Original Article

Association between Socio-demographics of Nurses and their Knowledge about Hospital Waste Management in Tertiary Care Hospital Lahore

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ABSTRACT

The management of healthcare waste is very important due to the possible environmental dangers and threats to public health. Additionally, the direct exposure and handling of waste can results in disastrous events. Therefore, health care professionals should handle it carefully because majority of professionals does not give it importance to follow all the steps of waste management. **Objective:** To assess association between socio- demographics of nurses and knowledge about hospital waste management in Tertiary Care Hospital Lahore. **Methods:** A quantitative correlational study design was used for this study. The setting of study was Mayo Hospital Lahore. The study was completed in 3-month after approval of Ethical Research Committee. Sample size of 110 cases was calculated with 95% confidence interval. Data were collected by using Self developed demographic form and Knowledge Scale. Data were analyzed using SPSS version 24.0. **Results:** The result showed that among 110, the most of the participants are the age group of 31-40 years. Out of 110, majority of the participants (93.6%) are married. The study findings revealed that about 80(86.5%) participants had poor knowledge about hospital waste management and only 30(13.5%) nurses had good knowledge. Additionally, there was a statistically significant relationship between nurses' knowledge and their age, marital status, and qualification. **Conclusions:** It was concluded that majority of participants had poor knowledge regarding waste management. The knowledge of participants about waste management had statistically significant relationship with age, marital status, and qualification.

INTRODUCTION

Hospitals are organizations that offer a range of healthcare services to the general public [1]. They may provide patient care services that are curative, rehabilitative, preventative, and that also promote health education [2]. Hospitals and healthcare facilities have a responsibility to protect the public's health. This can be done directly by caring for patients or inadvertently by providing a clean, safe atmosphere for their staff and the general public [3]. All wastes produced by medical facilities, health research labs, and related facilities are referred to collectively as hospital waste (HW) [4]. Any solid or liquid waste from a hospital that might potentially infect people is considered hospital trash [5]. It is produced by healthcare institutions including hospitals that provide human treatment, diagnosis, or immunizations, blood banks, clinics, dental offices, and labs [6]. The waste of hospital is a unique kind of waste that, because of its infectious and/or poisonous qualities, is extremely dangerous [7]. Additionally, the risk associated with the handling of this sort of waste at health care facilities is increased by the direct exposure of waste management personnel and members of the public to it [8]. Despite the fact that there is variation in the handling of medical waste in different hospitals, but all healthcare facilities follow the same phases of waste management, which include separation, gathering, packing, preservation, transportation, treatment, and destruction

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[9]. To combat the hazards of hospital waste, the healthcare team member is seen to be the first line of defense [10]. The outcomes are devastating if this danger gets beyond the first line of defence. Therefore, the collaboration of healthcare team including nurses, physicians, and housekeepers is necessary to adequately address the risk of waste [11]. Where the system of healthcare waste segregation begins at the generational level. In order to properly manage medical waste, the members of the healthcare team must be well informed of all of its types, dangers, and management requirements [12]. There is a belief that the disposal of medical waste is only possible via the use of incinerators and various processing techniques [13]. However, this idea is incorrect; effective healthcare waste management relies on developing a medical waste treatment from the ground up. Inadequate treatment and improper treatment techniques to discard the waste can cause infection and serious diseases [14]. Regular staff practices need to be monitored in order to ensure that hospital trash is handled effectively over the long run. Waste management team should stress upon the proper handling of medical waste. Members of this committee are frequently the same people who oversee nosocomial infections. Therefore, highest standards should be practiced through appropriate training programmes [15]. However, major wards like the surgical and obstetrics departments are more prone to have an infection outbreak because there, patients may be exposed to infected surgical wounds. Nurses are immediately exposed to these risks since they are in charge of handling waste disposal [16]. The results of this study will pave the way for further research in this area and raise nurses' awareness of the significance of hospital waste management.

METHODS

A descriptive cross sectional research design was used to conduct this study. The current investigation was carried out in Mayo Hospital, Lahore. The study was conducted from August 2022 to October 2022 after getting the approval from Ethical Committee. A sample of 110 staff nurses was calculated using 95% confidence interval. Purposive sampling technique was used to collect the data. Nurses having age 20 to 40 year with at least one year of job experience were included in the study. Nurses with mental illness and aged above 40 year were excluded from study. The level of knowledge of respondents was assessed by 16 multiple choice questions [1]. The total score ranged from 0-16. Each correct answer was marked as 1 and wrong answer. Based on blooms cut off points, the knowledge of respondents was categorized as poor with 0-16 scores with 40% correct answers, average knowledge with 7-12 scores with 41%-75% correct answers, and good knowledge with 13-16 scores with 76%-100% correct answers [17]. Data were collected from nurses from all major departments of Mayo Hospital Lahore. All participants were given a brief explanation of the study's goal by the researcher. After obtaining written, informed permission, a self-administered questionnaire related to demographic characteristics and related to waste management was distributed among participants. Seventy percent of the participants returned filled performa and 30% did not returned the questionnaire. They returned it after one week. SPSS version 24.0 was used to analyze the data. The demographic information was calculated using descriptive statistics (frequency and percentages). The connection between participant knowledge and demographic factors was examined using the Chi Square test.

RESULTS

A total of 110 participants participated in study. Data about demographic characteristics and knowledge about waste management is given in tables below. The socio-demographic features of the nurses under study are shown in Table 1. The table demonstrates that 110 nurses took part in this study. With a mean age of 34.37.8 years, 63.6% of them were above the age of 30. Nursing staff who were married (93.6%) made up the majority. And 73.6% had a graduate degree in general nursing. All of the nurses were enrolled in waste management training programmes, and more than half of them (71.8%) had experience spanning more than five years.

Table 1: Demographic characteristic of participants

Variables	No. (%)
Age	
20-30 year	40 (36.4)
31-40 year	70 (63.6)
Range	23.0-59.0
Mean ± SD	34.3±7.8
Median	32.0
Gender	
Male	27 (26.4)
Female	83 (73.6)
Marital Status	
Single	7 (6.4)
Married	103 (93.6)
Religion	
Muslim	82 (76)
Christian	28 (24)
Nursing qualification	
General Nursing Graduate	81 (73.6)
Post RN BSN	29 (26.4)
Experience years (total)	
<5	31 (28.2)
5+	79 (71.8)
Range	2.0-39.0

Mean ± SD	15.2±8.1
Median	13.5

The study's nurses' stated overall knowledge of hospital waste management is summarized in Table 2. As the table demonstrates, all nurses were familiar with general safety measures and trash transportation, but only 30 (13.5%) of them were knowledgeable about hospital waste management. In contrast, 80 (86.5%) nurses had inadequate hospital waste management knowledge.

Table 2: Knowledge of participants regarding waste management

Level of Knowledge	Frequency (%)	Valid Percent
Poor Knowledge	80 (86.5)	86.5
Good Knowledge	30 (13.5)	13.5

Table 3 shows the relationship between the personal and professional traits of nurses and their understanding of hospital waste management. The data shows that nurses with sufficient expertise were over 30 years' old, female, post-RN BSN holders, and had more than 10 years of experience in the nursing industry. Additionally, the table shows that there is a significant relationship between a knowledge of nurses and demographic variable e.g. age, marital status, and qualification as p value is less than 0.05.

Table 3: Relationship between socio-demographic factors and knowledge of nurses about hospital waste management

Demographic Characteristics	Knowledge score				X^2 test	p- value
	Poor		Good			
	No.	%	No.	%		
Age						
<30	12	30.0	28	70.0	3.93	0.047*
30+	10	14.3	60	85.7		
Gender						
Male	2	2.6	5	71.4	Fisher	0.63
Female	20	19.4	83	80.6		
Marital Status						
Single	22	35	30	45	9.006	0.024
Married	10	15	2	3		
Religion						
Muslim	12	25.0	36	75.0	1.33	0.25
Christian	10	16.1	52	83.9		
Nursing qualification						
General Nursing Graduate	21	25.9	60	74.1	6.74	0.01*
Post RN	1	3.4	28	96.6		
Experience years (current)						
<5	12	25.0	36	75.0	1.33	0.25
5+	10	16.1	52	83.9		

DISCUSSION

Healthcare institutions have a duty to safeguard the environment and the general public's health. The purpose of this study is to ascertain the participants' level of awareness regarding hospital waste management. The results of the current study shows that the majority of nurses were married, were older than 30 years old, and varied in age from 23 to 59 with a mean age of 34.17.8. An investigation done in Pakistan have similar findings and reported that age of majority of participants between 16 to 30 years [18]. The majority of them had general nursing graduate degrees and more than ten years of nursing experience. In contrast a study conducted in Iran revealed that majority of the participants had clinical experience greater than 5 year [4]. While addressing the knowledge of nurses about hospital waste management, the current study reported that a large number of participants (86.5%) had poor knowledge about hospital waste management. This is because, in Pakistan infection control team in hospitals is failed to supervise the practices of medical and non-medical professionals to improve their practices of handling the waste. Hospital management should arrange waste management orientation programme for employees, handouts of waste management, and training sessions on regular basis. In contrast, a research conducted in India, reported that nurses working in three hospitals had average knowledge about waste management [19]. Similar to this, Sobh revealed that 85% of nurses in India have strong awareness of biomedical waste management [1]. In addition, a research conducted in Nigeria reported that 95.8% of nurses had good understanding of biomedical waste management and its techniques [20]. In the same direction, a South African research assessed doctors' and nurses' practises and understanding of biological waste management revealed that 90% of respondents had limited expertise [21]. While these results were in contrast to those of Elsayed et al., who discovered that about 98.7% nurses had good information regarding waste management at Mansoura University Hospital [22]. Additionally, a research in Christian Mission Hospitals in Madurai revealed that only a minority (25%) of participants have strong expertise, which is comparable with the findings of the current study [23]. Similar findings were made by Adu (2020), who discovered that study participants had an unacceptable mean knowledge score of 45.5±10.52 [24]. The current study revealed that there was a significant correlation between nurses' knowledge and their age, marital status, and qualification. This indicates that nurses with increased age and qualification had better understanding about biomedical waste. The fact is that senior nurses in the hospital system had better practice to handle the waste. This concurs with a research from Iran that shown that nurses with more years of experience become more informed, skilled, and confident in their ability to seek a level of excellence [25]. These results are consistent with those of Dey et al., who found that Indian nursing

professionals' understanding of Bio Medical Waste is significantly associated with age and experience [26]. In contrast, Al-Khatib demonstrated that staff nurses' awareness of hospital waste was unaffected by their years of experience [27]. Additionally, a research done in India found a link between personal traits and nurses' expertise that was detrimental [28].

CONCLUSIONS

According to the study's findings, just 20% of nurses had high understanding of waste management in hospitals, while 80% of nurses had inadequate knowledge. Additionally, there was a significant association between knowledge of nurses and age, marital status and qualification of nurses.

Authors Contribution

Conceptualization: TW, MI, AS
Methodology: SK
Formal analysis: NR
Writing-review and editing: TW, MI, AS, SK, NR

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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