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ASSESSMENT OF KNOWLEDGE RELATED TO OCCUPATIONAL HEALTH HAZARDS AMONG HOSPITAL NURSES

Nursing

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ABSTRACT

Introduction

Nurses being the largest category of health care workers, have a critical role to play in the healthcare delivery system They are at the highest risk of exposure to occupational health hazards among healthcare workers. They routinely come into contact with blood and body fluids, chemicals, radiations etc which are very hazardous to their health. Knowledge of occupational health hazards plays an important role in the prevention of occupational injuries and diseases. The objective of this study was to determine the level of knowledge about occupational health hazards among hospital nurses.

Method A cross-sectional descriptive study design was employed for this study. It was carried out in one of the public hospitals of Varanasi district of Eastern Uttar Pradesh, India.

Random sampling technique was used and the sample size was 95 staff nurses. A structured questionnaire was used to collect data which included the socio-demographic variables and questions to assess the level of knowledge of respondents about occupational health hazards that they experienced in their workplace.

Result The overall level of knowledge on occupational health hazards was average, with a mean score of 69.4 percent. Sociodemographic variables like age, marital status, professional qualification and duration of work experience had a significant influence on the level of knowledge of the respondents regarding occupational health hazards. The respondents had more knowledge about blood-borne infections, workplace stress and least about musculoskeletal injury and equipment injury. Most of them had experienced needle stick injury and musculoskeletal injury and rarely experienced equipment injury and fall.

Conclusion This study suggests that that nurses face considerable risk of occupational health hazards. The overall level of knowledge among hospital nurses was average and there is need to promote awareness among them regarding occupational hazards and its safety measures. Regular training and the educational programme should be organized to enhance occupational safety. There is also need to develop and introduce policies and guidelines or strategies on all aspects related to occupational safety that may enhance nurses' health and well-being and promote quality patient care.

KEYWORDS

Occupational Health Hazards, Hospital Nurses

INTRODUCTION

Nurses are a very important component of the healthcare system. They are an integral part of health services and have primary responsibility for a significant proportion of patient care in most healthcare settings. (Li, & Lambert, 2014 and Ramsay, 2015). Nurses have been found to be exposed to a wide range of occupational health hazards in the course of their day to day activities in the healthcare settings. (Isara & Ofili, 2012). They operate in an environment that is considered to be one of the most hazardous occupational settings. According to a National Survey on occupational hazards in the United States, the incidence rate of occupational injury and illness for the medical and healthcare industry was as high as 6.6% and ranked fourth out of 56 service industries in 2012. (United States Bureau of Labour Statistics, 2012). Moreover, compared with workers in other industries, healthcare workers reported more incidents of back strain, dermatitis, infectious hepatitis, infectious diseases, psychological disorders, eye diseases and toxic hepatitis. Substantial morbidity and mortality among healthcare workers inevitably lead to loss of skilled personnel and adversely impact health care services which are already strained in low and middle-income countries. Concerns have been raised in the research literature that workplaces in developing countries pose further and unique demands and risks on health care workers than developed countries. In spite of this knowledge, healthcare work environment continued to be neglected and lack policy and guideline to provide occupational safety to them. Nurses being the largest category of health care workers, have a critical role to play in the healthcare delivery system. They generally serve as the primary interface with patients.(Tung,Chang,Ming & Chan,2014) and are at the highest risk of exposure to occupational health hazards among health care workers. (Tung,Chang,Ming & Chan,2014)

In the nursing profession, the types of health hazards encountered are varied. Some have existed since the birth of the nursing industry; other health problems are new, mostly a consequence of the rapid advancement in the healthcare field in recent times. Occupational health problems among nurses may be categorized into four types, namely, biological hazards, chemical hazards, physical hazards, and psychosocial hazards. There are several reasons why nurses working in hospital area may be more exposed to workplace hazards than other health workers. The specific factors may be lack of staff, high workload, lack of support services and the need for nurses to take on extended roles (Hegney, Pearson & McCarthy, 2002). Also, there are often inadequate resources, poor systems, unrealistic expectations from communities and administrators, perceived lack of support from management and high stress (Weymouth et al., 2007).

Understanding the predisposing factors, the level of knowledge regarding occupational health hazards will help in planning and implementing safety measures and in preventing adverse outcomes. Data on occupational hazards faced by hospital nurses and their mitigation measures remain scarce in most part of India and in Eastern Uttar Pradesh in particular. In this study, an attempt is made to assess knowledge of nurses related to the occupational health hazards in one of the Public hospital in Varanasi. They are constantly in contact with patients that expose them to infections and other health hazards. Thus, there is need to assess their knowledge and take proper protective measures to reduce their risk of acquisition of disease or injury.

METHODS

Study design and setting: A cross-sectional descriptive study design was employed for this study. It was carried out in one of the public hospitals of Varanasi district of Eastern Uttar Pradesh, India.

Sampling: Random sampling technique was used and the sample size was 95 staff nurses.

Data Collection: A structured questionnaire was used to collect data. The questionnaire collected data on the sociodemographic characteristics of the respondents including age, education level, family type, marital status and their work profile. In addition, data was collected to assess the level of knowledge of respondents about occupational health hazards that they experienced in their workplace. The knowledge-based question included: Bloodborne infection (10 items), Airborne infection (7 items), Chemical hazards (7 items), Musculoskeletal injury (2 items), Work-related stress (4 items), workplace violence (3 items), falls (3 items), equipment hazards (2 items).

Data analysis:
The collected data were analyzed with the Statistical Package for the Social Sciences for Windows (SPSS), version 16.0.

Result:
Table 1: Sociodemographic description of the respondents

Variables	F	%
Age		
21-30	34	35.8
31-40	23	24.2
41-50	29	30.5
51-60	9	9.5
Gender		
Male	8	8.4
Female	87	91.6
Family type		
Nuclear	57	60
Joint	38	40
Religion		
Hindu	65	68.4
Non Hindu	30	31.6
Marital status		
Unmarried	21	22.1
Married	71	74.7
Divorced	1	1.1
Widow	2	2.1
Professional qualification		
GNM	76	80
BSc(N)/post basic B.Sc(N)	19	20
Years of work experience		
0-10	48	50.5
11-20	25	26.3
More than 20	22	23.2
Area of work		
Critical	23	24.2
Non- critical	72	75.8

Demographic characteristics of the respondents:
The table1 showed that the majority of respondents 35.8% were within the age group of 21-30 and 24.2% were in 31-40 age group, 30.5% were in age group of 41-50 and the rest 9.5% belong to the age group 51-60. Out of the respondents, 74.7 % were married 25.3% were single; and 91.6% were females while the remaining 8.4% were males.About 60% of the respondents belong to the nuclear family and rest 40% belong to joint family; 68.4% were Hindu and the remaining 31.6% were Non- Hindu; 80% of the respondents have professional qualification of GNM and 20% were B.Sc(N)/Post Basic B.Sc(N). Also, 50.5% have 0-10 years working experience while 26.3% have 11-20 years,23.2% have more than 20 years of experience in the nursing profession. According to the area of work, about 75.8% of respondents were working in non- critical area and 24.2% in the critical area.

The figure1, showed that 6.3% of respondent have poor knowledge about occupational health hazards, 69.4% have the average knowledge and 24.2% have good knowledge about occupational health hazards.

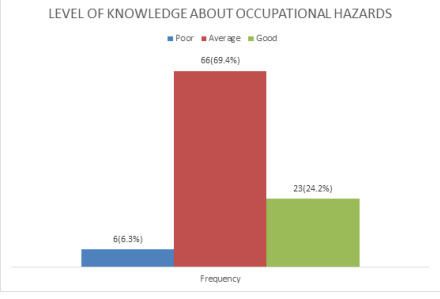

Figure 1: Respondents' level of knowledge about Occupational health hazards

Table 2: Effect of demographic features on respondents' knowledge score

Variables	frequency	Mean	SD	F value	t value	p-value
Age						
21-30	34	27.08	2.06			
31-40	23	17.43	3.47	80.161	-	.000*
41-50	29	18.10	2.88			
51-60	9	19.89	2.26			
Gender						
Male	8	21.25	3.49		-0.44	.965
Female	87	21.33	5.27			
Family						
Nuclear	57	20.66	4.90		-1.545	.126
Joint	38	22.31	5.36			
Marital status						
Unmarried	21	24.09	6.07			
Married	71	20.71	4.56	3.846		.012*
Divorced/widow	3	15.50	1.41			
Professional education						
GNM	76	20.26	4.88		-4.417	.000*
BSc N/PBBSc	19	25.57	3.77			
Work experience (in years)						
0-10	48	24.45	4.71			
11-20	25	17.28	3.66	20.201		.000*
More than 20	22	19.09	2.42			
Area of work						
Critical	23	21.00	5.04	-0.349		.728
Non-critical	72	21.43	5.19			

*Significant at(p<.05)

The table 2 depicted that the mean knowledge score for respondents was higher in the age group of 21-30 years (27.08±2.06) and was lowest in the age group 31-40 (17.43±3.47), which was found to be significant at p<.05. The mean knowledge score for male nurses was (21.25±3.49) and for female nurses was (21.33±5.27) with p>.05. It showed that there was no significant effect of gender on total knowledge score.

The mean knowledge score for nurses belonging to the nuclear family was (20.66±4.90) which was lower than the nurses belonging to the joint family (22.31±5.36) but it was statistically insignificant (p>.05). The area of work also had no significant effect on the level of knowledge as critical care nurses mean score (21.00±5.04) was similar to the nurses working in the non-critical area (21.43±5.19) with p>.05. The nurses' marital status, professional qualification and the duration of work experience had a significant influence on their level of knowledge (p<.05). The unmarried nurses had highest mean knowledge score (24.09±6.07) than married (20.71±4.56) and divorced/widowed (15.50±1.41) nurses. The nurses holding higher degree qualification had the mean knowledge score higher (25.57±3.77) than the diploma holders (20.26±4.88) which was significant at p<.05. When duration of experience was taken into consideration then the mean knowledge score for nurses with ≤ 10 years of experience was (24.45±4.71); for those with 11-20 years of experience was (17.28±3.66) and for more than 20 years of was (19.09±2.42) which was found to be significant at (p<.05). The level of knowledge was significantly higher among ≤ 10 years of experience than the more experienced group. It may be because they must have recently completed their professional training and have updated knowledge about occupational health hazards as a part of their curriculum.

Knowledge scores about different components of occupational health hazards:
Subscores were allocated for different components of occupational health hazards. Figure 2 summarizes the knowledge of 95 staff nurses about occupational health hazards who participated in the study from the public hospital of Uttar Pradesh, expressed as percentages of total maximal subscore.

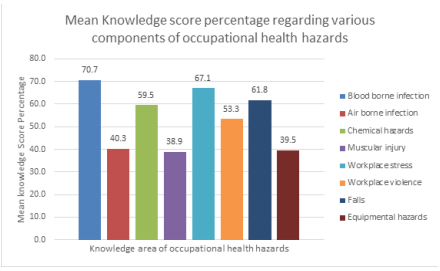

Figure 2: Mean knowledge scores (%) of respondents on the different components of occupational health hazards

The Figure 2 showed that the mean knowledge score percent of the nurses was highest for blood-borne infection (70.7%) and then for workplace stress (67.1%)and least about Musculoskeletal injury (38.9%) and equipment injury(39.5%).

EXPERIENCES OF OCCUPATIONAL HAZARDS

Table 3: Respondents' self-reported experiences of Occupational health hazards

Exposure to Occupational health hazards	Experienced	Not Experienced
Needle prick injury	86.30%	13.70%
Musculoskeletal injury	48.40%	51.60%
Work-related stress	55.80%	44.20%
Workplace violence	31.60%	68.40%
Fall during work	18.90%	81.10%
Equipment hazard	28.40%	71.60%
Chemical hazards	34.70%	65.30%

Table 3, depicted the respondents' experiences of occupational health hazards. The frequency distribution of their experiences of occupational health hazards was in a descending order of: needle prick injury > work-related stress > musculoskeletal injury > chemical hazards > workplace violence> equipment hazards>fall during work.

Discussion

Occupational hazards are risks to people that usually arise out of their employment. Hospitals are large, organizationally complex, system-driven institutions, employing a large number of workers from different professional streams. They are also potentially hazardous workplaces and expose their workers to a wide range of physical, chemical, biological, ergonomically, and psychological hazards. (Borg MA & Portelli A.,1999). These hazards include needlestick injuries, back injuries, latex allergy, violence, and stress. Nurses were the backbone of any hospital, work day and night for the care of the sick and injured. They are committed to their patients. They are often expected to sacrifice their own well-being for the sake of their patients. An unsafe workplace contributes to work-related injuries and diseases that often result in physical, emotional, and financial difficulties for the nurses. Occupational injuries resulting from an unsafe workplace impact the healthcare organization by increased costs and a reduced ability to provide services. Occupational health hazards in the workplace have been identified as a major contributor to nurses leaving the profession, contributing to the growing nursing shortage. (Clarke, S., et al.,2002).

The study was carried out to examine the knowledge of nurses on the various categories of occupational hazards at their workplace. It was evident that nursing professionals are exposed to one or the other category of occupational health hazards. Most of them (86.3%) have experienced needle prick injury and work-related stress(55.8%) next to it. About 50% of them have experienced musculoskeletal injury. The chemical injury and workplace violence are also observed by 31-35% of respondents and few of them had experienced equipment hazards and fall. These findings are in line with results of the study which reported these hazards as being common within the nursing profession (Amosu et al., 2011). The findings of the study were also extensively comparable to previous studies conducted in low and the middle income countries like Ziraba in Uganda, Nsubuga in Uganda, Orij in Nigeria, De Castro in the Philippines, and Adib-Hajbaghery in Iran which reported that sharp related injuries and stress were the major health-related occupational hazards experienced by healthcare workers. (Ndejjo, et al., 2015).

The present study also revealed that the majority of respondents had an average level of knowledge about occupational health hazards (69.4 %) and 24.2% of them had a good level of knowledge. One of the studies conducted in India showed a high level of awareness about occupational health hazards among nurses (Kumar & Pandit, 2015) whereas the studies done by Manyele et al. reported a low level of awareness among health workers. (Manyele, Ngonyani, & Eliakimu, 2008). Another study conducted, where the participants were doctors, nurses, medical support staffs, administrative officers and others showed that the level of awareness and knowledge regarding occupational hazards and safety among healthcare professionals in Malaysia was moderate (Lugah et al., 2010).

The study also revealed that the respondent had maximum knowledge about blood-borne infection (70.73±17.75) and then for workplace stress (67.10±27.10) and least about Musculoskeletal injury(38.94±38.71) and equipment injury(39.47±37.11). The study which was conducted at three Birmingham, UK teaching hospitals, investigated the level of knowledge about infection control amongst doctors and nurses through a cross-sectional survey. Seventy-five doctors and 143 nurses participated in the study and their knowledge about the risks of blood-borne virus (BBV) transmission from an infected patient after needlestick injury was low (44.0%) for hepatitis B virus, 38.1% for hepatitis C virus, 54.6% for human immune deficiency virus. (Stein, A.D et al. ,2003) This result of the study contradicts the finding related to knowledge of blood-borne infection in the present study which was high among nurses.

The other findings of the present study were that the mean knowledge score of respondents was higher in a younger age group in comparison to older one. It may be due to young generation have recently completed their training and have fresh knowledge about occupational health hazards whereas older nurses may not have the opportunity to update their knowledge. As in most of the public hospital in India, few nurses get an opportunity for higher studies or get financial assistance to participate in workshops and to attend continuing nursing education programme. Unmarried nurses had more knowledge in comparison to married and divorced as they have the least responsibility related to family life and can give time to keep themselves abreast with the current knowledge. The nurses had a degree in nursing are more knowledgeable than diploma nurses with regard to occupational hazards. The reason may be their educational background as in degree programme they undergo extensive and in-depth training in comparison to Diploma. And lastly, it was also evident from the study that nurses having less than 10 years of experience are having more knowledge about occupational hazards than nurses with more experience. This finding was contradictory to the result of the study conducted at Ondo City in Southwest Nigeria which showed a significant association between the number of years of experience with the level of awareness of occupational health and safety among healthcare workers.The healthcare workers with more than 10 years' experience had a better awareness of occupational health safety and hazards. (Osungbemiro, Adejumo, Akinbodewa, & Adelosoye, 2016).

LIMITATION

The limitation of the study was that the sample size was small which limits its representativeness. The factors like workload, poor staffing, lack of adequate supply and the practices which increases the risk of occupational health hazards were not studied in the present study which can be included in future research studies.

CONCLUSION

This study suggests that that nurses face considerable risk of occupational health hazards. In order to take care of their own health and safety, nurses must understand occupational risks and dangers. A large proportion of occupational hazards in the workplace can be prevented or controlled through different measures, such as safe work practices, appropriate tools, proper staffing, minimizing workload and provision of information related to occupational health hazards. The overall level of knowledge among hospital nurses was moderate and there is need to promote awareness among them regarding occupational hazards and its safety measures. Occupational safety training programs could be developed to address these issues. This research is useful for health administrators in developing policies, guidelines and strategies to reduce risk and manage occupational exposure effectively.

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