



Role Of Rag Pickers In Waste Segregation For Environmental Upgradation – A Case Study In Patna Municipal Corporation

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Abstract

Rag pickers are a crucial yet often unrecognized workforce in urban waste management, collecting and segregating recyclable materials from municipal waste streams. This study examines the pivotal role of rag pickers in waste segregation within the Patna Municipal Corporation and their contribution to environmental upgradation. Data was collected through field surveys, interviews with rag pickers, and consultations with waste management officials. The findings highlight the substantial positive impact of rag pickers on waste diversion and recycling, demonstrating their role in reducing greenhouse gas emissions and mitigating environmental degradation. However, rag pickers in Patna face significant health risks, social stigma, and economic instability due to their work conditions and lack of formal recognition. The study suggests that formalizing their role within Patna's waste management framework could improve waste segregation practices, enhance the livelihoods of rag pickers, and promote a more sustainable waste management model.

Keywords: Rag pickers, Patna Municipal Corporation, Environmental upgradation, waste management

Introduction

Rag-pickers are those who search trash cans for "rags" in order to make a living (Krishna et al., 2019). Rag-pickers are typically uneducated and exceedingly destitute women, children, and men. However, they benefit society by eliminating a significant amount of waste produced in a community, which lowers the expenses incurred by the local governments in charge of solid waste management. Due to the nature of their work, they are exposed to potentially harmful bio-aerosols that could cause a number of diseases to spread, and they live in filthy, impoverished urban slums (Ray et al. 2004). The working conditions at garbage disposal sites are made even less

hygienic by the prevalence of fleas and disagreeable odors, as well as the absence of appropriate protective gear. The rag-pickers' actions are dangerous since they gather plastics, paper, glass bottles, rubber materials, and ferrous and non-ferrous metals from public containers and dumping sites.

Ragpickers make a living by gathering, classifying, and separating rubbish before selling it. By doing this, they contribute significantly to the cleanup of India's 62 million tonnes of rubbish produced each year. Although it is difficult to measure the amount of waste gathered in this way because rag-picking is an entirely unorganized industry, there are some general indicators: In India, municipal entities only collect 75–80% of the waste produced. Additionally, almost 90% of India lacks a suitable method for disposing of waste. According to the environment minister, India would produce almost three times as much rubbish in the next few decades—"165 million tonnes by 2030 and 450 million tonnes by 2050." Nowadays, about 22–28% of the waste that is collected is handled or processed. The issue is more severe in urban areas (Sharma & Gupta, 2019). In Indian cities, the amount of waste generated per person varies from 200 to 870 grams per day and is increasing. The amount of trash in Indian cities increased by 50% between 2001 and 2011 as a result of the country's expanding urban population and rising per capita waste creation. The administration attributed this to shifting consumer behavior and purchasing trends. A 2009 report by the Central Pollution Control Board (CPCB) stated that India's per capita annual plastic use was 6–7 kilogram. Between 2010 and 2011, the demand for plastic raw materials doubled, rising from 3.3 to 6.8 million metric tons. Before four years ago, 20–30% of recyclable waste in Delhi alone was made up of plastic; now, the CPCB estimates that between 60 and 75 percent of recyclable waste is made up of plastic.

Nonetheless, recycling glass bottles and newspapers is a prevalent activity in Indian cities, and composting kitchen trash is a frequent practice among households that garden. Rag pickers typically gather other recyclable debris, like milk packets and packaging materials, in order to make a living. Rag pickers currently work in the unorganized sector, searching Dhalaos (trash collection locations) for recyclables. However, they come into touch with dead animals, sputum, animal excrement, and occasionally medical waste, making them vulnerable to a variety of illnesses (Sarkar, 2003). By separating waste at the source, rag pickers' working conditions will be improved, and their function will be given legitimacy, which will lessen the strain on local governments and benefit society at large (Sarkar, 2003). In addition to improving working conditions for the waste pickers, it would also improve the quantity that can be recycled and lower emissions into the air, soil, and water.

Based on the above discussion, present study evaluates to explore the socio-economic conditions of rag pickers, including income levels, health risks, social stigma, and lack of institutional support. This study also assesses the feasibility and potential benefits of formalizing the role of rag pickers within the Patna Municipal Corporation's waste management system, ensuring better working conditions and economic stability.

Materials and Methods

The survey was conducted among waste pickers in the corporation of Patna Municipal Corporation during 20/10/2020 to 30/12/2020 with the help of a structured interview schedule. Special care was given to spread the sample geographically around the corporation such as residential area, slum area near railway stations, dumping sites.

In order to get clear picture of the social status, economic status, health status and problems encountered by them, questions on various aspects like their age, sex, educational qualification, languages known, quantity of waste collected per day, sale of the waste, monthly income, other sources of income, precautionary measure taken by them while collecting waste, occupational health problems faced by them were included in the questionnaire. The questions were asked to the rag pickers by translating them into Hindi and then translating their answers in English and by putting a tick on the respective options according to the answer given because most of them were not able to understand the English language. All these information was incorporated into the Microsoft Excel and statistical analysis was performed.

Results & Discussion

Gender and age of rag pickers

In survey, it was found that 46% of the rag pickers are male and 54% are female. The number of males is high because in our society the male has the responsibility to do external work and the females for the internal i.e., household works. Secondly, the females have so many household works so they are not able to do work outside. Thirdly, there are also security issues of the females. The age group of the rag pickers was categorized into four sections i.e., <10 years, 10-20 years, 20-30 years and >30 years. Less than 10 years age group included 7% rag pickers. The reason is that these are child rag pickers and their ability and efficiency are low as compared to others and also many of them take their education. 11-20 years age groups included 35% rag pickers (Figure 2). This was because it contains the male rag pickers who were able to do this job efficiently and the females are less because of the security issue and their efficiency. 21-30 years age groups include 39% rag pickers since the responsibilities to run life increases because this age group includes many married couples so for the survival of their family efficiently, they work hard. > 31 years age group included 19% because this group involved the aged persons also who are unable to work hard at a high level.

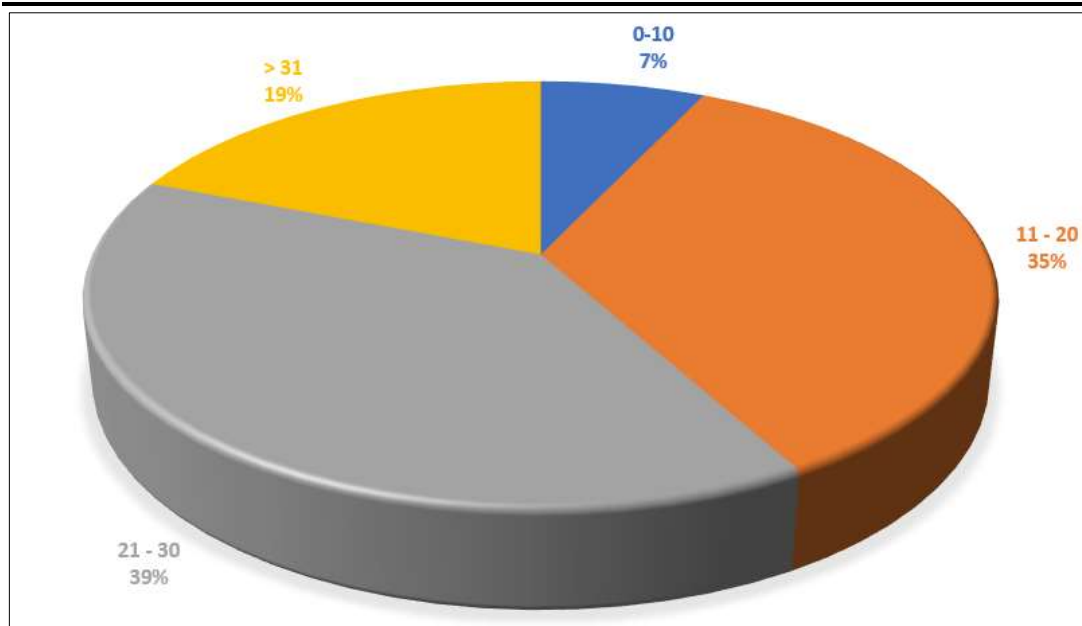


Figure 1: Age-wise rag pickers (%) distribution in the study area

Education of rag pickers

In this class most of the rag pickers were uneducated and only a few were educated up to primary, secondary and higher secondary level. It was seen that the percentage of uneducated rag pickers, primary level educated, secondary level educated and higher secondary level were 65%, 19%, 13% and 3% respectively. The level of uneducated rag pickers is quite high because the rag pickers are not able to get the opportunity to get an education due to their economic condition and work of rag picking. Secondly, they also think to earn money early. Some rag pickers are educated to a level because they did not get the opportunity to do any other work.

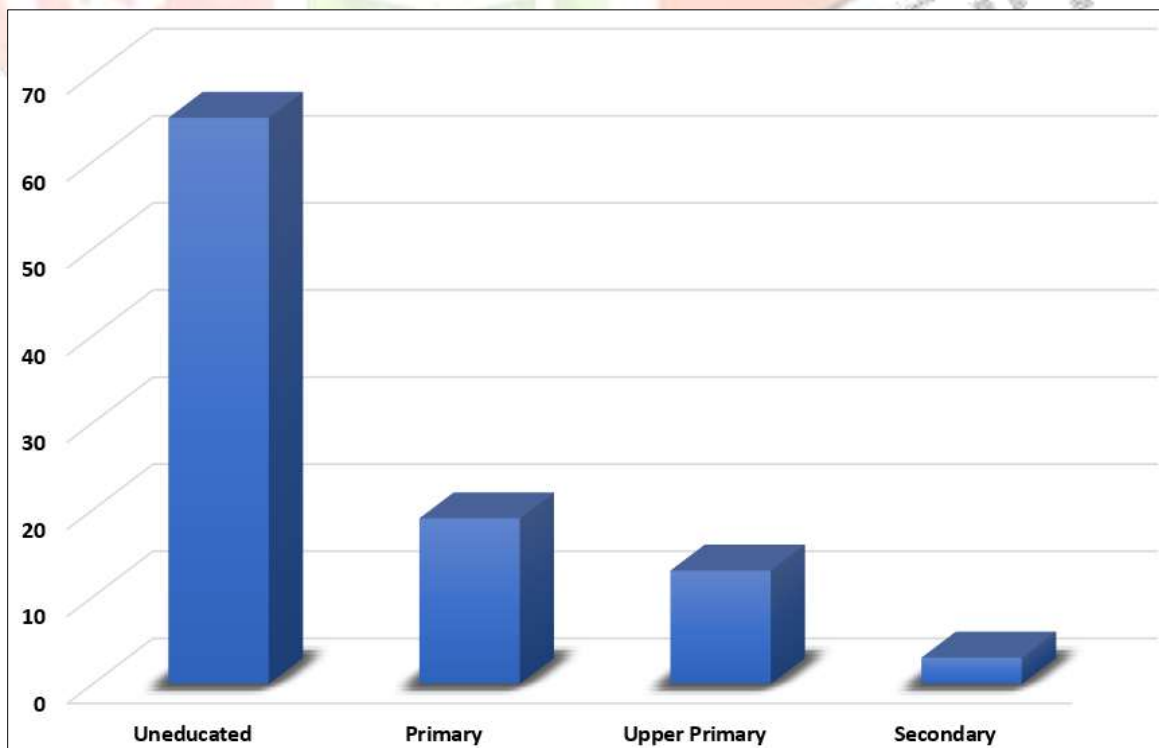


Figure 2: Educational status of rag pickers (%) in the study area

Occupational area:

Rag pickers operate on residential and commercial area, markets, offices, educational institutions, railway stations, bus stations and dumping sites. It was noticeable that 52.6% persons preferred to collect waste from railway and bus stations, 2.10 % persons collected waste from market and commercial areas, only 2.63% persons are collecting wastes from residential areas and 2.63% from offices and educational institutions in the study area.

Type of waste collected:

Many types of wastes were collected by the rag pickers such as plastic, paper, metal, biomedical waste, metals, glass, rubber etc. The distribution is as follows: Plastic and paper were collected by all the rag pickers. Metal was collected by 82% of the rag pickers. Glass, plastic, biomedical and other waste were collected by 23%, 54%, 14% and 9% of the rag pickers respectively. Since the paper and plastics are in daily use in our society so their production is higher and so the collection is highest and so they are easily available. Metals are comparatively less available. Glass is collected but in a small number since it is not so much practiced and is dangerous. Rubber is also collected and it is available from the houses etc. but only after a large span of time. Biomedical waste is dumped and treated by the hospital management and it contains many toxic and infectious substances so its collection is done lesser than other wastes.

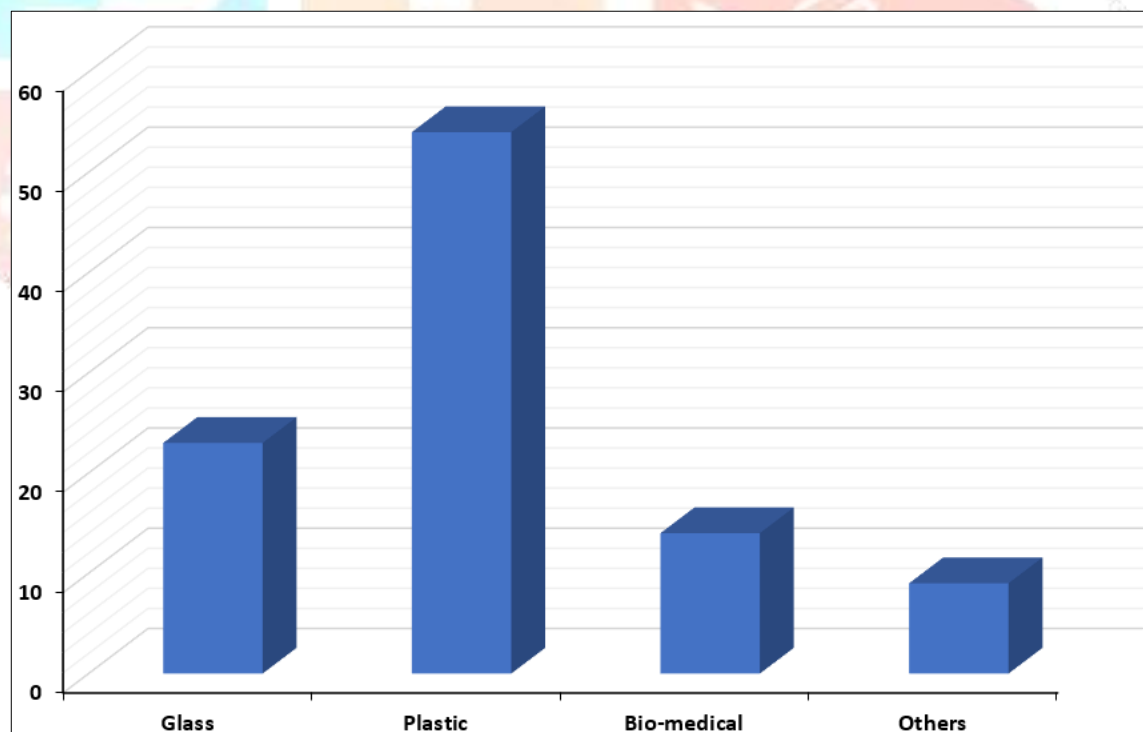


Figure 3: Types of waste collected by rag pickers in the study area

Duration of waste collection

It is observed that 57.62% of waste collectors were engaged in their work for more than 8 hours, 42.38% of persons preferred to work below 5 hours in the study area. 29% of the rag pickers gave 5 hrs. of their daily time in this job since they have to do other household activities as well as study. These include child rag pickers and

some females. 25% gave 8 hrs. to this work as per their efficiency. 24% of the rag pickers gave more than 8 hrs. to this job as they are totally engaged in this job and in order to earn more money they worked hard. 15% of the rag pickers gave 3-4 hrs to this job according to their efficiency. In this many child pickers were included. 7% gave only 2 hrs only to help the family members.

Distance travelled for the collection of waste

25% of the rag pickers travelled 2 to 5 km. in order to collect the waste. This includes the child rag pickers and the females who are engaged in other household activities also. 40% of the rag pickers travelled 5 to 10 km. This includes those rag pickers who are of teenage. 25% travelled 10 to 15 km in order to maintain their survival. 10% of rag pickers travelled more than 10 to 15 km. This includes those who are totally engaged in this job and have many responsibilities.

Quantity of waste collected per day

No any rag picker was clear about the actual amount of the waste collected per day. According to them, it is also the case that amount of waste collected never remains same every day. Actually, it always changes with large variations. But most rag pickers accepted that the maximum amount of the rag includes paper, cardboard and plastic in comparison to other components of the waste.

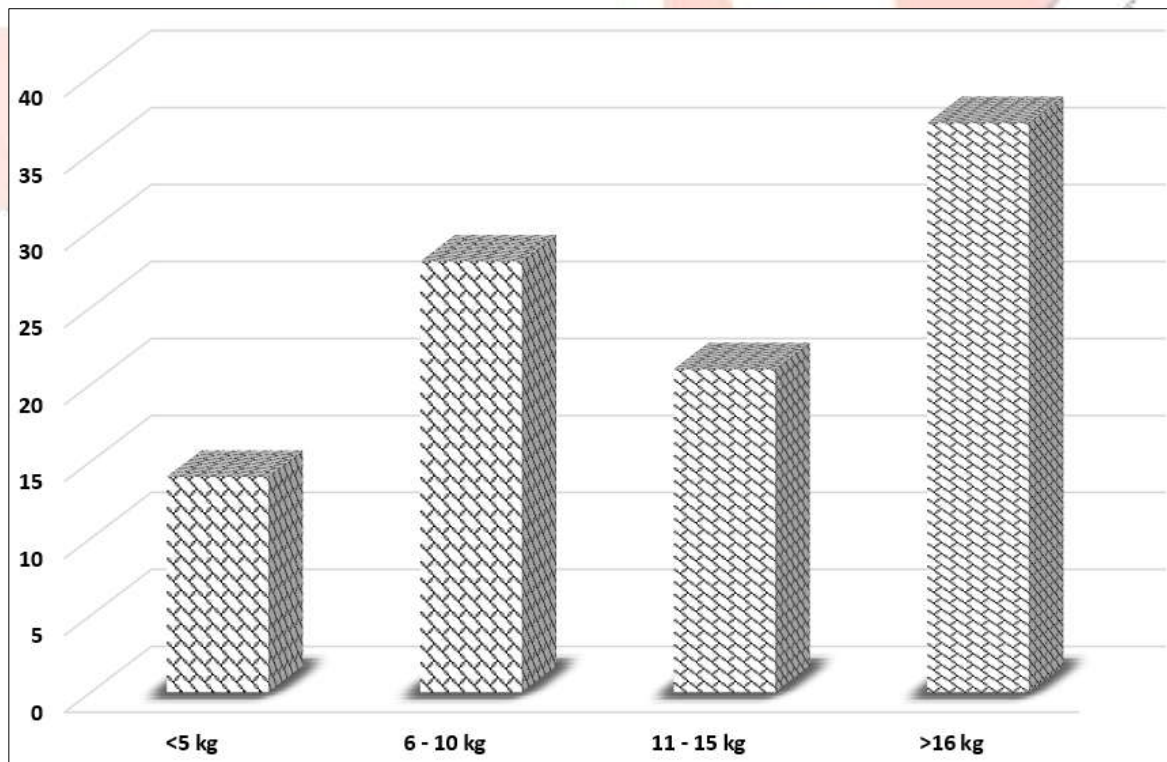


Figure 4: Percent of waste collection per day in the study area

About 14% of the rag pickers collect 2-5 kg per day. It is because it includes the child rag pickers and some females also who have other responsibilities. So as per the efficiency, time and the responsibilities the amount is

less. 28% collected 5-10 kg per day. This depends on the time used and the other things like a few rag pickers go to school or any other work. 21% collected 10-15 kg per day. These rag pickers gave their proper time to this job and collected the rags from different sites. 37% of the rag pickers collected >15 kg per day because they are totally engaged in this job and their motive is to collect more and more rags to earn money.

Waste Segregation

Nearly 86.84% of the rag pickers collected waste materials without being segregated the site and remaining 13.15% segregated the waste materials at the site itself in the study area.

Habitat:

Around 91% of the rag pickers lived in a slum because they did not have much money so that they owe their house and also the society does not allow them to provide a home in residential area. Secondly, they did not have any other option to live. 6% lived on railway platforms because they have not any other place to live and secondly at the platform, they were able to get the water from the railway taps and also the rag picking was easy there due to the rush. Only 3% rag pickers had their own house. This was because they were in this job for many years and the earning was comparatively high due to the involvement of the other members of the family.

Type of house:

61% of rag pickers lived on rent in slums. 26% on railway platforms and Bus station, 10% along the roadside and 3% had their own house. The houses were of raw materials since the raw infrastructure is relatively cheap and also, they cannot afford that much costly house. The rag pickers who live on platforms have no option due to their fewer earnings.

Police harassment:

About 45% of the rag pickers faced police harassment. This was due to the wrong time when they collected the waste and secondly due to the attitude of the policemen towards them. Secondly, the policemen took money illegally from them by threading them that their work is illegal. 54% of rag pickers did not face police harassment because they do their work at the right time and in the right manner. Secondly, it is good for the cleanliness of the society. However, it also matters from person to person that how they treat these people. Only 3% faced both the situation of support and harassment from the policemen. It depends upon the view and the situation present at that time.

Any health problems?

It is indicated that 97.36% had body pains and 2.63% had wounds and injuries in the study area. Lack of precautionary safety measures and lack of awareness regarding health were the main causes of health diseases. Rag pickers did not take care of their health because of ignorance and poverty (Uplap and Bhate, 2014).

General symptoms of ill health:

28% of rag pickers had a complaint of body pain. This was because they carry heavy loads of the rags and for the collection of rags, they travel a very large distance. 24% of the rag pickers complained about a headache since they suffer from stress and also due to the heavy workload they suffer from this problem. 19% suffered from fever due to the heavy workload, harassment and weather conditions. 9% of the rag pickers suffered from a cough and cold due to the weather conditions as well as hot and cold effects.

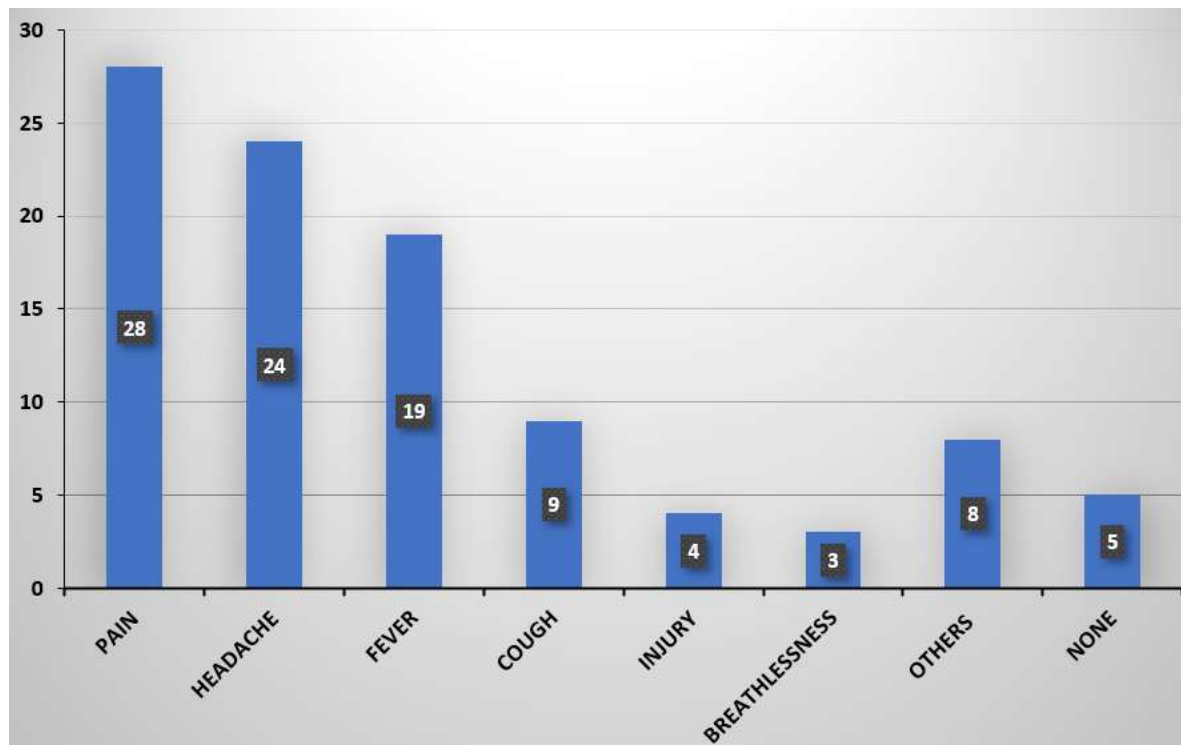


Figure 5: General symptoms of illness of rag pickers in the study area

4% complained about the injury since they collect many hazardous things such as glass, metals etc. as well as the load is high. 3% complained about other problems since they do not have any health facilities so the problem is common. 8% complained about breathlessness due to the bad environment and their personal problem of breathing. 5% of the rag pickers had no complaint since their workload was relatively less and they were aware of health effects.

Any occupational health problems?

The occupational health hazards of waste pickers arise from two aspects: poverty and their occupation itself. Because they belong to the poorest and most deprived section of the urban population, diseases are very common among waste pickers. These make them all the more susceptible to occupational health hazards (Agarwalla et al., 2017). According to it 65.78% of rag pickers replied yes and the remaining 34.21% replied no in the study area. Child ragpickers are working in filthy environments, surrounded by crows or dogs under any weather conditions and have to search through hazardous waste without gloves or shoes. 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 needles, syringes, used condoms, saline bottles, soiled gloves, and other hospital wastes as well as ample of plastic and iron items (Devi et al., 2014).

Addiction:

The addiction to smoking, alcohol and other tobacco addictive things were among 38%, 20% and 17% of the rag pickers. The reason behind this that they think that it is a remedy for removing stress and also, they have nobody to guide them about the ill effects of these things. Thirdly these people get involved in the bad company also who endorse them to do these types of addictive things. 25% had no addiction because many of them were children and females and they were not habituated or affected by these bad habits (Ray et al., 2014).

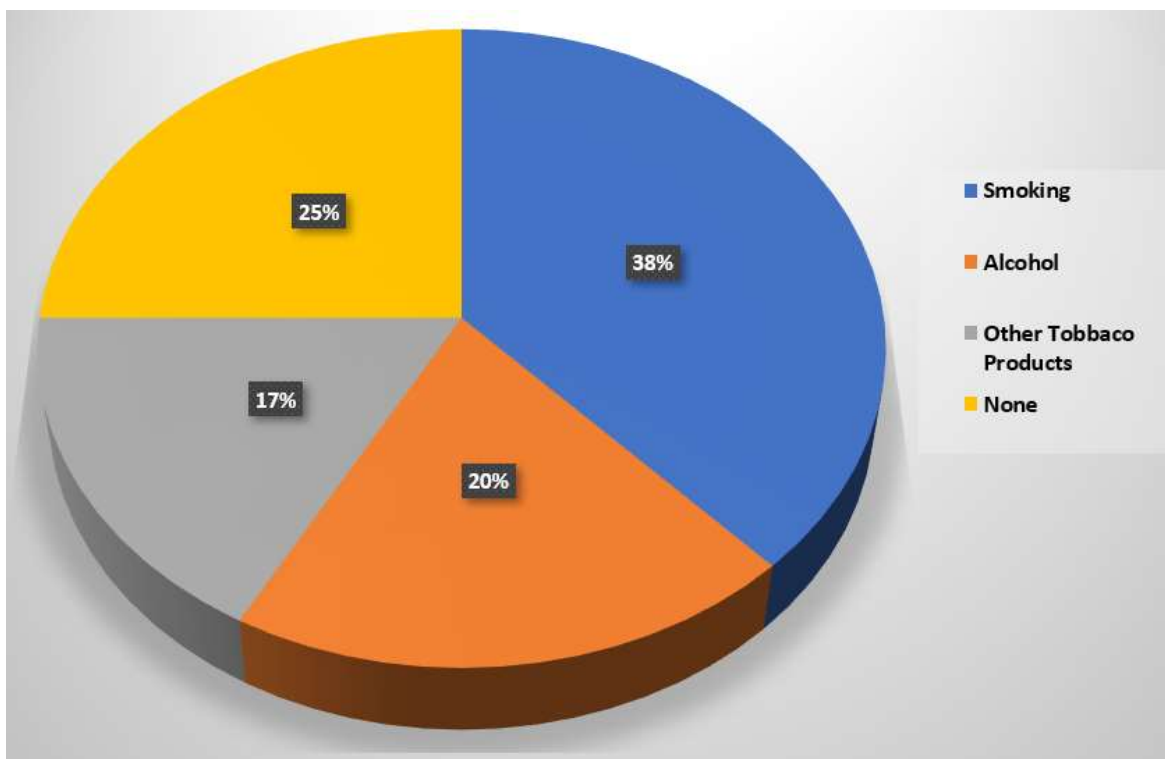


Figure 6: Addiction by the rag pickers in the study area

Public Attitude:

58% of the rag pickers were supported by the public because the public mentality is that the cleanliness is good for the society. Secondly, they understand the need of these people and also understand that this is their work. 29% of the rag pickers were avoided by the public because as the mentality of the people was that these people are of a low level and are dirty. Thirdly, they think that these people are involved in crime and theft. 13% of the rag pickers faced both the situation because of the mentality and conditions faced.

Conclusion

The rag pickers played a part in solid waste management in their own way by channelizing the recyclable materials. Through field surveys and interviews, the study finds that rag pickers significantly contribute to waste

management but lack recognition and institutional support. Integrating them formally into Patna's waste management system could improve environmental outcomes and provide better livelihoods for rag pickers (Kumar & Verma, 2020). They could reduce the expenditure of the corporation. As the rag pickers collected mostly materials like plastic and metals, the sorting of solid waste became easier to the municipal workers in both the cities. Rag picking also provided livelihood to them and it was virtually a form of self-employment. Besides that, rag picking is one of the most dangerous and in-human activity where the rag pickers are exposed to harsh weather conditions surrounded by stray animals and infectious solid waste that may induce them with many diseases (Bose & Banerjee, 2018). At the same time, they were also nuisance for certain reasons: Children were forced to undertake rag picking activity; As the rag picking was centred on recyclables, it led to spreading of waste dumps; some of them got involved in anti-social activities; and They sometimes encroached into the landfill sites and set fire to waste dumps.

Considering the strength of rag pickers active in both the corporations and their potential to effectively dispose about 2.5 tons of solid waste/day, it is suggested that steps should be taken to improve the working condition of the rag pickers. The corporations shall register the rag pickers involved in work and issue health cards to them so as to enable them to get treatment from ESI hospitals. Their work should be given support by the corporations in every city by providing them some income to work near the dumpsites, helping in segregation and other activities like bio-decomposition of organic wastes near to the dump sites and manure production, using this manure produced to grow small nurseries and maintain these nurseries which can provide livelihood not only to individual families of rag pickers, but to some group of families. If such integrated approaches are followed at the dump sites in association with rag pickers not only their living conditions can be improved but it would be a holistic approach to municipal solid waste management.

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