



KNOWLEDGE AND PRACTICES REGARDING BIOMEDICAL WASTE DISPOSAL AMONG HEALTH CARE PERSONNEL WORKING IN PEDIATRIC WARDS OF TERTIARY CARE HOSPITAL, LUDHIANA, PUNJAB.

Nursing

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ABSTRACT

Hospitals or health care services inevitably create waste that may be hazardous to health. Inadequate and inappropriate disposal of biomedical waste among the health care personnel may have serious health consequences and a significant impact on the environment.

A descriptive research design was used and a sample of 100 health care personnel including nursing students, staff nurses, resident doctors, ward boys/attendants and sweepers of pediatric wards of DMC & Hospital, Ludhiana were selected by convenience sampling technique. The structured questionnaire and checklist was used to assess the knowledge and practices regarding biomedical waste disposal among the health care personnel. Analysis was done by descriptive and inferential statistics.

Majority of the health care personnel i.e. 81 had attended the class regarding biomedical waste disposal. Majority of the health care personnel i.e. 87 had below average level of knowledge, 10 had average level of knowledge and only 3 health care personnel had good knowledge regarding biomedical waste disposal.

The present study concluded that majority of health care personnel exhibit below average level of knowledge regarding biomedical waste disposal whereas only few had average and good level of knowledge. Maximum of the health care personnel had satisfactory practices of proper biomedical waste disposal.

KEYWORDS

Knowledge, Practices, Biomedical Waste Disposal, Health Care Personnel.

Introduction:

Biomedical wastes are of great concern due to its potential environmental hazards and health problems. The waste produced in the course of health care activities carries a higher potential for infection and injury than any other type of waste.

According to WHO, Biomedical Waste is the waste generated during the diagnosis, treatment, research or production of biological products for humans or animals.

The quantum of waste generated in India is estimated to be 1-2 kg per bed per day in a hospital and 600 gm per day per bed in a clinic. The 85% of hospital waste is non-hazardous and 15% of the waste is infectious and nearly hazardous. Mixing of hazardous waste results into contamination of all waste and makes the entire waste hazardous and infectious. Hence there is necessity to segregate and treat biomedical waste. Improper disposal of biomedical waste increases risk of infection, encourages recycling of prohibited disposables and disposed drugs, and develops resistant microorganisms.

Mismanagement of hospital waste implies a combination of improper handling of waste during generation, collection, storage, transport and treatment. Improper handling comprises several unsafe actions, such as handling without personal protective equipment (PPE), poor storage (e.g. high temperature conditions combined with prolonged storage times before treatment), manual transport for longer distances, use of uncovered containers instead of closed plastic containers or bags.

However, lack of awareness has led to the hospitals becoming a hub of spreading disease rather than working towards eradicating them. Hence, there is a need for resource material and education to nurses, doctors and the other personnel.

So, there is a need to educate the health personnel about the biomedical waste disposal and protect the environment from the various adverse effects of the hazardous waste.

Objective:

To assess the level of knowledge and practices regarding biomedical waste disposal among health care personnel working in pediatric wards.

Literature survey:

Ajmera V & Jayalkshmi LS (2016) conducted a descriptive study to

assess the knowledge regarding bio-medical waste management in Saraswati College of Nursing, Udaipur College of Nursing & Sanjeevani College of Nursing, Udaipur among 120 B.Sc nursing students selected by simple random sampling technique. The results revealed that 61.67% students had high level of knowledge, 33.33% had moderate level of knowledge and 5% had low level of knowledge regarding biomedical waste management. The study concluded that low level of knowledge was found in the areas such as source of origin, disposal of waste, disease transmission, etc.

Shyamala R & Naveen G (2016) conducted a cross sectional study to assess the knowledge, attitude and practices regarding hospital waste management among 100 Health Care Personnel which includes doctors, nurses, lab technicians, management staff in Kannur Medical College, Kerala, India. Structured questionnaire was used to collect data. Results revealed that 65% of the doctors and 64.4% of the nurses were having appropriate knowledge 100% of the management staff had positive attitude and 83.34% of the management staff and 71.95% of the nurses had safe practices.

Methods and approach:

A descriptive design was used to assess the knowledge and practices regarding biomedical waste disposal among health care personnel. The study was conducted in pediatric wards i.e. medicine, surgery, thalassemia, NICU, PICU and emergency unit of DMC & Hospital, Ludhiana. The target population was health care personnel i.e. nursing students, staff nurses, resident doctors, ward boys/attendants and sweepers of pediatric wards of DMC & Hospital, Ludhiana. The sample size comprised of 100 health care personnel working in pediatric wards of DMC & Hospital, Ludhiana, Punjab. Convenience sampling technique was used for sampling. Analysis was done by descriptive and inferential statistics.

Results:

Table 1: Distribution of health care personnel as per their socio demographic variables.

Socio demographic variables	f %
Age (in years)	
15-24	40
25-34	37
35-44	16
>45	07

Gender	
Male	23
Female	77
Education	
Primary	06
Secondary	45
Diploma	15
Graduation	34
Religion	
Hindu	33
Sikh	60
Christian	07
Habitat	
Rural	41
Urban	59
Socio-economic status (According to Kuppuswamy's scale)	
Upper class (I)	45
Upper middle class (II)	40
Lower middle class (III)	14
Upper lower class (IV)	01
Present designation	
Nursing student	28
Staff nurse	28
Resident doctor	17
Ward boy/attendant	20
Sweeper	7
Attended any class regarding biomedical waste disposal	
Yes	81
No	19

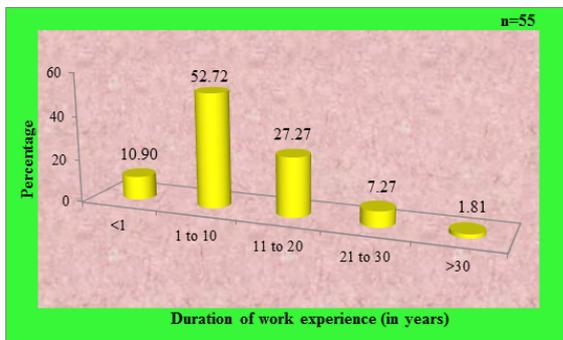


Fig.1: Distribution of health care personnel as per their duration of work experience.

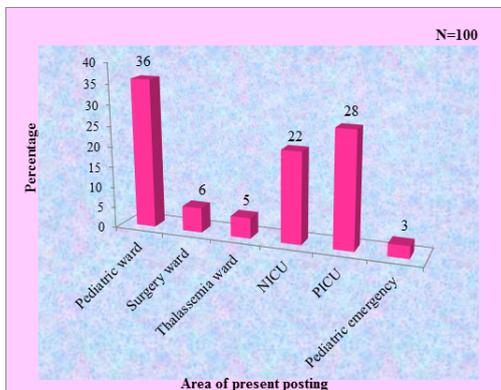


Fig 2: Distribution of health care personnel as per area of present posting.

Table 2: Distribution of health care personnel as per their level of knowledge regarding biomedical waste disposal.

N=100					
Sr. No.	Level of knowledge	Score	f %	Mean±SD	Mean%
1.	Excellent	29-30	-	-	-
2.	Good	25-28	03	26.33±1.155	94.03
3.	Average	23-24	10	23.30±0.483	97.08
4.	Below average	<23	87	18.10±2.941	78.69

Mean±S.D. = 19.02±3.081
Mean% = 63.4

Maximum score-30
Minimum score-00

Table 3: Mean knowledge of health care personnel according to components regarding biomedical waste disposal.

N=100				
Sr. No	Components	Max score	Mean ± S.D.	Mean%
1.	Biomedical waste legislation	2	1.09±0.698	54.5
2.	Definition	2	1.57±0.573	78.5
3.	Categories of biomedical waste disposal	8	5.19±1.412	64.8
4.	Biomedical waste disposal and segregation	14	8.47±1.598	60.5
5.	Miscellaneous	4	2.70±0.810	67.5

Table 4: Distribution of health care personnel as per their level of practices regarding biomedical waste disposal.

N=100			
Sr. No.	Level of practices	%	f %
1.	Satisfactory	>99	97
2.	Unsatisfactory	≤99	03

Table 5: Association of knowledge of health care personnel regarding biomedical waste disposal with their selected socio-demographic variables.

N=100				
Socio-demographic Variables	N	Knowledge Mean ± SD	F/t value	p value
Age (in years)				
15-24	40	18.20±2.857	2.809 df=99	0.044*
25-34	37	19.41±3.201		
35-44	16	20.56±2.804		
>45	07	18.14±3.132		
Gender				
Male	23	18.65±3.311	0.651 df=98	0.517 ^{NS}
Female	77	19.13±3.023		
Education				
Primary	06	19.17±1.941	2.190 df=99	0.094 ^{NS}
Secondary	45	18.18±3.172		
Diploma	15	19.87±2.800		
Graduation	34	19.74±3.058		
Religion				
Hindu	33	18.45±3.447	1.126 df=99	0.329 ^{NS}
Sikh	60	19.20±2.950		
Christian	07	20.14±2.035		
Habitat				
Rural	41	19.37±3.064	0.935 df=98	0.352 ^{NS}
Urban	59	18.78±3.097		
Socio-economic status (Kuppuswamy's scale 2014)				
Upper class (I)	45	19.87±3.035	2.741 df=99	0.047*
Upper middle class (II)	40	18.62±3.019		
Lower middle class (III)	14	17.64±2.845		
Upper lower class (IV)	01	16.00±0.000		

* significant p≤0.05

^{NS} Non significant p>0.05

Table 6: Association of knowledge of health care personnel regarding biomedical waste disposal with their professional profile.

N=100				
Professional profile	N	Knowledge Mean ± SD	F/t value	p value
Present designation				
Nursing student	28	17.46±2.755	5.816 df=99	0.000*
Staff nurse	28	20.79±2.795		
Resident Doctor	17	18.18±2.698		
Ward boy/attendant	20	18.95±3.034		
Sweeper	07	20.00±2.828		
Duration of work experience (in years) (n=55)				
<1	06	19.67±2.582	1.692 df=54	0.167 ^{NS}
1-10	29	19.90±2.795		
11-20	15	21.13±3.114		
21-30	04	19.50±3.317		
>30	01	14.00±0.000		

Area of posting				
Pediatric ward	36	18.81±3.188		
Surgery ward	06	20.17±4.956		
Thalassemia ward	05	18.40±5.857	0.414	0.838 ^{NS}
NICU	22	18.95±2.011	df =99	
PICU	28	19.36±2.765		
Pediatric emergency	03	17.67±2.517		
Attended any class regarding biomedical waste disposal				
Yes	81	19.23±3.183	1.446	0.151 ^{NS}
No	19	18.11±2.470	df = 98	

* *significant* $p \leq 0.05$ *NS Non significant* $p > 0.05$

Discussion:

The analysis of socio-demographic profile of health care personnel revealed that majority of health care personnel i.e. 40 were in the age group of 15-24 years, the mean age of health care personnel was 28.57±8.64 years, 77 were females, 45 were educated up to secondary level, 60 belonged to Sikh religion, 59 were from urban area, 45 were from upper class (I), 28 were nursing students and 28 were staff nurses, 36 were working in pediatric ward, 29 had 1-10 years of experience and 81 health care personnel had attended the class regarding biomedical waste disposal.

Similarly, a study conducted by Asadullah, Karthik G. K. and Dharmappa B (2013) to assess knowledge, attitude and practices regarding biomedical waste management among nursing staff in private hospitals in Udupi city, Karnataka, India revealed that the majority 160(96.4%) of participants were female and mean age of respondents were found to be 28.6±9.04 years.

The present study findings revealed that out of 100 health care personnel, 3 had good knowledge, 10 were having average level of knowledge and 87 health care personnel were having below average level of knowledge regarding biomedical waste disposal.

Similarly, a study conducted by Muluken A, Haimanot G & Mesafint M (2011) to assess healthcare waste management practices among healthcare workers in healthcare facilities of Gondar town, Ethiopia revealed that 13(5%) had higher knowledge, 45 (17.3%) had moderate level of knowledge and 13 (5%) had low level of knowledge of healthcare waste types and color coding containers.

The present study findings revealed that all most all of the health care personnel i.e. 97 were having satisfactory practices and only 3 had unsatisfactory practices.

Similarly, a study conducted by Chudasama RK, Sheth A, Rangoonwala M, Joshi N, Zalavadiya D & Bhola C (2013) to assess the practice of Biomedical Waste Management Among Different Health Care Personnel at Tertiary Care Centre, Rajkot, India revealed that practice related to biomedical waste management was found to be good among the nursing staff and laboratory technicians. Majority of doctors (89.4%), nurses (96.7%) and laboratory technicians (100%) were practicing segregation of BMW at work place.

The present study findings revealed that the age of health care personnel had significant association with the knowledge ($p=0.044$). Health care personnel who were in the age group of 35-44 years had more mean knowledge score. It shows that knowledge of health care personnel increases with the age.

Similarly, a study conducted by Asadullah, Karthik GK and Dharmappa B (2013) to assess knowledge, attitude and practices regarding biomedical waste management among nursing staff in private hospitals in Udupi city, Karnataka, India. Significant relationship were observed between knowledge and practice with age i.e. nursing staff who were >30 years had more knowledge regarding biomedical waste disposal ($p < 0.001$).

The present study findings revealed that gender, education, religion, habitat, area of posting and health care personnel attended any class had no significant association with the knowledge regarding biomedical waste disposal.

Similarly, a study conducted by Ajmera V & Jayalakshmi LS (2016) to

assess the knowledge regarding biomedical waste management among B.Sc Nursing students in College of Nursing, Udaipur did not found a significant association between age, class, area of residence, awareness regarding biomedical waste management and source of information between knowledge scores regarding biomedical waste management.

Conclusion:

The present study concluded that majority of health care personnel had below average level of knowledge regarding biomedical waste disposal. Maximum of the health care personnel had satisfactory practices and only 3 had unsatisfactory practices. The unsatisfactory practices of health care personnel were found in disposal of soiled linen and mask. Hence, health care personnel need more knowledge related to biomedical waste disposal.