ASSESS THE EFFECTIVENESS OF SKILL TRAINING ON PERSONAL PROTECTIVE EQUIPMENT (PPE) AMONG B.SC NURSING STUDENTS AT COLLEGE OF NURSING SVIMS, TIRUPATI".

[1]Miss. GUDI ROJA[2]Mrs. B. KOKILAMMA*[3]Dr. P. SUDHA RANI

*[4]Dr. M SREELATHA

*[1]*Corresponding author: Miss. Gudi Roja, M.sc (Nursing) Dept of community health nursing, College of Nursing (SVIMS), Tirupati, 517507, A.P, INDIA.*

*[2]*Mrs. B. Kokilamma, Assistant professor, Dept of community health nursing, College of Nursing (SVIMS), Tirupati ,517507, A.P, INDIA.*

*[3]*Dr. P. Sudha Rani, Professor,Dept of community health nursing College of Nursing (SVIMS), Tirupati,517507, A.P, INDIA.*

*[4] *Dr. M. Sreelatha, Assistant professor, Dept of community health nursing, College of Nursing (SVIMS), Tirupati ,517507, A.P, INDIA.*

ABSTRACT: *Healthcare personnel and those who visit the health care environment are at risk of developing life threatening infectious diseases due to contact with patients, patient's blood or body fluids such as mucus or vomit. For health care workers, the main strategy for reducing physical exposure to highly infectious diseases is through personal protective equipment (PPE, other barrier nursing techniques.* **Aim:** *To assess the skill on Personal Protective Equipment (PPE) by Pre- test, To assess the effectiveness of skill training on Personal Protective Equipment by Post-test, To determine association between skill on Personal Protective Equipment with their socio- demographic variables.* **Method:** *Total 100 sample were taken by using stratified sampling technique. Data were collected by using self structured checklist.* **Results:** *Out of 100 students majority 65% having low skill, 24% having moderate skill and only 11% were having high skill in Pre- test, In Post- test 83% student having high skill, 17% having moderate skill and none of the respondent having low skill in Post- test. There is a statistical significant association between the level of skill on PPE related to academic qualification, type of living area, awareness of barrier nursing techniques at $P<0.001$ level, have you aware of barrier nursing were significant at $P<0.05$ level, in pre-test. Gender, year of study and type of living area were significant at $P<0.01$ level, academic qualification and awareness of barrier nursing were significant at $P<0.05$ level at post test.* **Conclution:** *Based on the obtained findings the researcher prepared a book let which will help them to improve their knowledge on nursing informatics.*

KEY WORDS: PPE, SP, OSHA, HCW, B.Sc Nursing students.

I. INTRODUCTION

Infectious diseases are disorders that are caused by organisms, usually microscopic in size, such as bacteria, viruses, fungi, or parasites that are passed, directly or indirectly, from one person to another. Biologic hazards in health care industry include blood borne and air borne pathogens. Most biologic hazards can be classified as infectious or immunologically active. As an example, accidental injection or splash of blood borne viruses (HIV, hepatitis B, hepatitis C) is the major hazard of needle stick injuries especially in laboratory and dialysis staff and medical trainers. HBV is resistant to drying, simple disinfectants, and alcohol and may survive on environmental surfaces for up to one week[1].

Therefore It is worn to protect both healthcare worker as a means of occupational safety and health and the patient as a means of infection prevention. In combination, whatever the reason, there isn't one without the other. PPE keeps both healthcare worker and patient safe from each other when exposures can be anticipated or expected. Almost all of the time, what PPE to select and use is obvious risk of high-velocity blood splatters, use of eye, nose, mouth, and body protection risk of infectious disease like

TB, use of respirator risk of the unknown (standard precautions), use of gloves. What is not clear is when we don't know what type of exposure to expect, what to prepare for, what to have to hand, what to encourage people to wear[3].

For prevention of those incidence Occupational Safety and Health Administration (OSHA) has specially designed equipments it's called) 'Personal protective equipment (PPE)'.Personal protective equipment (PPE) refers to protective clothing, helmets, gloves, face shields, goggles, facemasks and/or respirators or other equipment designed to protect the wearer from injury or the spread of infection or illness. These materials were developed by OSHA's Office of Training and Education and are intended to assist employers, workers, and others as they strive to improve workplace health and safety.

NEED FOR THE STUDY:

Infection control is a quality standards of patient's care and is essential for the well being of the patients and the safety of both patients and staff to accomplish a reduction in infection rates, an infection control program has to be given. The transmission of blood borne viruses and other microbial pathogens to patients during routine health care procedures continues to occur because of the use of unsafe and improper procedures as injection, infusion, and medication practices by health care professionals in various clinical settings.

Percutaneous and mucocutaneous exposure to blood and other body fluids (BBFs) increases the risk of acquiring serious blood-borne infections among susceptible healthcare workers (HCWs) and apprenticing students. Such infections include hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). It has been estimated that 100,000 needle-stick and sharps injuries (NSSI) per year occur in the United Kingdom and 500,000 in Germany. In an average hospital, HCWs sustain approximately 30 NSSI per 100 beds per year in the United States. As estimated by the World Health Organization (WHO) in 2016, among the 35 million health care workers worldwide, approximately 3 million receive percutaneous exposures to blood borne pathogens each year; 2 million of those to HBV, 0.9 million to HCV and 170,000 to HIV. These injuries may result in 15,000 HCV, 70,000 HBV and 500 HIV infections every year. More than 90% of these infections occur in developing countries. Worldwide, approximately 40% of HBV and HCV infections and 2.5% of HIV infections in health care workers are attributable to occupational sharps exposures. The WHO also reported that while 90% of infections among HCWs are attributed to occupational exposure in the developing world, 90% of the reporting of occupational exposure to blood and body fluid is from the developed world[8].
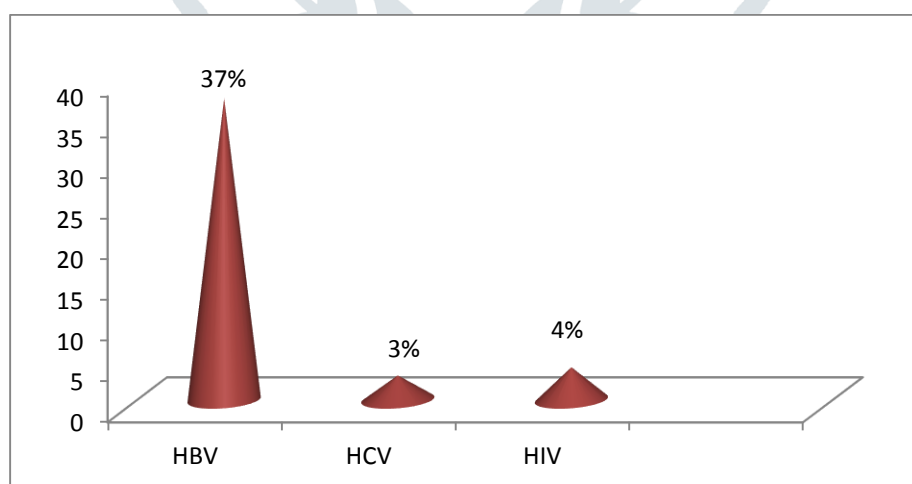
Annual Incidence of Occupational exposure HBV, HIV and HCV   (OSHA, 2018)

METHODOLOGY:

3.1 RESEARCH APPROACH: Pre- Experimental approach was adopted.

3.2 RESEARCH DESIGN: One group pre- test and post- test research design.

3.3 VARIABLES OF THE STUDY:

Independent variable: Socio- demographic variables like age, gender, academic qualification, year of study, religion, type of family, type of living area, awareness On Barrier nursing.

Dependent variable: Skill training on Personal protective equipment among B.sc nursing students

3.4 SETTING OF THE STUDY:

The study was conducted at CONSVIMS, Tirupati. The setting was chosen on the basis of feasibility in terms of required sample.

Formal permission will be obtained from the principal of CONSVIMS, Tirupati.

3.5 POPULATION: The population included 1st and 2nd year B.Sc nursing students in college of nursing SVIMS, Tirupati.

3.6 SAMPLE: The study samples includes the 1st and 2nd year B.sc nursing students who were under inclusion criteria.

3.7 SAMPLE SIZE: Sample size consists of 100 nursing students

3.8 SAMPLING TECHNIQUE: Stratified sampling technique was adopted based on inclusion criteria.

3.9 CRITERIA FOR SAMPLE SELECTION:

INCLUSION CRITERIA:

- Those who are willing to participate in the study
- Those who are present at the time of data collection

EXCLUSION CRITERIA:

- Those who are studying 3nd and 4th year nursing students in college of nursing SVIMS, Tirupati.

ETHICAL CONSIDERATION: the study was approved by the appropriate Ethical committee. students were informed about the purpose of the study and about their rights to refuse or with drawl at any time.

RESULTS

SECTION- 1

DISTRIBUTION OF SOCIO DEMOGRAPHIC VARIABLES AMONG B.SC NURSING STUDENTS

Table –I Frequency and percentage distribution of demographic variables among B.sc nursing students

N = 100

SI. NO	SOCIO DEMOGRAPHIC VARIABLES	FREQUENCY (f)	PERCENTAGE (%)
1.	AGE		
	a. 18- 19 years	47	47.00
	b. 20- 21 years	49	49.00
	c. > 21 years	4	4.00
2.	GENDER		
	a. Male	15	15.00

	b. Female		85	85.00
3.	ACADEMIC QUALIFICATION			
	a. Intermediate		80	80.00
	b. Vocational nursing		20	20.00
4.	YEAR OF STUDY			
	a. B.sc (N) 1st year		50	50.00
	b. B.sc (N) 2nd Year		50	50.00
5.	Religion			
	a. Hindu		73	73.00
	b. Muslim		20	20.00
	c. Christian		7	7.00
6.	Type of family			
	a. Nuclear		71	71.00
	b. Joint		23	23.00
	c. Extended		6	6.00
7.	Type of living area			
	a. Urban		53	53.00
	b. Semi urban		19	19.00
	c. Rural		28	28.00
8.	Have you aware of barrier nursing			
	a. Yes		16	16.00
	b. No		84	84.00
9.	Did you ever had any accidental exposure to blood and body fluids			
	a. Yes		4	4.00
	b. No		96	96.00
10.	If yes, source of accident			
	a. Hepatitis B		1	25.00
	b. Hepatitis C		3	75.00

11.	Have you taken any post exposure prophylaxis measures			
	a. Yes		1	1.00
	b. No		99	99.00
12.	If yes, within what time you have taken PEP (Post Exposure Prophylaxis)			
	a. Before 1 hour			
	b. 1- 2 hours		1	100.00
	c. 2- 3 hours			
	d. < 3 hours			

INTERPRETATION:

The data presented in the table reveals that among the samples of 100 nursing students, majority (49) respondents were in the age group of 20- 21 years, 47 were age group of 18- 19 and only 4 students were in age group of > 21 years.

Regarding gender, majority (85) respondents were females and only 15 were males with regards to academic qualification, 50 respondents were belongs to 1st year B.sc nursing and next 50 were belongs to 2nd year.

Based on Religion, majority (73) respondents were belongs to Hindu, 20 were belongs to Muslim and least of 7 were belongs to Christian.

In accordance to type of family, majority (71) respondents were belongs to nuclear family, 23 were belongs to joint family and only 7 were belongs to extended family.

Based on type of living area, majority (53) respondents were belongs to urban area, 28 were belongs to semi urban and least of 28 were belongs to rural area.

Regardance with awareness of barrier nursing 84 respondents ware having awareness regarding barrier nursing whereas 84 not aware of barrier nursing.

Regardance with accidental exposure majority (96) respondents were not had any exposure to blood and body fluids and only 4 had exposure.

Regardance with source of accident, among 4 exposed respondents 3 had exposure with Hepatitis - C and only 1 respondent had exposure with Hepatitis – B.

Related to post exposure prophylaxis measures, majority 4 respondents had not taken any post exposure prophylaxis measures and only 1 had taken within 1-2 hours.

SECTION- II

DISTRIBUTION OF LEVEL OF SKILL ON PERSONAL PROTECTIVE EQUIPMENT AMONG B.SC NURSING STUDENTS IN PRE- TEST AND POST- TEST

n = 100

SI. NO	VARIABLES	LOW SKILL		MODERATE SKILL		HIGH SKILL	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
	PRE- TEST	65	65	24	24	11	11.00
	POST- TEST	-	-	17	17	83	83.00

Table shows that, out of 100 students majority (65) respondents were having low skill, 24 were having moderate skill and only 11 were having high skill in Pre- test whereas in Post- test majority of 83 students were having high skill, only 17 were having moderate skill and non of the respondent having low skill in Post- test.
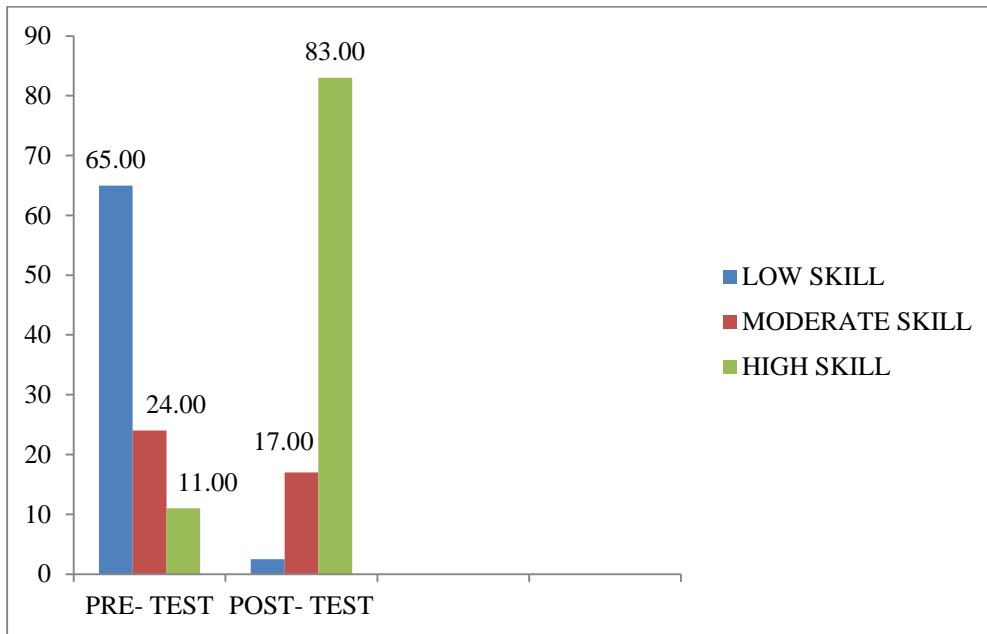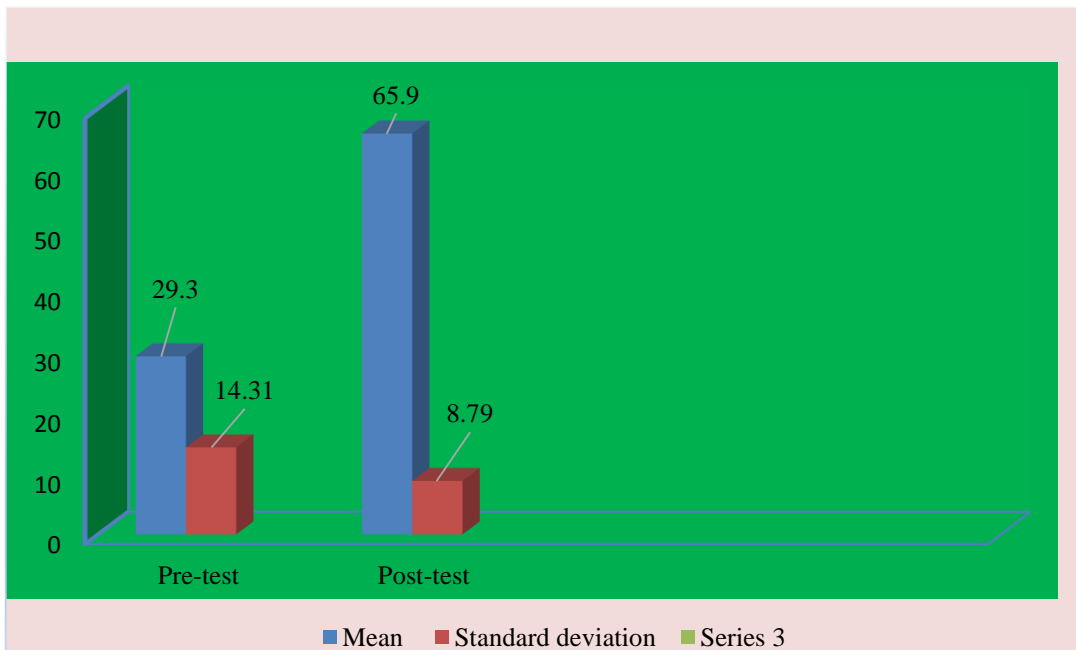
Distribution of level of skill on pre- test and post- test

SECTION 3: EFFECTIVENESS OF SKILL TRAINING PROGRAMME ON PERSONAL PROTECTIVE EQUIPMENT AMONG B.SC NURSING STUDENTS IN PRE- TEST AND POST-TEST

Paired t-test : Mean, S.D and t-value : Pre vs Post -test difference

	VARIABLES	Mean	N	Std. Deviation	t-value	p value
Pair 1	Pre test Skill	29.30	100	14.31	37.848**	0.000
	Post test Skill	65.90	100	8.79		

Table shows that there is a significant improvement in the skill on Personal Protective Equipment at P <0.01 level after skill training programme.

SECTION 4: ASSOCIATION BETWEEN DEMOGRAPHIC VARIABLES WITH THE SKILL ON PERSONAL PROTECTIVE EQUIPMENT AMONG B.SC NURSING STUDENTS IN PRE- TEST AND POST- TEST

There was a association between level of skill on Personal Protective Equipment (PEP) related to academic qualification, type of living area, awareness of barrier nursing techniques were statistically significant at 0.001 level and have you aware of barrier nursing were significant at 0.05 level remaining were not significant. where as in post- test demographic variables like gender, year of study and type of living area were statistically significant at 0.01 level whereas academic qualification and awareness of barrier nursing were significant at 0.05 level.

CONCLUSION

This study was able to show that nursing students exhibits good practice of personal protective measures. Among 100 participants (65) were having low skill, (24) were having moderate skill and (11) were having high skill on donning and doffing of Personal Protective Equipment (PPE) in Pre- test. Whereas in Post- test, (83) were having high skill, (17) were having moderate skill and none of them having the low skill on donning and doffing of Personal Protective Equipment (PPE).

RECOMMENDATIONS

➢ The study can be replicated on large sample, there by findings can be generalised to a large population.

➢ A descriptive study can be conducted to assess the knowledge and skill on donning and doffing of Personal Protective Equipment.

➢ Comparative study can be done among nursing students regarding skill on donning and doffing of Personal Protective Equipment.

➢ Skill training programme conducted through video assistance, information booklet, pamphlets and leaflets.

➢ Qualitative studies can be conducted to assess knowledge and attitude towards donning and doffing of Personal Protective Equipment.

➢ Providing training programs for newly posted nursing students about infection control standard precautions and at regular intervals.

REFERENCES

1. Workers Nazanin Izadi and Reza Piruznia Occupational Health Hazards among Health Care Workers, Tehran University of Medical Sciences, Iran, *Journal on Public health open access 2018,*Editorial Volume 2, Issue 1,   Email: nazanin.izadi@gmail.com

2. Article from Personal protective equipment for infection control, 2018, https://www.fda.gov/medical-devices, 2018 .

3. Marziale MHPConsequencias da exposiço ocupacional a material biolgico entre trabalhadores de um hospital universitario, 2016, Esc Anna Nery. 2014;18(1):11-26.

4. Assiri AM Occupational Infections among Health Care Workers in a Secondary Care Hospital Saudi Arabia. Occupational Medicine & Health Affairs. 2013;1:137.

5. Prince Ameh Ogenyi, Andrew England, Yusuf Aliyu, Joseph Dlama, Ahmed Hamza, Roswita Hamunyela, *original article on Occupational hazards among medical radiation workers* 2018, Volume 25, Issue 1, Page no 28- 33.

6. *Chinenye Mercy Nwankw and Simon Karanja, Hilda Vasanthakaalam, an International journal of community medicine and public health* 2018 ISSN: 2394 – 6040DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20175509

7. Adamu G. Umar and Abdullahi Aisha, an *International Journal of Biomedical Research* 2017, ISSN: 0976-9633, 2455-0566, Journal DOI: https://dx.doi.org/ 10.7439/ijbr , CODEN: IJBRFA

8. Fernanda RibeiroFagundes de Souza-Borges, *Article of Revista do Instituto de Medicina Tropical de Sao Paulo* on Occupational exposures to body fluids and behaviors regarding their prevention and post-exposure among medical and nursing students at a Brazilian public university 2014, 56(2):157-63, DOI: 10.1590/S0036-46652014000200012.

9. Ashraf Eljedi, *A Journal of public health research* on Prevalence and response to occupational hazards among nursing students, 2016, p-ISSN: 2167-7263, e-ISSN: 2167-7247; 5(1): 32-38, aajedi19772@hotmail.com

10. Rawlance Ndejjo, Geofrey Musinguzi, Xiaozhong Yu, Esther Buregyeya, David Musoke, Jia-Sheng Wang, *Journal of Environment and public health (2015)* PMCID: PMC4329737, PMID: 2580253