A Study to Assess the Effectiveness of Self Instructional Module on Knowledge Regarding Standard Precaution on Prevention of Infection among Staff Nurses at Selected Hospital in Indore M.P.

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Abstract:- A study to assess the effectiveness of self instructional module on knowledge regarding standard precaution on prevention of infection among staff nurses of selected hospital in Indore MP.   The research design used for study was Pre-experimental one group pre-test post-test research design. A Quantitative evaluatory approach was used in this study. The tool for study was self-structured knowledge questionnaire which consists of 2 parts-PART- I consisted questions related to Socio-demographic data, PART-II consisted of self -structured awareness questionnaire to assess the effectiveness of self instructional module on knowledge regarding standard precaution on prevention of infection among staff nurses of selected hospital. The data was analyzed by using descriptive & inferential statistical methods. In pre-test knowledge score and it is reflected that exactly few (3.3%) staff nurses observed with poor level of knowledge (0-6) about standard precaution on prevention of infection, twenty four (40.0%) staff nurses showed average (7-12) level of knowledge, thirty four (56.7%) were in (13-18) level of knowledge, none (0.0%) of the staff nurses identified with excellent (19-24) level of knowledge about standard precaution on prevention of infection.

In was detected in post-test that none subjects were left in poor (0-6) category. Major proportion of subjects twenty two (36.7%) staff nurses acquired excellent (19-24) level of knowledge. 35, (58.3%) staff nurses acquired good (13-18) level of knowledge, few (5.0%) staff nurses observed with average (7-12) level of knowledge.

Keywords:- Assess, Knowledge & Standard Precaution On Prevention Of Infection.

I.   INTRODUCTION

Standard precautions are to lower the transmission of risk of Infection such as infection in blood and other micro-organism or pathogens from both unrecognized and recognized sources of infection. Standard principles have been created to prevent health related infections. All healthcare practitioners to the care of every patient should apply these guidelines on standard precaution for infection control. Several recommendations have been divided here such as- (1) hand hygiene, (2) disposal of waste and (3) prevention from needle stick injuries.

[1] Hand Hygiene- Hand cleaning is the act of cleaning hands with water or without any other liquid and with the use of soap, for the purpose of removing dirt, soil or pathogens and micro-organisms. The Centre for disease control has started: "It is well documented that the most important measures for preventing the spread of pathogens is effective hand washing".

Hands should be decontaminated instantly direct patient contact before each and every episode of care and after any contact or activity that could potentially result in contamination of hands. Hands that are visibly dirty or soil, or potentially contaminated with dirt and organic materials should be washed with soap and liquid form and water. When decontaminating hands using an hand rub with alcohol, hands should be free from any type of dirt or soil and organic material. Hands must be rubbed together actively, paying three particular attentions to the fingers tip, thumbs and the areas between fingers, until the solution has dissipate and the hands are dry. (WHO 2008)

[2] Disposal of waste- Hospital waste is the waste generated during health treatment activities that are studied while doing diagnostic and research activities and also that is discarded. It can be non-biological and biological.

Biomedical waste means waste that originates in the course of diagnostic treatment or vaccination of humans (peoples) or animals or in biological production-related or research activities and also including in mentioned categories in Bio-medical waste rules (2016). Management of waste or disposal of waste is all activities and actions that are required, from prohibiting waste to its final disposal. This includes monitoring and regulation as well as other things including garbage collection, treatment, transport and disposal. Effective management for BMW is not only a legal requirement but it is also a responsibility of people live in society. Hospital waste management varies because it affects not only the patient's health but also health workers, nurses, sanitary workers and the general public.

[3] Prevention of needle sticks injury- Needle stick injury or injuries by needle are wound that accidentally punctured and penetrate the skin. Those with syringes use for hypodermic and other needle like equipment are at risk of injury from needle. Injuries can occur in several or every stage, in this involve improper disposal of waste during and after use, during recap the needle, during clean up, when access IV line, pass the sharp instrument, process specimen removal or insertion of needle and suture needle handling etc.

II. NEED OF THE STUDY

The population of India is 1298 million peoples. The present study found incidence rate of hospital acquired infection as 19.6% and incidence density as 26.35 per 1000 patient day. Other infection are such as urinary tract infection (23.8%) being the most frequent and surgical site infection was commonest type 57.2% gastroenteritis, (19.0%)% blood stream infection respectively. The nosocomial infection incidence found is more than some studies reported from other parts or study of the world. (WHO)

The study's prevalence and response to injuries from needle among health care workers in a Tertiary care hospital in Delhi, The study samples were 322 resident doctors, nursing staff, interns, technicians and nursing students,. The study results were a large percentage (79.5percent) of health care workers reported having had 1 or more needle stick injuries in their career. The mean or average number of needle stick injuries ever was found to be 3.85/health care workers (range from 0 to 20). Seventy two (22.4percent) reported having received a Needle Stick Injuries, within the last or previous month. In response to their most recent Needle Stick Injuries, 60.9percent washed the injury site with water and soap while thirty eight (14.8percent) did nothing. Only twenty (7.8 percent) of the HCWs took post-exposure prophylaxis against human influenza virus/AIDS after their injury. In this Concluded occurrence of injuries from needle was found to be quite common. Avoidable practices like needles recapping were contributing to the injuries. Prevention of NSI is an integral part of prevention programs in the work place, and training of HCWs regarding practices for safety indispensably requires being an ongoing activity at a hospital. (VMMC & Safdalganj Hospital, New Delhi, 2010)

A survey was done to rule out nosocomial infection's incidence in Asian heart institute, Mumbai. The result shows that average nosocomial infection's incidence is about five to ten percent but it may be up to twenty percent in ICU out of this twenty percent is UTI, 19% found is infection in wound, pneumonia is found 17% and 7-16% is infection in blood. In this concluded that nosocomial infection's incidence depends upon the internal host factors and external factors of environment like immune power and cleanliness respectively. (Asian heart institute, Mumbai)

➤ *Objectives*
● To assess the pre-test knowledge score regarding standard precaution on prevention of infection among staff nurses.
● To assess the effectiveness of self instructional module on knowledge score regarding standard precaution on prevention of infection among staff nurses at the level of significance P≤0.05
● To find out the association between pre-test and post-test knowledge score regarding standard precaution on prevention of infection among staff nurse with their selected demographic variables at the level of significance P≤0.05

➤ *Hypothesis*
RH01- There will be no significant difference between pre-test and post-test knowledge score regarding standard precaution on prevention of infection among staff nurses.
RH1- There will be significant difference between pre-test and post-test knowledge score regarding standard precaution on prevention of infection among staff nurses at the level of significance P≤0.05
RH02- There will be no significant association between pre-test and post-test knowledge score regarding standard precaution on prevention of infection among staff nurses with their demographic variables at the level of significance P≤0.05
RH2- There will be significant association between pre-test and post-test knowledge score regarding standard precaution on prevention of infection among staff nurses with their demographic variables at the level of significance P≤0.05

➤ *Assumption*
This study assumes that-
1. Nurses have inadequate knowledge regarding the Infection Control.
1. Self instructional module will help to improve the knowledge of nurses regarding standard precaution on prevention of Infection.

➤ *Delimitation:-*
1.The study conduct among the staff nurses those are working in selected Hospitals of Indore. 2.The study will be limited to the staff nurses those who have RN RM certificate. 3. The study will be limited to 60 staff nurses.

➤ *Conceptual Framework*
Interrelated concepts or abstractions that are assembled together in some rational scheme by virtue of their relevance to a common theme are referred to as conceptual framework. (Pilot , D.F. and Hungler, B.P. 1999).

The present study aimed at evaluating the knowledge and practices regarding standard precaution among nursing personnel. The conceptual framework taken for the present study based on general system theory given by Ludwig von bertanlanffy in 1968. According to this theory, a system is a group of element that interacts with one another in order to achieve the goal. An individual is an open system because he/she receive input from the environment. This input when processed provides an output. All living system is open. There is continuous exchange of matter, energy and information. The system is cyclical in nature and continues to be so, as long as the four parts input, process, output and

feedback keep interacting with each other. If there are the changes in any of the part, there will be alteration in all other parts. Feedback from within the system or item the environment provides information, which helps the system to determine its effectiveness.

➢ *Environment*

The environment includes all that is external to the host and agent but may influence interaction between them. In the present study it includes hospitals, clinical experience, working area, patients and immediate environment.

➢ *Input*

Input consists of information, material and energy that enter the system. In this study investigator and staff nurses are the part of system. Investigator administer structured questionnaire for knowledge and observational check list for assessing practices regarding standard precautions among the staff nurses of wards, which include age, qualification, clinical experience, nurse patient ratio and availability of personnel protective equipments.

➢ *Process*

After the input is absorbed by the system, it is processed in a way useful to the system. In the present study process refers to the evaluation of knowledge and practices regarding standard precautions.

➢ *Output*

It refers to the information, material and energy disposed of the system as a result of its process. In the present study, knowledge and practices of standard precautions among the staff nurses work in wards will be scored. The investigator developed a scale of assessment of knowledge and practices regarding standard precautions. This scale is classified into different categories. Score ranging between 0.25% and 26-50% were included in poor and average grades; score ranging between 51-74% were included in good criteria while 75-100% score were included in excellent knowledge

and practices regarding standard precautions among the staff nurses working in wards.

III. METHODOLOGY

An evaluative approach was used for the study. Pre-experimental one group pre test – post test research design was used in the study. The samples were recruited by probability simple random sampling technique. The size of population included in this study was 60 staff nurses which were selected according to inclusive and exclusive criteria. They were given a self instructional module to give their response to assess the knowledge regarding standard precaution on prevention of infection. Main study was conducted in the Shri Aurobindo hospital Indore, Informed consent from the staff nurses was obtained prior to data collection process and collect the data in the form of pre-test and post-test. Than going for analysis and interpretation of data with inferential statistics like chi-square, mean, median, standard deviation etc.

IV. RESULT

In pre-test knowledge score and it is reflected that exactly few (3.3%) staff nurses observed with poor level of knowledge (0-6) about standard precaution on prevention of infection, twenty four (40.0%) staff nurses showed average (7-12) level of knowledge, thirty four (56.7%) were in (13-18) level of knowledge, none (0.0%) of the staff nurses identified with excellent (19-24) level of knowledge about standard precaution on prevention of infection.

In was detected in post-test that none subjects were left in poor (0-6) category. Major proportion of subjects twenty two (36.7%) staff nurses acquired excellent (19-24) level of knowledge. 35, (58.3%) staff nurses acquired good (13-18) level of knowledge, few (5.0%) staff nurses observed with average (7-12) level of knowledge.

Section-1 Frequency And Percentage Distribution Of Staff Nurses.

DEMOGRAPHIC VARIABLES	CATEGORY	Frequency	Percent
Age	20-25 year	23	38.3
	25-30 year	20	33.3
	30-35year	8	13.3
	≥ 35 year	9	15.0
Gender	Male	33	55.0
	Female	27	45.0
Educational Qualification	General Nursing Midwifery	33	55.0
	B. Sc. Nursing	25	41.7
	Post Basic B. Sc. Nursing	2	3.3
Experience of working in clinical area	12-24 month	36	60.0
	24-36 month	10	16.7
	36-48 month	7	11.7
	≥ 48 month	7	11.7
Source of previous knowledge	During course	13	21.7
	Clinical experience	37	61.7
	Mass Media	7	11.7
	Conference and workshop	3	5.0

Figure 4.1.1 -Sector diagram is showing the age distribution of studied staff nurses of SAIMS hospital of Indore city
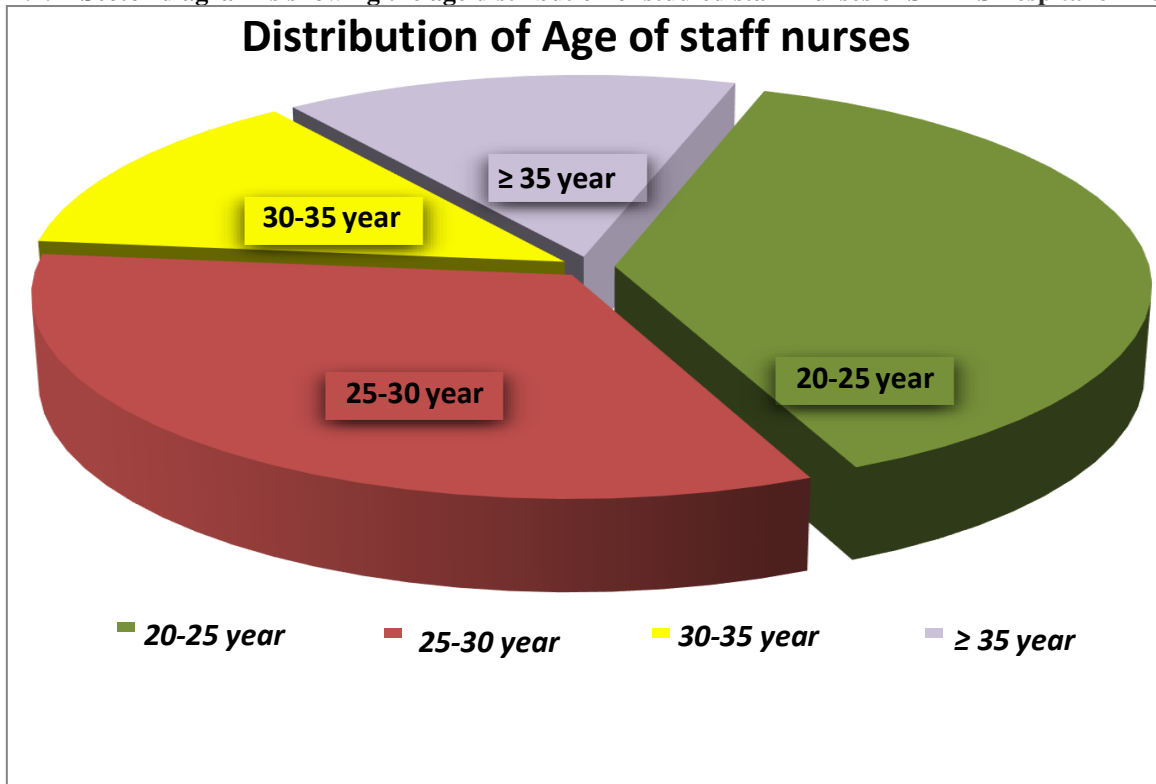

Figure 4.1.2-Sector diagram is showing the gender distribution of SAIMS staff nurses.
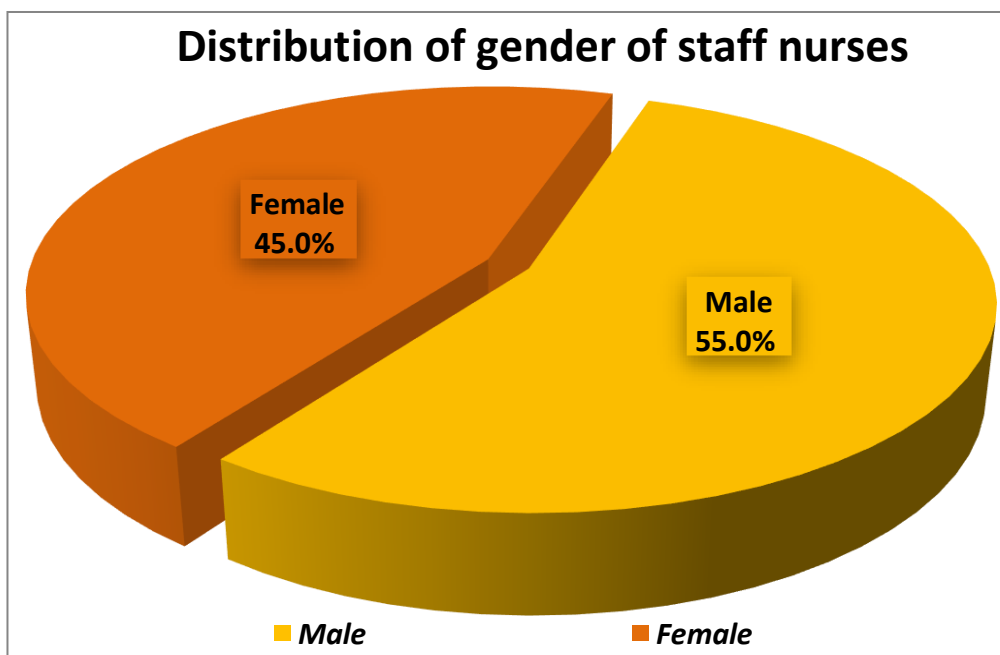

Figure 4.1.3-Sector diagram is showing the distribution of educational qualification of SAIMS staff nurses.
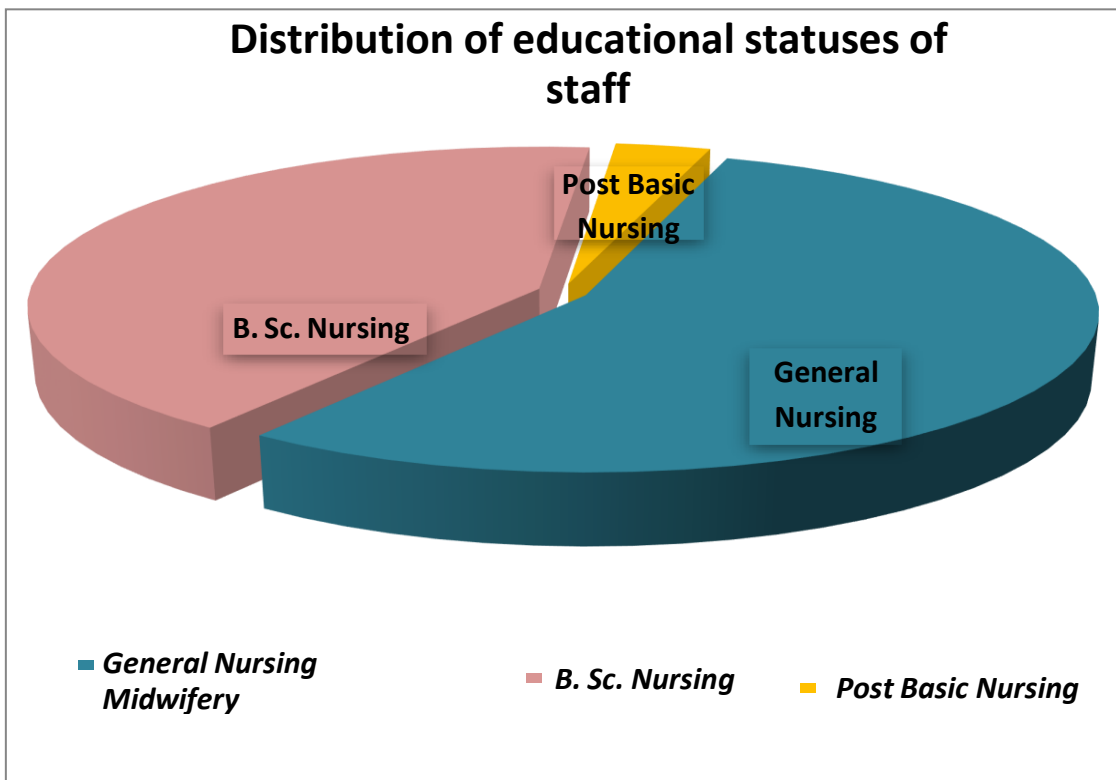
Fig 4.14-Sector diagram showed the distribution of experience of working ofSAIMS staff nurses.
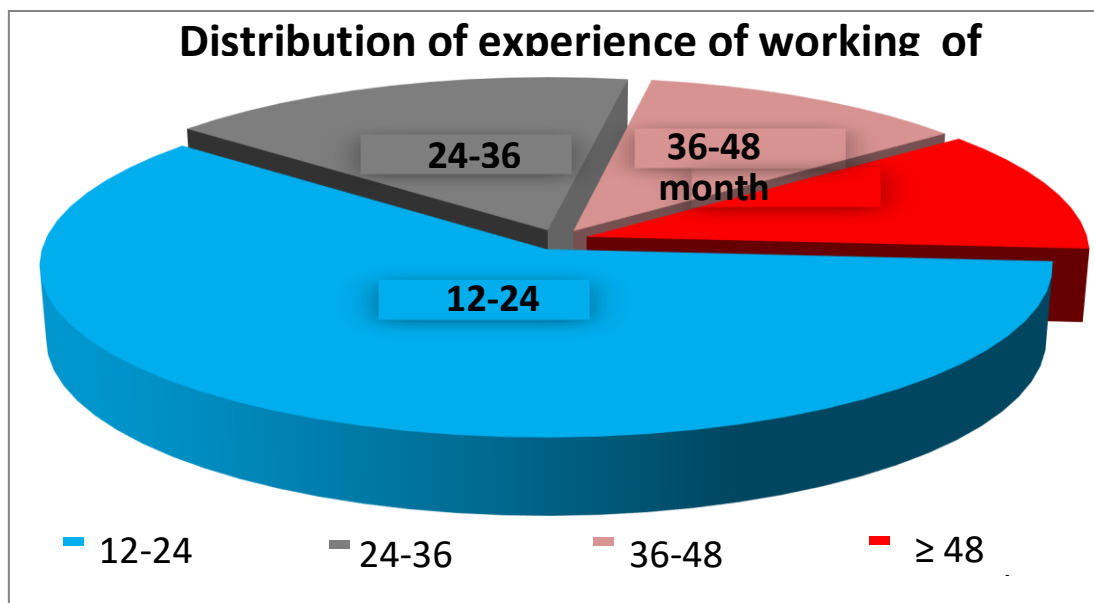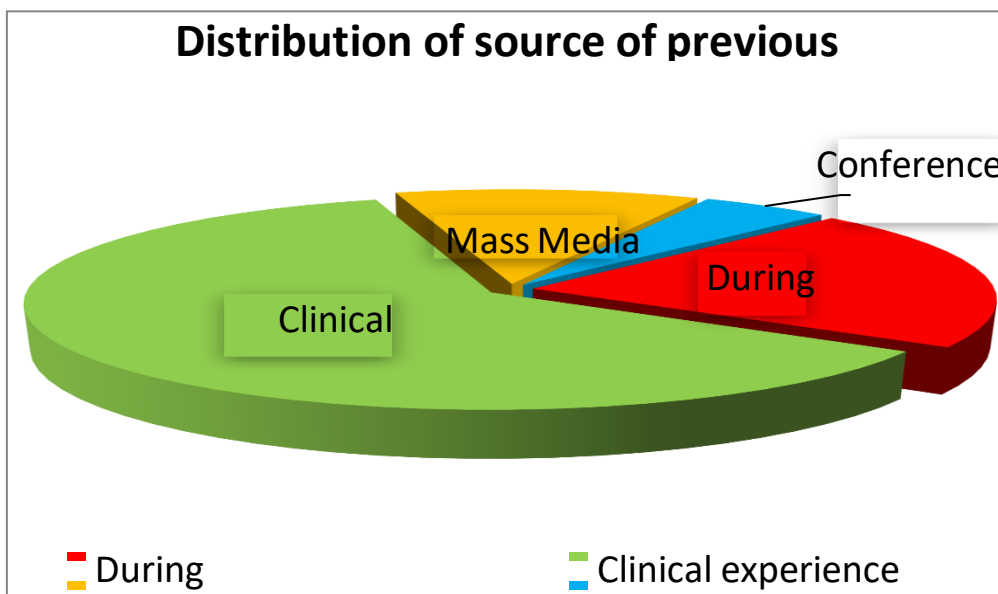

Figure 4.15-Sector diagram depicting the distribution of source of previous knowledge of staff nurses

Distribution of source of previous

SECTION-2- THE COMPARISON OF PRE-TEST AND POST- TEST KNOWLEDGE SCORE REGARDING STANDARD PRECAUTION ON PREVENTION OF INFECTION AMONG   STAFF NURSES.TABLE 4.2.1:- COMPARISON OF KNOWLEDGE AMONG STAFF NURSES AT PRE ADMINISTRATION (BASELINE)   N=60

Knowledge at Baseline stage		Frequency (N)	Percent (%)
Score	Category		
0-6	Poor	2	3.3
7-12	Average	24	40.0
13-18	Good	34	56.7
19-24	Excellent	0	0.0

Figure 4.2.1-Bar diagram showing the knowledge levels among staff nurses before(pre-test) administration of self-instructional module
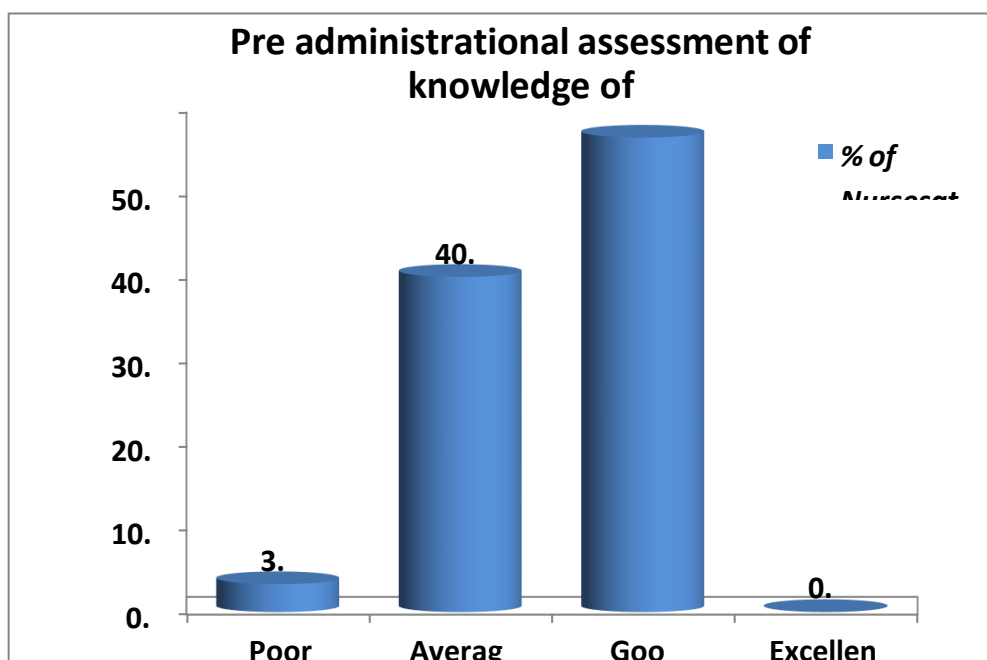
TABLE 4.2.2:-COMPARISON OF KNOWLEDGE OF STAFF NURSES AT POST ADMINISTRATION STAGE

N=60

Knowledge at Posttest		Frequency (N)	Percent (%)
Score	Category		
0-6	Poor	0	0.0
7-12	Average	3	5.0
13-18	Good	35	58.3
19-24	Excellent	22	36.7

Figure 4.2.2-Bar diagram showing the knowledge levels among staff nurses afteradministration (post-test) administration of self-instructional module

Figure 4.2.3-Bar diagram depicting the distribution of mean and standard deviation ofage of male and female staff nurses.
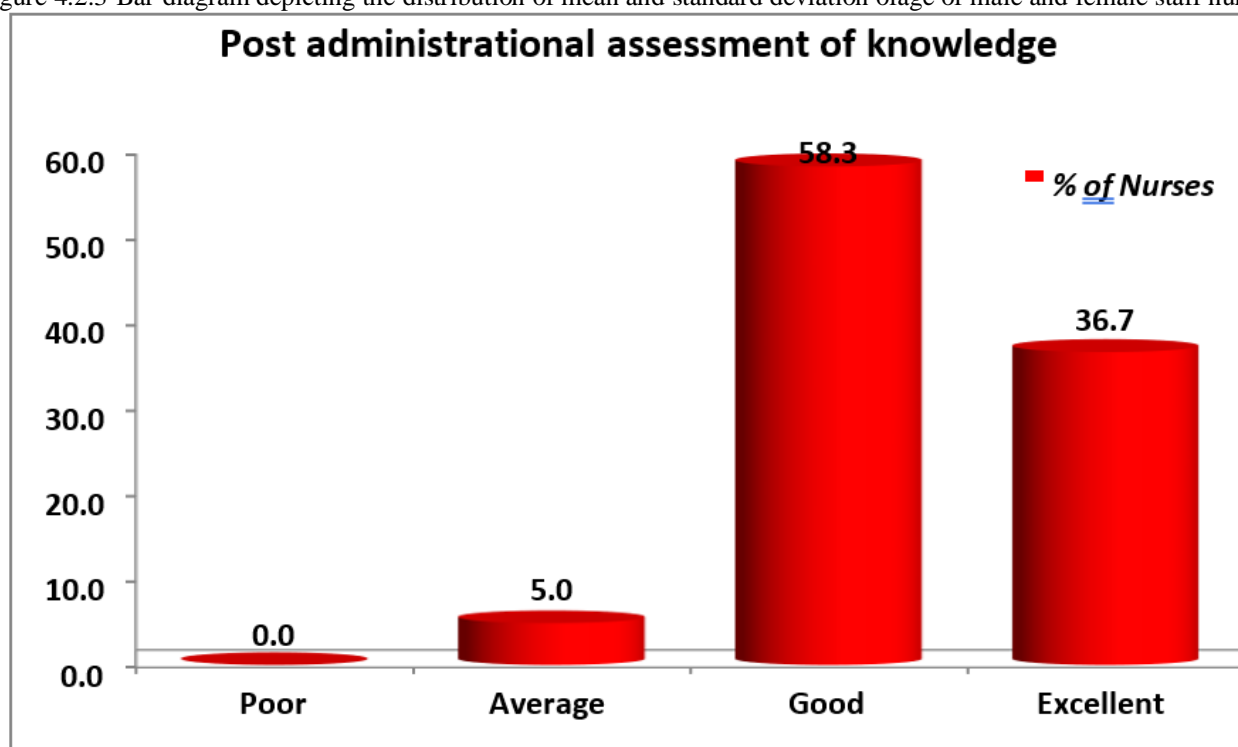

TABLE 4.2.4:-COMPARISON OF KNOWLEDGE SCORING BETWEEN PRE (BASELINE) AND POST ADMINISTRATION

Parameter	Variable	Scatterings	Z-Statistic	p-value(LOS)
		Mean ± SD		
Knowledge ofStandard Precaution	Pre-test	12.37±3.24	16.37	p<0.001 #
	Post-test	17.42±2.12		
	Mean Difference	5.05 points		

Fig 4.2.3-Bar diagram showing the comparison in knowledge levels among staff nurses having before (pre-test) and after administration (post- test) of self-instructional module.
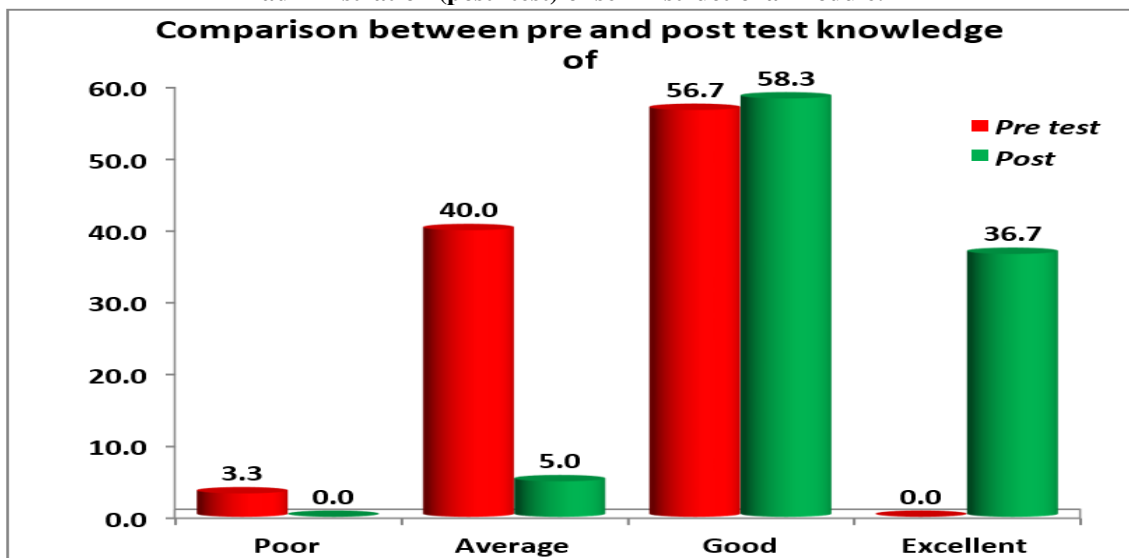

Table 4.2.3:-COMPARISON BETWEEN AGES OF MALE AND FEMALE STAFF NURSES

Sex of staff nurses anddifference in Mean Age	Scatter forage (year)	95% CI of the Mean age (year)		t- statistic	p-value(LOS)
	Mean ± SD	LB	UB		
Male	28.52±6.09	26.36	30.67		
Female	27.52±5.53	25.33	29.71		
Diff. in Mean age	1.00 year [□]			0.66	p=0.514 [□]

SECTION-3 EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE REGARDING STANDARD PRECAUTION ON PREVENTION OF INFECTION AMONG STAFF NURSES.

Table 4.3.1ASSESSMENT OF IMPROVEMENT OF KNOWLEDG BETWEENPRE AND POST ADMINISTRATION STAGES

Studied Parameter	Mean Pre Score	Mean PostScore	Improvement(%)
Effect of self-instructional module on knowledge	12.37	17.42	40.82%
Total	12.37	17.42	40.82%

THE ASSOCIATION OF KNOWLEDGE OF STANDARD PRECAUTION ON PREVENTION OF INFECTION OF STAFF NURSES AFTER ADMINISTRATION WITH SELECTED DEMOGRAPHIC VARIABLES AT POST ADMINISTRATION STAGE (POST-TEST)

TABLE 4.4.6ASSOCIATION OF AGE OF STAFF NURSES WITH KNOWLEDGE ATPOST-ADMINISTRATION STAGE (POST-TEST)

Age of Staff Nurses	Post-test Knowledge Score with Category			Total
	7-12 (Average)	13-18 (Good)	19-24 (Excellent)	
20-25 year	1 1.7%	17 28.3%	5 8.3%	23 38.3%
25-30 year	2 3.3%	8 13.3%	10 16.7%	20 33.3%
30-35 year	0 0.0%	1 1.7%	7 11.7%	8 13.3%
≥ 35 year	0 0.0%	9 15.0%	0 0.0%	9 15.0%
Total	3 5.0%	35 58.3%	22 36.7%	60 100.0%
$\chi^2 = 20.84^{\#}$; *p<0.002 (Highly Significant)*6				

TABLE 4.4.7:-ASSOCIATION OF GENDER OF STAFF NURSES WITHKNOWLEDGE LEVEL AT POST-ADMINISTRATION STAGE (POST- TEST)

Gender	Post-test Knowledge Score with Category			Total
	7-12 (Average)	13-18 (Good)	19-24 (Excellent)	
Male	2 3.3%	20 33.3%	11 18.3%	33 55.0%
Female	1 1.7%	15 25.0%	11 18.3%	27 45.0%
Total	3 5.0%	35 58.3%	22 36.7%	60 100.0%

$\chi^2 = 0.45$; *p>0.05 (Insignificant)*2

TABLE 4.4.8 ASSOCIATION OF PROFESSIONAL EDUCATIONAL QUALIFICATION O F STAFF NURSES WITH THEIR LEVEL OF KNOWLEDGE AT POST-ADMINISTRATION STAGE (POST-TEST)

Educational Status	Post-test Knowledge Score with Category			Total
	7-12 (Average)	13-18 (Good)	19-24 (Excellent)	
General Nursing Midwifery	0 0.0%	25 41.7%	8 13.3%	33 55.0%
Basic B. Sc. Nursing	3 5.0%	10 16.7%	12 20.0%	25 41.7%
Post Basic Nursing	0 0.0%	0 0.0%	2 3.3%	2 3.3%
Total	3 5.0%	35 58.3%	22 36.7%	60 100.0%

$\chi^2 = 12.98$; *p<0.02 (Significant)*4

TABLE 4.4.9ASSOCIATION OF TOTAL EXPERIENCE OF WORKING IN HOSPITALSETTING OF STAFF NURSES WITH KNOWLEDGE AT POST- ADMINISTRATION STAGE (POST-TEST)

Total experience ofworking of Staff Nurses	Post-test Knowledge Score with Category			Total
	7-12 (Average)	13-18 (Good)	19-24 (Excellent)	
12-24 month	1 1.7%	24 40.0%	11 18.3%	36 60.0%
24-36 month	2 3.3%	2 3.3%	6 10.0%	10 16.7%
36-48 month	0 0.0%	2 3.3%	5 8.3%	7 11.7%
≥ 48 month	0 0.0%	7 11.7%	0 0.0%	7 11.7%
Total	3 5.0%	35 58.3%	22 36.7%	60 100.0%

$\chi^2 = 18.38$[#] ; *p<0.005 (Highly Significant)*6

TABLE 4.4.10 ASSOCIATION OF PREVIOUS KNOWLEDGE OF STAFF NURSES WITH KNOWLEDGE AT POST-ADMINISTRATION STAGE (POST-TEST)

Source of previous knowledge	Post-test Knowledge Score with Category			Total
	7-12 (Average)	13-18 (Good)	19-24 (Excellent)	
During course	0 0.0%	10 16.7%	3 5.0%	**13 21.7%**
Clinical experience	3 5.0%	18 30.0%	16 26.7%	**37 61.7%**
Mass Media	0 0.0%	7 11.7%	0 0.0%	**7 11.7%**
Conference and workshop	0 0.0%	0 0.0%	3 5.0%	**3 5.0%**
Total	**3 5.0%**	**35 58.3%**	**22 36.7%**	**60 100.0%**

$$\chi^2 = 14.006 \; ; \quad P<0.03 \text{ (Significant)}$$

V. CONCLUSION

Thus after the analysis and interpretation of the data the hypothesis RH01-there are no significant difference between pre-test knowledge score regarding standard precaution on prevention of infection is Rejected.

While the hypothesis RH1-there are significant difference between the post-test knowledge score of the standard precaution on prevention of infection among staff nurses are significantly higher than mean pre-test knowledge score at the level of significance P<0.05 is being **accepted.**

RH02- there are significant association between pre-test knowledge score of the standard precaution on prevention of infection among staff nurses are Insignificant at the level of P<0.05 is **Rejected.**

Also the hypothesis RH2- there are significant association between post-test knowledge score with demographic variables Age, education, working experience, previous knowledge, found to be significant at the level of P<0.05 is being **accepted** from the above result.

We can conclude that were a statistically significant in gaining knowledge of standard precaution on prevention of infection of staff nurses. Thus the intervention "self instructional module'' was effective.

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