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Knowledge, Practice and Perception of Local Waste Disposal Personnel Regarding Domestic Waste Management at Uttara in Dhaka: A Case Study

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Abstract **Original Research Article**

The purpose of the study is to identify the knowledge, practice and perception of local waste disposal personnel regarding domestic waste management at Uttara Sector # 10 & 11. The purposive sampling method was used to collect the data. The study was conducted in Sectors 10 & 11. There were 50 male participants in this study. The pretested questionnaire was to the 50 male participants. The study was conducted using mixed methods (qualitative and quantitative). Both open-ended and close-ended questions led the participants to explore the knowledge, practice and perception of local waste disposal personnel. The study revealed that most of the participants (68%) are young adults. Only 12 participants are a child. It also investigated that most of the participants are not well-educated. The 35 people stated that they never went to school. The working experience of the total participants in this study is represented through a pie chart. The highest working experience level is 36 per cent, which is 2-5 years of working experience with waste disposal techniques. The second highest is 32 per cent and their working experience is below 2 years. This work also found that all the participants usually collect household waste including spoiled food, spoiled vegetable, glass items, paper and polythene. Among 50, 35 people know about the importance of waste management. The study also showed that the 48 people don't take any precautions because the authority does not provide them and the rest of them are accustomed. Most of the participants did not receive any training from the authority. 74% of people stated that their health is being affected by the job due to bad odour exposure from the waste. The number of injuries is high among them and 75% of people said that they have been injured many times with glass and needles. Most of them (46%) did not receive any treatment. On the other hand, 88% of people said they did not report anyone about their injury. It also revealed that most of the participants did not receive any vaccine. Only 32% of people said that they receive the tetanus toxoid vaccine.

Keywords: local waste disposal, Domestic waste materials, injury, food poisoning

INTRODUCTION

Inappropriate disposal of domestic waste has health impacts on people such as contamination or direct contact with the waste and air pollution. Other displays can be dengue outbreaks, food poisoning and so on. Stored wastes provide can food and breeding sites for insects, birds and rodents which can expose the community to vector-borne diseases [1]. The populations who are most at risk of these health issues are the people who work for domestic waste disposal. But unfortunately, in Bangladesh, they are relatively ignored and they have less awareness about this issue. It is very important to find their knowledge and practices and perception which will help to increase their health awareness and prevent them from all these diseases.

Domestic waste materials could be a threat to the health and the environment if they are not stored, collected, and disposed of properly [2]. In Bangladesh, domestic waste materials are collected by several people called waste disposal personnel. Their main responsibilities are to sort out waste materials and disposed of them. However, the problem with their work is that they are seen not to use gloves and shoes. As a result, they might be injured and infected. Moreover, they could spread the infection among the other people in the communities which leads to a public

health problem. Therefore, it is important to find out their knowledge, practices and perception of local waste disposal personnel regarding domestic waste management at Uttara Sector 10 & 11.

It is seen that they are not wearing any mask while they are handling the waste materials, where bad odour cannot be tolerated by general people who are exposed to the waste materials. But they are handling the waste materials without wearing any masks. Although, they are managing the waste with their bare feet. There might have some sharper materials but they do not care about it. So, there is a high chance for them to be injured by the sharper and rusty substance. If they do not take any vaccine after being injured by the sharper and rusty substance the chance of having infectious and other blood-borne diseases like Hepatitis-B, Hepatitis-C & Tetanus gets increased among them. Even though, they do not take any preventive measures while they are managing the waste materials. That is why my curious mind wants to know their knowledge, practice and perception regarding proper domestic waste management through systemic investigation.

Purpose of the Study

The main purpose of this study is to identify the knowledge of waste disposal employees regarding proper waste management. The perception of local waste disposal employers about appropriate waste management will be identified by this research study. Moreover, the factor of not maintaining proper waste disposal techniques will be identified through this research study. Through this study, what is their practice during the time of the work will be identified.

OBJECTIVE

General Objective

The objective of the research study is to find out the knowledge, practices and perception of local waste disposal personnel regarding proper domestic waste management and the factor of not maintaining proper waste disposal techniques the local waste disposal personnel.

Specific Objective

The specific objective has mentioned below:

- To conduct the knowledge of local waste disposal personnel regarding proper domestic waste management.
- To examine the practices of local waste disposal personnel regarding proper domestic waste management.
- To investigate the perception of local waste disposal personnel regarding proper domestic waste management.

LITERATURE REVIEW

Every day, millions of tons of solid waste are created in this modern world. Urban waste management is drawing attention because it is usually in the street that a huge amount of waste lying uncollected and polluting the environment, creating inconvenience for the people as well as posing a public health risks. It is a public benefit and an obligation to manage the waste properly. The entire citizens could be affected by an individual due to improper waste management techniques. The responsibility of the government should be to every person or organization to contribute significantly to the process of keeping their communities and environment cleans [3].

In the year 1920 waste management was less complex and voluminous in comparison to the current modern world. A large number of leaves, paper and wood products with little plastic or hazardous chemicals were usually produced at that time. In recent years, the high incidence of sanitation-related diseases such as cholera, typhoid and intestinal warming has led due to poor waste management. According to their recorded information, these are the top ten diseases among all in the modern world and that is a big public health concern nowadays [4].

Solid waste is a kind of waste which arises from household activity. This kind of waste is always described as garbage and thrown away from the house. This waste is collected by the local authorities and waste disposal units [5].

Asnani and Zurburg stated in their book which is published in the year of 2002 that solid waste is one of the biggest challenges in the urban area. This should be managed as promptly as municipalities can [6]. Another article describes that people are finding a solution to relocate the resources in waste management. They are finding a solution to waste management which is eco-friendly and economically well-fitted [7]. A research report stated that the management of medical solid waste management is very fragile in developing countries like ours. In this country, health hazards are increasing day by day. Among garbage collectors, the risk for contagious diseases is increasing, especially in developing countries [8].

The waste is collected from the locality or community by the municipality and dumped in some places where waste is divided according to the flammable and non-flammable types and after that, the waste is incinerated [9]. The garbage collectors are prone to bacterial infection as the biodegradable waste contains more bacteria than other things [10]. They are not only working in a high-risk area, but they are also in a position where their life expectancy is becoming shorter due to a lot of infection present [11].

A study found that the waste collection in Dhaka City usually collects with two processes including primary and secondary collection. The secondary waste collection is mainly controlled by the

Dhaka City Corporation. The different NGOs and private sector are mainly provided with the primary collection services to collect the waste from the household. The waste is usually collected by several people called waste disposal personnel. Finally, the collected waste is transported to dustbins or containers [12].

The estimated generation of domestic waste is 1950 tons/day, business waste 1050 tons/day and street waste 200 tons/day are collected in Dhaka city. Dhaka City Corporation circulates about 7,000 cleaners in eight zones for cleaning roads/drains and public spaces whereas private firms circulate about 600 cleaners in two zones. The cleaners do not require any qualifications to do the work. A main distinguishing feature of DCC cleaners is the working hours an average of 4 hours with a minimum of 2 hours whereas private cleaners work on average 6 hours with a minimum of 4 hours [13]. The municipalities were structured waste management in 1864 and they used to do the night soil collection by bullock cart. Now the Dhaka municipality renamed a Dhaka City Corporation [14].

RESEARCH METHODOLOGY

Research strategy is an overall guideline for the researchers for the research study. Moreover, the research strategy assists the researchers to collect and analyze the data. However, the study was conducted by using both qualitative and quantitative (mixed methods) in my research study. It was very helpful for analyzing and interpreting the data which had collected through the purposive sampling method. Non-probability purposive sampling techniques were used in this research study.

Study Population and Sampling Techniques

The domestic waste disposal personnel who work in Sectors #10&11 were the main target population in this research study. According to the statement of the Sector Developmental Society, there are approximately 450 waste disposal personnel in the whole Uttara area. According to the opinion of the waste disposal personnel, there are overall 200 waste disposal employers in Uttara Sector# 10 & 11. The research study was conducted among 50 participants at Sector-10 &11, Uttara Model Town, Dhaka, Bangladesh. Almost all of the selected study population was destitute. People of all ages were included in this study. The identification of the waste disposal personnel that they have been seen to wear yellow uniforms during the time of their work. Sometimes they did not wear the uniform during their working hour. However, they usually collect household waste in the morning and gathered it in the afternoon at sector#10 waste disposal junction. That is why the interview time was selected in the morning and afternoon. At the time of the interview, we selected them by noticing their uniform. Then we simply asked them about their profession for further confirmation so they easily matched with my study population. Finally, we started the interview with their consent.

Study Design

The data were collected by using both qualitative and quantitative methods (mixed method) to analyze the knowledge, practice and perception of domestic waste disposal personnel. There were both open and close-ended questions for the participants to obtain the data. The mixed method was very helpful to collect and analyze both quantitative (closed-ended) and qualitative (open-ended) data. The qualitative method was helpful for the investigator to understand the perception of local waste disposal employers about proper domestic waste management. On the other hand, the quantitative method was helpful for the researchers to explore the knowledge of local waste disposal employers regarding proper domestic waste management. To estimate the number and percentage the quantitative method was helpful for the investigator. That is why the investigator selected the mixed method process.

Additionally, a non-probability purposing sampling technique enables the data collection from a population who are conveniently accessible for the study. In this study, this sampling method was used to get the target population. The process we have selected is due to limited waste disposal personnel. Otherwise, it was very difficult to get 50 participants in this research study. The purposive sampling was very cost-effective and also minimizes the time of the data collection process. Because there was a short time frame to conduct the research and there was no financial help from anyone. This method also allowed the researchers to collect data from a particular group of the population. By using this method, the interpretation and analysis of the collected data were straightforward. The percentage of the population and their opinions were presented by graphs and charts as well as tables.

Data Collection

Firstly, the participant was receiving the pretested questionnaire, although consent was taken from the participant before proving the questionnaire. Before the interview participant's permission was taken and they were informed about the approximate time of the interview. The duration of one single interview was 10-15 minutes. The given answer was written on the questionnaire. The interview was taken in the morning and afternoon because they were available at this time. Some participants disagreed to take part in the interview then the investigator was looking for other participants. Some of the participants denied giving signatures. So, we exclude them and find another participant. There was the chance to get the same participants again and again. Therefore, we asked them whether he took part in the interview or not. If the participants did not take

part in the interview, then we proceed with the interview. The data was written on the questionnaire by the interviewer. This is how data were collected from 50 participants. Additionally, a pre- testing pilot study was led by 5 of our university friends to ensure the questions are comprehended by the respondents and any kinds of misleading, confusing, or conflicting questions were removed from the questionnaire. Moreover, both open and close-ended questions were included in the questionnaire for collecting data. Finally, the questionnaire was written in both Bengali and English versions to promote the level of understating of the question for the employees as their educational background might be below the satisfaction.

Data Analysis

The collected data from each participant were simply inputted in the excel sheet as value 1. There was a specific section for a specific question in the excel sheet. The value was included based on their given answer. Finally, the total value was summed together to represent graphs, charts and tables etc.

Study Materials

The following materials were used in the research study: a questionnaire, pen, paper, pencils, eraser and pencil sharpener, and computer.

Ethical Considerations

Ethics is the term which helps us to distinguish between right and wrong. However, the investigator must inform the participant about the purpose of the research, risks and benefits. After getting all the required information about the research study the participant can be involved with them as a respondent. Conversely, the participant has the right not to involve themselves as a respondent. Moreover, the respondent has the right to withdraw from any point in the interview. The respondent was never requested to continue the interview.

Privacy and Confidentiality

The respondent has to sign the consent paper before starting the interview. It works as a written document as they are participating in the research study. Whatever data was collected from the respondent through the interview and questionnaire the data were private as well as confidential. No one was allowed to access the data except the researchers. Although their name and identification were not mentioned in this report. As a researcher, privacy and confidentiality were strictly maintained to mitigate the risk for the respondent.

Benefits and Risks

Direct Benefits

The selected study has not provided any direct benefits for the participants. Because there was not any sort of incentives for the participants. Moreover, the participants were completely voluntary. Additionally, the participants did not receive any kind of teaching or education. Thus, they have not received any direct benefits.

Indirect Benefits

The investigator identified the factors of not maintaining proper waste management techniques by the local waste disposal personnel through this research study. As a result, further research can be conducted on a greater scale with a similar subject. These findings might be used to make policies for healthy practices. A long-term benefit might be that after completing the study, the line manager or supervisor may be motivated to think about the proper technique for of disposing domestic waste products.

Risk

The topic of this research was not sensitive. The permit had taken from the Sector Development Society before conducting this research in Sectors #10 and 11. The design of the study, as well as the questionnaire, did not bring any harm (physical and emotional: the topic was not sensitive and the participants were allowed to withdraw from the interview at any time) to the participants.

There was no risk for the researchers as well because before starting the interview consent was taken from the participants and Sector Development Society. Moreover, an appropriate code of ethics and confidentiality was followed strictly.

RESULTS AND DISCUSSIONS

Demographic Data

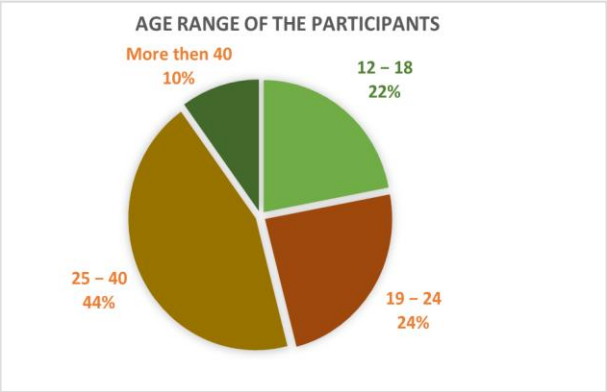

Figure 1: Age range of the participants.

According to the pie chart, most of the participants are from the 31-40 years of age range. The highest percentage is 44% between the age ranges from 31 to 40. The second highest is 24% between the age range of 21 to 30. The age ranges from ≤20 years is 22% per cent. This is the third highest among all categories of people. Only ten per cent of participants are older adults.

Approximately, 73 million child labourers between the age range 5-17 are involving themselves with hazardous work. It's also seen in both industrialized and developing countries. According to the estimation of ILO (International Labor Organization), more than 22,000 children are killed at work every year worldwide [15].

So, it is clear that most of the participants are adults and young adults. Conversely, a few numbers of participants (22%) are adolescents and this is a concern for society. The International Labor Organization (ILO) sets the general minimum age for involvement with work at 15 years. They also mention that they can make light work at 13 years and the minimum age for hazardous work at 18 years [15]. As waste disposal management is a kind of hazardous work, 22% per cent of workers those aged 12-18 years are involved with this profession. It is a great concern for society. Because their bodies and minds are still developing, children are more vulnerable than adults to workplace hazards.

Highest Educational Status of the Participants

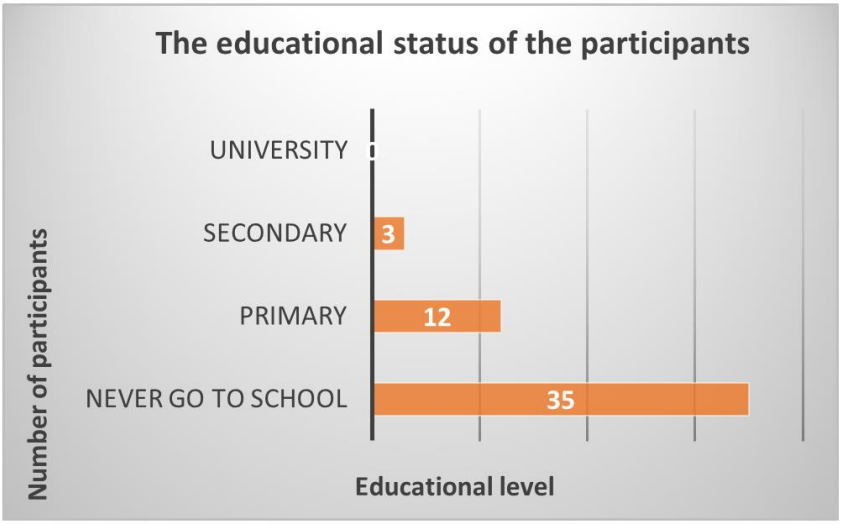

Figure 2: Educational level of the participants.

It is to be seen from the bar chart that among 50 the 35 participants never go to school. On the other hand, only 12 participants studied up to the primary level. Among all, the rest the 3 participants studied up to the secondary level. But none of the participants studied up to university as well as in the higher secondary level. This means most of the participants, who are involved with waste management, are mostly illiterate. Most of them were able to give their signature, but few of them gave their thumb sign. According to their opinion, the main reason for their illiteracy due to lack of financial support. The rest of the participants also dropped out of the study when they were at the primary and secondary levels also due to a lack of financial support and also proper guidance because most of them belong to poor families.

Working Experiences of the Participants

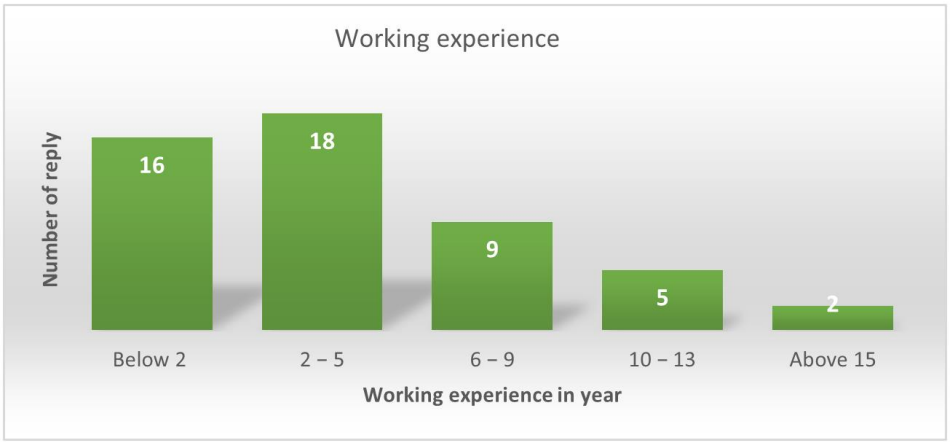

Figure 3: The working experiences of the participants

The working experience of the total participants in this study is represented through the above bar chart. The highest working experience level is 36 per cent, which is 2-5 years of working experience with waste disposal techniques. The second highest is 32 per cent and their working experience is below 2 years. The working experience between 6 to 9 years is 18 per cent and this is the third highest. Also, 10 per cent of participants answer about their job experience between 10-13 years. Only 4 per cent of people and their working experience above 15 years. Most of the participants and their working experience is not more than 5 years. And there is a smaller number of participants those working experiences from 6 to above 15. Most of them have average working experience. It might happen because it is a hard-working profession. According to their opinion, a huge amount of waste has to bring from the house by the manual van. They do not get any financial support for treatment at the rate of injury is high among them. They also state that the salary is not sufficient for them. That's why they are looking for another profession.

Participants Responsible for their Job

Figure 4: The participant's responsibilities for their job.

The pie chart shows the participant's responsibilities in their job. 100 per cent of participants are involving themselves in collecting the waste from the house and disposing of the waste in road no 13 waste disposal junctions. All of them are well introduced to the job titles they have. They know what their job is.

According to this study, the household is usually collected by local waste disposal employers. Also, the participants state that they collect waste from door to door and transport the waste to the dustbin/container. Both studies are providing a similar statement.

Types of Waste they collect from Household

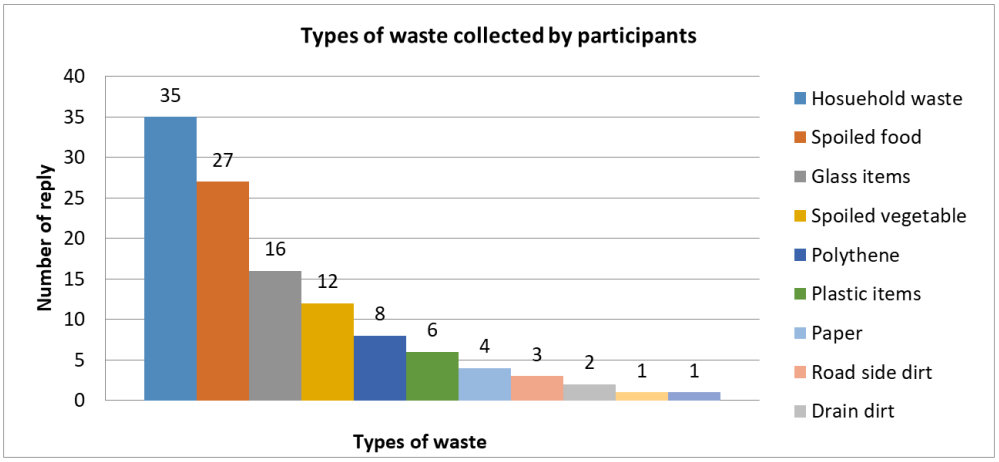

Figure 5: Types of waste collected by the participants.

The vertical axis is showing the number of participants' replies and the horizontal axis is describing the types of waste collected by the waste disposal employers. The most frequent answer was household waste and spoiled food. Both 16 and 12 participants said that they usually collect glass items and spoiled vegetables. Both 8 and 6 participants said that they usually collect polythene and plastic items. They are a few participants who replied that they collect roadside dirt, drain dirt, medical waste and garments waste.

Most of them usually collect household waste and spoiled food. The second highest number of people collects glass items and spoiled vegetables. One of the studies recorded that the highest percentage of organic waste was collected in Indonesia (70.2%) and China

(63.7%). Another study has been done in Dhaka and which also found that Food waste (organic) is higher than any other substance like paper, glass and plastic. [16]. In this study, 78% of organic waste (vegetable and food) was collected by employers. Which is greater than other developing countries. In comparison to other developing countries, the percentage of paper (19%) and plastic (18%) was found in the Philippines [18]. The percentage of polyethene and plastic is 28%, which is greater than in other developing countries. Another study found in Bangladesh that 600 million bags are used in Dhaka city per day [16]. That is a big environmental concern for our countries. On the other hand, the percentage of paper is 8%, which is less than in other developing countries. That is a positive side for the environment.

Participants' Opinions about the Importance of waste Management

Figure 6: Participants' opinions about the importance of waste management

Keeping the environment clean and reducing bad smells are kind of similar answers. But they answer differently. So, 60 per cent of people answered that it keeps the environment clean and reduces bad smells. On the other hand, 32 per cent of people said that they do not have any idea about the importance of waste management. Moreover, 18 per cent of people replied that they are working for the money. Only 10 per cent of participants answered that reduced the human problem. A study found that waste products are one of the leading reasons for environmental pollution. The environment will be free from pollution if we can manage the waste properly [17]. From the above result, it is clear that most of the participants know the importance of waste management. But few of them said that they do not have any specific idea about the importance of waste management.

Several Participants are Taking Precautions during waste Management

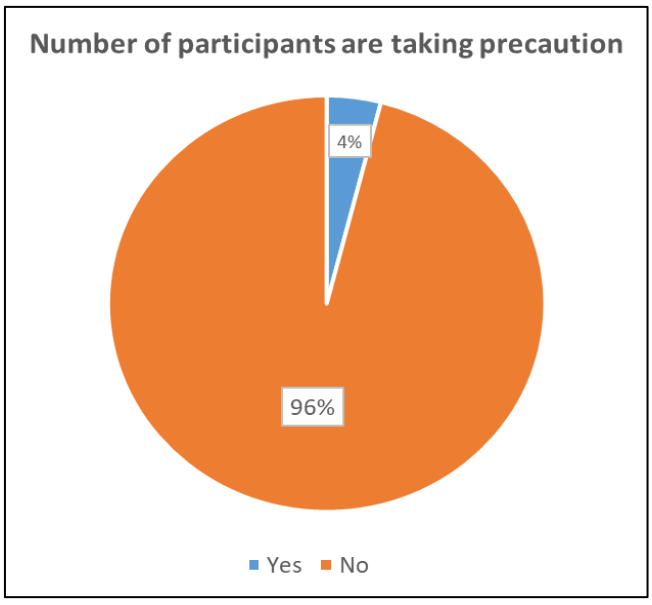

Figure 7: The precaution is taking by the number of participants.

The close-ended question asked the participants to identify the number of people who usually take precautions during their work. From the above pie chart, we can describe the number of people who took the precaution and who did not. It is to be seen that among all participants 48 people do not take the precaution while they are working. Conversely, only 2 people said they took the precaution. This means most of the participants (96%) do not take the precaution and only 4% of people usually take the precaution while they managed waste. It is absolutely a bad practice as most of them does not take precaution. Some people said they do not have to take any precautions because they are accustomed to doing the work without taking any precautions. Therefore, most of the people found not to maintain any precautions. The participants are more vulnerable as they do not take any precautions. The possible health impacts for them include nausea, vomiting, headache, skin disorder, diarrhea and nervous system disorder.

CONCLUSION

Waste is a kind of a threat to public health if it is not properly collected, dispose and store. The study was conducted to explore the knowledge, practice and perception of local waste disposal personnel regarding proper domestic waste management at Uttara Sector #10 & 11 by using a mixed method sampling technique. The study found that most of the participants do not take any precautions because the authority does not provide anything for them. The rate of injury is high among them by glass, blade and needle. They have not received any treatment from anyone. Even if they have not received any training before coming to this profession. Most of them did not receive any vaccine. Some of them received the tetanus toxoid vaccine. Also, they don't appear to understand exposure to microbes and toxins can affect the body/health. Further study can be done over the country to generalize the findings also it will help to take initiative for policy making.

RECOMMENDATIONS

- The authority should provide training on proper waste management and logistic support for waste disposal employers.
- The authority should provide preventive equipment including gloves, masks, gowns and protective shoes for the waste disposal employers. So, they will able to use preventative equipment like masks, shoes and gowns during the time of work.
- The vaccination should be ensured for them (tetanus, hepatitis A & B).
- The authority should arrange a health checkup program for them every month as they are involved with hazardous work. They are more vulnerable to getting an infection.
- The government should facilitate free treatment for them because they are involved with hazardous work.
- The government should educate the household people to dispose of waste in the specific container for the different categories of waste. So, the rate of injury will decrease among them.

REFERENCES

1. Yoada, R, M., Chairawuah, D., & Adonogo, B., (2014). Domestic waste disposal practice and perceptions of private sector waste management in urban Accra. *BMC public health*, (1).
2. Wilson, D., C., Veils, C., & Cheeseman, C. (2006). Role of informal sector recycling in waste management in developing countries. *Habits international*, 30(4), 797-808.
3. Lemann, M. F. (2008). *Waste Management.* Berlin: Peter Lang.
4. Jeong, B, Y., Lee, S., & Lee, J, D. (2015). Workplace Accidents and Work-related Illnesses of Household Waste *Collectors. Safe Health Work*, 7 (2).
5. Hester, R., E., & Harrison, R., M. (eds). (2002). *Environmental and Health Impact of Solid Waste Management Activities.* Cambridge: Royal Society of Chemistry.
6. Asnani, P., U., & Zurbrugg, C. (2002). *Improving Solid Waste Management in India.* Washington D.C: The World Bank.
7. Maids, K, G. (2019). Proper Waste Management and its Importance.
8. Hossain, M. S., Santhanam, A., Norulaini, N., N., & Omar, M. A. (2011). Clinical solid waste management and its impact on human health and environment- A review: *Waste Management*, 31(4), 754-766.
9. Gilkeson, R. H., Heigold, P. C., & Laymon, D. E. (1986). Practical application of the theoretical to magnetometer survey on hazardous waste disposal site- a history. *The Groundwater Association, 6*(1), 54-61.
10. Almers, H., Huber, H., & Baur, X. (2000). Two years follow up for a garbage collector with allergic bronchopneumoaspergillosis. *American Journal of Industrial Medicine*, 37(4).
11. Tooher, R., Griffin, T., & Shute, E. (2005). Vaccinations for waste-handling workers. A review of the literature. *Waste management and research.*
12. Kitahara, E., (2005). The study on solid waste management in Dhaka city. Dhaka City Corporation. *The People's Republic of Bangladesh Japan International Cooperation Agency.*
13. Japan International Cooperation Agency. (2005). The study on solid waste management in Dhaka city.
14. Islam. (2016). Solid Waste Management System in Dhaka City of Bangladesh.
15. ILO. (1999). Hazardous child labour.
16. Bahauddin, K. M., & Uddin, M. H. (2012). Prospect of Solid Waste Situation and An Approach of Environmental Management Measure

(EMM) Model for Sustainable Solid Waste Management: Case Study of Dhaka City. *J. Environ. Sci. & Natural Resources*, 5(1).
17. Strategy for the Safe Handling and Disposal of Waste. (2006). Retrieved from: http://www.wales.nhs.uk/sites3/documents/49/11waste.pdf
18. Rushton, L. (2003). Health hazards and waste management.