**CHAPTER 1**

**INTRODUCTION**

Waste management is a critical aspect of urban development, and with the growing population and urbanization, effective waste management strategies are essential to address environmental concerns. In recent years, various community-driven initiatives have emerged to combat the challenges posed by increasing waste generation. One such initiative is the Harithakarma Sena, a grassroots organization committed to promoting environmental sustainability through community engagement and waste management.

Harithakarma Sena, which translates to "Green Action Army," operates with the mission of creating a cleaner and greener environment by actively involving local communities in waste management practices. This study aims to assess the effectiveness of Harithakarma Sena in waste management, focusing on its strategies, community involvement, and overall impact on waste reduction and environmental conservation.

Kerala has taken a great leap towards achieving the goal of a zero-waste state by adopting a digital solution to waste management. This is in keeping with their efforts to make waste management more efficient which includes enhancing the efficiency of door-to-door collection service through Haritha Karma Sena (Green Task Force) and allied services.

Haritha Keralam Mission, along with the Suchitwa Mission, last year launched a smart garbage monitoring system named Haritha Mithram Smart Garbage Monitoring System App. The App helps to streamline the activities of Haritha Karma Sena and its waste management interventions through time-to-time monitoring of various functional aspects covering the volume of generation from each waste source, its collection, transportation, and various other enormous processes that follow.

Under the Nava Keralam Karma Padhathi programme launched by the state government, almost all the Local Self Government Departments (LSGDs) have been integrated with a seamless chain that connects door-to-door waste collection by the Haritha Karma Sena, maintaining the mini material collection centres (MCC), material collection centres (MCF), resource recovery facilities (RRF), domestic and institutional level bio-waste, disposal of material, and the installation and operation of organic waste management systems at household and institutional levels. The activities under this network system are monitored from ward level to state level through this unified online platform called the Haritha Mithram App.

**1.2 SIGNIFICANCE OF THE STUDY**

The new challenge of the world, that is managing the waste. In Keralam,the Kudumbashree Mission –Haritha Karma Sena -will work togther with Haritha Keralam Mission, Suchitwa Mission and Clean Kerala Company for a garbage-free state. The power to select Haritha Karma Sena are entrusted with the local bodies.Haritha Karma Senas are working with the objective of ensuring employment and income through the collection and treatment of waste materials, thereby finding a solution to the waste problem faced by Kerala to some extent.The importance of waste management in Kerala cannot be overstated. With a population of over 33 million people and growing urbanization, the amount of waste generated in the state has increased dramatically. Poor waste management practices can lead to environmental degradation, health hazards, and even economic losses.

**1.3 STATEMENT OF THE PROBLEM**

The problem statement revolves around the effective management of solid waste, particularly in the context of the Haritha Karma Sena, an environmental initiative. This involves addressing issues such as waste collection, segregation, recycling, and disposal, while also considering the role and effectiveness of the Haritha Karma Sena in implementing sustainable waste management practices. Key aspects may include infrastructure, community engagement, policy support, and the integration of innovative technologies for efficient waste management.

**1.4 OBJECTIVES OF THE STUDY**

* To evaluate the effectiveness of Harithakarma Sena
* To access the socio economic status of harithakarma sena workers
* Suggesting recommendations for improving the efficiency and sustainability of solid waste management practices facilitated by Harithakarma Sena

**1.5 SCOPE OF THE STUDY**

The scope of the study involves examining various aspects of solid waste management, particularly within the context of the Harithakarma Sena initiative. This could include analyzing methods for waste collection, segregation, recycling, and disposal implemented by the Harithakarma Sena, as well as assessing their effectiveness, challenges faced, and potential for scalability or improvement. Additionally, the scope may encompass exploring the socio-economic and environmental impacts of the initiative, comparing it with other solid waste management strategies, and identifying opportunities for collaboration or further research.

**1.6 RESEARCH METHODOLOGY**

This study will employ a mixed-methods approach, combining quantitative data collection through surveys and waste audits with qualitative methods such as interviews and focus group discussions. The research will be conducted in selected urban areas where Harithakarma Sena is actively involved in waste management activities.

**1.6.1 Research design**

According to Burns and Grove research design is defined as “a blue print for conducting a study with maximum control over factors that may interfere with the validity of the findings”.

The research design is probability research design and is descriptive in nature.

**1.6.2 Area Of The Study**

The study is conducted at Kannur district.

**1.6.3 Sample Size**

The study was conduct a sample of 35 respondents

**1.6.4 Sampling Technique**

In this project probability sampling is used and simple random sampling is chosen from probability sampling. Simple random sampling from a finite population refers to that method of sample selection, which gives each sample combination in equal probability of being picked up and each item in the entire population to have an equal chance of being included in the sample.

**1.6.5 Sources of Data**

* **Primary data**

Primary data was collected from Kannur district by distribution of questionnaire.

* **Secondary data**

Secondary data was collected through various mediums such as web portals, reference books relating to the subject.

**1.6.6 Tools for data analysis**

Interview schedule was used for collection the primary data. The collected data was analysed by using percentage method. Diagrams and tables were also used to present the data where ever necessary.

**1.7 LIMITATIONS OF THE STUDY**

* The study was conducted within a very short period of time so detailed study could not be made.
* Some of the respondents were not cooperative
* Study is based on limited samples so conclusion derived from this study cannot be generalized.

**1.8 CHAPTER SCHEME**

The study has been arranged into 5 chapters.

* The first chapter deals with introduction, statement of the problem, objectives, scope, research methodology and limitations of the study.
* The second chapter deals with Review of literature
* The third chapter deals with theoretical frame work.
* The Fourth chapter includes analysis and interpretation of collected data.
* Fifth chapter deals with summary, findings, suggestions and conclusion of the study.

**CHAPTER 2**

**REVIEW OF LITERATURE**

**Ashish.R.Mishra, et.al (2014)** studied solid waste management this was case study. This present paper based on study carried out on solid waste management by Yavatmal Municipal Corporation. Total solid waste generation was 24 tons/day in yavatmal city and 36 to 40 metric tons of waste generated per year .in this paper most focus on 6 steps as follows waste generation, storage, collection, segregation and processing, disposal. Where start collection of solid waste from door to door then community bins after transfer station and finally to disposal sites. There is site for solid waste management at village swaged situated at 8 km from the yavatmal city. Disposal of solid waste is done by following composting and land filling.

**Vaishali Anagal, et.al (2015)** sustainable solid urban waste management is one type of case study. They studied in pune ARTI technology used for waste disposal. Using this technology biogas is generated KKPKP is very strong union play major role for economical sustainable waste management and waste recycling to next generation this improve the living standard .In this paper they had focus on slum, peri urban and low income areas. Waste disposal also create income source for poor people.

**Gianpaolo Ghiani, et.al (2012)** studied capacitated location of collection sites in an urban waste management system in this paper we have faced the problem of locating collection sites in an urban waste management stem. We have proposed an optimization model which helps deciding the sites where to locate the garbage collection bins, as well as the number and the characteristics of the bins to be positioned at the different collection sites. This model introduces constraints that, from one side, ensure the Quality of Service from the citizens’ point of view, and, from the other side, allocate bins to collection sites, so to provide the least necessary capacity to fit the expected waste to be directed to the sites.

**Maher Arebey, et.al (2010)** “Integrated advances for robust waste receptacle screening system”. They studied strong waste of the receptacle also truck couch need aid continuously screen utilizing produced frame work. Utilizing technologic for example, RFID (radio recurrence identification), GPRS (general packer radio system) with Polaroid would constructed to robust waste checking framework. Those following units mounted in the trucks gather area data progressively through those GPS. This data is exchanged ceaselessly through GPRS with a vital database. Those clients have the ability with perspective the current area from claiming each truck couch in the gathering stage through a web-based provision What's more thereby wrist bindings that armada. Those trucks positions Also junk canister majority of the data need aid shown around an advanced

**Subramani 2012** the pollution and diseases human induced climate change increasing recognized crucial treat and natural variability climate change is altering migratory species attern, causing coral bleaching etc.

**Subramani 2012** the pollution and diseases human induced climate change increasing recognized crucial treat and natural variability climate change is altering migratory species attern, causing coral bleaching etc.

**Tichobanoglous G and Frank K 2002-** this study evaluates household waste management method and their attitudes and way of behaviors of communities in Bilaspur city. The study identify some household view and attitude in relation to waste disposal that are important in designing community based waste management programs, Especially the light of the country's new law all ecological solid waste management. The study shows the basic economic benefits if we are following the resource recovery practices at the household level.

**Vassilis 2015** this study conveys about waste method of households hazardous waste (HHW) presenting over all information. This review conveys that in legislation the hazardous waste generated within the household is not clearly defined, so there is absence of proper acts controlling the management of HHW. The lack of proper acts to separate HHW from the house waste and the different uses of terminology make it difficult to determine the quantities and generation amount is relatively small.

**CHAPTER 3**

**PROFILE OF THE STUDY**

The waste at the household or dumpsites shows that there are mainly organic and inorganic wastes. Organic waste include substances such as food leftovers, papers, wood and plant remain. These are also regarded as compost materials because they can easily decompose. The inorganic materials include glass , metals , plastics , electronic materials and others.

**3.1.1 SOLID WASTE**

A “solid waste’’ is defined as any discarded material that is abandoned by being disposed of , burned or incinerated , recycled or considered “waste-like’’. A solid waste can physically be a solid, liquid , semi-solid , or container of gaseous material. Solid waste includes garbage , construction debris , commercial refuse , sludge from water supply or waste treatment plants , or air pollution control facilities, and other discarded materials. Solid waste can come from industrial, commercial, mining, or agricultural operations, and from household and community activities. Solid waste does not include wastes such as solid or dissolved materials , or source special nuclear , or by-product material as defined by federal law. The management of solid waste can include source reduction, recycling, storage, collection, transportation, processing, and disposal. Solid waste facilities include landfills, composting sites, transfer stations, incinerators, and processing facilities. Such facilities may be publically or privately owned.

**3.1.1.1 Classification of Solid Waste**

A typical classification of solid waste are in the following.

1. Garbage - Putrifiable ( decomposable) waste from food , slaughter – houses , canning and freezing industries etc.
2. Rubbish - Non putrifiable combustible wastes either combustible or non-combustible would include paper , wood , cloth , rubber , leather and garden wastes. Non-combustible include metal glass ceramics , stones , dirt masonry and some chemicals.
3. Ashes - Residues ( such as cinders and fly ash) of the combustions of solid fuels for heating and cooking or the incineration of solid waste by municipal industrial and apartment of house incinerators.
4. Large wastes - Demolition and construction rubber (pipes , lumber , masonry , brick , plastic , roofing and insulating materials) , automobiles , furniture , refrigeratrs and other home appliances.
5. Dead animals - Household pets ,birds , zoo animals etc. there are also anatomical and pathological wastes from hospitals.
6. Sewage treatment process solids screenings , settled solids sludge
7. Industrial solid wastes - Chemical, paints, sand explosives etc.
8. Mining wastes – ‘‘tailings’’
9. Agricultural wastes - Farm animal manure , crop residuals etc.

**3.1.2 Classification on the basis of origin of solid waste**

On the basis of origin , the above solid wastes can be further divided into:

1. Household wastes generally classified as MSW
2. Industrial wastes including hazardous waste
3. Biomedical wastes or hospital wastes known as infectious wastes

**3.1.2 TYPES OF WASTE DISPOSAL**

There are eight major groups of waste management methods.

Landfill: The landfill is an effective procedure or waste disposal in present time. This process of waste removal focuses the attention on burying the waste in land. Landfills are found in all areas. There is a process used that reduces the odours and hazards of waste before it is placed into the ground. While this is the most popular way of waste disposal, it is surely far from the only procedure and one that may also bring with it an assortment of space.

Road tarring is a crucial aspect of infrastructure maintenance and development. It involves the application of bitumen and aggregate materials to create a smooth and durable surface for vehicles to travel on. Tarring not only enhances the aesthetics of roads but also improves their functionality and safety. The process begins with the preparation of the road surface, followed by the application of a bituminous binder and then the spreading of aggregate materials. Finally, the surface is compacted to ensure its strength and longevity. Properly tarred roads contribute significantly to the overall efficiency of transportation networks, facilitating smoother journeys for commuters and promoting economic growth.

Incineration: incineration or it is also called combustion is also an important waste disposal procedure in which municipal solid wastes are burned at high temperatures so as to convert them into remains and gaseous products. Major benefits of this type of method is that it can reduce the volume of solid waste to 20% to 30% of the original volume, reduces the space they take up and reduce the stress on landfills.

Recovery: Resource recovery is the method of collecting useful leftover items for further use. These discarded items are then processed to extract or recover materials and resources or convert them to energy in the form of useable heat, electricity or fuel.

Recycling: Recycling is also effectual process of managing waste. It is the collection and use of materials that would otherwise have been unwanted as the raw materials in the production of new products. It is the process of converting waste products into new products to avoid energy usage and utilization of fresh raw materials. Recycling is the third component of reduce, reuse and recycle waste hierarchy. Main principle recycling is to reduce energy usage, reduce volume of landfills, reduce air and water pollution, reduce greenhouse gas emissions and preserve natural resources for future use.

Composting: Composting is a natural procedure to handle waste in this method , food craps , yard trimmings , and other organic materials are collected and allowed to decompose under controlled conditions into a rich , soil- like substances called compost. Composting is an easy and natural bio- degradation method that takes organic wastes that is remains of plants and garden and kitchen waste and turns into nutrient rich food for plants.

Waste to Energy (Recover Energy): In Waste to energy method, non-recyclable waste items are converted into useable heat, electricity, or fuel through a variety of processes. This type of source of energy is a renewable energy source as non-recyclable waste can be used over again to create energy. It can also assist to decrease carbon emissions by offsetting the need for energy from fossil sources.

Avoidance/Waste Minimization: The simple procedure to manage waste is to reduce creation of waste materials thus reducing the amount of waste going to landfills. Waste reduction can be done through recycling old materials like jar, bags, repairing broken items instead of buying new one, avoiding use of disposable products like plastic bags, reusing second hand items, and buying items that uses less designing.

Recycling and composting are considered as effective methods of waste management. Composting is so far only possible on a small scale, either by private individuals or in areas where waste can be mixed wit

**3.1.3 WASTE MANAGEMENT**

Waste management is a critical global challenge that demands innovative solutions and community-driven initiatives. In recent years, the emergence of organizations dedicated to environmental stewardship has played a pivotal role in addressing the escalating concerns associated with waste generation. One such entity making strides in this realm is the "Harithakarma Sena."

Harithakarma Sena, a dynamic force committed to environmental sustainability, has been actively engaged in waste management initiatives within [mention the specific region or community]. This organization has garnered attention for its comprehensive approach to waste reduction, recycling, and community participation. As we delve into the effectiveness of Harithakarma Sena in waste management, it is imperative to explore key aspects such as waste diversion rates, community engagement, technological innovations, and the broader impact on the local environment.

This examination aims to shed light on the strategies employed by Harithakarma Sena, evaluating their efficiency in achieving sustainable waste management goals. By understanding the organization's initiatives and their impact on the community and environment, we can gain valuable insights into the broader landscape of waste management and the role of grassroots movements in fostering positive change.

Educational initiatives can raise awareness about sustainable waste practices among residents.

**3.1.3.1 Purpose**

* **Assessment of Environmental Impact:**

Understanding how Harithakarma Sena's waste management initiatives contribute to environmental conservation, reduction of pollution, and preservation of natural resources.

* **Community Well-being and Health:**

Evaluating the impact of waste management practices on the health and well-being of the local community, ensuring that the initiatives protect residents from potential hazards.

* **Resource Recovery and Recycling:**

Assessing the organization's success in maximizing resource recovery through recycling, composting, and other sustainable practices, thereby reducing the reliance on virgin materials.

* **Community Engagement and Awareness:**

Examining the extent to which Harithakarma Sena engages the local community in waste management efforts and how effective they are in raising awareness about sustainable waste practices.

* **Job Creation and Economic Benefits:**

Evaluating whether Harithakarma Sena's waste management initiatives contribute to job creation and economic benefits for the community, such as revenue generation through recycling.

**CHAPTER 4**

**DATA ANALYSIS AND INTERPRETATION**

**TABLE 4.1**

**PLACE OF RESIDENCE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Urban  | 20 | 57.14 |
| Rural | 15 | 42.86 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.1**

**PLACE OF RESIDENCE**

**INTERPRETATION**

Above table and graph shows that 57.14% of the respondents are from urban area while 42.86% of them are from rural area.

**TABLE 4.2**

**AGE WISE CLASSIFICATION**

|  |  |  |
| --- | --- | --- |
| **PARTICULARS** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Below 30 years | 6 | 17.14 |
| 31-35 years | 16 | 45.71 |
| 35-40 years | 10 | 28.57 |
| Above 40 years  | 3 | 8.57 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.2**

**AGE WISE CLASSIFICATION**

**INTERPRETATION**

Above table and graph shows that 45.71% of the respondents are from the age group of 31 to 35 years. 28.57% of the respondents are from the age group of 35 to 40 years. 17.14% of the respondents belongs to the age group of below 30 years. 8.57% of the respondents belongs to the age group of above 40 years.

**TABLE 4.3**

**EDUCATION**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| SSLC | 7 | 20.00 |
| HSS/PDC | 9 | 25.71 |
| Diploma  | 8 | 22.86 |
| Graduate  | 6 | 17.14 |
| Other | 5 | 14.29 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.3**

**EDUCATION**

**INTERPRETATION**

Above table and graph shows that 25.71% of the respondents have HSS/PDC. 22.86% of the respondents have diploma. 20% of them have SSLC while 17.14% of them are graduates. 14.29% of the respondents have other educational qualification.

**TABLE 4.4**

**TYPE OF FAMILY**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Nuclear  | 28 | 80.00 |
| Joint  | 7 | 20.00 |
| **TOTAL** | **35** | **100.00** |

Source: Primary Data

**FIGURE 4.4**

**TYPE OF FAMILY**

**INTERPRETATION**

Above table and graph shows that 80% of the respondents are from Nuclear family. 20% of the respondents have Joint family.

**TABLE 4.5**

**ECONOMIC STATUS**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| APL | 3 | 8.57 |
| BPL | 28 | 80.00 |
| Other  | 4 | 11.43 |
| **TOTAL** | **35** | **100.00** |

Source: Primary Data

**FIGURE 4.5**

**ECONOMIC STATUS**

**INTERPRETATION**

Above table and graph shows that 80% of the respondents have BPL card. 11.43% of the respondents have other card. 8.57% of the respondents have APL card.

**TABLE 4.6**

**SOURCE OF WASTE GENERATION**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Domestic  | 20 | 57.14 |
| Commercial  | 10 | 28.57 |
| Both  | 5 | 14.28 |
| **TOTAL** | **35** | **100.00** |

Source: Primary Data

**FIGURE 4.6**

**SOURCE OF WASTE GENERATION**

**INTERPRETATION**

Above table and graph shows that 57.14% of the respondents said that main source of waste generation is domestic. 28.57% said commercial and 14.28% of them said that both domestic and commercial is the source of waste generation.

**TABLE 4.7**

**DAY HAVE BEEN ENGAGED IN THIS SERVICE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Below 1 year | 4 | 11.43 |
| 1-2 year | 18 | 51.43 |
| Above 3 year | 13 | 37.14 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.7**

**DAY HAVE BEEN ENGAGED IN THIS SERVICE**

**INTERPRETATION**

Above table and graph shows that 51.43% of the respondents engaged in this services for 1 to 2 years. 37.14% of the respondents engaged in this services from above 3 years. 11.43% of the respondents engaged in this service for below 1 year.

**TABLE 4.8**

**METHOD OF REMUNERATION**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Fixed Amount  | 25 | 71.43 |
| Collection base | 10 | 28.57 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.8**

**METHOD OF REMUNERATION**

**INTERPRETATION**

Above table and graph shows that 71.43% of the respondents have fixed amount as remuneration. 28.57% of the respondents have remuneration collection base.

**TABLE 4.9**

**KIND OF WASTE COLLECT FROM THE PLASTIC**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Medicine strips  | 6 | 17.14 |
| Broken glass | 3 | 8.57 |
| Tooth paste | 9 | 25.71 |
| E Waste  | 7 | 20.00 |
| Leather product  | 10 | 28.57 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.9**

**KIND OF WASTE COLLECT FROM THE PLASTIC**

**INTERPRETATION**

Above table and graph shows that 28.57% of the respondents collect leather product waste. 25.71% of the respondents collet tooth paste from the plastic. 20% collect E waste, 17.14% collect medicine strips and 8.57% of the respondents collect broken glass from the plastic.

**TABLE 4.10**

**ARE THE PLASTIC COVER AS CLEAN AS YOU SUGGESTED**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 28 | 80.00 |
| No  | 7 | 20.00 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.10**

**ARE THE PLASTIC COVER AS CLEAN AS YOU SUGGESTED**

**INTERPRETATION**

Above table and graph shows that 80% of the respondents said that plastic covers are as clean as they suggested. 20% of the respondents said that plastic covers are not as clean as they suggested.

**TABLE 4.11**

**WASTE STORAGE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Basket  | 30 | 85.71 |
| Plastic container bag | 5 | 14.28 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.11**

**WASTE STORAGE**

**INTERPRETATION**

Above table and graph shows that 85.71% of the respondents use basket for waste storage. 14.28% of the respondents use plastic container bag for waste storage.

**TABLE 4.12**

**WHAT IS THE USER FEE NOW**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Domestic(50)  | 33 | 94.29 |
| Commercial (100 ) | 2 | 5.71 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.12**

**WHAT IS THE USER FEE NOW**

**INTERPRETATION**

Above table and graph shows that 94.29% of the respondents said that domestic is user fee now. 5.71% of the respondents said that commercial is user fee now.

**TABLE 4.13**

**ANY ADDITION CHARGED ON WASTE OTHER THAN PLASTIC**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 19 | 54.29 |
| No  | 16 | 45.71 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.13**

**ANY ADDITION CHARGED ON WASTE OTHER THAN PLASTIC**

**INTERPRETATION**

Above table and graph shows that 54.29% of the respondents said that they charged addition charges on waste other than plastic. 45.71% of the respondents said that don’t charge addition charges on waster other than plastic.

**TABLE 4.13**

**METHOD ARE USED FOR DISPOSAL OF WASTE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Recycle  | 24 | 68.57 |
| Other purpose  | 11 | 31.43 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.14**

**METHOD ARE USED FOR DISPOSAL OF WASTE**

**INTERPRETATION**

Above table and graph shows that 68.57% of the respondents said that they use recycle method for disposal of waste. 31.43% of the respondents said that they use other methods for disposing waste.

**TABLE 4.15**

**HOW FREQUENTLY WASTE DISPOSAL TAKING PLACE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Daily  | 4 | 11.43 |
| Weekly  | 3 | 8.57 |
| Monthly  | 25 | 71.43 |
| Other  | 3 | 8.57 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.15**

**HOW FREQUENTLY WASTE DISPOSAL TAKING PLACE**

**INTERPRETATION**

Above table and graph shows that 71.43% of the respondents said that waste disposal take place monthly. 11.43% of the respondents said that waste disposal take place daily. 8.57% of the respondents each said that waste disposal take place weekly or other time.

**TABLE 4.16**

**RECEIVED TRAINING FROM PANCHAYAT/ LOCAL SELF GOVT ON SOLID WASTE MANAGEMENT**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 34 | 97.14 |
| No | 1 | 2.86 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.16**

**RECEIVED TRAINING FROM PANCHAYAT/ LOCAL SELF GOVT ON SOLID WASTE MANAGEMENT**

**INTERPRETATION**

Above table and graph shows that 97.14% of the respondents received training from panchayat/local self govt on solid waste management. 2.86% of the respondents not received training from panchayat/local self govt on solid waste management.

**TABLE 4.17**

**CONCERNED ABOUT THE HEALTH IMPACTS OF THIS SERVICE**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 27 | 77.14 |
| No | 8 | 22.86 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.17**

**CONCERNED ABOUT THE HEALTH IMPACTS OF THIS SERVICE**

**INTERPRETATION**

Above table and graph shows that 77.14% of the respondents concerned about the health impacts of this service. 22.86% of the respondents not concerned about the health impacts of this service.

**TABLE 4.18**

**HAVE ANY HEALTH ISSUES**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 35 | 100.00 |
| No  | 0 | 0.00 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.18**

**HAVE ANY HEALTH ISSUES**

**INTERPRETATION**

Above table and graph shows that the entire respondents have health issues.

**TABLE 4.19**

**TYPES OF HEALTH ISSUES**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Respiratory issues | 16 | 45.71 |
| Skin problem  | 10 | 28.57 |
| Chronic pain  | 9 | 25.71 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.19**

**TYPES OF HEALTH ISSUES**

**INTERPRETATION**

Above table and graph shows that 45.71% of the respondent have respiratory issues. 28.57% have skin problem and 25.71% of the respondents have chronic pain.

**TABLE 4.20**

**HAVE ANY FINANCIAL PROBLEM**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 20 | 57.14 |
| No  | 15 | 42.86 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.20**

**HAVE ANY FINANCIAL PROBLEM**

**INTERPRETATION**

Above table and graph shows that 57.14% of the respondents have financial problem. 42.86% of the respondents have no financial problem.

**TABLE 4.21**

**TYPE OF FINANCIAL PROBLEM**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Lack of income | 10 | 28.57 |
| Too much debt | 17 | 48.57 |
| Unexpected expenditure  | 6 | 17.14 |
| Lack of savings  | 2 | 5.71 |
| **TOTAL** | **35** | **100.00** |

Source: Primary Data

**FIGURE 4.21**

**TYPE OF FINANCIAL PROBLEM**

**INTERPRETATION**

Above table and graph shows that 48.57% of the respondents have too much debt. 28.57% of them have lack of income. 17.14% of them have unexpected expenditure and 5.71% of the respondents have lack of savings.

**TABLE 4.22**

**ALL PEOPLE CO-OPERATE WITH YOU**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 35 | 100.00 |
| No  | 0 | 0.00 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.22**

**ALL PEOPLE CO-OPERATE WITH YOU**

**INTERPRETATION**

Above table and graph shows that the entire respondents agreed that all people co-operate with them.

**TABLE 4.23**

**SOCIAL STATUS OF THIS JOB WERE VERY LOW**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 10 | 38.57 |
| No | 25 | 71.43 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.23**

**SOCIAL STATUS OF THIS JOB WERE VERY LOW**

**INTERPRETATION**

Above table and graph shows that 71.43% of the respondents disagreed that social status of this job were very low while 38.57% of the respondents agreed that social status of this job is very low.

**TABLE 4.24**

**PEOPLE PAYING USER FEE PROPERLY**

|  |  |  |
| --- | --- | --- |
| **RESPONSES** | **NO. OF RESPONDENTS** | **PERCENTAGE** |
| Yes  | 32 | 91.43 |
| No  | 3 | 8.57 |
| **TOTAL** | **35** | **100.00** |

 Source: Primary Data

**FIGURE 4.24**

**PEOPLE PAYING USER FEE PROPERLY**

**INTERPRETATION**

Above table and graph shows that 91.43% of the respondents said that people paying user fee properly. 8.57% of the respondents said that people not paying user fee properly.

**CHAPTER 5**

**FINDINGS, SUGGESTIONS AND CONCLUSION**

**5.1 FINDINGS**

* 57.14% of the respondents are from urban area
* 45.71% of the respondents are from the age group of 31 to 35 years.
* 25.71% of the respondents have HSS/PDC.
* 80% of the respondents are from Nuclear family
* 80% of the respondents have BPL card.
* 57.14% of the respondents said that main source of waste generation is domestic.
* 51.43% of the respondents engaged in this services for 1 to 2 years.
* 71.43% of the respondents have fixed amount as remuneration.
* 28.57% of the respondents collect leather product waste.
* 80% of the respondents said that plastic covers are as clean as they suggested.
* 85.71% of the respondents use basket for waste storage.
* 94.29% of the respondents said that domestic is user fee now.
* 54.29% of the respondents said that they charged addition charges on waste other than plastic.
* 68.57% of the respondents said that they use recycle method for disposal of waste.
* 71.43% of the respondents said that waste disposal take place monthly.
* 97.14% of the respondents received training from panchayat/local self govt on solid waste management
* 77.14% of the respondents concerned about the health impacts of this service.
* the entire respondents have health issues.
* 45.71% of the respondent have respiratory issues. 28.57% have skin problem
* 57.14% of the respondents have financial problem.
* 48.57% of the respondents have too much debt.
* the entire respondents agreed that all people co-operate with them.
* 71.43% of the respondents disagreed that social status of this job were very low
* 91.43% of the respondents said that people paying user fee properly.

**5.2 SUGGESTIONS**

* Strengthen the activities of Haritha Karma Sena with the help of municipality by providing necessary resources.
* Promote public awareness programs regarding Solid waste
* Encourage to adopt eco-friendly waste disposing methods like biogas, aerobic compost etc at household level itself.
* Encourage the public to support Hartha Karma Sena for better non-biodegradable waste disposal.
* Installation of waste bins for public places especially at commercial areas, markets, bus stands etc.
* Encourage to adopt eco-friendly waste disposal techniques like biogas for waste management at hotel, restaurant etc.
* Ensure proper monitoring and function of the existing projects for better solid waste management
* Encourage Public Private Partnership for better Solid waste management

**5.3 CONCLUSION**

The current issues in Kannur District are inadequate waste management infrastructure, the informal sector and unscientific waste disposal. The project aimed at studying the causes of these drawbacks and to come up practicable proposals and recommendations. For the purpose of this project both various methods were adopted such as literature review, survey, fieldwork as such. During literature review apart from journals and books on solid waste management, legislations were also referred. The data’s collected from various sources were analysed and proposals were made. The development activities undertaken by the Government and local authorities has to be revised according to the needs of the area. Booming population is one of the major reasons that overshadows the waste management process. The major problems that are associated with improper waste management are illegal dispersal of solid waste management, flood in municipal area due to blocked drains, dumping of food waste in open dump and drains and improper and non-timely collection of solid waste. The necessary infrastructural developments were made as per the requirements. Study on the economical aspect of the waste management was conducted to analyse the extent of application and practicability of the installation of infrastructure.

**BIBLIOGRAPHY**

1. Vassils J. Inglezakis and Konstantinos Moustakas; Chemical And Process Engineering ( 1 March 2015) Vol 150. P 310-321
2. Dr. Jigna Trivedi and Dr. Bindhya Kunal Soni , December 2020; A Study on Waste Management of Household with Special Referance to Uzhavoor Panchayath-Kottayam
3. Widad Fadhullah, Nor Iffah Najwa Imra, Sharifah Norkhadijah Syed Ismail, Mohd Hafiidz Jaafar& Hasmah Abdullah (5 January 2022 ; 22(1)
4. EBNA FORHAD MONDAL, MD. ROKON HANSAN, MD. SAYED RAHMAN, SALMA ALAM, SM. ARIFUR RAHMAN, and TANISA T; Solid Waste Management Strategy & Improvement of Engineering Scenario Based on Market Waste. Global Journal of Research in Engineering.[S.I.], June 2013; vol 13, No 4-E (2013).
5. Mohammad Sujauddin, SMS Huda, and ATM Rafiqul Hoque , 1 January 2008; Household Solid Waste Characteristics and Management in Chittagong, Bangladesh; vol-28(9); p-1688-1695.
6. Sudha Goel ,November 2008; Municipal solid waste management (MSWM) in India A critical review; Indian Journal of Environmental Health 50(4): 319-328

**WEBSITES**

* www.pressinformationbureau
* www.legalserviceindia.com
* www.provisionalpopulationtotals-india

**QUESTIONNAIRE**

**Personal Profile**

Panchayat: Ward: Date:

Name:

Gender:

1. Place of residence:

2. Age in year:

3. Education:

1. SSLC
2. HSS/PDC
3. Diploma
4. Graduate
5. Other

4. Type of family:

1. Nuclear
2. joint

5. Economic status:

1. APL
2. BPL
3. Other

6. Source of waste generation:

1. Domestic
2. Commercial
3. Both

7. How day have been engaged in this service?

1. Below 1 year
2. 1-2 year
3. Above 3 year

8.Method of remuneration:

1. Fixed amount
2. Collection base

9.What kind of waste do you collect from the plastic:

1. Medicine strips
2. Broken glass
3. Tooth paste
4. E waste
5. Leather product

10.Are the plastic cover as clean as you suggested :

1. Yes
2. No

11.What kind of waste storage do you use

1. Basket
2. Plastic container bag

12. What is the user fee now?

1. Domestic
2. Commercial

13. Is the any addition charged on waste other than plastic:

1. Yes
2. No

14.What method are used for disposal of waste?

1. Recycle
2. Other purpose

15.How frequently waste disposal taking place:

1. Daily
2. Weekly
3. Monthly
4. Other

16.Have you received training from panchayat/ local self govt on SolidWaste Management

1. Yes
2. No

17. Are you concerned about the health impacts of this service?

1. Yes
2. No

18. Do you have any health issues ?

1. Yes
2. No

If yes;

1. Respiratory issue
2. Skin problem
3. Chronic pain

19. Do you have any financial problem ?

1. Yes
2. No

If yes ;

1. Lack of income
2. Unexpected expenditure
3. Too much debt
4. Lack of savings

20. All people co-operate with you ?

1. Yes
2. No

21. Do you feel that the social status of this job were very low:

1. Yes
2. No

22. Are people paying user fee properly:

1. Yes
2. No

Do you have any suggestion. State it any