

Knowledge, Attitude and Practice on Hospital Acquired Infections Among the Nurses Working at Selected Private Hospitals in Dhaka, Bangladesh

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Abstract

The aim of this descriptive cross-sectional study was to evaluate Health Care Workers' (HCW) level of knowledge, attitude and practice towards Hospitals acquired infections (HAIs) in Bangladesh. The study was a survey conducted in three randomly selected private hospitals in Dhaka City. The data was collected through a self-administered semi-structured questionnaire to assess the level of knowledge and attitude. Observational check list was used to evaluate the practice. The study revealed that only 6.2% of the population had excellent knowledge about HAIs, 47.6% of the respondents had good knowledge, and rest of the population had either average or poor knowledge about HAIs. The majority had a good attitude and satisfactory practice. However, 22.4% of the nurses had the unsatisfactory level of practice on HAIs. The study found a highly significant association between the knowledge of the nurses and their practice.

Introduction

Hospitals acquired infections (HAIs), also called nosocomial infections, are acquired after 48 hours of admission in a hospital. HAI is a cross infection from one patient to another or from a doctor, nurse or other hospitals staff to a patient. A high frequency of HAI is an evidence of poor quality health service (Park K, 2011). The objectives of the study are to assess the level of knowledge, attitude and practice Bangladeshi Nurses have regarding HAIs.

HAIs are a matter of deep concern in the health sectors of all over the world. Almost 5 to 10% of hospitalized patients in the United States experience these infections. This figure is higher in developing countries and annually 2 to 4 million nosocomial infections happen in these countries. Nosocomial infections are the eleventh leading cause of mortality and the fifth leading cause of hospital deaths (Ghadamgahi F, 2011). Several studies reported that nosocomial infection increased mortality rate in ICUs.

In Bangladesh, hospital-acquired respiratory infections are of particular interest because of regional threats from emerging diseases, such as severe acute respiratory syndrome and Nipah virus, which have caused nosocomial outbreaks in the past decade. The emergence of novel strains of influenza, such as pandemic H1N1, warrant strengthening systems for detection and response to outbreaks of respiratory disease in health care facilities.⁸ The most important

infections are urinary tract infections, pneumonia, diarrhea, infections following surgery or invasive medical procedure, maternal and newborn infections (Saha JC, 2010).

HAI takes a heavy toll on patients and their families by causing illness, prolonging hospital stays, reducing the quality of life, increasing the potential of disabilities, increasing the resistance of the microbes to antimicrobials, as well as leading to excess costs and sometimes death of the patient. The spread of HAI serves as a major source of worry for managers in the healthcare practice, particularly in the resource-poor health care settings of developing countries.

Nurses have a critical role to play in prevention and infection control and they should have scopes for continuous professional development (Oliveira AC, 2010). The present study explores the level of knowledge, attitude, and practices among nurses regarding HAIs in Bangladeshi private hospitals with a view to understanding the awareness and preventions about HAIs in Bangladeshi health sector.

Methodology:

The study was carried out for the duration of three months from May 2014 to July 2014. The study populations were 240 male and female nurses working in three private hospitals of Dhaka city, Bangladesh. 80 nurses currently working in each of the above-mentioned hospitals were selected by Random sampling. Nurses who were trainees, volunteers, non-responsive, and not available were excluded.

Data was collected by self-administered semi-structured questionnaire. Correct answers were determined depending on the review of the available literature. Analysis of correct answers determined Nurses' knowledge about HAIs. Six Socio-demographic questions based on nurses' age, sex, educational status, job category, professional experience, and monthly income were designed to know the socio-demographic status of the respondents.

In addition, twenty-six knowledge related questions were used to measure the knowledge level of the respondents. On the other hand, a set of ten attitudes related statements were provided for nurses' response in a five-point Likert scale: strongly agree, agree, uncertain, disagree and strongly disagree. Both the knowledge and attitude of the respondents were arbitrarily categorized into five categories- very poor attitude: 0 to 20%; poor attitude: 21-40%; average attitude: 41-60%; good attitude: 61-80%; and excellent attitude: 80 to 100%.

Moreover, as an observational checklist, nine items were postulated to determine nurses' practice level regarding HAIs. The respondents were observed every day either morning or evening shift. 6-10 nurses were observed each day for 2 hours (10.00 am-12.00am or 15.00pm-1700pm). Each item was observed by the investigator and scored. The maximum score was 9. The practice of the respondents was arbitrarily categorized as follows: Unsatisfactory practices: 0 to 60%; Satisfactory practices: 60%-80%; and Good: 80 to 100%.

The purposes, objectives, and rationale of the study were clearly stated to the nurses, and the permission to contact the nurses was taken from the head of the selected private hospitals'

authority. For data analysis and processing, the Statistical Package of Social Science (SPSS 16) and Microsoft Excel were used.

Result:

The results of the study are presented in the tabular and narrative form and interpreted to describe the various aspects of the respondents' knowledge, attitude, practice, and socio-demographic status. The majority 87.5% (n=210) respondents responded in this study.

Table 1: Personal characteristics of the study population

<u>Variables</u>	<u>No</u>	<u>%</u>
<u>Age (years)</u>		
20-25	117	55.7
26-30	77	36.7
31-35	4	1.9
> 35	12	5.7
<u>Sex</u>		
Male	39	18.6
Female	171	81.4
<u>Educational status</u>		
Diploma in nursing	192	91.4
Bachelor of nursing	17	8.1
Masters of nursing	1	.5
<u>Job category</u>		
Nurse supervisor	4	1.9
Nurse in charge	22	10.5
Senior nurse	172	81.9
Assistant nurse	10	4.8
Others	2	1.0
<u>Professional experience</u>		
Less than 1 year	45	21.4
1-5 years	98	46.7
6-10 years	53	25.2
11-15 years	6	2.9
More than 15 years	8	3.8
<u>Monthly income</u>		
Less than 10000	33	15.7
10000-15000	86	41.0
15001-20000	74	35.2
20001-25000	10	4.8
Above 25000	7	3.3

Table 02: Distribution of respondents by Knowledge on the meaning of HAIs (n=210).

<u>HAIs is</u>	<u>Frequency</u>	<u>Percentage</u>
Infection which spreads before admission	9	4.3
Infection which spreads within 12 hours after admission	23	11.0
Infection which spreads within 24 hours after admission	79	37.6
Infection which spreads within 48 hours after admission	68	32.4
<u>Infection which spreads more than 48 hours after admission</u>	<u>31</u>	<u>14.8</u>
Total	210	100.0

Table 03: Distribution of respondents by Knowledge on most common types of HAIs. (n=210).

<u>Most common types of HAIs</u>	<u>N</u>	<u>Percentage</u>
Pneumonia	73	34.8%
Bloodstream infection	109	51.9%
Urinary tract infection	156	74.3%
Surgical site infection	115	54.8%
Decubitus ulcer	12	5.7%
Others	15	7.1%

*Multiple responses allowed.

Table 04: Distribution of respondents by Knowledge on infections that can be transmitted to a patient by HCWs (n=210).

<u>Infections can transmit to a patient by HCWs</u>	<u>N</u>	<u>Percentage</u>
Hepatitis B	106	50.5%
Hepatitis C	82	39.0%
Human Immunodeficiency Virus	65	31.0%
Influenza	112	53.3%
Tuberculosis	127	60.5%

*Multiple responses allowed.

Table 1 showed the demographic data of the respondents. Table 02 which demonstrated the distribution of respondents by Knowledge on the meaning of HAIs, showed that most of the respondents (37.6%) had wrong idea that infection which spread within 24 hours after admission is called Hospital Acquired Infections (HAIs). Only (32.6%) knew the proper meaning of HAIs.

Table 3 showed the distribution of respondents by Knowledge on most common types of HAIs where according to most of the respondents (74.3%), the most common type of HAIs was UTI. The proportion of participants who answered correctly about the transmission of certain infections from patients to HCWs and the reverse were reported in table 04.

The analysis of the above data illustrated that out of 210 nurses the majority of the nurses (47.6%) had good knowledge and (41.9%) had average knowledge. About (6.2%) of them had excellent knowledge and only (4.3%) had poor knowledge.

Table 05: Distribution of respondents by their attitude on HAIs. (n=210)

<u>Statements</u>	<u>Strongly agree (%)</u>	<u>Agree (%)</u>	<u>Uncertain (%)</u>	<u>Disagree (%)</u>	<u>Strongly disagree (%)</u>
Hands hygiene measures before starting the working	83.3	11.9	.5	4.3	
Hands hygiene measures before going to another patient	66.2	19.5	7.6	6.2	.5
Wearing gloves reduce the spreads of HAIs	51.9	37.1	8.6	2.4	
Proper disposal of hospital waste reduces the risk of HAIs.	49.5	28.6	13.3	8.6	
Proper disposal of patients' sputum can reduce the chance	45.2	31.9	17.1	5.2	.5
Use of aseptic technique while doing dressing is necessary	57.6	30	8.6	3.8	
Recapping needles after using is helpful to avoid HAIs	41	19.5	14.3	21	4.3
Placing needles in sharp's containers play a significant	38.6	34.8	12.4	13.8	.5
The nurses & other healthcare staffs should be given	52.4	35.7	4.3	7.6	
If hospital staffs are effectively implementing necessary	48.6	36.2	11.4	3.8	

Table 06: Distribution of respondents by their practice on HAIs. (n=210)

<u>Practice</u>	<u>Yes (%)</u>	<u>No (%)</u>
Hands hygiene measures before starting the working activity	98.6	1.4
Hands hygiene measures before going to another patient	72.4	27.6
Wearing gloves when at direct contact with a patient	88.1	11.9
Hands hygiene measures before wearing gloves	60	40
Hands hygiene measures after removing gloves	88.1	11.9
Proper disposal of patients' sputum	68.6	31.4
Use of aseptic technique while doing dressing	90	10
Recapping needles after using	61.9	38.1
Placing needles in sharp's containers	95.7	4.3

Table 05 showed the percentage distribution of the nurses' attitude on hospital-acquired infections. The analysis illustrated that among of the respondents, 39.0% had the good attitude, and 31.9% had the excellent attitude. About 20.0% of them had the average, 6.2% had the poor, and few of the respondents had a very poor attitude on HAIs. On the other hand, the table 06 showed the percentage distribution of the nurses based on their practice on HAI. Among the respondents, 47.1% had the good practice, 30.5% had the satisfactory level of practice, and 22.4% had the unsatisfactory level of practice on HAIs.

Table 07: Association between knowledge and attitude level on HAIs

<u>Attitude</u>	<u>Knowledge level</u>				Total
	Poor	Average	Good	Excellent	
Very poor	1(7.7%)	0(.0%)	4(4.5%)	0(.0%)	5(2.4%)
Poor	1(7.7%)	6(6.0%)	5(5.7%)	1(11.1%)	13(6.2%)
Average	1(7.7%)	19(19.0%)	21(23.9%)	2(22.2%)	43(20.5%)
Good	9(69.2%)	43(43.0%)	26(29.5%)	4(44.4%)	82(39.0%)
Excellent	1(7.7%)	32(32.0%)	32(36.4%)	2(22.2%)	67(31.9%)
Total	13(100.0%)	100(100.0%)	88(100.0%)	9(100.0%)	210(100.0%)

($X^2=16.697$, $df=12$, $p=0.161$)

Table 08: Association between knowledge and practice of the respondents

Knowledge level	Practice level			Total
	Unsatisfactory	Satisfactory	Good	
Poor	4(8.5%)	2(3.1%)	3(3.0%)	9(4.3%)
Average	10(21.3%)	38(59.4%)	40(40.0%)	88(41.9%)
Good	32(68.1%)	23(35.9%)	45(45.5%)	100(47.6%)
Excellent	1(2.1%)	1(1.6%)	1(11.1%)	13(6.2%)
Total	47(100.0%)	64(100.0%)	99(100.0%)	210(100.0%)

($X^2=25.415$, $df=6$, $p=0.000$)

Table 07 illustrated the association between the knowledge and the attitude of nurses towards HAIs. It showed that among nurses with the low level of knowledge, (7.7%) had a very poor level of attitude whereas (69.2%) had the good attitude. Among the respondents with good knowledge, (36.4%) had an excellent attitude, and with excellent knowledge, (44.4%) had the good attitude. On the other hand, table 08 showed the association between the knowledge and practice of nurses on HAIs. It showed that the nurses with unsatisfactory practice, (68.1%) had a good level of knowledge. Among the nurses with satisfactory practice, (59.4%) had an average level and (35.9%) had a good level of knowledge, and nurses with good practice, (45.5%) had good knowledge. Therefore, there was no significant association ($p>0.05$) between the knowledge of nurses with their attitude on HAIs. However, there was a highly significant association between ($p<0.05$) the knowledge of the nurses and their practice.

Discussion:

According to WHO, HAIs are infections acquired during hospital care which are not present or incubating at admission. Infections occurring more than 48 hours after admission are usually called nosocomial. (WHO). The present study revealed that most of the nurses (37.6%) had the wrong idea that infection which spread within 24 hours after admission were called nosocomial, and only (14.8%) nurses had the proper knowledge about the definition of nosocomial.

The result of the study showed that 74.3% of the respondents knew that the most common type of HAIs was UTI. 54.8% of respondents knew it was surgical site infection, (51.9%) knew bloodstream infection, and (34.8%) knew pneumonia. A similar study on an Investigation of Nurses' Knowledge, Attitudes, and Practices Regarding Disinfection Procedures in Italy showed that (57.3%) of the respondents knew the most common types of HAIs was urinary tract infection, (52.0%) knew respiratory tract, (49.5%) knew surgical wound, (31.5%) knew skin infections. (Sessa, 2011).

The study found that the majority of the respondents (60.5%) had knowledge that HCW can transmit an infection like Tuberculosis. 53.3% believed that HCW can transmit Influenza; (50.5%) knew its Hepatitis B, (39.0%) believed its Hepatitis C and (31.0%) had the knowledge it's HIV. A similar study on knowledge, attitude and behavior of primary health care workers regarding healthcare-associated infections in Kuwait found majority of the respondents (86.2%) had the knowledge that HCW can transmit an infection like Influenza, (70.9%) tuberculosis, (59.0%) HBV, (55.5%) HCV, (53.4%) had knowledge of HIV. (Alnoumas, 2012).

The result of the study on the knowledge of Bangladeshi nurses' regarding nosocomial infections revealed that majority of the nurses (47.6%) had good knowledge and (41.9%) had average knowledge. About (6.2%) of them had excellent knowledge and only (4.3%) had poor knowledge. A study by Ghadamgahi on knowledge, attitude, and self-efficacy of nursing staffs in hospital infections control showed that (29.9%) had good knowledge about HAIs and (67.9%) of the nursing staff had average knowledge. (Ghadamgahi, 2011). Whereas in 2009, a study revealed that the mean knowledge of staff nurses regarding infection control measures was (75.5%). (Taneja, 2009).

The level of knowledge of nurses' analyzed from this study indicates that there is an urgent need to evaluate and revise the education and training program in prevention of HAIs because the knowledge acquired through basic and continuing education and in-service training could enhance nursing practice.

In the attitude scores, the majority of nurses' attitude (39.0%) had a good attitude on hospital-acquired infections, (31.9%) had an excellent attitude. About (20.0%) of them had an average, (6.2%) had poor and few of the respondents had a very poor attitude on HAIs. This is because of the lack of knowledge and proper training on infection control.

The study presented that among the respondents, (47.1%) had a good practice, (30.5%) had a satisfactory level of practice and (22.4%) had an unsatisfactory level of practice on HAIs. A similar study found the mean reported infection control practice was (57.5%). (Taneja, 2009). In another study the highest recorded score for practice was (66.66%). (Jayasinghe, 2014). Therefore, the level of practice in Bangladesh is unsatisfactory.

There are several factors responsible for the unsatisfactory level of practice. Bangladeshi nurses have been trained to perform task oriented nursing care rather than problem-solving oriented nursing care. This reflects that nurses may perform nursing care without knowing the reason why

they need to do that task. The lack of knowledge regarding the routine tasks might motivate them to skip some of the procedures which in fact might be very important for the prevention of HAIs.

The study found that there was a highly significant association between the knowledge of the nurses with their practice. Similarly, a study conducted in Samar, Philippines, where it was found that knowledge is correlated to the performance of universal precautions. (Kane, 1997). However, another study found that there was no significant association between the knowledge of the nurses and their practice. (Lindy, 2013).

It has been found in a study by Suchitra JB (2007) that a yearly education program on nosocomial infections and its prevention helps in the retention of knowledge, attitudes, and practices among the various categories of HCWs. This also helps in a better adherence to barrier protection such as hand washing, use of gloves and hand disinfection. However, the level of education, lack of evidence-based practice, and knowledge requirement during the nursing degree could be major reasons for the unsatisfactory level of practice.

Conclusion:

HAIs are widespread. They are important contributors to morbidity and mortality. They will become even more important as a public health problem with increasing economic and human impact because of increasing numbers and crowding of people. This was a descriptive cross sectional study conducted to assess the level of knowledge, attitude and practice on hospital acquired infections among the nurses working at selected private hospitals in Dhaka, Bangladesh. The study has revealed that little less than half of the respondents (47.6%) had good knowledge on HAIs, only (39.0%) of the respondents had good attitude and (47.1%) respondents had good practice towards HAIs. There was no significant association between the level of knowledge and attitude but there was weak association between the knowledge level and educational status. Statistically it was found there was highly significant association between the knowledge and practice and between the attitude and practice.

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