ISSN: 2091-2749 (Print)
2091-2757 (Online)

Knowledge and compliances of safety measures among the solid waste collectors in Kathmandu valley

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Submitted
28 Apr 2019

Accepted
26 May 2019

How to cite this article
Shova Shrestha. Knowledge and compliances of safety measures among the solid waste collectors in Kathmandu valley. Journal of Patan Academy of Health Sciences. 2019Jun;6(1):66-71.

Abstract

Introductions: Safety measures of solid waste collectors are important to prevent occupational health problems. This study was designed to find out knowledge and compliance of safety measures among the solid waste collectors in Kathmandu Valley.

Methods: A cross-sectional survey was conducted among solid waste collectors of Kathmandu metropolitan city from 12th August to 7th September 2018 by using a structured face to face interview schedule. Data were analysed by chi-square test, Pearson's correlation and entered into SPSS 16 version.

Results: Out of 117 waste collectors interviewed, more than 1/3rd (32.48%) had an adequate level of knowledge, and 1/5th (21.4%) had an adequate level of compliances. There was a weak negative correlation between level of knowledge and compliance on safety measures.

Conclusions: One-third of respondents had an adequate level of knowledge about safety measures whereas only one fifth had an adequate level of compliances.

Keywords: compliance, knowledge, safety measures, solid wastes collectors

Introductions

With urbanization and alterations in lifestyle, there is inadequate waste management, especially in developing countries, with potential harm to the public, environment, and the solid wastes collectors.[1]

Safety measures are designed to protect the employee from serious workplace injuries.[2] All over the world in every 15 seconds, a worker dies from an occupational hazard.[3] Nearly 6,300 people die due to occupational diseases every day and 2.3 million die every year.[3]

The health and safety risk are high in developing countries because of poor public awareness and practices of service sectors.[3] The rapid increments of fatalities among waste collectors have been attributed to their lack of awareness and poor compliance with safety measures.[4,5] The information and knowledge generated from studies on waste management are useful for planning and interventions in the future.[6]

This study was carried out to assess the knowledge and compliances of safety measures among solid wastes collectors of Kathmandu valley of Nepal.

Methods

A cross-sectional study was conducted from April 2018 to February 2019. Out of 32 wards in Kathmandu metropolitan city, nine wards were selected, three wards each from three areas by simple random sampling: Western area (Teku, Kalanki, Swyambhu), Eastern (Purano Bus Park, Maharajung, Baluwatar) and Central areas (Chhetrapati, Nardevi, Mahabouddha). Next, 13 respondents were chosen by lottery method from the attendance list of the solid waste collectors of these nine wards.

Ethical approval was obtained from Institutional Review Committee of Patan Academy of Health Sciences.

The structured questionnaire interview was used for data collection. Content validity was based on a literature review and consultation with supervisors and subject experts.

The interview was carried out after obtaining informed verbal consent from the respondents. Confidentiality of the participants was maintained. The knowledge and practice scores were calculated by recoding separately, zero for the wrong answer and one for the correct, maximum score for knowledge was 23, for practice and 10. Adequate knowledge was score greater than 11, and inadequate less than nine. Compliance was measured by structure questionnaire with total score of ten, greater than four adequate compliance, less than two inadequate compliance.

Statistical Package for Social Sciences (SPSS) version 16 was used for descriptive (frequency, mean, standard deviation, percentage) and chi-square test, Pearson correlation for inferential analysis.

Results

There were 117 respondents, 67 (57.26%) in age group of 40-50 years, 78 (66.67%) female and 100 (85.47%) illiterate, Table 1. And 110 (94.02%) used gloves, 106 (90.60%) masks as safety measures, 38 (32.48%) had adequate knowledge and 32 (27.35%) inadequate knowledge, Table 2.

In compliance to safety measures, among 117 respondents 90 (76.92%) used mask, 9 (7.69%) helmet, 13 (11.11%) goggle, 68 (58.12%) gloves and 76 (65.96%) boots on a regular basis. And, 25 (21.4%) had adequate compliance and 33 (28.2%) inadequate compliance, Table 3, 4, 5.

Table 1. Socio-demography of solid waste collectors in Kathmandu valley, n=117

Variables	Frequency	Percent
Age (in years)		
20-30	2	1.71
30-40	31	26.5
40-50	67	57.26
50-60	17	14.53
Mean± SD: 44.56±5.83		
Gender		
Female	78	66.67
Male	39	33.33
Education		
Illiterate	100	85.47
Literate	16	14.53
If literate, level of education		
Read and write Only	11	9.40
Primary	5	5.13
Work Experience		
<20	21	17.95
21-30	86	73.50
31-40	10	8.55
Training of safety measures		
Yes	36	30.77
No	81	69.23
If No, reasons for not taking training (n=81)		
Lack of opportunity	69	58.97
Ignorance	7	5.98
Lack of time	3	2.56
Lack of Interest	2	1.71

Table 2. Knowledge regarding safety measures of solid waste collectors in Kathmandu valley, n=117

Variables	Frequency	Percent
Safety Measures [a]		
Gloves	110	94.02
Mask	106	90.60
Safety boots	76	64.96
Googles	34	29.06
Hard Hat	15	12.82
Necessary to use safety measures [a]		
Yes	115	98.29
No	2	1.71
Necessary to use safety measures[a] (n=115)		
If yes,		
To protect from diseases	94	82.40
To protect from respiratory infection	32	28.07
To protect from musculoskeletal problem	17	14.91
To protect from gastrointestinal problem	4	3.51
Rational for health problems		
No access to safety measures	73	62.39
No proper use of safety measures	21	17.95
Lack of knowledge of safety measures	13	11.11
Ignorance of using safety measures	10	8.55

Note [a] Multiple responses questions

Table 3. Compliance regarding safety measures of solid waste collectors in Kathmandu valley, n=117

Variables	Frequency	Percent
Helmet		
Yes	9	7.69
No	108	92.31
Goggle		
Yes	13	11.11
No	104	88.89
Gloves		
Yes	68	58.12
No	49	41.88
Boots		
Yes	76	65.96
No	41	35.04
Mask		
Yes	90	76.92
No	27	23.08

Table 4. Compliance regarding safety measures of solid waste collectors in Kathmandu valley n=117

Variables	Always	Sometimes	Never	When Required
Use of safety measures				
If yes				
Use of boot	64 (54.70)	12 (10.26)		
Use of mask	66 (56.41)	23 (19.66)		1 (0.85)
Use of gloves	43 (36.75)	24 (20.51)		1 (0.85)
Use of helmet	7 (5.96)			2 (1.71)
Use of goggle	6 (5.13)	7 (5.98)		

Table 5. Level of knowledge and compliance among solid waste collectors in Kathmandu valley n=117

Level of knowledge	Frequency	Percent
Inadequate knowledge (<9)	32	27.35
Moderate knowledge (9-11)	47	40.17
Adequate knowledge (>11)	38	32.48
Level of compliance		
Inadequate compliance (<2)	33	28.2
Moderate compliance (2-4)	59	50.4
Adequate compliance (>4)	25	21.4

Discussions

This study revealed, most of the solid waste collectors, 115 (98.29%) had knowledge regarding safety measures and knew that gloves (94.02%) and masks (90.60%) are safety measures. Likewise, the majority of respondents (94.87%) responded to their work as an occupational hazard. Majority of them use the safety measures frequently.

This study is supported by the findings of another study where majority of 115 (75.5%) of waste collectors were aware of the hazardous solid waste handling, 118 (76.1%) were aware of safety measures, 110 (70.9%) on concern on preventing occupational

injuries and 130 (75.5%) felt the necessity to always protect themselves while working.[7] This might be due to the training and awareness to protect themselves from different occupational hazards.

Our findings revealed that 115 (98.29%) respondent's had knowledge of safety measures. Other studies also report similar findings to that of ours, with majority of the respondents (60.8%) having satisfactory knowledge.[8] Also, we found that majority of the respondents answered wearing gloves, mask, apron, and boots as a means of preventing methods of occupational health risks. And 73.9% of the waste handlers knew about safety measures. This showed that the respondents have a high percentage of knowledge on the safety measure which may be due to their experience and pre-occupational training. This might be due to the increase in training facilities provided by the governments and experience obtained by the workers as they face various hazards while working.

In present study, 68 (58.12%) of the respondents used gloves while only 9 (7.69%) of the used helmets for safety measures. A contradicting result was found by Das[9] in which 894 workers used gumboots and uniform, 90% used helmets, 13% gloves and only 2% used goggles. The poor compliance may be due to scarcity in 46%, ignorance 16%, discomfort 12%, to save time 9% and loss of equipment's 4%.

Findings of present study highlights need of better knowledge and compliance of safety measures in solid waste collectors of Kathmandu, Nepal. However, this may not be generalized and require broader study including more sites and samples to improve the knowledge and compliance to safety measures for solid waste collectors in our country.

Conclusions

The study reveals that one-third of respondents had an adequate level of knowledge about safety measures whereas only one fifth had an adequate level of compliances. Similarly, there was a negative weak correlation between the level of knowledge and compliance on safety measures with socio-demographic variables.

Acknowledgements

This study was a thesis work for completion of masters in nursing program. I would like to thank Asst. Prof. Bina Rana Khagi, Dr. Priscilla Samson for their advice during research.

Funding

The study had been funded by University Grant Commission, Nepal.

Conflict of Interests

There was no conflict of interests.

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