

# Standard precautions Status of Nursing Personnel's of Tertiary Level Care Hospital of Rajasthan: A Descriptive Analysis

Chetan<sup>1</sup>, Kriti Gera<sup>2</sup>, Diya<sup>3</sup>, Bhavya Mathur<sup>4</sup>, Dr. Dilip Raj<sup>4§</sup>

<sup>1,2,3</sup>Final Year MBBS Students, SMS Medical College, Jaipur (Rajasthan) India

<sup>§</sup>Email of Corresponding Author: [diliprajhadia@yahoo.com](mailto:diliprajhadia@yahoo.com)

<sup>4</sup>Associate Professor, Department of Community Medicine, SMS Medical College, Jaipur (Rajasthan) India

**Abstract**—In India, communicable diseases account for nearly half of its disease burden. Nursing staff plays a major role in the health care delivery system; therefore their role in prevention of infectious diseases by taking care of universal precautions is very important. So this study was conducted aimed to know the status of universal precaution practices of nursing personnel of a tertiary care hospital of Rajasthan. 100 nursing professionals were interrogated and supervised for practice and as per a semi-structured schedule. It was concluded from this study that all nursing personals were washing hands after toilet and hands were washed properly but they were reluctant regarding every time washing hands before starting work, washing with antiseptic after contacting contaminated gauze, linen etc. Apron was weared by 89% but none was wearing mask while dealing with patients. And only 40% were wearing gloves while handling patient but none was changing gloves before handling new patient. It was also concluded that all the nursing personals were using sterile syringes and new syringe was taken every time for new patients which was destroyed after use but only 43% were wearing glove while taking out needle/syringes from its wrapper and only 29% nursing personals were recapping syringes after use. Proper disposal of syringes, soiled infected gauze, needles, I.V. Drip set and gloves was done by almost all nursing personals

**Key words- Nursing Personnel. Universal Precautions, Practice**

## I. INTRODUCTION

Infectious disease is a great challenge to the development of modern medicine in recent years. In India, communicable diseases account for nearly half of its disease burden<sup>1</sup>. It becomes much more difficult due to crowded hospitals, high patient load per HCW, limited knowledge of the risks, inadequate personal protective equipment (PPE) and limited knowledge and utilization of Post Exposure Prophylaxis (PEP).<sup>2</sup> It was supported by the fact that in a recent Indian study conducted on 203 health care professionals in Pune (India) reported that 85% of nurses did not apply the universal safety protocol<sup>2</sup>. It is also reported that improper hand hygiene by healthcare workers (HCWs) is responsible for about 40% of nosocomial infections.<sup>3</sup>

In 2002, the CDC published revised guidelines for hand hygiene.<sup>4</sup> A major change in these guidelines was the recommendation to use alcohol based hand rubs for decontamination of hands between each patient contact (of non-soiling type) and the use of liquid soap and water for cleaning visibly contaminated or soiled hands. A systematic review of handwashing by the Thames Valley University as part of the evaluation of processes and indicators in infection control (EPIC) study<sup>5</sup>, concluded that there was a good evidence that direct patient contact resulted in hand contamination by pathogens. The EPIC study also showed the superiority of 70 per cent alcohol/ alcohol based antiseptic hand rubs.<sup>5,6</sup>

With the growing burden of HAIs, limited options of effective antimicrobials evidence supporting the role of hand hygiene in reduction of HAIs, the WHO has launched a global hand hygiene campaign. In

2005, it introduced the first Global Patient Safety Challenge “Clean Care is Safer Care (CCiSC)”, as part of its world alliance for patient safety.<sup>7,8</sup> The first Global Handwashing Day was observed on October 15, 2008.

Proper hand hygiene is the single most important, simplest, and least expensive means of reducing the prevalence of HAIs and the spread of antimicrobial resistance.<sup>4,9-14</sup>

Standard precautions (SP) are measures that should be applied by health care workers when treating all patients, regardless of their infection status. SP include the use of hand hygiene, the use of personal protective equipment (PPE) (e.g., gloves, masks, safety glasses and aprons), the application of caution in handling and disposal of sharps, and engagement in actions to minimize risk in the workplace.<sup>15,16</sup> SP are supposed to be adopted by all health care workers.

Nursing staff plays a major role in the health care delivery system in prevention of infectious diseases<sup>17</sup>; so this study was conducted on nursing personals aimed to assess the status of adherent to Standard precaution in a tertiary care hospital of Rajasthan.

## II. METHODOLOGY

This observational descriptive study was conducted on 100 nursing personals posted in various department of Sawai Man Singh (SMS) Hospital, Jaipur (Rajasthan) India.

For the study sample size was calculated 100 health care personnel at 95% confidence limit and 20% relative allowable error assuming a correct practice in 50% of nursing personnel.

For proper representation nursing personnel of tertiary care hospital, 10 nursing personnel were selected randomly from each of ten identified major departments, i.e. Medicine, Surgery, ENT, Ophthalmology, Gynecology, Pediatrics, Plastic surgery, Cardio-thoracic, Neurosurgery and Urology. Those departments having their operation theater (OT), 5 nursing personnel were randomly selected from wards and 5 nursing personnel were selected from OT otherwise in all departments 10 nursing personnel were selected randomly from wards.

Semi-structured schedule was having two parts. **Part (1)** includes personnel's information regarding socio-demographic data, professional experience etc. **Part (2)** includes items for supervising practice of nurses on various universal precaution and hospital waste management. protocol<sup>6</sup>.

Data thus collected were compiled in Microsoft Excel in the form of master chart. These data were analyzed and inferred with the help of Microsoft Excel 2007.

## III. RESULTS

Study population for this study was with mean age  $39.81 \pm 10.06$  years with slight male preponderance (52% v/s 48%). Age range was observed 24 years to 59 years with majority in age group of 31-45 years. (Table 1)

Majority i.e. 73% of surveyed nursing personals were Hindus followed by Christian, Muslim and Sikh. Likewise majority i.e. 60% were from general caste followed by OBC, ST and SC. And when socio-economic status was inquired, majority i.e. 43% were found from SES Class V (Table 1).

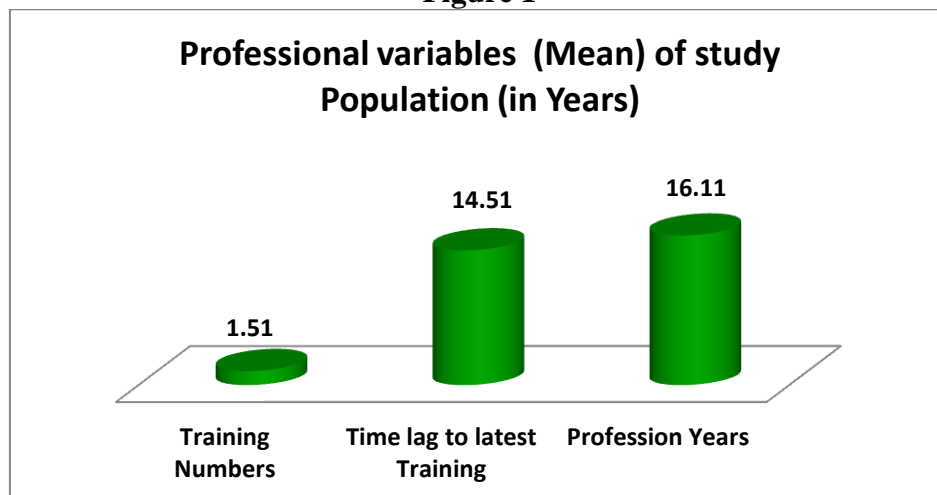
**Table No. 1**  
**Socio-demographic Profile of Study Population (N = 100)**

Socio-demographic Variable	Cases	
	No.	Percentage
<b>Age wise distribution of cases</b>		
upto30 Years	24	24
31-45 Years	<b>42</b>	<b>42</b>
>45 Years	33	33
<b>Sex wise distribution of cases</b>		
Female	48	48
Male	<b>52</b>	<b>52</b>
<b>Religion</b>		
Hindu	<b>73</b>	<b>73</b>
Muslim	9	9
Sikh	3	3
Christian	15	15
<b>Caste</b>		
GEN	<b>60</b>	<b>60</b>
OBC	27	27
SC	2	2
ST	11	11
<b>Socio-economic Status</b>		
Class I	26	26
Class II	<b>5</b>	<b>5</b>
Class III	7	7
Class IV	19	19
Class V	<b>43</b>	<b>43</b>

*Age range=24 years to 59 years with mean age 39.81 yrs*

Surveyed nursing personnel in this study were having mean training number 1.51 ranging from 1 to 15, mean years from last training 14.51 ranging from 0.5 to 36 years and mean professional years 16.11 years ranging from 0.5 years to 36 years. (Figure 1)

**Figure 1**



When practice regarding hand washing was observed it was 100% for washing hands after toilet and hands were washed properly by all nursing personals but they were reluctant regarding every time washing hands before starting work, washing with antiseptic after contacting contaminated gauze, linen etc. Nails were also clean of 94% of nursing personals. (Table 2)

When practice regarding personal hygiene and personal protective equipment was observed that although 89% were wearing Apron but none was wearing mask while dealing with patients. And only 40% were wearing gloves while handling patient but none was changing gloves before handling new patient. Almost all (99%) were either eating or drinking normally while handling patients. (Table 2)

When practice regarding sharp instruments was concerned it was observed that all the nursing personals were using sterile syringes and new syringe was taken every time for new patients which was destroyed after use by 100% nursing personals. But only 43% were wearing glove while taking out needle/syringes from its wrapper and only 29% nursing personals were recapping syringes after use. (Table 2)

When practice regarding hospital waste management was observed it was found that disposing of syringes were proper by 97% of nursing personals followed by proper disposal of soiled infected gauze, needles, I.V. Drip set and gloves. (Table 2)

**Table No. 2**  
**Universal Precautions status of Study Population (N = 100)**

Universal Precautions Variables	PRACTICING	
	No.	%
<b>Hand hygiene:</b>	No.	%
• Hands wash <b>before starting work?</b>	99	99
• Washed hands <b>properly?</b>	100	100
• Washed hands <b>after using toilet?</b>	100	100
• Washed hands with antiseptic <b>after handling of contaminated gauze, linen etc.?</b>	74	74
• <b>Nails</b> clean?	94	94
<b>Personal hygiene and personal protective equipment:</b>	No.	%
• Worn ' <b>Apron</b> ' before start working?	89	89
• Worn ' <b>Mask</b> ' before start working?	0	0
• Worn ' <b>Gloves</b> ' before handling patient?	40	40
• <b>Changed</b> your ' <b>Gloves</b> ' before handling new patient?	0	0
• <b>Eat or drink</b> when caring for patients?	99	99
<b>Sharp management:</b>	No.	%
• Taken <b>sterile</b> syringes?	100	100
• <b>Worn</b> gloves before taking out needle/syringes from its wrapper?	43	43
• <b>Recapping</b> of syringe?	29	29
• <b>Destroyed</b> needle after use?	100	100
• <b>Separate</b> sterilized syringes for every patient?	100	100
<b>Hospital Waste Management:</b>	No.	%
• disposing the used <b>syringes?</b>	97	97
• disposing the used <b>needles?</b>	89	89
• disposing the used <b>Gloves?</b>	64	64
• disposing the <b>soiled infected gauze?</b>	91	91
• disposing the used <b>I.V. Drip sets?</b>	81	81

#### IV. DISCUSSION

In this study nursing personals were washing hands after toilet and hands were washed properly by all nursing personals but they were reluctant regarding every time washing hands before starting work, washing with antiseptic after contacting contaminated gauze, linen etc. Nails were also clean of 94% of nursing personals. Almost similar observations were made by other authors.<sup>18,19</sup> A study conducted at Ludhiana reported hand washing practice in 85% with Soap & water but 1 Lower compliance with

alcohol hand wash (41.3%) among nurses working in ICU settings of tertiary care hospital.<sup>18</sup> Even another conducted in US also found the almost similar observations i.e. overall hand hygiene compliance rate of 38.4% with aqueous and 79.4% with alcohol.<sup>19</sup>

It was also observed in this study that 89% were wearing Apron but none was wearing mask while dealing with patients. And only 40% were wearing gloves while handling patient but none was changing gloves before handling new patient. It was observed that all the nursing personals were using sterile syringes and new syringe was taken every time for new patients which was destroyed after use. But only 43% were wearing glove while taking out needle/syringes from its wrapper and only 29% nursing personals were recapping syringes after use. In another study only 12% of the participants always used double gloving, 2% (3/158) always used protective eyewear, and 10% (15/158) always practiced not recapping used needles.<sup>20</sup>

The WHO guidelines mention three levels of control is prevention of hospital-acquired infections: The first is administrative controls, which are measures taken to ensure that the entire system is working effectively. The second is environmental and engineering controls, including cleaning of the environment, spatial separation and the ventilation of spaces. The third is to further decrease the risk of transmission and includes personal protection, which is the provision of the proper personal protective equipment (PPE)<sup>21</sup>, which was taken care by only 45.6% of nurses in present study. Similar observations were made by Maqbool A et al<sup>22</sup> who reported practice of using gloves regularly in 27% only.<sup>22</sup>

Concerning sharp instrument management, only 74.4 were practicing proper Management. It was also observed that 29% of nurses were not recapping the needles after use. Almost similar observations were made by Kotwal et al<sup>23</sup>.

## V. CONCLUSION

It was concluded from this study that all nursing personals were washing hands after toilet and hands were washed properly but they were reluctant regarding every time washing hands before starting work, washing with antiseptic after contacting contaminated gauze, linen etc.

It was also concluded that Apron was weared by almost all but none was wearing mask while dealing with patients. And only 40% were wearing gloves while handling patient but none was changing gloves before handling new patient

It was also concluded that all the nursing personals were using sterile syringes and new syringe was taken every time for new patients which was destroyed after use but only 43% were wearing glove while taking out needle/syringes from its wrapper and only 29% nursing personals were recapping syringes after use. Proper disposal of syringes soiled infected gauze, needles, I.V. Drip set and gloves was done by almost all nursing personals.

## CONFLICT

None declared till date.

## REFERENCES

- [1] Disease burden in India: estimations and causal analysis. In: 14. NCMH background papers - burden of disease in India. New Delhi: National Commission on Macroeconomics and Health & Family Welfare, Ministry of Health, Government of India; 2005

- [2] Sagoe-Moses C, Pearson RD, Perry J, Jagger J. Risk to health care workers in developing countries. *New Engl J Med* 2001; 345: 538-541. <http://dx.doi.org/10.1056/NEJM200108163450711>
- [3] Inweregbu K., Dave J., Pittard A. Nosocomial infections. Continuing education in Anaesthesia. *Crit Care & Pain. Br J Anaesth.* 2005;5(1):14-17
- [4] 3. Boyce JM, Pittet D. Guideline for Hand Hygiene in Health-Care Settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force. *Morb Mortal Wkly Rep.* 2002;51:1-44.
- [5] Pratt RJ, Pellowe C, Liveday HP, Robinson N, Smith GW, Barrett S. The EPIC project: developing national evidence-based guidelines for preventing healthcare associated infections. *J Hosp Infect.*2001;47(Suppl A):S3-82
- [6] Stone SP. Hand hygiene: the case for evidence-based education. *J R Soc Med.* 2001;94:278-81
- [7] Allegranzi B, Storr J, Dziekan G, Leotsakos A, Donaldson L, Pittet D. The First Global Patient Safety Challenge "Clean Care is Safer Care": from launch to current progress and achievements. *J Hosp Infect.*2007;65(Suppl 2):115-23
- [8] Magiorakos AP, Suetens C, Boyd L, Costa C. National Hand Hygiene Campaigns in Europe, 2000-2009. *Euro Surveill.* 2009;14:ii-19191
- [9] Smith SMS. A review of hand-washing techniques in primary care and community settings. *J Clin Nurs.*2009;18:786-90
- [10] Canada: Laboratory Centre for Disease Control, Bureau of Infectious Diseases; 1998. Infection control guidelines. Communicable disease report
- [11] Larson E. Skin hygiene and infection prevention: more of the same or different approaches? *Clin Infect Dis.* 1999;29:1287-94
- [12] Larson E. A causal link between handwashing and risk of infection. Examination of the evidence? *Infect Control Hosp Epidemiol.* 1988;9:28-36
- [13]. Guide to implementation of the WHO multimodal hand hygiene improvement strategy. [accessed on August 24, 2010]. Available from: <http://www.who.int/patientsafety/en/>
- [14] WHO Guidelines on Hand Hygiene in Health Care. First Global Patient Safety Challenge. Clean Care is Safer Care. [accessed on August 24, 2010]. Available from: <http://www.who.int/patientsafety/en/>
- [15] Garner JS. Hospital infection control practices advisory committee. Guideline for isolation precautions in hospitals. *Infect Control Hosp Epidemiol.* 1996;17((5)):53-80. <http://dx.doi.org/10.2307/30142367>[PubMed]
- [16] Siegel JD, Rhinehart E, Jackson M, Chiarello L. Guideline for Isolation precautions: preventing transmission of infectious agents in healthcare settings. Published. 2007 Available at:<http://www.cdc.gov/ncidod/dhqp/pdf/isolation2007.pdf>. Accessed July 2015
- [17] Williams AB, Wang H, Burgess J, Wu C, Gong Y, Li Y. Effectiveness of an HIV/AIDS educational programme for Chinese nurses. *Journal of Advanced Nursing.* 2006;53:710-720
- [18] Sharma S., Sharma S., Puri S., Whig J. Hand hygiene compliance in intensive care units of tertiary care hospital. *Indian J Community Med.* 2011;36(3):217-221. [PMC free article] [PubMed]
- [19] De Wandel D., Labeau S., Vereecken C., Blot S. Behavioral determinants of hand hygiene compliance in intensive care units. *Am J Crit Care.* 2010;19:230-240
- [20] Jeong, Cho J, Park S. Compliance with standard precautions among operating room nurses in South Korea. *Am J Infect Control* 2008 Dec;36 (10):739-42
- [21] WHO Guidelines 2009. WHO Publication/ Guidelines. Collaboration between WHO Water Sanitation and Health (WSH) & WHO Biorisk Reduction for Dangerous Pathogens (BDP). WHO Press. p. 1-106. Available from [whqlibdoc.who.int/publications/2009/9789241547857\\_eng.pdf](http://whqlibdoc.who.int/publications/2009/9789241547857_eng.pdf) (Accessed August 1, 2013)
- [22] Maqbool Alam et al. Knowledge, attitude and practices among health care workers on needle-stick injuries. *Annals of Saudi Medicine.* 2002; Vol 22, No 5-6: 396-99
- [23] Kotwal A, Priya R, Thakur R, et al. Injection practices in a metropolis of North India: perceptions, determinants and issues of safety. *Indian J Med Sci* 2004;58:334-44.