

STANDARD PRECAUTIONS: AN ASSESSMENT OF AWARENESS AMONG HEALTH CARE PERSONNEL IN A TEACHING HOSPITAL, SOUTH INDIA.

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ABSTRACT: BACKGROUND: Standard precautions are crucial in the prevention and transmission of Healthcare associated infections (HAI) and transmission of blood-borne pathogens like Hepatitis B, Human Immunodeficiency Virus & Hepatitis C. They are not well understood or implemented by health care practitioners. Hence this study was taken up to determine and compare knowledge, attitude of standard precautions among health care personnel at a teaching hospital, Bangalore. **OBJECTIVE:** To assess knowledge, attitude, practices and compliance of Standard precautions among health care workers at a teaching hospital. **METHODOLOGY:** One hundred and fifty seven health care personnel participated in this study. A pretest and post test was administered to the study group. A pre-structured questionnaire on standard precautions was prepared which included knowledge, attitude and practices. **RESULTS:** 116(73.88%) nurses had knowledge about hand hygiene, but only 82(52.2%) nurses practiced hand hygiene before and after patient care. Knowledge about PPE measures like gloves, face mask & goggles, gowns were known to 101(64.33%), 56(35.66%) & 69(43.94%) nurses respectively. 117(74.52%) nurses discarded needles & sharps in correct puncture proof containers, but their correct knowledge regarding colour coding of hospital waste segregation was comparatively less i.e. 104(66.24%). 119(75.79%) of the nurses had practice of recapping the needles after use. **CONCLUSION:** There was significant improvement in the knowledge and practice of standard precautions in the present study after incorporating good training practices.

KEYWORDS: Standard Precautions, Knowledge, attitude, practice.

INTRODUCTION: Health care associated infections (HAI) have long been recognized as crucial factors bedeviling the quality and outcomes of health care delivery.⁽¹⁾ Centre for diseases control published Standard Precautions (SP) guidelines way back in 1996. This promotes basic infection control practices and is aimed at reducing the transmission of organisms. They are applied to all body fluids (except sweat), irrespective of whether they are contaminated with blood, non-intact skin and mucous membranes and include hand decontamination, the use of personal protective equipment, the safe use and disposal of sharps, decontamination of equipment and the environment, patient placement, linen and waste management.⁽²⁾ Since then a lot of modifications continue to be added. Health care workers are at an increased risk of acquiring needle-stick injuries and blood-borne infections due to occupational exposure to blood.⁽³⁾ The level of practice of standard precautions by health care workers differs from one health care worker to another. Their differences in knowledge, attitude and practices may be influenced by the type of their

ORIGINAL ARTICLE

training. Various studies carried out among different categories of health care workers have found that exposure to blood or other body fluids were approximately 9.3%.⁽⁴⁾ A similar study conducted in Ibadan found a higher exposure rate of 25.1 %.⁽⁵⁾ Since there are very few studies done on these lines, we made an effort to test knowledge, attitude and practice by doing pre and post-test evaluation among various categories of health care personnel.

METHODOLOGY: This study was conducted in the month of January 2013 at a teaching hospital in Bangalore. The study was granted ethical approval by the institutional ethical committee. The teaching hospital is approximately 1,100 bedded, catering to a semi-urban population. It provides services in community health, surgery, obstetrics and gynecology, pediatrics, psychiatry, general medicine and also provides super specialty services. The study included a total of 157 health care personnel (nursing staff). The health care personnel are posted to various wards in the hospital. A pre-test was conducted using a structured questionnaire, which was distributed to all the participants, after taking informed consent to participate in the study. A 15 item self-administered structured questionnaire was given regarding knowledge, attitude and practice which included a full range of response options. After the pre-test, training was given to the participants regarding Standard precautions. Post- test was conducted on the same participants, after the training session.

Statistical analysis was done using Statistical software SPSS version 20. Comparison of pre-training and post training awareness of standard precautions was made using McNemar test and p value was obtained. The p value of <0.05 was considered significant.

RESULTS: Demographic characteristics of the study population: Out of 157 health care personnel in the present study, majority of the health care personnel were females (114) and 13 were males. Most of them were in the age group of 21 – 25 yrs with the mean age in years was 24.66 ± 2.99 . Only 7 of them had professional training of BSc Nursing, remaining 150 of them had professional training of General Nursing & Midwifery (GNM). The main demographic data of the study subjects are summarized in Table 1.

Knowledge of Standard precautions: The correct knowledge of standard precautions among the study population is summarized in table 2. Out of 157 nurses who participated in the study, 73.88 % health care personnel had correct knowledge about hand hygiene. After the training, the knowledge of nurses improved to 83.07% which was found to be statistically significant ($p=0.02$).

Correct knowledge regarding the use of personal protective equipments like gloves, face mask & goggles, gowns were 64.33%, 35.66%, & 43.94% respectively. Among these, there was significant increase in the knowledge of using gloves, face mask & goggles after the training program, which was found to be statistically significant ($p = 0.002$ & $p = 0.01$ respectively).

Only 66.24% nurses had proper knowledge regarding proper segregation & disposal of biomedical waste. Though there was improvement in the knowledge of proper management of biomedical waste to 71.97% after the training, it was not statistically significant.

ORIGINAL ARTICLE

The proper knowledge regarding the needle stick injury, that it can occur while recapping, was comparatively less i.e. 33.75%. This knowledge significantly improved to 42.03% ($p = 0.01$) after the training. Also awareness regarding whether needle stick injury should be reported was about 73.88%. Though there was improvement in the knowledge after the training program to 78.98%, it was not found to be statistically significant ($p = 0.16$).

Practice of Standard Precautions: The correct practices of standard precautions followed by the study population are summarized in table 3. Most of the health care personnel i.e. 52.2 % practiced hand washing before and after the patient care, which further improved to 82 % after the training program which was statistically significant. ($p = 0.0001$).

Majority of them i.e. 75.79% had the faulty practice of recapping the needle after use, which leads to major risk of getting needle stick injury. Only 24.2% nurses had the correct knowledge that the needles should not be recapped after use. The correct knowledge that the needles should not be recapped after use, improved after training program to 56% which was found to be statistically significant ($p = 0.0001$).

Most of the nurses (74.52%) were discarding the needles & sharps properly in the puncture proof container. Though there was slight improvement in the awareness of proper practice of discarding needles and sharps in puncture proof containers after the training, it was not statistically significant.

Only 39.4% nurses practiced use of sodium hypochlorite as the disinfectant in the management of blood & other body fluid spills. This awareness significantly increased after the training program ($p = 0.01$). The practice of immediate first aid measures to be taken after needle stick injury like washing the injured site with soap and water & reporting immediately to the Hospital Infection control committee was known to 64.96% nurses. This knowledge improved to 88.53% after the training program which was found to be statistically significant ($p = 0.0001$).

DISCUSSION: Knowledge and practice of standard precautions are very important in preventing HAI and also in the protection of health care personnel from risk of acquiring infections especially from blood borne pathogens like HIV, HBV and HCV.

In the present study, though a varied level of awareness was there regarding standard precautions among the study population, a formal induction & training had not been administered at the beginning of services.

The knowledge of hand hygiene (73.88%) was good among the nurses. But only (52.2%) adhered to the practice of hand hygiene before and after patient care, which is very important in preventing HAI. Similarly, knowledge was higher than the actual practice of standard precautions such as hand wash in among health care workers, as reported in the studies of Vaz K et al,⁽⁶⁾ Phukan,⁽⁷⁾ and Garcia – Zapata MRC et al.⁽⁸⁾

Personal protective equipments (PPE) are very important in protecting health care personnel as they are at risk of acquiring infections especially from blood borne pathogens like HIV, HBV and HCV. Hence, correct knowledge as well as correct practice of using PPE is very important. In the present study, correct knowledge about the use of PPE like gloves was good, but the knowledge about the use of other PPE measures like face mask & goggles, gowns was

ORIGINAL ARTICLE

relatively less. There was significant improvement in the knowledge of use of PPE's like gloves, face mask & goggles after the training program.

Hospital waste is one of the most important sources of HAI. Hence proper handling of hospital waste is essential. Majority of the nurses practiced discarding needles & sharps in puncture proof containers. However, their knowledge of colour coding in biomedical waste segregation was not satisfactory. The knowledge of appropriate hospital waste management improved after training, but it was not statistically significant. These findings are similar to the study of Phukan,⁽⁷⁾ but in contrast to the study of Shaubhadavachat et al⁽⁹⁾ & Vij et al⁽¹⁰⁾ who observed that there was a significant improvement in the awareness regarding hospital waste management after the training.

Only few nurses practiced the use of sodium hypochlorite as disinfectant in the management of blood spills which is also important in preventing HAI. These findings correlate with the study of Phukan.⁽⁷⁾

In the present study, the faulty practice of recapping of needles after use was followed by most of the nurses (75.79%) which is one of the important risk factor of getting needle stick injury exposing the HCW's to risk of HIV, HBV, and HCV infections. Unfortunately, only few knew about the importance of not recapping the needles. Also, in few other studies the faulty practice of recapping needles was found to be present. Wilson E Sadoh et al⁽⁵⁾ found that 31.9% of the respondents admitted to always recapping used needles. Oguamanam Okezie Enwere et al⁽¹¹⁾ found that 44.8% of them always recapped needles. The correct knowledge significantly increased after the training program in the present study.

Though the knowledge that the needle stick injury can occur while recapping, was not known clearly to many health care personnel, they were aware that it had to be reported immediately. Also the practice of correct first aid steps to be taken immediately after needle stick injury like washing with soap and water was followed by most of them.

CONCLUSION: There was significant improvement in the knowledge and practice of standard precautions in the present study. There is an attitude of willingness to learn among Health care workers. A well planned formal induction, orientation at the start of training program with periodic updates would bring about a sea change in their knowledge, hence skills & therefore better patient & ultimately a fall in Hospital Associated infection rates.

RECOMMENDATIONS:

1. Knowledge can be enhanced by giving pre employment induction training.
2. Awareness can be reinforced by periodic training.
3. Attitude can be changed by showing reduction in Hospital acquired infection rates after following the correct practices in their respective wards /department.

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ORIGINAL ARTICLE

Age group	Number (n = 157)	Percentage (%)
20	3	1.91
21-25	112	71.33
26 – 30	36	22.9
>30	6	3.82
Gender		
Male	13	8.2
Female	144	91.71
Professional qualification		
General Nursing & Midwifery(GNM)	150	95.54
B.Sc Nursing	7	4.45
Work Experience (in years)		
< 1	16	10.19
1 – 5	134	85.3
>5	7	4.45

Table 1: Demographic characteristics of the study population

Variables	Pre training (Correct)	Post training (Correct)	p value	Significance
Hand hygiene				
What is Hand hygiene?	116	132	0.02	Significant
Use of Personal protective equipments (PPE) measures				
Gloves	101	121	0.002	Significant
Face mask & Goggles	56	75	0.01	Significant
Gowns	69	70	1.00	Not Significant
Needle stick injury				
Does recapping cause needle stick injury?	53	66	0.04	Significant
Is reporting of needle stick injury necessary?	116	124	0.16	Not Significant
Biomedical Waste Management				
Colour coding for biomedical waste	104	113	0.25	Not Significant

Table 2: Knowledge and awareness of standard precautions among the study population

P value is obtained by Mc Nemar test. (p = < 0.05 – Significant).

ORIGINAL ARTICLE

Variables	Pre Training (Correct)	Post Training (Correct)	p value	Significance
Hand washing before and after patient care	82	121	0.0001	Significant
Recapping of needle	38	88	0.0001	Significant
Discarding needles & sharps in puncture proof container	117	125	0.28	Not Significant
Use of sodium hypochlorite in spill management	62	80	0.01	Significant
First aid measure taken after needle stick injury	102	139	0.0001	Significant

Table 3: Practice of standard precautions among the study population

P value is obtained by Mc Nemar test. ($p = < 0.05$ – Significant).

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