

Chemical Studies on the Solid Waste Collection by Rag Pickers at Sidhi Municipality, M.P. India

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Abstract: Urbanization economic development and improved living standards in cities contribute to increase in the quantity and complexity of generated solid waste. This solid waste ultimately leads to degradation of urban environment, which leads to health problems. Solid waste management has become a major environmental issue in India. Since all natural processes generate waste. Rag Pickers play an important, but usually unrecognized role in the waste management system of Indian cities. They collect garbage in search of recyclable items that can be sold to scrap merchant like paper, plastics, tin.... etc. This activity requires no skills and is a source of income for a growing number of urban poor people. The present paper intends to present a vulnerability study of the Rag Pickers of Sidhi Municipality with focus on the socio-economic and occupational health aspects.

This research paper makes use of a database, parenting to the socio-economic profile of the Rag Pickers including the working condition and their problems and expectations. All the information has been developed through literature review, questionnaires survey and open ended interviews conducted to generate data's on Rag Pickers of Sidhi Municipality area.

I. Introduction

The Rag Pickers do the dangerous work, in the polluted environment searching certain recyclable items out of hazardous waste dumped by municipality. They often eat the filthy food remnants they find in the garbage bins or in the dumping ground. Using the dumping ground as a playing field, the children run the risk to come upon needless syringes, used condoms, saline bottles, soiled gloves and other hospital waste as well as ample of plastics and iron items. They suffer from many diseases such as respiratory problems, worms, anaemia, fever and other problems which include cuts, rashes and dog bits.

In the developing country like India the hazardous content in is quite high, since the regulatory and enforcement system to control such waste disposal are usually non-existent or not operating. Another problem that the waste from hospitals located within the city area, which is often found, mixed with municipal waste in open dumps and landfills. These differences mean that waste management system in each region require distinct approaches.

Besides compostable waste, the household solid waste consist of hazardous materials resulted from items like, tube lights, dry battery cells used in radio and torch etc. nail polish remover, blades, sprays and other miscellaneous items. There is no specific methodology suggested or adopted for collection and disposal of household hazardous waste generated in our country.

All activities in SWM (Solid Waste Management) involve risk, either to the worker directly involved or to the nearby residents, from point of its generation to its ultimate disposal. The Rag Pickers lives in rows of huts a little away form the dumping site, their life begin and ends only and only in an atmosphere surmounted by garbage and stench.

The Sidhi Municipality dumping site located mainly at Azad Nager, Old Sidhi city area, Madriya, Padra and nearby Sukha Nala, Hiran aala the city outskirts of Sidhi. It is found that not only children but people of all age group involve in collection of recyclable item from solid waste for earning livers.

According the officials of municipality, the total dump site area is about 22 acre where waste material dumped and about 90 rag pickers walks all day for collecting the recyclable item. The municipality dumps about 5 tone of waste per day in all the dump site area.

From five year old child to elders all members of the families move in to the dump site area from morning to evening, they collect mainly waste plastic, iron scrap, glass bottles, milk sachets, zippers or cans and ultimately sell all that to commission agents. These wastes are responsible for occupational health risk to workers and residents too. The most commonly diseases among waste pickers are tuberculosis, bronchitis, asthma, pneumonia, dysentery, parasites and malnutrition.

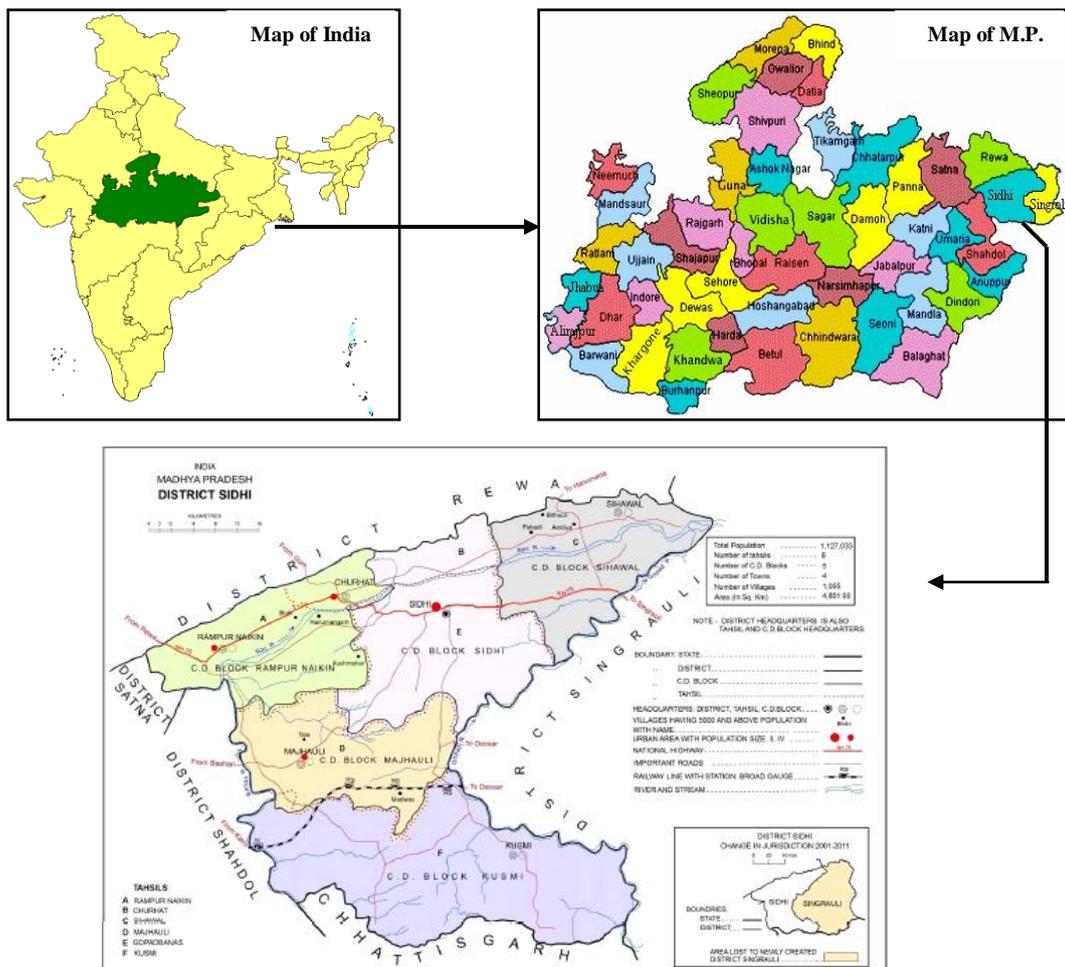
The waste pickers involved in collection and disposal constituted an informal and unorganized sector where occupational health hazards were least attended and therefore focus is needed to be given in discussing the health problems of these rag pickers.

The present paper intends to present a vulnerability study of the rag pickers of Sidhi Municipality with focus on the socio-economic and occupational health aspects. The paper makes use of database, parenting to the socio-economic profile of the rag pickers including the working condition and their problems and expectation, this information has been developed through literature review, questionnaires survey and open ended interviews conducted to generate data on Rug Pickers of Sidhi Municipality area.

II. Methodology

Study area:

1. **Azad Nager** : Located along the bank of sukha nala in the mid of the city having dump site area about 9 acre.
2. **Hiran nala area** : Located about 3 km. away from city center in north side toward Sidhi Singrauli road, dumpsite area is about 8 acre.
3. **Madariya-Padra road side** : Located about 4 km from city center in east side on Sidhi-Madwas road the dump site area is about 5 acre.
4. **Rag pickers living area**, mainly near by the all above mentioned dumpsite area, where most of the rag pickers reside.



The snow ball method intended to gather information on the role of rag pickers in waste reduction and to find out their socio-economic status health and hygienic problems was followed.



Fig. 1 : Dump site Area (Hiran nala)



Fig. 2 : Dump site Gopal Das road (near sukha nala)

The survey was conducted among waste pickers in the all dumpsite area of municipality during October 2014 to February 2015. For this a structured interview schedule was devised. The 20 out of 50 rag pickers involved in the activity were randomly selected and interviewed.

At the initial stage of the survey the rag pickers were not cooperating for answering to the queries because most of rag pickers were illiterate handle they were reluctant to speak on their income and other personal details.

III. Result and discussion :

1. Collection of waste : In the investigation it was found that 40 % of the rag pickers are involved collecting the waste from residential areas, 30 % from market and commercial areas, 10 % from hospitals, 10 % from bus stop area and 10 % from offices and educational institutions.

2. Number of hours spent by rag pickers for collection of waste : In the investigation it was found that the majority 70 % of the rag pickers spending time 5-8 hours in a day for the collection of waste, 25 % spending time more than 8 hours. While 5 % less than 5 hours in a day.

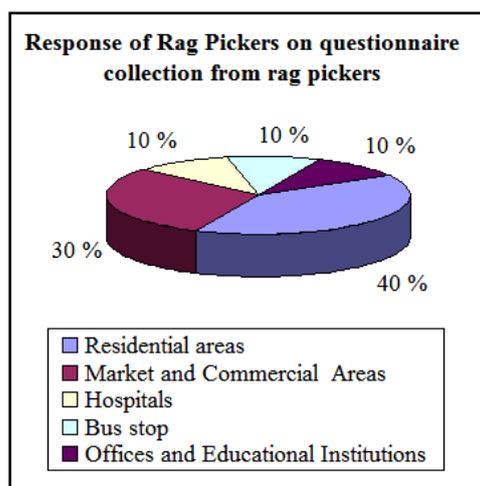


Fig. 3 : Collection of waste

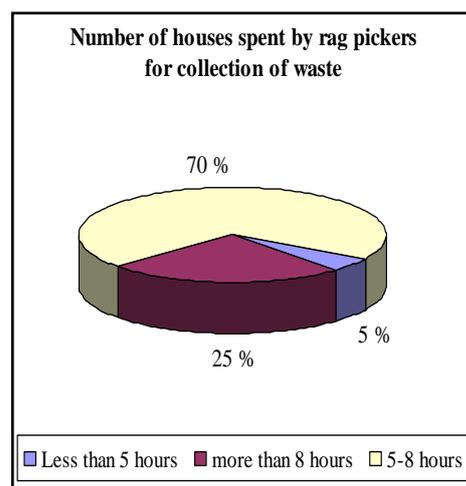


Fig. 4 : Number of hours spent by rag pickers

3. Collection of waste singly or in group : The majority 80 % of rag pickers collecting waste singly, 15 % in a group of 2, and 5 % in a group of 3 or 4, this indicates the reluctance of pickers to cooperate and share the earning.

4. Family Assistance : Some times family members assist to rag pickers in the collection of waste. During the investigation it was found that 90 % of the rag pickers were assisted by their family members. Where as 10 % of them were not assisted by their family members.

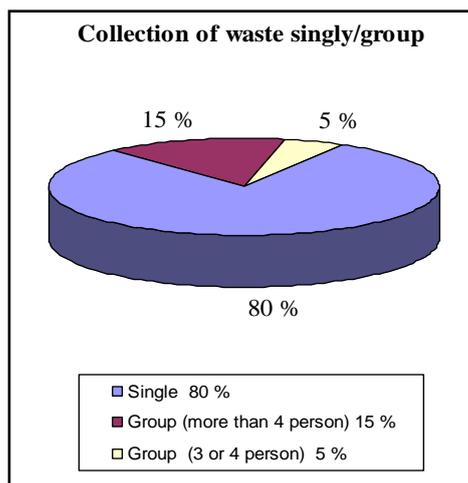


Fig. 5 : Collection of waste in single/group

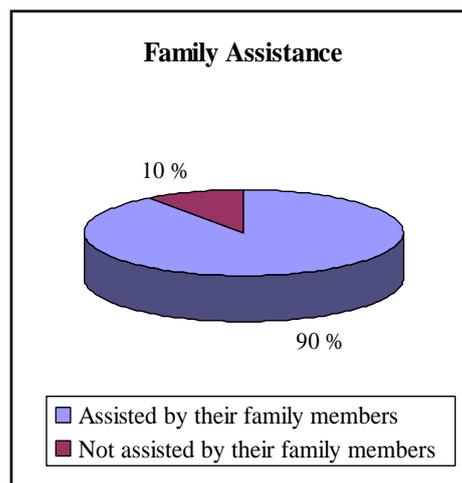


Fig. 6 : Family Assistance

5. Nature of work : During the survey it was found that 60 % of rag pickers were full time workers and 40 % were part time workers. Rag pickers begin his work as early as 4 AM in order not to miss the waste. Whenever that bag becomes full, they returned to the store or trade center to sell those earning.

6. Days selection for waste collection : Most of the rag pickers preferred all days except Sunday and holidays for collecting waste. In the study it was cleared that major percentage (85 %) of rag pickers roamed for collection on all days except Sunday and holiday whereas minor group (8 %) preferred holidays and 7 % on Sunday.

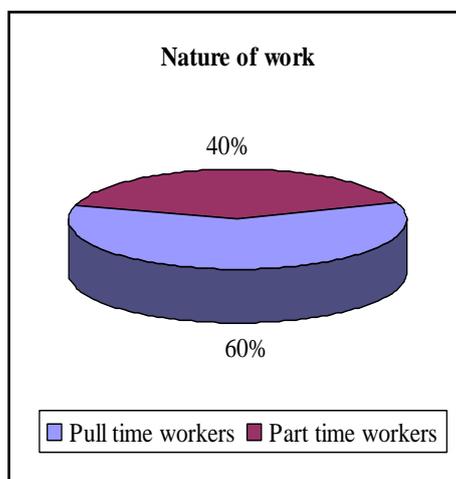


Fig. 7 : Nature of Work

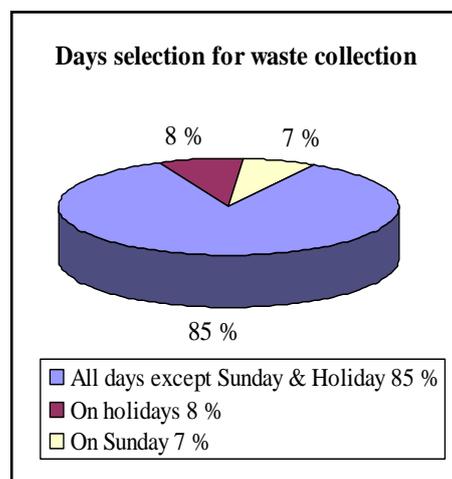


Fig. 8 : Selection of days for waste collection

7. Distance covered for waste collection : In the study it was found that 76 % rag pickers travelled a distance of 1-5 km., 14 % from 5-10 km., 10 % above 10 km. to collect the waste.

8. Quantity of waste collected : Usually the quantity of waste collected in a day depends on the number of hours spent and number of houses covered for collecting the waste. In the survey it was found that 5 % collects more than 50 kg./day, 10 % about 35 to 40 kg./day, 20 % between 25 to 30 kg./day and 65 % collect waste below 25 kg./day.

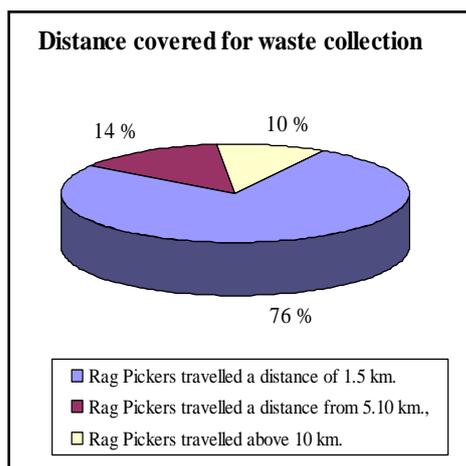


Fig. 9 : Distance covered for waste collection

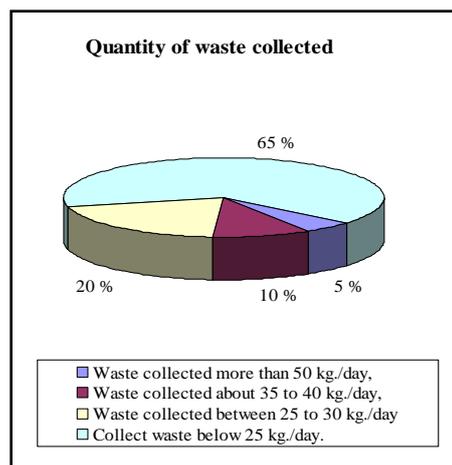


Fig. 10 : Quantity of waste collected

9. Waste Segregation : Segregation is an important aspect in solid waste management. Proper segregation of waste would lead to better option and opportunities for its scientific disposal. During the survey it was found that 85 % of the rag pickers collected waste without being segregated the site and remaining 15 % of rag pickers segregated the waste at the site itself.

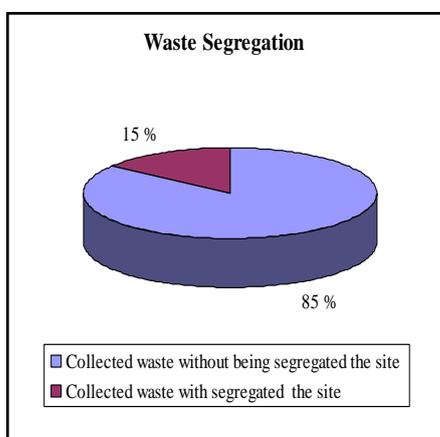


Fig. 11 : Waste Segregation



Fig. 12 : Sale of collected waste

10. Sale of collected waste and payment : After segregated the recyclable waste most of the rag pickers have the habit of selling that, it is found in the survey that 80 % of waste collector sold the collected waste on the same day itself. The few rag pickers get the payment on same day and few at the weekend and few are on month end.

In the study we found that 25 % of the rag pickers received the cost of waste collected on the same day itself. However 40 % received money at the weekend and 10 % on end of the month and 25 % of them received money based on the quality/quantity of collection. While most of rag pickers wants to have the remuneration on same day.

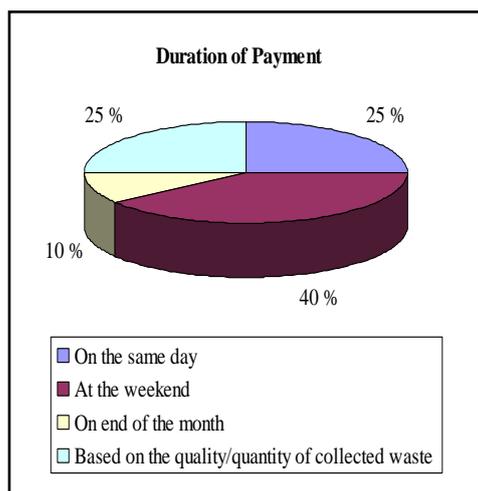


Fig. 13 : Sale of collected waste

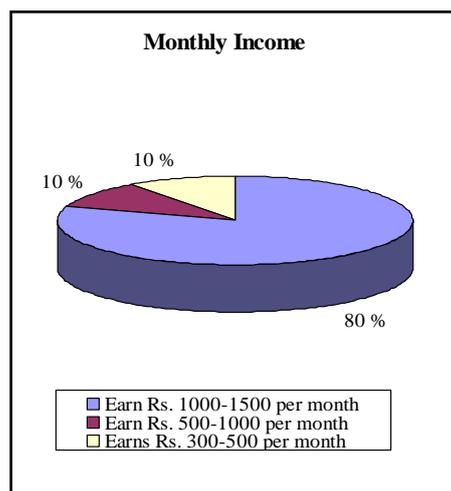


Fig. 14 : Monthly Income

11. Monthly Income : The rag pickers are earning money due to collection and selling of the waste. The 80 % of the waste collectors earned Rs. 1000-1500 per month, 10 % earn Rs. 500-1000 per month and another 10 % earns Rs. 300-500 per month.

12. Other Source of Income : The 95 % of the waste collectors have the only source of income, to collect and sell the waste materials. However 5 % of rag pickers are having other source of income too.

13. Precautionary Measure : The survey revealed that 92 % of waste collectors did not adopt any precautionary measure, 3 % used antiseptic lotion, 5 % used hand globes, lack of precautionary measure might produce health hazards to them.

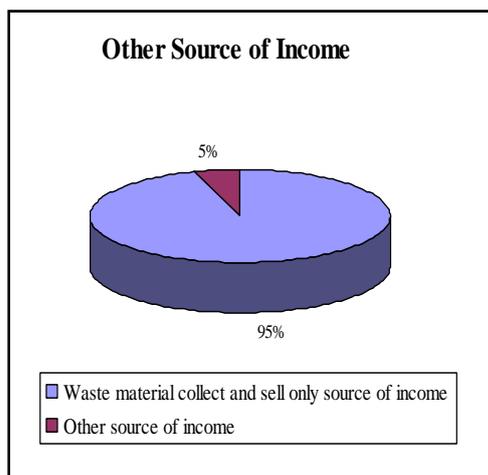


Fig. 15 : Other Source of Income

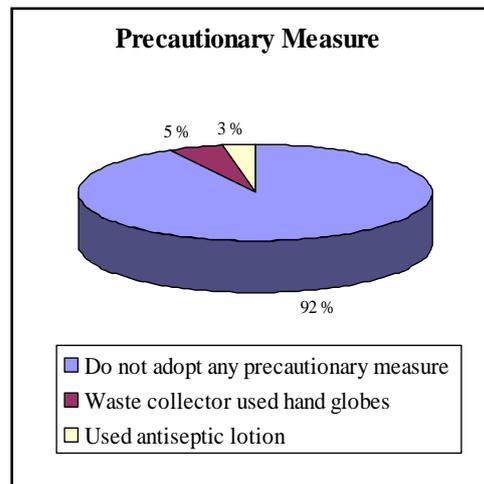


Fig. 16 : Precautionary Measure

14. Occupational health hazard : In the survey it is found that 80 % of rag pickers had wound or injuries, 5 % had body pain, 5 % had skin or lung diseases and 10 % said that they were not faced any health problems. Lack of precautionary measure and awareness regarding health were the main causes of health problem.

15. Job Satisfaction : During the survey we asked to the rag pickers about their job satisfaction, where 98 % of the respondents were not satisfied with rag picking job because of the hardship involved in the long hour of work and poor remuneration. Other 2 % however expressed satisfaction.



Fig. 17 : Occupational health hazard

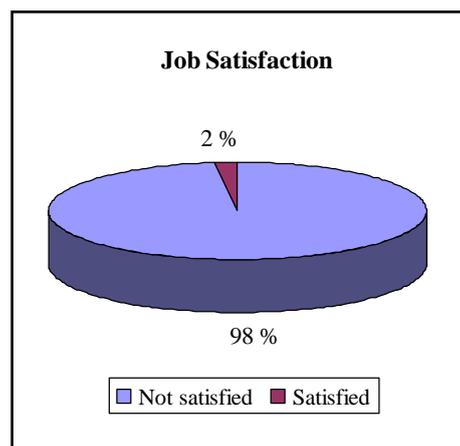


Fig. 18 : Job Satisfaction

16. Job Selection : The question when asked to rag pickers about the reason for taking up this particular job, the answer of 94 % of them was no other alternative available to them. But 5 % showed a special interest toward this job, and 1 % of them were hereditary rag pickers.

17. Period of Service : Once the rag pickers entered and got adjusted to that environment it is not easy to come out from that service. In this study it is found that 60 % were working for 3 years in this field, 30 % worked for 2 years and 10 % for one year.

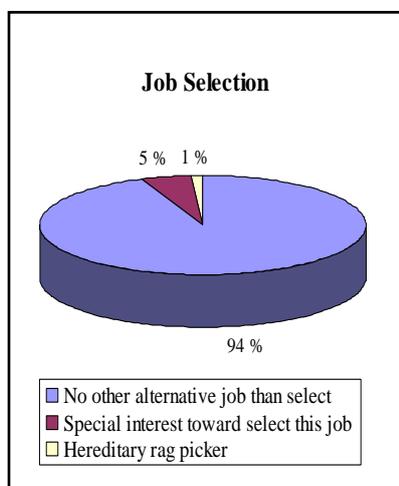


Fig. 19 : Job Selection

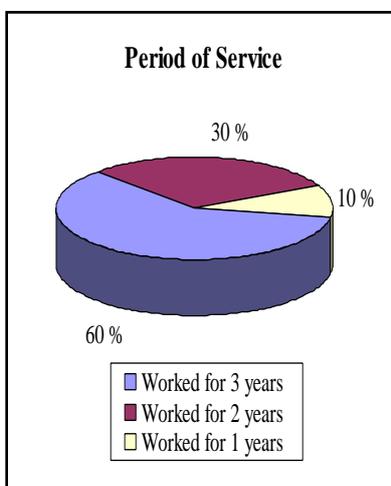


Fig. 20 : Period of Service

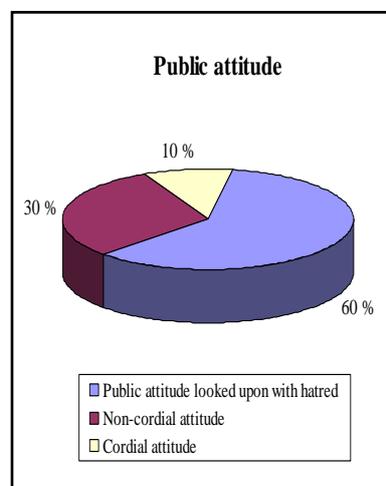


Fig. 21 : Job Satisfaction

18. Public attitude : During the survey are asked a question to the rag pickers about the public attitude, 60 % felt that they were looked upon with hatred, 30 % felt a non-cordial attitude and 10 % felt that the public had a cordial attitude towards them.

IV. Discussion

The whole study was done in the said dumpsite area and rag picker living area of Sidhi municipality focusing on their socio-economic and health status. As per the literature concerned with this study was reviewed by us, it reveals that, in Delhi 35 % were found to be female workers and 65 % males. Here at Sidhi Municipality 80 % of the rag pickers were male and 20 % belongs to females. Kumar S.; Mondal A. N.; Gaikwad S. A.; Devotta S. and Singh R. N.¹ reported that there were 3965 children engaged in rag picking in the various urban settlement of Nepal with the highest concentration being in Katmandu Valley.

In Brazil, the age group of Scavengers and their percentage were in the order of 14 to 17 years (11 %), 18 to 30 years (25 %), 31 to 45 years (35 %) and 46 to 65 years (27 %), it was also reported that 54 % of them were men. The present investigation for Sidhi Municipality it is found that out of 50 rag pickers 20 % belongs to age below 25 years, 70 % age group of 26 to 40 years whereas only 10 % belong to age of 41 to 50 years. In Brazil the educational level of rag pickers based on reading and writing was 52 % literate and 48 % illiterates.

And in the present study showed that rag pickers consisted of 40 % literate people out of which 10 % were with pass only primary label class.

In Delhi most of the waste pickers were migrant from neighboring state, while at Sidhi Municipality all rag pickers belongs to nearby villagers. Studies of Menon R.V. G. J.; Josephe M.; Ambat B. and Vinod V.² showed that in Vadakara Municipality Kerala 52 % in their job at both residential and commercial area whereas 43 % worked in residential and 10 % in commercial area. The present study at Sidhi Municipality indentified that 40 rag pickers were active in residential areas and 35 in market and commercial areas out of 75 workers interviewed. The another study also revealed that 95 % of rag pickers belongs to the Hindu religion, 5 % Muslim, among Hindus 75 % belong to OBC and 25 % belongs to SC/ST. The literature reviewed regarding this study, clearly showed that almost all the parameter adopted were by and large, same as we did in our study.

V. Occupational Diseases :

The present study reveals that 80 % of rag pickers suffer form skin diseases 10 % suffers from body pain and about 8 % suffers from pulmonary problem and 2 % from eye diseases. The same type of study had also been done for Calcutta, Nepal (Kathmandu), Bangkok, Italy, Brazil, Manila, Delhi, Bombay, Denmark, revealed that, rage pickers are really suffering from various diseases. In 1990, Institute of Hygiene and University of Genoa conducted clinical examination on 1396 solid waste employees of Genoa, Italy which indicated the probability of Hepatitis B Virus infection, Tuberculosis, Bronchitis, Asthma, Pneumonia, and Dysentery among them.

Hence it is suggested that steps should be taken to improve the working condition of the rag pickers. The Municipality should register all the rag pickers involved in work and issue health cards to them so as to enable them to get treatment from Govt. Hospitals.

VI. Conclusion

For the municipalities, it becomes major issue to mange the waste generated in cities. Improvements in infrastructure and technology should help to overcome barriers to the safe disposal of urban waste. Environmental regulations, intelligently designed to protect the health and integrity of ecosystems and human populations, should be created and enforced now in order to prevent the need for costly remediation measures in the future.

Many children begin working as rag pickers at the young age of five or six years. So child rage pickers should be controlled, by raising minimum age and established minimum education for them and increase the number of labour inspector to control over them, by enforcement of child labor laws, and in the same time provide educational and prevocational counseling, medical, recreation, and entertainment activities.

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