Knowledge and Practice on Infection Prevention among Nurses of Bir Hospital, Kathmandu

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ABSTRACT

Background: Infection prevention is a crucial component to provide quality care in any health care setting. Infections are leading cause of death and preventable illness. This study was conducted to find out the knowledge and practice among nurses regarding infectionprevention.

Methods: A descriptive study design was adopted for the study. Total 170 nurses were included by usingcensus technique to assess knowledge on infection prevention.Probability systematic sampling technique was used by selecting every odd number from staffs' list to observe the practice of 85 nurses..Semi-structured self-administered questionnaire and observation checklist was used for data collection.

Results: The study showed that 57.1% of respondents had adequate knowledge and only 48.2% had good practice on infection preventionthrough hand hygiene, use of adequate personal protective equipment, decontamination, cleaning of instruments, sterilization, and use of antiseptics, disposal of sharps and waste disposal. Similarly 88.8% of the respondents had not received any training related to infection prevention.

Conclusions: This study reveals that respondents had better knowledge than practice on infection prevention. The study suggestthat need for organizing regular training, monitoring, development and implementation of guideline to improve knowledge and practice of nurses for prevention of infection in the hospital.

Keywords: Infection prevention; knowledge; practice; standard precautions.

INTRODUCTION

Infection prevention is a crucial component to provide quality care in any health care setting. Infections are leading cause of death and preventable illness. Many infection control measures such as appropriate hand hygiene and the correct application of basic precautions during invasive procedures are simple and low cost, but require staff accountability and behavioral changes, in addition to improving staff education, reporting and surveillance system.[1]

It has been estimated that the risk of healthcare-associated infections is 2 to 20 times higher in developing countries compared to developed countries and 5% and 10% of patients admitted to hospital in developed countries acquire these infection.[2]

Evidence shows inadequate knowledge and poor technical skill (20%) regarding infection prevention among the health workers in different areas of Nepal[3]so it is felt to find out knowledge and practice of nurses in central level government hospital on infection prevention.

METHODS

The study was quantitative, descriptivedesign carried out to find out the knowledge and practice on infection prevention among nurses of Bir Hospital tertiary level government hospital. Population of the study was nurses who were working in Bir Hospital. The data was collected from all wards of Bir hospital.

Census method was used to collect data for assessment of knowledge of nurses from all wards of hospital except operation theatres. Probability systematic sampling techniquewas used by selecting every odd number from staffs' list to observe the practice. Total 170 samples were selected to determine the level of knowledge on infection prevention and 50% of total samples were selected to examine the extent of infection prevention practice among nurses.Self-administered semi-structured close ended except two open ended questionnaire was used to assess knowledge and observation checklist was used to assess practice for data collection.

Before skill assessment, researchers provided the orientation to ward in charges for skill assessment of the selected staffs. During orientation, objective of the study and checklist was shared and discussed with ward in charges. At first, participants' skill was assessed by ward in charges to reduce bias.. Only half of the total respondents (that is 85 nurses') practice was assessed during their duty timewithout

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knowing by assessed staffs. After completion of skill assessment, 170 nurses were selected by census method for knowledge assessment and data was collected by researchers themselves. Researchers visited to nurses in selected wards, then stated objective of the study. Self-administered questionnaire was distributed to respondents as per their convenient time in duty, then nurse participants were requested to fill written consent before starting to fill the questionnaire. Finally 170 nurses had returned back the filled questionnaire. After data collection, questionnaire and observation check list of each participants was coded and made ready for data entry and analysis into SPSS 20 version.

As per study purpose both descriptive and inferential statistic was used to analyze the data. The data was analyzed and reported in terms of frequency, percentage, mean and chi square to assess association between knowledge and practice.

Level of knowledge was categorized as scoring criteria (1 score for each right response). Adequate knowledge means knowledge score above and equal to mean knowledge score. Inadequate knowledge means knowledge score below to mean knowledge score. Similarly good practice means score above and equal to mean practice score and poor practice means score below to mean practice score. Chi square was used to assess association between knowledge and practice to other selected variables. Thus the findings of the study were connected with the research objectives. Furthermore findings of the study were compared and differentiated with other study nationally and globally.

Likewise researchers consciously pursued ethical and moral issues for this study. After getting approval from Institutional Review Board (IRB) of NAMS, permissionfrom hospital authority was taken before study.Thenafter,written informed consent from each respondent was taken and anonymity of respondents were also maintained. Respondents unwilling to provide informed consent were not included in the study.No respondents were forced to participate in the study. They were assured of confidentiality of the information. All ethical norms were considered throughout the study. Every precaution was taken to protect the right of respondents. The findings of the study were used only for the purposes statedon study.

RESULTS

The socio-demographic findings shows that out of 170 respondents, approximately one third 31.2% of the respondents were from the age group 19-29 years. Only 1.7% of the respondents were from age group ≥59 years. The mean age group was 35.72 years.

Regarding nursing educational background, more than half (62.4%) of the respondents had completed Bachelor level in Nursing and only some (5.3%) of the respondents had completed master's degree in nursing.

Among the total respondents, 18.8% of them were from ICU department, 16.5% from medical wards and 14.7% from surgical wards. Regarding the work experience of the respondents, majority (27.6%) of the respondents had 6 month to 5 years of experience, 20.6% had 10-15 years of experience and 19.4% of the respondents had work experience more than 25 years. The mean age of work experience was 13.26 years.

Table 1. Level of knowledge on infection prevention among respondents. (n=170)

Level of knowledge	Frequency	Percent (%)
Adequate knowledge	97	57.1
Inadequate knowledge	73	42.9

Mean ±SD= 27.75±4.18, Range of score= 15-36 (out of 38)

The table shows that only about half 97(57.1%) of the respondent had adequate knowledge on infection prevention while 73(42.9%) of respondent had inadequate knowledge with the mean score of 27.75 out of 38.

Table 2. Level of practice on infection prevention among the respondents.(n=85)

Level of Practice	Frequency	Percent
Good Practice	41	48.2
Poor Practice	44	51.8

Mean± SD = 40.49±7.22, Range of Practice score = 19-52

This table shows that less than half 41(48.2%) of the respondents had good practice on infection prevention and more than half 44 (51.8%) of the respondents had poor practice.(Table 2.)

Among respondents with inadequate knowledge, 53.8% had poor practice while those having adequate knowledge 50% had poor practice. This difference is statistically insignificant at 5% significance level (p-value: 0.724). Thus, there is no statistical association between knowledge level and practice level.(Table 3.)

Based on qualification, PCL level had poor practice level than bachelor and above. However, this difference is statistically insignificant at 5% significance level (p-value: 0.075). Thus, there is no statistical association between practice level and educational background. (Table 4.)

Based on working experience, those who have experience up to 10 years had inadequate knowledge than who have more than 10 years' experience. However, this difference is not statistically significant at 5% significance level (p-value: 0.493). Thus, there is no statistical association

between knowledge level and work experience.(Table 5.)

Based on working experience, there is almost similar level of practice between those with up to 10 years'

and more than 10 years' experience. Therefore, this difference is statistically insignificant at 5% significance level (p-value: 0.935) inferring that there is no statistical association between practice level and work experience. (Table 6.)

Table 3. Association between knowledge and practice.

		Practice Level		Chi-square	
		poor practice	good practice	Value	P-value
Knowledge Level	Inadequate knowledge	21(53.85)	18 (46.15%)	0.125	0.724
	Adequate knowledge	23 (50%)	23 (50%)		

Table 4. Association between educational level and practice.

		level of practice			
		poor practice	good practice	Chi square	p- value
Nursing educational background	PCL	20 (64.5%)	11 (35.5%)	3.178	0.075
	Bachelor and above	24 (44.4%)	30 (55.6%)		

Table 5. Association between knowledge and working experience.

		Knowledge Level			
		Inadequate knowledge	Adequate knowledge	Chi square	p-value
Working Experience	up to 10 years	40 (45.5%)	48 (54.5%)	0.470	0.493
	more than 10 years	33 (40.2%)	49 (59.8%)		

Table 6. Association between working experiences and practice.

		Level of practice			
		Poor practice	Good practice	chi-square	p-value
Working Experience	Up to 10 years	20 (52.6%)	18 (47.4%)	0.007	0.935
	More than 10 years	24 (51.1%)	23 (48.9%)		

Table 7. Response towards factors affecting IP practice in hospital.(n=270)

Variables	Frequency	Percent
Positive factors**		
Proper waste disposal system	86	50.6
Proper use of PPE	20	11.8
IP trainings	13	7.6
Regular cleaning of ward/ floor	11	6.5
Orientation programs about waste management	10	5.9
Examine/Evaluate IP practice	8	4.7
Formation of IP committee	7	4.1
Hindering factors**		
Inadequate training programs	64	37.6
Lack of sufficient human and material resources	59	34.7
Ignorance/Negligence by visitors	30	17.6
Lack of knowledge among staffs	24	14.1
Poor segregation of contaminated and non-contaminated waste	22	12.9
Lack of guidelines	15	8.8
Malpractice by nurses, doctors and students	13	7.6
Lack of supervision/ Counselling	12	7.1

** Multiple response

Above table describes 86 (50.6%) of the respondents answered that proper waste disposal system as the positive factor while only few (5.9%, 4.7%, 4.1%) responded orientation programs, periodical monitoring and evaluation of infection prevention practice and formation of infection prevention committee as positive factors respectively. About one third (37.6% and 34.7%) of the respondents answered inadequate training program and lack of sufficient human and material resources are hindering factors, respectively.

DISCUSSION

Regarding nursing educational background, more than half of the respondents had completed bachelor level in nursing and only some (5.3%) of the respondents had completed master'sdegree in nursing. This is similar to a study on infection control knowledge, attitude and practice 2007whichshowed that majority (89.3%) of the nurses had completed bachelors in nursing.[4]

The mean age of work experience was 13.26 years wheremajority of the respondents had 6 month to 5 years of experience, and only 19.4% of the respondents had work experience of more than 25 years. This finding is somewhat similar to a study done in Palestinian Hospitals on knowledge and practice oninfection control measures 2015,showed that majority of the respondents had work experience of 5 years and very few 1.5% of the respondents had work experience of more than 25 years.[5]

According to this study, 88.8% of the respondents did not get any training related to infection prevention and only 11.2% of the respondents had received training.Similarly a studyconducted by Sana'a Hon nurses in Azady Teaching Hospital in Kirkuk city showed that 91.9% of the nurses did not get training sessions regarding infection control and 83.4% of them had not participated in continuous learning about infection control.[6]

As per the findings of this study, majority of the respondents were aware about the transmission of hepatitis B and nearly all respondents answered that fluids and secretion are contagious. This finding contradicts to a study done in Nigeria, Immanuel general hospital2005, shows that only 63% respondents stated that hepatitis B is as dangerous as HIV/AIDS and only 44% (n=80) of the respondents stated fluids and secretions from patients are potentially contagious.[7]

In this study, majority of the respondents stated hand washing and use of protective barriers as standard precautions respectively and only few respondents stated no need to apply standard precautions to all patients. Majority of the respondents stated to wear the gloves, mask and goggles to protect from splashes of blood, or body fluids. Nearly all (98.8%) of the respondents use soap and water after accidental prick by sharps contaminated instruments. Similarly, majority (88.8%) of the respondents acknowledged the necessity to wear footwear to protect from injury.This findings is similar to a study conducted by Vaz et al. in Jamaica in 2010, shows that more than half (64.0%) of the respondents were very knowledgeable of universal precautions. More respondents (92.9%) who were employed in the health sector for 16 years and over reported high levels of awareness of universal precautions than those who were employed for less than five years (p<0.0001).[8]

The findings of this study showed good practice of the respondents on disposal of the waste. Cent percent of the respondents dispose the contaminated waste in red bucket, non- contaminated waste in blue bucket, papers in green bucket and food particles in black bucket. Nearly all (97.6%) of the respondents kept the ward always clean. Likewise, 81.2% of the respondents transferred the waste in the interim storage area or for disposal in adequate closed containers.The hospital has well defined system of waste management.

Almost all respondents stated the disposal of sharps in puncture proof container which was relevant with the practice as observed by majority of the respondents disposed the sharp instruments in the puncture proof container and destroy needle with needle destroyer. However, more than half (58.8%) of the respondents practiced recapping the needle after use.It is probably due to the lack of adequate supplies. This findings is also supported by a study conducted by Al-rawajfah OM, Tubaishat A. in 2014 which showed 27.5% of the nurses recap the needle.[9]

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A descriptive study conducted by Agarwal M, Punnamma in 2003, shows that about 78% of the respondents practiced prevention of hospital acquired infections while 22% did not. About 94% of the respondents

expressed that they have hindrances to the practice of prevention of nosocomial infections. The hindrances included poor working environment among 26%, poor knowledge about prevention of nosocomial infection was 10%, and lack of water for hand washing and other material resources 58%.In addition, ignorance/ negligence by visitors (17.6%), lack of knowledge among staffs (14.1%), and poor segregation of contaminated and non- contaminated waste (12.9%) are also the hindering factors.[11]Thus that literature has supported our study in which 37.6% and 34.7% of the respondents expressed that inadequate training programs and lack of sufficient human and material resources are the hindering factors affecting infection prevention practice in the hospital.

Our study showed that more than half (57.1%) of the respondents had adequate knowledge on infection prevention and less than half (42.9%) of the respondents had inadequate knowledge on infection prevention. Further our study showed that nearly half (48.2%) of the respondents had good practice on Infection Prevention and remaining half (51.8%) of the respondents had poor practice.The findings of this study contradicts with the study done in Palestinian Hospitals which showed approximately half (53.9%) of the studied sample had fair knowledge level (>80%). However, the majority (91.1%) of the studied sample had good practice (>80%).[5] likewise a recent descriptive study conducted by Eskander, Morsy, & Elfeky revealed that, approximately two thirds (63.6%) of the studied sample had unsatisfactory knowledge level but more than half (57.1%) of the studied sample had satisfactory performance level. [12]

Among respondents with inadequate knowledge, 53.8% had poor practice while those having adequate knowledge, 50% had poor practice. This difference is statistically insignificant, thus, there is no statistical association between knowledge level and practice level. Similarly based on qualification, PCL level had poor practice level than bachelor and above. However, this difference is statistically insignificant and no statistical association between practice level and educational background.

This study findings also disclosed that 50.6%of respondents answered proper waste disposal system as the positive factor while few responded orientation programs, periodical monitoring/ evaluation of infection prevention practice and formation of infection prevention committee as positive factors for infection prevention practice. About one third of the respondents answered inadequate training program and lack of sufficient human and material resources are hindering factors for infection prevention practice.

CONCLUSIONS

The result of this study reveals that more than half of the respondents had adequate knowledge and onlyless than half of the respondents had good practice to prevent infection. There is no significant association between knowledge and practice with different selected variablesof infection prevention like education, and year of experience. So,this study suggests that continuing education courses, and refresher trainings are necessary for raising significant association between knowledge and practice. Similarly, the need for development and implementation of guideline/protocol as a reference guide will be helpful to increase knowledge and practice for prevention of infection in the hospital. There is also need of infection prevention clower casein order to supervise, monitor and regulate all activities in preventing infection and reducing morbidity and mortality of hospitalized patient.

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