Original Research Article

A pre-experimental study to assess the effectiveness of computer assisted teaching programme on knowledge regarding nosocomial infection and it's prevention among b.sc nursing 1st year students of alamdar memorial college of nursing and medical technology, charar-i-sharief , budgam"

ABSTRACT

The study was conducted with an aim to improve the knowledge of B.sc Nursing 1st year students of Alamdar Memorial College of Nursing and Medical Technology regarding Nosocomial Infection and it's prevention.

A pre experimental study to assess the effectiveness of the Computer Assisted Teaching Programme on knowledge regarding Nosocomial Infection and its prevention among B.sc Nursing 1styear students of Alamdar Memorial College of Nursing and Medical Technology ,Charar-i-sharief, Budgam.

Objectives of the study were

1. To assess the pretest knowledge score regarding Nosocomial infection and its prevention among B.Sc Nursing 1st year students of Alamdar Memorial College of Nursing and Medical Technology, Charar-i-sharief.
2. To assess the post-test knowledge score regarding Nosocomial Infection and its prevention among B.Sc Nursing 1st year students of Alamdar Memorial College of Nursing and Medical Technology, Charar-i-sharief
3. To find the effectiveness of Computer Assisted Teaching Programme (CATP) on knowledge regarding nosocomial infections and its prevention among B.Sc Nursing 1st year students by comparing pre-test and post-test knowledge scores.
4. To find the association of pre-test knowledge score of BSc Nursing Ist year students regarding Nosocomial Infections and its prevention with their selected demographic variables (Gender, Residence, Parents occupation, previous knowledge regarding nosocomial infection, Source of knowledge).

A pre- experimental one group pre- test and post- test design was used for the study. The sample was selected by sampling technique and 36 B.sc Nursing 1st year students of Alamdar Memorial College of Nursing and Medical Technology Charar-i-sharief ,Budgam were

selected. Data was collected by using structured questionnaire consisting 36 items. The results of the study showed that in pre-test majority of the B.sc Nursing students 55.6% had inadequate knowledge and 44.4% had moderate knowledge regarding Nosocomial Infection and its prevention.

Whereas in post-test the majority of students 83.3% had adequate knowledge and 16.7% students had moderate knowledge. None of the study subjects had inadequate knowledge regarding Nosocomial Infection and it's prevention.

Conclusion

The findings of the study concluded that B.sc Nursing 1st year students were having less knowledge regarding Nosocomial Infection and its preventions. The Computer Assisted Teaching Programme was found effective in increasing the knowledge level of Nosocomial Infection and its preventions.

Key words

Effectiveness; Computer Assisted Teaching Programme; Knowledge; Nosocomial Infection.

INTRODUCTION

"There is nothing more important than our good health that is our principal capital asset"[1]

During hospitalization, the patients are more prone to infections and the infection may be because of carelessness of health care workers, improper handling of equipments or poor hand washing techniques. Health care workers should try to avoid the spread of infections from one patient to another or from the surrounding environment by adopting sterile techniques. Infections that the patient gets from the health care workers or the hospital environment is known as hospital acquired infection or nosocomial infection.[2]

The term nosocomial comes from Greek words "nosus" meaning disease and "komeion" meaning "to take care of". Hence nosocomial infection can be defined as those occurring within 48 hrs of hospital admission or after 3 days of discharge from the hospital or 30 days of an operation.[2]

It can also be defined as infection acquired by the person in the hospital, manifestation of which may occur during hospitalization or after discharge from hospital and was neither present at the time of admission nor in its incubation period. The person may be a patient, members of the hospital staff and/or visitors. Nosocomial infections are also known as HAIs or health care associated infection.[2]

When health care professionals such as Holmes, Semmelweis and Florence Nightingale introduced hygienic and sanitation practices as handwashing, aseptic techniques etc. In the middle 1800s , the infections were curtailed to some extent and later with the discovery of pencillin in 1928, the expectations were ambitiously raised to the belief that infections could now be controlled without dealing with the constraining details of previously essential methods. But within two decades, however the error of this thinking would surface; pencillin – resistant staphylococci resulted in the extensive hospital epidemics of 1950s and 1960s. [3]

Materials and methods

Quantitative research approach was used in this study to assess the effectiveness of Computer Assisted Teaching Programme (CATP) on knowledge regarding nosocomial infection and its prevention among B.SC nursing 1st year students of Alamdar memorial college of nursing and medical technology, Charar-i-sharief, Budgam. A pre-experimental one group pre-test post-test research design was selected for the present study. The primary objective of the study was to find the effectiveness of Computer Assisted Teaching Programme (CATP) on knowledge regarding nosocomial infection and its prevention among B.sc nursing Ist year students of Alamdar memorial college of nursing and medical technology Charar-i-sharief. In the present study a structured knowledge questionnaire was administered to B.sc nursing Ist year students of Alamdar memorial college of nursing and medical technology Charar-i-sharief on day 1 as a pre test measure and intervention was given in the form of structured teaching programme on knowledge regarding nosocomial infection and its prevention. Post-test was conducted on day 7 using same knowledge questionnaire. Variables under study were independent variable; Computer Assisted Teaching Programme (CATP) on knowledge regarding nosocomial infection and its prevention. The dependent variable of the present study referred to gain in Knowledge score of B.Sc regarding Nosocomial infection and its prevention. Demographic variables selected for this study were Gender, Residence, Occupation of Parents, previous knowledge and source of knowledge. The present study was conducted at Alamdar Memorial College Of Nursing and Medical Technology(AMCONMT)

Charar-I-Sharief, Budgam. The criteria for selecting this setting were feasibility and availability of sample. In the present study the target population consisted of B.sc nursing first year students of Alamdar memorial college of nursing and medical technology Charar-i-sharief Budgam during the period of data collection , from 16 Nov 2021 to 23 Nov 2021.

sample consisted of 36 B.sc nursing 1st year students of Alamdar Memorial College of nursing and medical technology Charar-i-sharief Budgam Kashmir. Total Enumerative sampling technique was used for selection of sample. As the study was aimed to assess the effectiveness of computer assisted teaching Programme on knowledge regarding nosocomial infection and its prevention among B.Sc nursing 1styear students, therefore structured knowledge questionnaire was used to collect the data.

DESCRIPTION OF THE TOOL

The tool consisted of a Structured Knowledge Questionnaire. It was divided into, following two sections:

Section A: Related to demographic data: - It consists of 5 items i.e. gender, residence, occupation of parents, previous knowledge and source of knowledge

Section B: Related to structured knowledge questionnaire- It is subdivided into following parts.

- **Part I**: - Items related to infections comprising 5 items
- **Part II**: - Items related to nosocomial infection comprising 13 items
- **Part III**: - Items related to prevention of nosocomial infections comprising 18 items.

  All items were in the form of questions with four options each with only one correct answer.

Table 1: Criteria Scoring for Knowledge Levels

KNOWLEDGE LEVEL	SCORE
Inadequate	0-12
Moderate	13-26

Adequate	27-36

Maximum score = 36

Minimum score=0

ETHICAL CONSIDERATION

The student investigators has taken permission from the IEC (Institute Ethical Committee) of Islamic University of Science And Technology (IUST) Awantipora, Pulwama to conduct research study and ethical clearance was obtained and study was found ethically exempted.

DATA COLLECTION PROCEDURE

Data collection is the gathering of information needed to address a research problem. For the purpose of data collection, permission was obtained from the principal, AMCONMT ,Charar-i-sharief to conduct the research study . Prior to the conduction of the study, administrative permission was obtained from the coordinator of B.Sc nursing first year of AMCONMT, Charar-i-sharief AMCONMT Charar-i-sharief .The main data collection period started from 16 Nov 2021 to 23 Nov 2021. Prior to data collection the investigator introduced her/him and explained the purpose of the study and informed consent was obtained from the study subjects The study subjects were assured the anonymity and confidentiality of the information provided by them. All the subjects have cooperated well in the research project. Finally we have concluded our data collection process by thanking all the subjects. Data collected was analyzed and tabulated by using both inferential and descriptive statistics.

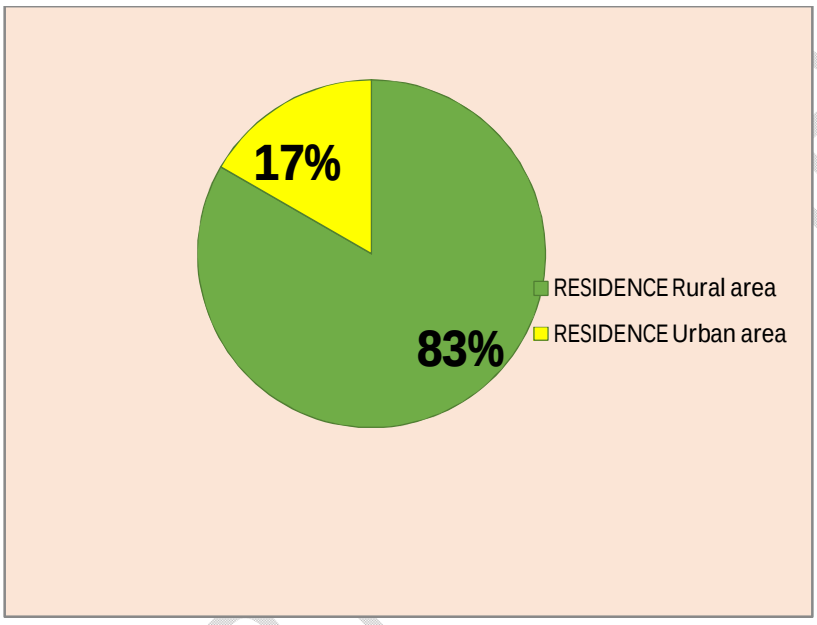
- ANALYSIS AND INTERPRETATION OF DEMOGRAPHIC VARIABLES OF SUBJECTS
- Table 2 : Frequency and percentage distribution of subjects according to gender

Gender	Frequency (f)	Percentage (%)
Male	07	19.4%
Female	29	80.6%
Total	36	100%

- The data presented in Table2 reveals that 29 (80.60 %) subjects were females and 07 (19.40%) subjects were males.

- Table 3: Frequency and percentage distribution of subjects according to Residence

Residence	Frequency (f)	Percentage (%)
Rural Area	30	83.3%
Urban Area	06	16.7%
Total	36	100%

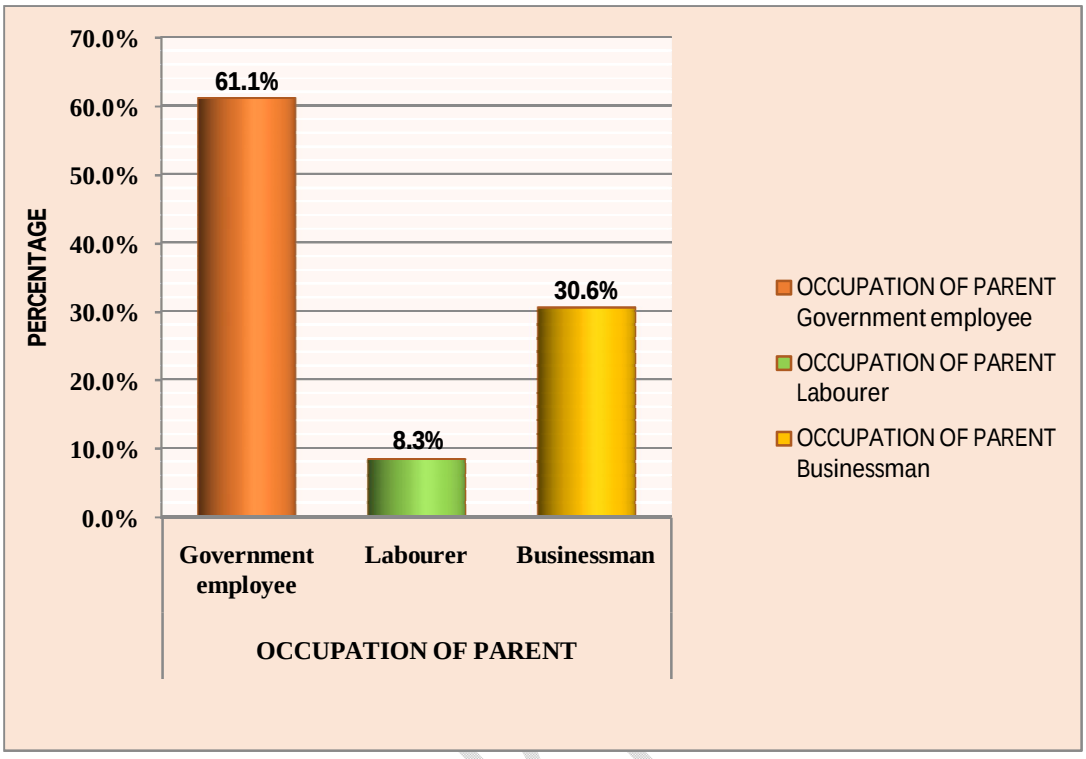


- Graph 1 . Residence

- The data presented in the Table 3 and Figure 1 reveals that majority 30 (83.3%) subjects were from rural area and 06 (16.7%) were from urban area.

- Table 4: Frequency and percentage distribution of subjects according to occupation of parents

Occupation of Parents	Frequency (f)	Percentage (%)
Government employee	22	62.1%
Laborer	03	8.3%
Businessman	11	30.6%
Total	36	100%



- Figure 1: Distribution of subjects according to occupation of parents.
- Data presented in Table 4 and Figure 1 indicates that parents of 22 (61.1%) of subjects were Government employee, parents of 3 (8.3%) of subjects were laborer and parents of 11 (30.6%) of subjects were businessman

- Table 5: Frequency and percentage distribution of subjects according to their previous knowledge about nosocomial infection.

Previous knowledge about Nosocomial Infection	Frequency (f)	Percentage (%)
Yes	12	33.3%
No	24	66.7%
	36	100%

Total		

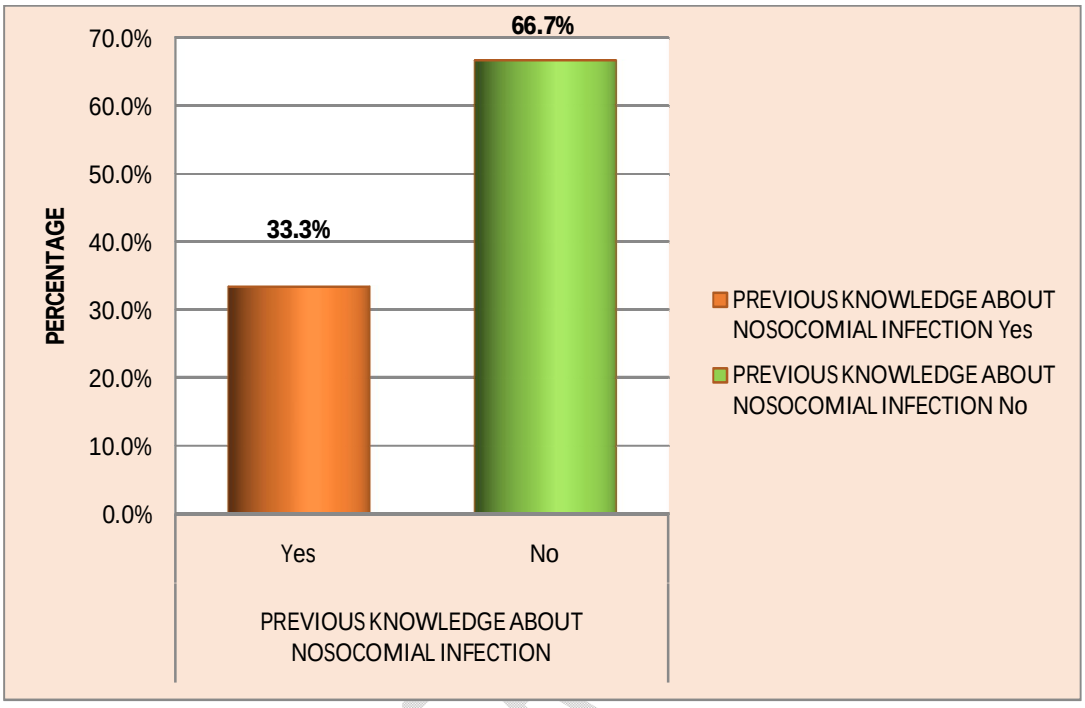
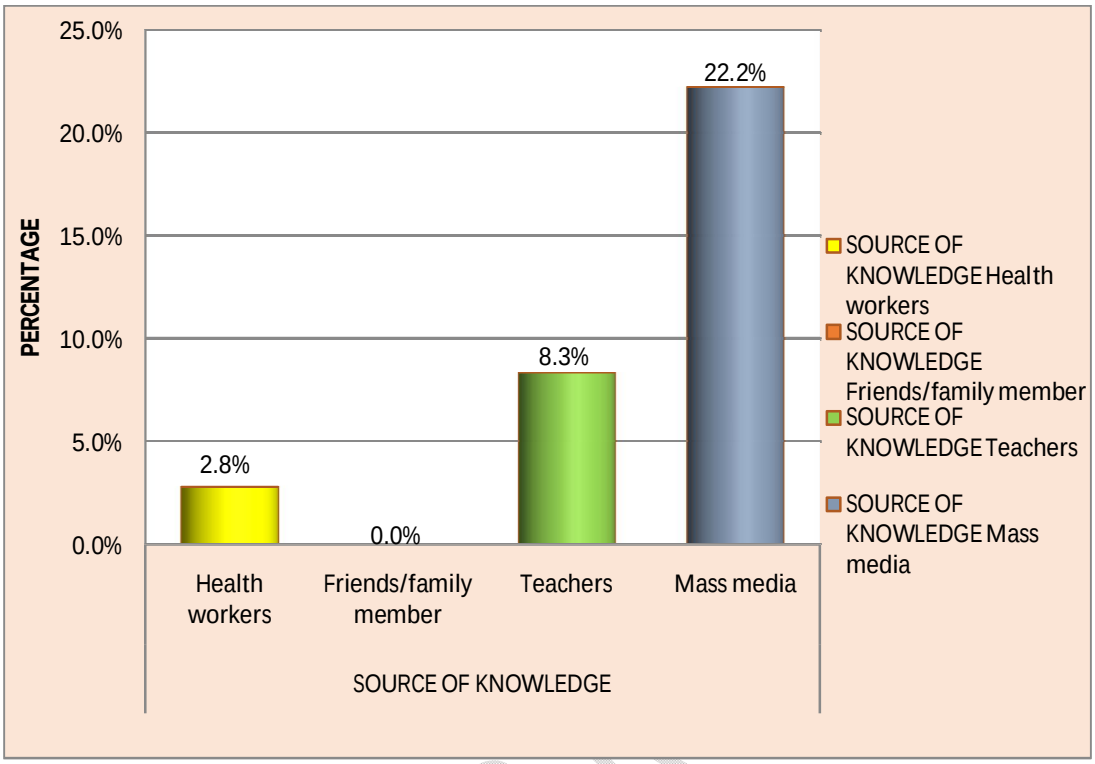


Figure 2: Distribution of subjects according to their previous knowledge.

- Data presented in table 5 and figure 2 reveals that majority of subjects 24(66.7%) does not have previous knowledge regarding nosocomial infection while only 12(33.3%) of subjects were having previous knowledge regarding nosocomial infection.

- Table 6 :Frequency and percentage distribution of subjects according to their source of knowledge

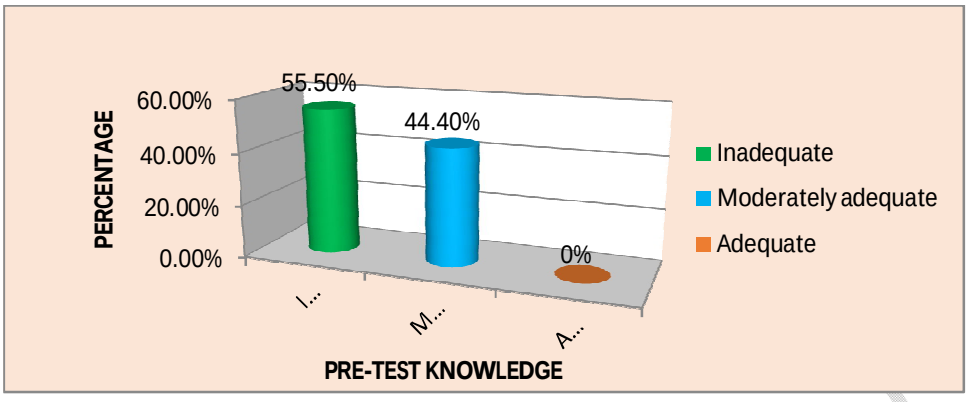
Source of knowledge	Frequency (f)	Percentage (%)
Health workers	01	2.8%
Friend/Family members	0	0.0%
Teachers	03	8.3%
Mass Media	08	22.2%
Total	12	33.3%



- Figure 3: Distribution of subjects according to their source of knowledge
- The data presented in table 6 and Figure 3 reveals that majority 8 (22.2%) of subjects had mass media as source of knowledge , 3(8.3%) had teachers as source of knowledge, 1(2.8%) subjects had health worker as source of knowledge , while none of subjects had family /friends as source of knowledge.

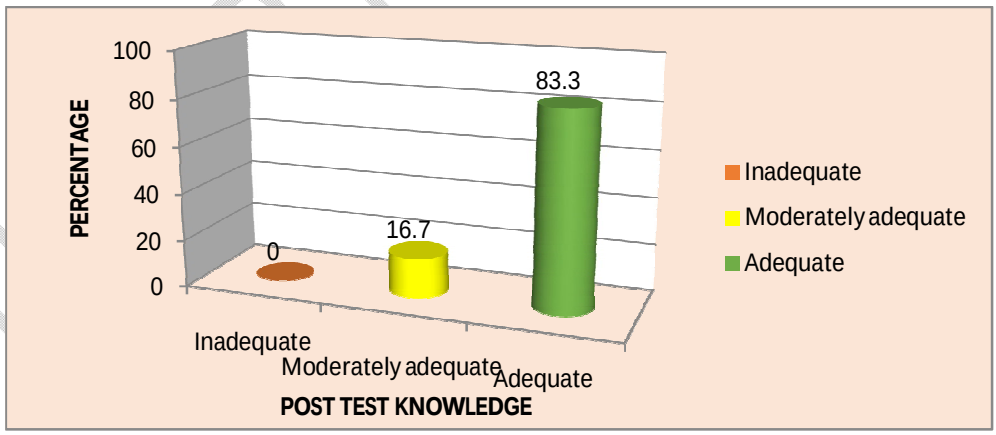
- Table 7: Frequency and percentage distribution of B. Sc Nursing1st yearstudents according to pre- test knowledge score

Percentage	Score	Level of knowledge	Pre-test (f)	Pre-test (%)
=<33%	0-12	Inadequate	20	55.5%
(34-36) %	13-26	Moderately adequate	16	44.4%
(67-100) %	27-36	Adequate	0	0%



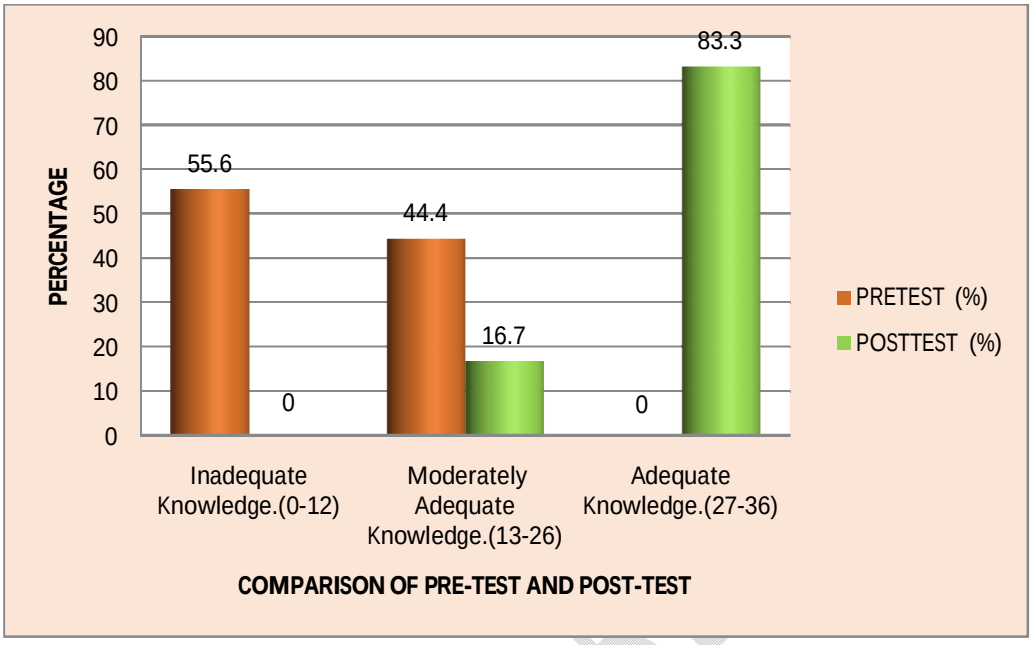
- Figure 4: Distribution of pre-test knowledge scores Table 7 and figure 4 reveals that in the pre-test, 20 (55.60%) had inadequate knowledge,16(44.40%) had moderate knowledge and none of the subjects had adequate knowledge.
- Table 8: frequency and percentage distribution of B.sc nursing 1st year students according to post test knowledge scores

Percentage	Score	Level of knowledge	Post-test (f)	Post -test (%)
=<33%	0-12	Inadequate	0	0
(34-66) %	13-26	Moderately adequate	6	16.7
(67-100%)	27-36	Adequate	30	83.3



- Figure 5: Distribution of post- test knowledge scores.
- Table8 and figure 5 reveals that in the post test, majority of the subjects 30 (83.30%) had adequate knowledge, 6 (16.70%) had moderate knowledge, while as none of the subjects had inadequate knowledge.

Comparison of pre-test and post-test knowledge score



- Figure 6: figure 6 reveals that in the pre-test , majority of the subjects (55.60%) had inadequate knowledge, (44.60%) had moderately adequate knowledge and none of the subjects had adequate knowledge regarding nosocomial infection and it's prevention,while as in post -test majority of subjects (83.30%) had adequate knowledge,(16.70%) had moderate knowledge, while as none of the subjects had inadequate knowledge.

- Table 9: Descriptive statistics of knowledge

DESCRIPTIVE STATISTICS N=36	PRETEST KNOWLEDGE SCORE	POST TEST KNOWLEDGE SCORE
Mean	12.83	31.81
S. D	3.485	3.927
Median score	12	33
Maximum	21	36
Minimum	7	20
Range	14	16
Mean%	35.60	88.30

Table 9 Shows that pre-test mean knowledge score is 12.83 which increased to 31.81 in post-test mean knowledge score. Median score was 12 which increased to 33, minimum score was 7 which increased to 20, maximum score was 21 which increased to 36 and range was 14 which increased to 16 in post-test knowledge score.

Table 10: Overall Mean S. D and T value of pre test knowledge score

Group	Mean ±S.D	Mean%	Range	Mean Diff.	T test	P value	Table value at 0.05
Pre test knowledge	12.83±3.485	35.60	7-21	18.98	27.157	<0.001	2.03
Post test knowledge	31.81±3.927	88.30	20-36	0	*sig	<0.001	2.03
*significance level 0.05	Maximum= 36	Minimum = 0					

- Interpretation; on comparison mean post test knowledge shows significant increase from 12.83 to 31.81 by average increase of 18.98%. Calculated't' value of knowledge is greater than the table value. Hence null hypothesis (H_0) was rejected and research hypothesis (H_1) was accepted as there was significant increase in knowledge gain. It indicates CATP was effective in increasing the knowledge score of subjects.

Table 11. Association Of Pretest Test Knowledge Scores Of With Selected Socio-Demographic Variables.

Variables	Opts	Adequate Knowledge	Moderately Adequate Knowledge	Inadequate Knowledge	Chi Test	P Value	df	Table Value	Result
GENDER	Male		1	6	3.201	0.074	1	3.841	Not Significant
	Female		15	14					
RESIDENCE	Rural area		15	15	2.250	0.134	1	3.841	Not Significant
	Urban area		1	5					
OCCUPATION OF PARENT	Government employee		8	14	6.545	0.038	2	5.991	*Significant
	Laborer		0	3					
	Businessman		8	3					
PREVIOUS KNOWLEDGE ABOUT NOSOCOMIAL INFECTION	Yes		6	6	0.225	0.635	1	3.841	Not Significant
	No		10	14					
SOURCE OF	Health workers		0	1	1.833	0.400	2	5.991	Not Significant

KNOWLEDGE	Friends/family member		0	0					
	Teachers		1	2					
	Mass media		5	3					

- Table 10 shows the association between the pre tests knowledge score and selected demographic variables. the chi-square showed that their was significant association between the pre-test knowledge score and selected demographic variablei.e. Occupation of parent; Hence the researchers rejected the null hypothesis for this variable. While as, the chi-square value showed no significant association between the pre-test knowledge score and other selected demographic variable (Gender, Residence, Previous knowledge regarding nosocomial infection, Source of knowledge), so the researchers accepted the null hypothesis for these variables at 0.05 level of significance.

• Discussion

- Findings of the study showed that out of 36 study subjects 80.6% were females and 19.4%were males. The high %of female subjects in the study is due to the dominance of females in the nursing
- 83.3% of the study subjects were from rural area, and 16.7%were from urban area.
- Out of 36 parents of the study subjects ,22(62.1%) were Govt.emplyee,11(30.6%) were businessman and 3(8.3%) were labourers
- 66.7%of the study subjects does not have any previous knowledge regarding nosocomial infection while only 33.3%of of study subjects had Previous knowledge regarding nosocomial infection and its prevention.
- 22%of study subjects had mass media as source of knowledge,8.3%had teachers, and 2.8% had health workers as a source of knowledge.

Majority of the study subjects 55.5% had inadequate knowledge, 44.4% had moderate knowledge and none of the subjects had adequate knowledge regarding nosocomial infection and its prevention.

Majority of study subjects 83.3% had adequate knowledge and 16.7%of study subjects had moderate knowledge. None of the study subjects had inadequate knowledge regarding nosocomial infection.

The findings of present study correlates with findings of another study conducted by Manisha, VijendraS,Rushali T, Kriti D and Gaurav G in 2018 to assess the knowledge regarding nosocomial infection among B.sc nursing students of selected nursing institution of Pune city.The results of the study revealed that 64% of B.sc nursing students were having average knowledge,33% had good knowledge and 3%had poor knowledge regarding nosocomial infection .

The mean ± standard deviation post-test knowledge score (38.81±3.927) of the study subject regarding nosocomial infection was significantly higher than mean ± standard deviation pre-test knowledge score (12.83± 3.485) at 0.05 level of significance. This indicated computer Assisted Teaching Programme (CATP)was effective in enhancing knowledge of students of B.sc nursing ist year students regarding nosocomial infection and its prevention.

The findings of present study correlates with findings of another study conducted by Potdar N, Shinde M, SardariSin 2016to assess the effectiveness of STP on prevention of nosocomial infection among staff nurses working at tertiary Hospital Kadar (india). The results showed that calculated paired "t" value t=18.95 is greater than tabulated "t" value t=2.01. Hence the study concluded that STP was effective in enhancing the knowledge of study subjects on prevention of nosocomial infection .[36]

Findings of the present study revealed that there was significant association between pre-test knowledge score of study subjects with selected demographic variable i.e. occupation of parents and there was no significant association between pre-test knowledge score of the study subjects with other selected demographic variables i.e, gender , residence , previous

knowledge regarding nosocomial infection and source of knowledge .Hence researcher accepted null hypothesis(HO_2)for their variables.

The findings of present study correlates with findings of another study conductedbySophia G in 2019 to assess the knowledge regarding nosocomial infection among 1st year b.sc nursing students studying in college of nursing Banglore (India). In her study she revealed that maximum of nursing students had adequate knowledge on nosocomial infection. The chi-square implies that there was no significant association between knowledge score of study subjects with their selected demographic variables as the chi-square value was lower than the table value at 0.05 levels of significance.[2]

Summary of major findings of study

Findings related to demographic variables

- Findings of the study showed that out of 36 study subjects 80..6% were females and 19.4 % were males. The high percentage of female subjects in the study is due to the dominance of females in the nursing.
- 83% of study subjects were from rural areas and 16.7% from urban areas.
- 66.7% of the studysubjects doesn't have any previous knowledge while only 33.3% of study subjects had previous knowledge regarding Nosocomial infection and it's prevention.
- 22% of study subjects had mass media as source of knowledge,80.3% had teachers, and 2.8% had health workers as a source of knowledge.

Majority of the study Subjects 55.6% had inadequate knowledge and 44.4% had moderate knowledge regarding nosocomial infection and it's prevention and none of the subjects had adequate knowledge.

Majority of study subjects 83.3% had adequate knowledge and 16.7% of study subjects had moderate knowledge. None of the study subjects had inadequate knowledge regarding nosocomial infection and it's prevention.

The mean± standard deviation post-test knowledge score (38.81±3.927) Of the study subject regarding nosocomial infection is significantly higher than mean ± standard deviation pre-test knowledgescore(12.83±3.485) at 0.05 level of significance .This indicated that computer assisted teaching programme was

effective in enhancing knowledge of students of B.sc nursing 1styear students regarding nosocomial infection.

Findings of the present study revealed that there was significant association between pre-test Knowledge score of study subjects with their selected demographic variable of Occupation of parents there was no significant association between pre-test knowledge score of the study subjects with their remaining selected demographic variables i.e, (gender ,residence, previous knowledge regarding nosocomial infection and source of knowledge).

CONCLUSION

The following conclusions have been drawn on the basis of findings of the present study:

- Pre- test findings showed that the B.sc Nursing Ist year students had inadequate knowledge regarding nosocomial infection and it's prevention so there was need to educate them.
- The ComputerAssistedTeachingProgramme (CATP) was found effective in improving the level of knowledge regarding nosocomial infection and it's prevention that was evident from post-test knowledge score.

- Significant association was found between pre- test knowledge score of B.sc nursing Ist year students with their selected demographic variableoccupation of parents and there was no Significant association between pre- test knowledge score of the study subjects with their remaining selected demographic variables including, Gender, residence ,previous knowledge regarding Nosocomial infection and, source of knowledge.
- This indicates that an effective Computer AssistedTeachingProgramme (CATP) must be conducted in college with a view to make the B.sc nursing 1st year students knowledgeable about various aspects of hospital acquired infection which helps to promote positive attitude and healthy practices of life.

IMPLICATIONS

Implications to Nursing practice

- Nurses play an important role in disease prevention and health promotion, this reveals the importance of formulating and implementing teaching programmes regarding infection control measures.
- Study findings shows that student nurses need to update their knowledge related to acquired infection focusing on aspects like cause, spread of infection, prevention and complications. This will enable them to utilize standard precaution , hand washing, disinfection and sterilization, biomedical waste management on day to day basis.

IMPLICATIONS TO NURSING EDUCATION

- One of the leading functions of education is imparting education with newer knowledge.

- Nurse educator can make use of thisComputerAssistedTeachingProgramme (CATP) to orient the students.

IMPLICATIONS TO NURSING ADMINISTRATION

- Hospital is an organization which provides a higher level of care especially nurses and nursing students.
- Based on the study findings, it is necessary to include such programmes as induction classes for newly joined staff nurses. This will improve their knowledge and adhere these aspects to their practical areas
- **IMPLICATIONS TO NURSING RESEARCH**
- Study findings have added to the body of knowledge regarding prevention of HAI's among student nurses. The prepared tool can be tested in various setting.
- Various methods of infection prevention can be discovered/ invented by the nurse researches.
- Disseminate the findings through conferences, workshops.

LIMITATIONS

- Sample was only taken from selected Alamdar Memorial College of Nursing and medical technology charar-i-sharief, Budgam and small no. of sample limits the generalization of the findings.
- Use of structured knowledge questionnaire restricts the amount of information that could be collected from the respondents.
- Long- term follow up could not be carried out because of time constraint.
- Only single domain i.e. knowledge was considered in the present study.
- Study was limited to B.sc nursing Ist year students only

RECOMMENDATIONS

- Based on the findings of the study , the following recommendations were made:
- A comprehensive study can be done between nursing students pursuing GNM, B.sc, post basic B.sc nursing in different colleges.
- The same study can be replicated on large sample to generalize the findings.
- The same study can be conducted in different settings like: Hospitals, Health care centers etc.
- Nursing Curriculum should be updated to include comprehensive information about Nosocomial infection to improve the awareness of other students once in practice.
- A similar study can be conducted by assessing the knowledge and practice among various health care professionals.
- A descriptive study can be conducted in the hospital to assess the incidence of nosocomial infection

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