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Knowledge and Practices Regarding Infection, Prevention and Control in Public Hospital of Lahore

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Abstract

Background: Infectious patients are admitted to the hospitals and therefore, hospitals have emerged as common place where diseases transmit from one person to another person. Further, these infectious patients serve as a source of infections transmission from patient to patient, nurses and other visitors (Sydnor and Perl, 2011). Further, hospital acquired infections are defined as infections which occur in a patient during the process of care within a hospital which was not present or incubating at the time of admission. **Objectives:** This study was conducted to assess the knowledge and practices regarding infection prevention and control among the nurses of a public hospital. **Methodology:** This study was conducted to assess nurse's level of knowledge and practices of infection prevention and control at Jinnah hospital Lahore. Target population of the current study was 150 nurses of ICU, CCU and surgical and Medical wards of Jinnah Hospital Data is collected from the participant through self-administered questionnaire and the participants are selected through simple random sampling method, the sample size for this study is 150 nurses of different departments. **Results:** The current study examines the Knowledge and Control practices of Infection among the Nurses of Public Hospitals of Lahore, Pakistan. The results show that the nurses have sufficient knowledge regarding the infection control practices; however, the nurses lack the practices regarding the infection control in the public sector of health. **Conclusions:** mostly nurses have adequate knowledge of regarding infection control practices. But many nurses have lack of practices reason could lack of recourses non availability of personal protective equipments in public hospital. But with the time nurses are getting more and more knowledge and utilization of excellent practices and learning importance of infection prevention and good health out puts of patients as well as health care providers.

Keywords: infection; Nurses; hospital; health care providers; diseases; prevention; Infectious

Introduction

The existing literature identifies many factors that impact on compliance with infection prevention and control precautions. Literature explains the lack of knowledge and implementation issues of protocols while practicing as the causes of infection. A lack of knowledge, for example, has been reported to be associated with sub-optimal use of personal protective equipment with only 22% of staff having the correct knowledge about standard precautions (Mohamedali, Breunis, Timilshina, and Alibhai, 2011). A correlation has also been reported between knowledge and hand hygiene practices in nursing and medical students, with less knowledge leading to lower levels of compliance There is, however, some confusion regarding whether improvements in knowledge increases levels of compliance

with infection prevention and control precautions. (DeJoy, Searcy, Murphy, and Gershon, 2000), for example, reported that better knowledge predicted better general compliance with standard precautions. However, it was later found that theoretical knowledge of guidelines did not have any impact on hygiene practices (De Wandel, Maes, Labeau, Vereecken, and Blot, 2010). The infections which are cause after any type of surgery due to carelessness of medical staff member or a patient is known as surgical site infection (Diaz and Newman, 2015). Surgical site infections are known to be 16 % of all nosocomial infections (Van Mossel *et al.*, 2012).

The prevalence the rate of infections in developed countries is low ranging from 2% to 6.4% but in undeveloped countries its rate is going upward from 5.5% to 25%”

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(Dubberke *et al.*, 2008). The best way to control the infection is through good knowledge and practice of the nursing staff members in the surgical wards (Famakinwa, Bello, Oyeniran, Okhiah, and Nwadike, 2014). There are two main types of the factors that are related to the growth of surgical site infection Intrinsic factors and Extrinsic factors. Intrinsic factors include advanced age, malnutrition, smoking, obesity and hypoxia. Extrinsic factors includes skin aseptic, pre-operative shaving, pre-operative skin preparation, sterilization of instruments, surgical hand scrub and dressing techniques (Famakinwa *et al.*, 2014).

For the prevention of infection nurses must have appropriate knowledge and practice regarding intrinsic factors such as advanced age, malnutrition, hypoxia, smoking and long time stay in the hospital. Nurses are the health care takers who spend most of their time with patients and should give numerous formal and informal health education regarding surgical site infection to the patients (de Lissovoy *et al.*, 2009).

Knowledge and practice of nurses regarding intrinsic factors must be good because intrinsic factors are mostly responsible for development of surgical site infection. Main focus is on the intrinsic factors because intrinsic factors are known to be one of the main cause of surgical site infection. The role of intrinsic factors is equal to extrinsic factors in the spread of surgical site infections. So, that's why main focus will be on the nurses' knowledge and practice of intrinsic factors regarding prevention of surgical site infection (S. O. Labeau *et al.*, 2010).

One of the prominent factor which is the cause of surgical site infection is age. Small babies and old age people are much near to the infections. So, the nurses working in the surgical wards must be aware from the age factor of the patients having any surgery to prevent the patients from acquiring surgical site infection (O'Brien *et al.*, 2013).

The intrinsic factor which is responsible for surgical site infection is malnutrition, patients suffering from malnutrition have less immunity power to fight against any disease or infection that's why they are at high risk of carrying infection. So a nurse with proper knowledge and practice must prevent the risk of such patients to avoid them from getting closer to the surgical site infection (Diaz and Newman, 2015).

Patients who have a habit of smoking are also near to acquire surgical site infection Smoking is also a reason of surgical site infection. Smoking causes many other problems which help surgical site infection to get growth. Smoking is inhibited with delay wound healing and the circulation of blood is decreased and the skin due to micro vascular obstruction from platelet aggregation and increased non-functioning of the blood (Kingsley, 2001).

Hypoxia is also a cause of surgical site infection. The patients suffering from hypoxia are having oxygen deficiency due to this they are much near to risk of carrying surgical site infection. Hypoxia cause delay healing of wounds. So the patient who is already having delay in wound healing will be more near to acquire surgical site infections (de Lissovoy *et al.*, 2009)).

Problem statement:

The study will be providing the deep insight and knowledge regarding infection control strategies to the nurses that will be helpful to prevent infection. The study findings enable the organization to enhance the knowledge and practice of

nurses regarding prevention and control of infection which results in the reduction of the patient hospital stay and minimize cost and time.

Study objective:

- 1- To assess nurses' knowledge regarding prevention of surgical site infection.
- 2- To assess nurses' practice regarding prevention of surgical site infection.

Review of Literature

Nurses must always have a good knowledge and practice about the intrinsic factors responsible for infection while they are dealing with the patients to prevent the patients from acquiring any kind of intrinsic infection in wards. The prevention of infection is an important duty for nurses working. If nurses have awareness they can give proper care to the patients and prevent the patient's health from getting worse (W. S. Labeau, Vandijck DM, Claes B, Rello J, Vandewoude KH, Lizy CM, Vogelaers, 2010).

Infections are acquired through the contact with health care providers such as nurses and doctor those working in the hospitals. Surgical site infections can cause minor complications or great loss to the health of a patient. Surgical site infections are cost effective because of long term hospital stay, extra laboratory test charge, doctor's visit and extra processes (Harrison, Cohen, and Walton, 2015)).

Rate of surgical site infection vary from country to country some countries have very low infection rate like USA but some countries have high rate of acquiring surgical site infection like Pakistan. The risk of surgical site infection is higher in developing countries like Pakistan, India, and Afghanistan relative to developed nations like USA, China and Bangladesh (Van Mossel *et al.*, 2012).

Site infection can be preventing through proper knowledge of nurses regarding intrinsic factors that are cause of spreading surgical infections, the problems of the patient in surgical wards such as, age of the patient, malnutrition status, obesity the smokers and hypoxic patients. A study shows that nurses' have no proper knowledge and practice regarding the age of patient, malnutrition status, obese patients, smoking patients and hypoxic patients that's why such patients acquire infection from the surgical wards (Böhm *et al.*, 2013).

Age is a considerable intrinsic factor which is responsible for increase in acquiring surgical site infection, people who are aged and small children are much near to get surgical site infection. A study found that people who are old (more than 70 years) are at high risk of surgical site infection (O'Brien *et al.*, 2013).

Malnutrition is also one of the major causes of nosocomial infection including the surgical site infection; patients

suffering from malnutrition have less immunity power that's why they are at high risk of carrying infection. If the serum albumin level is below then surrogate level of 3.4 to 5.4 g/dl is indicator of surgical site infection so the nurses working in the surgical departments must be aware of the surrogate level of the patients (Diaz and Newman, 2015).

Smoking is associated with inhibited wound healing and decreased blood circulation to the skin due to micro vascular obstruction from platelet aggregation and increased non-functioning of haemoglobin. This factor increased risk of surgical site infection (Kingsley, 2001).

Obesity has been associated with surgical site infection especially after cardiac and orthopaedic implant surgery found that patients with underweight colon surgery who had BMI of 25 or above had a 1.67-fold risk for surgical site infection compared with patients with BMI less than 25 (Famakinwa et al., 2014). The patient who is having oxygen deficiency is much near risk of carrying surgical site infection. It causes delay in the healing of wounds. The patient having delay in healing wounds is at very high risk of acquiring surgical site infections (de Lissovoy et al., 2009).

Methodology

Study Setting

The setting for this study was nurses of Jinnah Hospital Lahore.

Study Design

A quantitative descriptive and cross-sectional research design was used for this study

Study Population

Target population of the current study was 150 nurses of ICU, CCU and surgical and Medical wards of Jinnah Hospital.

Sampling Method

Convenient sampling technique was used.

Sample Size

Data is collected from the participant through self-administered questionnaire and the participants are selected through simple random sampling method, the sample size for this study is 150 nurses.

Sampling Technique

Convenient sampling was used for the data collection.

Inclusion Criteria

The inclusion criteria for this study all the on-job nurses of ICU, CCU and Surgical department of Jinnah hospital of Lahore, Pakistan. Nurses age group from 22 to 40 years.

Exclusion Criteria

Exclusion criteria was all the nurses on leave & who are not interested.

Data Analysis

Data analysis was done by SPSS version 21. Statistical computer software for data analysis. This is a descriptive study and all the descriptive statistics tests are applied

Ethical Consideration

Enough information of research will provide to participants with help of full consent and this will be achieved via a consent form attach to the questionnaire. Confidentiality will be considered by informing participants. Letter of conducting research will be taken from the ethical committee of the University of Lahore, Lahore School of Nursing to carry out this research.

Study Duration

This study approximately completed in 4 months from February, 2018 to May, 2018.

Results and Discussion

Table 1 shows that 77.3% (116) of the respondent were married and 22.7% (34) of the respondents were non-married. Age of the respondent are 6.7% (10) of the respondent were of age 18-25 years and majority (66%) of the nurses were of age 36-50 years. Majority (43.3%) of the respondents have completed the surgical diploma, majority (41.3%) of the respondents were working from 6-10 years in the hospital.

Table 1: Demographic characteristics showing frequency and their percentage

Demographic characteristics	Frequency	Percentage
Sex		
Male	1	7%
Female	149	99.3%
Total	150	100.0%
Marital status		
Married	116	77.3%
Single	34	22.7%
Total	150	100.0%
Age		
18-25Yrs	10	6.7%
26-35Yrs	41	27.3%
36-50Yrs	99	66.0%
Total	150	100.0%
Education		
Nursing Diploma	60	40.0%
Surgical Diploma	65	43.3%
Other	25	16.7%
Total	150	100.0%
Experience		
Less than 1Yr	3	2.0%
1-5 Yrs	28	18.7%
6-10Yrs	62	41.3%
Above 10 Yrs	57	38.0%
Total	150	100.0%

Table 2: Data related to the knowledge of respondents

S.N.	Knowledge	Agree	Disagree	Not Applicable	Total
		f (%)	f (%)	f (%)	f (%)
1	Hospital acquired infections (HAI's) can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, thermometers, etc.	138 (92%)	10 (6.7%)	2 (1.3%)	150 (100%)
2	Nosocomial infection is an infection that the patient comes with from home	99(66%)	47(31.3%)	4(2.7%)	150 (100%)
3	I know the World Health Organization's 5 moments of hand hygiene.	102(68%)	44(29.3%)	4(2.7%)	150 (100%)
4	Some instruments can be stored in an antiseptic solution for up to 36 hours	40(26.7%)	57(38.0%)	53(35.3%)	150 (100%)
5	If there is limited beds available, patients with communicable disease may be admitted in the same ward with other patients	41(27.3%)	85(56.7%)	24(16.0%)	150 (100%)
6	Micro-organisms are destroyed by using clean water	84(56.0%)	49(32.7%)	17(11.3%)	150 (100%)
7	Bathing every day is a universal precaution	113(75.3%)	28(18.7%)	9(6.0%)	150 (100%)
8	Standard precautions apply to all patients regardless of their diagnosis.	125(83.3%)	22(14.7%)	3(2.0%)	150 (100%)
9	I am familiar with hospital acquired infection guidelines	111(74.0%)	37(24.7%)	2(1.3%)	150 (100%)
10	All staff and patient should be considered potentially infectious	117(78.0%)	29(19.3%)	4(2.7%)	150 (100%)
11	You can handle body fluids with bare hands if gloves are not available	40(26.7%)	60(40.0%)	50(33.3%)	150 (100%)
12	I know how to prevent and control hospital acquired infections.	107(71.3%)	40(26.7%)	3(2.0%)	150 (100%)

Table 3: Data related to the control practices of respondents

S.N.	Control Practices	Agree	Disagree	Not Applicable	Total
1	I always wash hands before and after Direct contact with the patient?	74(49.3%)	65(43.3%)	11(7.3%)	150 (100%)
2	I always put on a mask and glasses when performing invasive and body fluid Procedures?	67(44.7%)	67(44.7%)	16(10.7%)	150 (100%)
3	Knowledge of infection prevention and control are being monitored in the hospital?	57(38.0%)	69(46.0%)	23(15.3%)	150 (100%)
4	I attend in-service training/workshop related to infection prevention and control yearly?	42(28.0%)	83(55.3%)	25(16.7%)	150 (100%)
5	Surgical operation sites are shaved with razors?	49(32.7%)	78(52.0%)	23(15.3%)	150 (100%)
6	The latest infection and prevention guidelines date is between 2015 and 2013?	39(26.0%)	91(60.7%)	20(13.3%)	150 (100%)
7	Screening of patients are being done to detect colonization even if no evidence of infection?	23(15.3%)	93(62.0%)	34(22.7%)	150 (100%)
8	Vaccination is provided to staff?	58(38.7%)	65(43.%)	26(17.3)	150 (100%)
9	Personal protective equipment is always accessible?	14(65.3%)	98(65.3%)	38(25.3%)	150 (100%)

Table 3: Data related to the control practices of respondents

S.N.	Control Practices				
10	Our hospital monitors patients with urinary catheters for infection and gives feedback on urinary tract infection rates?	14(9.3%)	78(52.0%)	58(38.7%)	150 (100%)
11	Infection prevention does not improve patient outcome	12(8.0%)	73(48.7%)	65(43.3%)	150 (100%)
12	We wear PPE when handling linens	10(6.7%)	75(50.0%)	65(43.3%)	150 (100%)
13	We shake linens out to release dust from the linen	10(6.7%)	79(52.7%)	61(40.7%)	150 (100%)

The current study examines the Knowledge and Control practices of Infection Among the nurses of Jinnah hospital Lahore, Pakistan. The results in Table 2 show that majority of the nurses have know-how regarding the question that Hospital acquired infections (HAI's) can be transmitted by medical equipment such as syringes, needles, catheters, stethoscope, thermometers, etc. Similarly, Table 2 shows that majority of the nurses knew that patients come from home with the nosocomial infection. Moreover, majority of the nurses knew about the World Health Organization's 5 steps of hand hygiene. Same is the case with the nurse's knowledge regarding the instruments storage. Similarly, majority of the nurses disagree that in case of limited beds in the hospitals, patients with communicable disease may be admitted in the same ward with other patients (Table 2).

Majority of the nurses of Jinnah hospital kept the information regarding the importance of clean water to destroy the organisms. However, the results of the current study show that the nurses also have sufficient knowledge regarding the precaution and guidelines regarding the infection control techniques. Similarly, majority of nurses also knew that staff and patients should also be considered as the infectious (Table 2). The results in Table 2 also shows that majority of nurses did not know regarding the control of fluid with bare hands.

However, Table 3 shows that a lot of nurses were not washing hand before and after the contact with the patients which may cause the increase of infection among the other patients. Similarly, Table 3 shows the results that majority of the nurses responded as disagree that the nurse's knowledge and infection prevention and control practices are being monitored in their hospital.

Furthermore, the results show that majority of the nurses of Jinnah hospital Lahore, Pakistan have attended the training workshop regarding infection control through the Jinnah hospital Lahore, Pakistan. However, the staff does not monitor and take all the measures to control the infection among the patients through the standardized guidelines and procedures (Table 3).

Therefore, the current study emphasizes that nurses have sufficient knowledge regarding the infection control practices. However, Table 2 and 3 show that the nurses lack the practices regarding the infection control in the public sector of health. This shows that there is need of the focus of administration to implement practices of the infection control in the public sector hospitals for the society well-being and efficient health care services

Limitations

This study done within a short period of time and on only one nursing institutes of Punjab. Its findings cannot be generalizable to the whole Pakistan nurses experiences. The current study only focused on the diploma nursing student's experiences with those problems which influence student's learning. Further studies in this area are required to identify the problems which student's face during their learning.

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