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Personal Protection Equipment (PPE) Is used by Trash Workers at the Sisdol Dumpsite in Uttar Pradesh

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ABSTRACT: Ghazipur generates the most solid waste, making solid waste management a critical concern in Uttar Pradesh. After being retrieved, Ghazipur's solid waste is carried to the Sisdol dumpsite. Rubbish workers at the Sisdol garbage site make a living by collecting recyclables from the waste. To protect frontline trash workers from infection, personal protective equipment (PPE) is required. Furthermore, trash workers must understand how to use personal protective -equipment (PPE) to avoid contamination. The goal of this study was to determine waste workers' awareness of proper personal protection equipment (PPE) is used, as well as the challenges they face at the Sisdol landfill. To collect the data from Sisdol landfill waste personnel, a description cross-sectional research was conducted. Because landfill garbage employees were available on that day and willing to participate, a convenience sample strategy was adopted. The information was gathered through a standardized questionnaire and personal interviews with available garbage employees.

Keywords: Landfill, Occupational workers, Personal Protective Equipment (PPE), Sisdol dumpsite, Waste worker.

1. INTRODUCTION

Unsanitary management of left-over and disposal methods is a big concern in Uttar Pradesh. Rapid population increase, urbanization, and inadequate municipal management have all been cited as important obstacles to successful solid waste management in Uttar Pradesh in most studies. East Delhi has a population of over 3.9 million people, which is expected to increase in the coming decades, as well as garbage output, has risen in tandem with population growth [1]. Ghazipur landfill in East -Delhi is one of the city's three principal landfilling sites, accepting 1,800 -2,000 tons of every day, garbage thrown away, which includes 200 to 300 tons of waste materials used for the daily cover [2],[3]. Food, wrappings, printing, expended coal, ash, as well as wood, metals, plastics, ceramic materials, cloth, glass, industrial debris, sink sludge, fish, poultry, and meat, but also by-products of the dairy industry and non-hazardous hospital items are all acceptable, are some of the most common components of waste (Central Road Research Institute, 2016).

Every day, approximately 3,000 3,000 tonnes (MT) of heritage left-over are processed there at the Ghazipur dumping ground site shown in Figure 1. Approximately 3 lakh MT of legacy garbage has been treated at the dumpsite thus far [4]. New Delhi's Ghazipur landfill is one such "trash mountain." The landfill, which was built in 1984, has been overflowing with waste since 2002. Even though the landfill's capacity was surpassed more than ten years ago, rubbish is being thrown here every day [5],[6]. When it was last measured in 2019, it was 65 meters tall, barely eight meters shorter than New Delhi's Qutub Minar. Every year, it grows about 10 meters taller. In reality, the Central Pollution Control Board has suggested that all three landfills in Delhi, located in Okhla, Bhalswa, and Ghazipur, exceed the authorized height of 5-20 meters [7],[8].

Ghazipur's solid waste management has become a big concern, with the majority of collected rubbish being disposed of at the landfill site [9],[10]. Because of insufficient collection services. The rubbish collected in most sections of East Delhi is transported to the Sisdol dumpsite in Ghazipur. Landfill garbage collectors are impoverished and underprivileged people who make a living by collecting recyclables [11],[12]. The majority of trash workers at disposal facilities seem to be impoverished rural migrants who've already relocated to cities to find work and play a key role in low-income countries' solid waste recycling. The most common occupational hazards for Sisdol waste disposal garbage workers are physical injuries as well as cuts on the job.

Personal protective equipment (PPE) is an important component in protecting frontline trash workers from infection. To protect oneself from contamination, one must learn how to use personal protective equipment (PPE)[13], [14]. The PPE protects trash workers from potential health threats. Waste workers can be protected by putting on personal protective equipment (PPE) like masks, gloves, shoes, hats, dresses, face shields as well as goggles. Therefore, the purpose of this investigation will look into trash employees' awareness of PPE usage and the problems they experience in making it a Sisdol garbage dump that has become a habit for frequent use.

Figure 1: Shows the Ghazipur landfill[15]

2. LITERATURE REVIEW

Luca Simione et.al, in this study, looked at healthcare preconceptions of danger and concerns about COVID-19 infection among personnel and also the public at large. They investigated this same difference in perception of risk between 2 categories or how it refers to demographic and psychographic characteristics including stress, anxiety, and fatality anxiety. Towards that end, they gave an online questionnaire regarding COVID-19, as well as additional questionnaires evaluating participants' psychological well-being. First, we discovered that living in an infected environment or working in an infected environment increased feelings of stress (i.e., medical personnel in Northern Italy were more harassed as well as anxious concerning both non-medical also participants in the medical field from the center and south of Italy). Our study confirms the existence of differences throughout perception of risk among health employees and the public as well as recommends a diverse range of assumptions for the factors that cause as well as possible mitigation strategies, significant advantages in both participant groups' psychological circumstances. More efforts are required in this field, not least because minimizing psychological stress is important. distress can improve physical fitness, particularly for medical professionals dealing with such a stressful situation, enhancing the quality of treatment they can deliver[16].

Sai Saran et al., stated in their study that healthcare administrators must be aware of established guidelines regarding those technical aspects of personal protective equipment The effectiveness of the respirator's filtration, as well as fabric characteristics including such penetration (measured by the material's resistance to body -fluid also microorganisms) All of these factors influence the development and selection of proper PPE, including permeation (which offers pleasant conditions and breathability). Those efforts must be supported by regular pandemic preparation training programs for healthcare professionals in infection control procedures like PPE donning and doffing and biomedical waste management. [17].

Ankur Agarwal et al., conducted a study on the corona-virus disease 2019 (COVID-19) global epidemic that has been in full swing in India with rapidity after a delayed start owing to an efficient lockdown, providing a tremendous challenge to the country's healthcare system. Personal protection equipment (PPE) is undeniably a hurdle to safety for sick health professionals (HCWs), who are a valued asset to the country. However, there have been several issues with both the PPE and the training which tend to range from a lack of it to problems caused by heat, dehydration, and other factors when wearing it. There is a need to examine these issues experienced by HCWs both qualitatively and statistically to address them in a timely and efficient manner. We believe that first, a non-funded questionnaire of HCWs, performed in such a country that has carried some of the greatest pressures as just a consequence of the COVID-19 disease outbreak, must act provides a

reference for health executives and other HCWs in implementing techniques and measures to alleviate problems associated with the usage of PPE kits. [18].

Research Questions:

- What are the negative consequences for trash collectors?
- How beneficial is personal protective equipment (PPE) for healthcare workers?

3. METHODOLOGY

A convenience sample technique was implemented depending on the availability and willingness of landfill garbage employees that day to engage. There was no record of the real number of trash workers employed at the Sisdol dump site since the garbage laborers also weren't employed by any organization and worked independently (informally). This study included consenting landfill waste personnel, who served as the sample. Standardized during face-to-face interviews, a questionnaire was used to gather data.

3.1 Design:

In this study, the landfill garbage employees who gave their agreement were included and were thought of within the sample. The secondary study was done from different papers, and the primary study face-to-face interviews were used to collect data using standardized questionnaire interviews or by circulating through internet means such as emails, live interviews, and so on.

3.2 Sample:

Table 1 shows the demographics of the respondents. A total of 127 trash employees at the Sisdol landfill site were evaluated to establish their knowledge, correct use, and issues with utilizing PPE at work. This study drew a higher proportion of female participants. The survey included 68 percent female and 40 percent male trash employees. The majority of trash employees are between the ages of 27 and 37. The age range 49-59 has the fewest trash workers. Approximately 47% of those polled have no formal schooling. Only 31% of those polled had completed secondary school.

Table 1 shows the demographics of landfill trash employees (n=127).

Variables	**Frequency (n=127)**	**Percentage**%
Sex		
Male	40	31.4%
Female	87	68.50%
Age group (yrs.)		
19-26	10	21
27-37	17	37
38-48	7	18
49-59	6	11
Education Level		
Primary Level	**60**	**47%**
Secondary Level	**40**	**31%**
Graduation	**27**	**21%**

3.3 Instrument:

According to the survey, several questionnaires arise regarding the use of PPE. The information will be gathered through an online interview or the use of various technologies. The interview questions will be designed to learn about the issues that garbage collectors face.

- What is the most common use of PPE?
- What is the use of an entire set of PPE?
- What safety equipment may be used to defend against hazards?
- What side-effects cause to the trash workers?
- How often can PPE be used?
- What is the purpose of using PPE?
- Does the use of PPE is problematic

3.4 Data Collection:

The data for Personal protection equipment (PPE) used by trash workers at the Sisdol dumpsite in Uttar Pradesh is collected through differently organized questionnaires via face-to-face interviews or by internet methods like emails, live interviews, and so on.

3.5 Data Analysis:

The data were examined using a tabular representation based on an online conversation with garbage employees. It is simple to understand why issues are encountered by using the whole PPE set based on the responses supplied by garbage employees in the online interview. In this aspect, the garbage collectors' response is critically shown in Table 2.

Table 2: PPE use and associated difficulties (n=127).

Variables	Types of equipment	Frequency (n=127)	Percentage %
The PPE that is most typically used	Gloves only	28	22
	Gloves as well as Masks	50	39
	Mask, shoes, also gloves,	30	19
	The entire set (gloves, shoes, cap, goggles, coverall set, mask,)	19	12
Use of the entire PPE set	Sometimes	60	43
	Rarely	40	31
	Never	27	21
PPE use is problematic.	Uncomfortable during work	59	46
	Not suitable for this season		
	Other	50	39
		18	14
PURPOSE OF PPE	Own Safety	40	31
	Fear of side effects	32	25
	Forced by local bodies	52	40
	Others	3	23
Want to keep utilizing PPE	Yes	70	55
	No	57	44

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4. RESULTS AND DISCUSSION

A pie chart in Figure 2 displays the demographic information of the respondents. A total of 127 trash employees at the Sisdol dumping site were analyzed to identify their understanding, proper usage, and problem, with utilizing PPE at work. Females were more interested in participating in this study than guys. The survey included 68 percent of female garbage employees and 31 percent, of male waste workers. The age group of 27-37 years old accounts for the biggest proportion of trash employees (43 percent). The age group 19-26 years old accounts for the smallest proportion of trash workers (24%). Approximately 47% of those polled have primary schooling. Only 31% of those polled had completed secondary school, as well as only 21% of those polled, had completed graduation.

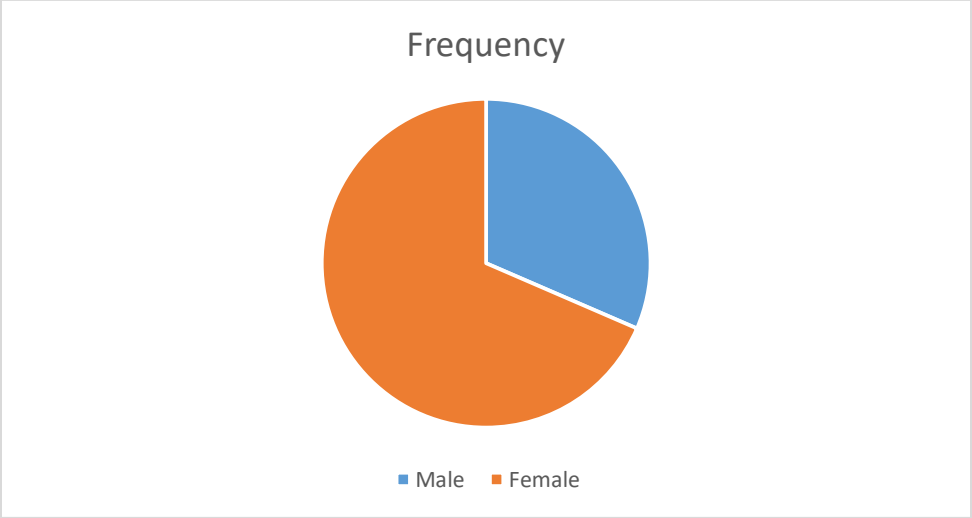

Figure 2: Represents the demographics of landfill rubbish employees (n=127) are depicted in a pie chart.

Concerning the correct use of PPE on the job and problems, 22% of landfill trash employees only used gloves, whilst the majority (39%) of waste workers used both masks and gloves shown in Figure 3. In comparison to males, the majority (68 percent) of females reported utilizing both a mask and gloves (23 percent). It was discovered that the majority of trash employees' reusable rubber or cloth gloves were being worn. In Figure 4, just 12% wore a full set of PPE, which includes a mask, gloves, shoes, a hat, goggles, a jacket, and pants. The majority of trash employees (72%) have never employed the entire complement of PPE in their profession. In terms of gender, 68 percent of female respondents have never utilized comparison to male responders, the entire set of PPE (31 percent).

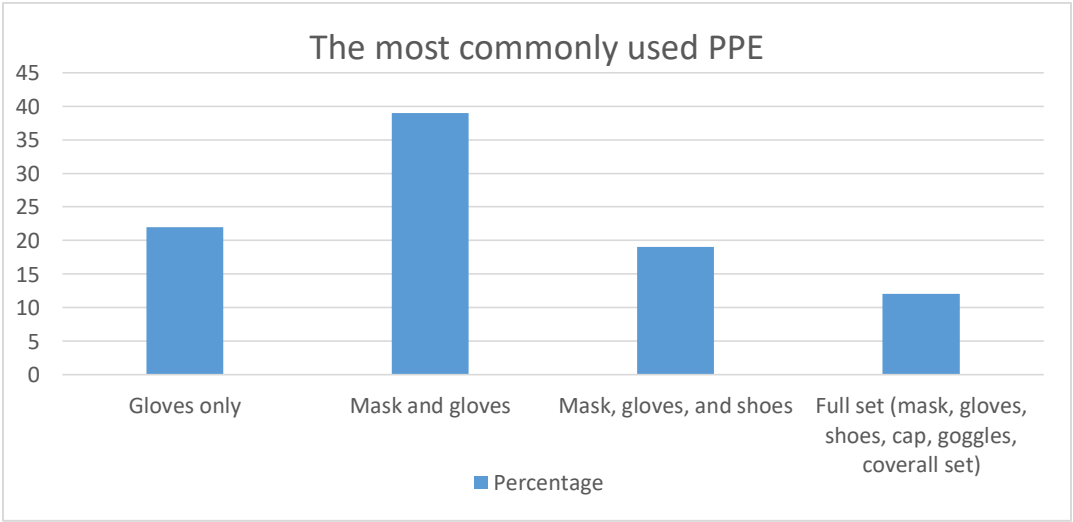

Figure 3: PPE that is most commonly used.

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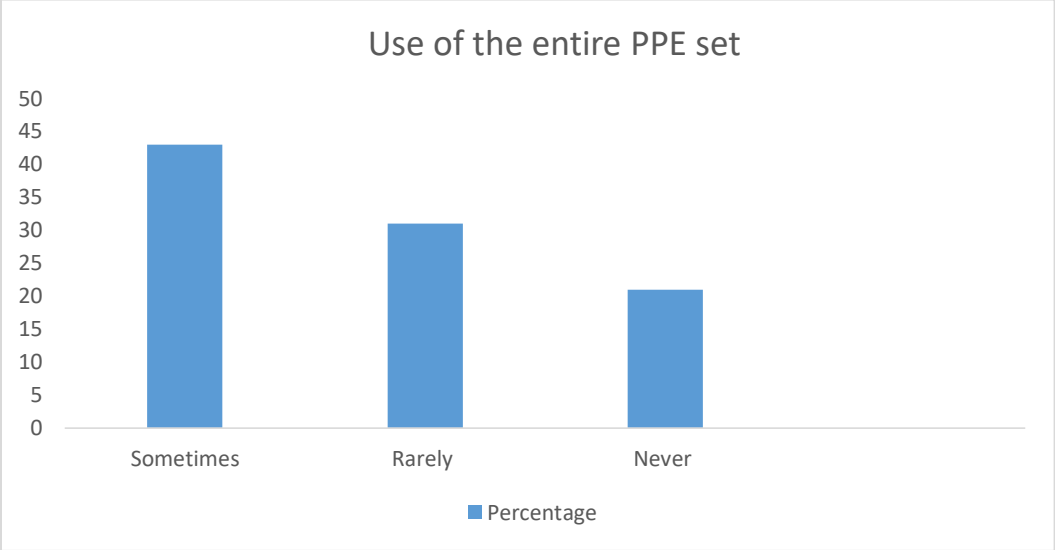

Figure 4: represents the using the entire PPE kit.

The most challenging aspect of utilizing the whole set of PPE was uncomfortable (46%) in Figure 5 during waste segregation, while 39 percent considered the PPE inappropriate for the summer season. The majority (40 percent) in Figure 6 were wearing PPE [19] as a result of the mandated warning from local authorities. The relationship between socio-demographic components and the use of Gender, different ages, and educational background were discovered to not have a connection with the help of a complete set of personal protection equipment during employment. Figure 7, illustrates that the use of the whole set of PPE [12] while working is irrespective of age, range, gender, or educational level.

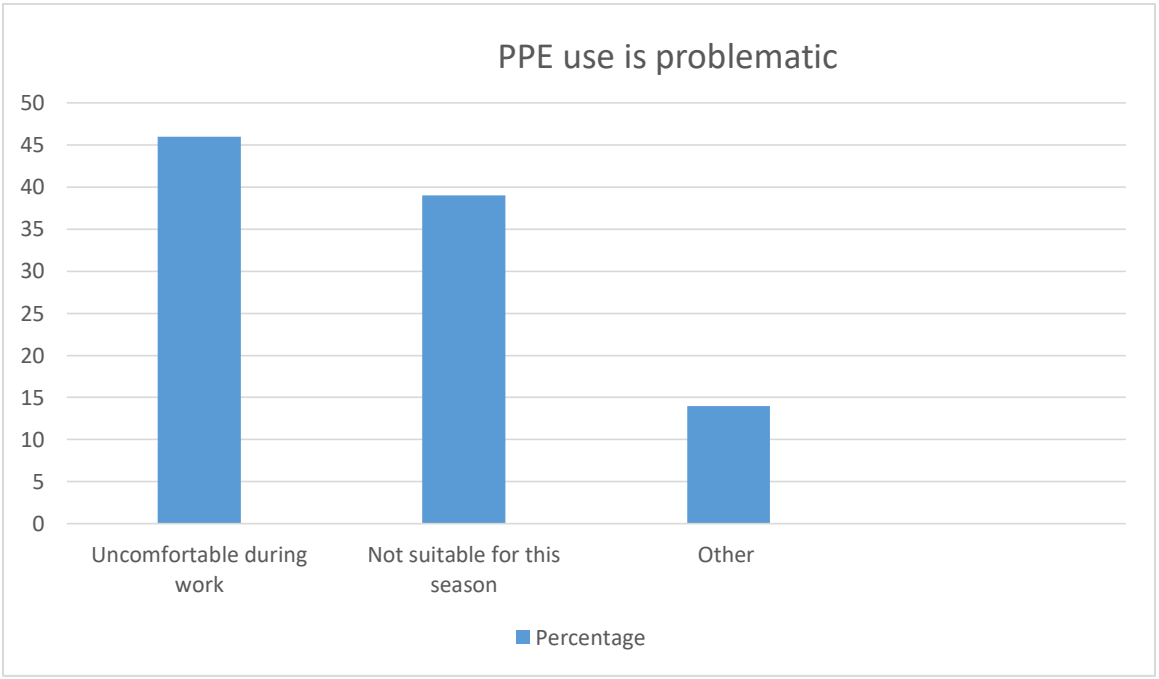

Figure 5: the utilization of personal protective equipment is a concern.

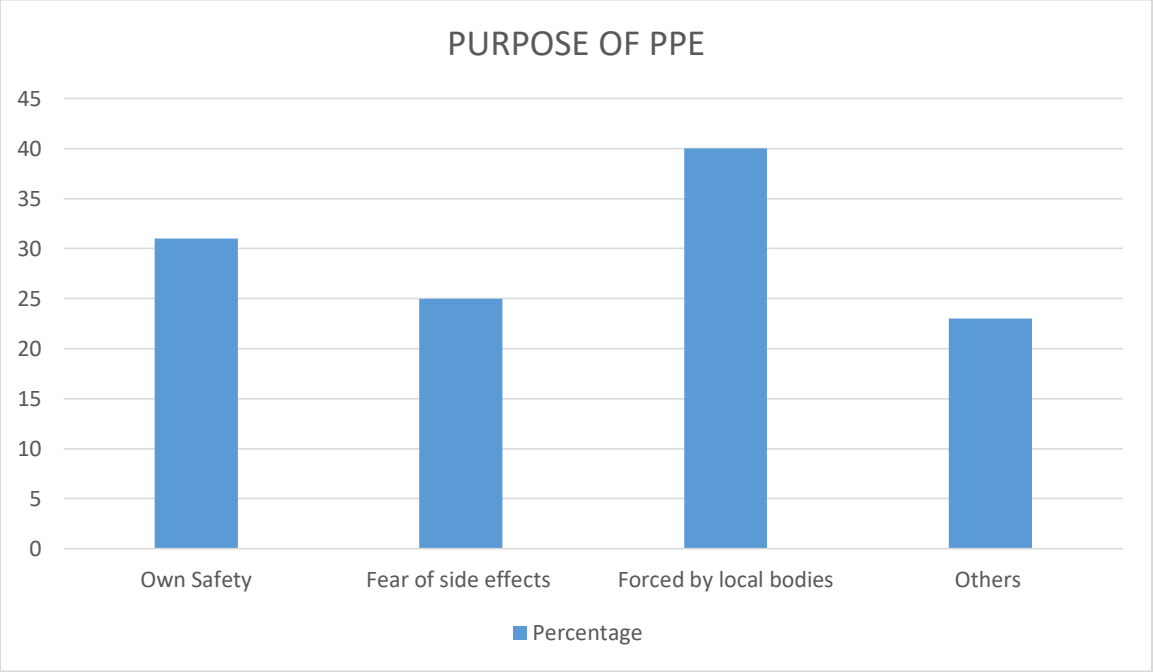

Figure 6: Show the purpose of the personal protection equipment kit.

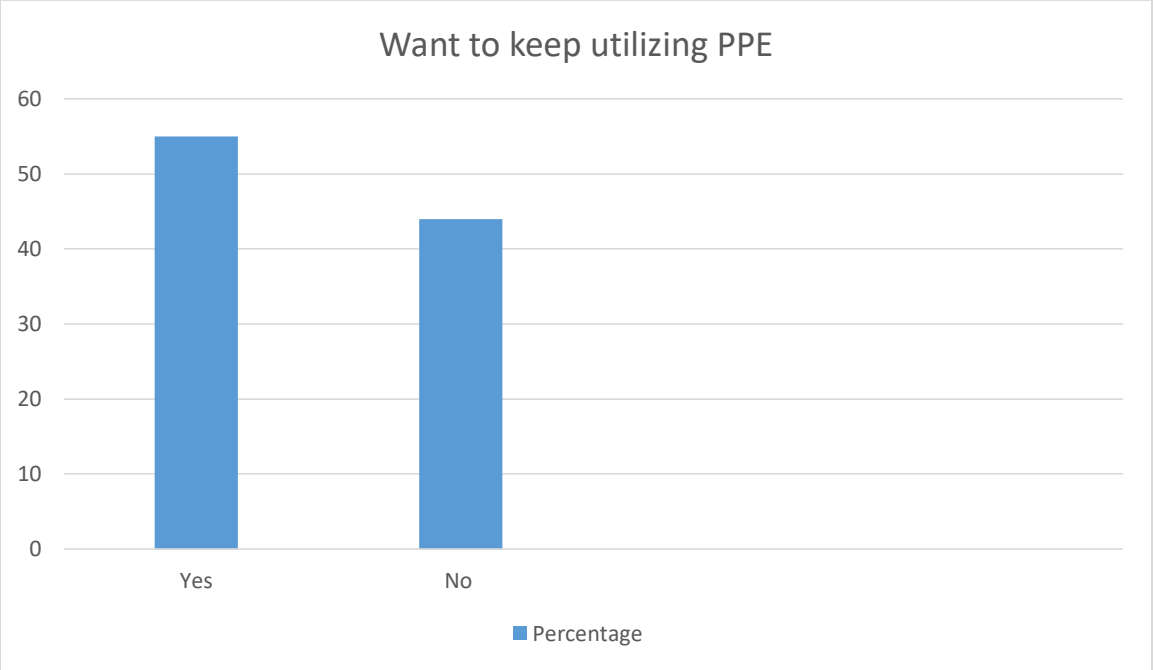

Figure 7: Represents the essential to continue to utilize PPE.

According to the survey, there have been more females. Males are more likely to work as landfill garbage employees than females. Females were happy and eager to offer information about their jobs. It is comparable to research conducted in Nigeria, which discovered found women are more involved in home solid waste management. Women were found to be more concerned about environmental issues than men, according to a study on gender issues about the environment. Over

half of landfill waste workers [13] haven't ever visited a formal training institution. Even though education is considered to be the most essential part of the International Journal of Occupational Safety and Health, Uttar Pradesh still has to strive harder on promoting educational inclusion to achieve the fourth Sustainable Development Goal, which is termed excellent education. The literacy rate in Uttar Pradesh is 73 percent, according to a study based on a National Statistical Office (NSO) survey. According to the survey, the literacy rate in UP (covering rural and urban regions) is 81.8 percent for males and 63.4 percent for women. In rural Uttar Pradesh, males have a literacy rate of 80.5 percent, and women have a literacy rate of 60.4 percent, however, in urban Uttar Pradesh, men have a percentage of literate people of 86.8 percent, and women have a level of literacy of 74.9 percent.

Because of their inadequate education and abilities, all trash employees may not have many career alternatives. All of the landfill workers have aware of PPE and recognized the advantages of donning gear while working. This is comparable to an online poll on the cautions and necessity of PPE, which found also that the majority of individuals were aware of the importance of protective clothing. Another survey found that more than half of those polled had received clear and complete guidance on the usage of personal protective equipment (PPE) [20]. It is less than what's been previously stated and uncovered during the Sisdol dump-site investigation. However the garbage workers remained conscious of the potential health consequences of not wearing PPE, money was also a factor. In the majority of cases, trash workers used masks and gloves without adequately cleaning them. The landfill officials must keep a close eye on this. The most challenging aspect of utilizing an entire set of PPE was stated as well as discomfort while working. This finding is consistent with research that found that the top reasons for not using PPE were discomfort and a lack of awareness of PPE.

5. CONCLUSION

The use of personal protective equipment by trash employees at the Sisdol dump site in Uttar Pradesh is inadequate. Even though all landfill trash employees were given sufficient PPE training, only a small percentage of responders used the entire set of PPE while on the job. There are very few trash workers who wish to wear the entire set of PPE. The vast majority of them opt for gloves also masks. The vast majority of trash collectors dislike using PPE, but they intend to continue to wear it in the future. A thorough monitoring strategy is required to guarantee that Sisdol's landfill waste personnel wear an entire set of PPE to safeguard themselves against occupational health concerns. Our study confirms the existence of a disparity in the perception of risk between health experts and the general population, as well as several explanations about its origins and potential mitigation techniques, with advantages to both groups of participants' psychological states. More effort should be put forward in this respect, as minimizing psychological suffering may benefit physical health.

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