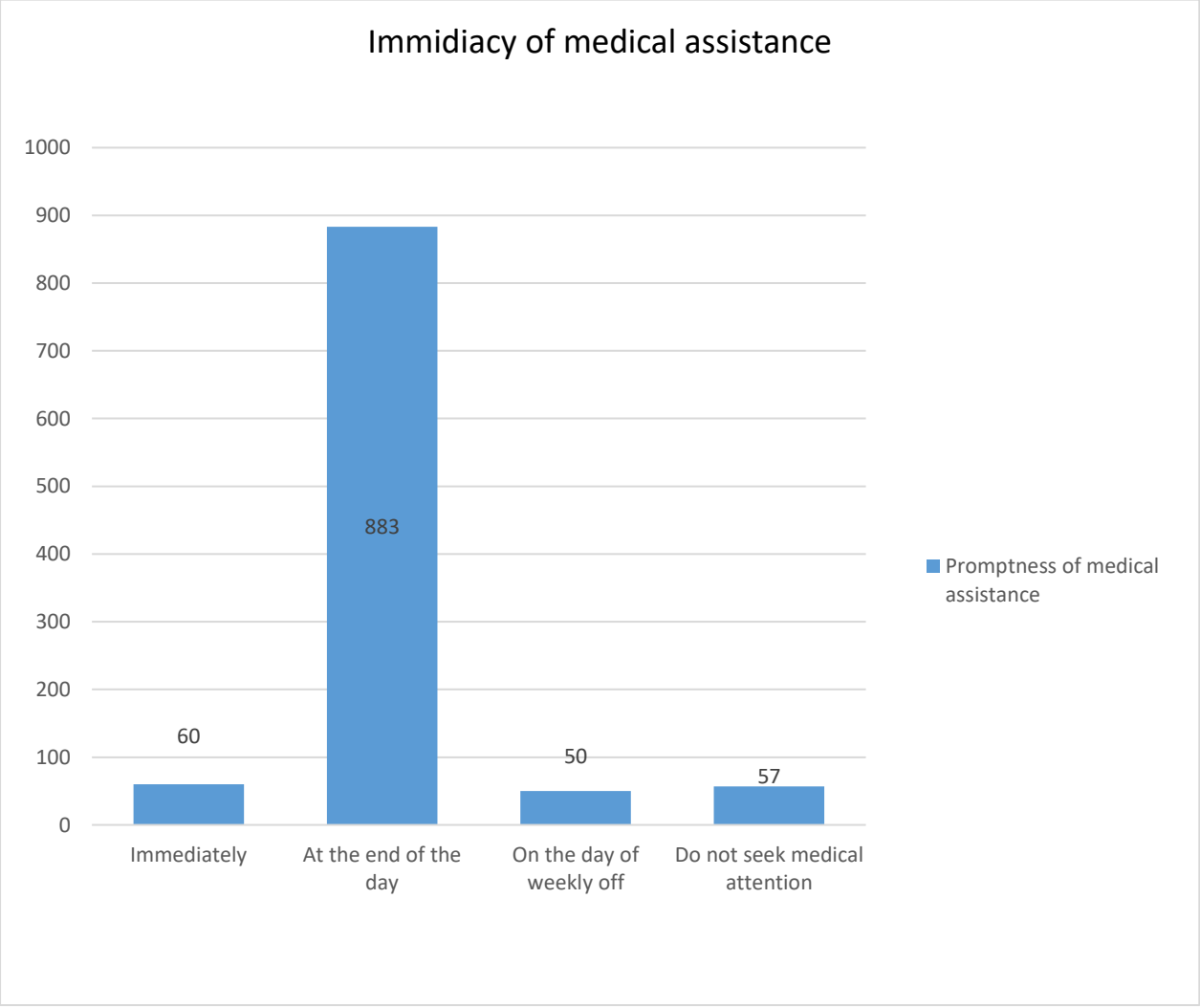
*For question number 4.26.1 most respondents have stated that they have been a part of road accidents or frequently suffer from cuts and abrasions whereas very few respondents have denied any such health hazards from their jobs. On the other hand, risk for injuries associated with acid burns and attack from stray animals received lesser ratings from the respondents.*

*Interactions with respondents has revealed that the sweepers and the bigari workers mostly experience or skip accidents by fractions since most of them are sweeping roads early in the morning with commuters passing by. Respondents have also stated that lack of heavy-duty gloves causes them to suffer from cuts and abrasions on an almost daily basis so much so that often they fail to treat their wounds because of the frequency of occurring. Respondents have stated that most of them take due precautions while handling acids and solvents and are also careful while approaching roadside waste piles in order to avoid stray animal attacks.*

4.27 Immediacy of seeking medical assistance in case of injuries

Table and Figure 4.27

| Parameter | No of responses |
|---|---|
| Immediately | 60 |
| At the end of the day | 883 |
| On the day of weekly off | 50 |
| Do not seek medical attention | 57 |
| **Total** | **1050** |



**Inference:**

- 6% of the respondents have stated that they seek medical assistance *immediately* in case of injuries;
- 84% of the sample size have stated that at the *end of the day* they attend to their injuries;
- 5% of the sample size have stated that they seek medical assistance on the day of their *weekly off;*
- The remaining 5% of the sample size have said that they *do not seek* any medical attention.

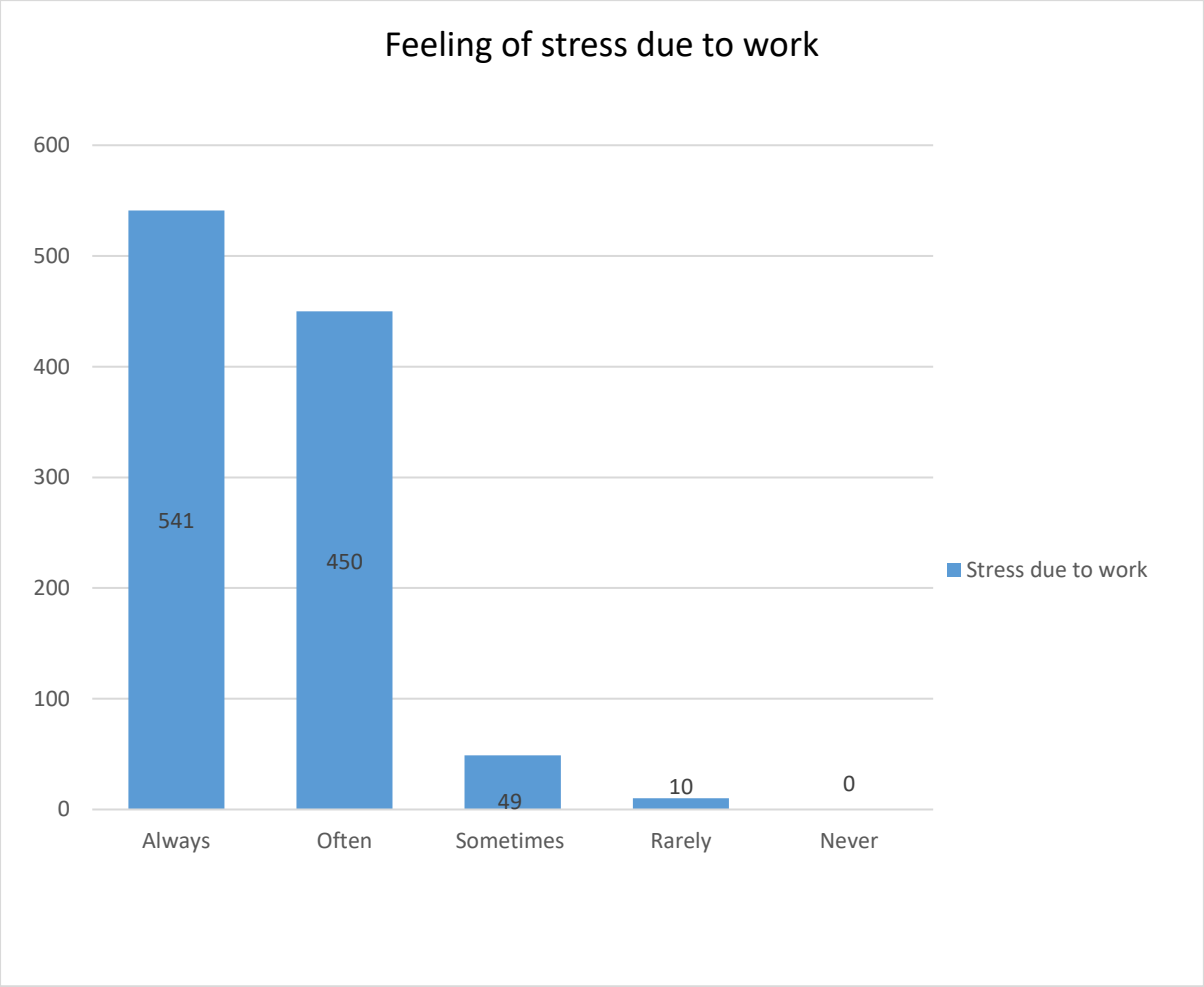
*Most of the respondents have stated that they tend to their injuries at the end of the day. The remaining options such as immediately, treating on weekly off and lack of medical attention have negligent responses. Thus, the researcher would like to conclude that though the respondents are aware about the necessity of medical treatment for their injuries they do not have the necessary facilities at their disposal to see immediate assistance in case of injuries during their working day.*

*The accessibility of first aid facilities has already been discussed in question number 4.22 for intramural welfare. Interactions with respondents has also revealed that they lack the necessary first training making them wait for the day to end before they seek medical attention.*

4.28 Feeling stressed due to work

Table and Figure 4.28

| Parameters | No of responses |
|---|---|
| Always | 541 |
| Often | 450 |
| Sometimes | 49 |
| Rarely | 10 |
| Never | 0 |
| **Total** | **1050** |



**Inference:**

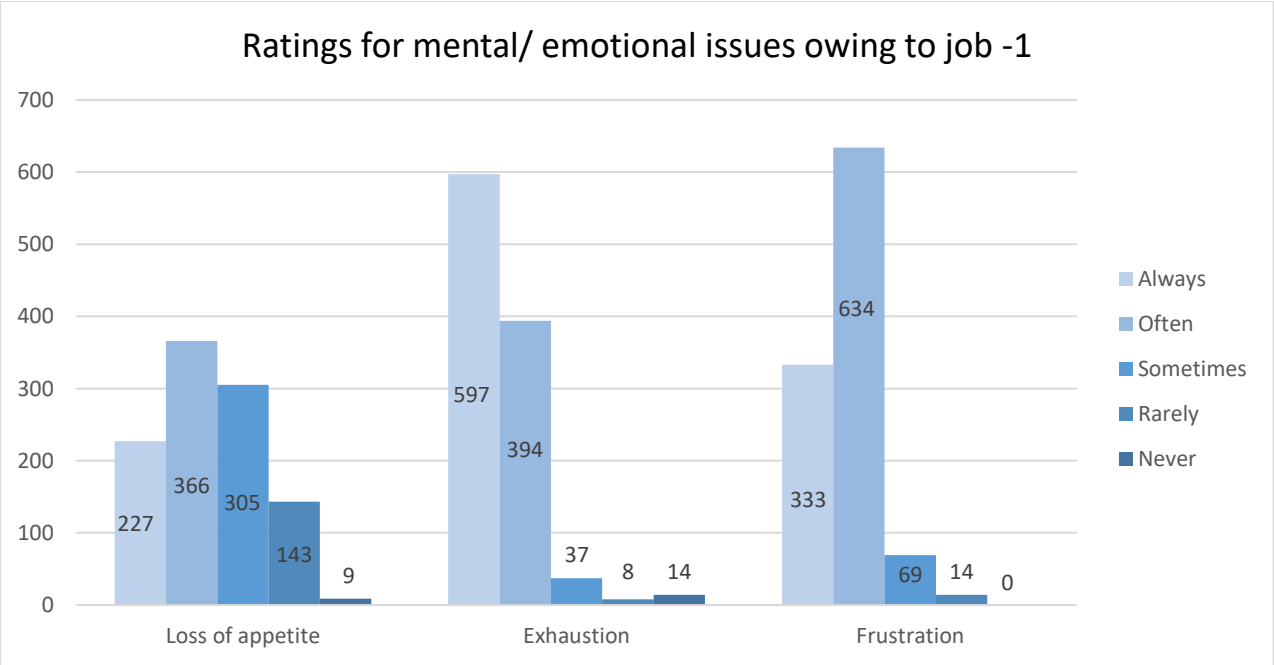
- 52% of the respondents have stated that they *always* feel stressed due to work;
- 43% have stated that they *often* feel stressed due to work;
- 4% of respondents have stated that they *sometimes* feel stressed because of work;
- 1% of respondents have rated the stress at *rarely;*
- No one feels that they are *never* stressed because of their work profile.

*Majority of the responses are bifurcated between always and often whereas negligent responses are given to options such as sometimes and rarely. It is important to note that the option never has not been selected by any respondent thereby indicating the level of stress in their jobs. Thus, the researcher would like to conclude that overall, this is a very stressful job owing to its nature, complexity, working conditions and absolute lack of motivation.*

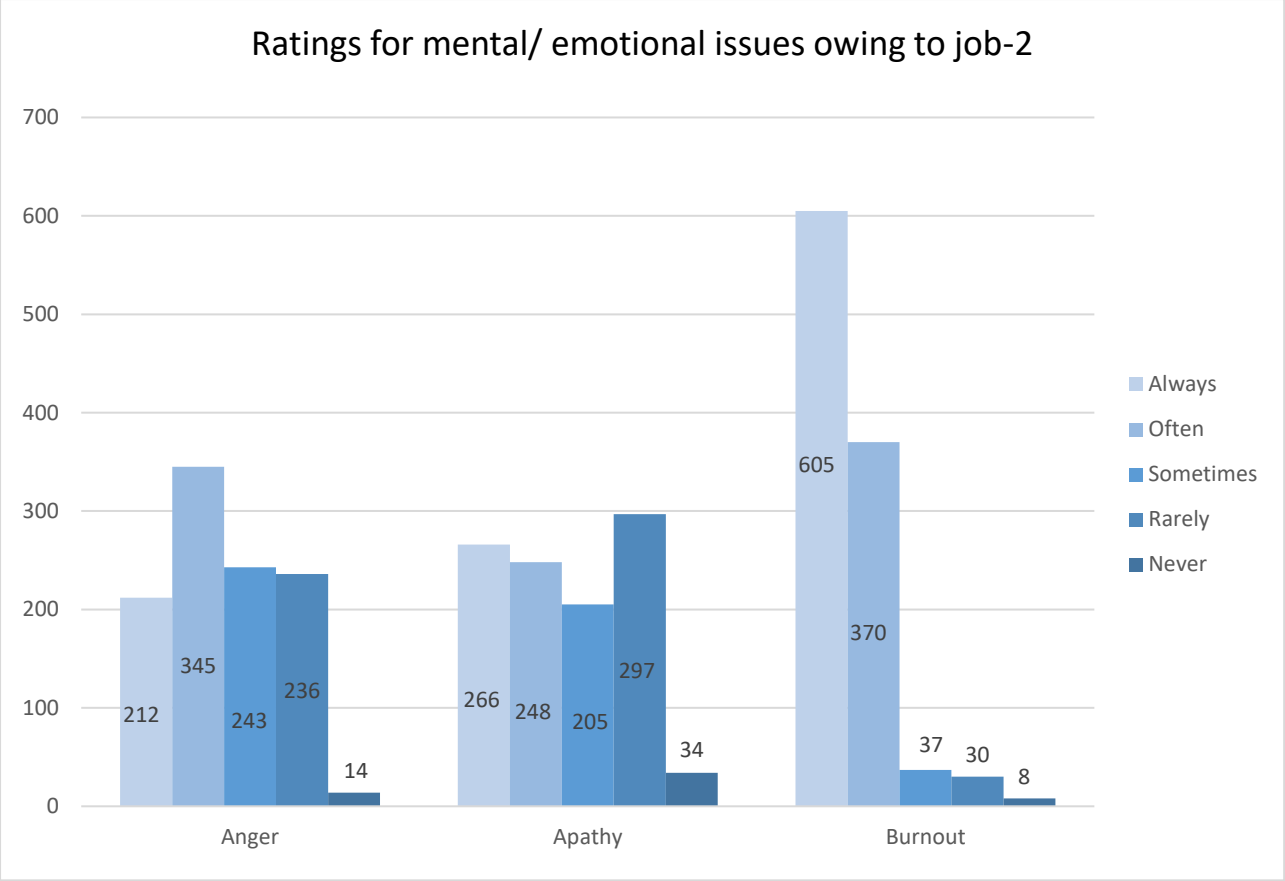
4.29 Mental or emotional issues due to job

Table and Figure 4.29

| Mental or emotional issues due to job | No of responses | | | | |
|---|---|---|---|---|---|
| | **Always** | **Often** | **Sometimes** | **Rarely** | **Never** |
| Loss of appetite | 227 | 366 | 305 | 143 | 9 |
| Exhaustion | 597 | 394 | 37 | 8 | 14 |
| Frustration | 333 | 634 | 69 | 14 | 0 |
| Anger | 212 | 345 | 243 | 236 | 14 |
| Apathy[61] | 266 | 248 | 205 | 297 | 34 |
| Burnout[62] | 605 | 370 | 37 | 30 | 8 |
| **Total** | **2240** | **2357** | **896** | **728** | **79** |




[61] Apathy: As per American Medical Association; the feeling of not being interested in or enthusiastic about anything.
[62] Burnout: As per American Medical Association; a state of complete mental, physical, and emotional exhaustion.




**Inference:**

1. **Loss of appetite:** 22% of the respondents feel that they *always* experience lack of appetite; 35% of the respondents have rated loss of appetite loss to *often;* 29% of the respondents have stated that they *sometimes* experience loss of appetite; 14% have rated this phenomenon at *rarely* and 1% stated that they *never* experience appetite loss.

2. **Exhaustion:** 57% of the respondents feel *always* exhausted; 38% of the respondents have stated that they are *often* exhausted due to their work; 4% have rated it at *sometimes;* 1% at rarely; and 1% at *never.*

3. **Frustration:** 32% of respondents have stated that they are *always* frustrated at work; 60% of the respondents have rated frustration to *often;* 4% of the respondents *sometimes* feel frustrated; where as 1% of respondents feel frustrated *rarely* and *never* respectively.

4. **Anger:** 20% of the respondents have stated that they are *always* angry or furious while performing their jobs; 33% of the respondents have stated that they *often* experience this emotion; 23% of the respondents have stated that they *sometimes* experience anger; 22%

have rated their anger to a *rarely* occurring emotion where as 1% of the respondents have stated that they are *never* angry during their working hours

5. **Apathy:** 25% of the respondents have stated that they *always* experience apathy; 24% of the respondents have stated that they *often* experience apathy; 20% of the respondents have rated the emotion at *sometimes*; 28% of the respondents have started that they *rarely* experienced the emotion; whereas the remaining 3% stated that they *never* feel apathetic.

6. **Burnout:** 58% of the respondents' experience burnout *always*; 35% of the respondents have stated that day *often* feel burnt out after the performance of their daily duties; 4% of the respondents have stated that they *sometimes* experience burnout; 3% of the respondents have stated it at *rarely* and only 1% of the respondents stated that they *never* experience burnout.

*From all the emotional issues arising out of the job exhaustion, frustration, apathy and burnout are the issues which have received the highest ratings. For the above problems ratings are allotted to always and often as options whereas sometimes rarely and never have received negligent responses.*

*Loss of appetite and anger these emotional issues have received mixed ratings from the respondents. Thus, the researcher would like to conclude that exhaustion, frustration, apathy and burnout are common mental or emotional issues from which the waste picking fraternity suffers.*

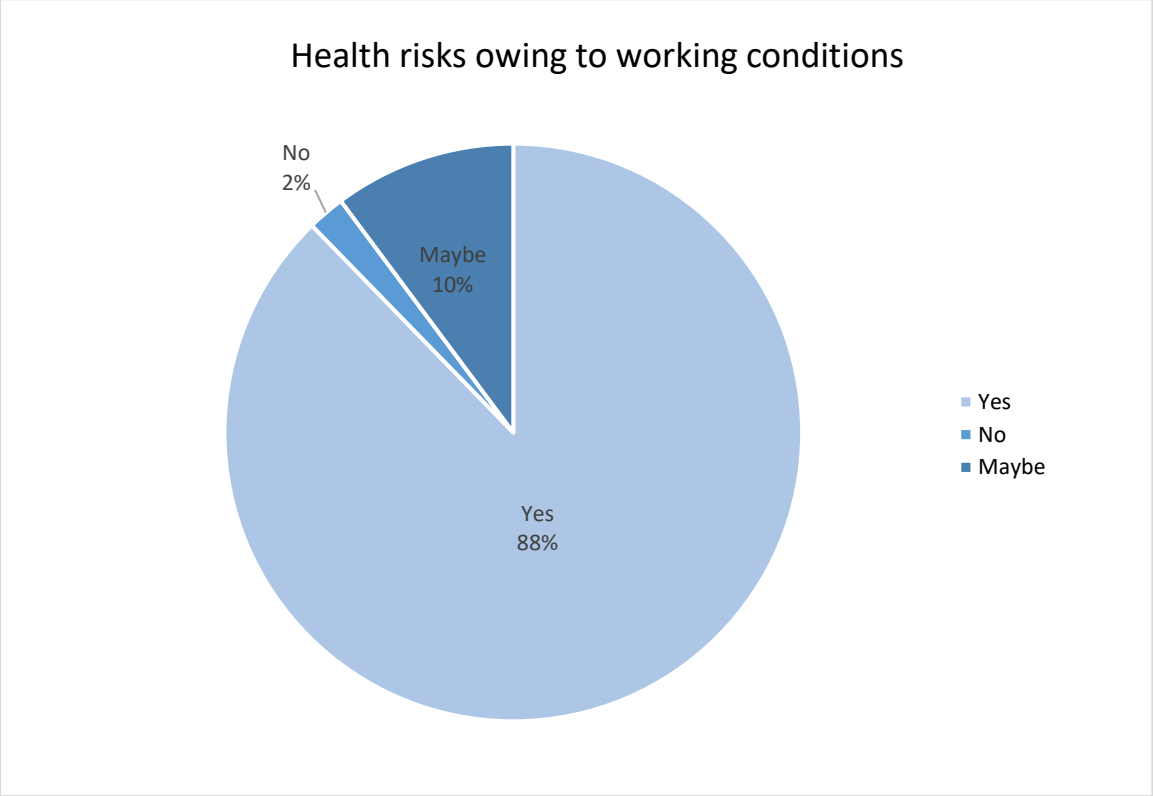
*Interactions with respondents has revealed that though the nature of their job causes them to experience nausea or loss of appetite sometimes; often their physical tiredness and efforts are so heavy that they do feel hungry after a certain duration of time.*

*Exhaustion and resulting apathy and furthermore burnout on the other hand are very predominant emotions and respondents have revealed that most of them almost every day do not feel like beginning their work. However, the nature of their employment and the insufficiency of income is the primary motivation behind reporting to their jobs.*

*The respondents have stated that they often experience anger and frustration owing to the nature of their jobs, lack of facilities, detiorated working conditions and lack of social recognition and welfare.*

4.30 Risks to health owing to working conditions | Table and Figure 4.30

| Parameter | No of responses |
|---|---|
| Yes | 921 |
| No | 22 |
| Maybe | 107 |
| **Total** | **1050** |




**Inference:**

- 88% of the respondents have agreed that they are subjected to health risks owing to their working conditions.
- 10% of the respondents have opted for *maybe*; they are unsure whether their job possess any health hazards to them.
- Only 2% of the respondents have denied that they are subjected to health hazards because of their jobs.

*Maximum respondents have agreed that they have several health risks owing to their working condition whereas very few respondents have opted for an unsure answer or a negative answer.*

*Thus, the researcher would like to conclude that the respondents are very well aware about the health risks posed by the jobs to their physical, mental and emotional health and yet continue to pursue the occupation.*

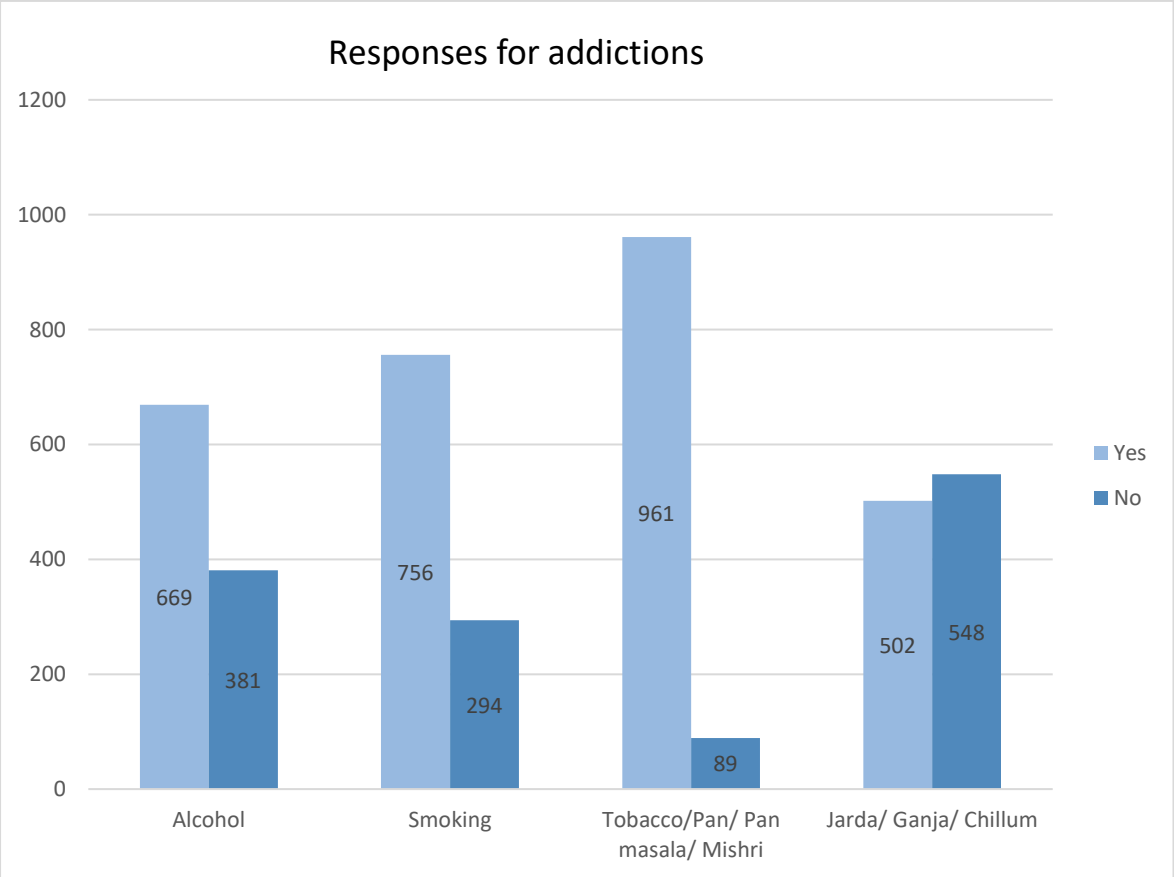
*Respondents have stated that most of them have been in this occupation for generations and have seen their family members suffer from more than one health hazards because of the nature of their work and yet they have opted for this occupation.*

*The researcher would therefore like to term this occupation as a no choice occupation where despite the hazards involved and their awareness the waste picking fraternity continues to work.*

4.31 Addictions of respondents

Table and Figure 4.31

| Addictions | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Alcohol | 669 | 381 |
| Smoking | 756 | 294 |
| Tobacco/Pan/ Pan masala/ Mishri[63] | 961 | 89 |
| Jarda/ Ganja/ Chillum[64] | 502 | 548 |
| **Total** | **2888** | **1312** |




[65]

[63] Tobacco, Pan, Pan Masala, Mishri: Tobacco based products used as addictions
[64] Jarda, Ganja, Chillum: Intoxicants used for inhalation, also termed as psychoactive drugs

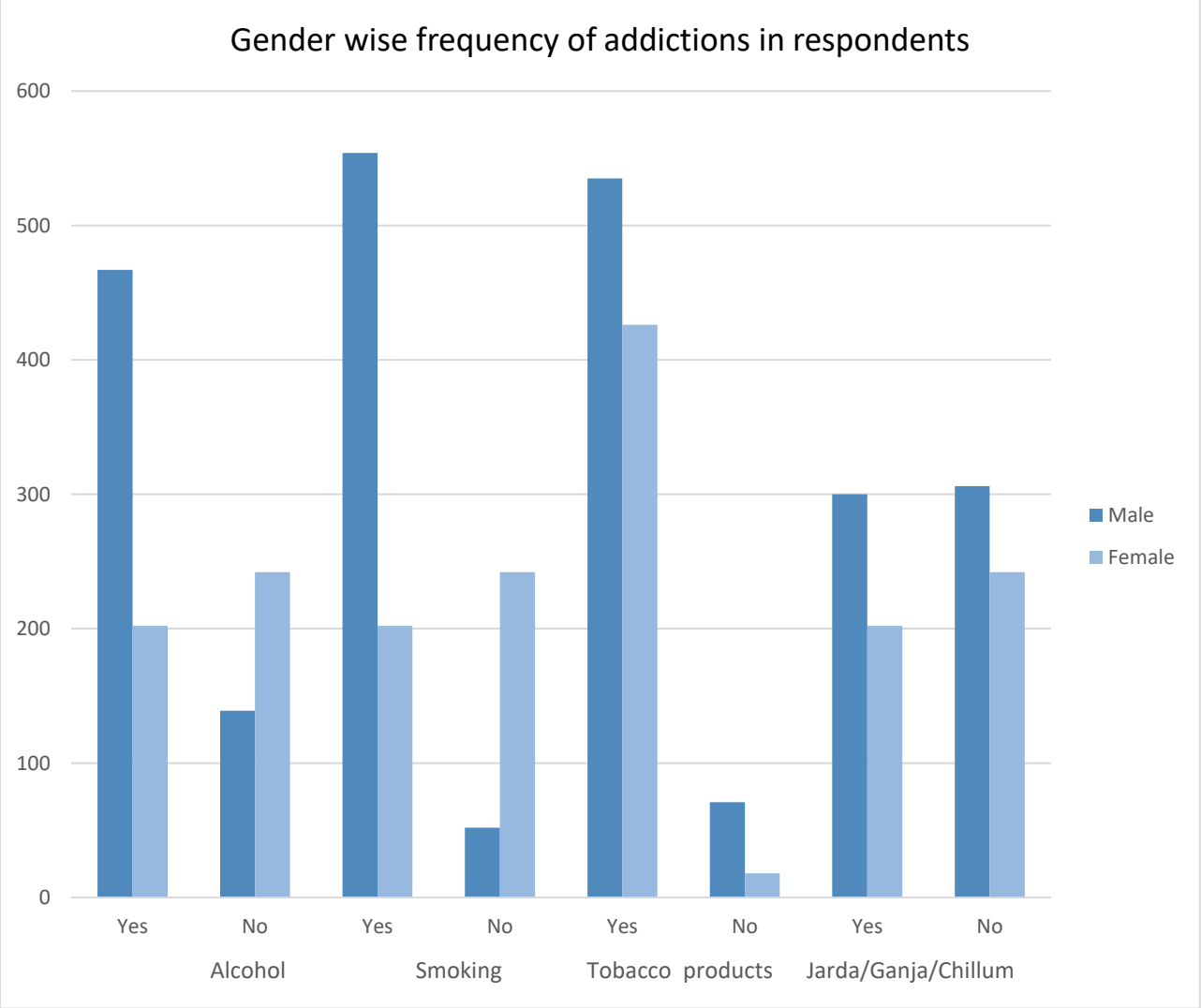
**Inference:**

1. **Alcohol:** 64% of the respondents have stated that *yes*, they consume alcohol; whereas 36% of the respondents have stated that they are non-alcoholic.
2. **Smoking:** 72% of the respondents have stated that they smoke cigarettes; bidis as well as other smoking agents; 28% of the respondents have stated that they *do not smoke.*
3. **Tobacco; Pan; Pan Masala; Mishri**: 92% of the respondents have stated that they consume tobacco Pan; Pan Masala or Mishri as a habit; whereas only 8% of the respondents have stated that they *do not* consume these items.
4. **Jarda; Ganja; Chillum**: 48% of the respondents have agreed that the use Ganja or Chillum; where has only 52% of the respondents have negated the use of such intoxicants.

4.31.1 Gender wise frequency of addictions amongst respondents

Table and Figure 4.31.1

| Gender | No of responses | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Alcohol** | | **Smoking** | | **Tobacco/Pan/Pan Masala/ Mishri** | | **Jarda, Ganja, Chillum** | |
| | Yes | No | Yes | No | Yes | No | Yes | No |
| Male | 467 | 139 | 554 | 52 | 535 | 71 | 300 | 306 |
| Female | 202 | 242 | 202 | 242 | 426 | 18 | 202 | 242 |
| **Total** | **669** | **381** | **756** | **294** | **961** | **89** | **502** | **548** |



**Inferences**

- **Alcohol**

1. **Males:** 77% of the males have agreed that they consume alcohol whereas 23% of the men have stated that they do not consume alcohols.
2. **Females:** 45% of the females have agreed that they drink alcohol whereas 55% of the women have denied that they consume alcohols.

- **Smoking:**

1. **Males:** 91% of the man have agreed that they smoke cigarettes and bidis whereas 9% of them only or not addicted to smoking.
2. **Females:** 45% of the women have agreed that they have an addiction of smoking whereas the remaining 55% have denied it.

- **Tobacco products:**

1. **Males:** 88% of the male respondents have agreed that they consume tobacco-based products whereas only 12% of them have denied the addiction of such items.
2. **Females:** 96% of the women have stated yes when it comes to consumption of tobacco-based products only 4% of women do not consume them.

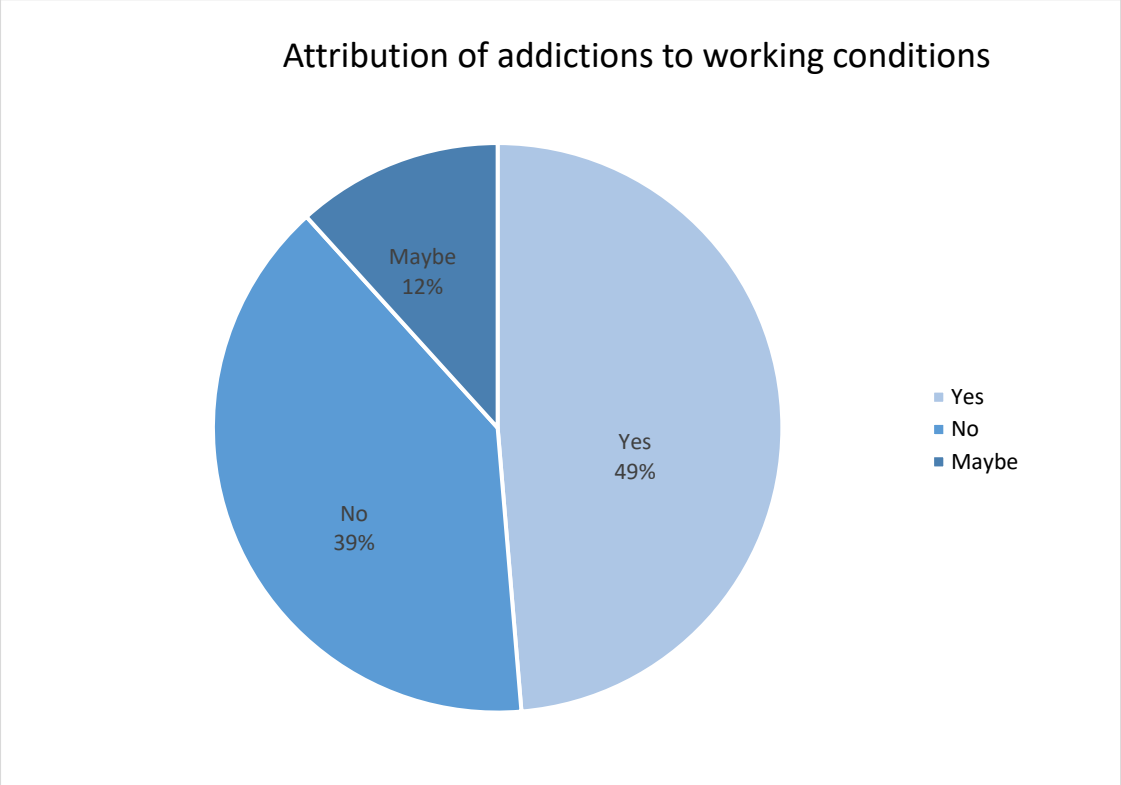
- **Jarda ganja Chillum:**

1. **Males:** There is a 50% response from the male respondents when it comes to consumption of Jarda Ganja and Chillum.
2. **Females:** 45% of the women have agreed that they opt for substance abuse where as 55% of them have denied this addiction.

4.32 Attribution of addictions to working conditions

Table and Figure 4.32

| Parameter | No of responses |
|---|---|
| Yes | 511 |
| No | 416 |
| Maybe | 123 |
| **Total** | **1050** |




**Inference:**

- 49% of the respondents agree and attribute their addictions to their working conditions;
- 40% of the respondents feel that their addictions are not a consequence of their working conditions;
- 12% of the respondents are unsure whether the addictions are co - related to their working conditions;

*From the above addictions the most common addiction among the waste pickers is the consumption of tobacco, Pan, Pan Masala and Mishri. The second most common addiction is alcoholism followed by smoking. Consumption of Ganja and others inebriants is fourth in the ranking. The researcher would thus like to conclude that the level of intoxication and addictions is very high among the waste picking population.*

***Gender wise data trends:*** *Gender wise bifurcation of these responses has indicated that even women are equally prey to addictions as compared to their male counterparts. Men have shown a greater inclination towards alcohol and smoking where as women on the other hand prefer alcohol, smoking and tobacco based adictors alike.*

***Age wise data trends:*** *Age wise bifurcation of the above responses has shown the addictions to be concentrated amongst the population falling in the age group of 29 to 50 years. Few older respondents have agreed that they have given up on addictions in the due course of time.*

*For question number 4.35 maximum respondents are of the opinion that they have fallen prey to these addictions because of the nature of their working conditions. Very few respondents do not feel that their jobs or the resultant working conditions and stress are responsible for they are addictions.*

*Respondents have also stated during interactions that in the absence of these addictions they shall find it very difficult to pursue their jobs. The consumption of intoxicants and substance abuse gives them the necessary will power and intrinsic negative motivation to pursue their task at hand. Most respondents have agreed that though they do not consume alcohol during working hours however once their working overs are completed, they devote almost all of their time to the same.*

*During the process of visits and interactions the researcher has observed and noted that almost all of the waste pickers consume tobacco and tobacco related products while working.*

*Women respondents apart from their addiction have stated that their husbands also if in the same profession are heavily addicted resulting in several personal life issues as well.*

### 4.32.1 Testing of hypotheses 1 and 2:

**The hypotheses testing for hypotheses 1 and 2 is presented as below:**

**Hypothesis 1:**

H0: The task related challenges have no effect on the physical and mental health of the waste pickers

H1: The task related challenges have an effect on the physical and mental health of the waste pickers

One way ANOVA[66]

Table no 4.32.1

| ***Groups*** | ***Count*** | ***Sum*** | ***Average*** | ***Variance*** |
|---|---|---|---|---|
| Task challenges | 1050 | 4351 | 4.1438 | 0.3292 |
| Stress arising | 1050 | 3667 | 3.4924 | 0.2921 |
| Encountered situations | 1050 | 1626 | 1.5486 | 0.5834 |
| Health issues | 1050 | 3637 | 3.4638 | 0.5883 |
| Experienced hyper emotions | 1050 | 4261 | 4.0581 | 0.459 |
| Addiction | 1050 | 3938 | 3.7505 | 1.7718 |
| Attribute stress to working conditions | 1050 | 3340 | 3.181 | 3.502 |

Table no 4.32.2

| ***Source of Variation*** | ***SS*** | ***df*** | ***MS*** | ***F*** | ***P-value*** | ***F critical*** |
|---|---|---|---|---|---|---|
| Between Groups | 4823.4966 | 6 | 803.92 | 747.75 | 0.01 | 2.0998 |
| Within Groups | 7894.5714 | 7343 | 1.0751 | | | |
| Total | 12718.0680 | 7349 | | | | |

As the F table value (747.75) is greater than the F critical value (2.10) and also the p-value (0.01) is less than 0.05, the null hypothesis is rejected i.e. there is a significant difference between the means of task challenges variable (all variables related to task challenges clubbed together) and the physical and mental health related factors of the waste pickers. ***Hence it is concluded that there is a significant association between task challenges and physical and mental health of waste pickers. i.e. The task related challenges have an effect on the physical***

[66] ANOVA: Analysis of variance

***and mental health of the waste pickers.*** Further to identify which factor among the physical and mental health related factors is more significant, Post Hoc test was applied and the results achieved are placed underneath;

***Post-hoc test - Bonferroni correction = Alpha/No. of variables = 0.05/6 = 0.0083***

Table no 4.32.3

| ***Groups*** | ***P-value (T test)*** | ***Significant*** |
|---|---|---|
| Stress arising | 3.7803E-136 | True |
| Encountered situations | 0 | True |
| Health issues | 1.2976E-104 | True |
| Experienced hyper emotions | 0.001780507 | True |
| Addiction | 2.96688E-18 | True |
| Attribute stress to working conditions | 4.38594E-54 | True |

Though all the factors are significant, to find the most significant factors among these, Post Hoc test was applied. It was observed that again all the factors found to be significant. Hence further based on their p-value, it could be concluded that the following three are further most significant;

1) Encountered situations
2) Stress arising
3) Health issues

**Hypothesis 2:**

H0: The working environment has no effect on the physical and mental health of the waste pickers.

H1: The working environment has an effect on the physical and mental health of the waste pickers.

One way ANOVA

Table no 4.32.4

| ***Groups*** | ***Count*** | ***Sum*** | ***Average*** | ***Variance*** |
|---|---|---|---|---|
| Working environment | 1050 | 3407 | 3.2448 | 0.2327 |
| Stress arising | 1050 | 3667 | 3.4924 | 0.2921 |
| Encountered situations | 1050 | 1626 | 1.5486 | 0.5834 |
| Health issues | 1050 | 4486 | 4.2724 | 0.4977 |
| Experienced hyper emotions | 1050 | 4261 | 4.0581 | 0.459 |
| Addiction | 1050 | 3938 | 3.7505 | 1.7718 |
| Attribute stress to working conditions | 1050 | 3340 | 3.181 | 3.502 |

Table no 4.32.5

| ***Source of Variation*** | ***SS*** | ***df*** | ***MS*** | ***F*** | ***P-value*** | ***F critical*** |
|---|---|---|---|---|---|---|
| Between Groups | 5057.09 | 6 | 842.85 | 803.94 | 0.01 | 2.0998 |
| Within Groups | 7698.36 | 7343 | 1.0484 | | | |
| Total | 12755.4 | 7349 | | | | |

As the F table value (803.94) is greater than the F critical value (2.10) and also the p-value (0.01) is less than 0.05, the null hypothesis is rejected i.e. there is a significant difference between the means of working environment variable (all variables related to working environment clubbed together) and the variables related to physical and mental health of waste pickers. ***Hence it is concluded that there is a significant association between working environment and physical and mental health of waste pickers. i.e. The working environment has an effect on the physical and mental health of the waste pickers***. Further to identify which variable among the physical and mental health variables is more significant, Post Hoc test was applied and the results achieved are placed underneath;

***Post-hoc test - Bonferroni correction = Alpha/No. of variables = 0.05/6 = 0.0083***

Table no 4.32.6

| ***Groups*** | ***P-value (T test)*** | ***Significant*** |
|---|---|---|
| Stress arising | 9.5072E-28 | True |
| Encountered situations | 0 | True |
| Health issues | 2.592E-250 | False |
| Experienced hyper emotions | 1.965E-180 | False |
| Addiction | 4.4607E-30 | False |
| Attribute stress to working conditions | 0.28477822 | False |

Though all the factors are significant after applying Post Hoc test, the most significant factors based on the P-value were as follows;

1) Encountered situations
2) Stress arising

**Hypothesis 3:**

- H0: There is no dissatisfaction amongst the waste pickers with regards to the ***hygiene factors.***
- H1: There is dissatisfaction amongst the waste pickers with regards to the ***hygiene factors***.

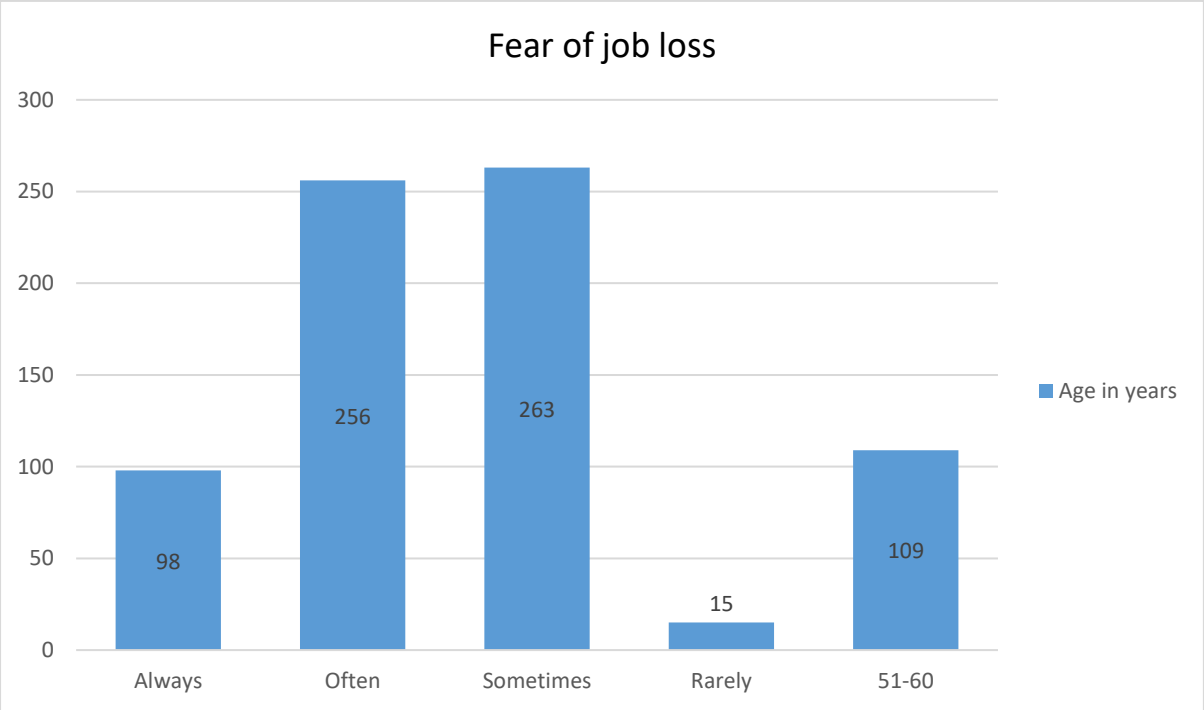
For hypothesis 3 the questions from 4.33 to 4.38 have been treated as independent variable

For dependent variables the following questions have been treated as dependent variables 4.24, 4.28, 4.30 to 4.32

4.33 Fear of job loss

Table and Figure 4.33

| Parameter | No of responses |
|---|---|
| Always | 98 |
| Often | 256 |
| Sometimes | 263 |
| Rarely | 15 |
| Never | 418 |
| **Total** | **1050** |




**Inference:**

- 9% of respondents have stated that they are *always* in the fear of job loss;
- 24% of the respondents experience the fear of job loss *often*;
- 25% of the respondents have stated that *sometimes* they think about losing their jobs;
- 1% of respondents have rated their fear of job loss at *rarely;*
- 40% of the respondents have stated that they *never* think about losing their job.

*The responses indicating fear of job loss cumulatively are concentrated around always, often and sometimes. However, a significant number of people have also rated never as a rating for thinking about job loss. Thus, the researcher would like to conclude that the responses are bifurcated between two extremes when it comes to fear of job loss.*

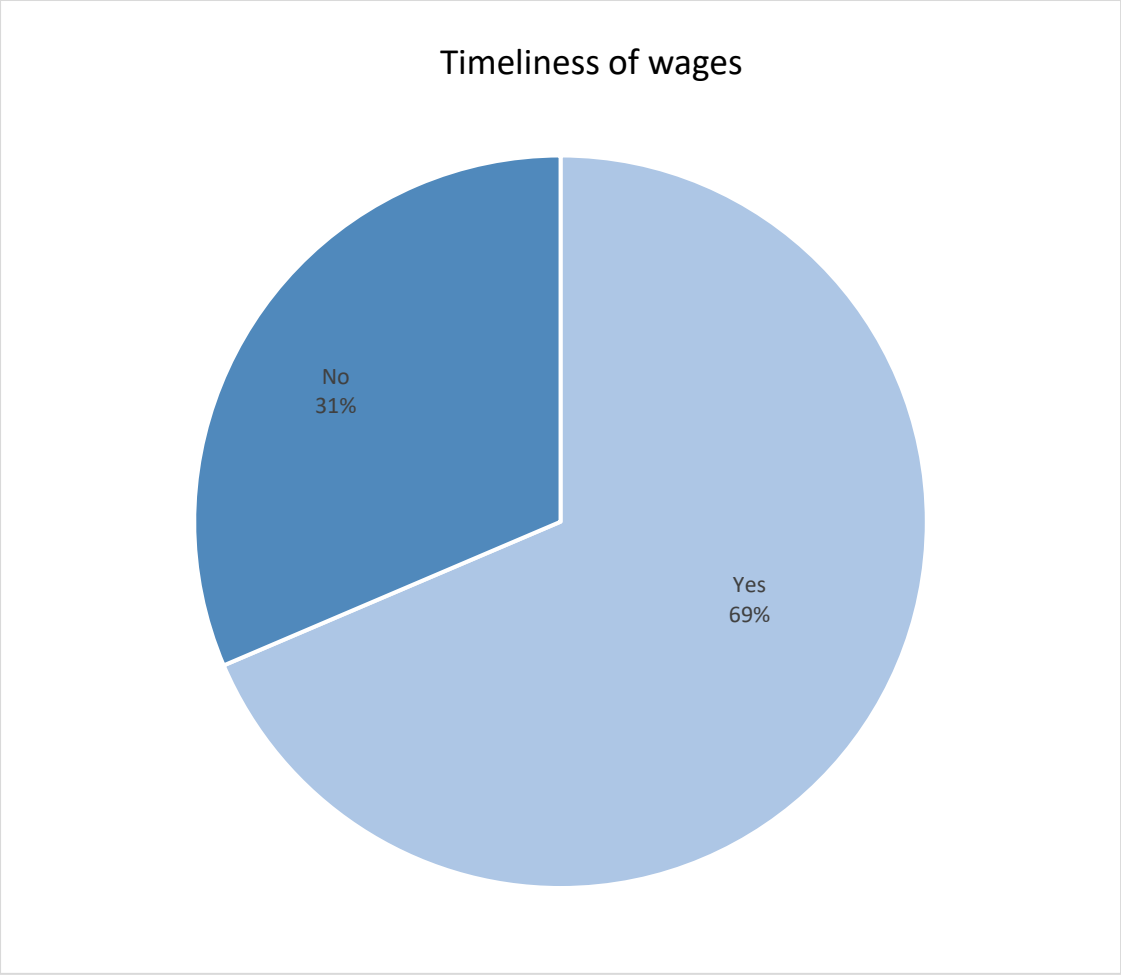
*The researcher has thus observed that the DTDC workers, the contractual employees as well as the itinerant waste pickers are the population that are significantly worried about losing their jobs in case they fail to perform.*

*On the other hand, permanent employees such as the sweepers and the biggari workers are the population that never thinks about losing their jobs despite being lax in their discharge of duties. Thus, the researcher would like to conclude that this occupation lacks reasonable job security and make it a mandate for the job performer to perform his task daily tasks in order to earn livelihood.*

4.34 Timeliness of fixed wages

Table and Figure 4.34

| Parameter | No of responses |
|---|---|
| Yes | 441 |
| No | 202 |
| **Total** | **643** |



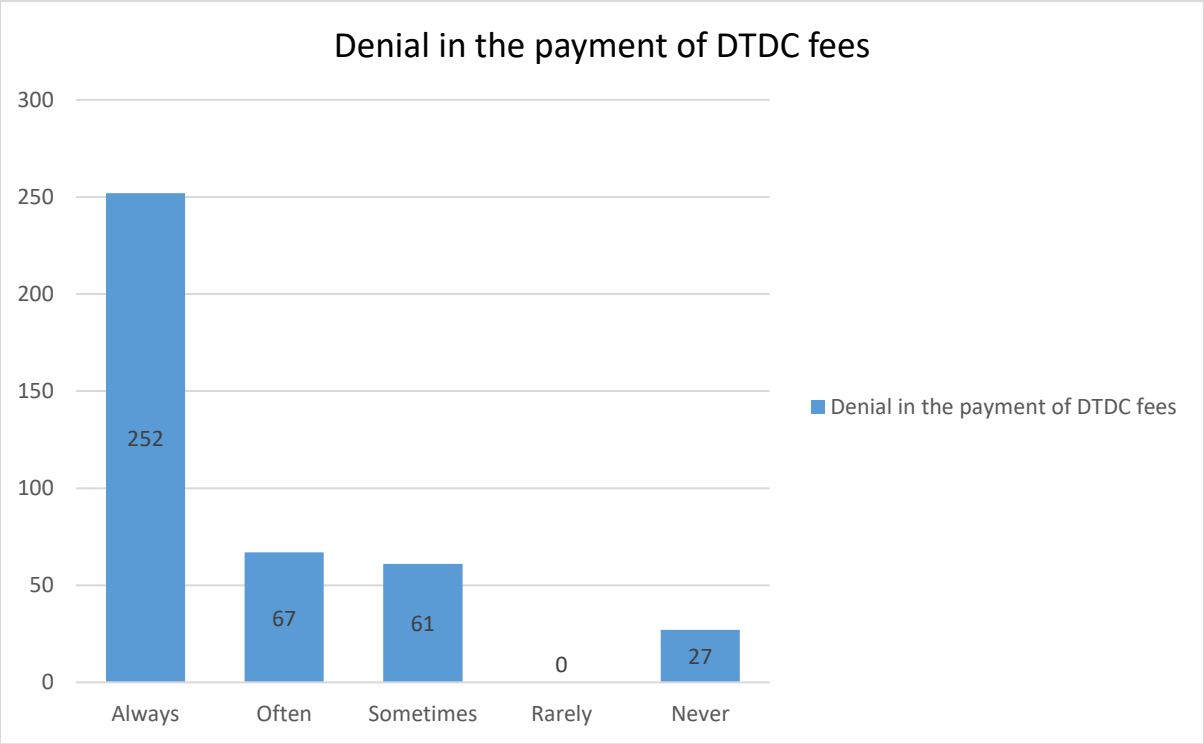

**Inference:**

- 69% of the respondents have stated that they received they are salaries timely.
- 31% of the respondents have stated that there is no timeliness in their wages.

4.34.1 Denial in the payment of DTDC fees

Table and Figure 4.34.1

| Parameter | No of responses |
|---|---|
| Always (Every month) | 252 |
| Often (Minimum 6 months in a year) | 67 |
| Sometimes (Minimum 3 months in a year) | 61 |
| Rarely | 0 |
| Never | 27 |
| **Total** | **407** |



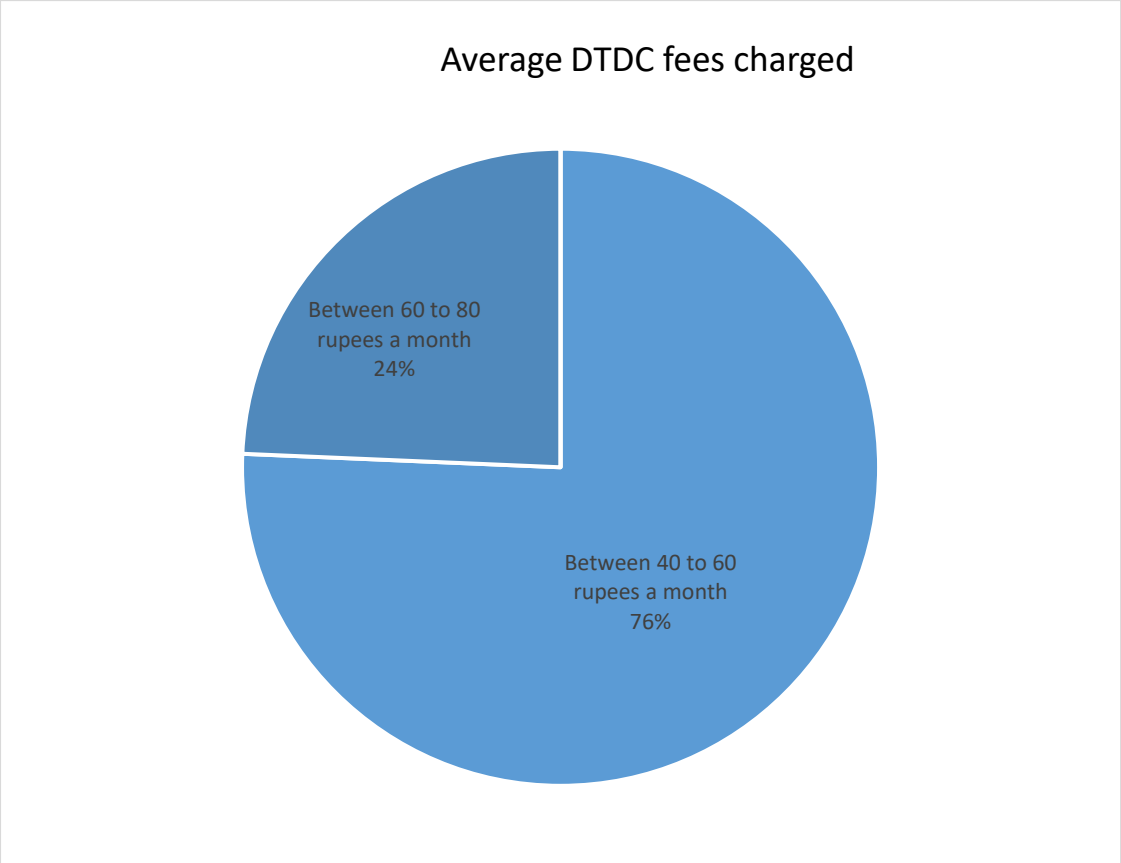

**Inference:**

- 62% of respondents have stated that they are *always* denied the payment of DTDC fees.
- 16% of respondents have rated it at *often.*
- 15% of respondents have stated that *sometimes* they do not receive the DTDC fees.
- 0% of respondents have rated it at *rarely.*
- 7% of respondents have stated that they are *never* denied door to door collection fees.

4.34.2 Average DTDC fees charges

Table and Figure 4.34.2

| Parameter | No of responses |
|---|---|
| Less than 20 rupees a month | 0 |
| Between 20 to 40 rupees a month | 0 |
| Between 40 to 60 rupees a month | 308 |
| Between 60 to 80 rupees a month | 99 |
| More than 80 rupees a month | 0 |
| Total | **407** |



**Inference:**

- For DTDC fees of less than 20 rupees and more than 80 rupees a month there are 0 responses;
- 76% of the SWaCH workers have stated that they are paid DTDC fees between 40 to 60 rupees a month;
- 24% of SWaCH workers have stated that they are paid DTDC fees are between 60 to 80 rupees a month.

*For question number 4.34 the responses are bifurcated on two extremes where maximum respondents have agreed that they receive their salary on time and the other half respondents have stated that they do not receive their salaries on time. For this particular question only, salaried employees are considered as respondents.*

*Interaction with respondents have revealed that the permanent employees receive timely salaries on the first of every month. Contractual employees however have stated that they experience a delay of 8 to 10 days while getting the salary is credited into their accounts.*

*For question number 4.34.1 maximum respondents have chosen always, often and sometimes as options for denial in payment of DTDC fees whereas only a negligent percentage of respondents have stated that they are never denied DTDC payment.*

*Interactions with respondents has revealed that the door-to-door collection workers are for a large part denied monthly payments.*
*Interactions with citizens in this regard have brought forward the following observations:*

- *Most citizens have stated that waste collection is a function of the Pune Municipal Corporation and therefore they do not see the point of paying DTDC fees.*
- *Citizens also tend to not have a belief that the DTDC workers are a part of a SWaCH cooperative and that they receive monthly salary.*
- *Citizens have also expressed the opinion that they do pay Diwali and other major festivals to the members of the SWaCH cooperative which should be sufficient for them.*

*Thus, the researcher would like to conclude that DTDC fees are greatly denied to the waste pickers thereby making them rely only on the sale of scrap for the purpose of survival.*

*In question number 4.34.2 the respondents have stated that they charge a monthly DTDC fees between 40 - 80 per household.*

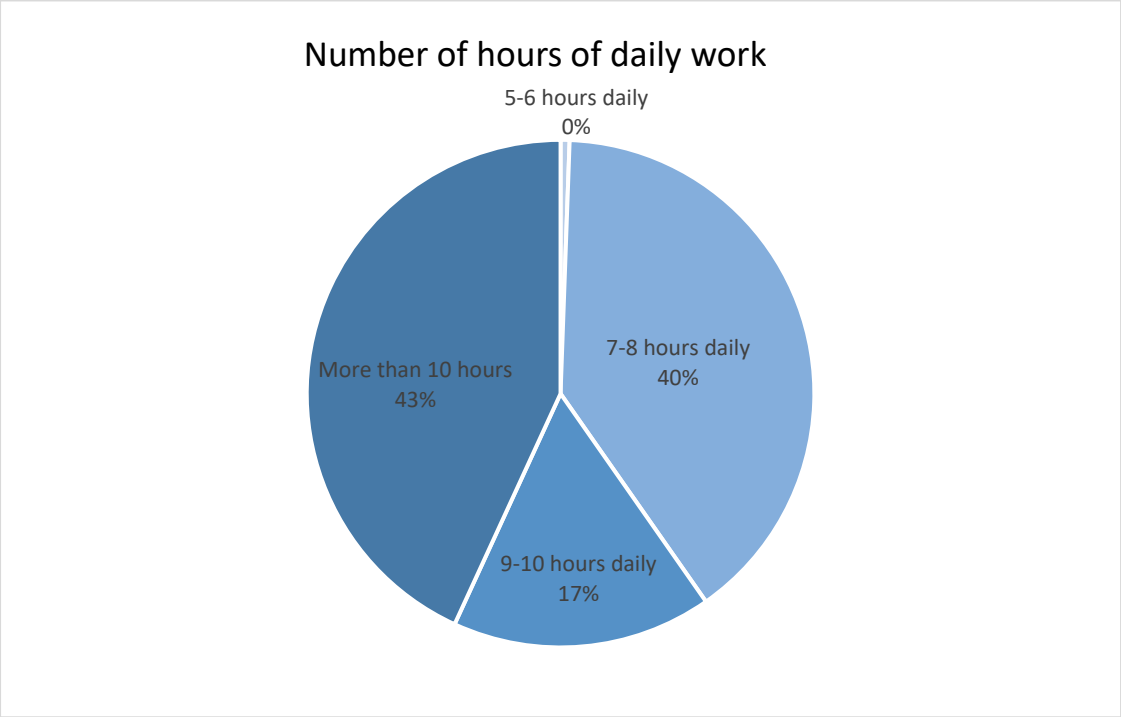
***Ward office wise data trends:*** *Ward office wise bifurcation of these responses indicates that the DTDC fees are directly proportional to the socio-economic status of the citizens. The highest charging ward office being Aundh Baner while the lowest charging being Bhavani Peth.*

*Interactions with respondents has revealed that in most apartment and societies citizens tend to prefer not to interact with the SWaCH workers and the DTDC fees are often collectively paid by the chairman of the society for all the flats which are in turn collected in the monthly maintenance. However, such societies and apartments tend to pay a monthly fee between 500 to 700 which brings down the average fees for household to 20-25 rupees.*

4.35 Number of hours of daily work

Table and Figure 4.35

| Parameter | No of responses |
|---|---|
| 5-6 hours daily | 6 |
| 7-8 hours daily | 417 |
| 9-10 hours daily | 174 |
| More than 10 hours | 453 |
| **Total** | **1050** |

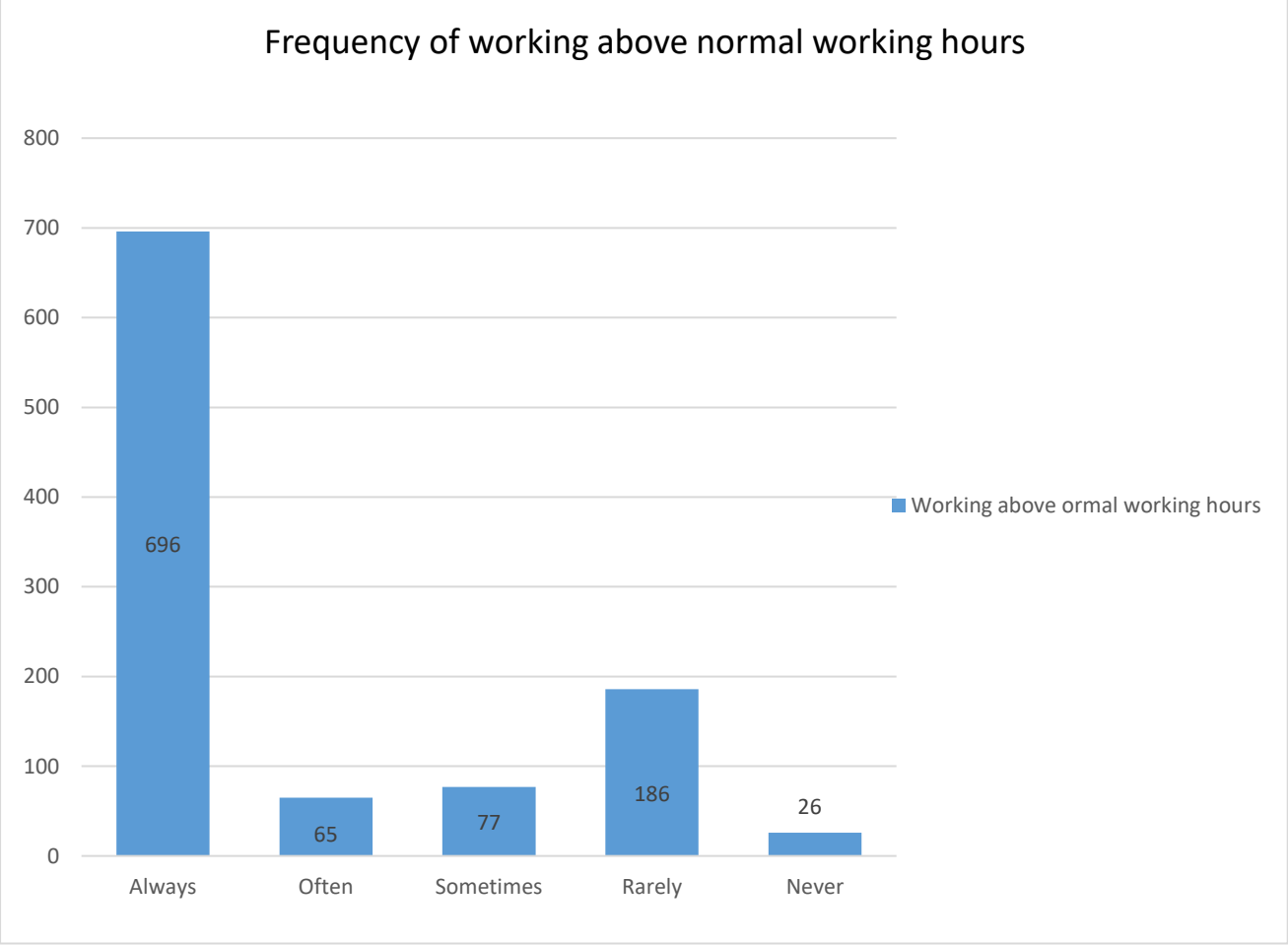



**Inference:**

- <1% of respondents stated that they work 5 to 6 hours daily.
- 40% of respondents have stated that they work 7 to 8 hours on a daily basis.
- 17% of respondents stated that they work for 9 to 10 hours each day.
- 43% of respondence have stated that they have to work for more than 10 hours a day.

4.35.1 Frequency of working above your normal working hours. Table and Figure 4.35.1

| Parameter | No of responses |
|---|---|
| Always (Every day) | 696 |
| Often (More than 4 times a wee) | 65 |
| Seldom (Not more than twice a week) | 77 |
| Only on festivals and national holidays | 186 |
| Never | 26 |
| **Total** | **1050** |



**Inference:**

- 66% of respondents have stated that they *always* work more than their normal working hours.
- 6% of respondents have stated that they *often* work more than their normal working hours.
- 7% of respondents have stated that they *sometimes* work more than their normal working hours.
- 18% of respondents have stated that they *rarely* work more than their normal working hours.
- 2% of respondents have stated that they *never* work more than their normal working hours.

*For question number 4.35 maximum respondents have stated that they work for a minimum of 9 hours and a maximum of more than 10-hour day. Few respondents have stated that they work for 7 to 8 hours on a daily basis. Thus, in a nutshell the average working hours for the waste pickers are in the range of 9 to 12 hours.*

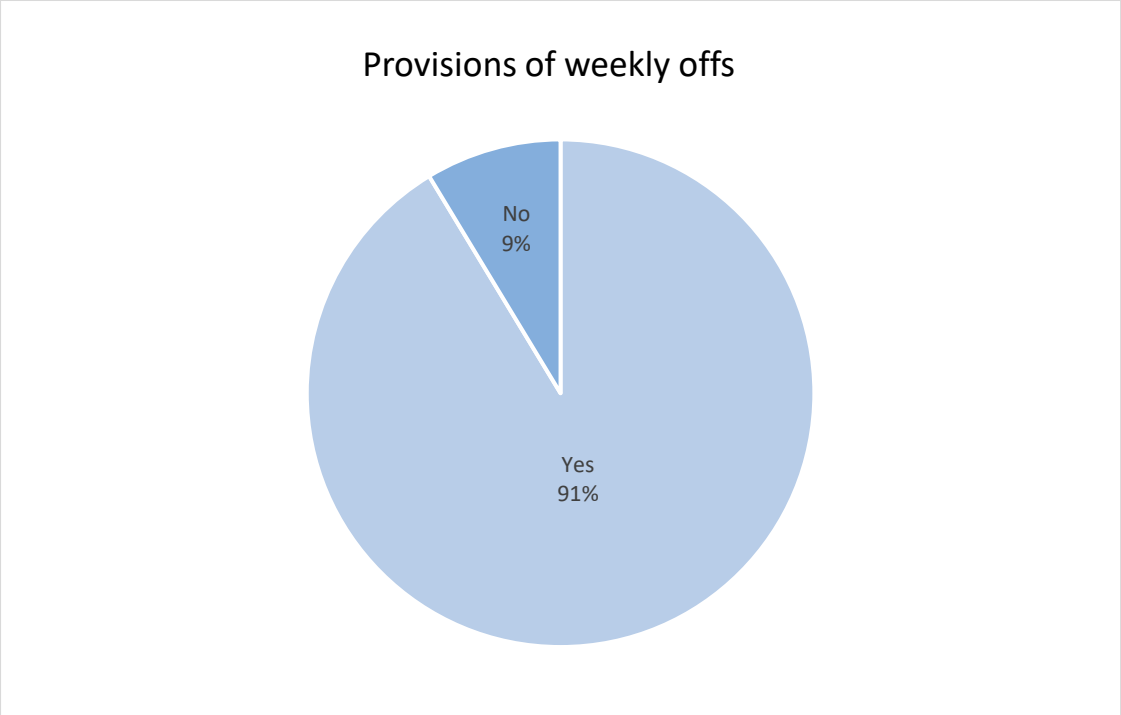
*For question number 4.35.1 maximum respondents have chosen always and often as options for working above standard working hours whereas negligent responses have been recorded for seldom rarely and never. The researcher would like to conclude that the waste picking fraternity has a huge workload and requires over and above 9 hours a day to finish their tasks. This is also an indicator of the fact that the aarogya kothis cover a larger jurisdiction and that there is a need for further re allocation of work so as to reduce the number of working hours for the existing people.*

*DTDC workers have also stated that they spend time beyond their normal working hours to segregate the waste in order to find the saleable scrap thus increasing the stress full ness of their jobs.*

4.36 Provision of weekly offs

Table and Figure 4.36

| Parameter | No of responses |
|---|---|
| Yes | 959 |
| No | 91 |
| **Total** | **1050** |



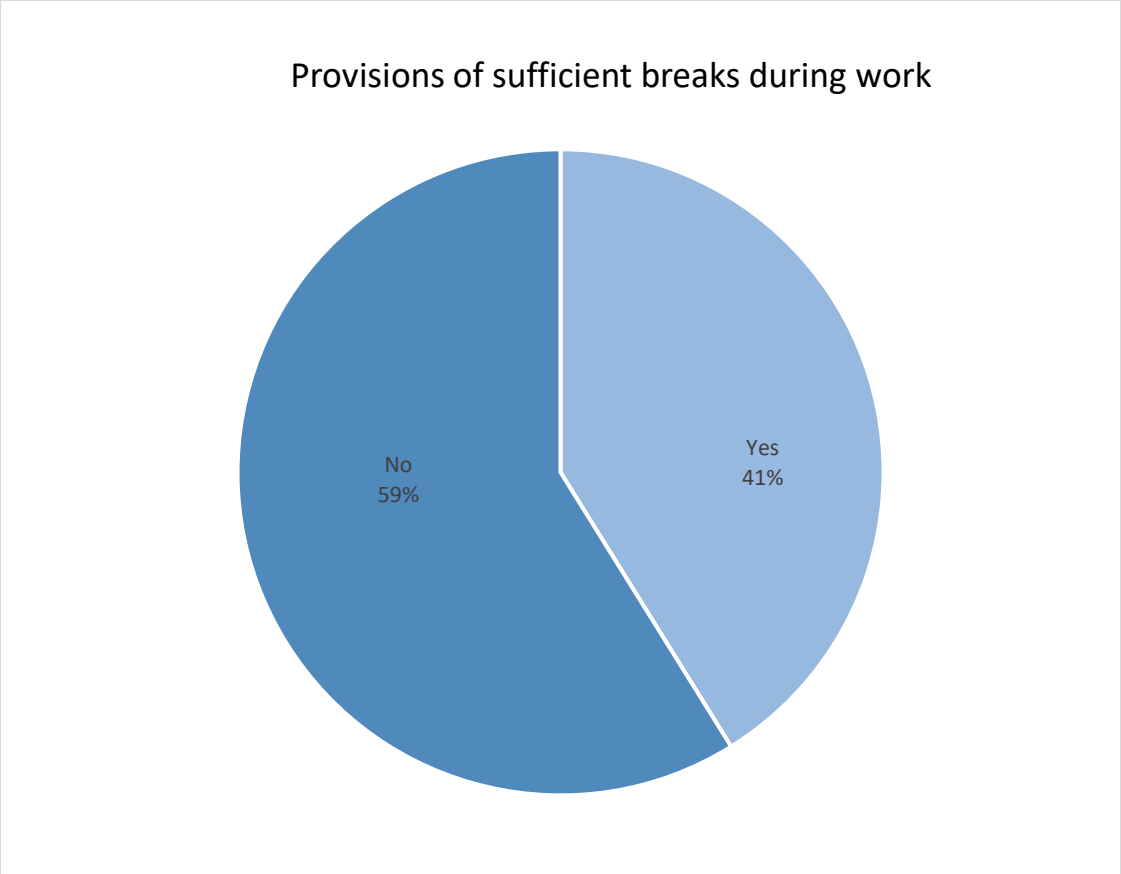

**Inference:**

- 91% of respondents have stated that *yes* there is a provision for a weekly off.
- 9% of respondents have stated that *no* that is no provision for a weekly off.

4.36.1 Provision of sufficient breaks during work

Table and Figure 4.36.1

| Parameter | No of responses |
|---|---|
| Yes | 432 |
| No | 618 |
| **Total** | **1050** |



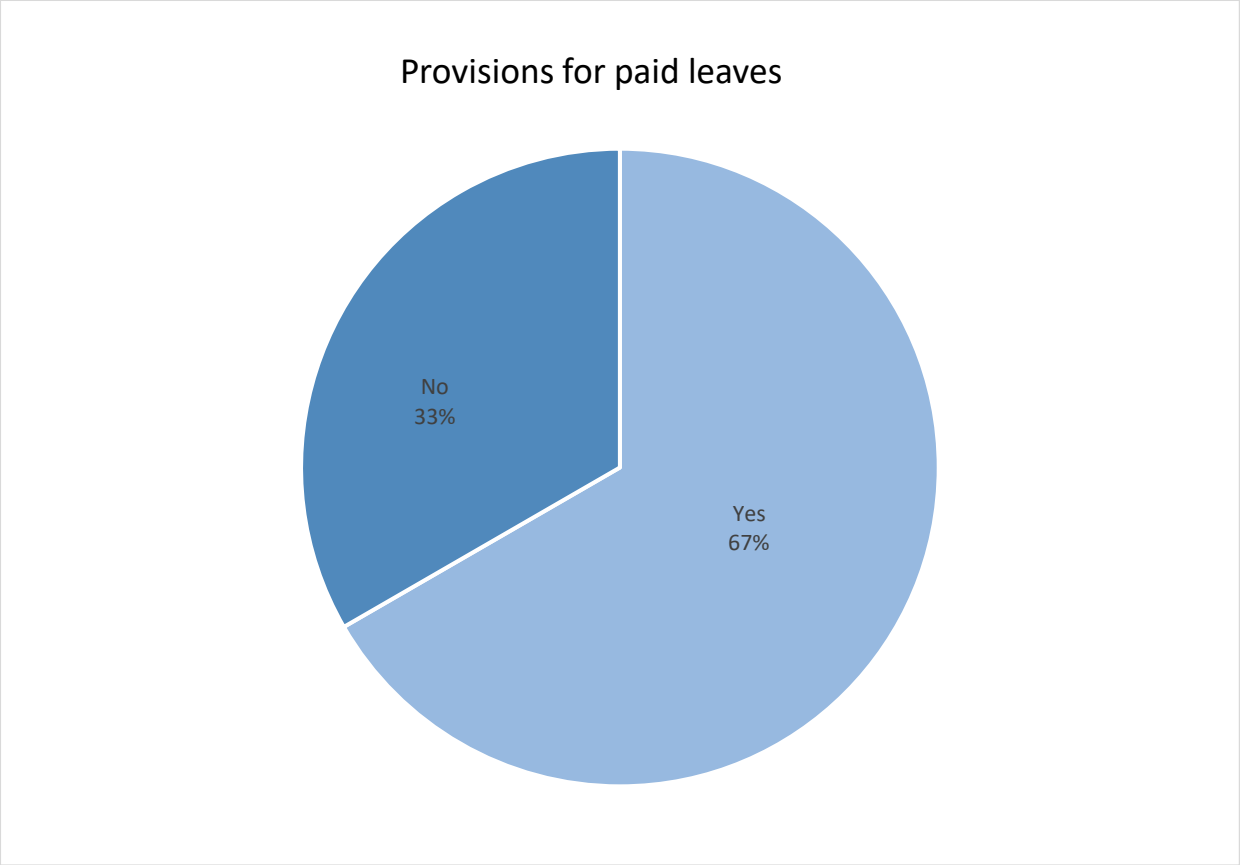

**Inference:**

- 41 % of respondents feel that they receive sufficient break during work;
- 59% of the respondents feel that they *do not* get sufficient breaks during working hours.

4.36.2 Provision for paid leaves

Table and Figure 4.36.2

| Parameter | No of responses |
|---|---|
| Yes | 700 |
| No | 350 |
| **Total** | **1050** |




**Inference:**

- 67% of respondents have *agreed* that there is a provision for paid leave;
- 33% of the respondents has stated that they *do not* have a provision for paid leaves.

*For question number 4.36 maximum respondents have said that they get a weekly off whereas very few respondents have given a negative answer to this question.*

*For question number 4.36.1 maximum respondents are of the opinion that they do not get sufficient breaks during working hours whereas few respondents find the breaks that they get sufficient.*
*Respondents have also stated that more often than not they come to work on an empty stomach early in the morning and therefore find continuous working after late afternoon extremely tiring and exhausting.*

*For question number 4.36.2 maximum respondents have stated that they have paid leaves whereas though the number of respondents saying that they do not have paid leaves is less it is still significant.*

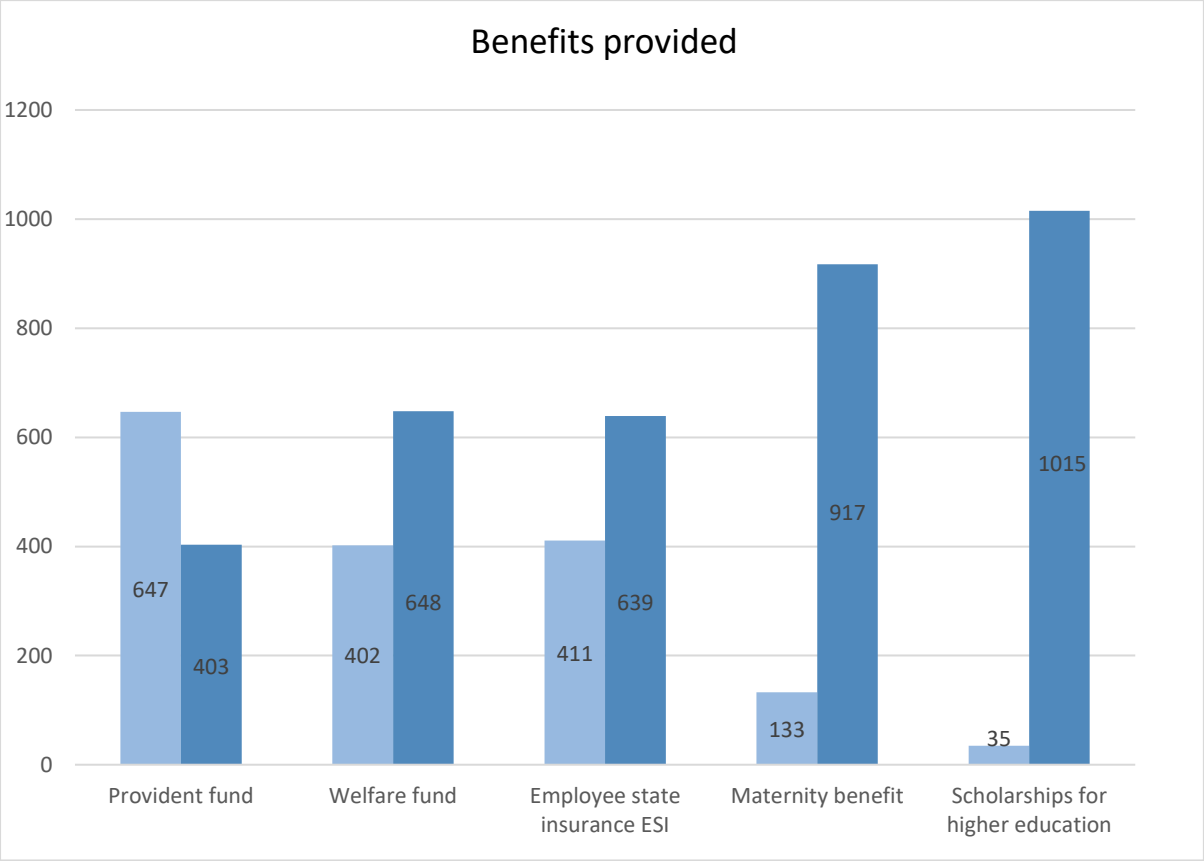
*The researcher would like to note that the employees of Pune Municipal Corporation whether permanent or contractual are eligible for paid leaves whereas the DTDC workers being members of a co-operative society do not have any paid leaves.*

*Thus, in a nutshell the researcher would like to conclude that the number of breaks provided to the waste pickers in terms of intervals, weekly offs and paid leaves are insufficient from the point of view of mental, physical and emotional well-being of the waste pickers.*

4.37 Provision of benefits

Table and Figure 4.37

| Benefits provided | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Provident fund[67] | 647 | 403 |
| Welfare fund | 402 | 648 |
| Employee state insurance ESI[68] | 411 | 639 |
| Maternity benefit[69] | 133 | 917 |
| Scholarships for higher education | 35 | 1015 |
| **Total** | **1628** | **3622** |




**Inference:**

[67] Provident fund: Benefits as mentioned in The Provident Fund Act, 1952
[68] Employee state insurance: Benefits as mentioned in The Employees State Insurance Act, 1948
[69] Maternity benefit: Benefits as mentioned in The Maternity Benefit Act, 1961

1. **Provident fund:** 62% of the respondents have stated that *yes;* they have a provision for provident fund; 38% of the respondents have stated that they do not have any provision related to provident fund.
2. **Welfare fund:** 38% of respondents have stated that *yes;* they make a contribution to the welfare fund; 62% of the respondents have stated that they *do not* have any access to a welfare fund.
3. **Employee State Insurance ESI:** 39% of the respondents are the beneficiaries of Employees State Insurance Scheme; whereas 61% of the respondents are *not* eligible for ESIC scheme.
4. **Maternity Benefit**: 26% of the women respondents have stated that they are eligible for the maternity benefit whereas 74% of women respondents have stated that they do not have the maternity benefit.
5. **Scholarships for Higher education**: 3% of respondents have stated that they receive scholarships for higher education where as 97% of the respondents have stated that they *do not* receive scholarships for higher education.

*For the question 4.37 the bifurcation of responses shows the following trend:*

- *Permanent employees have agreed that they are eligible for provident fund, maternity benefit and employee state insurance scheme.*
- *Contractual employees on the other hand are only eligible for provident fund and do not receive any of the remaining benefits.*
- *DTDC workers on the other hand do not receive any of the above financial welfare measures.*

*The researcher would like to note that that in the absence of maternity benefit contractual women workers and DTDC workers are seen to be working in the waste picking process until late into their pregnancy.*
*Interactions with women respondents has highlighted the fact that despite being aware of the hazards they prefer to work during their maternity term and are keen to join back within a few days of childbirth.*
*The researcher would also like to note that in the absence of Employee State Insurance and any kind of medical benefits those deprived of it and negligent towards injuries caused during their work days and towards the treatment of occupational diseases as well.*

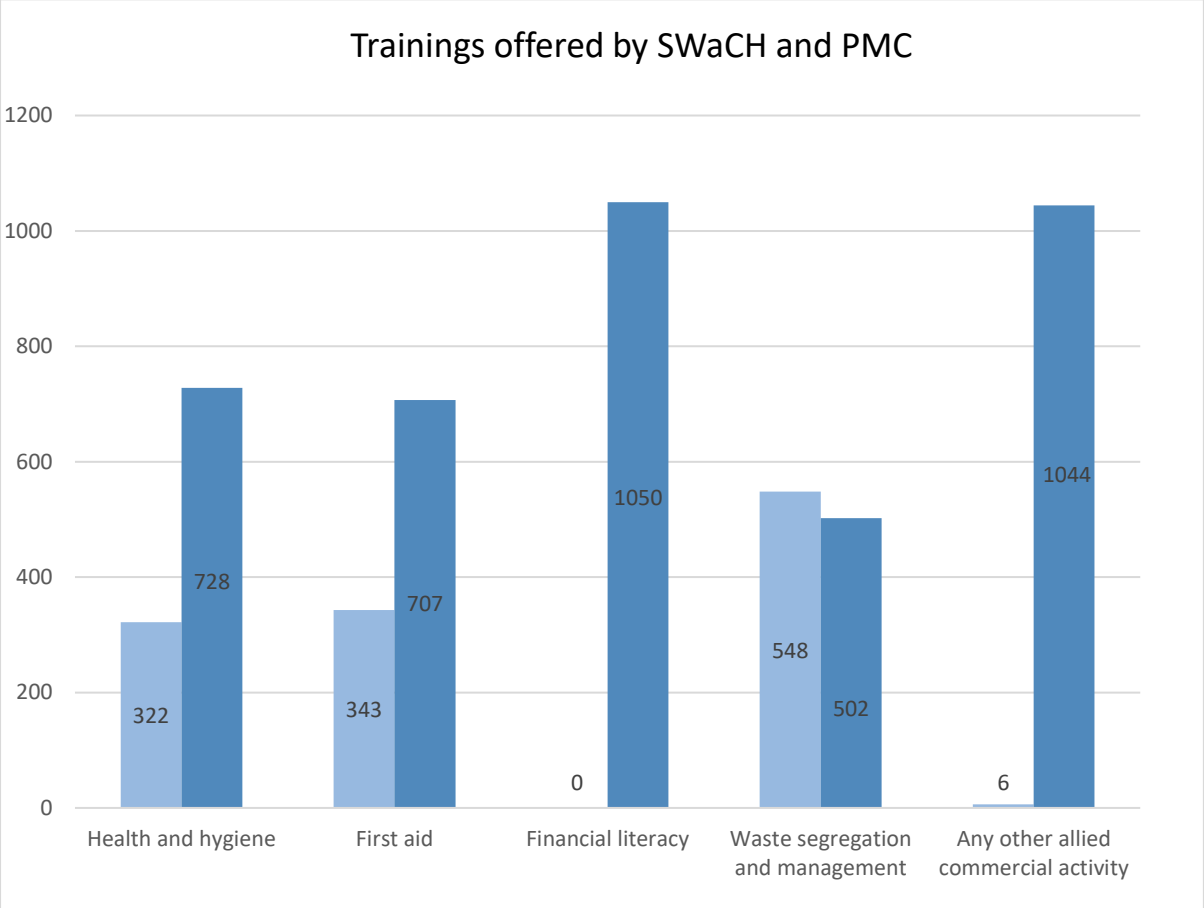
*Respondents have also stated that though they are eligible for scholarships for higher education of their children most of them lack the necessary information and documentation as a part of the compliance to receive the scholarships.*

*In a nut shell the researcher would like to state that the financial welfare measures though present for the waste pickers are not satisfactory and have further scope for improvement.*

4.38 Trainings received from PMC/SWaCH

Table and Figure 4.38

| Trainings received from PMC/SWaCH | No of responses | |
|---|---|---|
| | **Yes** | **No** |
| Health and hygiene | 322 | 728 |
| First aid | 343 | 707 |
| Financial literacy | 0 | 1050 |
| Waste segregation and management | 548 | 502 |
| Any other allied commercial activity | 6 | 1044 |
| **Total** | **1219** | **4031** |



**Inference:**

- **Health and hygiene:** 31% of the respondents have stated that they would like to receive training programs in health and hygiene whereas 69% of respondents have *not* shown any interest in the same.
- **First aid:** 33% of respondents have stated that they would like to be trained in first - aid whereas 67% of the respondents *do not* feel its necessity.
- **Financial literacy:**100% respondents feel that they would like to receive training for financial literacy; whereas 0% respondents have negative feedback with regards to the same.

*From the above inferences it can be concluded that both Pune Municipal Corporation and SWaCH do organise training programs for the waste pickers. The data trend for the above questions indicates that a larger population is uninterested in knowing about health and hygiene and first aid. On the other hand, the entire set of respondents are keen to learn about financial literacy.*

*Interaction with respondents have revealed that they have an interest in knowing about banking functions, use of mobile wallets and about the various saving and investment schemes offered by the government.*

*Thus, the researcher would like to conclude that both the affiliating bodies are playing a substantial role in training of the fraternity there are several grey areas which can be acted upon.*

### 4.39 Testing of hypothesis 3:

**Hypothesis 3:** There is no dissatisfaction amongst the waste pickers with regards to the hygiene factors.

To test the above hypothesis statistically, it has been reframed as follows;

H0: There is no significant association between job dissatisfaction factor and hygiene factors amongst the waste pickers.

H1: There is a significant association between job dissatisfaction factor and hygiene factors amongst the waste pickers.

Table no 4.39

One way ANOVA

| ***Groups*** | ***Count*** | ***Sum*** | ***Average*** | ***Variance*** |
|---|---|---|---|---|
| Job dissatisfaction factors | 1050 | 3327 | 3.16857 | 0.76183 |
| Allowed to access facilities in the society's premises | 1050 | 2390 | 2.27619 | 3.47941 |
| Risk of injury or accident | 1050 | 4274 | 4.07048 | 2.8568 |
| Because of handling COVID waste | 1050 | 4202 | 4.0019 | 2.27454 |
| Stressed because of work | 1050 | 4672 | 4.44952 | 0.39831 |
| Health and safety at risk | 1050 | 4948 | 4.71238 | 0.66076 |
| Consume-Alcohol | 1050 | 3726 | 3.54857 | 3.7026 |
| Consume-Smoking | 1050 | 4074 | 3.88 | 3.22867 |
| Consume-Tobbaco/ Pan/ Pan Masala/ Mishri | 1050 | 4894 | 4.66095 | 1.24242 |
| Consume-Jarda/ Ganja/Chillum | 1050 | 3058 | 2.91238 | 3.99613 |
| Attribute stress to working conditions | 1050 | 3340 | 3.18095 | 3.50202 |

Table no 4.39.1

| ***Source of Variation*** | ***SS*** | ***df*** | ***MS*** | ***F*** | ***P-value*** | ***F critical*** |
|---|---|---|---|---|---|---|
| Between Groups | 6290.43 | 10 | 629.043 | 265.078 | 0.01 | 1.83152 |
| Within Groups | 27382.6 | 11539 | 2.37305 | | | |
| Total | 33673 | 11549 | | | | |

As the F table value (265.078) is greater than the F critical value (1.8315) and also the p-value (0.01) is less than 0.05, the null hypothesis is rejected i.e. there is a significant difference between the means of job dissatisfaction factor (all variables related to job dissatisfaction

clubbed together) and the hygiene related factors of the waste pickers. ***Hence it is concluded that there is a significant association between job dissatisfaction factor and hygiene factors amongst the waste pickers. i.e. There is dissatisfaction amongst the waste pickers with regards to the hygiene factors***. Further to identify which factor among the hygiene related factors is more significant, Post Hoc test was applied and the results achieved are placed underneath;

***Post-hoc test - Bonferroni correction = Alpha/No. of variables = 0.05/10 = 0.005***

Table no 4.39.2

| ***Groups*** | ***P-value (T test)*** | ***Significant*** |
|---|---|---|
| Allowed to access facilities in the society's premises | 7.1613E-43 | True |
| Risk of injury or accident | 1.4695E-50 | True |
| Because of handling COVID waste | 2.2986E-51 | True |
| Stressed because of work | 3.918E-246 | True |
| Health and safety at risk | 9.888E-280 | True |
| Consume-Alcohol | 6.4904E-09 | True |
| Consume-Smoking | 6.4856E-30 | True |
| Consume-Tobbaco/ Pan/ Pan Masala/ Mishri | 1.006E-203 | True |
| Consume-Jarda/ Ganja/Chillum | 0.00014539 | True |
| Attribute stress to working conditions | 0.84596863 | False |

Though all the factors are significant, to find the most significant factors among these, Post Hoc test was applied. It was observed that again all the factors except one (i.e. “Attribute stress to working conditions”) found to be significant. Hence further based on their p-value, it could be concluded that the following three are further most significant;

1) Health and safety at risk
2) Stressed because of work
3) Consume-Tobacco/ Pan/ Pan Masala/ Mishri

### 4.39.1 Summary of statistical Analysis:

- For all three hypotheses One -way Anova test has been used.
- To find out the most significant factors Post Hoc test was applied.

Table no 4.39.3

| Sr no. | Hypothesis No | F critical | F calculated | Hypothesis accepted |
|---|---|---|---|---|
| 1. | Hypothesis no 1 | 2.0998 | 747.75 | Alternate hypothesis |
| 2. | Hypothesis no 2 | 2.0998 | 803.94 | Alternate hypothesis |
| 3. | Hypothesis no 3 | 1.83152 | 265.078 | Alternate hypothesis |

# Chapter 5:

# Major Conclusions and Suggestions

This chapter contains the major findings of the research and the conclusions drawn thereafter. It also contains the major suggestions and recommendations identifying the aspects to be taken into consideration for further improvement.

### 5.1 Major conclusions relating to demographic details of waste pickers:

1. Maximum task force of waste pickers falls in the age bracket of 29 to 50 years.
2. The number of females working in this occupation are almost at par with the males.
3. The illiteracy rate in this occupation is significantly higher compared to other professions. Even among the literate individuals, most possess only basic reading and writing skills, often struggling to comprehend documentation, even when presented in the regional language. Those possessing a degree or diploma instead of choosing an alternate occupation have chosen to continue waste picking as a formal source of income.
4. Majority of the waste pickers are married and have familial responsibilities which is the primary motivation behind the choice of this task.
5. A large number of respondents are conscious regarding their socio - economic status and would have one or two children. A few of them still have a traditional set of minds and either want a male heir or view children as additional hands in waste picking.
6. Maximum portion of the population is a single earner thus left with no choice than to opt for this source of income generation from the point of view of basic sustenance for themselves and their family.

### 5.2 Major conclusions relating to task related stressors:

1. Maximum respondents experience the stress on a higher level with rating 4 and 5 for tasks such as door - to - door collection of waste, segregation of waste filling of the dumpsters and sweeping of roads and collection of waste.

2. For all the three categories of task related stressors viz. waste collection from roadside and dumping sites, handling high risk items, and handling sanitary waste maximum responses are concentrated around ratings 4 and 5. This indicates that problems encountered by the waste picking fraternity on a daily basis add on to their physical stress caused by the performance of tasks.

3. For daily physical movements such as lifting and carrying heavy loads, working in tiring body positions, climbing stairs, walking long distances, pushing carts and dealing with the smell of waste the ratings from the respondents are concentrated around 3,4 and 5. Thus it can be concluded that these physical movements have a heavy toll on the physical health of the waste picking fraternity.

4. For situational stressors most of the respondents have recorded their ratings at always and often. Negligent ratings are seen to be coming for sometimes, rarely and never options. From the above inferences it can be concluded that the situations mentioned above are everyday occurring phenomena that routinely cause stress among the waste pickers.

### 5.3 Major conclusions relating to working environment of the waste pickers:

1. Maximum respondents have stated that the segregation of waste takes place along the roadside. Maximum responses have been received by monsoon followed by summer therefore it can be concluded that the most challenging season for the waste pickers is monsoon. This indicates that extreme weather conditions intervene with the working of the waste pickers.

2. Most of the respondents have agreed to the fact that they have faced negligent and careless attitude of citizens, verbal abuse, accusatory behaviour and caste-based discrimination. There have been responses recorded also for physical abuse and sexual harassment from the respondents. These situations though showing a negligent percentage are also present.

3. Maximum respondents have agreed that they have to use the stairs despite the society having elevators whereas a few respondents have stated that they are being allowed the usage of elevators rather than climbing the stairs.

4. Most of the respondents have stated that lunch areas, facilities for washing and storage of clothes etc are not present in their respective kothis. In case of drinking water and access to separate laterals and urinals and first aid kits most respondents have agreed that they have access to the same.

5. Maximum respondents have affirmed that they have received gloves for the waste segregation process. However negligent responses have been marked for receipt of heavy-duty gloves, masks, shoes, uniform, soaps and sanitizers. 100% negative responses have been recorded for full sleeves coat and PPE kits.

6. Few respondents have agreed that they have access to extra mural facilities such as hospitals health insurance and medical benefits however maximum respondents have denied the access to such extra mural welfare. The sweepers, bigari workers are employees of Pune Municipal Corporation. DTDC workers on the contrary associated with SWaCH are members of the cooperative society. This makes them ineligible for any kind of extramural welfare facilities since they are not paid a salary but work voluntarily for fees.

7. The respondents are aware about the necessity of medical treatment for their injuries however they do not have the necessary facilities at their disposal to seek immediate assistance in case of injuries during their working day.

8. The average working hours for the waste pickers are in the range of 9 to 12 hours. The waste picking fraternity has a huge workload and requires over and above 9 hours a day to finish their tasks. This is also an indicator of the fact that the aarogya kothis cover a larger jurisdiction and that there is a need for further re allocation of work so as to reduce the number of working hours for the existing people.

9. A large number of respondents have said that they get a weekly off however they do not get sufficient breaks during working hours. The employees of Pune Municipal Corporation whether permanent or contractual are eligible for paid leaves whereas the DTDC workers being a member of a co-operative society do not have any paid leaves.

10. Permanent employees have agreed that they are eligible for provident fund, maternity

benefit and employee state insurance scheme. Contractual employees on the other hand are only eligible for provident fund and do not receive any of the remaining benefits. DTDC workers on the other hand do not receive any of the above financial welfare measures.

**5.4 Major conclusions relating to physical and mental health of the waste pickers:**

1. Utmost number of respondents have agreed that they have several health risks as a consequence of their working condition whereas very few respondents have opted for an unsure answer or a negative answer.

2. Maximum respondents have stated that they have suffered from Covid-19 whereas only very few of them have not suffered from the disease. Maximum respondents do believe that they might have contracted Covid -19 owing to handling covid waste.

3. For all the hazards mentioned in the question maximum responses have been marked for always and often. This indicates that the hazards in the question are frequently exposed on the waste pickers during the performance of their jobs. Very few ratings have been given to options such as sometimes, really and never.

4. For issues such as a body ache, nausea, dizziness, skin and eye infections, and respiratory diseases maximum respondents have chosen the rankings of always and often. This indicates that the above health issues are very common among the waste pickers. For health problems such as gastrointestinal diseases and urinary tract infections the responses are mostly centred around sometimes and rarely. Thus, it can be concluded that these health issues though affecting the waste picking population are present in moderation.

5. Maximum respondents have agreed that they are at risk of injury or accident because of their work whereas very few respondents do not feel that they are at a risk of any injury or accident because of their work.

6. Most respondents have stated that they have been a part of road accidents or frequently suffer from cuts and abrasions whereas very few respondents have denied any such health hazards from their jobs. On the other hand, risk for injuries associated with acid burns and attack from stray animals received lesser ratings from the respondents. Most of the respondents have stated that they tend to their injuries at the end of the day.

7. From all the emotional issues arising out of the job exhaustion, frustration, apathy and burnout are the issues which have received the highest ratings.

8. The most common addiction among the waste pickers is the consumption of tobacco, Pan, Pan Masala and Mishri. The second most common addiction is alcoholism followed by smoking. Consumption of Ganja and others inebriants is fourth in the ranking. Maximum respondents are of the opinion that they have fallen prey to these addictions because of the nature of their working conditions. Very few respondents do not feel that their jobs or the resultant working conditions and stress are responsible for they are addictions.

*Thus, in a nutshell it can be noted that the task related stressors have in general received high ratings from the respondents.*

*Also, the overall ratings for the working conditions and working environment are towards the negative side.*

*The overall physical mental and spiritual health of the entire waste picking fraternity is also seen to be affected by the nature of work, task related stressors and the working conditions.*

*Hence from the conclusions derived by the researcher in 5.2, 5.3 and 5.4 the following hypotheses are proved.*

*For hypothesis 1:*

- ***H1: The task related challenges have an effect on the physical and mental health of the waste pickers.***

*For hypothesis 2:*

- ***H1: The working environment has an effect on the physical and mental health of the waste pickers.***

**5.5 Major conclusions relating to nature of employment:**

1. Almost half of the task force is recruited as sweepers. The sweepers as well as the bigari workers are either permanent or contractual in their employment which makes them eligible for a minimum take home pay and other works as applicable.

2. The remaining half of the task force i.e. the door-to-door collection workers are members of the SWaCH coop cooperative and are not employed in any manner by the Pune Municipal Corporation.

3. The responses indicating fear of job loss cumulatively are concentrated around always, often and sometimes. However, a significant number of people have also rated never as a rating for thinking about job loss. Thus, the researcher would like to conclude that the responses are bifurcated between two extremes when it comes to fear of job loss and also that this occupation lacks reasonable job security and make it a mandate for the job performer to perform his task daily tasks in order to earn livelihood.

4. For timeliness of salaries maximum respondents have agreed that they receive their salary on time and the other half respondents have stated that they do not receive their salaries on time whereas DTDC fees are greatly denied to the waste pickers thereby making them rely only on the sale of scrap for the purpose of survival.

*In a nutshell it can be noted that conclusions relating to nature of employment indicate that for most respondents this is an 'occupation of no choice' which they have taken up merely with the objective of sustenance.*

*The conclusions associated with the nature of employment also indicate that the hygiene factors in this occupation are dissatisfactory whereas there is an absence of motivational factors in the occupation.*

*Hence from the conclusions derived by the researcher in, 5.3 and 5.5 the following hypothesis is proved.*

*For hypothesis 3:*

***H1: There is dissatisfaction amongst the waste pickers with regards to the hygiene factors.***

### 5.6 Recommendations and suggestions:

Based on the conclusions drawn during the research; the researcher would like to give following suggestions and recommendations to the various stake holders in the waste collection process.

#### 5.6.1 Suggestions and recommendations to the Pune Municipal Corporation PMC:

Waste collection is a key function of any governing body and therefore the PMC's attempt to entirely decentralize this function in terms of manpower management needs to be changed. Hence, following suggestions are presented to the Pune Municipal Corporation:

##### 5.6.1.1 Immediate interventions:

1. **Extension of contract with SWaCH:** The PMC has an ongoing contract with SWaCH for one year. However, the contract extension has been secured by SWaCH after several protests and follow ups with the Pune Municipal Corporation. The researcher would like to recommend PMC to extend the contract with SWaCH in bouts of 5 years. This extension shall provide reasonable job security to the waste picking fraternity by giving them the 'right to waste'.

2. **Positive interventions in contractual employment:** For those employees who are on contractual employment the Pune Municipal Corporation needs to undertake positive interventions from time to time with regards to full payment of wages and timely payment of salaries. For the same PMC needs to ensure timely clearance of bills of contractors and also ensure compliance from contractors and for timely dissemination of salary.

3. **Sanctioning welfare facilities for all waste pickers:** Welfare facilities and social security measures are an essential right of every employee irrespective of the nature of his employment whether permanent contractual or otherwise. While permanent employees are receiving all welfare facilities appropriately contractual employees and members of SWaCH are being denied the privilege of social security measures. Basic social security measures such as provident fund, medical and sickness benefit, maternity benefit, scholarships for higher education, dependents benefit etc. should be made available to all waste pickers irrespective of their nature of employment.

4. The researcher would like to note that the legislations governing these social welfare measures define the term 'employee' and therefore may not be applicable to all. Hence PMC can either design standalone welfare programs based on the lines of these social security measures for the waste pickers or ensure the dissemination of all national schemes mentioned in the 'The Unorganised Labour Social Securities Act, 2008 [70] through education, awareness and 'one window facility' to all the beneficiaries.

5. **Rigid and prompt compliances of PPE and intramural welfare facilities**: The Swachh Bharat manual elaborates the guidelines for maintaining the health and sanitation of the waste pickers. The manual clearly specifies the role of the governing body in providing personal protective equipment such as gloves, heavy duty gloves, shoes, full sleeves jacket, masks, soap and sanitizers. The PMC needs to ensure prompt compliance of the availability of these personal protective equipment and basic intramural welfare facilities in all aarogya kothis.

**5.6.1.2 Intermediate interventions:**

1. **Mobilisation of resources to SWaCH**: One of the preliminary lacunae of the SWaCH coop model is the fact on door-to-door collection fees is the prima facie income of its members. Citizens on the contrary avoid paying the door-to-door fees to the waste pickers denying them they are rightful income. From the citizens perspective they have already paid the taxes to the Pune Municipal Corporation and therefore expenditure towards waste management is the PMC's forte. The Reliance of PMC on the task force of SWaCH for waste collection is understandable however the Pune Municipal Corporation needs to mobilize resources to Swatch in terms of funds and grants so as to facilitate growth and the same time financial sustenance of its members.

2. **Extension of the SWaCH coop model:** The SWaCH coop model is effective in bridging the gap between the waste pickers and the waste; however, only a standalone unit for the same is insufficient for the growing boundaries and population of Pune city. With this

[70] The Unorganised Labour Social Securities Act, 2008: Legislation for providing various social security benefits to unorganized workers.

drawback in sight the Pune Municipal Corporation should extend the SWaCH coop model to incorporate new institutions and accommodate more such self- help organisations.

3. **Creation of awareness amongst citizens for segregation and disposal of waste:** The PMC also is to focus on creation of consciousness amongst the citizens regarding the segregation and management of waste. This can be achieved through seeking the cooperation of various educational institutions for making a mass appeal to the citizens regarding the correct methods of segregation and waste disposal.

**5.6.1.3 Long term interventions:**

1. **Mechanisation of waste collection process**: In the long run, the PMC can initiate efforts for the mechanization of the waste collection process. so as to achieve no-touch segregation of waste and 100% recycling of biodegradable waste in order to achieve the proposed zero waste model of SWM - G25.

2. **Promotion of CSR[71] initiatives towards waste management:** The local governing body can solicit the support of various corporate houses and promote CSR initiatives towards waste management. For instance the contribution of Adar Poonawalla Clean City Initiative[72] significantly contributes to waste management in Pune by taking on the responsibility of waste management to help ease the burden on the local governing body.

*It is noted by the researcher that the financial provisions required for the implementation of above suggestions for employee welfare are already made by Pune Municipal Corporation every year. Therefore, it merely remains to be a matter of execution to bring the above strategies into practice. Excerpts from annual budgets of Pune Municipal Corporation have been attached in the annexures to the thesis to justify the presence of funds for solid waste management initiatives.*

[71] CSR: Corporate Social Responsibility
[72] Adar Poonawalla clean city initiative: Initiative for improving the environment and waste management in Pune city.

### 5.6.2 Suggestions and recommendations to SWaCH:

The SWaCH coop model has received critical a claim from various stakeholders in the society and is successful to a large extent in helping the waste pickers achieve their right to waste. However, in tune with the conclusions drawn during this research the following suggestions are proposed to the solid waste collection and handling unit SWaCH:

#### 5.6.2.1 Immediate interventions:

1. **Creation of awareness amongst citizens regarding challenges of waste pickers**: SWaCH as a representer of the waste pickers fraternity should undertake awareness programs among citizens regarding the challenges faced by the waste pickers during their day to day working. These awareness sessions can be held with the involvement of various educational institutions such as schools, colleges, hostels, NSS[73] units etc.

2. **Promotion of adult education programmes**: SWaCH can create awareness and promote adult education programs with a view to enhancing the literacy rate and to make the waste picking fraternity self - reliant in terms of reading and writing.

3. **Offering various training programmes**: The respondents have themselves shown an inclination towards various training programs especially first aid, commercial activities other than waste picking, financial literacy program etc. SWaCH in collaboration with various educational bodies can identify the need for such training programs and ensure that the waste pickers are provided the same.

#### 5.6.2.2 Intermediate interventions:

1. **Alternate employment generation initiatives:** SWaCH an institution has already been providing alternate employment generation opportunities to the waste pickers.
   - The Red Dot initiative[74] campaign organised by SWaCH plays a pivotal role in creating awareness among the citizens regarding the packaging of sanitary waste. The waste pickers have been preparing paper envelopes containing the red dots exclusively to be used for packing sanitary waste and selling them across the city.

[73] NSS: National Service Scheme
[74] The Red Dot initiative: An awareness programme for the safe disposal of sanitary pads and diapers

- Similarly paper bag making workshops, compost and manure creation workshops are also organised by SWaCH for creating alternate employment opportunities.

SWaCH can further enhance the extent and scope of these programs by soliciting the help of the Pune Municipal Corporation, educational institutions and CSR initiatives offered by various corporate houses.

2. **Rehabilitation programmes for waste pickers:** Addiction related issues in the waste picking fraternity require holistic attention in terms of awareness, medication, interventions and rehabilitation. The rehabilitation programs for alcoholism, drug abuse etc are of crucial importance and can be organised by SWaCH in collaboration with various medical institutions and anti-addiction groups.

#### 5.6.2.3 Long term interventions:

1. **Extension of SWaCH coop model across state and seeking state government support:** The SWaCH model can be expanded to other municipal corporations, municipalities, and Zilla Parishads across the state, creating a unified platform for waste pickers and strengthening their bargaining power to secure their rights.

# Bibiliography

1. (LARRDIS), P. a. (2013). *Manual Scavengers: Welfare and Rehabilitation.* New Delhi: Lok Sabha Secretariat.

2. Acquah, A., Nsiah, T. K., Antie, E. N., & Otoo, B. (2021). Literature review on motivation theories. *International journal of economics and business*, 25-29.

3. Agunwamba, & J C. (2003). Analysis of scavengers? Activities and recycling in some cities of Nigeria. *Journal of environment management*, 116-127.

4. Akter, A., Mohit, S., & Chowdhury, M. (2017). Predicting urban storm water-logging for Chittagong city in Bangladesh. *International Journal of Sustainable Built Environment*, 238-249.

5. Ali, A. F., & Yusuf, a. F. (2021). Prevelance of injuries among waste pickers: A case study in Nigeria. *Detritus: Multidisciplinary journal for waste resources and residues*, 89-96.

6. Altymurat, Muhai, M., & Saparow, T. (2021). Human behaviour in organisations related to Abraham Maslow's need heirarchgy theory. *Interdisciplinary jopurnal papier human review*, 12-16.

7. Andrianisa, H. A., & and Brou, Y. O. (2016). Role and importance of informal collectors in the municipal waste pre-collection system in Abidjan. *C˙ote d'Ivoire Habitat Int*, 265-273.

8. Annepu, R. (2012). Sustainable Solid Waste Management in India. *Waste-to-Energy Research and Technology Council (WTERT)*, 10-21.

9. Badubi, R. (2017). Theories of motivation and their application in organizations: a risk analysis. *International journal of innovation and economic development*, 44-51.

10. Bajaj, J. S. (1995). *Report of The High Powered Committee on Urban Solid Waste Management.* Delhi.

11. Barki, M. a. (2013). . Working Conditions of Rag Picking Children in Jammu City, India. *Zenith International Journal of Multidisciplinary Research*, 51-57.

12. Basu, R. (2010). Solid Waste Management-A Model Study. *Sies Journal of Management*, 20-24.

13. Bender, A. P., & and Bilotta, P. (2020). *Circular economy and urban mining: resource efficiency in the construction sector for sustainable cities.* Cham: Springer.

14. Bhaskar, & Chikarmane, a. (2012). The story of waste and its reclaimers: Organising waste collectors for better lives and livelihood. *The Indian Journal of Labour Economics*, 55-58.

15. Bhaskar, A. (2013). *Workers, Social Protection for Informal Waste in India and Recommendations for Nepal* . Delhi.

16. Bhosale, D. (2016). A study of waste pickers in Kolhapur district: A social work pespective. 28-35.

17. Bisht, R. A. (2020). The Coronapocalypse and Sanitation Workers in India. *The wire*, pp. 25-30.

18. Buah, W. K. (2007). Characterization of Products from the Pyrolysis of Municipal Solid Waste. Process Safety & Environmental Protection. 450-457.

19. Burneo, D., Cansino, J. M., & R, a. Y. (2020). Environmental and socioeconomic impacts of urban waste recycling as part of circular economy. The case of cuenca (Ecuador). *Research jurnal of sustainanbility*, 34-39.

20. C, H. (2018). Waste picker livelihoods and inclusive neoliberal municipal solid waste management policies: The case of the La Chureca garbage dump site in Managua, Nicaragua. *Waste Management*, 565-577.

21. Carenbauer, M. G. (2021). Essential or dismissible? Exploring the challenges of waste pickers in relation to COVID-19 . *Elsevier*, 79-81.

22. Chandran, P., Shekar, N., & Abubaker, M. a. (2009). “Informal Waste Workers Contribution, Banglore. *Hasirudala*, 78-84.

23. Chengappa, C. (2013). *Organizing Informal Waste Pickers. A Case Study of Bengaluru, India.* Banglore: Women in Informal Employment: Globalizing and Organizing WEIGO.

24. Chikarmane, P. (2012). *Integrating Waste Pickers into Municipal Solid Waste Management in Pune, India.* Pune: WEIGO.

25. Chokhandre, P. S. (2017). Prevalence, predictors and Prevalence, predictors and sectional study. *Journal of occupational medicine*, 15-21.

26. Chukwunonye, E. &. (2012). Analysis of barriers and success factors affecting the adoption of sustainable management of municipal solid waste in Nigeria. *Journal of Environmental Management*, 9-14.

27. Colombijn, F., & and Morbidini, M. (2017). Pros and cons of the formation of waste-pickers' cooperatives: a comparison between Brazil and Indonesia. *Decision*, 91-101.

28. Cook, D., & Artino, A. (997-1014). Motivation to learn: an overview of contemporary theories. *The cross cutting edge journal*.
29. Curry, C. (2018). *A Historical Comparison of the Brazilian and Indian Waste Picker Regime.* Utrecht: Utrecht University.

30. Devi, K. S., Swamy, A. V., & krishna, R. H. (2014). Studies on the Solid Waste Collection by Rag Pickers at Greater Hyderabad Municipal Corporation, India. *International Research Journal of Environment Sciences*, 13-22.

31. Dias, & SM. (2016). Waste pickers and cities. *Environment & Urbanization*, 375-390.
32. Dixon, N. &. (2005). Engineering properties of municipal solid waste. . *Geotextiles & Geomembranes*, 205-233.

33. Donnelly, & Ivancevich, G. a. (1984). *Fundamentals of Management.* Texas: Business publications.

34. Gadgil, Ranjit, M., & Sansrit. (2018). Solid Waste Management in Pune: A Desired Future" . *Centre of Environment Education*, 15-35.

35. Gall, & al, e. (2020). Building a circular plastics economy with informal waste pickers: recyclate quality, business model, and societal impacts. *Journal of resources conservation and recycling*, 150-156.

36. Ganguli, H. C. (1954). An Enquiry into Incentives for Workers in an Engineering Factory. *Indian Journal of Social Work*, 30-40.

37. Government, A. I. (2005). *Garbage Generation and Collection in Pune City.* Mumbai: All India Institute of Local Self Government.

38. Gowan. (1997). American untouchables: homeless scavengers in San Francisco's underground economy. *International Journal of Sociology and Social Policy*, 159-190.

39. Gowan, T. (2010). *Hobos, Hustlers, and Backsliders: Homeless in San Francisco.* Minneapolis: University of Minnesota Press.

40. Graedel, e. a. (2011). What do we know about metal recycling rates? *Journal of Indian Ecological Studies*, 355-366.

41. Gram Panchayat Uruli Devachi vs Pune Municipal Corporation Writ Petition, 2746/2000 (Pune District Court 2000).

42. Gupta, A. S. (2021). Analysing the Working Conditions of Sanitation Workers with Special Reference to Urban Slum Dwellers in a Post COVID-19. *International Journal of Policy Sciences and Law*, 332-351.

43. Gutberlet J, e. (2016). Bridging Weak Links of Solid Waste Management in Informal Settlements. *The Journal of Environment & Development*, 106-131.
44. H, S. (2020). *Sustainanbe Development Goal #8: Decent Work and Economic Growth.* Kobe Japan: Global Development Research Center.

45. Helwege, M. M. (2014). Solid Waste Management and Social Inclusion of Waste Pickers: Opportunities and Challenges. *Global Eonomic Governance Initiative*, 23-56.

46. Huang, X., & Vliert, E. V. (2003). Where intrinsic job satisfaction fails to work: national moderators of intrinsic motivation. *Journal of organisational behaviour*, 25-37.

47. Hunt, C. (1996). Child waste pickers in India: the occupation and its health risks. *Environment and Urbanization*, 111-118.

48. Integrating Waste Pickers into Municipal Solid Waste Management in Pune, India. (2012, July). *Women in informal employment Globalising and organising*, pp. 1-21.

49. *International labour organisation*. (2022, June Friday). Retrieved from www.ilo.org: https://www.ilo.org/global/about-the-ilo/history/lang--en/index.html

50. Johansson, N. (2016). *Landfill Mining: Institutional Challenges for the Implementation of Resource Extraction from Waste Deposits.* Linköping: Linköping University Electronic Press.

51. Jutta, & Gutberlet, S. M. (2017). Household waste and health risks affecting waste pickers and the environment in low- and middle-income countries. *International Journal Of Occupational And Environmental Health*, 299-310.

52. Kain, J.-H., Zapata, P., Carenzo, S., Charles, G., GutberletI, J., Oloko, M., Campos, M. J. (2022). Characteristics, challenges and innovations of waste picker organizations: A comparative perspective between Latin American and EastAfrican countries. *Plos Open*, 1-27.

53. Kalburgi, M. J., & G.P., D. ( 2010). Motivation as a tool for productivity in Public Sector Unit. *Asian Journal of Management Research* , 147-152.

54. Kanekal, S. (2019). Challenges in informal waste sector:Banglore, India. *Pen IUR series on informality*, 2-12.

55. Khurana, H., & Joshi, a. V. (2017). Motivation and its impact o0n individual performance : A comparative study based on Mclellands three needs model. *International journal of vresearch in commerce and management*, 110-116.

56. Kothari, A. (2013). Picking a brighter future. *Nature and cities*, pp. 65-69.

57. Kotni, P., Devi, V. V., & Venkateswarlu, K. (n.d.). Application of Hertzberg's two factor theory model for motivating retail sales force.

58. Kuhnert, K. W., & Palmer, D. R. (1991). Job Security, Health, and the Intrinsic and Extrinsic Characteristics of Work. *Group & Organization Management* , 23-29.

59. Kulsum Akter, N. H.-A. (2019). An Assessment Of Health Hazards And Awareness Of Waste Pickers A Case Study Of Dhaka City. *Jagannath University Journal of Life and Earth Sciences*, 96-113.

60. L.M.Prasad. (2010). *Organisartional Behaviour.* New Delhi: Sultan Chand and Sons.

61. Lam, C. &. (2001). Environmental Accounting of Municipal Solid Waste Originating from Rooms and Restaurants in the Hong Kong Hotel Industry. *Journal of Hospitality & Tourism Research*, 371-385.

62. Makhubele, M. R. (2019). Common Mental Health Disorders among Informal Waste Pickers in Common Mental Health Disorders among Informal Waste Pickers in. *International Journal of Environmental Research and public health* , 18-26.

63. Malhotra, M. (2014). *Social Iimpact Assesment of the Pune Waste Collection Model: The SWaCH Movement.* Pune: SIU.

64. Mangi, Ahmed, A., Ali, K. H., & Bux, M. (2014). Motivational tools and organisational success: A critical analysis of motivational theories. *Government journal of political science*, 51-62.

65. Mansaray, H. E. (2019). The Role of Human Resource Management in Employee Motivation and Performance-An Overview. *Budapest international research and critics institute journal*, 183-194.

66. Marello, M., & Helwege, A. (2014). Solid Waste Management and Social Inclusion of Waste Pickers: Opportunities and Challenges. *Global ecoonomic governance initiative*, 1-10.

67. Marello, M., & Helwege, A. (2017). Solid Waste Management and Social Inclusion of Wastepickers: Opportunities and Challenges. *Latin American Perspectives*, 108-129.

68. Melosi, M. (1981). *Garbage in the Cities, Refuse, Reform and Environment.* Texas: Texas A&M Press.

69. Mote, B. K. (2016). Occupational and Environmental Health Hazards (Physical & Mental) Among Rag-Pickers in Mumbai Slums: A Cross-Sectional Study. *Science Journal of Public Health,*, 1-10.

70. Mphaka, S., & Moja, J. (2017). Waste pickers perceptions amonghouseholds in Cosmo City, South Africa. *Advanced applied sciences research*, 69-72.

71. Mumuni, I. ( 2016). *Examining the Roles and Challenges of Informal Waste Pickers in the Solid Waste Management of the Tamale Metropolis of Northern Ghana.* Hague: The Hague.

72. Nair, S. (2005). *Organisational behaviour text and cases.* Nagpur: Himalaya publishing house.

73. Nanda, N., & Panda, J. K. (2013). Challenges and Effectiveness of Industrial Relation Environment in Indian industries: A study on Rourkela Steel Plant, Rourkela, Odisha, India. *International Journal of Marketing, Financial Services & Management Research*, 163-175.

74. Navarrete-Hernández, Navarrete-Hernández, P. a., & N. (2018). Unleashing waste-pickers' potential: supporting recycling cooperatives in Santiago de Chile. 293-310.

75. Ngoc, U. N. (2009). Sustainable solutions for solid waste management in Southeast Asian. *Waste Management*, 81-95.

76. Niloufer, S. S. (2013). Waste Collection by Rag Pickers in the Cities. *Indian Journal of Research*, 211-214.

77. Osabiya, & Joseph, B. (2015). The effect of employees' motivation on organizational performance. *Journal of public administration and policy research*, 62-75.

78. Osemeke, M., & Adegboyega, S. (2017). Critical review and comparism between Maslow, Herzberg and McClelland's Theory of Needs. *Funai Journal of accounting*, 161-173.

79. Paul, J., Arce-Jaque, J., Ravena, N., & Villamor, S. (2012). Integration of the informal sector into municipal solid waste management in the Philippines–What does it need? *Journal of waste management*, 20-28.

80. Poon, C. S. (2001). On-site sorting of construction and demolition waste in Hong . *On-site sorting of construction and demolition waste in Hong* , 157-172.

81. Porras Bulla, J., Rendon, M., & Espluga, a. (2021). Policing the stigma in our waste: what we know about informal waste pickers in the global north. *The International Journal of Justice and Sustainability*, 299-312.

82. Probst, T. M. (2001). The effects of job insecurity on employee safety outcomes: Cross-sectional and longitudinal explorations. *Journal of Occupational Health Psychology*, 139-159.

83. Putz-Anderson, V.-E. (1997). Musculoskeletal disorders and workplace factors. *National Institute for Occupational Safety and Health*, pp. 21-29.

84. Quing, Ye, F., Asmi, M., Azfar, R., & Zhou. (2021). Health concerns among waste collectors during pandemic crisis. *Environmental Science and Pollution Research*, 63-78.

85. R, T., & Bhavani.K. (2010). Impact of Industrial Relations on Employee Productivity. *Asian Journal of Management and research*, 25-30.

86. Rinie Schenck, P. F. (2019). The Work and Lives of Street Waste Pickers in Pretoria—A Case Study of Recycling in South Africa's Urban Informal Economy. *University of the Western Cape Research Repository* , 45-64.

87. Rutkowski, JE, R., & EW. (2015). Expanding worldwide urban solid waste recycling: The Brazilian social technology in waste pickers inclusion. *Waste Management & Research*, 1084-1093.

88. S. Parveen, I. M. (2020). Occupational health impacts on the child waste-pickers of Dhaka City. *Environmental Health Risk*, 295-304.

89. Samarth, U. (2014). New Delhi: Women in informal employment globalising and organising.

90. Samath, & Sursula, a. (2014). SWaCH Cooperative - Transforming a Stigmatised Occupation into Decent Work. *Urban Livelihoods Approaches: Need for a New Thrust*, 2126.

91. Samson, M. (2009). *Refusing to be Cast Aside: Waste Pickers Organising Around the World.* Cambridge: WEIGO.

92. Sarkar, P. (2003). Solid Wate Management in Delhi - A social vulnerability study. *Third International Conference on Environment and Health* (pp. 451-464). Chennai: University of Madras.

93. Scarlat, N., & and Dallemand, J. (2019). *Future role of bioenergy: The Role of Bioenergy in the Bioeconomy.* Amsterdam: Elsevier.

94. Seadi, T. A.-N. (2004). Solid Waste: Assessment, Monitoring and Remediation. *Waste Management Series*, 207-215.

95. Sector, N. C. (2007). *National Commission for Enterprises in the Unorganised Sector.* New Delhi: Academic Foundation.

96. Sembiring, E., & Nitivattananon, V. (2010). Sustainable solid waste management toward an inclusive society: integration of the informal sector. *Resources conseravation and recycling strategies*, 208-214.

97. SEPA. (2008). *Estimation of commercial and industrial waste*. Retrieved from http://www.sepa.org.uk:

98. http://www.sepa.org.uk/waste/waste_data/waste_data_reports/business_waste_survey.aspx
99. SEPA. (2011, November 25). *Construction and demolition waste* . Retrieved from http://www.sepa.org.uk: http://www.sepa.org.uk/waste/waste_data/commercial__industrial_waste/construction__demolition.aspx

100. Shin, Y., Hur, W.-M., Moon, T. W., & Lee, S. (2019). A Motivational Perspective on Job Insecurity: Relationships Between Job Insecurity, Intrinsic Motivation, and Performance and Behavioral Outcomes. *International journal of environmental research and public health*, 2-16.

101. Silva, M. F. (2005). World at work: Brazilian ragpickers. *Occupation and environment*, 736-740.

102. Singh, R. (2021). *Integration of Informal Sector in Solid Waste Management: Strategies and Approaches.* New Delhi: Centre for science and environment.

103. Singh, S. C. (2015). Assessing the impact of waste picking on musculoskeletal disorders among waste pickers in Mumbai, India: a cross-sectional study. *BMJ Open*, 74-84.

104. Solomon E. Uhunamure, 1. J. (2021). Occupational Health Risk of Waste Pickers: A Case Study of Northern Region of South Africa. *Journal of Environmental and Public Health*, 12-24.

105. Srivastava, R. (2012). Social Protection for Workers in India: Struggling for Basic Rights Under Increasing Labour Market Flexibility. *Indian Journal of Labour Economics*, 55-58.

106. Sultan, & Sarwat. (2012). Examining the Job Characteristics: A Matter of Employees' Work Motivation and Job Satisfaction. *Journal of Behavioural Sciences*, 13-25.

107. Thangaswamy, D. A., & D.Thiyagaraj. (2017). Theoritical concept of job satisfaction: A study. *International journal of research - Granthalaya*, 464-470.

108. Thomas, K. W. (2000). Intrinsic motivation and how it works. *Training Journal*, 130-135.

109. Tirado-Soto, M., & Zamberlan, F. (2013). . Networks of recyclable material waste-picker's cooperatives: an alternative for the solid waste management in the city of Rio de Janeiro. *Waste Management*, 1004-1012.

110. Tiwari, R. (2008). Occupational health hazards in sewage and sanitary workers. *Indian Journal of Occupational and Environmental Medicine*, 112-115.

111. Uddin, Gutberlet, & N, S. M. (2018). Livelihoods and health status of informal recyclers in Mongolia. *Resources management conservation and recycling*, 1-9.

112. Uddin, S M N, G., J, R., Nasiruddin, A. a., & M, S. (2020). Experiencing the everyday of waste pickers: a sustainable livelihoods and health assessment in Dhaka city, Bangladesh. *Journal of International Development*, 33-53.

113. V Kalyan Shankar, R. S. (2018, December 8). Waste Pickers and the 'Right to Waste' in an Indian City . *Economic & Political Weekly*, pp. 54-62.

114. Van Zeeland, A. J. (2014). *The interaction between popular economy, social movements and public policies: a case study of the waste pickers' movement.*

115. Vázquez, & J, J. (2013). Happiness among the garbage: differences in overall happiness among trash pickers in León. *J. Posit Psychol*, 1-11.

116. WEIGO. (2022, June 18). *Waste pickers: essential service providers at high risk.* Retrieved from www.weigo.org: https://www.wiego.org/waste-pickers-essential-service-providers-risk

117. White, P. R. (1995). *Integrated Solid Waste Management: A Lifecycle Inventory.* Berlin: Springer.

118. WIEGO. (2021, June 12). *Waste pickers.* Retrieved from www.weigo.org: www.weigo.org//informal-economy/occupational-groups/waste-pickers

119. Williams, P. T. (2005). *Waste Treatment and Disposal.* London: John Wiley & Sons.

120. Yusuf, F. I. (2021). Awareness of Occupational Hazards and Use of Protective Equipment among Waste Pickers in Bauchi City North-eastern Nigeria. *Annual Conference of Environmental Management Association of Nigeria*, pp. 447-460.

121. Zapata, C., & P, Z. (2013). Translating Development Aid into City Management: The Barrio Acacity through household waste collection. *Environment and Urbanization*, 1-18.

122. Zhao, X. (., Ghisell, R., Law, R., & Ma, J. (2016). Motivating frontline employees: Role of job characteristics in work and life satisfaction. *Journal of hospitality and tourism management*, 27-38.

# Permission from Pune Municipal Corporation PMC

उप आयुक्त कार्यालय
घनकचरा व्यवस्थापन
पुणे महानगरपालिका
जावक क्र.:- घक/घव/५०१५
दिनांक :- १९-०१-२०२३

प्रति,
मा.अतिरिक्त महापालिका आयुक्त (इ)
पुणे महानगरपालिका

यांजकडेस सविनय सादर...

विषय :- पुणे महानगरपालिका अंतर्गत कार्यरत सफाई सेवक व कचरा वेचक यांचे कामकाज व अडचणी याबाबत सर्वेक्षण करण्याच्या अनुषंगाने परवानगी देणेबाबत.

संदर्भ :- आवक क्र. ११६१०,दिनांक १६/०१/२०२३ रोजी घनकचरा व्यवस्थापन विभागास प्राप्त झालेला प्रस्ताव.

महोदय,

वरील संदर्भांकित अन्वये, टिळक महाराष्ट्र विद्यापीठाकडील Ph.D चा अभ्यास करणारे श्री. गुरमीत कौर राजपाल (लाझरी गोखले) यांनी पुणे महानगरपालिकेच्या ढोलेपाटील रोड, औंध-बाणेर, कसबा-विश्रामबागवाडा, कोंढवा-येवलेवाडी व भवानी पेठ क्षेत्रिय कार्यालयांतर्गत कोठीनिहाय कार्यरत सफाई सेवक व कचरा वेचक यांचे दैनंदिन कामकाज व अडचणी याविषयी माहिती घेण्यास परवानगी मिळणेबाबतचा प्रस्ताव सादर करण्यात आला आहे.

यामध्ये आरोग्य कोठीवरील किमान १५ सफाई सेवक व कचरा वेचक यांचे दैनंदिन कामकाज व अडचणी याविषयी माहिती घेण्यात येणार असून त्याचा अहवाल सदर विद्यार्थी घनकचरा व्यवस्थापन विभागास सादर करणार आहेत.

तरी उपरोक्त विषयाच्या अनुषंगाने टिळक महाराष्ट्र विद्यापीठाकडील Ph.D चा अभ्यास करणारे श्री. गुरमीत कौर राजपाल (लाझरी गोखले) यांना ढोलेपाटील रोड, औंध-बाणेर, कसबा-विश्रामबागवाडा, कोंढवा-येवलेवाडी व भवानी पेठ क्षेत्रिय कार्यालयांतर्गत आरोग्य कोठीवरील सफाई सेवक व कचरा वेचक यांचे दैनंदिन कामकाज व अडचणी याबाबत माहिती संकलित करण्यासाठी परवानगी देणेबाबत आपली मान्यता मिळणेस विनंती आहे.

मा.स.कळावे.

(आशा राऊत)
उप आयुक्त
घनकचरा व्यवस्थापन
पुणे महानगरपालिका

अतिरिक्त आयुक्त (इस्टेटस्)कार्यालय
पुणे महानगरपालिका
आवक क्र. ९०७३ दि. २७/०२/२३
जावक क्र. ९०४६ दि. ०६/०३/२३

5/3
(डॉ. कुणाल खेमनार) मा.प्र.से
अतिरिक्त महापालिका आयुक्त(इस्टेटस्)
पुणे महानगरपालिका

Scanned with CamScanner

# Permission from SWaCH

SWACH
A higher level of self-reliance

Date: 13th Jan 2023

To,

The HOD,

Management Department,

Tilak Maharashtra University (TMV).

Subject: Permission letter for data collection for Ph.D thesis from SWaCH workers across Pune city.

Respected Madam,

With reference to the above subject, we would be allowing Ms. Lazree Sudhir Gokhale (Gurmeet Kaur Rajpal) to meet, interact and collect data from members of SwACH across Pune city from different ward offices provided the working and functioning of the SWaCH team is not affected. It has been assured by the candidate that the data collected shall be utilised for academic purposes only.

This for your information.

स्वच्छ पुणे सेवा सहकारी संस्था
एडमिन विभाग
जा. क्र. एडमिन- Swach/473
दिनांक- 13/01/2023
संकलन-
इनचार्ज सही-

सेवा सहकारी संस्था मर्यादित, पुणे
Reg. No. PNA(1)/GNL/ 01321/07-08

Regards,

Ms. Mangal Pagare

Executive Director

# Questionnaire for waste pickers - English

# A Study Of Working Conditions AndTheir Effect On Motivation Of Waste Pickers In Pune City.

This questionnaire is designed to collect information with regards to the abovementioned Ph.D topic and is to be circulated purely for academic purposes only.

1. Literacy Level (Incase respondent is illiterate the questionnaire shall be filled as a schedule)
   - ☐ Illiterate
   - ☐ Literate

2. Name of respondent
   _____

3. Ward office
   - ☐ Dhole Patil Road Ward Office
   - ☐ Aundh -Baner Ward Office
   - ☐ Kasaba Vishrambaugwada Ward Office
   - ☐ Kondhwa – Yevalewadi Ward Office
   - ☐ Bhavani Peth Ward Office

4. Name of the Arogya Kothi
   _____

5. Designation
   - ☐ Sweepers
   - ☐ Door to Door Collection workers DTDC
   - ☐ Vehicle drivers
   - ☐ Itinerant waste pickers
   - ☐ Bigari

6. Education (Question is not applicable if respondent illiterate)
   - ☐ Primary education
   - ☐ Secondary education
   - ☐ Higher secondary education
   - ☐ Degree/ Diploma

7. Gender
   - ☐ Male
   - ☐ Female
   - ☐ Transgender

8. Age
   - ☐ Below 18
   - ☐ 18-28
   - ☐ 29-39
   - ☐ 40-50
   - ☐ 51-60

9. Marital Status
   - ☐ Married
   - ☐ Unmarried
   - ☐ Divorced
   - ☐ Widowed

10. Number of children
   - ☐ 0
   - ☐ 1
   - ☐ 2
   - ☐ 3
   - ☐ More than 3

11. Number of earning members in the family
   - ☐ 1
   - ☐ 2
   - ☐ More than 2

Task related challenges inwaste picking

This section questions the respondent keeping in focus allthe task related challenges in waste picking

12. What work do you undertake daily? (Choose multiple options where applicable)
*Check all that apply.*

- ☐ Sweeping of roads and collection of waste
- ☐ Door to door collection of waste
- ☐ Segregation of waste
- ☐ Filling dumspters
- ☐ Driving vehicles up to and from pickup points

13. Rate the stress arising out the performance of following tasks on a scale of 1 to5

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Door to door collection of waste | ☐ | ☐ | ☐ | ☐ | ☐ |
| Segregation of waste | ☐ | ☐ | ☐ | ☐ | ☐ |
| Filling dumpsters | ☐ | ☐ | ☐ | ☐ | ☐ |
| Driving vehicles up to and from pickup points | ☐ | ☐ | ☐ | ☐ | ☐ |
| Sweeping of roads and collection of waste | ☐ | ☐ | ☐ | ☐ | ☐ |

14. Rate the stress arising out the performance of following tasks on a scale of 1 to5

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Collection of waste from roadside and dumping sites | ☐ | ☐ | ☐ | ☐ | ☐ |
| Segregation of wet and dry waste manually | ☐ | ☐ | ☐ | ☐ | ☐ |
| Handling of high-risk items (Glass, Syringes etc.) | ☐ | ☐ | ☐ | ☐ | ☐ |
| Handling of sanitary waste (Diapers, napkins) | ☐ | ☐ | ☐ | ☐ | ☐ |

15. Rate the stress arising out of the following tasks on a scale of 1 to 5

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Lifting heavy loads | ☐ | ☐ | ☐ | ☐ | ☐ |
| Carrying heavy loads | ☐ | ☐ | ☐ | ☐ | ☐ |
| Pushing Carts | ☐ | ☐ | ☐ | ☐ | ☐ |

| | | | | | |
|---|---|---|---|---|---|
| Tiring body positions | ☐ | ☐ | ☐ | ☐ | ☐ |
| Walking long distances | ☐ | ☐ | ☐ | ☐ | ☐ |
| Climbing stairs | ☐ | ☐ | ☐ | ☐ | ☐ |
| Dealing with the smell of waste | ☐ | ☐ | ☐ | ☐ | ☐ |

16. Do you experience the following situations?

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Manual collection of spilled over waste | ☐ | ☐ | ☐ | ☐ | ☐ |
| Non packing of sanitary waste | ☐ | ☐ | ☐ | ☐ | ☐ |
| Garbage thrown on roadside | ☐ | ☐ | ☐ | ☐ | ☐ |
| Degenerating wet waste | ☐ | ☐ | ☐ | ☐ | ☐ |

Working Environment

This section questions the respondent keeping in focus all thework environment related challenges in waste picking

17. Where do you segregate waste?

*Check all that apply.*

- ☐ On the roadside
- ☐ In the land fill
- ☐ In a separate covered area
- ☐ Other:_____

18. Which of the following seasons is the most challenging for you for the performance of your jobs?

- ☐ Summers
- ☐ Monsoons
- ☐ Winters

19. How often is your work hampered due to extreme weather conditions? (Consider occasions of extreme conditions only)

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely

20. Have you ever encountered the following situations?

| | Yes | No |
|---|---|---|
| Negligent and careless attitude towards you | ☐ | ☐ |
| Physical abuse | ☐ | ☐ |
| Verbal abuse | ☐ | ☐ |
| Accusatory behavior | ☐ | ☐ |
| Sexual harassment at workplace | ☐ | ☐ |
| Discrimination linked to caste | ☐ | ☐ |

21. Do you have to climb stairs in societies having elevators?

- ☐ Yes
- ☐ No

22. Are you allowed to access any facilities in the society's premises if present?

- ☐ Yes
- ☐ No

23. If yes which facilities can you access?

*Check all that apply.*

- ☐ Washroom
- ☐ Changing areas
- ☐ Service elevator
- ☐ Common elevators

24. Do you have access to the following in your Arogya kothi

| | Yes | No |
|---|---|---|
| Drinking water | ☐ | ☐ |
| Lunch area | ☐ | ☐ |
| Facilities to wash and dry clothes | ☐ | ☐ |
| Facilities for storage of clothing | ☐ | ☐ |
| Separate Latrine /Urinals | ☐ | ☐ |
| First aid kit | ☐ | ☐ |

25. Do you get the following personal protection equipment PPE?\

| | Yes | No |
|---|---|---|
| Gloves | ☐ | ☐ |
| Heavy duty gloves | ☐ | ☐ |
| Masks | ☐ | ☐ |
| Shoes | ☐ | ☐ |
| Uniform | ☐ | ☐ |
| Full sleeves coat | ☐ | ☐ |
| Anti - Covid kits | ☐ | ☐ |
| Soaps and sanitizers | ☐ | ☐ |

26. Are you provided with the following welfare facilities?

| | Yes | No |
|---|---|---|
| Hospitals | ☐ | ☐ |
| Health insurance | ☐ | ☐ |
| Medical benefits in case of accidents or injury | ☐ | ☐ |

| | |
|---|---|
| Effects on Physical and mental health ofwaste pickers | This section questions the respondent keeping in focus effects of task related challenges and working conditionson waste pickers. |

27. Are you exposed to the following physical risk factors?

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Breathing in smoke, fumes and dust | ☐ | ☐ | ☐ | ☐ | ☐ |
| Breathing in vapours of solvents and thinners | ☐ | ☐ | ☐ | ☐ | ☐ |
| Direct skin contact with chemicals | ☐ | ☐ | ☐ | ☐ | ☐ |
| Direct skin contact with infectious material | ☐ | ☐ | ☐ | ☐ | ☐ |

28. Out of the following health issues which one have you suffered from due to performance of your jobs and how often?

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Body aches due to physical labour | ☐ | ☐ | ☐ | ☐ | ☐ |
| Dehydration | ☐ | ☐ | ☐ | ☐ | ☐ |
| Nausea | ☐ | ☐ | ☐ | ☐ | ☐ |
| Dizziness | ☐ | ☐ | ☐ | ☐ | ☐ |
| Skin and eye infections | ☐ | ☐ | ☐ | ☐ | ☐ |
| Respiratory tract diseases | ☐ | ☐ | ☐ | ☐ | ☐ |
| Migraines | ☐ | ☐ | ☐ | ☐ | ☐ |
| Gastro intestinal diseases | ☐ | ☐ | ☐ | ☐ | ☐ |
| Bladder related issues | ☐ | ☐ | ☐ | ☐ | ☐ |

29. Are you at risk of injury or accident because of your work?

☐ Yes

☐ No

30. How often have you faced the following situations?

| | Never | Only once | 2-3 times | 5-6 times | Always |
|---|---|---|---|---|---|
| Road accidents | ☐ | ☐ | ☐ | ☐ | ☐ |
| Cuts and abrasions | ☐ | ☐ | ☐ | ☐ | ☐ |
| Acid burns | ☐ | ☐ | ☐ | ☐ | ☐ |
| Attack by stray animals | ☐ | ☐ | ☐ | ☐ | ☐ |

31. In case of the above injuries when do you seek medical assistance?

- ☐ Immediately, first aid kit is available with mukkadam
- ☐ At the end of the day
- ☐ On the day of weekly off
- ☐ Do not seek medical attention

32. Have you suffered from COVID -19 / Omicron?

- ☐ Yes
- ☐ No

33. If Yes, do you think it was because of handling COVID waste?

- ☐ Yes
- ☐ No
- ☐ Maybe

34. Do you feel stressed because of your work?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

35. How often do you experience the following mental /emotional issues due to your job?

| | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|
| Loss of Appetite | ☐ | ☐ | ☐ | ☐ | ☐ |
| Exhaustion | ☐ | ☐ | ☐ | ☐ | ☐ |
| Frustration | ☐ | ☐ | ☐ | ☐ | ☐ |
| Anger | ☐ | ☐ | ☐ | ☐ | ☐ |
| Apathy | ☐ | ☐ | ☐ | ☐ | ☐ |
| Burnout | ☐ | ☐ | ☐ | ☐ | ☐ |

37. Do you consume any of the following?

| | Yes | No |
|---|---|---|
| Alcohol | ☐ | ☐ |
| Smoking | ☐ | ☐ |
| Tobacco/Pan/ Pan masala/ Mishri | ☐ | ☐ |
| Jarda/ Ganja/ Chillum | ☐ | ☐ |

38. Do you attribute smoking and consumption of alcohol/inebriants to your job and working conditions?

- ☐ Yes
- ☐ No
- ☐ Maybe

Motivation of employees

This section aims to gauze the motivation of the respondentstowards this occupation

39. Why have you opted for waste picking as an occupation?

40. What is the nature of your employment?

- ☐ Permanent
- ☐ Contractual
- ☐ Unemployed (For itinerant waste pickers)

41. How often do you think about losing your job?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

42. What is your source of income in waste picking? (Choose multiple options where applicable)

- ☐ Fixed Wage
- ☐ Door to door collection fees
- ☐ Selling of scrap

43. In case of fixed wage do you receive it on time?

- [ ] Yes
- [ ] No

44. How often are you denied the payment of DTDC fees?

- [ ] Always (Every month)
- [ ] Often (Minimum 6 months in a year)
- [ ] Sometimes (Minimum 3 months in a year)
- [ ] Never

45. In case of door to door collection fees what is the average fees charged?

- [ ] Less than 20 rupees a month
- [ ] Between 20 to 40 rupees a month
- [ ] Between 40 to 60 rupees a month
- [ ] Between 60 to 80 rupees a month
- [ ] More than 80 rupees a month

46. How many hours a day do you work?

- [ ] 5-6 hours daily
- [ ] 7-8 hours daily
- [ ] 9-10 hours daily
- [ ] More than 10 hours

47. How frequently are you working above your normal working hours?

- [ ] Always (Every day)
- [ ] Very often (More than 4 times a week)
- [ ] Seldom (Not more than twice a week)
- [ ] Only on festivals and national holidays
- [ ] Never

48. Do you have weekly offs?

- [ ] Yes
- [ ] No

49. Do you feel you are given sufficient breaks from work?

- ☐ Yes
- ☐ No

50. Do you get paid leaves?

- ☐ Yes
- ☐ No

51. Which of the following benefits do you get?

| | Yes | No |
|---|---|---|
| Provident fund | ☐ | ☐ |
| Welfare fund | ☐ | ☐ |
| Employee state insurance (ESI) | ☐ | ☐ |
| Maternity benefit | ☐ | ☐ |
| Scholarships for higher education | ☐ | ☐ |

52. Have you ever received training from PMC/ SWaCH for the following?

| | Yes | No |
|---|---|---|
| Health and hygiene | ☐ | ☐ |
| First aid | ☐ | ☐ |
| Financial literacy | ☐ | ☐ |
| Waste segregation and management | ☐ | ☐ |
| Any other allied commercial activity | ☐ | ☐ |

53. If no, which areas would you like to receive training in?

- ☐ Health and hygiene
- ☐ First aid
- ☐ Financial literacy
- ☐ Waste segregation and management
- ☐ Any other allied commercial activity
- ☐ Other:

54. What suggestions would you like to give in order to improve the conditions ofyour work?

_____

_____

# Questionnaire for waste pickers - Marathi

# विद्यावाचस्पती (पीएच. डी.)

## पुणे शहारातील स्वच्छताद्दूतांच्या कार्यपरिस्थतीचा त्यांचा प्रेरणांवर होणाऱ्या परिणामांचा अभ्यास (विशेषतः कचरा वेचकांच्या संदर्भात.)

ही प्रश्नावली उपरोक्त नमूद केलेल्या विद्यावाचस्पती (पीएच. डी.) पदवीच्या विषयाशी संबधित सर्वेक्षण माहिती संकलित करणायसाठी तयार केलेली आहे. ही केवळ शैक्षणिक हेतूसाठी ती प्रसारित केली जाईल.

१. साक्षारता स्तर. (प्रतिसादक निरक्षर असल्यास प्रश्नावली शेड्यूल म्हणून भरली जाईल.)
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ साक्षर.

☐ निरक्षर.

२. प्रतिसादकाचे नाव. / स्वच्छताद्दूताचे नाव.

_____

३. क्षेत्रीय कार्यालय.
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ ढोले पाटील रोड क्षेत्रीय कार्यालय.

☐ औंध–बाणेर क्षेत्रीय कार्यालय.

☐ कसबा–विश्रामबागवाडा क्षेत्रीय कार्यालय.

☐ कोंढवा–येवलेवाडी क्षेत्रीय कार्यालय.

☐ भवानी पेठ क्षेत्रीय कार्यालय.

४. आरोग्य कोठीचे नाव.

_____

५. पदनाम.
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ साफाई कामगर.

☐ प्रत्येक घरात/घरोघरी (डोअर टू डोअर) जाऊन कचरा गोळ करणारे कामगार.

☐ वाहन चालक.

☐ फिरस्ते कचरावेचक.

☐ बिगारी.

६. शिक्षण (निरक्षर प्रतिसादकांना प्रश्न लागू होत नाहीत.)

☐ प्राथमिक शिक्षण.

☐ माध्यमिक शिक्षण.

☐ उच्च माध्यमिक शिक्षण.

☐ पदविका शिक्षण.

☐ आन्य अभ्यासक्रम.

७. लिंग.

☐ पुरुष.

☐ स्त्री.

☐ तृतीयपंथी.

८. वायोगट.

(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ १८ च्या खाली

☐ १८ – २८

☐ २९ – ३९

☐ ४० – ५०

☐ ५१ – ६०

९. वैवाहिक माहिती.

☐ विवाहित.

☐ अविवाहित.

☐ घटस्फोटित.

☐ विधवा.

☐ विधुर.

१०. अपल्य औश्स. / अनौंरस.

☐ एकही नाही.

☐ एक.

☐ द्वोन.

☐ तीन.

☐ तीनहून अधिक.

११. कुटुंबातील कमावल्या सदस्यांची संख्या.

☐ एक.

☐ द्वोन.

☐ द्वोनाहून अधिक.

| | |
|---|---|
| कचरा संकलनातील आव्हाने | ही प्रश्नावली कचरा संकलनाच्या कार्याशी संबंधित सर्व आव्हानांवर लक्ष केंद्रित करून प्रतिसादकास प्रश्न विचारतो |

१२. तुम्ही रोज कोणते काम करता? (लागू असेल तेथे अनेक पर्याय विवडू शकता.)

☐ रस्ते झाडणे आणि कचरा गोळा करणे.

☐ घरोघरी जाऊन कचरा गोळ करणारे.

☐ कचऱ्याचे वर्गीकरण.

☐ कचरा बाहनांत भरणे.

☐ ठरावीक स्थानापासून कचरा वाहून नेणे.

१३. खालील कार्याच्या कामगिरीमुळे उद्भवलेल्या तणावाचे मूल्यांकन १ ते ५ च्या मोजणीत करा.
(प्रत्येक ओळी मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | १ | २ | ३ | ४ | ५ |
|---|---|---|---|---|---|
| रस्ते झाडणे आणि कचरा गोळा करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| घरोघरी कचरा गोळ करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| कचरा वाहनांत भरणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| ठरावीक स्थानापासून कचरा वाहून नेणे. | ☐ | ☐ | ☐ | ☐ | ☐ |

१४. खालील कार्याच्या कामगिरीमुळे उद्भवलेल्या तणावाचे मूल्यांकन १ ते ५ च्या मोजणीत करा.
(प्रत्येक ओळी मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | १ | २ | ३ | ४ | ५ |
|---|---|---|---|---|---|
| रस्त्याचा कडेला आणि क्षेत्रीय कचरा डेपोमधून कचरा गोळा करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| ओला व सुका हाताने वेगळा करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| उच्च जोखमीच्या वस्तू हाताळणे. (काच, सुया, गंजलेल्या लोखंडी वस्तू इ..) | ☐ | ☐ | ☐ | ☐ | ☐ |
| सॅनिटरी कचरा हाताळणे. (डायपर, नॅपकिन्स इ..) | ☐ | ☐ | ☐ | ☐ | ☐ |

१५. खालील कार्याच्या कामगिरीमुळे उद्भवलेल्या तणावाचे मूल्यांकन १ ते ५ च्या मोजणीत करा.
(प्रत्येक ओळी मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | १ | २ | ३ | ४ | ५ |
|---|---|---|---|---|---|
| जड वस्तू उचलणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| जड वस्तू वाहून नेणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| घंटा गाडी ढकलणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| त्रासदायक शरीरावस्था सहन करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| ढूर अंतरावरची काम करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| जिन्यावरील चढ–उतार करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| डुर्गंधी सहन करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |

१६. तुम्हाला खालील परिस्तिर्तीचा अनुभव येतो का?
(प्रत्येक ओळी मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | कधीच नाही | व्कचितच | कधी क्धी | अनेकद्दा | नेहमी |
|---|---|---|---|---|---|
| सांडलेल्या कचऱ्याचे हाताने संकलन करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| पॅकिंग नकेलेला सॅनिटरी कचराा उचलणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| रस्त्याच्या कडेला फेकलेला कचरा गोळा करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| कुंजलेला ओल्या कचऱ्याचे पुनर्भरण करणे. | ☐ | ☐ | ☐ | ☐ | ☐ |

| | |
|---|---|
| कार्यक्षेत्रातील कामाच्या असलेला ठिकाण. | हा विभाग कचरा उचलण्याच्या कामाच्या वातावरणाशी संबंधित सर्व आव्हानांवर लक्ष केंद्रित करून प्रतिसादकाला प्रश्न विचारतो. |

१७. तुम्ही कचऱ्याचे वर्गीकरण कुठे करता?

- ☐ रस्त्याच्या कडेला.
- ☐ मोकळ्याजागेत.
- ☐ आच्छादित परिसरात विशिष्ट.
- ☐ अन्य.

१८. खालीलपैकी कोणता ऋतू कचरा उचलण्यासाठी सर्वात आव्हानात्मक आहे?

- ☐ उन्हाळा.
- ☐ पावसाळा.
- ☐ हिवाळा.

१९. खराब हवामानामुळे तुमच्या कामात किती वेळा अडखळा येतो?
(केवळ आर्त्यतिक परिस्थितीचे प्रसंग विचारात घ्या?)

- ☐ कथीच नाही.
- ☐ व्कचितच.
- ☐ कधी कधी.
- ☐ वारंवार.
- ☐ नेहमी.

२०. तुम्हाला खालील परिस्थितींचा अनुभव येतो का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- ☐ आपल्याबद्दल निष्काळजी वृत्ती.
- ☐ शरिरिक शोषण.
- ☐ अपशब्दांचा वापर.
- ☐ आरोपात्मक वर्तन.
- ☐ कामाच्या ठिकाणी लैंगिक छळ.
- ☐ जातिभेदाचे पडसाद.

२१. लिफ्ट असलेल्या सोसायट्यांमध्ये तुम्हाला जिने चढावे लागतात का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

२२. तुम्हाला सोसातटीच्या आवारात असलेल्या सुविधा वापरण्याची परवानगी आहे का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

२३. जर होय तर तुम्ही त्या सोसातटीच्या आवारात असलेल्या कोणत्या सुविध वापरू शकाता?

☐ स्वच्छतागृह.

☐ कपडे बदलण्याची खोली.

☐ कर्मचारी लिफ्ट.

☐ सामान्य लिफ्ट.

☐ डबा खाण्याची सोय.

☐ वाहन व्यवस्थेची सुविधा.

☐ मोबाईल चार्ज करणेची सुविधा.

२४. तुमच्या आरोग्य कोठीत खालील सुविध आहेत का?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | होय | नाही |
|---|---|---|
| पिण्याचे पाणीची सुविधा. | ☐ | ☐ |
| जेवण खाण्यासाठी जागा. | ☐ | ☐ |
| कपडे धुण्याची आणि सुकवण्याची सुविधा. | ☐ | ☐ |
| कपडे आणि वैयक्तिक साहित्या ठेवण्यासाठी लॉकर . | ☐ | ☐ |
| स्वच्छतागृह. | ☐ | ☐ |
| प्रथमोपचार पेटी. | ☐ | ☐ |

२५. तुम्हाला खालील वैयक्तिक संरक्षण संसाधन उपलब्ध होतात का?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | होय | नाही |
|---|---|---|
| हातमोजे. | ☐ | ☐ |
| विशेष गरजेसाठीचे हेवी ड्युटी हातमोजे. | ☐ | ☐ |
| मुखपट्टी. (मास्क) | ☐ | ☐ |
| बूट. | ☐ | ☐ |
| गणवेश. | ☐ | ☐ |
| पूर्ण बाह्यांचा कोट. | ☐ | ☐ |
| अँटी कोविड किट. | ☐ | ☐ |
| साबण आणि सॅनिटायझर. | ☐ | ☐ |

२६. तुम्हाला खालील कल्याणकारी सुविध पुरविल्या जातात का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ रुग्णालये.

☐ आरोग्य विमा.

☐ अपघात / दुखापत झाल्यास वैद्यकीय उपचार.

## कचरा वेचकांच्या शारीरिक आणि मानसिक आरोग्यावर होणारे परिणाम

२७. तुम्ही खालील शारीरिक जोखीम घटकांच्या संपर्कात आहात का?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | कधीच नाही | व्कचितच | कधी कधी | अनेकदा | नेहमी |
|---|---|---|---|---|---|
| श्वासोच्छवासाद्वारे धूर आणि धूळ. | ☐ | ☐ | ☐ | ☐ | ☐ |
| श्वासोच्छवासाद्वारे रासायनिक उत्पादने. | ☐ | ☐ | ☐ | ☐ | ☐ |
| रसायनांचा त्वचेशी थेट संपर्क. | ☐ | ☐ | ☐ | ☐ | ☐ |
| संसर्गजन्य सामग्रीचा त्वचेशी थेट संपर्क. | ☐ | ☐ | ☐ | ☐ | ☐ |

२८. नोकरीमुळे तुम्हाला खालीलपेकी कोणत्या आरोग्य समस्यांचा सामना करावा लागतो? किती वेळा?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | कधीच नाही | क्वचितच | कधी कधी | अनेकदा | नेहमी |
|---|---|---|---|---|---|
| शरीरिक श्रमामुळे अंगदुखी. | ☐ | ☐ | ☐ | ☐ | ☐ |
| उलटया जुलाब. | ☐ | ☐ | ☐ | ☐ | ☐ |
| मळमळ. | ☐ | ☐ | ☐ | ☐ | ☐ |
| चक्कर येणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| टवचा आणि डोळ्यांचे संसर्गजन्य आजार. | ☐ | ☐ | ☐ | ☐ | ☐ |
| श्वसनमार्गाचे रोग. | ☐ | ☐ | ☐ | ☐ | ☐ |
| असहय / डोकेदुखी. | ☐ | ☐ | ☐ | ☐ | ☐ |
| पोटाशी संबंधित आजार. | ☐ | ☐ | ☐ | ☐ | ☐ |
| मूत्राशय संबंधित समस्या. | ☐ | ☐ | ☐ | ☐ | ☐ |

२९. तुमच्या कामाच्या स्वरूपामुळे तुम्हाला दुखापत किंवा अपघाताचा धोका आहे का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

३०. तुम्ही किती वेळा खालील परिस्थितींचा सामना केला आहे?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | कधीच नाही | क्वचितच | कधी कधी | अनेकदा | नेहमी |
|---|---|---|---|---|---|
| रस्त्यावरील अपघात. | ☐ | ☐ | ☐ | ☐ | ☐ |
| कापणे आणि खरचट. | ☐ | ☐ | ☐ | ☐ | ☐ |
| रसायनांमुले भाजणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| भटक्या प्राण्यांचा हल्ला. | ☐ | ☐ | ☐ | ☐ | ☐ |

३१. वरील जखमांच्या बाबतीत तुम्हाला वैद्यकीय मदत कधी मिळते?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ तत्काळ.

☐ दिवसाच्या अखेरीस.

☐ साप्ताहिक सुट्टीच्या दिवशी.

☐ वैद्यकीय उपचारांकडे दुर्लक्ष केले जाते.

३२. तुम्हाला कोव्हिड–१९ / ओमिक्रॉन झाला आहे का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

३३. जर होय, तर तुम्हाला असे वाटते का की हे कोव्हिड कचरा हाताळल्यामुळे होते?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

☐ कदाचित.

३४. तुमच्या कामामुळे तुम्हाला ताण–तणाव जाणवतो का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ कधीच नाही.

☐ क्वचितच.

☐ कधी कधी.

☐ अनेकदा.

☐ नेहमी.

३५. तुमच्या कामाच्या स्वरूपमुळे तुम्हाला खालील गोष्टींचा किती वेळा अनुभव येतो?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | कधीच नाही | क्वचितच | कधी कधी | अनेकदा | नेहमी |
|---|---|---|---|---|---|
| थकण. | ☐ | ☐ | ☐ | ☐ | ☐ |
| भूक न लागणे. | ☐ | ☐ | ☐ | ☐ | ☐ |
| राग. | ☐ | ☐ | ☐ | ☐ | ☐ |
| निराशा. | ☐ | ☐ | ☐ | ☐ | ☐ |
| उदासीनता. | ☐ | ☐ | ☐ | ☐ | ☐ |
| अतीव क्रण. | ☐ | ☐ | ☐ | ☐ | ☐ |

३६. तुमच्या कामामुळे तुमचे आरोग्य आणि सुरक्षितता धोक्यात आहे असे तुम्हाला वाटते का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

☐ कद्धाचित.

३७. तुम्ही खालीलपैकी कोणत्य गोष्टीचे सेवन करता?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | होय | नाही |
|---|---|---|
| मद्धयपान. | ☐ | ☐ |
| धूम्रपान. | ☐ | ☐ |
| तंबाखू / पान / गुटख / मिसरी / हुक्का. | ☐ | ☐ |
| अमली पद्धार्थ. | ☐ | ☐ |

३८. तुम्ही नोकरी व कामाच्या ठिकाणी धूम्रपान आणि मद्धयपान सेवन करता का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ होय.

☐ नाही.

☐ कद्धाचित.

| नौकरद्धाराची कार्यप्ररणा | या विभागाचा उद्देश व्यवसायाकडे प्रतिसाद्धकासचे प्रेरण जाणून घेणे आहे. |
|---|---|

३९. तुम्ही कचरा उचलणे हा व्यवसाय म्हणून का निवडला?

_____

४०. तुमच्या नोकरीचे स्वरूप काय आहे?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ कायमस्वरूपी.

☐ कंत्राटी कर्मचारी.

☐ बेरोजगर.

☐ फिरस्ते कचरावेचक.

४१. तुम्हाला नोकरी गमावण्याची भीती वाटते का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] कधीच नाही.
- [ ] व्कचितच.
- [ ] कधी कधी.
- [ ] अनेकद्दा.
- [ ] नैहमी.

४२. तुमचा कचरा उचलण्याच्या कामाच्या उत्पन्नाचा स्रोत कसा आहे? (लागू असतील तर अनेक पर्याय निवडा.)

- [ ] पगार.
- [ ] घरोघरी कचरा संकलन निधी.
- [ ] भंगाराची विक्री
- [ ] अन्य

४३. (कायमस्वरूपी कर्मचाऱ्यांच्या बाबतीत) तुम्हाला पगार वेळेवर मिळतो का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] होय
- [ ] नाही

४४. वेळेवर मासिक शुल्क मिळण्यात किती अडचणी येतात / दुर्लक्ष केल जातो?

- [ ] कधीच नाही.
- [ ] व्कचितच.
- [ ] कधी कधी.
- [ ] वारंवार.
- [ ] नैहमी.

४५. घरोघरी कचरा संकलन करण्यसाठी किती मासिक शुल्काच्या बाबीत सरासरी किती शुल्क आकरले जाते?

- [ ] माहिन्याला २० रुपयांपेक्षा कमी
- [ ] माहिन्याला २० ते ४० रुपये
- [ ] माहिन्याला ४० ते ६० रुपये
- [ ] माहिन्याला ६० ते ८० रुपये
- [ ] माहिन्याला ८० रुपयांपेक्षा जास्त

४६. तुम्ही दिवसातून किती तास काम करता?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] दररोज ५–६ तास.
- [ ] दररोज ७–८ तास.
- [ ] दररोज ९–१० तास.
- [ ] १० तासांपेक्षा जास्त.

४७. तुमच्या नियोजित कार्य वेळ पेक्षा किती तास आणि किती वेळा जस्त काम करावे लागते?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] कधीच नाही
- [ ] फक्त सण आणि राष्ट्रीय सुट्टवर
- [ ] व्कचितच (आठवड्यातून दोनदा जास्त नही)
- [ ] खूप वेळ (आठवड्यातून ४ वेळा)
- [ ] नेहमी

४८. तुम्हाला साप्ताहिक सुट्टी मिळते का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] होय
- [ ] नाही

४९. कामाचा दरम्यान तुम्हाला वैयक्तिक गरजासाठी / कामासाठी पुरेसा अवधी दिली जाते असे तुम्हाला वाटते का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] होय
- [ ] नाही

५०. तुम्हाला भरपगारी रजा मिळतात का?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

- [ ] होय
- [ ] नाही

५१. खालीलपैकी कोणत्या योजनांचा लभ तुम्हाला मिळतो?

(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | होय | नाही |
|---|---|---|
| शैवक निधी. | ☐ | ☐ |
| कल्याण निधी. | ☐ | ☐ |
| कर्मचारी निधी. | ☐ | ☐ |
| उच्च शिक्षणासाठी शिष्यवृत्ती. | ☐ | ☐ |
| आरोग्य विमा. | ☐ | ☐ |

५२. तुम्ही कधी पुणे मनपा / स्वच्छ कडून खालील गोष्टींसाठी प्रशिक्षण घेतले का?
(प्रत्येक ओळ मधील कणत्याही एका रकान्यात ✔ अशी खूण करा.)

| | होय | नाही |
|---|---|---|
| आरोग आणि स्वच्छता. | ☐ | ☐ |
| प्रथमोपचार. | ☐ | ☐ |
| आर्थिक साक्षरता. | ☐ | ☐ |
| ख्चरा वर्गीकरण आणि व्यावसायिक. | ☐ | ☐ |
| इतर कोणतेही संबंधित व्यावसायिक काम | ☐ | ☐ |

५३. नसल्यास, तुम्हाला कोणत्य क्षेत्रात प्रशिक्षण घ्यायला आवडेल?
(कणत्याही एका रकान्यात ✔ अशी खूण करा.)

☐ आरोग्य आणि स्वच्छता.

☐ प्रथमोपचार.

☐ आर्थिक साक्षरता.

☐ कचरा वर्गीकरण आणि व्यावस्थापन.

☐ इतर कोणतेही संबंधित व्यावसायिक काम.

☐ इतर.

५४. तुमच्या कामाची परिस्थिती सुधारण्यासाठी तुम्ही कोणत्या सूचना देऊ इच्छिता?

_____

_____

_____

# Excerpts from Swachh Bharat Mission Mannual - Part 2

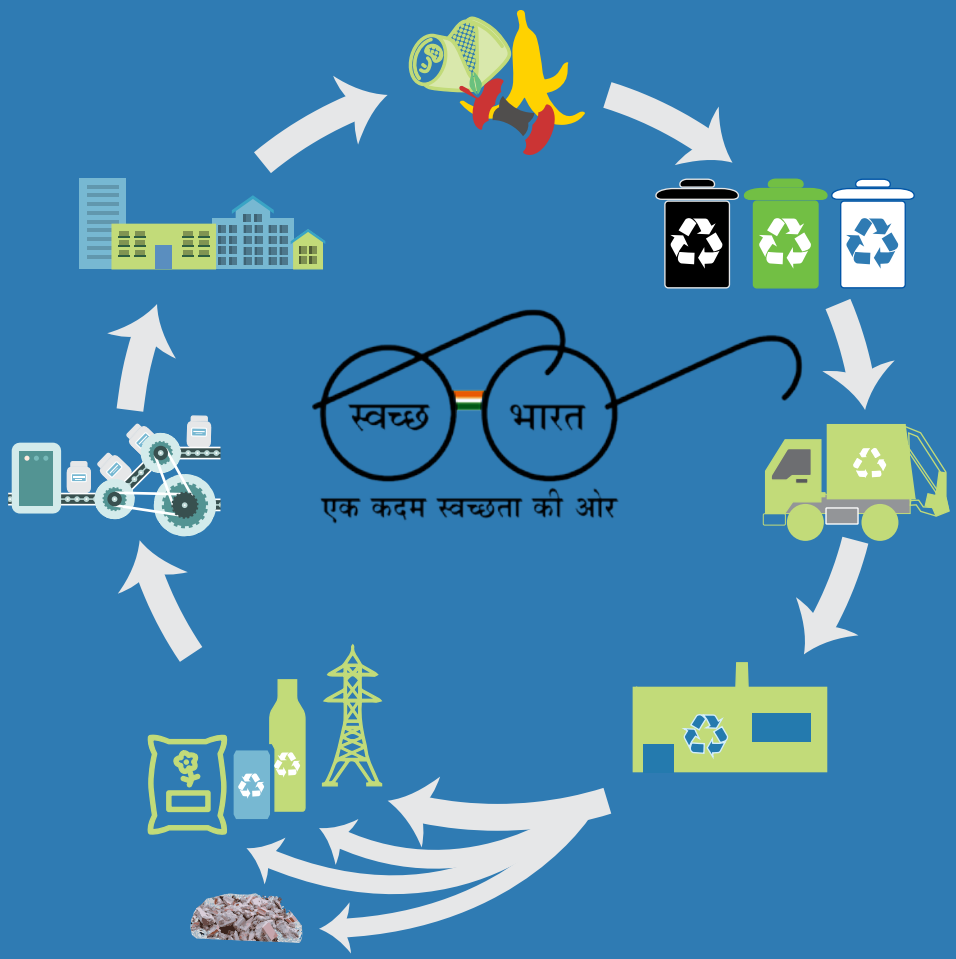
सत्यमेव जयते

GOVERNMENT OF INDIA

# SWACHH BHARAT MISSION

# MUNICIPAL SOLID WASTE MANAGEMENT MANUAL

## PART II: THE MANUAL




Central Public Health and Environmental Engineering Organisation (CPHEEO)

**MINISTRY OF URBAN DEVELOPMENT**

www.moud.gov.in

www.swachhbharaturban.gov.in

**2016**



सत्यमेव जयते

GOVERNMENT OF INDIA
**MINISTRY OF URBAN DEVELOPMENT**
http://moud.gov.in

# MUNICIPAL SOLID WASTE MANAGEMENT MANUAL

Central Public Health and Environmental Engineering Organisation (CPHEEO)

**IN COLLABORATION WITH**







**German International Cooperation**

2016

# PART II:
# Manual on Municipal Solid Waste Management

Waste Management Cycle




*Source: MJS*

### 1.4.5.9 ARRANGEMENTS FOR INFORMAL SECTOR INTEGRATION

The informal sector, constituting of both kabadi system and waste pickers, plays an important role in the MSWM value chain by recovering valuable material from waste. It helps reduce environmental impacts by improving resource recovery and reducing disposal requirements. The integration of the informal sector into the formal SWM system will contribute to the reduction of the overall system costs, provide support to the local recycling industry, and create new job opportunities. The waste pickers have significant expertise in sorting municipal waste and are an asset for processing and material recovery facilities.

The informal sector (kabadi system and waste pickers) is the backbone of the MSWM value chain in India, recovering nearly 50% of recyclables generated by households

**Integrating the Informal Waste Sector: Policy Directives**

The integration of the informal waste sector into formal waste management systems is made possible through a set of formal or informal arrangements between waste pickers or organisations of waste pickers or organisations working with waste pickers and the local authorities, in their operational area. The integration process would typically result in the accrual of social benefits to waste pickers."[25]

Some of the salient features of the policies or regulations pertaining to municipal solid waste management (MSWM) as they relate to the informal waste management sector are the following:

- National Environment Policy, 2006. It acknowledges the informal waste sector and states, "Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various material. In particular enhance their access to institutional finance and relevant technologies."
- National Action Plan on Climate Change, 2009. It stresses the need for giving legal recognition to the informal sector, which it recognizes as the "backbone of India's highly effective recycling system."[26]
- National Labour Commission, 2002. It "recognises the useful role played by the scrap collectors both in helping recycling activities as well as in maintaining civic hygiene. It is, therefore, essential that they should be protected from insecurity of various forms. The measures that could be thought of in this regard are providing identity cards, receipts for transactions, minimum wages when they are employed by contractors or other employers, health facilities, creation of welfare funds, prohibition of child labour from the activity and the likes. The Commission fully endorses the suggestions made by the United Nations Development Programme (UNDP) and the International Labour organisation (ILO)."[27]
- SWM Rules, 2016 recognises the role of informal sector in waste management, and emphasise on establishing a system for integration of these waste collectors in order to facilitate their participation in SWM.

Progressive regional legislation that facilitates integration of the informal waste sector into formal systems has been made in some of the Indian states like Maharashtra.

Developing formalized material recovery systems is capital intensive. Therefore, informal sectors, if existing, should be encouraged, while ensuring environmental, health and safety safeguards

There are various political, legal, cultural, and social conditions that determine the best possible approach to informal sector integration. Local, regional, and national legislative frameworks for informal workers should be considered.

Certain enabling conditions and supportive actions for promoting the integration of the informal sector include:

25 Adapted from Recycling livelihoods – Integration of the Informal Recycling Sector in Solid Waste Management in India Chikarmane, P. L. Narayan, and B. Chaturvedi (2008) and study prepared for GTZ´s sector project "Promotion of concepts for pro-poor and environmentally friendly closed-loop approaches in solid waste management" (unpublished).

26 National Action Plan on Climate Change (2009).

27 Second National Labour Commission (2002). Ministry of Labour, Government of India.

- organising informal sector into recognised membership-based associations or cooperatives, with true representation of women as part of their leaders and members;
- recognising these associations for MSWM service delivery;
- creating a policy framework for informal waste sector recognition and an inclusive framework to facilitate their participation in the delivery of service;
- promoting social security and health benefits to members of these associations;
- encouraging informal sector, NGO, and CBO through linkage to National Urban Livelihoods Mission;
- providing low-interest loans to organisations of waste pickers seeking to bid for tenders and contracts;
- providing exemptions on fees and deposits for participation of informal sector associations in bidding for MSWM contracts;
- providing basic amenities and facilities for the informal workers to work effectively such as timely wages and bonuses, proper facilities for women to be able to leave their children during work and linkages with community centres or anganwadis, safety and security including PPE, proper redressal mechanisms (for formal complaints, sexual harassment, etc.);
- encouraging informal sector involvement in waste collection and sorting services;
- reserving land in development plans for decentralised processing of biodegradable wastes and collection of recyclables; and
- supporting capacity development programs for informal sector associations (see box below).

**Scope for Informal Sector Integration in Municipal Solid Waste Management Activities**

- Door-to-door collection
- Sorting of recyclable waste
- Collection and segregation of recyclable material
- Manual sorting at the conveyor belt in a material recovery facility
- Setup and management of recyclable or reusable waste take-back or buy-back facilities supported by adequate and appropriate skill enhancement arranged for by the urban local body (ULB) or other concerned departments
- Waste sorters in processing facilities (e.g., at the sorting conveyor)

**Capacity Building and Training of Informal Sector for Providing Municipal Solid Waste Management Services**

- Improvement of managerial skills (business management, accounting, marketing, negotiation skills)
- Maintenance of work ethics and organisation or team work
- Training in sorting, processing, recycling techniques, and value added services
- Formalisation requirements for waste worker organisations
- Environmental and health aspects of waste management activities
- Occupational hygiene and safety
- Business support services linked to large scale formal recycling industries

### 1.4.5.10 SEGREGATED COLLECTION (DOOR-TO-DOOR COLLECTION, STREET SWEEPING AND DRAIN CLEANING), STORAGE AND TRANSPORTATION

Door-to-door collection of segregated waste is mandatory as per SWM Rules, 2016. Collection of segregated waste (wet waste, dry recyclables, and domestic hazardous waste), sanitary, horticulture, constuction & demolition from residential, commercial, and institutional areas is to be planned by ULBs. Frequency of waste collection is dependent on the quantum of waste generated by each of these groups and the level of segregation of waste. While residential waste is to be collected daily, waste from market area, commercial establishments and institutions may be collected twice a day. The quantum of waste generated and collected also determines the mode of transportation used to collect waste at doorstep. Segregated containers are required for collection of different fractions (wet, dry and domestic hazardous); at a minimum, ULBs shall collect wet and dry waste separately.

Waste collected from doorstep may either be stored in a secondary collection point or transferred directly to secondary collection vehicles (bin-less cities). The feasibility of choosing between secondary storage or direct transfer to secondary collection vehicles is to be ascertained based on the availability of secondary collection vehicles, extent of collection area, and timing of collection. Where waste from all residential areas is collected during morning hours and transferred directly from primary collection vehicles to secondary collection vehicles, the requirement for secondary collection vehicles will be much higher as compared to staggered timings of collection. Wet, dry and domestic hazardous waste should be transported in segregated manner.

The establishment of intermediate transfer stations is determined by the distance between secondary waste collection points and the final

# Excerpts from Municipal Solid Waste Management Mannual - Part 2

DRAFT

सत्यमेव जयते

GOVERNMENT OF INDIA

**MINISTRY OF URBAN DEVELOPMENT**

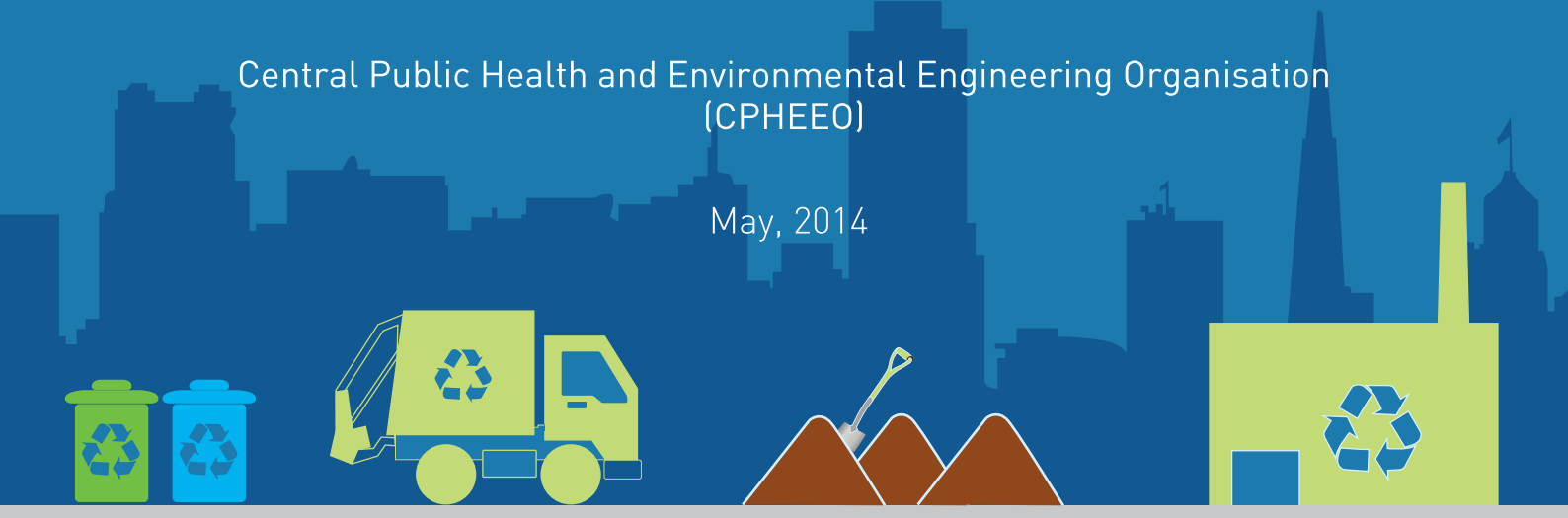
http://moud.gov.in

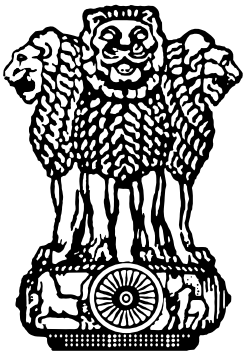
# MUNICIPAL SOLID WASTE MANAGEMENT MANUAL



Central Public Health and Environmental Engineering Organisation
(CPHEEO)

May, 2014





सत्यमेव जयते

**Government of India**

# Ministry of Urban Development

**http://moud.gov.in**

# MUNICIPAL SOLID WASTE MANAGEMENT MANUAL

## Central Public Health & Environmental Engineering Organisation (CPHEEO)

**IN COLLABORATION WITH**







Deutsche Gesellschaft
für Internationale
Zusammenarbeit (GIZ) GmbH

**GERMAN INTERNATIONAL COOPERATION**

**May 2014**

#### 1.4.4.8 ARRANGEMENTS FOR INFORMAL SECTOR INTEGRATION

The informal sector, constituting waste pickers/rag pickers, plays an important role in the SWM value chain by recovering valuable material from waste. They help reduce environmental impacts by improving resource recovery and reducing disposal requirements. The integration of the informal sector into the formal solid waste management system will contribute to the reduction of the overall system costs, provide support to the local recycling industry and create new job opportunities. They have significant expertise in sorting municipal waste and are an asset for processing and material recovery facilities.

The informal sector is the backbone of the SWM value chain, recovering nearly 50% of recyclables generated by households



**Integrating the Informal Waste Sector – Policy Directives**

The "integration" of the informal waste sector refers to several ways in which the informal waste sector could be involved in formal waste management systems. This is made possible through a set of formal or informal arrangements between waste pickers themselves or organizations of waste pickers or organizations working with waste pickers with local authorities in their operational area. The integration process would typically result in the accrual of social benefits to waste pickers."[29]

Some of the salient features of the policies/ regulations pertaining to Municipal Solid Waste Management as they relate to the informal waste management sector are:

- National Environment Policy, 2006: Acknowledges the informal waste sector and states "Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials. In particular enhance their access to institutional finance and relevant technologies"
- National Action Plan for Climate Change, 2009[30] (NAPCC) stresses the need for giving legal recognition to the informal sector, which it recognizes as the "backbone of India's highly effective recycling system".
- National Labour Commission, 2002[31] also "recognizes the useful role played by the

[29] Chikarmane, P.; Narayan, L.; Chaturvedi, B (2008), Recycling livelihoods – Integration of the Informal Recycling Sector in Solid Waste Management in India. May, 2008. Study prepared for GTZ´s sector project "Promotion of concepts for pro-poor and environmentally friendly closed-loop approaches in solid waste management" (unpublished). Available at: http://www2.gtz.de/dokumente/bib-2010/gtz2010-0485en-informal-recycling-india.pdf

[30] NAPCC, 2009, Available at http://pmindia.nic.in/climate_change_english.pdf

[31] Second National Labour Commission, Ministry of Labour, Government of India.2002. Available at: http://www.labour.nic.in/lcomm2/nlc_report.html

scrap collectors both in helping recycling activities as well as in maintaining civic hygiene. It is, therefore, essential that they should be protected from insecurity of various forms. The measures that could be thought of in this regard are providing identity cards, receipts for transactions, minimum wages when they are employed by contractors or other employers, health facilities, creation of welfare funds, prohibition of child labour from the activity and the likes. The commission fully endorses the suggestions made by the United Nations Development Programme (UNDP) and the International Labour organization (ILO)".

Progressive regional legislation has been made in some of the states in India e.g. Maharashtra, which facilitates inclusion of the informal waste sector into formal systems.

Developing formalized material recovery systems is capital intensive. Therefore, informal sectors, if existing, should be encouraged, while ensuring environmental, health & safety safeguards.

There are various political, legal, cultural and social conditions that determine the best possible approach to informal sector integration. Local, regional and national legislative frameworks for informal workers should be considered.

Certain enabling conditions and supportive actions for promoting the integration of the informal sector:

- Organization of informal sector into recognized, membership-based associations or cooperatives. These associations would have to have true representation of women as part of their leaders/ members
- Recognition of these associations for SWM service delivery.
- Creation of a policy framework for informal waste sector recognition and an inclusive framework to facilitate their participation in the delivery of service.
- Promotion of social security and health benefits to members of these associations.
- Encourage informal sector/ NGO/ CBO through linkage to National Urban Livelihood Mission.
- Providing low-interest loans to organizations of waste pickers seeking to bid for tenders and contracts.
- Providing exemptions on fees and deposits for participation of informal sector associations in bidding for solid waste management contracts
- Provisions of basic amenities and facilities for the informal workers to work effectively (PPE, timely wages, bonuses etc., proper facilities for women to be able to leave their children in the hours that they work, linkages with community centres/ aanganwadis may be established, safety and security provided to all workers, proper redressal

mechanisms for formal complaints, sexual harassment policy/ committees etc.

- Encourage informal sector involvement in provision of waste collection and sorting services.
- Reserving land in development plans for decentralized processing of bio-degradable wastes and collection of recyclables.
- Supporting capacity development programmes for informal sector associations (see Box below).



**Scope for Informal Sector Integration in SWM Activities**

- Door-to-door collection
- Sorting recyclable waste
- Collection and segregation of recyclable material
- Manual sorting at the manual sorting conveyor belt in a Material Recovery Facility
- Set-up and management of recyclable/reusable waste take-back/buy-back facilities
- Waste sorters in processing facilities ( e.g. at the sorting conveyor)



**Capacity Building and Training of Informal Sector for Providing MSW Management Services**

- Improvement of managerial skills (business management, accounting, marketing, negotiation skills);
- Maintenance of work ethics and organization/team work;
- Training in sorting, processing, recycling techniques and value added services;
- Formalization requirements for waste worker organizations;
- Environmental and health aspects of waste management activities;
- Occupational hygiene and safety;
- Business support services linked to large scale formal recycling industries;

#### 2.3.4.4 Four Wheeled Mini Truck With International Standard Garbage Collection Bins

Adequate repair and maintenance system should be established to service mechanical and manual vehicles and other heavy equipment, thereby lowering potential down-time of vehicles and equipment.

The main advantage of using bins instead of a hydraulic container is that the load height can be brought down from 1500 mm in case of the previous design to 1200 mm from ground or less, if the bins are brought down for collection.

Avoidance of hydraulic tipping will make it suitable for use in remote places also, where suitable provisions for maintenance of hydraulic component of large number of vehicles may not be available and is also costly and time consuming.

A typical set up: The vehicle can carry 8 bins of minimum 240 liters. Bins should be made of injection molded HDPE. Each mini truck should carry 4 green containers for wet waste and 4 blue containers for dry waste.

Apart from vehicles, urban local bodies should have adequate workshop facilities for the maintenance of their fleet of vehicles, containers, handcarts etc. The workshop, public or private or PPP, should have adequate technical staff (both trained men and women), spares and preventive maintenance schedules to ensure that at least 80% of the vehicles runon the road each day and the down time of repair/maintenance is minimised to the extent possible. For more information on preventive maintenance, please refer to Section 6.1.4 of Part II of the manual.

### 2.3.5 Manpower And Vehicle Requirements For Primary Collection

Efficient primary collection requires adequate equipment, facilities and trained man power. Table 2.2 below gives specifications of the requisite primary waste collection service systems to be deployed in different types of localities. Table 2.3 gives service norms for deployment of vehicles and manpower for primary collection. The specific requirement for equipment/vehicles should be calculated based on future waste generation projections of the city (at least for coming 5 years).

**Table 2.2: Elements of Primary Waste Collection System**

| Source | Primary Collection services | Transportation | PPE for waste handler |
|---|---|---|---|
| Societies/<br>Apartment Complexes | Door to Door collection services<br>Minimum of Two bins for collection of wet waste and dry waste (10-15L)<br>A pair of community bins of<br>60 litres( 20 to 30 kg) or<br>120 litre capacity (40 to 60 kg) or<br>240 lit capacity (80 to 120 kg) or<br>1.1 cu. m capacity (300 to 450kg) depending on no of houses to be served (i.e. 12, 24, 48, 200 units). The specifications should be as per Central Institute of Plastics Engineering and Technology (CIPET) advise<br>Contract for door to door collection should be given to Private sector/ RWAs/ CBOs/ NGOs/SHGs | Containerized light weight handcarts<br>Tricycles for both men/ women<br>Pick up Vans<br>Motorized waste collection vehicle<br>Any suitable combination of the above | Gloves<br>Shoes<br>Clothes that cover whole body |
| Inaccessible Residential Areas | Two separate community bins/ containerof 60 to 120 litre capacity for 20 to 40 dwelling units<br>Two domestic bins for storage of waste at source 5, 10, 15, 20 litres (for 2 to 8 Kg waste) capacity, as per CIPET specification | Containerized light wieght hand carts<br>Tricycle for both men/ women<br>Waste collected from the area should be transferred to a LCV outside the slum area | Gloves<br>Shoes<br>Clothes that cover whole body |

| Source | Primary Collection services | Transportation | PPE for waste handler |
|---|---|---|---|
| Residential areas | Door to door collection services for segregated waste<br>12 to 15 litres capacity domestic bins, one of them with lid, made as per CIPET specification<br>Contract for door to door collection should be given to Private firm/NGOs/ RWA/ SHGs | Containerized Handcarts<br>Tricycles for both men and women<br>Pick up Vans<br>Motorized waste collection vehicle | Gloves<br>Shoes<br>Clothes that cover whole body |
| Markets/ Bulk Waste Generators | Door step collection services for recyclable material/ dedicated waste streams on full cost recovery basis<br>Markets: Number of 1.1 to 4.00 cu. mt. covered bins for storage of waste as per the quantity of waste generated in the market.<br>Large commercial complexes could use 3.0 cu.m.to 7.0 cu.m. container | Motorized waste collection vehicle with container lifting devise<br>Compactors compatible with containers<br>Non compactor trucks | Heavy duty,gloves<br>Shoes<br>Clothes that cover whole body<br>Face mask |
| Hilly areas | Door to door collection service for segregated waste Manual collection or small motorized vehicles work well<br>Door to door collection service for segregated waste<br>5, 10, 15, 20 litres (for 2 to 8 Kg waste) capacity, HDPE, injection moulded, tested bins<br>Two domestic bins of 12 to 15 litres or a pair of community bins of 60, 120, 240 litre depending on the number of houses to be served ( 20, 40, 80 houses) | Lightweight containerized handcarts<br>Tricycles for both men and women<br>Pick up Vans<br>Motorized waste collection vehicle<br>Combination of vehicles specified above | Heavy duty gloves<br>Shoes<br>Clothes that cover whole body<br>Face mask |

Table 2.3 indicates 'thumb rules' for the deployment of vehicles and human resources for primary waste collection.

Recycling carried out by informal sector (individual or group of waste pickers) plays a critical role in reducing waste quantities and depletion of raw materials as well as minimizing the financial and environmental burden of cities.

Community initiatives need to be inclusive. Engagement of men, women, youth, and children should be given the due importance. Separate group discussions, involvement of community leaders, community associations, SHGs, local members who represent the interest of the community at large (especially with a focus on bringing in the voices of women) must be adapted. For this innovative means of gathering people, interested community members, engaging with the women, youth and school children must be thought of and planned for.

### 2.3.7 Informal Collection Of Recyclables

The informal sector popularly known as "kabadi system"is involved in purchase of about 70 to 75% of recyclables in the country from households and commercial establishments. In this informal sector, there are individuals, families, groups and small enterprises that carry out unregistered and unregulated activities. There is another set of informal sector known as "rag pickers" who pick up discarded recyclable waste from the streets, bins, dump sites etc. They pick up 5 to 10 % of the municipal waste which is of value to them to earn their living (please refer to figure 2.11). This informal sector helps to reduce the depletion of raw materials, natural resources and energy that otherwise would be used in the production of new products. For more information on role of informal waste sector, please refer to box on 'Role of Informal Sector in Primary Waste Collection'.

ULBs should make concerted efforts to integrate the informal sector of rag pickers into regular waste collection operations through the private sector, NGOs, RWAs etc.

Local "kabadi system" purchase recyclable waste from households, shops and establishments, segregate this waste in plastic, paper, metal, cardboard, e-waste, glass and then sell the segregated waste to the large wholesalers. The larger wholesaler is the final link between the recycling factory and the "kabadi" and can extend credit, bargain for better pricing etc.

Sorting of discarded waste by the informal sector or 'rag pickers' also occurs on the street corners, municipal bin level and at the dump sites where the rag pickers sort the recyclable material from the mixed waste discarded by the waste generators. This form is fraught with danger and makes the rag pickers susceptible to injuries and infections.

With an aim to avoid child labour, unhealthy practice of segregation of recyclable material from soiled and infected waste without any use of PPE (Personal Protective Equipment) to reduce exploitation and discrimination of this low income group and also to arrive at efficient and consistent segregated collection systems, municipal authorities should make concerted efforts to integrate the informal sector of rag pickers into regular waste collection operations through private sector, NGOs, CBOs, SHGs and RWAs and aim should

be to raise the status from rag pickers to waste collectors and provide them with tools for their work and PPE like gloves, shoes, full sleeves coat through their employers. Assessing the size of the existing informal system and the quantity of material handled by them in a town/city; identifying the number of rag pickers and kabadi system and their linkages to the wholesale market, are all important pre-requisites to defining any initiative to integrate them into the formal system. Organizing the informal sector to form viable business groups and societies, with the help of local NGOs is an ideal approach for achieving this integration. Such initiatives should be supported by appropriate local policy and bye-laws, where required; this would result in institutionalizing and ensuring rights of workers (both men and women) for the entire process. Once organized, provision of social security and welfare benefits to waste pickers should be also considered. As a general rule, any form of health problems related to occupational health hazards should be addressed appropriately. Social benefits of workers should include health check ups, medical health care and treatment facilities. Care must be taken to ensure that workers (be it contractual or otherwise) have access to proper facilities such as separate toilets for men and women, storage space for leaving behind their belongings etc. For further information, please refer to Section 1.4.4.8 of Part II of this manual.



**Figure 2.11: Waste Picker with recyclable material**




**Organizing the Unorganized - Towards formalization and social inclusion of informal waste pickers and recyclers**

**Location:** Pune, Pimpri Chinchwad, Maharashtra

**Main Players:** Kagad Kach Patra Kashtakari Panchayat (waste pickers trade union), SWACH (co-operative), Pune and Pimpri Chinchwad Municipal Corporations

# List of Aarogya Kothis

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## नगररोड वडगांवशेरी क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| 1 | 3 | श्री. संदीप चव्हाण - 9689931528 | सौ. ललिता तमसर - 8689936473 | राजू गांधी नगर | श्री. सुनिल शर्मा - 9823516093 |
| 2 | | | | बर्माशेल | श्री. अरूण बारिया - 8888409049 |
| 3 | | | | लोहगाव | श्री. चंद्रकांत गायकवाड - 9881115288 |
| 4 | | | श्री. सचिन गवळी - 9689939043 | विमाननगर जॉगर्स पार्क | श्री. लालासाहेब पितळे - 9890264879 |
| 5 | | | | सोमनाथनगर ईन ऑर्बिट मॉल मागे | श्री. नंदू तरस - 9011136809 |
| 6 | 4 | श्री. शंकर जगताप - 9869931610 | सौ. सुषमा मुंढे - 7447472200 | खराडी गावठाण | श्री. राहूल सारवान - 9689913181 |
| 7 | | | श्री. शरद मरकड - 9921210349 | बहुउद्देशीय हॉल चंदननगर | श्री. अजय थोरात - 7775094441 |
| 8 | | | श्री. संदेश रोडे - 8793242525 | सुंदराबाई मराठे शाळेलगत | श्री. चिमाजी डगळे - 7770041886 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | 5 | श्री. संदीप चव्हाण - 9689931528 | श्री. मुकुंद घम - 96899938715 | शास्त्रीनगर गलांडे दवाखाना मागे | श्री. गणेश नणवरे - 9667755732 |
| 10 | | | | वडगांवशेरी पंपिंग स्टेशनच्या आवारात | श्री. बाळू सोनावणे - 9822490634 |
| 11 | | | श्री. हनुमंत सावळी - 9689930576 | वडगांवशेरी गावठाण लोणकर शाळा | श्री. विनोद निकाळजे - 9860058009 |
| 12 | 6 | श्री. संदीप चव्हाण - 9689931528 | श्री. स्वप्निल कोठावळे - 9689931152 | कचरा हस्तांतरण केंद्र | श्री. अशोक क्षिरसागर - 9881041550 |
| 13 | | | | | श्री. अंबाजी मांडवकर - 9890995697 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## येरवडा-कळस-धानोरी क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| 1 | 1 | श्री.संजय घावटे 9689931356 | श्री.संदिप पवार 9689931527 | कळस कोठी | श्री.आण्णासो रास्ते 9689935165 |
| 2 | | | | गाडगीळ कोठी | श्री.अंगद गायकवाड 8806907675 |
| 3 | | | श्री.मयुर मांढरे 9689936795 | धानोरी कोठी | श्री.शेखर टकले 9049678379 |
| 4 | | | | भाजी मंडई धानोरी कोठी | श्री. सुरेश उबाळे 9552527972 |
| 5 | 2 | | श्रीमती.कविता खरात 9689931 | फुलेनगर कोठी | श्री. शरद देशमुख 9226484648 |
| 6 | | | | नानासाहेब परूळेकर शाळा कोठी | श्री. निर्मलकुमार कांबळे 9673958397 |
| 7 | | | श्री.स्वप्निल कुताळ | विानगर कोठी | श्री. सुनिल बनसोडे 9689934256 |
| 8 | | | | नागपुरचाळ कोठी | श्री. धोंडु शेळकंदे 9860814429 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | | | श्रीमती.रूपाली शेडगे 9689933 | प्रिझनप्रेस कोठी | श्रीमती. सुरेखा वाघमोडे 9922140359 |
| 10 | 6 | श्री.अनिल डमाले 9689932135 | श्री.प्रमोद उकिर्डे 8308841303 | श्रीमळ दवाखाना कोठी | श्रीमती.सुनिता विर 9881912279 |
| 11 | | | | मोझे शाळा कोठी | श्री.प्रल्हाद बुरटे 8605518516 |
| 12 | | | | स्मशानभूमी कोठी | श्री.दुदाराम केंगले 9604003482 |
| 13 | | | श्रीमती.अर्चना कानडे 8007831 | चर्च कोठी | श्री.कुंदन वाघेला 9764207567 |
| 14 | | | | नेताजी शाळा कोठी | श्री.अशोक जाधव 9823836292 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## कै.बा.स. ढोले पाटील रोड क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 20 | श्री. कलढोके - 9421212092 | सौ. निलिमा काकडे-9689931406 | कैलास स्माशनभूमी आवार | श्री. नागेश लांडगे - 9970664731 |
| | | | | 12, ताडीवाला रोड चौक | श्री. सुनिल डाळिंबे - 9371071319 |
| | | | श्री.निखिल शेंडगे - 83290774333 | पेस्तनजी दवाखाना, भवानी पेठ | श्री. गोपाळ गोरखे - 9527632681 |
| | | | | पूना स्टेशन | श्री. पेंट्टया धनगर - 9689885630 |
| | 21 | | श्री.नितिन कांबळे-9689930885 | ढोलेपाटील रोड क्षे. कार्यालय आवार | श्री. अविनाश कसबे - 9922735236 |
| | | | | बर्निंग घाट, कोरेगांव पार्क | श्री. संजय कुदळे - 9860368308 |
| | | | श्री.विक्रम सरोदे-9689936582 | शक्तीनगर, घोरपडी | श्री. राकेश गायकवाड-7888128282 |
| | | | | शक्तीनगर, घोरपडी | श्री. संजय सोनवणे - 9850456083 |

| | | | | | |
|---|---|---|---|---|---|
| | | | श्री.संदिप रोकडे-9689934512 | हडपसर औद्योगिक वसाहत | श्री. अशोक बारोडे - 9028338500 |

# पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## शिवाजीनगर- घोले रोड क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 7 | श्री. इनामदार - 96833931055 | लक्ष्मण एकनाथ चौधरी- 9689939846 | पुणे विद्यापीठ हजेरी कोठी | श्री. पांडुरंग निम्हण - 9689934654 |
| | | श्री. सुनिल कांबळे - 9869931881 | | पुणे विद्यापीठ हजेरी कोठी, रेजहिल्स कॉर्नर हजेरी कोठी | श्री. राजेंद्र टाक-9850279835 |
| | | | विश्वनाथ धोंडीभाउ बोराटे- 7720038707 | प्र.क्र.7, पीएमसी वाकडेवाडी हजेरी कोठी | श्री. जयवंत केंजळे-9931526408 |
| | | | | प्र.क्र.7, संगमवाडी हजेरी कोठी | श्री. संतोष गायकवाड- 9763757708 |
| | | | शाम रामचंद्र माने- 9689937745 | जनवाडी हजेरी कोठी | श्री. राजू वायदंडे-9604559898 |
| | | | | प्र.क्र.7, गोखले नगर हजेरी कोठी | श्री.रमेश खादोडे-9689900919 |
| | | | लक्ष्मीकांत चंद्रकांत कुलकणी - 9689937516 | प्र.क्र. दळवी दवाखाना हजेरी कोठी | श्री. संजय सातपुते -9764001250 |
| | | | | प्र.क्र.7 अनगळवाडी हजेरी कोठी | श्री. राजंद्र नेवसे-8668798347 |

| | | | | | |
|---|---|---|---|---|---|
| | 14 | | श्री.विनोद बबन साबळे-9689930854 | प्र.क्र. 14 घोले रोड क्षेत्रिय कार्या.आवार हजेरी कोठी | श्री. धनाजी खामकर-8689900879 |
| | | | | पी.एम.सी. पाडवनगर हजेरी कोठी | श्री. राजेश भालेराव-8689900944 |
| | | | श्री.किरण रामचद्र माडेकर-9689934892 | संभाजी उान हजेरी कोठी | श्री. मिलिंद हरिभक्त-8689900840 |
| | | | | रोकडोबा मदिर हजेरी कोठी | श्री. राजू गायकवाड-9689943879 |
| | | | श्री.शिवाजी किसन गायकवाड्-96936521 | कर्वे रोड हजेरी कोठी | श्री. चंद्रकांत म्हात्रे-9326846998 |
| | | | | हिरवाई हजेरी कोठी | श्री. शेखर ऐनपुरे-9623790790 |
| | | | श्री.शिवाजीराव अण्णासाहेब नलावडे-9689937506 | प्र.क्र. 14 चितरजन वाटीका हजेरी कोठी | श्री. सुदेश सारवान-9373536778 |
| | | | | रामोशी वाडी हजेरी कोठी | श्री. चिदानंद कसबे-9767003699 |
| | | | श्रीमती.राहत बेगम अब्दुलकरीम कोकणी-9689931198 | डॉ. होमीभाभा हजेरी कोठी | श्री. अतिश वायदंडे-9921007170 |
| | | | श्री.तुषार तुकाराम राउत-9822916731 | ज्ञानेश्वर पादुका चौक हजेरी कोठी | श्री. सुभाष घडशी-9891249303 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## कोथरूड बावधन क्षेत्रिय कार्यालय

| अ. क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 10 | श्री. अविनाश तेलकर - 9689931093 | | | श्री. विजय पाटील - 9850094502 |
| | | श्री. गणेश खिरिड - 9689931223 | | | श्री. अशोक कांबळे - 8380067811 |
| | | | | | श्री. साईनाथ तेलंगी - 9689162222 |
| | | | | | श्री. बापू वाघमारे - 9923345060 |
| | | | | | श्री. रोहिदास पवार - 9850031242 |
| | | | | | श्री. सुनिल भोसले - 9822454440 |
| | | | | | श्री. सुनिल लोंढे - 9011398582 |
| | | | | | श्री. गजानन कांबळे - 9850607362 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | श्री. अण्णा ढावरे - 96374774883 |
| | | | | | श्री. वैजनाथ गायकवाड - 7350007059 |
| | | | | | श्री. चंद्रकांत कदम - 9527242471 |
| | | | | | श्रीमती प्रमिला दळवी - 9765133936 |
| | | | | | श्री. संजय कांबळे - 9689934598 |
| | | | | | श्री. संतोष अडागळे - 7507994778 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## औंध-बाणेर क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 8 | श्री.विजय भोईर - 9689931157 | शीला वासकर-9689931423 | संजय गांधी रूग्णालय, बोपोडी | श्री. सतिश शिंदे - 7350945658 |
| | | | | मैलापाणी शुद्धीकरण केंद्र, बोपोडी | श्री. सिध्दार्थ बागूल -9158934847 |
| | | | | चिखलवाडी आरोग्य कोठी, बोपोडी | श्री. गौतम वाघमारे -9860590010 |
| | | | कविता निम्हण ८६६८८७८६६९१ | शेवाळे दवाखाना हजेरी कोठी | श्री.चंद्रकांत साठे-9860770072 |
| | | | राजेंद्र वैराट-9689934076 | औंधगांव हजेरी कोठी | श्री.शशिकांत ढावरे-8805198235 |
| | | | | | |
| | 9 | तुळशीराम साबळे - 9689937516 | जालिंदर चांदगुडे - 9689930586 | बाणेर संपर्क कार्यालय आरोग्य कोठी | श्री. किशोर परमार-9881608822 |
| | | | | विरभद्र नगर आरोग्य कोठी | |

| | | | | | |
|---|---|---|---|---|---|
| | | | नितीन लोखंडे - 9970129917 | बालेवाडी आरोग्य कोठी | श्री.सुरेश गायवाकवाड - 7057161962 |
| | | | | मुंबई-बैंगलोर हायवे आरोग्य कोठी | श्री. सतिश भारमळ-9604866559 |
| | | | श्रीमती जया सांगडे-9689931874 | संजय गांधी वसाहत आरोग्य कोठी | श्री. नागेश बाराथे-88890230 |
| | | | | नाना-नानी पार्क आरोग्य कोठी | श्री. मधुकर अडागळे-9175896923 |
| | 14 | | श्रीमती लक्ष्मी गवारे-8308841301 | सुतारवाडी आरोग्य कोठी | श्री. चंद्रकांत लोखंडे-9028190882 |
| | 14 | | | पाषाण दवाखाना आरोग्य कोठी | श्री.विनायक चोपडे-9881642954 |

# पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## सिंहगड रोड क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| 1 | 30 | श्री.आनंद शेंडगे - 9689931075<br>श्री.अनिल गायकर- 9689931609 | श्री.संदिप खेराडे-9689900746 | दत्तवाडी | श्री. अनिल अडसूळ - 9881879848 |
| 2 | | | | | |
| 3 | | | पंकज वैराट - 9689931037 | पु.ल.देशपांडे उद्यान कोठी | श्री.दत्ता लोंढे - 9823850812 |
| 4 | | | | पर्वती जलकेंद्र | श्री.अप्पासाहेब सातपुते - 9823830840 |
| 5 | | | प्रियांजली पवार - 9689931934 | जयभवानी जनता वसाहत | श्री.रवि ओव्हाळ-9049584508 |
| 6 | | | | | |
| 7 | | | | जनता वसाहत | श्री.धनंजय निकाळजे- 9960134490 |
| 8 | | | श्री. अजय गजधाने - 9689930728 | धायरी | श्री. शंकर रणदिवे - 9067208219 |

| | | | | | |
|---|---|---|---|---|---|
| 9 | 33 | | श्री. कुणाल मते - 9527818792 | वडगाव बु॥ | श्री. रोहिदास फुंदे - 95552385050 श्री. अशोक साठे - प्रभारी मोकादम |
| 10 | | | | | |
| 11 | 34 | | श्री. केतन निकम - 9689937989 | हिंगणे खुर्द | श्री. मारूती खताळ - 932555207 श्री. उमेश कांबळे - |
| 12 | | | श्री. आशिष सूपनार - 9689931758 | विठ्ठलवाडी | श्री. बाबा वाघमारे - 9763568209 |
| 13 | | | श्री. संतोष भाईक - 9689930873 | सनसिटी | श्री. अविनाश पोकळे - 9921870584 श्री. गणेश भालशंकर - |
| 14 | | | | माणिकबाग | श्री. चंद्रशेखर पवार - 9767962772 श्री. निलेश सुरेश आवळे - |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## धनकवडी-सहकारनगर क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 35 | नरेंद्र भालेराव-9689931054 | श्री.एकनाथ माने-9689935290 | अरण्येशवर हजेरी कोठी | श्री.विनोद साळवे- 9604899689 |
| | | | | पद्मावती नालंद विहार हजेरी कोठी | श्री.गौतम साळवे-9673722725 |
| | | | श्री.शांताराम सोनवणे-9689935827 | तळजाई माता वसाहत हजेरी कोठी | श्री.संजय भिसे-9822954470 |
| | | | | स्वानंद हजेरी कोठी | श्री.राजेंद्र जाधव-9689930795 |
| | | | श्री.दिनेश सोनवणे | संभाजीनगर हजेरी कोठी | श्री.सोमनाथ जगदाळे-9075002384 |
| | 39 | श्री.लाड-9689931468 | श्री.प्रदिपकुमार राउत-9689931088 | तीन हत्ती चौक | श्री.शंकर सोनवणे-9011696674 |
| | | | | श्रेयस गार्डन सोसायटी आरोग्य कोठी | श्री.चंद्रकांत नाईकनवरे-9689887954 |
| | | | श्रीमती सिमा पुजारी- | आंबेगांव पठार हजेरी कोठी | श्री.काशिनाथ वायदंडे-9823168810 |

| | | | | | |
|---|---|---|---|---|---|
| | | | 9689931692 | धनकवडी स्मशानभूमी | श्री.राजू गावडे- 9637862368 |
| | 40 | श्री.दुल्लम-9689931578 | श्री.नानासो शिंदे-9689931774 | कात्रज गावठाण, तलाटी आफीस शेजारी | श्री.सोमनाथ बिबवे-9881593472 |
| | | | श्री.अमोल लांडगे-9850443067 | इच्छापूर्ती गणपती मंदिरा जवळ, आंबेगाव आरोग्य हजेरी कोठी | श्री.रघुनाथ बाळलिंग गुरव-9689932201 |
| | | | | राजीव गांधी प्राणी संग्रहालय आरोग्य हजेरी कोठी | श्री.शिवाजी सरोदे-9689949201 |
| | | | श्री.नितीन राजगुरू-9689932664 | दत्तनगर रस्ता, संतोषनगर जवळ | श्री.सुनिल खुडे-9850357437 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## वारजे-कर्वेनगर क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 13 | श्री.दिपक डेलवान - 9689931612 | श्री.राहुल शेंळके-9850841727 | एस.एन.डी.टी.कॅनाल रोड | श्री.खडू कसबे- 9689934223 |
| | | | श्री.आतिश बोरडे-9689931596 | एरंडवणा दवाखाना | श्री.मंगेश थोरात-9763740649 |
| | | | श्री.फकिरा शेख - 9689900826 | दिनानाथ मंगेशकर हॉस्पिटल | श्री.दशरथ निवदेकर-772007866 |
| | | | | मे.ताथवडे उान हजेरी कोठी | श्री.कृष्णा धनगर - 9850383570 |
| | | | श्री.किरण गुरव - 7972308790 | हॅपी कॉलनी | श्री.सुनिल मोरे - 9822063546 |
| | 31 | श्री.मधुकर कारकूड - 9689931069 | श्री.सुहास पांढरे- 9689931619 | वारजे जलशुध्द्ीकरण केंद्र | श्री.राहुल परदेशी-808716993 |
| | | | श्री.अनिल लोखंडे - 9552529251 | हिंगणे स्त्री शिक्षण संस्था ओरोग्य कोठी | श्री.प्रविण गायकवाड-7219256445 |
| | | | | हिंगणे शिक्षण संस्था ओरोग्य कोठी | श्री.अंकुश साठे-9145648864 |

| | | | | | |
|---|---|---|---|---|---|
| | 32 | | श्री.ऋतुराज दिक्षित - 9689931613 | दिगंबरवाडी हजेरी कोठी | श्री.आनंदा कानडे- 9767586300 |
| | | | श्री.सचिन सावंत - 9766264005 | वारजे माळवाडी आरोग्य कोठी | श्री.संतोष बराटे-9689887879 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## वानवडी-रामटेकडी क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 24 | श्री.दिलावर आवटी- 9689931400 | श्री.निसार मुजावर - 9689931693 | रामटेकडी हजेरी कोठी | श्री.अशोक घुमे- 9665845470 |
| | | | श्री.गोविंद पाटोळे- 9921415489 | गोसावी वस्ती | श्री.अनिल वाघेला - 9373421215 |
| | | | | सयद नगर | |
| | 25 | | श्री.निखिल निकम - 9767969702 | बी.टी.कवडे रोड पूलाखाली | श्री.रविकांत चव्हाण- 9766315814 |
| | | | | शिवशंकर रोड, शिवरकर दवाखान्या शेजारी | श्री.इरफान मोमीन - 9822878075 |
| | | | श्री.संजय साळुंके - 9689931114 | अजातनगर कोठी, वानवडी | श्री.विठ्ठल सोनवणे- 9767218597 |
| | 27 | श्री.अनिल डोळे - 9689931043 | श्री.अब्दुलकरीम मुजावर - 9657982824 | समतानगर कोठी, कोंढवा | श्री.अरविंद चव्हाण - 9527364811 |
| | | | श्री.सुनिल कुचेकर - 9850473141 | नाला गार्डन कोठी, कोंढवा | श्री.सुरेश ढावरे- 8485078395 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | कचरा वहातुक विभाग | श्री.जयंत जाना - 8087081877 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## हडपसर-मुंढवा क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 22 | श्री.संजय धनवट-9689931879 | श्री.प्रविण गायकवाड-7447472029 | कोद्रे दवाखाना आवार आरोग्य कोटी | श्री.रमेश कांबळे-9822918501 |
| | | श्री.सुरेंद्र चिमोटे - 9689931598 | | | श्री.नितिन दिवटे-9922117618 |
| | | | श्री.सचीन लडकत-9689931431 | मगरपट्टा आवार आरोग्य कोठी | श्री.राजू रासगे-7774039910 |
| | | | | | श्री.सचिन जाधव-9689581567 |
| | | | श्री.राजेश दरेकर-9689936548 | माळवाडी आरोग्य कोठी | श्री.शांताराम कुंजीर-7875686081 |
| | | | | | श्री.भाउ खंदारे - 9834296643 |
| | | | श्री.सचिन लडकत-9689931431 | आकाशवाणी केंद्र | श्री.लक्ष्मण वाघमोडे-8855803791 |
| | | | | | श्री.दत्तात्रय पोळ-9688935454 |

| | | | | | |
|---|---|---|---|---|---|
| | 23 | | श्री.राजेंद्र वायदंडे-9689939529 | बंटर शाळा आवार आरोग्य कोठी | सौ.वैशाली फुंदे - 7387986127 |
| | | | | | श्री.नरेद्र आल्हाट- |
| | | | सौ.भारती टिळेकर - 9689937912 | सातववाडी आरोग्य कोठी | श्री.बालाजी ठोंबरे-9850650323 |
| | | | श्री.सुनिल घोळवे-9689932690 | बनकर उान आरोग्य कोठी | श्री.चित्तरंजन आल्हाट-8888553554 |
| | | | श्री.वसंत ससाणे-9689939532 | मारूतराव काळे शाळा आवार आरोग्य कोठी | श्री.गोविंद आल्हाट-7263858621 |
| | 26 | ु | श्री.नवनाथ शेलार-7387073192 | महंमदवाडी आरोग्य कोठी | श्री.महादेव खरात-9881669421 |
| | | | श्री.अमर शेरे-9689936093 | गार्डन नाला आरोग्य कोठी | श्री.अब्बास छप्परबंद-9850220331 |
| | | | | कचरा वहातुक विभाग | श्री.शामसुंदर कुचंकर-9763372017 |

# पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## बिबवेवाडी क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 28 | श्री.विक्रम काथवटे-9689931303 | श्री.राहुल बाठे-9689936319 | संदेशनगर सॅलीसबरी पार्क | श्री.प्रकाश नडगेरी-8805251489 |
| | | | | ढोलेमळा डायस प्लॉट | श्री.सतिश कसबे-9689904246 |
| | | | श्री.सुजय ठकार-9689931978 | टिमव्ही हजेरी कोठी | श्री.संतोष पितळे-9623021955 |
| | | | | कलाभूमी हजेरी कोठी | श्री.सयद लतिफ - 7038841552 |
| | 36 | | श्री.श्रीधर कांबळे - 9689930110 | प्रेमनगर मार्केटयार्ड | श्री.पप्पू खंदारे - 9922351109 |
| | | | श्री.शब्बीर शेख-8788149921 | बिबवेवाडी ओटा कोठारी ब्लॉक | श्री.लक्ष्मण मोरे-9923795010 |
| | | | श्री.सचिन पवार -9923347878 | बिबवेवाडी गांव बाबू गेणे शाळा | श्री.महेश हरणानवळ-9823633805 |
| | | | श्री.गणेश दळवी-7447472116 | राजीव गांधी कॉम्पलेक्स इंदिरा नगर के.के.मार्केट | श्री.समीर वाघ-9921770758 |

| | | | | | |
|---|---|---|---|---|---|
| | 37 | | श्री.महेश जाधव-9689933931 | सुपर इंदिरनगर महेश सोसायटी | श्री.उमेश अवघडे-8421198866 |
| | | | श्रीमती प्रियंका कंक - 9689931207 | व्ही.आय.टी.कॉलेज, अप्पर इंदिरा नगर | श्री.चंद्रमोहन कंठे-7447221822 |
| | | | श्री.रोहिदास डिंबळे-9689937643 | कचरा वहातुक विभाग | |

| पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर | | | | | |
|---|---|---|---|---|---|
| भवानी पेठ क्षेत्रिय कार्यालय | | | | | |
| **अ.क्र.** | **प्रभाग क्र.** | **वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर** | **आरोग्य निरीक्षकाचे नाव फोन नंबर** | **आरोग्य कोठीचे नाव** | **मोकादमाचे नाव व फोन नंबर** |
| | 17 | श्री.राम सोनवणे - 9689931620 | श्री.समीर मसुरकर- 9689931469 | डोके तालीम हजेरी कोठी | श्री.फिरोज अहंमद युसुन कादरी- 9673730091 |
| | | | | बर्वेशाळा हजेरी कोठी | श्री.राजू पेटाडे-9028327177 |
| | | | | महाराणा प्रताप शाळा, बुरडी पूल हजेरी कोठी | श्री.मनेश वरदेकर-9764144220 |
| | | | श्री.संतोष कदम-9881627567 | सिटी पोस्ट हजेरी कोठी | श्री.विजय मोहिते-9689896353 |
| | | | | पावटे आळी हजेरी कोठी | श्री.महेश कांबळे-9922999473 |
| | 18 | श्री.मुक्तार शफीरहुद्दीन सयद- 9689931718 | श्री.निलेश चव्हाण - 9689930876 | सरदार राणोजी आंग्रे शाळा हजेरी कोठी | श्री.मल्लेश धनगर-9764448682 |
| | | | | बोंबील मार्केट हजेरी कोठी | श्री.चंद्रकांत सकट-9881443077 |
| | | | | कर्मशाळा, घोरपडी पेठ | श्री.रविंद्र भोकरे-9822958449 |

| | | | | | |
|---|---|---|---|---|---|
| | | | श्री.योगेश जाधव - 7083569261 | श्रमदान मारूती मंडळ हजेरी कोठी | श्री.लक्ष्मण सातपुते- 99601311652 |
| | | | | गुरवार पेठ दवाखाना हजेरी कोठी | श्री.सुमित चिंतल - 8998954003 |
| | | | | मनपा कॉलनी क्र.8 हजेरी कोठी | श्री.महेंद्र चव्हाण-9823408312 |
| | 19 | श्री.राम सोनवणे - 9689931620 | श्री.मनोहर उभे-9689931697 | प्र.19 काशेवाडी हजेरी कोठी मौलाना अब्दुल कलाम आझाद | श्री.संतोष भूमकर-9373321915 |
| | | | | जुना मोटार स्टॅन्ड हजेरी कोठी | श्री.संतोष कांबळे-9527678046 |
| | | | श्री.प्रशांत वाघमारे- 9689931034 | महात्मा गांधी विलय हजेरी कोठी | श्री.महेंद्र पालवे-9689919001 |
| | | | | रामोशी गेट हजेरी कोठी | श्री.प्रदिप परदेशी-9689934948 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## कोंढवा-येवलेवाडी क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 38 | श्री.मंगलदास माने-9689931710 | श्री.सुनिल गोसावी-9689936293 | नानासाहेब पेशवे तलाव | श्री.सोमनाथ गायकवाड-8623901667 |
| | | | श्री.उमेश ठोंबरे-9767026120 | चैत्रबन हजेरी कोठी | श्री.दयानंद पाटोळे-9822783757 |
| | | | श्री.धनाजी नवले-9689931119 | खुशबू हॉटेल, वैभवनगर हजेरी कोठी | श्री.शफि शेख-9822351193 |
| | | | | के.के.मार्केट हजेरी कोठी | श्री.दिपक चव्हाण-9922951923 |
| | | | श्री.सचिन बिबवे-8087722314 | राजस सोसायटी हजेरी कोठी | श्री.सुनिल चव्हाण-9881996495 |
| | 41 | श्री.ए.पी.मंद्रुपकर-9689931885 | श्री.विकास मोरे-7040155753 | काकडे वस्ती हजेरी कोठी | श्रीमती करूणा गजधने-8796258831 |
| | | | श्री.जगदिश साळवे-9689934022 | शिवशंभो नगर हजेरी कोठी | श्री.कैलास कदम-9561859225 |
| | | | श्री.गणेश साठे-9689935623 | साईनगर हजेरी कोठी | श्री.विलास गुंड-9765815717 |

| | | | | | |
|---|---|---|---|---|---|
| | | | श्री.सचिन इगवे-9689934103 | कोंढवा बुर्.हजेरी कोठी | श्री.रामदास सुरटे-9922307030 |
| | | | श्री.अभिजीत सुर्यवंशी-9764161462 | येवलेवाडी हजेरी कोठी | श्री.मनोज गायकवाड-7770005858 |

## पुणे महानगरपालिका आरोग्य घनकचरा वरिष्ठ आरोग्य निरीक्षक, आरोग्य निरीक्षक, मोकादम यांची मोबाईल नंबर

## विश्रामबागवाडा क्षेत्रिय कार्यालय

| अ.क्र. | प्रभाग क्र. | वरिष्ठ आरोग्य निरीक्षकाचे नाव व मोबाईल नंबर | आरोग्य निरीक्षकाचे नाव फोन नंबर | आरोग्य कोठीचे नाव | मोकादमाचे नाव व फोन नंबर |
|---|---|---|---|---|---|
| | 15 | श्री.सुभाष तोंडे - 9689931941 | श्री.नंदकुमार म्हांगरे-9689935284 | हमालवाडी हजेरी कोठी | श्री.दत्तात्रय बडवे-9923201742 |
| | | | | गाडगीळ शाळा हजेरी कोठी | श्री.अशोक भालेराव-9850762432 |
| | | | | नाराचण पेठ हजेरी कोठी | श्री.अतिश नेटके-8390353380 |
| | | | | विश्रामबागवाडा हजेरी कोठी | श्री.राजेंद्र मोरे-9822664745 |
| | | | श्री.रजिराज बेंद्रे-9595979525 | जोंधळे चौक हजेरी कोठी | श्री.रविंद्र कांबळे-9028195777 |
| | | | श्री.विनय थोपटे-9689931695 | भिकारदास मारूती हजेरी कोठी | श्री.मनोहर जोरे-9762980539 |
| | | | | आर्यन पार्किंग हजेरी कोठी | श्री.सुधीर गायकवाड-9890737994 |
| | | | | शाहूपुरा हजेरी कोठी | श्री.राम कोखरे-9689935810 |

| | | | | | |
|---|---|---|---|---|---|
| | | | | शिशुविहार हजेरी कोठी | श्री.जितेंद्र पाटोळे-9623316257 |
| | 16 | श्री.सुनिल मोहिते-9689931399 | श्री.कमलेश क्षिरसागर-9552849565 | लालमहल हजेरी कोठी | श्री.अभिमन्यू वाघमारे-9763904464 |
| | | | | शाळा क्र.8 हजेरी कोठी | श्री.धनशाम वाघमारे-9604559070 |
| | | | श्री.कृष्णा अवघडे -9689930552 | मटण मार्केट हजेरी कोटी | श्री.संजय आदमाने-9168941456 |
| | | | | भिमनगर हजेरी कोठी | श्री.संजय चव्हाण-9130088450 |
| | | | श्री.संजय तेरेकर-9689968922 | खडीचा मैदान हजेरी कोठी | श्री.प्रविण दालतुरे-9689932155 |
| | | | | बारणे रोड हजेरी कोठी | श्री.भिमराज संकपाळ-9766252349 |
| | 29 | श्री.अशोक बडगर-9689931705 | श्री.अमित घाग -9689931904 | लक्ष्मीनगर हजेरी कोठी | श्री.विनोद साळवे-9604899689 |
| | | | | मित्रमंडख हजेरी कोठी | श्री.काशिनाथ अडागळे-9011641047 |
| | | | | नेहरू स्टेडियम हजेरी कोठी | श्री.तानाजी करडे-9823093793 |

| | | | | | |
|---|---|---|---|---|---|
| | | | श्री.किशार थोरात-9689937232 | अंबिलओढा कॉलनी हजेरी कोठी | श्री.विरू भंडगे-9890238590 |
| | | | | दाभाडे हजेरी कोठी | श्री.बाबुलाल कोळी-9561046122 |
| | | | | राजेंद्रनगर हजेरी कोठी | श्री.रणजित बनसोडे-8087774848 |
| | | | श्री.बाळासोहेब टिळेकर-9689939184 | वैकुंठ ठोसरपाग | श्री.शाम कोळेकर-96850291913 |
| | | | | कचरा वहातुक विभाग | श्री.रवि लोंढे-9689935728 |

# Excerpts from Bare acts

# The Employees Provident Fund and Miscellaneous Provisions Act, 1952

(*kb*) "Recovery Officer" means any officer of the Central Government, State Government or the Board of Trustees constituted under section 5A, who may be authorised by the Central Government, by notification in the Official Gazette, to exercise the powers of a Recovery Officer under this Act;]

[1][(*l*) "Scheme" means the Employees' Provident Fund Scheme framed under section 5.]

[2][(*ll*) "Superannuation", in relation to an employee, who is the member of the Pension Scheme means the attainment, by the said employee, of the age of fifty-eight years;]

[3][(*m*) "Tribunal" means the Industrial Tribunal referred to in section 7 D].

**[4][2A. Establishment to include all departments and branches.—**For the removal of doubts, it is hereby declared that where an establishment consists of different departments or has branches, whether situate in the same place or in different places, all such departments or branches shall be treated as parts of the same establishment.]

[5][**3. Power to apply Act to an establishment which has a common provident fund with another establishment**.—Where immediately before this Act becomes applicable to an establishment there is in existence a provident fund which is common to the employees employed in that establishment and employees in any other establishment, the Central Government may, by notification in Official Gazette, direct that the provisions of this Act shall also apply to such other establishment.]

**4. Power to add to Schedule I.**—(*1*) The Central Government may, by notification in the Official Gazette, add to Schedule I any other industry in respect of the employees whereof it is of opinion that a provident fund scheme should be framed under this Act, and thereupon the industry so added shall be deemed to be an industry specified in Schedule I for the purposes of this Act.

(*2*) All notifications under sub-section (*1*) shall be laid before Parliament, as soon as may be, after they are issued.

**5. Employees' Provident Fund Schemes**.—[6][(*1*)] The Central Government may, by notification in the Official Gazette, frame a Scheme to be called the Employees' Provident Fund Scheme for the establishment of provident funds under this Act for employees or for any class of employees and specify the [7][establishments] or class of [7][establishments] to which the said Scheme shall apply [8][and there shall be established, as soon as may be after the framing of the Scheme, a Fund in accordance with the provisions of this Act and the Scheme].

[9][(*1A*) The Fund shall vest in, and be administered by, the Central Board constituted under section 5A.

(*1B*) Subject to the provisions of this Act, a Scheme framed under sub-section (*1*) may provide for all or any of the matters specified in Schedule II.]

[10][(*2*) A Scheme framed under sub-section (*1*) may provide that any of its provisions shall take effect either prospectively or retrospectively on such date as may be specified in this behalf in the Scheme.]

---

1. Subs. by Act 16 of 1971, s. 14, for clause (*l*) (w.e.f. 23-4-1971).
2. Ins. by Act 25 of 1996, s. 3 (w.e.f. 16-11-1995).
3. Ins. by Act 7 of 2017, s. 159 (w.e.f. 26-5-2017).
4. Ins. by Act 46 of 1960, s. 3 (w.e.f. 31-12-1960).
5. Subs. by Act 94 of 1956, s. 5, for section 3.
6. Section 5 re-numbered as sub-section (*1*) thereof by Act 37 of 1953, s. 4.
7. Subs. by Act 94 of 1956, s. 3, for "factories".
8. Added by Act 37 of 1953, s. 4.
9. Ins. by Act 28 of 1963, s. 3 (w.e.f. 30-11-1963).
10. Ins. by Act 37 of 1953, s. 4.

[1][**6A. Employees' Pension Scheme**.—(*1*) The Central Government may, by notification in the Official Gazette, frame a scheme to be called the Employees' Pension Scheme for the purpose of providing for—

(*a*) superannuation pension, retiring pension or permanent total disablement pension to the employees of any establishment or class of establishments to which this Act applies; and

(*b*) widow or widower's pension, children pension or orphan pension payable to the beneficiaries of such employees.

(*2*) Notwithstanding anything contained in section 6, there shall be established, as soon as may be after framing of the Pension Scheme, a Pension Fund into which there shall be paid, from time to time, in respect of every employee who is a member of the Pension Scheme,—

(*a*) such sums from the employer's contribution under section 6, not exceeding eight and one-third per cent. of the basic wages, dearness allowance and retaining allowance, if any, of the concerned employees, as may be specified in the Pension Scheme;

(*b*) such sums as are payable by the employers of exempted establishments under sub-section (*6*) of section 17;

(*c*) the net assets of the Employees' Family Pension Fund as on the date of the establishment of the Pension Fund;

(*d*) such sums as the Central Government may, after due appropriation by Parliament by law in this behalf, specify.

(*3*) On the establishment of the Pension Fund, the Family Pension Scheme (hereinafter referred to as the ceased scheme) shall cease to operate and all assets of the ceased scheme shall vest in and shall stand transferred to, and all liabilities under the ceased scheme shall be enforceable against, the Pension Fund and the beneficiaries under the ceased scheme shall be entitled to draw the benefits, not less than the benefits they were entitled to under the ceased scheme, from the Pension Fund.

(*4*) The Pension Fund shall vest in and be administered by the Central Board in such manner as may be specified in the Pension Scheme.

(*5*) Subject to the provisions of this Act, the Pension Scheme may provide for all or any of the matters specified in Schedule III.

(*6*) The Pension Scheme may provide that all or any of its provisions shall take effect either prospectively or retrospectively on such date as may be specified in that behalf in that Scheme.

(*7*) A Pension Scheme, framed under sub-section (*1*), shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the scheme or both Houses agree that the scheme should not be made, the scheme shall thereafter have effect only in such modified form or be of no effect, as the may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that Scheme.]

[2][**6C. Employees' Deposit linked Insurance Scheme**.—(*1*) The Central Government may, by notification in the Official Gazette, frame a scheme to be called the Employees' Deposit-linked Insurance Scheme for the purpose of providing life insurance benefits to the employees of any establishment or class of establishments to which this Act applies.

---

1. Subs. by Act 25 of 1996, s. 5, for sections 6A and 6B (w.e.f. 16-11-1995).
2. Ins. by Act 99 of 1976, s. 21 (w.e.f. 1-8-1976).

(*2*) There shall be established, as soon as may be after the framing of the Insurance Scheme, a Deposit-linked Insurance Fund into which shall be paid by the employer from time to time in respect of every such employee in relation to whom he is the employer, such amount, not being more than one per cent. of the aggregate of the basic wages, dearness allowance and retaining allowance (if any) for the time being payable in relation to such employee as the Central Government may, by notification in the Official Gazette, specify.

*Explanation*.—For the purposes of this sub-section, the expressions "dearness allowance" and "relating allowance" have the same meanings as in section 6.

[1]* * * * *

(*4*) (*a*) The employer shall pay into the Insurance Fund such further sums of money, not exceeding one-fourth of the contribution which he is required to make under sub-section (*2*), as the Central Government may, from time to time, determine to meet all the expenses in connection with the administration of the Insurance Scheme other than the expenses towards the cost of any benefits provided by or under that scheme.

[1]* * * * *

(*5*) The Insurance Fund shall vest in the Central Board and be administered by it in such manner as may be specified in the Insurance Scheme.

(*6*) The Insurance Scheme may provide for all or any of the matters specified in Schedule IV.

(*7*) The Insurance Scheme may provide that any of its provisions shall take effect either prospectively or retrospectively on such date as may be specified in this behalf in that Scheme.]

[2][**6D. Laying of schemes before Parliament**.—Every scheme framed under section 5, section 6A and section 6C shall be laid, as soon as may be after it is framed, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the scheme, or both Houses agree that the scheme should not be framed, the scheme shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that scheme.]

**7. Modification of scheme**.—(*1*) The Central Government may, by notification in the Official Gazette, add to [3][amend or vary, either prospectively or retrospectively, the Scheme, the [4][Family Pension] Scheme or the Insurance Scheme, as the case may be].

[5][(*2*) Every notification issued under sub-section (*1*) shall be laid, as soon as may be after it is issued, before each House of Parliament, while it is in session, for a total period of thirty days, which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the notification, or both Houses agree that the notification should not be issued, the notification shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that notification.]

---

1. Omitted by Act 25 of 1996, s. 6 (w.e.f. 16-11-1995).
2. Ins. by Act 4 of 1986, s. 2 and Schedule (w.e.f. 15-5-1986).
3. Subs. by Act 99 of 1976, s. 22, for "amend or vary the Scheme or the Family Pension Scheme, as the case may be" (w.e.f. 1-8-1976).
4. Subs. by Act 25 of 1996, s. 4, for "Family Pension" (w.e.f. 16-11-1995).
5. Subs. by Act 4 of 1986, s. 2 and Schedule, for sub-section (*2*) (w.e.f. 15-5-1986).

# The Employees State Insurance Act, 1948

(a) "authorised officer" means the Director-General, Insurance Commissioner, Joint Insurance Commissioner, Regional Director or such other officer as may be authorised by the Central Government, by notification in the Official Gazette;

(b) "Recovery Officer" means any officer of the Central Government, State Government or the Corporation, who may be authorised by the Central Government, by notification in the Official Gazette, to exercise the powers of a Recovery Officer under this Act.**]**

## CHAPTER V

## BENEFITS

***46. Benefits.***

(1) Subject to the provisions of this Act, the insured persons, their dependants or the persons hereinafter mentioned, as the case may be, shall be entitled to the following benefits, namely: —

(a) periodical payments to any insured person in case of his sickness certified by a duly appointed medical practitioner or by any other person possessing such qualifications and experience as the Corporation may, by regulations, specify in this behalf (hereinafter referred to as sickness benefit;

(b) periodical payments to an insured woman in case of confinement or miscarriage or sickness arising out of pregnancy, confinement, premature birth of child or miscarriage, such woman being certified to be eligible for such payments by an authority specified in this behalf by the regulations (hereinafter referred to as maternity benefit);

(c) periodical payments to an insured person suffering from disablement as a result of an employment injury sustained as an employee under this Act and certified to be eligible for such payments by an authority specified in this behalf by the regulations (hereinafter referred to as disablement benefit);

(d) periodical payments to such dependants of an insured person who dies as a result of an employment injury sustained as an employee under this Act, as are entitled to compensation under this Act (hereinafter referred to as dependants' benefit);

(e) medical treatment for and attendance on insured persons (hereinafter referred to as medical benefit);

(f) payment to the eldest surviving member of the family of an insured person who has died, towards the expenditure on the funeral of the deceased insured person, or, where the insured person did not have a family or was not living with his family at the time of his death, to the person who actually incurs the expenditure on the funeral of the deceased insured person (to be known as funeral expenses**.**

Provided that the amount of such payment shall not exceed such amount as may be prescribed by the Central Government and the claim for such payment shall be made within three months of the death of the insured person or within such extended period as the Corporation or any officer or authority authorised by it in this behalf may allow.

(2) The Corporation may, at the request of the appropriate Government, and subject to such conditions as may be laid down in the regulations, extend the medical benefits to the family of an insured person.

***47. When person eligible for sickness benefit.***

Section 47 omitted by Act 29 of 1989, dt. 1-2-1991.

***48. When person deemed available for employment.***

Section 48 omitted by Act 44 of 1966, dt. 28-1-1968.

***49. Sickness benefit.***

The qualification of a person to claim sickness benefit, the conditions subject to which such benefit may be given, the rate and period thereof shall be such as may be prescribed by the Central Government.

***50. Maternity Benefit.***

The qualification of an insured woman to claim maternity benefit, the conditions subject to which such benefit may be given, the rates and period thereof shall be such as may be prescribed by the Central Government.

***51. Disablement benefit.***

Subject to the provisions of this Act —

(a) a person who sustains temporary disablement for not less than three days (excluding the day of accident) shall be entitled to periodical payment [5][at such rates and for such periods and subject to such conditions as may be prescribed by the Central Government;

(b) a person who sustains permanent disablement, whether total or partial, shall be entitled to periodical payment at such rates and for such periods and subject to such conditions as may be prescribed by the Central Government.

***51A. Presumption as to accident arising in course of employment.***

For the purposes of this Act, an accident arising in the course of an employee's employment shall be presumed, in the absence of evidence to the contrary, also to have arisen out of that employment.

***51B. Accidents happening while acting in breach of regulations, etc.***

An accident shall be deemed to arise out of and in the course of an employee's employment notwithstanding that he is at the time of the accident acting in contravention of the provisions of any law applicable to him, or of any orders given by or on behalf of his employer or that he is acting without instructions from his employer, if —

(a) the accident would have been deemed so to have arisen had the act not been done in contravention as aforesaid or without instructions from his employer, as the case may be; and

(b) the act is done for the purpose of and in connection with the employer's trade or business.

***51C. Accidents happening while travelling in employer's transport.*** — (1) An accident happening while an employee is, with the express or implied permission of his employer, travelling as a passenger by any vehicle to or from his place of work shall, notwithstanding that he is under no obligation to his employer to travel by that vehicle, be deemed to arise out of and in the course of his employment, if —

(a) the accident would have been deemed so to have arisen had he been under such obligation; and

(b) at the time of the accident, the vehicle —

(i) is being operated by or on behalf of his employer or some other person by whom it is provided in pursuance of arrangements made with his employer; and

(ii) is not being operated in the ordinary course of public transport service.

(2) In this section " vehicle" includes a vessel and an aircraft.

***51D. Accidents happening while meeting emergency.***

An accident happening to an employee in or about any premises at which he is for the time being employed for the purpose of his employer's trade or business shall be deemed to arise out of and in the course of his employment, if it happens while he is taking steps, on an actual or supposed emergency at those premises, to rescue, succour or protect persons who are, or are thought to be or possibly to be, injured or imperiled, or to avert or minimize serious damage to property.

***51E. Accidents happening while commuting to the place of work and vice versa.***

An accident occuring to an employee while commuting from his residence to the place of employment for duty or from the place of employment to his residence after performing duty, shall be deemed to have arisen out of and in the course of employment if nexus between the circumstances, time and place in which the accident occured and the employment is established.

***52. Dependants' benefit.***

(1) If an insured person dies as a result of an employment injury sustained as an employee under this Act (whether or not he was in receipt of any periodical payment for temporary disablement in respect of the injury) dependants' benefit shall be payable at such rates and for such periods and subject to such conditions as may be prescribed by the Central Government to his dependants specified in sub-clause (i), sub-clause (i-a) and sub-clause (ii) of clause (6A) of section 2.

(2) In case the insured person dies without leaving behind him the dependants as aforesaid, the dependants' benefit shall be paid to the other dependants of the deceased [at such rates and for such periods and subject to such conditions as may be prescribed by the Central Government.**]**

***52A. Occupational disease.***

(1) If an employee employed in any establishment specified in Part A of the Third Schedule contracts any disease specified therein as an occupational disease peculiar to that employment, or if an employee employed in the employment specified in Part B of that Schedule for a continuous period of not less than six months contracts any disease specified therein as an occupational disease peculiar to that employment or if an employee employed in any employment specified in Part C of that Schedule for such continuous period as the Corporation may specify in respect of each such employment, contracts any disease specified therein as an occupational disease peculiar to that employment, the contracting of the disease shall, unless the contrary is proved, be deemed to be an " employment injury " arising out of and in the course of employment.

(2) (i) Where the Central Government or a State Government, as the case may be, adds any description of employment to the employment specified in Schedule III to the Workmen's Compensation Act, 1923 by virtue of the powers vested in it under sub-section (3) of Sec. 3 of the said Act, the said description of employment and the occupational diseases specified under that sub-section as peculiar to that description of employment shall be deemed to form part of the Third Schedule.

(ii) Without prejudice to the provisions of clause (i), the Corporation after giving, by notification in the Official Gazette, not less than three months' notice of its intention so to do, may, by a like notification, add any description of employment to the employments specified in

# The Sexual Harrasment of Woemen at Workplace (Prevention, Prohibition and Redressal Act, 2013)

रजिस्ट्री सं० डी० एल०—(एन)04/0007/2003—13 REGISTERED NO. DL—(N)04/0007/2003—13

भारत का राजपत्र
The Gazette of India

असाधारण
EXTRAORDINARY
भाग II — खण्ड 1
PART II — Section 1
प्राधिकार से प्रकाशित
PUBLISHED BY AUTHORITY

सं० 18] नई दिल्ली, मंगलवार, अप्रैल 23, 2013/ वैशाख 3, 1935 (शक)
No. 18] NEW DELHI, TUESDAY, APRIL 23, 2013/ VAISAKHA 3, 1935 (SAKA)

इस भाग में भिन्न पृष्ठ संख्या दी जाती है जिससे कि यह अलग संकलन के रूप में रखा जा सके।
Separate paging is given to this Part in order that it may be filed as a separate compilation.

## MINISTRY OF LAW AND JUSTICE

**(Legislative Department)**

*New Delhi, the* 23*rd April*, 2013/*Vaisakha* 3, 1935 (*Saka*)

The following Act of Parliament received the assent of the President on the 22nd April, 2013, and is hereby published for general information:—

# THE SEXUAL HARASSMENT OF WOMEN AT WORKPLACE (PREVENTION, PROHIBITION AND REDRESSAL) ACT, 2013

(No. 14 OF 2013)

[22*nd April*, 2013.]

An Act to provide protection against sexual harassment of women at workplace and for the prevention and redressal of complaints of sexual harassment and for matters connected therewith or incidental thereto.

WHEREAS sexual harassment results in violation of the fundamental rights of a woman to equality under articles 14 and 15 of the Constitution of India and her right to life and to live with dignity under article 21 of the Constitution and right to practice any profession or to carry on any occupation, trade or business which includes a right to a safe environment free from sexual harassment;

AND WHEREAS the protection against sexual harassment and the right to work with dignity are universally recognised human rights by international conventions and instruments such as Convention on the Elimination of all Forms of Discrimination against Women, which has been ratified on the 25th June, 1993 by the Government of India;

AND WHEREAS it is expedient to make provisions for giving effect to the said Convention for protection of women against sexual harassment at workplace.

*Explanation.*—For the purposes of this sub-clause "management" includes the person or board or committee responsible for formulation and administration of polices for such organisation;

(*iii*) in relation to workplace covered under sub-clauses (*i*) and (*ii*), the person discharging contractual obligations with respect to his or her employees;

(*iv*) in relation to a dwelling place or house, a person or a household who employs or benefits from the employment of domestic worker, irrespective of the number, time period or type of such worker employed, or the nature of the employment or activities performed by the domestic worker;

(*h*) "Internal Committee" means an Internal Complaints Committee constituted under section 4;

(*i*) "Local Committee" means the Local Complaints Committee constituted under section 6;

(*j*) "Member" means a Member of the Internal Committee or the Local Committee, as the case may be;

(*k*) "prescribed" means prescribed by rules made under this Act;

(*l*) "Presiding Officer" means the Presiding Officer of the Internal Complaints Committee nominated under sub-section (*2*) of section 4;

(*m*) "respondent" means a person against whom the aggrieved woman has made a complaint under section 9;

(*n*) "sexual harassment" includes any one or more of the following unwelcome acts or behaviour (whether directly or by implication) namely:—

(*i*) physical contact and advances; or

(*ii*) a demand or request for sexual favours; or

(*iii*) making sexually coloured remarks; or

(*iv*) showing pornography; or

(*v*) any other unwelcome physical, verbal or non-verbal conduct of sexual nature;

(*o*) "workplace" includes –

(*i*) any department, organisation, undertaking, establishment, enterprise, institution, office, branch or unit which is established, owned, controlled or wholly or substantially financed by funds provided directly or indirectly by the appropriate Government or the local authority or a Government company or a corporation or a co-operative society;

(*ii*) any private sector organisation or a private venture, undertaking, enterprise, institution, establishment, society, trust, non-governmental organisation, unit or service provider carrying on commercial, professional, vocational, educational, entertainmental, industrial, health services or financial activities including production, supply, sale, distribution or service;

(*iii*) hospitals or nursing homes;

(*iv*) any sports institute, stadium, sports complex or competition or games venue, whether residential or not used for training, sports or other activities relating thereto;

(*v*) any place visited by the employee arising out of or during the course of employment including transportation provided by the employer for undertaking such journey;

(*vi*) a dwelling place or a house;

(*p*) "unorganised sector" in relation to a workplace means an enterprise owned by individuals or self-employed workers and engaged in the production or sale of goods or providing service of any kind whatsoever, and where the enterprise employs workers, the number of such workers is less than ten.

Prevention of sexual harassment

**3.** (*1*) No woman shall be subjected to sexual harassment at any workplace.

(*2*) The following circumstances, among other circumstances, if it occurs or is persent in relation to or connected with any act or behaviour of sexual harassment may amount to sexual harassment:—

(*i*) implied or explicit promise of preferential treatment in her employment; or

(*ii*) implied or explicit threat of detrimental treatment in her employment; or

(*iii*) implied or explicit threat about her present or future employment status; or

(*iv*) interference with her work or creating an intimidating or offensive or hostile work environment for her; or

(*v*) humiliating treatment likely to affect her health or safety.

## CHAPTER II

### CONSTITUTION OF INTERNAL COMPLAINTS COMMITTEE

Constitution of Internal Complaints Committee.

**4.** (*1*) Every employer of a workplace shall, by an order in writing, constitute a Committee to be known as the "Internal Complaints Committee":

Provided that where the offices or administrative units of the workplace are located at different places or divisional or sub-divisional level, the Internal Committee shall be constituted at all administrative units or offices.

(*2*) The Internal Committee shall consist of the following members to be nominated by the employer, namely:—

(*a*) a Presiding Officer who shall be a woman employed at a senior level at workplace from amongst the employees:

Provided that in case a senior level woman employee is not available, the Presiding Officer shall be nominated from other offices or administrative units of the workplace referred to in sub-section (*1*):

Provided further that in case the other offices or administrative units of the workplace do not have a senior level woman employee, the Presiding Officer shall be nominated from any other workplace of the same employer or other department or organisation;

(*b*) not less than two Members from amongst employees preferably committed to the cause of women or who have had experience in social work or have legal knowledge;

(*c*) one member from amongst non-governmental organisations or associations committed to the cause of women or a person familiar with the issues relating to sexual harassment:

Provided that at least one-half of the total Members so nominated shall be women.

(*3*) The Presiding Officer and every Member of the Internal Committee shall hold office for such period, not exceeding three years, from the date of their nomination as may be specified by the employer.

(*4*) The Member appointed from amongst the non-governmental organisations or associations shall be paid such fees or allowances for holding the proceedings of the Internal Committee, by the employer, as may be prescribed.

# The Unorganised Workers Social Security Act, 2008

(*m*) "unorganised worker" means a home-based worker, self-employed worker or a wage worker in the unorganised sector and includes a worker in the organised sector who is not covered by any of the Acts mentioned in Schedule II to this Act; and

(*n*) "wage worker" means a person employed for remuneration in the unorganised sector, directly by an employer or through any contractor, irrespective of place of work, whether exclusively for one employer or for one or more employers, whether in cash or in kind, whether as a home-based worker, or as a temporary or casual worker, or as a migrant worker, or workers employed by households including domestic workers, with a monthly wage of an amount as may be notified by the Central Government and State Government, as the case may be.

## CHAPTER II

## SOCIAL SECURITY BENEFITS

**3. Framing of scheme.**—(*1*) The Central Government shall formulate and notify, from time to time, suitable welfare schemes for unorganised workers on matters relating to—

(*a*) life and disability cover;

(*b*) health and maternity benefits;

(*c*) old age protection; and

(*d*) any other benefit as may be determined by the Central Government.

(*2*) The schemes included in the Schedule 1 to this Act shall be deemed to be the welfare schemes under sub-section (*1*).

(*3*) The Central Government may, by notification, amend the Schedules annexed to this Act.

(*4*) The State Government may formulate and notify, from time to time, suitable welfare schemes for unorganised workers, including schemes relating to—

(*a*) provident fund;

(*b*) employment injury benefit;

(*c*) housing;

(*d*) educational schemes for children;

(*e*) skill upgradation of workers;

(*f*) funeral assistance; and

(*g*) old age homes.

**4. Funding of Central Government Schemes**.—(*1*) Any scheme notified by the Central Government may be—

(*i*) wholly funded by the Central Government; or

(*ii*) partly funded by the Central Government and partly funded by the State Government; or

(*iii*) partly funded by the Central Government, partly funded by the State Government and partly funded through contributions collected from the beneficiaries of the scheme or the employers as may be prescribed in the scheme by the Central Government.

(*2*) Every scheme notified by the Central Government shall provide for such matters that are necessary for the efficient implementation of the scheme including the matters relating to,—

(*i*) scope of the scheme;

(*ii*) beneficiaries of the scheme;

(*iii*) resources of the scheme;

(*iv*) agency or agencies that will implement the scheme;

## SCHEDULE I

[*See* sections 2(*i*) and (3)]

SOCIAL SECURITY SCHEMES FOR THE UNORGANISED WORKERS

| S. No. | Name of the Scheme |
|---|---|
| 1. | Indira Gandhi National Old Age Pension Scheme. |
| 2. | National Family Benefit Scheme. |
| 3. | Janani Suraksha Yojana. |
| 4. | Handloom Weavers' Comprehensive Welfare Scheme. |
| 5. | Handicraft Artisans' Comprehensive Welfare Scheme. |
| 6. | Pension to Master craft persons. |
| 7. | National Scheme for Welfare of Fishermen and Training and Extension. |
| 8. | Janshree Bima Yojana. |
| 9. | Aam Admi Bima Yojana. |
| 10. | Rashtriya Swasthya Bima Yojana. |

SCHEDULE II

[*See* section 2(*m*)]

| S. No. | Name of the Act |
|---|---|
| 1. | The Workmen's Compensation Act, 1923 (8 of 1923). |
| 2. | The Industrial Disputes Act, 1947 (14 of 1947). |
| 3. | The Employees' State Insurance Act, 1948 (34 of 1948). |
| 4. | The Employees' Provident Funds and Miscellaneous Provisions Act, 1952 (19 of 1952). |
| 5. | The Maternity Benefit Act, 1961 (53 of 1961). |
| 6. | The Payment of Gratuity Act, 1972 (39 of 1972). |

# Excerpts from budgets of Pune Municipal Corporation -PMC

## (३) घनकचरा व्यवस्थापन (भांडवली तरतूद र.रू १४५.९५ कोटी + महसूली तरतूद र.रू.५५७.५० कोटी – ७०३.४५ कोटी)

**सन २०२०–२१**

**प्रकल्पीय कामे**

- पुणे शहरातील उपनगरात निर्माण होणारा कचरा, त्याच भागात प्रक्रिया करुन जिरविण्याचे महानगरपालिकेचे उद्दीष्ट ठेवुन खालील प्रमाणे कामे करण्यात आली आहेत.
- आंबेगांव प्रकल्पा अंतर्गत २०० मे.टन, हडपसर–रामटेकडी प्रकल्पा अंतर्गत २०० मे.टन दैनांदिन कचऱ्याचे यांत्रिकी पध्दतीने प्रक्रीया करण्यास काम सुरु करण्यात आले आहे.
- केशवनगर येथील १०० मे. टन क्षमतेच्या प्रकल्पा अंतर्गत मिश्र कचऱ्यावर प्रक्रिया प्रकल्प उभारण्यात आला असून यामध्ये १०० मे. टन मिश्र कचऱ्यावर प्रक्रिया सुरु करण्यात आली.

- मे. संस्कृती इंजिनियरिंग, बिबवेवाडी प्रकल्पा अंतर्गत ५० मे.टन दैनंदिन कचऱ्याचे यांत्रिकी पध्दतीने वर्गीकरण करण्यात येत आहे.
- बावधन येथील सुमारे २ एकर जागेवर मेट्रो मार्फत आधुनिक रॅम्प करणे, काम सुरु करण्यात येणार आहे.
- ऊरूळी फुरसुंगी कचरा डेपो येथे ६ एकर जागेवर शास्त्रोक्त भू-भराव करण्यात येऊन वापर सुरु करण्यात आला आहे.
- पुणे शहरातील रामटेकडी हडपसर येथे कचऱ्यापासून वीज निर्मिती प्रकल्पाचे मे. ऑरगॅनिक रिसायकलिंग सिस्टिम्स प्रा. लि., तर्फे एसपीव्ही पुणे बायो एनर्जी यांचे मार्फत उभारल्या जाणाऱ्या ७५० मे. टन प्रकल्पामध्ये माहे मार्च २०२१ अखेर कचरा विलगीकरण प्रकल्प उभारणी पूर्ण होऊन ३०० मे.टन वर प्रक्रिया करण्यात येणार आहे. याप्रमाणे अंशतः प्रक्रिया सुरू होणार आहे. तसेच डिसेंबर २०२१ अखेर सदर प्रकल्पाची उभारणी पूर्ण होऊन वीज निर्मिती करण्याचे उद्दिष्ट ठेवण्यात आले आहे.
- ऊरूळी फुरसुंगी कचरा डेपो येथे १००० मे.टन क्षमतेचा बायोमायनिंग प्रकल्प उभारण्यात आला असून चार वर्षे मुदतीत सुमारे ९ लक्ष मे. टन जुन्या कचऱ्यावर प्रक्रिया करुन सुमारे २० एकर जागा मोकळी करण्यात येणार आहे. सदर २०२०-२१ चा कालावधी नोव्हेंबर अखेर सुमारे ११ एकर जागेतील ४.५ लक्ष मे. टन कचरा प्रकिया करुन जागा मोकळी करण्यात येत आहे.
- पुणे शहरातील मुख्य रस्त्यांवर यांत्रिकी पध्दतीने झाडणकाम करणे यासाठी मान्य निविदा नुसार असून शहरातील झोन १,२,३,४ याकरिता ठेकेदार यांची नियुक्ती केली असुन रस्त्याचे झाडणकाम सुरु आहे. झोन क्र. ५ करीता मनपाकडील मशीन मार्फत कुमठेकर रोड, लक्ष्मी रोड, टिळक रोड, शास्त्री रोड, शनिवार वाडा स्वारगेट ते राजीव गांधी उद्यान इ. रस्त्याची साफसफाई करण्यात येत आहे. दैनंदिन सुमारे ४०० किमी रस्त्याची साफसफाई करण्यात येते.

**कचरा प्रकल्पांसाठी अन्य खात्यामार्फत स्थापत्य विषयक कामे करणे.**

- आंबेगाव स.नं. ५१ येथील २०० मे. टनाच्या प्रकल्पाकडे जाणाऱ्या रस्त्याचे व अन्य आरक्षण जागेचे संपादन करणेची प्रक्रिया करण्यात येत आहे.
- केशवनगर येथील १०० +५० मे.टनाच्या प्रकल्पांकडे जाणारा रस्ता डांबरीकरण करण्यात आला.
- मलनिःसारण विभागाकडुन १० एम एल डी प्रक्रिया प्रकल्प निविदा राबविण्यात येत आहे. हडपसर- रामटेकडी येथील पुणे बायोएनर्जी प्रकल्पाकरीता २ एम.एल.डी चा प्रक्रिया केलेले पाणी उपलब्ध करून देणेत येणार आहे.
- शास्त्रोक्त भू भरावाचे काम पूर्ण करण्यात आले असुन प्रतिदिन ३५० मे. टन रिजेक्ट (प्रक्रिया न होणारे, ज्वलन न होणारे, विघटन न होणारे कचऱ्यातील घटक) घेण्यात येत आहे.

**स्वच्छ भारत अभियान २०२०**

- स्वच्छ भारत अभियान २०२० अंतर्गत शहरातील एकूण शौचालयापैकी २५% शौचालय सर्व सुविधांयुक्त बेस्ट टॉयलेट असणे आवश्यक आहे. शहरात १५ क्षेत्रिय कार्यालया अंतर्गत एकुण ३१० शौचालये निश्चित केलेली आहेत. सदर शौचालये स्वच्छ भारत अभियान मार्फत निश्चित केलेल्या मानकाप्रमाणे करण्यात आलेली आहेत. यामध्ये प्रामुख्याने सॅनिटरी वेडिंग मशीन, एक्झॉस्ट फॅन, वॉश बेसिन सोय, नॅपकीन या सुविधांनी युक्त करण्यात आली आहेत. या कामाकरीता सुमारे र.रू. १२ कोटी क्षेत्रिय कार्यालयांना उपलब्ध करुन देण्यात आलेले आहेत. यामुळे शहरातील स्वच्छतेचा दर्जा उंचावण्यास मदत होणार आहे.
- स्वच्छ भारत अभियान अंतर्गत नागरिकांनी ओल्या व सुका कचरा स्वतंत्र करुन देणे अनिवार्य आहे. या करीता नागरिकांना माहिती देणे,जनजागृती करणे, सहभाग वाढविणे, मनपाकडुन विविध कार्यक्रम राबविण्यात येत आहेत. वस्ती पातळीवर बैठका घेणे, रेडीओ व दूरदर्शनवर स्वच्छतेचे संदेश देणे, जाहिरात फलक लावणे, सेल्फी पॉईट करणे, रिक्षा, रथ याद्वारे जनजागृती करणे या सर्व बाबींची मोहिम सुरू आहे.

**ओल्या कचऱ्यावरील नाविन्यपूर्ण प्रकल्प**

- बाणेर स. नं. ४८ येथे मनपाकडुन शिल्लक ओला कचरा, अन्नपदार्थाची स्लरी करुन सुमारे १२५ मे. टन क्षमतेचा प्रकिया प्रकल्प सुरु आहे. ओल्या कचऱ्यातील स्लरी प्रवाही मिश्रण पासुन बायो सिएनजी गॅसची निर्मिती करण्यात येत असुन मनपाकडील वाहनांकरिता इंधन म्हणुन यशस्वी चाचणी झालेली आहे. सदर कॉम्प्रेस्ड गॅसचा उपयोग वाहनाचे इंधन असा करून या नाविन्यपुर्ण उपयोगामुळे महानगरपालिकेने एक स्तुत्य उपक्रम राबविला आहे.

**सन २०२१-२२ चे दृष्टीक्षेपातील अंदाजपत्रक**

- प्रकल्पीय कामे-
- पुणे शहरातील उपनगरात निर्माण होणारा कचरा त्याच भागात प्रक्रिया करुन जिरविण्याचे महानगरपालिकेचे उद्दिष्ट असुन त्या करीता पुढील ठिकाणी कामे करण्यात येणार आहेत.
- भूगांव व बावधन येथील सुमारे २ एकर जागा घनकचरा व्यवस्थापन विभागाचे उपलब्ध झाली असुन त्या ठिकाणी यांत्रिकीकरण करुन आधुनिक रॅम्प करणे व १०० मे. टन मिश्र कचऱ्यावरील प्रकल्प प्रस्तावीत आहे.
- ऊरूळी फुरसुंगी कचरा डेपो येथे १० एकर जागेवर शास्त्रोक्त भु-भराव करणे. या कामासाठी सन २०२१-२२ या अंदाजपत्रकात सुमारे र.रू. ११ कोटी इतकी रक्कम प्रस्तावित केलेली आहे.
- पुणे महानगरपालिका राष्ट्रीय हरित लवाद (NGT) यांना प्रतिज्ञापत्र सादर केले असून ऊरूळी-फुरसुंगी येथे डिसेंबर २०१९ पासून कचऱ्याचे शुन्य डंपिंग व सविस्तर आराखडा तयार केला आहे. त्यानुसार पुणे महानगरपालिकेने जानेवारी २०२० पासुन याठिकाणी ओपन डंपिंग १००% बंद केले आहे. तसेच आणखी नवीन चार कचरा प्रक्रिया एप्रिल २०२१ पर्यंत चालु होणार असून सध्या काम करत असलेल्या जुन्या कचरा प्रक्रिया प्रकल्प धारकाकडून शहरातच २१०० मे.टन कचऱ्यावर शहरातच प्रक्रिया केली जाणार आहे.

**सफाई कर अंतर्गत वापरकर्ता शुल्क-**

- घनकचरा विभागास दरवर्षी मिळणाऱ्या उत्पन्नाचा विचार केल्यास आजमितीस मालमत्ता करा अंतर्गत स्वच्छता करापोटी आकारण्यात येणारे शुल्क हे एकमेव उत्पनाचे स्त्रोत आहे.
- शासनाच्या घनकचरा (व्यवस्थापन हाताळणी), नियम २०१६ नुसार स्थानिक स्वराज्य संस्थाने घनकचरा व्यवस्थापनासाठी होणाऱ्या एकुण खर्चासाठी तुलनेत त्या शहरातील नागरिकांकडून वापकर्ता शुल्क आकारणी बंधनकारक आहे व त्यासाठी शासनाकडून भविष्यात कोणतेही स्वतंत्र अनुदान मिळू शकणार नाही. घरोघरी जाऊन कचरा गोळा करणे, कंटेनर मुक्त शहर करणे याकामासाठी र.रू. १ कोटी प्रस्तावित करण्यात आलेले आहेत. त्यानुसार अंदाजपत्रकात संपुर्ण शहरातील ४२ प्रभागांमध्ये कचरा संकलन व प्राथमिक वाहतुक रॅम्प पर्यंत करणे असे कामकाज निविदा मागवुन करण्यात येणार आहे. यामुळे घरोघरी जाऊन वर्गीकृत कचरा संकलन करण्याचे प्रमाण सुमारे १०० टक्के पोहचविणे शक्य होणार आहे.
- शहरातील सार्वजनिक शौचालय व वस्ती पातळीवरील शौचालयाची स्वच्छता आऊटर्सोसिंग तत्वावर करण्यात येणार आहे, यासाठी २०२१-२२ च्या अंदाजपत्रकात तरतुद करण्यात आली आहे.

**सन २०२१-२२ चे दृष्टीक्षेपातील अंदाजपत्रकातील संक्षिप्त माहिती**

- पुणे बायोएनर्जी ७५० मे. टन प्रकल्प मार्च २०२१ पर्यत कार्यान्वित करणे.
- व्हेरीएट कन्सलंट प्रा. लि. यांचे मार्फत ३५० मे. टन प्रकल्प ऑगस्ट २०२१ मध्ये कार्यान्वित करणे.
- स्वच्छ भारत अभियान अंतर्गत स्वच्छता विषयक कामे करणे कचरा रॅम्प व प्रकल्प संगणकीकरण करणे/अत्याधुनिकी करण करणे.
- R O/plant /leachate / प्रक्रिया प्रकल्प अपग्रेड करणे.

**सन २०२१-२२ मध्ये करावयाचे प्रस्तावित महत्वाचे प्रकल्प / योजना**

- नवीन २०० मे. टन प्रकल्प उरुळी देवाची येथे उभारणे.
- नवीन शास्त्रोक्त भु भराव विकसित करणे.
- NCAP च्या माध्यमातुन रोड स्वीपर व रोड स्प्रींकलर खरेदी करणे.
- बायोमायनिंग प्रकल्प क्षमता वाढविणे.
- वेस्ट टु एनर्जी प्लॅन्टसाठी आवश्यक पाण्यासाठी रामटेकडी येथे मलनिःसारण प्रकल्प उभारणे.
- चिकन व मटण वेस्ट प्रक्रियासाठी CSR माध्यमातुन नवीन तंत्रज्ञानावर आधारीत प्रक्रिया प्रकल्प उभारणे.

**सन २०२०-२१ मध्ये पुणे मनपास मिळालेले अवॉर्ड /बक्षिसे / ट्रॉफिज यांची माहिती**

- स्कॉच ॲवार्ड
- ओ डी एफ++ थ्री- स्टार - स्वच्छ सर्वेक्षण

जमेचा

| विवरण | | नक्की आकडा | | | |
|---|---|---|---|---|---|
| | | 2017-18 | 2018-19 | 2019-20 | 2019-20 शेवटची सहामाही |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये इ. | | | | | |
| क. सांसर्गिक रोगांचे रुग्णालय इतर संस्थांचा हिस्सा (आ.प्र.) | RI17A101 | 6,000 | 6,000 | | -19,800 |
| ख. औषधालय शुल्क (आ.प्र.) | RI17B101 | 1,33,07,004 | 1,29,80,828 | 1,39,40,559 | 76,86,911 |
| ग. प्रयोगशाळा शुल्क (आ.प्र.) | RI17C101 | 26,74,120 | 6,21,974 | 2,83,805 | 1,60,983 |
| घ. इतर जमा (आ.प्र.) | RI17D101 | 1,23,18,394 | 55,00,188 | 1,74,67,887 | 24,95,011 |
| ज. कुटी रुग्णालय (आ.प्र.) | RI17H101 | | | | |
| झ. रेडिऑलॉजी (आ.प्र.) | RI17I101 | 11,34,699 | 10,91,574 | 2,61,585 | 1,20,120 |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये एकूण बेरीज | | 2,94,40,217 | 2,02,00,564 | 3,19,53,836 | 1,04,43,225 |
| ८. मा. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना | | | | | |
| अ. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A101 | 6,40,86,314 | 6,98,76,845 | 8,52,07,517 | 4,41,11,479 |
| क. शिक्षण मंडळ सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A103 | 1,24,04,076 | 1,52,37,142 | 1,16,82,775 | 67,89,535 |
| ८. आरोग्य सहाय्य योजना एकूण बेरीज | | 7,64,90,390 | 8,51,13,987 | 9,68,90,292 | 5,09,01,014 |
| ९. पथांची झाटलोट, कचरावाहतूक नि मैला व मैलापाणी वाहतूक व्यवस्था | | | | | |
| क. सफाईपट्टी व विशेष सफाईपट्टी | | | | | |
| १. नागरिकांकडून (कआकसंप्र) | RI19A101 | 99,37,829 | 1,15,10,374 | 1,15,03,132 | 29,94,011 |
| २. शासनाकडून (कआकसंप्र) | RI19A102 | 48,69,541 | 56,40,086 | 62,79,406 | 14,67,065 |
| ३. PMPML खात्याच्या मिळकतींवरील (कआकसंप्र) | RI19A103 | | | | |
| ४. विशेष सफाई कर (कआकसंप्र) | RI19A104 | 4,55,98,978 | 5,85,19,562 | 5,93,07,219 | 2,60,23,233 |
| स्वच्छ महाराष्ट्र अभियान अंतर्गत अनुदान | RI19A108 | 3,10,44,000 | | 33,89,55,904 | 33,89,55,904 |
| क. बेरीज | | 9,14,50,348 | 7,56,70,022 | 41,60,45,661 | 36,94,40,213 |
| ख. इतर जमा | | | | | |
| २. किरकोळ जमा (आ.प्र.) | RI19B102 | 85,634 | 44,926 | 5,800 | 2,000 |
| ३. साफसफाई शुल्क (आ.प्र.) | RI19B103 | 3,16,724 | 3,33,249 | 2,83,544 | 1,49,239 |
| ५. ई-टॉयलेट वापर शुल्क | RI19B105 | | | 1,33,400 | 1,33,400 |
| ख. बेरीज | | 4,02,358 | 3,78,175 | 4,22,744 | 2,84,639 |
| ९. पथांची झाडलोट एकूण बेरीज | | 9,18,52,706 | 7,60,48,197 | 41,64,68,405 | 36,97,24,852 |
| १०. पथ सुधारणा | | | | | |
| क. पथ विभाग | | | | | |
| १. पथ कर (कआकसंप्र) | RI20A101 | 94,13,97,648 | 1,01,30,88,068 | 1,04,67,05,347 | 27,16,11,011 |
| ३. किरकोळ जमा (टेंडर फॉर्म विक्री, देखरेख खर्च) (पथ) | RI20A103 | 32,46,76,451 | 18,05,05,539 | 13,10,20,335 | 4,79,80,894 |
| ७. फळी, पायरी शुल्क (अतिक्रमण) | RI20A107 | 19,552 | 11,820 | 2,19,095 | 23,935 |
| ८. रस्ता खोदाईपोटी आलेली जमा (पथ) | RI20A108 | 75,07,04,904 | 89,14,91,360 | 19,08,72,647 | 13,18,22,104 |
| ८-अ. Optical Fiber Cable टाकणेसाठी डिमांड नोट पोटी जमा (पथ) | RI20A108A | 1,19,11,950 | | | |
| ९. वाहनतळ शुल्क / ITS माध्यमातून वसुली (वाहतूक नियोजन) | RI20A109 | 27,42,608 | | 2,75,706 | |
| १०. रस्ते बांधणी व रस्ते दुरुस्तीसाठी अनुदान (कआकसंप्र) | CI20A110 | | 1,50,00,000 | 3,00,00,000 | 3,00,00,000 |
| १३. नो-पार्किंग झोनमध्ये पार्किंग केलेल्या वाहनांवर कारवाई करणे | RI20A114 | 4,33,950 | 35,72,251 | 71,20,917 | 32,31,942 |
| १६. Optical Fibre अंतर्गत जमा | RI20A117 | | 4,850 | | |
| लुल्लानगर चौक, कोंढवा खुर्द येथे उड्डाणपूल बांधणे याकामी पुणे कँटोन्मेंट बोर्ड यांचेकडून शुल्क परत जमा | RI20A118 | | | 3,62,95,833 | 3,62,95,833 |
| १०. पथ सुधारणा एकूण बेरीज | | 2,03,18,87,063 | 2,10,36,73,888 | 1,44,25,09,880 | 52,09,65,719 |
| १०-ग. विद्युत विभाग | | | | | |
| विद्युत विभाग इतर जमा | RI20C101 | 16,29,239 | 10,80,983 | 43,34,110 | 34,10,983 |
| शनिवारवाडा ध्वनी प्रकाश कार्यक्रमाचे प्रवेश शुल्क | RI20C102 | 21,93,430 | 16,66,930 | 6,71,150 | 3,87,960 |
| १०-ग. विद्युत विभाग एकूण बेरीज | | 38,22,669 | 27,47,913 | 50,05,260 | 37,98,943 |

| सन 2021-22 चे योजनांतर्गत | | | | | | |
|---|---|---|---|---|---|---|
| मान्यतेचा ठराव क्र. दिनांक (Code) | प्रभाग क्रमांक | BPL | कामाचे नाव अगर वर्णन | दि. 31 मार्च 2021 अखेरपर्यंत केलेली तरतूद | | |
| | | | | कर्जातून | महसूल निधीतून | एकूण |
| | | | १. मनपा भवन व मनपा इमारती | | | |
| CE11A129# | J1- | SJ1- | शहरात विविध ठिकाणी मनपासाठी इमारती बांधणे व विकास कामे करणे | | 83,36,63,635 | 83,36,63,635 |
| | | | १. मनपा भवन व मनपा इमारती एकूण बेरीज | | 83,36,63,635 | 83,36,63,635 |
| | | | २. प्राथमिक शिक्षण | | | |
| CE12A381# | – | – | प्राथमिक शाळेमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,37,07,33,043 | 1,37,07,33,043 |
| CE12A422# | J2- | SJ2- | प्राथमिक शाळेसाठी नवीन इमारत बांधणे / वर्गखोल्या बांधणे / मैदाने विकसित करणे व मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,60,45,87,914 | 1,60,45,87,914 |
| | | B | २. प्राथमिक शिक्षण एकूण बेरीज | | 3,03,47,61,774 | 3,03,47,61,774 |
| | | | ३. दुय्यम शिक्षण | | | |
| CE13A128# | J5- | | माध्यमिक शाळांमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 7,14,96,493 | 7,14,96,493 |
| | | B | ३. दुय्यम शिक्षण एकूण बेरीज | | 7,14,96,493 | 7,14,96,493 |
| | | | ७. आरोग्य विभाग | | | |
| CE17A192# | – | – | दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 60,18,66,405 | 60,18,66,405 |
| CE17A227# | J12- | SJ12 | शहरामध्ये विविध ठिकाणी स्मशानभूमी / दफनभूमी विकसित करणे / दशक्रीया विधीसाठी घाट बांधणे व विविध विकासकामे करणे | | 88,04,78,327 | 88,04,78,327 |
| CE17A242# | J6- | SJ6- | शहरामध्ये दवाखाने / प्रसुतिगृह बांधणे / दवाखान्यांसाठी विविध उपकरणे खरेदी करणे / दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,38,25,89,302 | 1,38,25,89,302 |
| CE17A244# | – | – | शहरातील दवाखान्यांसाठी विविध उपकरणे खरेदी करणे | | 15,32,67,558 | 15,32,67,558 |
| | | B | ७. आरोग्य विभाग एकूण बेरीज | | 3,04,62,48,730 | 3,04,62,48,730 |
| | | | ९. पथांची झाडलोट / घनकचरा व्यवस्थापन विभाग | | | |
| CE19A116 | | | उरूळी देवाची/फुरसंगी डेपो परिसर कचरा डेपोवरील उर्वरित कचऱ्याचे नॉर्म्सप्रमाणे कॅपिंग करणे व तदनुषंगिक कामे करणे | | 81,72,56,400 | 81,72,56,400 |
| CE19A117 | | | उरुळी देवाची/फुरसुंगी येथील कचरा डेपोच्या भोवती सिमाभिंत बांधणे. | | 5,45,69,374 | 5,45,69,374 |
| CE19A120 | | | व्हर्मीकंपोस्ट पध्दतीचे प्रक्रिया प्रकल्प उभारणे. | | 15,34,49,062 | 15,34,49,062 |
| CE19A122 | | | कचरा प्रक्रिया प्रकल्पासाठी जागा ताब्यात घेणे, कंपाउंड करणे, रस्ते करणे व तदनुषंगिक कामे करणे. | | 7,90,47,347 | 7,90,47,347 |
| CE19A123 | | | ताब्यात येणाऱ्या जागांवर प्रक्रिया प्रकल्प उभारणे, प्रकल्पांसाठी आवश्यक सुविधा विषयक कामे करणे इत्यादी. | | 25,29,12,702 | 25,29,12,702 |
| CE19A139 | | | उरुळी देवाची/फुरसंगी येथील गावांमध्ये विविध विकास कामे करणे | | 52,04,47,806 | 52,04,47,806 |
| CE19A141 | | | घनकचरा व्यवस्थापनकडील कचरागाडया, बंदिस्त करणे विविध रॅम्प बंदिस्त करणे व कॉक्रीट करणे. | | 12,74,14,310 | 12,74,14,310 |
| CE19A143 | | | गार्डन वेस्टसाठी विविध ठिकाणी पुणे मनपा हद्दीत श्रेडर मशिन बसविणे | | 82,26,843 | 82,26,843 |
| CE19A153 | | | प्लास्टिक व इलेक्ट्रॉनिक वस्तू विभाजीत करणेकरीता शेड बांधणे | | 1,60,28,393 | 1,60,28,393 |
| CE19A154# | | SH1- | शहरात घनकचरा संदर्भात विविध विकास कामे करणे | | 32,83,76,807 | 32,83,76,807 |
| CE19A155 | | | e-waste जमा करणे व प्रक्रिया करणे | | 8,50,000 | 8,50,000 |
| CE19A156 | | | कचरा वाहतुकीसाठी नव्याने उपनगरांमध्ये रॅम्पचे आधुनिकीकरण, विकासकामे करणे, यंत्रसामग्री | | 6,50,77,860 | 6,50,77,860 |
| CE19A157 | | | उरळी देवाची / फुरसुंगी येथे इनर्ट / रिजेक्ट मटेरीयलसाठी नव्याने शास्त्रोक्त लॅण्डफील विकसीत करणे व त्याची देखभाल दुरुस्ती करणे | | 24,81,23,460 | 24,81,23,460 |
| CE19A158 | | | पुणे महानगरपालिकाच्या नव्याने समाविष्ट होणाऱ्या गावामध्ये घनकचरा व्यवस्थापनाशी संबधीत कामे करणे | | 3,85,58,063 | 3,85,58,063 |
| CE19A163 | | | घनकचरा व्यवस्थापनाअंतर्गत विकेंद्रीत पध्दतीने प्रभाग व वॉर्डनिहाय कचरा प्रकिया केंद्र उभारणे व तदनुषंगिक कामे करणे | | 41,52,82,756 | 41,52,82,756 |
| CE19A168 | | | पुणे मनपाच्या अस्तित्वातील कचरा हस्तांतर केंद्र व हजेरीकोठ्या व विविध प्रकल्प याठिकाणी सेवकांसाठी सुविधा पुरविणे व बांधकामासाठी देखभाल दुरूस्ती करणे | | 2,44,96,246 | 2,44,96,246 |
| CE19A169 | | | स्वच्छ भारत अभियान अंतर्गत मनपाचा हिस्सा | | 21,04,33,994 | 21,04,33,994 |
| CE19A171 | | | समग्रसाठी मनपाचा हिस्सा | | 1,61,77,027 | 1,61,77,027 |

## (३) घनकचरा व्यवस्थापन (भांडवली तरतूद र.रू १२८.०० कोटी + महसूली तरतूद र.रू.७००.७७ कोटी = ८२८.७७ कोटी)

सन २०२१–२२

- **उरुळी फुरसुंगी येथे २०० मे टन क्षमतेचा कचरा प्रक्रिया प्रकल्प** – उरुळी फुरसुंगी कचरा डेपो येथील २ एकर क्षेत्रात २०० मे. टन क्षमतेचा मिश्र कचरा प्रक्रिया प्रकल्प उभारण्याचे काम मार्च २०२१ अखेर पुर्ण करण्यात आले आहे. एप्रिल २०२१ पासुन या प्रकल्पामध्ये २०० ते २५० मे. टन क्षमतेने कचऱ्यावर प्रक्रिया करण्यात येत आहे.

- **NCAP अंतर्गत वाहने खरेदी** – NCAP (National Clean Air Program) अंतर्गत महानगरपालिकेस ४ कोटीचा निधी उपलब्ध झालेला आहे. यापैकी ३ कोटी रुपये वाहन खरेदी व १ कोटी रुपये जनजागृतीसाठी देण्यात आलेले आहेत. खात्यास सद्यस्थितीस २ रोड स्वीपर उपलब्ध झाले असुन ३ वॉटर स्प्रींकलर खरेदी करण्याची वर्क ऑर्डर देण्यात आली आहे.

- **बायोमायनिंग** – उरुळी फुरसुंगी कचरा डेपो येथे साठलेल्या कच–यावर प्रक्रिया करणेसाठी १००० मे. टन प्रति दिन क्षमतेचा प्रकल्प उभारण्यात आला असुन सदर प्रकल्पामध्ये सरासरी ९५० मे. टन प्रतिदिन क्षमतेने प्रक्रिया करण्यात येत आहे. सद्यस्थितीत सुमारे १२ एकर क्षेत्र रिकामे करण्यात आले असुन निविदेतील नमुद कालावधीच्या आधी सुमारे दिड वर्ष अगोदर काम संपणार आहे.

- **वेस्ट टू एनर्जी** – पुणे बायोएनर्जी यांच्या मार्फत ७५० मे टन क्षमतेचा वेस्ट–टू–एनर्जी प्रकल्पाच्या पहिल्या टप्प्यातील देखभाल दुरस्तीचे O & M (Operation & Maintance) काम सुरु झाले आहे. या अंतर्गत सुमारे ३०० मे. टन प्रतिदिन क्षमतेने कचऱ्यावर प्रक्रिया करण्यात येत आहे. तसेच या प्रकल्पातील अन्य स्थापत्य विषयक कामाचे बांधकाम देखील मोठयाप्रमाणात सुरु आहे. येणाऱ्या आर्थिक वर्षात सदर प्रकल्प ७५० मे. टन क्षमतेने कार्यान्वीत करण्याचे नियोजन आहे.

- **स्वच्छ सर्वेक्षण २०२१** – स्वच्छ सर्वेक्षण २०२१ स्पर्धेमध्ये १० लाखाहुन अधिक लोकसंख्येच्या श्रेणीत पुणे शहरास ५ वा राष्ट्रीय क्रमांक आणि महाराष्ट्रात २ रा राज्य क्रमांक मिळविला आहे. तसचे पुणे शहराला कचरा मुक्त शहर अंतर्गत ३ स्टार मानांकन, ODF++ (Open Defication Free) प्रमाणपत्र व बेस्ट सेल्फ सस्टेनेबल बिगसिटीचा देशातील प्रथम क्रमांकाचा पुरस्कारही मिळाला आहे.

सन २०२२–२३ चे दृष्टीक्षेपातील अंदाजपत्रक

- **ओला कचरा प्रक्रीया प्रकल्प** – अस्तित्वातील बंद पडलेले/नादुरुस्त असलेले बायोगॅस प्रकल्प पाडुन त्याठिकाणी DBOO (Design, Build, Own, Operate) तत्वावर ओल्या कचऱ्याचे प्रकल्प उभारण्यासाठी EOI (Expression of Inerest) मागविण्यात आला आहे. शहराच्या ४ ठिकाणच्या बायोगॅसच्या जागी ओल्या कचऱ्यापासुन ब्रीकेट्स बनविण्याचा प्रकल्प उभारण्याचे नियोजन आहे.

- **शास्त्रोक्त भुभराव उभारणे** – बायोमायनिग व शास्त्रोक्त भुभराव करून प्राथमिक स्तरावर उरुळी फुरसुंगी कचरा डेपो मधील जागा निश्चित करण्यात आली आहे. भुभरावाच्या कामासाठी तज्ञ सल्लागाराची नेमणुक करण्याची कार्यवाही सुरु आहे. नवीन भुभराव करणे या कामासाठी र.रू. ३.६० कोटी रुपये इतकी तरतुद करण्यात आली आहे.

- **पुणे छावणी परिषद येथे प्रकल्प क्षमता वाढविणे व भुभराव करणे** – पुणे छावणी परिषदेच्या अस्तित्वातील ५० मे. टन क्षमतेच्या प्रकल्पाची क्षमता १०० मे. टनाने वाढविणे. नव्याने शास्त्रोक्त भुभराव उभारणे या कामी मा. मुख्य सभेकडे प्रस्ताव मान्यतेस सादर करण्यात आला आहे. या प्रस्तावानुसार नमुद कामांसाठी ठराविक रक्कम पुणे छावणी परिषदेस वर्ग करण्यात येणार आहे. सदरचे दोन्ही प्रकल्प पुणे छावणी परिषदेच्या

मालकीच्या जागेवर करण्यात येणार आहे. त्यामुळे शहरातील कचरा समस्येचा प्रश्न सुटण्यास मदत होणार आहे.

- **ISWM** - Iswm (Integrated Solid Wase Management) अंतर्गत घनकचरा विभाग व मोटारवाहन विभाग यांच्याकडील सर्व प्रकल्प, वाहने, मनुष्यबळ याचे संगणकीय एकत्रिकरण करण्याचे काम हाती घेण्यात आले आहे. या कामाची वर्क ऑर्डर मे. VANN (M/s. Vaaan Infra Pvt. Ltd.) यांना देण्यात आली असुन प्रत्यक्ष जागेवर करावयाच्या कामांच्या अनुषंगाने मटेरीयल खरेदीची प्रक्रिया सुरु करण्यात आली आहे.
- **नवीन समाविष्ट गावे** – नवीन २३ गावांचा समावेश पुणे मनपामध्ये झालेला असुन या गावामधील घनकचरा विषयक विविध कामासाठी नियोजन करण्यात येत आहे. अस्तिवातील जागा ताब्यात घेऊन तेथे कचरा हस्तांतरण केंद्र /कचरा प्रक्रिया प्रकल्प उभारणेचे नियोजन आहे. या गावांसाठी अतिरिक्त स्वच्छता कर्मचारी यांची मागणी करण्यात येत आहे. त्याचप्रमाणे काही भागात सुरु असलेल्या प्रकल्पासाठी आवश्यक ती मान्यता घेण्यात येत आहे. सदर गावांमधील पुर्वीपासुन साठविण्यात आलेल्या कचऱ्यावर प्रक्रिया करण्यासाठी नियोजन करण्यात येणार आहे.
- सर्व कचरा रॅम्पवरुन सुका कचरा १५० मे. टन प्रतिदिन क्षमतेने सिमेंट कंपन्यांमध्ये इंधनासाठी वापरण्यासाठी निविदा प्रक्रिया राबविण्यात आली आहे.
- **गार्डन वेस्ट** – सद्यस्थितीत सुमारे १०० मे. टन गार्डन वेस्टवर प्रक्रिया करण्यात येत आहे. यामध्ये ३० टन नारळाच शहाळे व उर्वरित वेस्ट हे झाडाचे कटींग आहे. या कामामध्ये सर्व प्रकारचे गार्डन वेस्ट हे मनपाच्या खर्चाने वाहतुक करुन प्रक्रिया प्रकल्पांना पोहोचविण्यात येत होते. पुढील वर्षी शहरातील सर्व प्रभागातुन सर्व प्रकारचे गार्डन वेस्ट ठेकेदारामार्फत संकलन करणे, वाहतुक करणे व प्रक्रिया करणे या कामासाठी EOI (Expression of Interest) मागविण्यात येत आहे.
- **रॅम्प आधुनिकिकरण** – कचरा हस्तांतरण करणेसाठी सद्यस्थितीत ७ ठिकाणी रॅम्प उभारण्यात आलेले आहे. या व्यतिरिक्त बावधन येथे नवीन तंत्रज्ञानावर आधारित कॅप्सुल कंटेनरच्या स्वरुपातील कचरा हस्तांतरण केंद्र उभारण्यात येणार आहे. सदर हस्तांतरण केंद्रासाठी शहराच्या मध्यवर्ती भागात अशाप्रकारचे आधुनिक हस्तांतरण केंद्र उभारण्याचे खात्याचे नियोजन आहे.

जमेचा

| विवरण | | नक्की आकडा | | | |
|---|---|---|---|---|---|
| | | 2018-19 | 2019-20 | 2020-21 | 2020-21 शेवटची सहामाही |
| ५. लोकारोग्य | | | | | |
| हिवताप (मलेरिया) निर्मूलन योजना शासकीय अनुदान इतर जमा (आ.प्र.) | RI15A101 | 12,74,87,321 | 19,09,96,248 | 6,61,78,900 | 6,61,78,900 |
| वैकुंठ स्मशानभूमी उत्पन्न (आ.प्र.) | RI15B101 | 31,800 | 5,300 | 11,500 | 11,500 |
| भेसळप्रतिबंधक निर्बंध उपहारगृह शुल्क (आ.प्र.) | RI15C101 | | 1,91,898 | | |
| इतर धंद्यांवरील अनुज्ञापत्र शुल्क (आ.प्र.) | RI15D101 | 96,56,832 | 1,11,22,972 | 1,65,38,637 | 1,51,77,363 |
| इतर जमा (औषध विक्री, लस वगैरे) (आ.प्र.) | RI15E101 | 2,70,360 | 2,74,325 | 83,300 | 56,250 |
| संतती नियमन सहाय्यप्रित्यर्थ (आ.प्र.) | RI15F101 | | 26,83,796 | | |
| कुत्र्यांच्या बंदोबस्ताप्रित्यर्थ शासकीय सहाय्य (आ.प्र.) | RI15G101 | | | | |
| फॉर्म विकी (आ.प्र.) | RI15H101 | 13,323 | 7,203 | 7,864 | 6,927 |
| जन्ममृत्यू विभाग (आ.प्र.) | RI15I101 | 47,50,576 | 31,23,911 | 32,07,109 | 23,20,698 |
| इतर धंद्यांवरील अनुज्ञापत्र - धोबी घाट (मसआ.जिंघ.) | RI15K101 | 1,87,701 | 1,94,885 | 1,25,058 | 1,25,058 |
| विवाह नोंदणी फॉर्म विक्री | RI15N101 | 21,43,849 | 21,22,890 | 14,76,505 | 11,21,895 |
| कोविड-19 साठी शासनाकडून अनुदान | RI15R101A | | 1,25,00,000 | 3,00,84,000 | |
| कोविड-19 साठी नागरिकांकडून मदत | RI15R101B | | 1,37,535 | 3,75,53,676 | 17,02,777 |
| महात्मा ज्योतिबा फुले जन आरोग्य योजना अंतर्गत दाव्याने प्राप्त रक्कम | RI15S101 | | | | |
| ५. लोकारोग्य एकूण बेरीज | | 14,45,41,762 | 22,33,60,963 | 15,52,66,549 | 8,67,01,368 |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये इ. | | | | | |
| क. सांसर्गिक रोगांचे रुग्णालय इतर संस्थांचा हिस्सा (आ.प्र.) | RI17A101 | 6,000 | | | |
| ख. औषधालय शुल्क (आ.प्र.) | RI17B101 | 1,29,80,828 | 1,39,40,559 | 29,92,745 | 24,20,125 |
| ग. प्रयोगशाळा शुल्क (आ.प्र.) | RI17C101 | 6,21,974 | 2,83,805 | 51,590 | 38,885 |
| घ. इतर जमा (आ.प्र.) | RI17D101 | 55,00,188 | 1,74,67,887 | 50,58,895 | 33,97,299 |
| ज. कुटी रुग्णालय (आ.प्र.) | RI17H101 | | | | |
| झ. रेडिऑलॉजी (आ.प्र.) | RI17I101 | 10,91,574 | 2,61,585 | 81,800 | 71,435 |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये एकूण बेरीज | | 2,02,00,564 | 3,19,53,836 | 81,85,030 | 59,27,744 |
| ८. मा. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना | | | | | |
| अ. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A101 | 6,98,76,845 | 8,52,07,517 | 6,93,40,613 | 4,31,27,669 |
| क. शिक्षण मंडळ सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A103 | 1,52,37,142 | 1,16,82,775 | 1,16,16,060 | 81,02,238 |
| ८. आरोग्य सहाय्य योजना एकूण बेरीज | | 8,51,13,987 | 9,68,90,292 | 8,09,56,673 | 5,12,29,907 |
| ९. पथांची झाटलोट, कचरावाहतूक नि मैला व मैलापाणी वाहतूक व्यवस्था | | | | | |
| क. सफाईपट्टी व विशेष सफाईपट्टी | | | | | |
| नागरिकांकडून (कआकसंप्र) | RI19A101 | 1,15,10,374 | 1,15,03,132 | 2,27,83,855 | 1,45,28,749 |
| शासनाकडून (कआकसंप्र) | RI19A102 | 56,40,086 | 62,79,406 | 1,11,64,080 | 71,19,082 |
| PMPML खात्याच्या मिळकतींवरील (कआकसंप्र) | RI19A103 | | | | |
| विशेष सफाई कर (कआकसंप्र) | RI19A104 | 5,85,19,562 | 5,93,07,219 | 4,82,16,709 | 2,41,96,767 |
| स्वच्छ महाराष्ट्र अभियान अंतर्गत अनुदान | RI19A108 | | 33,89,55,904 | | |
| क. बेरीज | | 7,56,70,022 | 41,60,45,661 | 8,21,64,644 | 4,58,44,598 |
| ख. इतर जमा | | | | | |
| किरकोळ जमा (आ.प्र.) | RI19B102 | 44,926 | 5,800 | 17,508 | 17,508 |
| साफसफाई शुल्क (आ.प्र.) | RI19B103 | 3,33,249 | 2,83,544 | 1,89,575 | 1,34,500 |
| ई-टॉयलेट वापर शुल्क | RI19B105 | | 1,33,400 | 13,126 | 11,120 |
| ख. बेरीज | | 3,78,175 | 4,22,744 | 2,20,209 | 1,63,128 |
| ९. पथांची झाडलोट एकूण बेरीज | | 7,60,48,197 | 41,64,68,405 | 8,23,84,853 | 4,60,07,726 |

| सन 2022-23 चे योजनांतर्गत | | | | | | |
|---|---|---|---|---|---|---|
| मान्यतेचा ठराव क्र. दिनांक (Code) | प्रभाग क्रमांक | BPL | कामाचे नाव अगर वर्णन | दि. 31 मार्च 2022 अखेरपर्यंत केलेली तरतूद | | |
| | | | | कर्जातून | महसूल निधीतून | एकूण |
| | | | १. मनपा भवन व मनपा इमारती | | | |
| CE11A129# | J1- | _ | शहरात विविध ठिकाणी मनपासाठी इमारती बांधणे व विकास कामे करणे | | 98,72,99,291 | 98,72,99,291 |
| | | | १. मनपा भवन व मनपा इमारती एकूण बेरीज | | 98,72,99,291 | 98,72,99,291 |
| | | | २. प्राथमिक शिक्षण | | | |
| CE12A381# | _ | _ | प्राथमिक शाळेमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,30,15,02,862 | 1,30,15,02,862 |
| CE12A422# | J2- | _ | प्राथमिक शाळेसाठी नवीन इमारत बांधणे / वर्गखोल्या बांधणे / मैदाने विकसित करणे व मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,53,14,07,139 | 1,53,14,07,139 |
| | | B | २. प्राथमिक शिक्षण एकूण बेरीज | | 2,89,23,50,818 | 2,89,23,50,818 |
| | | | ३. दुय्यम शिक्षण | | | |
| CE13A128# | J5- | _ | माध्यमिक शाळांमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 27,33,30,996 | 27,33,30,996 |
| | | B | ३. दुय्यम शिक्षण एकूण बेरीज | | 27,33,30,996 | 27,33,30,996 |
| | | | ७. आरोग्य विभाग | | | |
| CE17A192# | _ | _ | दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 58,37,46,804 | 58,37,46,804 |
| CE17A227# | J12- | _ | शहरामध्ये विविध ठिकाणी स्मशानभूमी / दफनभूमी विकसित करणे / दशक्रीया विधीसाठी घाट बांधणे व विविध विकासकामे करणे | | 97,87,70,778 | 97,87,70,778 |
| CE17A242# | J6- | _ | शहरामध्ये दवाखाने / प्रसुतिगृह बांधणे / दवाखान्यांसाठी विविध उपकरणे खरेदी करणे / दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 2,46,23,24,455 | 2,46,23,24,455 |
| CE17A244# | _ | _ | शहरातील दवाखान्यांसाठी विविध उपकरणे खरेदी करणे | | 15,32,67,558 | 15,32,67,558 |
| | | B | ७. आरोग्य विभाग एकूण बेरीज | | 4,20,61,56,733 | 4,20,61,56,733 |
| | | | ९. पथांची झाडलोट / घनकचरा व्यवस्थापन विभाग | | | |
| CE19A116 | | | उरूळी देवाची/फुरसंगी डेपो परिसर कचरा डेपोवरील उर्वरित कचऱ्याचे नॉर्म्सप्रमाणे कॅपिंग करणे व तदनुषंगिक कामे करणे | | 82,68,38,528 | 82,68,38,528 |
| CE19A117 | | | उरुळी देवाची/फुरसुंगी येथील कचरा डेपोच्या भोवती सिमाभिंत बांधणे. | | 5,75,39,046 | 5,75,39,046 |
| CE19A120 | | | व्हर्मीकंपोस्ट पध्दतीचे प्रक्रिया प्रकल्प उभारणे. | | 15,34,49,062 | 15,34,49,062 |
| CE19A122 | | | कचरा प्रक्रिया प्रकल्पासाठी जागा ताब्यात घेणे, कंपाउंड करणे, रस्ते करणे व तदनुषंगिक कामे करणे. | | 8,00,97,347 | 8,00,97,347 |
| CE19A123 | | | ताब्यात येणाऱ्या जागांवर प्रक्रिया प्रकल्प उभारणे, प्रकल्पांसाठी आवश्यक सुविधा विषयक कामे करणे इत्यादी. | | 31,20,85,651 | 31,20,85,651 |
| CE19A139 | | | उरुळी देवाची/फुरसंगी येथील गावांमध्ये विविध विकास कामे करणे | | 51,74,98,479 | 51,74,98,479 |
| CE19A141 | | | घनकचरा व्यवस्थापनकडील कचरागाडया, बंदिस्त करणे विविध रॅम्प बंदिस्त करणे व कॉक्रीट करणे. | | 13,10,05,349 | 13,10,05,349 |
| CE19A143 | | | गार्डन वेस्टसाठी विविध ठिकाणी पुणे मनपा हद्दीत श्रेडर मशिन बसविणे | | 80,93,533 | 80,93,533 |
| CE19A153 | | | प्लास्टिक व इलेक्ट्रॉनिक वस्तू विभाजीत करणेकरीता शेड बांधणे | | 1,60,78,393 | 1,60,78,393 |
| CE19A154# | | _ | शहरात घनकचरा संदर्भात विविध विकास कामे करणे | | 61,15,78,553 | 61,15,78,553 |
| CE19A155 | | | e-waste जमा करणे व प्रक्रिया करणे | | 9,00,000 | 9,00,000 |
| CE19A156 | | | कचरा वाहतुकीसाठी नव्याने उपनगरांमध्ये रॅम्पचे आधुनिकीकरण, विकासकामे करणे, यंत्रसामग्री | | 6,20,89,926 | 6,20,89,926 |
| CE19A157 | | | उरळी देवाची / फुरसुंगी येथे इनर्ट / रिजेक्ट मटेरीयलसाठी नव्याने शास्त्रोक्त लॅण्डफील विकसीत करणे व त्याची देखभाल दुरुस्ती करणे | | 31,74,23,460 | 31,74,23,460 |
| CE19A158 | | | पुणे महानगरपालिकाच्या नव्याने समाविष्ट होणाऱ्या गावामध्ये घनकचरा व्यवस्थापनाशी संबधीत कामे करणे | | 2,79,05,818 | 2,79,05,818 |
| CE19A163 | | | घनकचरा व्यवस्थापनाअंतर्गत विकेंद्रीत पध्दतीने प्रभाग व वॉर्डनिहाय कचरा प्रकिया केंद्र उभारणे व तदनुषंगिक कामे करणे | | 53,14,24,317 | 53,14,24,317 |
| CE19A168 | | | पुणे मनपाच्या अस्तित्वातील कचरा हस्तांतर केंद्र व हजेरीकोठ्या व विविध प्रकल्प याठिकाणी सेवकांसाठी सुविधा पुरविणे व बांधकामासाठी देखभाल दुरूस्ती करणे | | 2,30,68,891 | 2,30,68,891 |
| CE19A169 | | | स्वच्छ भारत अभियान अंतर्गत मनपाचा हिस्सा | | 21,10,63,993 | 21,10,63,993 |
| CE19A171 | | | समग्रसाठी मनपाचा हिस्सा | | 1,61,77,027 | 1,61,77,027 |

## (३) घनकचरा व्यवस्थापन (भांडवली तरतूद र.रू ५८.८२ कोटी + महसूली तरतूद र.रू.७८७.३५ कोटी = ८४६.१७ कोटी)

सन २०२२-२३

- **ओला कचरा प्रक्रिया प्रकल्प** - ओला कच-यापासून इंधन तयार करून वापरण्यासाठी ५० मे.टन क्षमतेचे चार प्रक्रिया प्रकल्प उभारणीचे काम सुरू आहे.
- **एकात्मिक घनकचरा व्यवस्थापन प्रणाली** - घनकचरा संकलन, वाहतुक, प्रक्रिया कामांचे नियोजन या करिता संगणक प्रणाली निर्माण करण्यात आली आहे. यामध्ये औंध-बाणेर-बालेवाडी क्षेत्रिय कार्यालयाच्या प्रभागात यशस्वी अंमलबजावणी सुरू आहे.
- **पुणे छावणी परिषद येथील कचरा प्रक्रिया प्रकल्प** - पुणे महानगरपालिका व पुणे छावणी परिषद यांच्या संयुक्त प्रकल्पातुन १०० मे.टन प्रकल्प क्षमता वाढ व नवीन शास्त्रोक्त भू-भराव निर्माण करण्याचे काम सुरू आहे.
- कचरा हस्तांतरण केंद्रावरून प्रतिदिन १५० मे.टन क्षमतेने सिमेंट कंपनीमध्ये इंधन वापरासाठी सुका कचरा प्रक्रियेसाठी निविदा पध्दतीने देणेत येत आहे.
- **नवीन समाविष्ट गावे** -२३ नवीन समाविष्ट गावांसाठी स्वच्छता कर्मचारी नेमणे, कचरा संकलन, प्रक्रिया करणे तसेच जुन्या साचलेल्या कच-यावर प्रक्रिया करण्यात येत आहे. तसेच नवीन गावांमध्ये प्रक्रिया प्रकल्प उभारण्याचे नियोजन करण्यात येत आहे.
- **गार्डन वेस्ट प्रक्रिया** - शहरातील सर्व भागातील गार्डन वेस्ट संकलन, वाहतुक व प्रक्रिया करून इंधन, जीवनावश्यक वस्तु, मातीसाठी पर्यायी वापर इ. उप उत्पादने करणेसाठी १२५ मे.टन प्रतिदिन क्षमतेची यंत्रणा कार्यान्वित करण्यात आली आहे.
- ऊरूळी देवाची येथील २०० मे.टन प्रतिदिन क्षमतेच्या ओला व सुका कचरा प्रक्रिया प्रकल्पाची क्षमता १५० मे.टन प्रतिदिन क्षमतेने वाढवून एकूण ३५० मे.टन प्रतिदिन क्षमतेने कार्यान्वित आहे.
- **शास्त्रोक्त भू-भराव** - जुन्या साचलेल्या कच-यावर बायोमायनिंग करून मोकळया झालेल्या जागेवर शास्त्रोक्त भू-भराव ६ एकर क्षेत्रामध्ये करण्याची कार्यवाही सुरू आहे.
- जुन्या साचलेल्या १२ लाख मे.टन कच-यापैकी ८ लाख मे.टन कचऱ्याचे बायोमायनिंग करण्याची प्रक्रिया सुरू असून याकरिता प्रतिदिन २००० मे.टन प्रतिदिन क्षमतेने प्रक्रिया सुरू आहे.
- **ई-वेस्ट** - शहरातील विविध भागात वापरून होणाऱ्या संगणकीय उपकरण, इलेक्ट्रॉनिक्स वापरास आलेल्या गोष्टींचे संकलन, वाहतुक व त्यावर शास्त्रोक्त पध्दतीने प्रक्रिया करणे, पुर्नवापर करणे याकरिता आदर पूनावाला क्लीन सिटी इनेसेटीव्ह यांचे समवेत संयुक्त प्रकल्प १५ क्षेत्रिय कार्यालयात राबविण्यात येत आहे.
- **वॉटर स्प्रिंकलर** - नॅशनल क्लीन एअर प्रोगॅमिंग अंतर्गत हवेतील धुळीचे प्रदुषण कमी करण्यासाठी तीन वॉटर स्प्रिंकलर कार्यरत आहेत. ही यंत्रणा उपनगरांमध्ये कार्यान्वित ठेवण्यात आली आहे.

- **जटायु मशीन** – व्हॅक्युम ऑपरेटेड/ गार्बेज सक्शन मशीन अथवा जटायु मशीनच्या सहाय्याने शहरातील क्रॉनिक स्पॉट्स कमी करणे/ स्वच्छता राखणेसाठी यांचा प्रभावी वापर होतो. सध्या पाच परिमंडळ क्षेत्रात यांचा दैनंदिन वापर करण्यात येत आहे.
- स्वच्छ सर्वेक्षण २०२२ मध्ये पुणे महानगरपालिकेस राज्यामध्ये व्दितीय क्रमांक व देश स्तरावर १० लाख पेक्षा जास्त लोकसंख्या असलेल्या शहरांमध्ये ९वा क्रमांक प्राप्त झाला आहे.

## सन २०२३-२४ चे दृष्टीक्षेपातील अंदाजपत्रक

- **अत्याधुनिक हस्तांतरण केंद्र** – शहरातील कचऱ्याची दुय्यम वाहतुक सुरक्षित, अत्याधुनिक पध्दतीने व बंदिस्त कंटेनरमधून करून शहराच्या आरोग्य व स्वच्छता राखण्याच्या दृष्टीने संपूर्ण स्वयंचलित हस्तांतरण केंद्र उभारण्यात येणार आहे. यासाठी १५ वे वित्त आयोगामधून निधी उपलब्ध होणार आहे.
- **कन्स्ट्रक्शन ॲण्ड डिमॉलिशन वेस्ट प्रक्रिया प्रकल्प उभारणे** – शहराच्या पश्चिम, दक्षिण-पूर्व भागातील कन्स्ट्रक्शन ॲण्ड डिमॉलिशन वेस्ट प्रक्रियेसाठी २५० मे.टन प्रतिदिन क्षमतेचा प्रकल्प उभारण्याची कार्यवाही करणेत येणार आहे. याकरिता प्रकल्पधारकांमार्फत जागा उपलब्ध करून प्रक्रिया यंत्रणा उभारणे, उप उत्पादने निर्माण करणे इ. चा स्वखर्चाने प्रकल्प कार्यान्वित करण्याची योजना राबविण्यात येणार आहे.
- **वेस्ट टू हायड्रोजन** – कचऱ्यापासून प्रक्रियेव्दारे पर्यावरणपूरक व कमी किंमतीमध्ये हायड्रोजन निर्माण करण्याचा प्रकल्प रामटेकडी हडपसर फायनल प्लॉट क्र. ८७ येथे उभारण्यात येणार आह. यामुळे भारत सरकारच्या राष्ट्रीय हायड्रोजन मिशन धोरणास पुरक असून यासाठी BARC भाभा ऑटोमिक रिसर्च सेंटर यांचे मार्गदर्शन लाभणार आहे.
- १५ व्या वित्त आयोगाच्या निधीमधुन तीन प्रमुख रस्त्यांची यांत्रिकी पध्दतीने साफसफाई करणेसाठी प्रक्रिया राबविण्यात येणार आहे.
- स्वच्छ भारत अभियानांतर्गत पुणे महानगरपालिकेस राज्य शासनाचा 'हरित महासिटी कंपोस्ट' हा ब्रॉण्ड कंपोस्ट खताच्या विपणन व विक्री करण्यासाठी प्रदान करण्यात आलेला आहे.
- मनिला, फिलीपीन्स येथे झालेल्या **'झिरो वेस्ट सिटीज कॉन्फरन्स २०२३'** या आंतरराष्ट्रीय परिषदेमध्ये पुणे महानगरपालिकेचा झिरो वेस्ट नेटर्वक मधील संस्थापक सदस्य म्हणुन गौरव करण्यात आला.

जमेचा

| विवरण | | नक्की आकडा | | | |
|---|---|---|---|---|---|
| | | 2019-20 | 2020-21 | 2021-22 | 2021-22 शेवटची सहामाही |
| ५. लोकारोग्य | | | | | |
| हिवताप (मलेरिया) निर्मूलन योजना शासकीय अनुदान इतर जमा (आ.प्र.) | RI15A101 | 19,09,96,248 | 6,61,78,900 | | |
| वैकुंठ स्मशानभूमी उत्पन्न (आ.प्र.) | RI15B101 | 5,300 | 11,500 | | |
| भेसळप्रतिबंधक निर्बंध उपहारगृह शुल्क (आ.प्र.) | RI15C101 | 1,91,898 | | | |
| इतर धंद्यांवरील अनुज्ञापत्र शुल्क (आ.प्र.) | RI15D101 | 1,11,22,972 | 1,65,38,637 | 2,02,55,302 | 1,36,00,546 |
| इतर जमा (औषध विक्री, लस वगैरे) (आ.प्र.) | RI15E101 | 2,74,325 | 83,300 | 2,15,700 | 85,400 |
| संतती नियमन सहाय्यप्रित्यर्थ (आ.प्र.) | RI15F101 | 26,83,796 | | | |
| कुत्र्यांच्या बंदोबस्ताप्रित्यर्थ शासकीय सहाय्य (आ.प्र.) | RI15G101 | | | | |
| फॉर्म विकी (आ.प्र.) | RI15H101 | 7,203 | 7,864 | 8,484 | 5,181 |
| जन्ममृत्यू विभाग (आ.प्र.) | RI15I101 | 31,23,911 | 32,07,109 | 49,75,694 | 22,94,736 |
| इतर धंद्यांवरील अनुज्ञापत्र - धोबी घाट (मसआ.जिंघ.) | RI15K101 | 1,94,885 | 1,25,058 | 1,94,277 | 67,745 |
| विवाह नोंदणी फॉर्म विक्री | RI15N101 | 21,22,890 | 14,76,505 | 22,46,305 | 13,49,210 |
| कोविड-19 साठी शासनाकडून अनुदान | RI15R101A | 1,25,00,000 | 3,00,84,000 | | |
| कोविड-19 साठी नागरिकांकडून मदत | RI15R101B | 1,37,535 | 3,75,53,676 | 3,10,63,287 | 4,99,42,784 |
| महात्मा ज्योतिबा फुले जन आरोग्य योजना अंतर्गत दाव्याने प्राप्त रक्कम | RI15S101 | | | 7,72,30,104 | 6,52,38,884 |
| | | | | | |
| ५. लोकारोग्य एकूण बेरीज | | 22,33,60,963 | 15,52,66,549 | 13,61,89,153 | 13,25,84,486 |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये इ. | | | | | |
| क. सांसर्गिक रोगांचे रुग्णालय इतर संस्थांचा हिस्सा (आ.प्र.) | RI17A101 | | | | |
| ख. औषधालय शुल्क (आ.प्र.) | RI17B101 | 1,39,40,559 | 29,92,745 | 79,46,335 | 46,69,185 |
| ग. प्रयोगशाळा शुल्क (आ.प्र.) | RI17C101 | 2,83,805 | 51,590 | 96,015 | 51,115 |
| घ. इतर जमा (आ.प्र.) | RI17D101 | 1,74,67,887 | 50,58,895 | 1,03,02,858 | 22,86,606 |
| ज. कुटी रुग्णालय (आ.प्र.) | RI17H101 | | | | |
| झ. रेडिऑलॉजी (आ.प्र.) | RI17I101 | 2,61,585 | 81,800 | 4,00,830 | 2,60,780 |
| ७. रुग्णालये, प्रसुतिगृहे, औषधालये एकूण बेरीज | | 3,19,53,836 | 81,85,030 | 1,87,46,038 | 72,67,686 |
| ८. मा. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना | | | | | |
| अ. सभासद व सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A101 | 8,52,07,517 | 6,93,40,613 | 9,67,15,782 | 5,32,73,395 |
| क. शिक्षण मंडळ सेवकांसाठी आरोग्य सहाय्य योजना (आ.प्र.) | RI18A103 | 1,16,82,775 | 1,16,16,060 | 1,94,18,766 | 98,50,400 |
| ८. आरोग्य सहाय्य योजना एकूण बेरीज | | 9,68,90,292 | 8,09,56,673 | 11,61,34,548 | 6,31,23,795 |
| ९. पथांची झाटलोट, कचरावाहतूक नि मैला व मैलापाणी वाहतूक व्यवस्था | | | | | |
| क. सफाईपट्टी व विशेष सफाईपट्टी | | | | | |
| नागरिकांकडून (कआकसंप्र) | RI19A101 | 1,15,03,132 | 2,27,83,855 | 6,11,49,921 | 2,27,60,997 |
| शासनाकडून (कआकसंप्र) | RI19A102 | 62,79,406 | 1,11,64,080 | 2,95,14,867 | 1,07,04,292 |
| PMPML खात्याच्या मिळकतींवरील (कआकसंप्र) | RI19A103 | | | | |
| विशेष सफाई कर (कआकसंप्र) | RI19A104 | 5,93,07,219 | 4,82,16,709 | 5,89,28,767 | 2,47,38,516 |
| स्वच्छ महाराष्ट्र अभियान अंतर्गत अनुदान | RI19A108 | 33,89,55,904 | | -1,28,90,000 | -1,28,90,000 |
| क. बेरीज | | 41,60,45,661 | 8,21,64,644 | 13,67,03,555 | 4,53,13,805 |
| ख. इतर जमा | | | | | |
| किरकोळ जमा (आ.प्र.) | RI19B102 | 5,800 | 17,508 | | |
| साफसफाई शुल्क (आ.प्र.) | RI19B103 | 2,83,544 | 1,89,575 | 3,07,520 | 1,95,095 |
| ई-टॉयलेट वापर शुल्क | RI19B105 | 1,33,400 | 13,126 | 66,000 | 62,000 |
| ख. बेरीज | | 4,22,744 | 2,20,209 | 3,73,520 | 2,57,095 |
| ९. पथांची झाडलोट एकूण बेरीज | | 41,64,68,405 | 8,23,84,853 | 13,70,77,075 | 4,55,70,900 |

| सन 2023-24 चे योजनांतर्गत | | | | | | |
|---|---|---|---|---|---|---|
| मान्यतेचा ठराव क्र. दिनांक (Code) | प्रभाग क्रमांक | BPL | कामाचे नाव अगर वर्णन | दि. 31 मार्च 2023 अखेरपर्यंत केलेली तरतूद | | |
| | | | | कर्जातून | महसूल निधीतून | एकूण |
| | | | १. मनपा भवन व मनपा इमारती | | | |
| CE11A129# | J1- | _ | शहरात विविध ठिकाणी मनपासाठी इमारती बांधणे व विकास कामे करणे | | 1,06,48,74,262 | 1,06,48,74,262 |
| | | | १. मनपा भवन व मनपा इमारती एकूण बेरीज | | 1,06,48,74,262 | 1,06,48,74,262 |
| | | | २. प्राथमिक शिक्षण | | | |
| CE12A381# | _ | _ | प्राथमिक शाळेमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,30,15,02,862 | 1,30,15,02,862 |
| CE12A422# | J2- | _ | प्राथमिक शाळेसाठी नवीन इमारत बांधणे / वर्गखोल्या बांधणे / मैदाने विकसित करणे व मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 1,63,25,29,755 | 1,63,25,29,755 |
| | | B | २. प्राथमिक शिक्षण एकूण बेरीज | | 2,99,34,73,434 | 2,99,34,73,434 |
| | | | ३. दुय्यम शिक्षण | | | |
| CE13A128# | J5- | _ | माध्यमिक शाळांमध्ये मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 26,90,33,416 | 26,90,33,416 |
| | | B | ३. दुय्यम शिक्षण एकूण बेरीज | | 26,90,33,416 | 26,90,33,416 |
| | | | ७. आरोग्य विभाग | | | |
| CE17A192# | _ | _ | दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 58,37,46,804 | 58,37,46,804 |
| CE17A227# | J12- | _ | शहरामध्ये विविध ठिकाणी स्मशानभूमी / दफनभूमी विकसित करणे / दशक्रीया विधीसाठी घाट बांधणे व विविध विकासकामे करणे | | 91,56,24,560 | 91,56,24,560 |
| CE17A242# | J6- | _ | शहरामध्ये दवाखाने / प्रसुतिगृह बांधणे / दवाखान्यांसाठी विविध उपकरणे खरेदी करणे / दवाखान्यातील मुलभूत सोयी सुविधांसाठी विविध विकासकामे करणे | | 2,56,50,82,865 | 2,56,50,82,865 |
| CE17A244# | _ | _ | शहरातील दवाखान्यांसाठी विविध उपकरणे खरेदी करणे | | 15,32,67,558 | 15,32,67,558 |
| | | B | ७. आरोग्य विभाग एकूण बेरीज | | 4,24,57,68,925 | 4,24,57,68,925 |
| | | | ९. पथांची झाडलोट / घनकचरा व्यवस्थापन विभाग | | | |
| CE19A116 | | | उरूळी देवाची/फुरसंगी डेपो परिसर कचरा डेपोवरील उर्वरित कचऱ्याचे नॉर्म्सप्रमाणे कॅपिंग करणे व तदनुषंगिक कामे करणे | | 83,33,12,664 | 83,33,12,664 |
| CE19A117 | | | उरुळी देवाची/फुरसुंगी येथील कचरा डेपोच्या भोवती सिमाभिंत बांधणे. | | 5,71,55,253 | 5,71,55,253 |
| CE19A120 | | | व्हर्मीकंपोस्ट पध्दतीचे प्रक्रिया प्रकल्प उभारणे. | | 15,34,49,062 | 15,34,49,062 |
| CE19A122 | | | कचरा प्रक्रिया प्रकल्पासाठी जागा ताब्यात घेणे, कंपाउंड करणे, रस्ते करणे व तदनुषंगिक कामे करणे. | | 8,53,39,173 | 8,53,39,173 |
| CE19A123 | | | ताब्यात येणाऱ्या जागांवर प्रक्रिया प्रकल्प उभारणे, प्रकल्पांसाठी आवश्यक सुविधा विषयक कामे करणे इत्यादी. | | 43,79,00,959 | 43,79,00,959 |
| CE19A139 | | | उरुळी देवाची/फुरसंगी येथील गावांमध्ये विविध विकास कामे करणे | | 52,57,56,552 | 52,57,56,552 |
| CE19A141 | | | घनकचरा व्यवस्थापनकडील कचरागाडया, बंदिस्त करणे विविध रॅम्प बंदिस्त करणे व कॉक्रीट करणे. | | 13,74,03,119 | 13,74,03,119 |
| CE19A143 | | | गार्डन वेस्टसाठी विविध ठिकाणी पुणे मनपा हद्दीत श्रेडर मशिन बसविणे | | 82,02,180 | 82,02,180 |
| CE19A153 | | | प्लास्टिक व इलेक्ट्रॉनिक वस्तू विभाजीत करणेकरीता शेड बांधणे | | 1,83,28,393 | 1,83,28,393 |
| CE19A154# | | _ | शहरात घनकचरा संदर्भात विविध विकास कामे करणे | | 57,64,78,545 | 57,64,78,545 |
| CE19A155 | | | e-waste जमा करणे व प्रक्रिया करणे | | 40,50,000 | 40,50,000 |
| CE19A156 | | | कचरा वाहतुकीसाठी नव्याने उपनगरांमध्ये रॅम्पचे आधुनिकीकरण, विकासकामे करणे, यंत्रसामग्री | | 6,39,91,166 | 6,39,91,166 |
| CE19A157 | | | उरळी देवाची / फुरसुंगी येथे इनर्ट / रिजेक्ट मटेरीयलसाठी नव्याने शास्त्रोक्त लॅण्डफील विकसीत करणे व त्याची देखभाल दुरुस्ती करणे | | 35,24,23,438 | 35,24,23,438 |
| CE19A158 | | | पुणे महानगरपालिकाच्या नव्याने समाविष्ट होणाऱ्या गावामध्ये घनकचरा व्यवस्थापनाशी संबधीत कामे करणे | | 4,04,05,818 | 4,04,05,818 |
| CE19A163 | | | घनकचरा व्यवस्थापनाअंतर्गत विकेंद्रीत पध्दतीने प्रभाग व वॉर्डनिहाय कचरा प्रकिया केंद्र उभारणे व तदनुषंगिक कामे करणे | | 58,49,05,632 | 58,49,05,632 |
| CE19A168 | | | पुणे मनपाच्या अस्तित्वातील कचरा हस्तांतर केंद्र व हजेरीकोठ्या व विविध प्रकल्प याठिकाणी सेवकांसाठी सुविधा पुरविणे व बांधकामासाठी देखभालं दुरूस्ती करणे | | 2,84,23,185 | 2,84,23,185 |
| CE19A169 | | | स्वच्छ भारत अभियान अंतर्गत मनपाचा हिस्सा | | 20,79,13,993 | 20,79,13,993 |
| CE19A171 | | | समग्रसाठी मनपाचा हिस्सा | | 1,61,77,027 | 1,61,77,027 |

# A STUDY OF WORKING CONDITIONS AND THEIR EFFECT ON MOTIVATION OF WASTE PICKERS IN PUNE CITY.

**A Thesis**

**Submitted to**

**Tilak Maharashtra Vidyapeeth, Pune**

**For the degree of**

**Doctorate in Philosophy (Ph.D)**

**In the subject – Management**

**Under the Board of Management studies**

Estd. 1921


**By**

**Ms. Lazree Sudhir Gokhale**

**PRN:15821002654**

**Under the Guidance of**

**Dr. C. Sunanda Yadav**

**Department of Management**


**December, 2024**

# 80_Reccomendations

This chapter contains the major findings of the research and the conclusions drawn thereafter. It also contains the major suggestions and recommendations identifying the aspects to be taken into consideration for further improvement.

### 5.1 Major conclusions relating to demographic details of waste pickers:

1. Maximum task force of waste pickers falls in the age bracket of 29 to 50 years.
2. The number of females working in this occupation are almost at par with the males.
3. The illiteracy rate in this occupation is significantly higher compared to other professions. Even among the literate individuals, most possess only basic reading and writing skills, often struggling to comprehend documentation, even when presented in the regional language. Those possessing a degree or diploma instead of choosing an alternate occupation have chosen to continue waste picking as a formal source of income.
4. Majority of the waste pickers are married and have familial responsibilities which is the primary motivation behind the choice of this task.
5. A large number of respondents are conscious regarding their socio - economic status and would have one or two children. A few of them still have a traditional set of minds and either want a male heir or view children as additional hands in waste picking.
6. Maximum portion of the population is a single earner thus left with no choice than to opt for this source of income generation from the point of view of basic sustenance for themselves and their family.

**5.2 Major conclusions relating to task related stressors:**

1. Maximum respondents experience the stress on a higher level with rating 4 and 5 for tasks such as door - to - door collection of waste, segregation of waste filling of the dumpsters and sweeping of roads and collection of waste.

2. For all the three categories of task related stressors viz. waste collection from roadside and dumping sites, handling high risk items, and handling sanitary waste maximum responses are concentrated around ratings 4 and 5. This indicates that problems encountered by the waste picking fraternity on a daily basis add on to their physical stress caused by the performance of tasks.

3. For daily physical movements such as lifting and carrying heavy loads, working in tiring body positions, climbing stairs, walking long distances, pushing carts and dealing with the smell of waste the ratings from the respondents are concentrated around 3,4 and 5. Thus it can be concluded that these physical movements have a heavy toll on the physical health of the waste picking fraternity.

4. For situational stressors most of the respondents have recorded their ratings at always and often. Negligent ratings are seen to be coming for sometimes, rarely and never options. From the above inferences it can be concluded that the situations mentioned above are everyday occurring phenomena that routinely cause stress among the waste pickers.

**5.3 Major conclusions relating to working environment of the waste pickers:**

1. Maximum respondents have stated that the segregation of waste takes place along the roadside. Maximum responses have been received by monsoon followed by summer therefore it can be concluded that the most challenging season for the waste pickers is monsoon. This indicates that extreme weather conditions intervene with the working of the waste pickers.

2. Most of the respondents have agreed to the fact that they have faced negligent and careless attitude of citizens, verbal abuse, accusatory behaviour and caste-based discrimination. There have been responses recorded also for physical abuse and sexual harassment from the

respondents. These situations though showing a negligent percentage are also present.

3. Maximum respondents have agreed that they have to use the stairs despite the society having elevators whereas a few respondents have stated that they are being allowed the usage of elevators rather than climbing the stairs.

4. Most of the respondents have stated that lunch areas, facilities for washing and storage of clothes etc are not present in their respective kothis. In case of drinking water and access to separate laterals and urinals and first aid kits most respondents have agreed that they have access to the same.

5. Maximum respondents have affirmed that they have received gloves for the waste segregation process. However negligent responses have been marked for receipt of heavy-duty gloves, masks, shoes, uniform, soaps and sanitizers. 100% negative responses have been recorded for full sleeves coat and PPE kits.

6. Few respondents have agreed that they have access to extra mural facilities such as hospitals health insurance and medical benefits however maximum respondents have denied the access to such extra mural welfare. The sweepers, bigari workers are employees of Pune Municipal Corporation. DTDC workers on the contrary associated with SWaCH are members of the cooperative society. This makes them ineligible for any kind of extramural welfare facilities since they are not paid a salary but work voluntarily for fees.

7. The respondents are aware about the necessity of medical treatment for their injuries however they do not have the necessary facilities at their disposal to seek immediate assistance in case of injuries during their working day.

8. The average working hours for the waste pickers are in the range of 9 to 12 hours. The waste picking fraternity has a huge workload and requires over and above 9 hours a day to finish their tasks. This is also an indicator of the fact that the aarogya kothis cover a larger jurisdiction and that there is a need for further re allocation of work so as to reduce the number of working hours for the existing people.

9. A large number of respondents have said that they get a weekly off however they do not get sufficient breaks during working hours. The employees of Pune Municipal Corporation whether permanent or contractual are eligible for paid leaves whereas the DTDC workers being a member of a co-operative society do not have any paid leaves.

10. Permanent employees have agreed that they are eligible for provident fund, maternity benefit and employee state insurance scheme. Contractual employees on the other hand are only eligible for provident fund and do not receive any of the remaining benefits. DTDC workers on the other hand do not receive any of the above financial welfare measures.

**5.4 Major conclusions relating to physical and mental health of the waste pickers:**

1. Utmost number of respondents have agreed that they have several health risks as a consequence of their working condition whereas very few respondents have opted for an unsure answer or a negative answer.

2. Maximum respondents have stated that they have suffered from Covid-19 whereas only very few of them have not suffered from the disease. Maximum respondents do believe that they might have contracted Covid -19 owing to handling covid waste.

3. For all the hazards mentioned in the question maximum responses have been marked for always and often. This indicates that the hazards in the question are frequently exposed on the waste pickers during the performance of their jobs. Very few ratings have been given to options such as sometimes, really and never.

4. For issues such as a body ache, nausea, dizziness, skin and eye infections, and respiratory diseases maximum respondents have chosen the rankings of always and often. This indicates that the above health issues are very common among the waste pickers. For health problems such as gastrointestinal diseases and urinary tract infections the responses are mostly centred around sometimes and rarely. Thus, it can be concluded that these health issues though affecting the waste picking population are present in moderation.

5. Maximum respondents have agreed that they are at risk of injury or accident because of their work whereas very few respondents do not feel that they are at a risk of any injury or accident because of their work.

6. Most respondents have stated that they have been a part of road accidents or frequently suffer from cuts and abrasions whereas very few respondents have denied any such health hazards from their jobs. On the other hand, risk for injuries associated with acid burns and attack from stray animals received lesser ratings from the respondents. Most of the respondents have stated that they tend to their injuries at the end of the day.

7. From all the emotional issues arising out of the job exhaustion, frustration, apathy and burnout are the issues which have received the highest ratings.

8. The most common addiction among the waste pickers is the consumption of tobacco, Pan, Pan Masala and Mishri. The second most common addiction is alcoholism followed by smoking. Consumption of Ganja and others inebriants is fourth in the ranking. Maximum respondents are of the opinion that they have fallen prey to these addictions because of the nature of their working conditions. Very few respondents do not feel that their jobs or the resultant working conditions and stress are responsible for they are addictions.

*Thus, in a nutshell it can be noted that the task related stressors have in general received high ratings from the respondents.*

*Also, the overall ratings for the working conditions and working environment are towards the negative side.*

*The overall physical mental and spiritual health of the entire waste picking fraternity is also seen to be affected by the nature of work, task related stressors and the working conditions.*

*Hence from the conclusions derived by the researcher in 5.2, 5.3 and 5.4 the following hypotheses are proved.*

*For hypothesis 1:*

- ***H1: The task related challenges have an effect on the physical and mental health of the waste pickers.***

*For hypothesis 2:*

- ***H1: The working environment has an effect on the physical and mental health of the waste pickers.***

**5.5 Major conclusions relating to nature of employment:**

1. Almost half of the task force is recruited as sweepers. The sweepers as well as the bigari workers are either permanent or contractual in their employment which makes them eligible for a minimum take home pay and other works as applicable.

2. The remaining half of the task force i.e. the door-to-door collection workers are members of the SWaCH coop cooperative and are not employed in any manner by the Pune Municipal Corporation.

3. The responses indicating fear of job loss cumulatively are concentrated around always, often and sometimes. However, a significant number of people have also rated never as a rating for thinking about job loss. Thus, the researcher would like to conclude that the responses are bifurcated between two extremes when it comes to fear of job loss and also that this occupation lacks reasonable job security and make it a mandate for the job performer to perform his task daily tasks in order to earn livelihood.

4. For timeliness of salaries maximum respondents have agreed that they receive their salary on time and the other half respondents have stated that they do not receive their salaries on time whereas DTDC fees are greatly denied to the waste pickers thereby making them rely only on the sale of scrap for the purpose of survival.

*In a nutshell it can be noted that conclusions relating to nature of employment indicate that for most respondents this is an 'occupation of no choice' which they have taken up merely with the objective of sustenance.*

*The conclusions associated with the nature of employment also indicate that the hygiene factors in this occupation are dissatisfactory whereas there is an absence of motivational factors in the occupation.*

*Hence from the conclusions derived by the researcher in, 5.3 and 5.5 the following hypothesis is proved.*

*For hypothesis 3:*

- ***H1: There is dissatisfaction amongst the waste pickers with regards to the hygiene factors.***

### 5.6 Recommendations and suggestions:

Based on the conclusions drawn during the research; the researcher would like to give following suggestions and recommendations to the various stake holders in the waste collection process.

#### 5.6.1 Suggestions and recommendations to the Pune Municipal Corporation PMC:

Waste collection is a key function of any governing body and therefore the PMC's attempt to entirely decentralize this function in terms of manpower management needs to be changed. Hence, following suggestions are presented to the Pune Municipal Corporation:

##### 5.6.1.1 Immediate interventions:

1. **Extension of contract with SWaCH:** The PMC has an ongoing contract with SWaCH for one year. However, the contract extension has been secured by SWaCH after several protests and follow ups with the Pune Municipal Corporation. The researcher would like to recommend PMC to extend the contract with SWaCH in bouts of 5 years. This extension shall provide reasonable job security to the waste picking fraternity by giving them the 'right to waste'.

2. **Positive interventions in contractual employment:** For those employees who are on contractual employment the Pune Municipal Corporation needs to undertake positive interventions from time to time with regards to full payment of wages and timely payment of salaries. For the same PMC needs to ensure timely clearance of bills of contractors and also ensure compliance from contractors and for timely dissemination of salary.

3. **Sanctioning welfare facilities for all waste pickers:** Welfare facilities and social security measures are an essential right of every employee irrespective of the nature of his employment whether permanent contractual or otherwise. While permanent employees are receiving all welfare facilities appropriately contractual employees and members of SWaCH are being denied the privilege of social security measures. Basic social security measures such as provident fund, medical and sickness benefit, maternity benefit, scholarships for higher education, dependents benefit etc. should be made available to all waste pickers irrespective of their nature of employment.

4. The researcher would like to note that the legislations governing these social welfare measures define the term 'employee' and therefore may not be applicable to all. Hence PMC can either design standalone welfare programs based on the lines of these social security measures for the waste pickers or ensure the dissemination of all national schemes mentioned in the 'The Unorganised Labour Social Securities Act, 2008 [1] through education, awareness and 'one window facility' to all the beneficiaries.

5. **Rigid and prompt compliances of PPE and intramural welfare facilities**: The Swachh Bharat manual elaborates the guidelines for maintaining the health and sanitation of the waste pickers. The manual clearly specifies the role of the governing body in providing personal protective equipment such as gloves, heavy duty gloves, shoes, full sleeves jacket, masks, soap and sanitizers. The PMC needs to ensure prompt compliance of the availability of these personal protective equipment and basic intramural welfare facilities in all aarogya kothis.

**5.6.1.2 Intermediate interventions:**

1. **Mobilisation of resources to SWaCH**: One of the preliminary lacunae of the SWaCH coop model is the fact on door-to-door collection fees is the prima facie income of its members. Citizens on the contrary avoid paying the door-to-door fees to the waste pickers denying them they are rightful income. From the citizens perspective they have already paid the taxes to the Pune Municipal Corporation and therefore expenditure towards waste management is the PMC's forte. The Reliance of PMC on the task force of SWaCH for waste collection is understandable however the Pune Municipal Corporation needs to mobilize resources to Swatch in terms of funds and grants so as to facilitate growth and the same time financial sustenance of its members.

2. **Extension of the SWaCH coop model:** The SWaCH coop model is effective in bridging the gap between the waste pickers and the waste; however, only a standalone unit for the same is insufficient for the growing boundaries and population of Pune city. With this

[1] The Unorganised Labour Social Securities Act, 2008: Legislation for providing various social security benefits to unorganized workers.

drawback in sight the Pune Municipal Corporation should extend the SWaCH coop model to incorporate new institutions and accommodate more such self- help organisations.

3. **Creation of awareness amongst citizens for segregation and disposal of waste:** The PMC also is to focus on creation of consciousness amongst the citizens regarding the segregation and management of waste. This can be achieved through seeking the cooperation of various educational institutions for making a mass appeal to the citizens regarding the correct methods of segregation and waste disposal.

**5.6.1.3 Long term interventions:**

1. **Mechanisation of waste collection process**: In the long run, the PMC can initiate efforts for the mechanization of the waste collection process. so as to achieve no-touch segregation of waste and 100% recycling of biodegradable waste in order to achieve the proposed zero waste model of SWM - G25.

2. **Promotion of CSR[2] initiatives towards waste management:** The local governing body can solicit the support of various corporate houses and promote CSR initiatives towards waste management. For instance the contribution of Adar Poonawalla Clean City Initiative[3] significantly contributes to waste management in Pune by taking on the responsibility of waste management to help ease the burden on the local governing body.

*It is noted by the researcher that the financial provisions required for the implementation of above suggestions for employee welfare are already made by Pune Municipal Corporation every year. Therefore, it merely remains to be a matter of execution to bring the above strategies into practice. Excerpts from annual budgets of Pune Municipal Corporation have been attached in the annexures to the thesis to justify the presence of funds for solid waste management initiatives.*

[2] CSR: Corporate Social Responsibility
[3] Adar Poonawalla clean city initiative: Initiative for improving the environment and waste management in Pune city.

### 5.6.2 Suggestions and recommendations to SWaCH:

The SWaCH coop model has received critical a claim from various stakeholders in the society and is successful to a large extent in helping the waste pickers achieve their right to waste. However, in tune with the conclusions drawn during this research the following suggestions are proposed to the solid waste collection and handling unit SWaCH:

#### 5.6.2.1 Immediate interventions:

1. **Creation of awareness amongst citizens regarding challenges of waste pickers**: SWaCH as a representer of the waste pickers fraternity should undertake awareness programs among citizens regarding the challenges faced by the waste pickers during their day to day working. These awareness sessions can be held with the involvement of various educational institutions such as schools, colleges, hostels, NSS[4] units etc.

2. **Promotion of adult education programmes**: SWaCH can create awareness and promote adult education programs with a view to enhancing the literacy rate and to make the waste picking fraternity self - reliant in terms of reading and writing.

3. **Offering various training programmes**: The respondents have themselves shown an inclination towards various training programs especially first aid, commercial activities other than waste picking, financial literacy program etc. SWaCH in collaboration with various educational bodies can identify the need for such training programs and ensure that the waste pickers are provided the same.

#### 5.6.2.2 Intermediate interventions:

1. **Alternate employment generation initiatives:** SWaCH an institution has already been providing alternate employment generation opportunities to the waste pickers.
   - The Red Dot initiative[5] campaign organised by SWaCH plays a pivotal role in creating awareness among the citizens regarding the packaging of sanitary waste. The waste pickers have been preparing paper envelopes containing the red dots exclusively to be used for packing sanitary waste and selling them across the city.

[4] NSS: National Service Scheme
[5] The Red Dot initiative: An awareness programme for the safe disposal of sanitary pads and diapers

- Similarly paper bag making workshops, compost and manure creation workshops are also organised by SWaCH for creating alternate employment opportunities.

SWaCH can further enhance the extent and scope of these programs by soliciting the help of the Pune Municipal Corporation, educational institutions and CSR initiatives offered by various corporate houses.

2. **Rehabilitation programmes for waste pickers:** Addiction related issues in the waste picking fraternity require holistic attention in terms of awareness, medication, interventions and rehabilitation. The rehabilitation programs for alcoholism, drug abuse etc are of crucial importance and can be organised by SWaCH in collaboration with various medical institutions and anti-addiction groups.

**5.6.2.3 Long term interventions:**

1. **Extension of SWaCH coop model across state and seeking state government support:** The SWaCH model can be expanded to other municipal corporations, municipalities, and Zilla Parishads across the state, creating a unified platform for waste pickers and strengthening their bargaining power to secure their rights.

**5.6.2.4 Limitations of research and scope of further studies:**

1. The research is focused geographically on Pune city only; similar research can be undertaken in other cities of India.
2. The researcher has not considered the sanitation workers since their working conditions vary from the rest of the waste management team; similar research may be performed with them in focus.
3. This research is limited to a time frame of three years restricting the selection of the sample. Similar study may be undertaken with a larger number of respondents depending upon the availability of time and resources.

***Plagiarism Report*** **Ph.D.** *Date- 27/11/2024*

**Gokhale Lazree**

**Department – Management**

**PRN.- 15821002654**

**Title – " A Study of Working Conditions And Their Effect On Motivation of Waste Pickers in Pune City "**

| | |
|---|---|
| **Chapter 1 INTRODUCTION** | 8% |
| **Chapter 2 REVIEW OF LITERATURE** | 2% |
| **Chapter 3 RESEARCH METHODOLOGY** | 8% |
| **Chapter 4 ANALYSIS & INTERPRETATION** | 10% |
| **Chapter 5 CONCLUSION/FINDINGS/RECOMMENDATIONS** | 6% |

Head of Ph.D. Department

Tilak Maharashtra Vidyapeeth ★ Pune ★ Ph.D. Dept.