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Assessment of knowledge, attitudes & practices among doctors, Nurses & ward aids on nosocomial infections in tertiary care hospital

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ABSTRACT

Introduction: Nosocomial infections are drawing increasing attention because of the magnitude of the problem in terms of the associated morbidity, mortality and cost of treatment, but also due to the growing recognition that most of these are preventable. Failure to implement correct practices by health care workers responsible for increased incidences of Nosocomial infections.
Objective: To assess knowledge, attitude and practices for control of nosocomial infections among doctors, Nurses & ward aids in tertiary care institute.
Materials and Methods: A total of 135 HCWs, 45 doctors, 50 nurses and 50 ward aides were included and questionnaires were prepared covering different areas like Hand hygiene, biomedical waste, vaccination, universal precautions and PEP etc. to assess their knowledge, attitudes and practices for prevention of nosocomial infections.
Results: Total of 274 questionnaires was analyzed using appropriate statistical methods. Different responses obtained as excellent, good, fair and poor for different categories of health care personnel (HCP). The test of significance Wilcoxon signed rank test was applied for pre test and post test responses found significant change in response after their training.
Discussion: Attending continued medical educations on hospital infection had a positive effect on infection control practices in all levels of health care personnel.
Conclusion: Regular monitoring, education and motivational programs on nosocomial infections and their prevention can help in retention of Knowledge, attitudes and practices among the various categories of health care workers.

1. Introduction

Nosocomial infections can also be called as hospital acquired infections or health cae associated infections. Health care associated infections is that infection that was not present nor incubating at the time of admission that includes infections acquired in the hospital and including occupational infections among health care staff of the facility.[1] Nosocomial infections are caused by pathogens transmitted from one patient to another by way of healthcare workers who do not practice infection control measures such as hand disinfection, use of gloves etc.[2,3] The most common HCAI are urinary tract, surgical site, lower respiratory tract and bloodstream infections. In addition to increased morbidity and mortality, these infections contribute significantly to the financial burden borne by patients, their families, and the health care system.[4] Most guidelines for infection prevention and control include appropriate hand hygiene as a key recommendation. The need for appropriate measures required for reducing the incidence of nosocomial infections. Failure to employ correct practices has been responsible for an increased incidence of nosocomial infections.[2]

The purpose of our study was to understand level of Knowledge, Attitude and Practices among different categories of health care workers, identify gaps in their understanding and analyze the effect of training for

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different areas of prevention of nosocomial infections like Biomedical waste, vaccination of health care workers, hand hygiene, universal precautions etc.

2. Material and Methods

The study was done at Department of Microbiology, New civil hospital, Surat after approval from institutional ethical and scientific review board.

A total of 135 HCWs, 45 doctors, 50 nurses and 50 ward aides will be included to assess their knowledge, attitudes and practices on nosocomial infections. 5 subjects from each departments & each category of health care worker from Medicine, Surgery, Paediatrics, Orthopaedics, Obs & gynecology, ophthalmology, ENT, TB & chest, Skin & VD. They will be subjected to a series of questionnaires. A scoring system was devised to grade those (KAP score). To analyze knowledge, Attitude and practices for prevention of nosocomial infections, questionnaires was prepared covering different areas like Hand hygiene, biomedical waste, vaccination, universal precautions and PEP (pre exposure prophylaxis) etc. as shown in. Table 1

Identity of Health care workers was closed by giving them dummy numbers. A pre-test questionnaire was asked to write individually then training was given about different aspects of prevention of nosocomial infections. To check effect of training post test questionnaires was asked to write.

Response to questionnaire was given a score, the KAP score. A KAP score of 1-10 was considered as poor, 11-20 as fair, 21-30 as Good and >30 as excellent. Statistical analysis was made using Wilcoxon signed rank test to analyse significant change in study parameters before and after training using software namely SPSS 20.0 and Microsoft word and Excel have been used to generate graphs, tables etc.

3. Results

Total of 274 questionnaires were analyzed using appropriate statistical methods. All the questionnaires were assessed for different area of Biomedical waste (BMW), vaccination in health care personnel, hand hygiene, nosocomial infections and post exposure prophylaxis (PEP) among different categories of HCP as shown in.Figure 1 Different responses obtained as excellent, good, fair and poor for different categories of health care personnel (HCP) and analyses of which is shown in.

The test of significance Wilcoxon signed rank test was applied between pre-test and post-test responses covering different areas of questionnaires like Biomedical waste, vaccination, hand hygiene, PEP, Nosocomial infection found p=0.000 suggestive significant change in response after their training.

4. Discussion

Health care associated infection (HCAI) rates remains high due to increasing complex health care interventions. Although considerable progress is being made in health care facilities world wide to reduce HCAI by adherence to hygiene recommendations.[4] Hospital administration should develop and implement programme for regular training and monitoring of different aspects of prevention and control of nosocomial infections. These programs should be innovative, educational and motivational and tailored to specific health care personnel.

In present study, there was a significant difference in pre education and post education responses given by all the categories of health care personnel. Study by JB Suchitra *et al* 2007 and Ujjavala C *et al* 2016 has shown similar results on effect of training given.[2,5] Studies by Angelillo *et al* 1999 recommended that attending continue medical educations on hospital infection had a positive effect on infection control practices.[6] Studies by Charalampia et al 2014 had shown that there significant increase in the compliance of health care professionals after first educational intervention.[7]

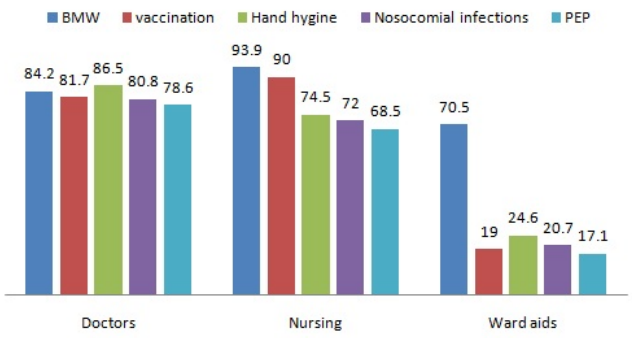

Fig. 1: Subject wise percentage pre-test KAP score in different categories of health care workers

4.1. Knowledge

In present study responses had shown gaps in knowledge of doctor staff about needle recapping practices, use of skin antiseptics, concentration of disinfectant to be used, spillage of specimen containers, hand washing practices, use of alcohol based hand rub, use of universal precautions and vaccination guidelines for health care workers so emphasis should be made on these aspects of improvement of their knowledge. Nursing staff were deficient about knowledge of percentage of disinfectant solution to be used as well as spillage of laboratory forms and specimen containers. This is a major aspect in prevention and control of nosocomial infections. All three category of staff were deficient in their knowledge about use of alcohol based hand rubs as substitution for routine hand washing as it's a very important

Table 1: Questionnaires to assess Knowledge, attitude and practices of health care workers for different areas like Biomedical waste (BMW), vaccination, Hand hygiene, Heath care associated infections, Pre exposure prophylaxis (PEP) for the control of nosocomial infections

Questionnaires for Doctor staff	**Area/ KAP score**
1. Is there any category for waste disposal? Yes /No	BMW/ Knowledge-1
2. Do you feel that there is need for categorization of waste? –Yes / No	BMW/ Attitude-1
3. Are you disposing all infections waste as per guidelines? – Yes / No	BMW/ Practice-1
4. Have you been trained for biomedical waste disposal? – Yes / No	BMW/ practice-1
5. Where would you discard the following a. Paper b. Needles c Used Gloves d Used Catheters e Linen stained with blood on body fluid	BMW/ practice-5
6. 6.Red bag should contain which of the following disinfectants. a. Phenol b.Formaldehydec.Dettold.Sodium Hypochlorite	BMW/ Knowledge-1
7. Are medical waste containers to be cleaned with a disinfectant before re-using? – Yes /No	BMW/ practice-1
8. Does the hospital have a contact with a biomedical waste management agency? Yes /No	BMW/ Knowledge-1
9. How many categories of BMW are there? a. 3 b. 4 c. 5 d. 6	BMW/ Knowledge-1
10. How much should be concentration of sodium hypochlorite in spillage ? a. 1% b. 2% c. 3% d. 4%	BMW/ Knowledge-1
11. Should you recap a needle before disposal? – Yes/No	BMW/ practice-1
12. Is there any recommendation for influenza vaccine for Health care worker? – Yes/ No	Vaccination/ Knowledge-1
13. What is the schedule for Hepatitis B vaccination? a.0,1,6 months b.2,4,6 months c. Two dose in 1 year interval d. Only one dose	Vaccination/ Knowledge-1
14. What is the schedule for influenza vaccination? a. Annually b. Only once c. 6,4,8 months d.At birth	Vaccination/ Knowledge-1
15. Is there any vaccine for HIV? –Yes/ No	Vaccination/ Knowledge-1
16. For how many infections, Health care worker should be vaccinated? a. Influenza, Hepatitis B, DPT, MMR, Varicella, Meningococci b. DTP, MMR c. Meningococcal, varicella d.Hepatitis	Vaccination/ Knowledge-1
17. Will hand washing prevent the spread of infection from patients? –Yes/ No	Hand/ Knowledge-1
18. Do you feel hand washing should be performed in between two patients? Yes/No	Hand/ Attitude-1
19. Do you change gloves in between patients? –Yes/ No	Hand/ Practice-1
20. What is the ideal time for routine hand washing? a. 5sec. b. 10sec. c. 15-20sec d. 40-50sec	Hand/ Knowledge-1
21. What is the ideal time providing for surgical hand washing? a. 2 -3min. b. 4 -5min. c. 15-20min. d. 30min	Hand/ Knowledge-1
22. Which of the following opportunities, hand rub can be a substitute for hand Washing? a. After removing gloves b. Hands are visibly soiled c. Hands visibly contaminated with blood d. Before and after eating	Hand/ practice-1
23. Do you use hub cutter to prevent re-use of disposable syringes? Yes/No	BMW/ Practice-1
24. Which of the following skin antiseptics used before collection of blood for blood culture? a. Spirit b. Iodine c. Spirit,Iodine,Spirit d. Spirit, Sodium hypochlorite	HAI/ knowledge-1
25.Do you believe that health care worker is at risk of acquiring a nosocomial infection? Yes/ No	HAI/ knowledge-1
26. What are nosocomial infections? a. Infection acquired from hospital b.Infection acquired from community c.Infection of nose d. Seasonal viral infections	HAI/ knowledge-1
27. What should be done when specimen container are soiled on the outside? a. Nothing b. Change the container c. Clean from outside d. Keep in polythene bag	HAI/ practice-1
28. What should be done when lab request forms are soiled? a. Change & discard original b. Nothing c. Clean & Dry	HAI/ practice-1
29. Have you heard about universal precautions? – Yes/ No	PEP/ knowledge-1
30. Do you feel universal precautions are a. Cumbersome b. Expensive c. Protective d. Compulsory	PEP/ Attitude-1
31. Universal precautions should be observed a. At all times b. At all times for all patients c. For HIV patients d. In the OT	PEP/ Knowledge-1
32. What do you mean by PEP? a. Personal exposure policy b. Post exposure prophylaxis c. Partial exposure policy d. Public exposure prophylaxis	PEP/ Knowledge-1

element in control of HCAI because studies has shown that 70% carryover of bacteria can be prevented by proper hand washing and use of alcohol based hand rubs so trainings regarding same should be routinely implemented. Majority of ward aids did not know about any aspects of prevention of nosocomial infections except biomedical waste though they are at a highest risk of getting infections. [1–3]

4.2. Attitude

Analysis of attitudes of health care personnel regarding Biomedical waste categorization, Hand hygiene and universal precautions were evaluated and it's not the matter of concern as most of them felt that there should categorization as well as good hand hygiene practices but majority of doctor staff and nursing staff found universal precautions as compulsory not protective.

4.3. Practices

Questions on practices like trainings for biomedical waste, cleaning of waste containers, recapping of used needles, changing gloves in-between patients, reuse of used syringes has found good practices but practices regarding management of spillage of laboratory requisition forms and specimen containers were absolutely worse so regular training and monitoring is top most priority in development of strategies for prevention and control of nosocomial infections

5. Conclusion

The continuing medical education is one of the most important tools to adapt in growing concerns of Health care associated infections. Regular education programs on nosocomial infections and their prevention can help in retention of Knowledge, attitudes and practices among the various categories of heal care workers.

There should be recommendation on written guidelines in every institution for HCWs. Regular system for monitoring of practices towards infection control and infection rates will form link between the management and the HCWs and thus help in implementing and improving strategies for prevention of nosocomial infections.

5.1. Limitations & future perspectives

Follow-up analysis is a limitation of this study to know compliance of Health care workers towards adherence of practices for control of nosocomial infections. Use of electronic devices for on the spot evaluation of gaps in knowledge, attitude and practices among different categories of health care workers so that immediate emphasis on those aspects could be made. Prospective study with regular trainings and follow-up compliance among different categories of staff is a future perspective for present study done.

6. Source of Funding

None.

7. Conflict of Interest

None.

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