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Original Research Article

Knowledge and practices of health care professionals to prevent surgical site infection in a tertiary health care centre

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ABSTRACT

Background: In spite of advanced operative techniques, availability of higher antibiotics, modern sterilization techniques, higher rate of SSI in government set up after major surgeries is quiet worrisome. Present study is an attempt to assess knowledge and practices of health care professionals to decrease incidence of SSI and to determine their relationship with each other.
Methods: This is cross sectional study conducted in one of the tertiary institute in western Maharashtra. Data collection was done by using pre-tested, structured questionnaire. We assessed knowledge and practices followed in wards and operation theatre and compared with standard practices according to WHO infection control protocols. We analyzed data according to Low (<60%), moderate or good (60-80%) and >80% means high knowledge and practices using 3-point Likert scale (never practiced, sometimes practiced, and always practiced). Subgroup analysis will be made by dividing participants in 3 groups mainly consultants (faculty), residents and interns, and staff nurses.
Results: Authors found poor knowledge among all three subgroups and in assessment of level of practices, we found that 68.75 % of consultants were following very high level of practices followed by staff nurses (64.51%) and then Interns and residents (49.15%) and while assessing relationship between knowledge and practices in each subgroup by calculating spearman's Rho coefficient (R), authors found that for interns and residents, P value is 0.025, so association is statistically significant.
Conclusions: It can be concluded that health care professionals in the current study have good practices level regarding infection control but knowledge of surgical site infection prevention activities among those was found low. It emphasizes importance of providing training programs for newly joined students, staff nurses and for consultants about infection control protocols at regular intervals.

Keywords: Knowledge, Practices, Surgical site infection

INTRODUCTION

Surgical site infections are defined as infections that occur within 30 days of the operation.[1] It affects up to 5% of all the surgical operations carried out in developed countries, and significantly higher (5.5 to 25%) in developing countries. In India, incidence of SSI in variety of surgical procedure is 11%.[2,3] Throughout the literature, SSIs were associated with factors including advanced age, malnutrition, metabolic diseases, smoking, obesity, hypoxia, and immune-suppression.[4]

Moreover, factors like application of skin antiseptics, preoperative shaving, antibiotic prophylaxis, preoperative skin preparation, inadequate sterilization of instruments, surgical drains, surgical hand scrubs, and dressing techniques were among the most frequently reported risk factors.[5,6]

This study is an attempt to asses knowledge of health care professionals about SSI control and their usual practices in operation theatres/wards to control or prevent them.

Many infection control measures, such as appropriate hand hygiene and the correct application of basic precautions during invasive procedures are simple and of low-cost, but require staff accountability and behavioural change, in addition to improving staff education, reporting and surveillance systems.[7]

To utilize these precautions, the human element plays an important role in increasing or decreasing the chances of catching health care associated infections.[8]

METHODS

This is cross sectional study conducted in one of the tertiary institutes in western Maharashtra. Data collection was done by using pre-tested, structured questionnaire.

The questionnaire was derived from the guidelines established by the WHO9, the Centres for Disease Control and Prevention. It will mainly have 3 parts. First part assessed sociodemographic features of study participants like age, gender, designation, educational qualification, work experience.

Second part had questions which assessed knowledge of participants regarding prevention of SSI, third part assessed various practices followed in wards and operation theatre and compared with standard practices according to WHO infection control protocols. We enrolled all those health care workers who are willing to participate in the study and given consent.

Health care professional's knowledge regarding the prevention of SSIs was measured by 9 multiple choice questions in which only one correct answer was found. The questions addressed the most important recommendations by the WHO infection prevention and patient safety guideline (about correct time of prophylactic antibiotics, presurgical skin preparation, hand hygiene etc.). The correct response for each question receives score 1 and incorrect response will have 0. For interpretation researcher divided transformed scores into 3 levels.

Low or poor knowledge <60%, moderate or good knowledge 60-80% and >80% means high knowledge. On the other hand, HCP's practices in the prevention of SSIs were measured by 10 questions in which responses were answered in a 3-point Likert scale (never practiced, sometimes practiced, and always practiced). Total score range from 1 to 3.

Higher score indicates higher level of practices. Subgroup analysis will be made by dividing participants in 3 groups mainly consultants (faculty), residents, and staff nurses.

RESULTS

A descriptive correlation design was used in this study. One hundred and thirty eight out of 145 health care professionals completed their questionnaire, yielding the response rate of 95.1%.

Table 1: Demographic data.

	n (138)	Percentage
Age (Years)		
21-30	101	73.18
31-40	24	17.39
41-50	7	5.07
51-60	6	4.34
Gender		
Male	66	47.82
Female	72	52.17
Designation		
Intern and junior residents	59	42.75
consultants	48	34.78
staff nurse	31	22.46
Work experience in surgical ward		
<1 year	36	26.08
1-5 years	72	52.17
5-10 years	14	10.14
10-15 years	10	7.2
15-20 years	6	4.3
20-25 years	2	1.4
Attended infection control training programme		
Yes	54	39.13
No	84	60.86

Table 1 shows 52.17% were female and 47.82% were male enrolled in study. Out of total 138 subjects, 59 (42.75%) were residents and interns and 48 (34.78%) were consultants. Out of 138, 72 (52.17%) individuals were having surgical ward experience between 1-5 yrs. 84 (60.86%) participants were not attended any infection control training program.

Table 2: Assessment of level of knowledge.

Faculty (consultants)	n (48)	Percentage
Level of knowledge		
Low (<60%)	31	64.58
Moderate (60-80%)	16	33.33
High (>80%)	1	2.08
Interns and residents n = 59		
Low	38	64.4
Moderate	19	32.2
high	2	3.38
Staff nurses n = 31		
Low	22	70.96
Moderate	6	19.35
high	3	9.67

In this study very, few participants were found to have high level of knowledge and majority of them fell in the

category of poor knowledge as shown in above table. In assessment of level of practices, we found that 68.75% of consultants were following very high level of practices followed by staff nurses (64.51%) and then Interns and residents (49.15%).

Table 3: Assessment of level of practices.

	n (48)	Percentage
Level of practices		
Low	0	0
Moderate	5	10.41
High	10	20.83
Very high	33	68.75
Interns and Residents n = 59		
Low	0	0
Moderate	7	11.86
High	23	38.98
Very high	29	49.15
Staff nurses n = 31		
Low	1	3.2
Moderate	2	6.45
High	8	25.8
Very high	20	64.51
Faculty (consultants) <60% = Low, 60-80% =Moderate, 80-90% = High, >90% = Very High		

Correlation analysis was conducted to study relationship between knowledge and practices in each subgroup by calculating spearman's Rho coefficient (R). In case of faculty members, the value of R is 0.08 and two tailed P value is 0.55. So, association between two variables would not be considered statistically significant. For interns and residents, value of R is 0.29 and P value is 0.025, so association is statistically significant. In case of staff nurses, R is 0.02 and P value is 0.9, so it is again statistically non-significant association.

Table 4: Problem faced while working to remain compliant with infection control guidelines.

Problems	n (138)	Percentage
Inadequate supply of surgical consumables (Cap, mask, scrub, antiseptic solution)	60	43.47
Lack of supervision of hospital infection control committee.	9	6.52
Inadequate knowledge about disinfection and sterilizing techniques	30	21.73
Lack of training about infection control methods	50	36.23

The reasons given by the respondents for their non compliance with the infection control guidelines are presented in Table 4. The respondents attributed their noncompliance mostly to inadequate supply of surgical consumables (Cap, mask, scrub, antiseptic solution) (43.47%) and lack of training about infection control methods (36.23%).

DISCUSSION

Prevention of SSIs is one of the most important challenges in delivering optimum health care. In spite of advanced operative techniques, availability of higher antibiotics and modern sterilization techniques, higher rate of SSI in government set up after major surgeries is quite worrisome. Wound complications delays recovery of patients, increases hospital stay, induces psychological trauma. It robs credit of surgeon and his hours of dedicated work of surgeries, induces anxiety and threatens his confidence. SSI is also a growing source of a malpractice suit in developing countries, not only for the extra financial burden it places on the patient, but also for the emotional stress caused by the ugly scar that comes with it.

In the literature, majority of studies conducted in this regard are related to nursing staff. Though nursing staff is crucial to the success of any preventive program aimed at reducing the incidence of infection, role of interns, junior residents and sometimes consultants can't be neglected. So, authors conducted this study amongst interns, junior residents, faculty (consultants) and staff nurses to assess their knowledge and their practices towards prevention of SSI because these are the subjects who are involved in patient care for pre operative period, intraoperative and post operative management round the clock.

In this study nearly three fourth (73.18%) of studied participants aged between 21 to 30 yrs old which is comparable with study done by Teshager FA et al on prevention of SSI.[10] Among all study participants, interns and junior residents were highest in number comprising 42.75% followed by consultants (34.78%). Although all health care professionals involved in patient care are responsible for ensuring patients safety in this regard, residents and nurses plays major role since they are usually involved in each step around the clock.

The result of our study showed that almost 60% of study participants hadn't had previous infection control training and majority of them were interns and junior residents. This emphasizes need to schedule regular infection control training sessions to train those newcomers in the field of patients care. Approximately 2/3rd of consultants, interns and residents found to have poor knowledge and 70% of staff nurses were having poor knowledge. Approximately 1/3rd of respondents among each group were having moderate to high knowledge that means almost 2/3rd of them demonstrated inadequate knowledge on prevention of SSI, a finding in line with many similar studies conducted in Africa and western countries.[11-13] In this study, we designed questions based on up-to-date guidelines and it may be the possible reason for lower findings in current study about level of knowledge which might be due to lack of in service refreshment trainings

on evidence based SSI prevention guidelines and recommendations.

Regarding assessment of participant's practices of infection control, the current study demonstrates that majority of them having higher level of practices. These findings were found to be higher than what was reported in other studies.[14] The relationship between knowledge and practices of SSI is not showing significant association in consultants and staff nurses but in interns and junior residents this relationship is statistically significant.

CONCLUSION

It can be concluded that health care professionals in the current study have good practices level regarding infection control but knowledge of surgical site infection prevention activities among those is poor. It is necessary to update knowledge and improve practices of all of them through continuing in-service educational programs. It also emphasizes importance of providing training programs for newly joined students (interns and residents) about infection control protocols at regular intervals.

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REFERENCES

1. Smith MA, Dahlen NR, Bruemmer A, Davis S, Heishman C. Clinical practice guideline surgical site infection prevention. Orthopaedic Nurs. 2013 Sep 1;32(5):242-8.
2. deLissovoy G, Fraeman K, Hutchins V, Murphy D, Song D, Vaughn BB. Surgical site infection: Incidence and impact on hospital utilization and treatment costs. Am J Infect Control. 2009;37:387-97.
3. Akhter MS, Verma R, Madhukar KP. Incidence of surgical site infection in post operative patients at a tertiary care centre in India, J Wound Care. 2016;25(4):210-2,214-7.
4. Korol E, Johnston K, Waser N, Sifakis F, Jafri HS, Lo M et al. A systematic review of risk factors associated with surgical site infections among surgical patients. PloS one. 2013 Dec 18;8(12):e83743.
5. Petrosillo N, Drapeau CM, Nicastri E, Martini L, Ippolito G, Moro ML. Surgical site infections in Italian hospitals: a prospective multicenter study. BMC Infect Dis. 2008 Dec;8(1):34.
6. Cha KS, Cho OH, Yoo SY. Risk factors for surgical site infections in patients undergoing craniotomy. J Korean Acad Nurs. 2010 Apr 1;40(2):298-305.
7. Bouallègue O, Naija W, Said H, Nouria A, Jaidane N, Dhidah L, Boujaafar N. P233: Incidence of ICU acquired nososcomial infections in University Hospital of Sahloul (Sousse-Tunisia). Antimicrob Resist Infect Control. 2013 Jun;2(1):P233.
8. Cole M. Infection control: world's apart primary and secondary care. Br J Commun Nurs. 2007;12(7):301,303-306.
9. WHO. Global guidelines for prevention of surgical site infections, Evidence-based recommendations on measures for the prevention of surgical site infection. 2016:74-158. Available at http://www.who.int/gpsc/ssi-guidelines/en/
10. Teshager FA, Engeda EH, Worku WZ. Knowledge, practice, and associated factors towards prevention of surgical site infection among nurses working in Amhara regional state referral hospitals, Northwest Ethiopia. Surgery Res Pract. 2015;2015.
11. Brisibe SF, Ordinioha B, Gbeneolol PK. Knowledge, attitude, and infection control practices of two tertiary hospitals in Port-Harcourt, Nigeria. Nigerian J Clin Pract. 2014;17(6):691-5.
12. Fashafsheh I, Ayed A, Eqtait F, Harazneh L. Knowledge and practice of nursing staff towards infection control measures in the Palestinian Hospitals. J Edu Pract. 2015;6(4):79-90.
13. El-Enein NY, El Mahdy HM. Standard precautions: a KAP study among nurses in the dialysis unit in a University Hospital in Alexandria, Egypt. J Egyptian Public Health Assoc. 2011 Apr 1;86(1 and 2):3-10.
14. Talaat E, Shamia E. Developing a control action plan for infection prevention at the endoscopy unit. J int Acad Res. 2010;2(4):412-20.

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