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# Community and Public Health Nursing

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# A Study to Assess the Effectiveness of Structured Teaching Programme on Osteoporosis among Middle Aged Women Residing at Selected Rural Area of Bangalore District Karnataka

Asha Lekshmi S

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## Abstract

Bone is a living, dynamic tissue that undergoes constant remodeling through life. This is necessary to allow the skeleton to increase in size during growth, respond to the physical stresses placed on it and repair structural damage due to structural fatigue or fracture. This process requires range of proteins and minerals, which are absorbed from the blood stream. Osteoporosis often known as the silent thief because bone loss occurs without symptoms; one in four women over the age of 50 has osteoporosis. One in eight men over 50 year also has the disease. However, the disease can strike at any age. More women die each year as a result of osteoporotic fractures than from breast and ovarian cancer. This study is the Quasi experimental -one group pre test post test design to assess the effectiveness of STP on osteoporosis among middle aged women. In this study non-probability sampling technique with convenient sampling was used. Sample size consists of 50 middle aged women. The overall knowledge score in pre test is 14.300 and post test score is 26.260. The paired t-test score (21.532) shows that the Structured Teaching Programme has effectiveness on increasing knowledge of middle aged women regarding osteoporosis and its prevention. It is revealed that there is significant association between the post test knowledge score with education (Chi-square=4.920) and occupation (Chi-square value=5.048). The association was calculated using Chi square test. Therefore the Research hypothesis H2 has been accepted.

## Introduction

The osteoporosis is a major public health problem affecting millions of people all around the world. Osteoporosis is much more common in women than men and occurs frequently in women. Osteoporosis is a disease in which the density and quality of bone are reduced, leading to weakness of skeleton and increase the risk of fracture, particularly of the spine, wrist and hip. Osteoporosis and associated

fractures are an important cause of mortality and morbidity.

The bone disease osteoporosis is a costly disorder not only in terms of health care dollars but also in terms of human suffering, pain, disability and death. It is estimated that osteoporosis and its precursor, osteopenia, will affect approximately 40 million American older than 50 years by 2010. Ten million persons in the United States (80% of them

women) have Osteoporosis, with the projected increase in life expectancy, this number is expected to grow. One in two women and one in 8 men over the age of 50 will sustain an osteoporosis related fracture during their lifetime. In the United States, the total cost of osteoporosis in terms of medical care, nursing home fees, and loss of income is estimated to exceed \$13 billion.

Osteoporosis is a major health problem in many parts of the world, and its scope will increase as the population ages. One in two Caucasian women will experience a bone fracture due to osteoporosis in her lifetime. Indian women from low socioeconomic group in community and other area consume diets that have inadequate calcium coupled with too few calories' proteins, micronutrients.

Hospital data and other researchers suggest that these women have osteoporosis hip fracture at a much earlier age than Western women. According to W.H.O, osteoporosis is second only to cardiovascular disease as global health care problem.

## Methodology

### Research Approach

The research approach indicates the procedure for conducting the study. It guides the researcher what to research, whom to analysis and interpret the results.

In the present study the investigator wished to assess the gain in knowledge of middle aged women after the administration of structured teaching programme on osteoporosis, hence the research approach adopted for this study was an evaluative approach. Evaluative approach helps to explain the effect of independent variable on the dependent variable.

### Research Design

The research design refers to the researchers over all plans for obtaining answers to the research questions and for testing the research hypothesis.

The research designs provide an overall or blueprint to carry out the study. The research design used in this study is the Quasi experimental -one group pre test post test design to assess the effectiveness of STP on osteoporosis.

**Table 1:** Schematic Representation of Research Design.

Group	Pre test	Intervention	Post test
50 middle aged women.	O <sub>1</sub>	X	O <sub>2</sub>

### Keys

X-Structured Teaching Programme on osteoporosis.

O<sub>1</sub> - Pre test on knowledge of middle aged women regarding osteoporosis.

O<sub>2</sub> - Post test on knowledge of middle aged women regarding osteoporosis.

### Setting of the Study

Setting is the general location and condition in which data collection takes place in study.

*Population:* The population is all elements that meet certain criteria for inclusions in a study. The requirement of defining population for research project arises from the need to which the result of the study can be applied.

The population for the study was the middle aged women in Bettahalsur Community Area, Bangalore.

### Sample and Sampling Technique

Sample is the small proportion of population selected for observation and analysis. Sampling is the process of selecting representative units of a population for study in a research process. In the present study non- probability sampling technique with convenient sampling was used to select middle aged women in Bettahalsur Community Area, Bangalore.

### Sample Size

Sample size consists of 50 middle aged women in Bettahalsur Community Area, Bangalore.

### Criteria for Selection of the Sample

#### Inclusive Criteria

The study will include:

1. Women above 35 years of age.
2. Middle aged women who are willing to participate in the study.
3. Middle aged women who are available during data collection.
4. Middle aged women who are able to speak and read Kannada or English.

### Exclusion Criteria

The study will not include:

1. Middle aged women who are not willing to participate during data collection.
2. Middle aged women who are not able to speak and read Kannada or English.
3. Middle aged women who have any medical problems.
4. Women with hysterectomy.

### Description of the Tool

The tool was organized as follows.

*Part I:* Socio demographic variables of the middle aged women. This dealt with demographic data which was used to collect the characteristics of the samples with an instruction to participants to write an opinion of the correct answer in the box provided with each question

*Part II:* Contains Section A,B,C and D, which mention the Knowledge Questionnaire on concept, causes risk factors, clinical manifestations, complications and prevention of osteoporosis. Consists of the structured knowledge Questionnaire with 30 items based on the, concept of bones, definition, risk factors, causes, clinical manifestations, complications and prevention of osteoporosis.

*Part III:* Structured Teaching Programme of osteoporosis.

**Table 2:** Assessment of Variables.

Assessment of Variables	Number of Questions	Incorrect Response	Correct Response
Concept and types of osteoporosis	8	0	1
Causes and risk factors of Osteoporosis.	7	0	1
Clinical manifestation, diagnosis and complication of Osteoporosis.	4	0	1
Prevention of Osteoporosis	11	0	1

This contains multiple choices and yes/no types. A score value of 1 was allotted to each correct response and for wrong response zero was awarded. Thus there were 30 maximum obtainable scores. The level of knowledge was categorized based on the percentage of scores obtained.

The score was converted into percentage by using following formula.

$$\text{Percentage} = \frac{\text{Obtained score}}{\text{Total score}} \times 100$$

**Table 3:** Scoring Key for the Knowledge on Prevention of Osteoporosis among Middle Aged Women.

Score	Knowledge of Patients Undergoing Abdominal Surgery
<50%	Poor
51- 75%	Average
>75%	Good

### Validation of the Tool

When an instrument is valid, it truly reflects concept, it is supposed to measure. Content validity of the instruments was assessed by obtaining opinion from 2 Medical experts and 3 community health nursing experts. As per the suggestions of the experts the investigator had made necessary modification in the tool with the permission of the guide.

**Table 4:** Distribution of Demographic Variablestable.

Demographic variables	Frequency	Percentage (%)
<b>Age</b>		
40-50	17	34%
50-60	16	32%
60-70	15	30%
70 Above	2	4%
<b>Educational status</b>		
Pre graduate	24	48%
graduate	5	10%
postgraduate	11	22%
others	10	20%
<b>Occupation</b>		
Job holder	20	40.0
House wife	30	60.0
<b>Monthly income</b>		
Below 5000	2	4.0
5000-10000	29	58.0
10000-20000	17	34.0
above 20000	2	4.0
<b>Food pattern</b>		
Vegetarian	16	32.0
Non vegetarian	34	68.0
<b>Any family history of fractures without any accident or injury</b>		
present	2	4.0
absent	48	96.0
<b>Mass media</b>		
Academic education	2	4.0
Contact with any health personnel	14	28.0
Any other	1	2.0

## Method of Data Collection

### Plan for Data Analysis

The plan for data analysis includes both inferential and descriptive statistics. The collected data were statistically analyzed and tabulated by applying descriptive statistics such as mean and standard deviation, and inferential statistics such as student paired 't' test, chi-square test and Karl Pearson correlation coefficient. The 't' test was used to find out the differences in the scores of knowledge between pre test and post test. The chi-square was used to find out the association between demographic variables with knowledge in the post test. The findings of the study were presented in the form of tables and figures.

## Results and Analysis

### Section II

**Table 5:** Pre Test Knowledge Score on Different Aspects of Osteoporosis among Middle Aged Women. N=50

Level of knowledge	Pre test knowledge score							
	Concept of the osteoporosis		Causes and risk factors		Manifestation complications and diagnosis		Preventive practice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Inadequate	34	68%	28	56%	41	82%	37	74%
Moderately adequate	13	26%	17	34%	9	18%	10	20%
Adequate	3	6%	5	10%	-	-	3	6%

The above tables of pre-test scores represents the frequency and percentage, then it is divided in to 3 levels inadequate , moderately adequate, adequate on aspects of knowledge of the concept, causes ,risk factors, manifestations, complications, diagnosis and prevention of osteoporosis.

Regarding the concept 34 (68%) were inadequate, 13(26%) were moderately adequate, 3(6%) was adequate.

Regarding the causes and risk factors 28 (56%) were inadequate, 17(34%) were moderately adequate, 5(10%) was adequate.

Regarding the manifestations, diagnosis and complications 41 (82%) were inadequate, 9(18%) was moderately adequate.

Regarding the prevention 37 (74%) were inadequate, 10(20%) were moderately adequate, 3(6%) was adequate.

### Section III

**Table 6:** Post Test Knowledge Score on Different Aspects of Osteoporosis among Middle Aged Women.

Level of knowledge	Post test knowledge score							
	Concept of the osteoporosis		Causes and risk factors		Manifestation complications and diagnosis		Preventive Practice	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%
Inadequate	21	42%	-	-	-	-	-	-
Moderately adequate	10	20%	-	-	-	-	-	-
Adequate	19	38%	50	100%	50	100%	50	100%

The above tables of post-test scores represents the frequency and percentage, then it is divided in to 3 levels inadequate, moderately adequate, adequate on aspects of knowledge of the concept, causes ,risk factors, manifestations, complications, diagnosis and prevention of osteoporosis.

Regarding the concept 21 (42%) were inadequate,

10(20%) were moderately adequate, 19(38%) was adequate.

Regarding the causes and risk factors 50 (100%) was adequate.

Regarding the manifestations, diagnosis and complications 50 (100%) was adequate.

Regarding the prevention 50 (100%) was adequate.

#### Section IV

**Table 7:** Comparison of Pre and Post Test Knowledge Scores Regarding Prevention of Osteoporosis among Middle Aged Women before and after Administration of Structured Teaching Programme.

Area of Knowledge	Pre-test		Post-test		Student's paired t-test	'p' value
	Mean	SD	Mean	SD		
Concept of the osteoporosis	3.2400	.79693	4.3400	1.36442	5.276	< 0.001(s)
Causes and risk factors	4.4600	1.50116	7.3400	.47852	13.052	< 0.001(s)
Manifestation, complications and diagnosis	1.4200	.99160	3.7600	.43142	14.567	< 0.001(s)
Preventive practice	5.1800	2.15416	10.8200	.80026	19.764	< 0.001(s)

N=50

**Table 8:** Determination of Overall Means Knowledge Score Before and after Structured Teaching Programme.

Knowledge	No. of Patients	Pre-test	Post-test	Mean of differences	paired t-test
Overall Knowledge score	50	14.300	26.260	11.96 (SD=3.9277)	21.532

N=60

HS, p-0.000, df=49

The given table determines the overall mean knowledge score before and after Structured Teaching Programme. The overall knowledge score in pre test is 14.300 and post test score is 26.260. The paired t-test score(21.532) shows that the Structured Teaching Programme has effectiveness on increasing knowledge of middle aged women regarding osteoporosis and its prevention.

**Table 9:** Comparison of Average Knowledge Score Percentage on Prevention of Osteoporosis before and after Administration of Structured Teaching Programme.

Area of Knowledge	Pre-test %	Post-test %	% Enhancement
Concept of the osteoporosis	54	72.33	18.33
Causes and risk factors	55.75	91.75	36
Manifestation, complications and diagnosis	35.50	94	58.50
Preventive Practice	43.16	90.17	47.01
Over all	47.67	87.53	39.86

N=50

The above table shows the association between socio-demographic variables and the pre test knowledge of middle aged women. Educational status (Chi-square value=4.920) and Occupational (Chi-square value=5.048) are significantly associated with their pre test Knowledge score. These types of association are statistically significant and it was calculated using Pearson chi square test.

H2: There will be an association between knowledge scores with their selected socio-demographic variables.

It is revealed that there is significant association between the post test knowledge score with education (Chi-square =4.920) and occupation (Chi-square value=5.048).The association was calculated using Chi square test. Therefore the Research hypothesis H2 has been accepted.

#### Discussion

For this study the data was obtained from middle aged women at Bettahalsur regarding prevention of osteoporosis. In order to achieve the objectives of the study a pre experimental (single group pre

**Table 10:** Association of Pre Test Level of Knowledge on Prevention of Osteoporosis among Middle Aged Women with Selected Demographic Variables of Students.

N=50					
Demographic variables	Frequency	Mean	SD	Mann Whitney/ Kruskal wallis test	'p' Value
<i>Age</i>					
35-40	17	13.5294	2.26709		
40-45	16	13.8125	2.78613	4.436	0.218 NS
45-50	15	16.1333	5.16674		
50 Above	2	11.0000	1.41421		
<i>Educational status</i>					
Pre Graduate	24	12.2500	3.92594	4.920	0.046S
Graduate	5	15.4000	1.48324		
Postgraduate	11	15.9273	3.22116		
Others	10	13.6000	2.98887		
<i>Occupation</i>					
Job holder	20	15.2500	3.50751	5.048	0.025
House wife	30	13.6667	3.69840		
<i>Monthly income</i>					
Below 5000	2	11.5000	2.12132	2.880	0.410 NS
5000-10000	29	14.5517	4.33908		
10000-20000	17	14.0588	2.53650		
above 20000	2	15.5000	2.12132		
<i>Food pattern</i>					
Vegetarian	16	13.6250	2.65518	0.243	0.622 NS
Non vegetarian	34	14.6176	4.06026		
<i>Any family history of fractures without any accident or injury</i>					
Present	2	14.0000	2.82843	0.010	0.920 NS
Absent	48	14.3125	3.72545		
<i>Sources of information regarding osteoporosis</i>					
Mass media	33	14.3030	3.82005	2.742	0.433 NS
Academic education	2	14.5000	3.53553		
Contact with any health personnel	14	13.5714	2.47182		
Any other	1	24.0000	-		

test post test) design was adopted and 50 middle aged women were selected by using convenient sampling, fulfilling the inclusion and exclusion criteria.

The subjects were evaluated using structured questionnaire for socio demographic data and knowledge questionnaire on osteoporosis H1. The mean post test knowledge scores of middle aged women regarding prevention of osteoporosis will be significantly higher than that of the mean pre test knowledge score. It is revealed that there is significant difference between the pre test and

post test knowledge score. Comparison was done using student's paired 't' test and the value is  $t=21.532$ , which is significant. Therefore the research hypothesis H1 has accepted.

H2. There will be significant association between pre test and post test knowledge and selected demographic variables of middle aged women such as age, education, occupation, income, dietary habits, family history and sources of information. It reveals that out of several demographic variables the educational status and occupational status are significantly associated with the pre test

knowledge scores. Association with education status (Chi-square=4.920, P=0.046), association with occupational status (Chi-square=5.048, P=0.025) are significantly associated with their pre test scores. Therefore the Research hypothesis H2 has been accepted.

## Conclusion

The findings of the study revealed that there was a marked increase in overall knowledge level scores (87.53) of post test than the pre test (47.67). The overall improvement in the mean score was with the paired 't' value 21.532 which was highly significant at  $p < 0.001$ . Thus, the structured teaching programme was effective in improving the knowledge of the mothers.

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I, **Dinesh Kumar Kashyap**, hereby declare that the particulars given above are true to the best of my knowledge and belief.

Sd/-

**(Dinesh Kumar Kashyap)**

# Knowledge Regarding Cervical Cancer Among Women at Selected Setting

C Nallathai<sup>1</sup>, M Hemamalini<sup>2</sup>, S Rajathi<sup>3</sup>

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## Abstract

**Introduction:** Cervical cancer is a cancer arising from the cervix. It due to an abnormal growth of cells that have the ability to invade or spread to the other parts of the body. A descriptive study was conducted to assess the knowledge regarding cervical cancer among women. **Methods:** The research approach used in this study was quantitative approach. The research design was non experimental descriptive research design and 50 samples were selected by non probability sampling technique. The study setting was Nandhivaram village, Guduvancheri. **Results:** the study results showed that the knowledge level among women were inadequate knowledge (54%), moderate knowledge (40%), adequate knowledge (6%) regarding cervical cancer.

**Keywords:** Cervical cancer; Knowledge; Women.

## Introduction

Cervical cancer is the second leading causes for women death in the world. Cervical cancer is arising from the cervix. It is due to abnormal growth of cells that have the ability to invade or spread to other parts of the body. The current scenario of cervical cancer is fifty lakhs of death due to cervical cancer and it leads to increase of women mortality rate.<sup>1</sup>

Human papilloma virus (HPV) is a very common virus which is the most important etiological agent in the development of cervical cancer and pre cancer. HPV is also implicated in other cancers, including head and neck cancer, vulval, penile and anal cancer.<sup>2</sup> Certain HPV sub types are linked with cervical cancer linked with cervical cancer and pre cancer. In particular HPV 16 and 18 known to cause 70% of all cervical cancers as well as cancers of

anus, vulva, vagina and throat.<sup>3</sup> Human papilloma virus infection (HPV) causes more than 90% of cases. Most people who have had HPV infections, however, do not develop cervical cancer. Other risk factors include smoking, a weak immune system, birth control pills, starting sex at a young age, and having many manysexual partners but these are less important. Cervical cancer typically develops from precancerous changes over 10 to 20 years. About 90% of cervical cancer cases are squamous cell carcinomas, 10% are adenocarcinoma.<sup>4</sup>

The early symptoms are skin wart, genital warts and other minor changes in the body. In many cases the cervical cancer is asymptomatic, but later it shows the major complications such as menstrual disturbance, infertility, abdominal pain, unexplained fatigue, abdominal bloating and even

it cause a death. External genital warts, also known as condylomata acuminata, are extremely common, with between 500,000 to one million new cases diagnosed each year in the United States alone. To date, more than 120 distinct subtypes of human papillomavirus have been identified. Human papillomavirus types 6 and 11 rarely give rise to cervical cancers, but are responsible for 90 percent of the cases of genital warts.<sup>5</sup> While bleeding after sex may not be serious, it may also indicate the presence of cervical cancer. Burden of the disease is enormous in developing countries, where mortality rate is 10-30 per 10,000 women population as compared to developed countries.<sup>6</sup>

### Statement of the Problem

A Study to assess the knowledge regarding cervical cancer among women (18-49 years) at Nandhivaram village, Kanchipuram District.

### Objectives

To assess the level of knowledge on cervical cancer among the women (18-49 years).

To associate the level of knowledge on cervical cancer among the women (18-49 years) with their selected demographic variables.

### Hypothesis

H<sub>0</sub>: There will be no significant association on knowledge on cervical cancer among women in the selected demographic variables.

### Methodology

Quantitative research approach and non experimental descriptive research design was used for the study. After obtaining a prior permission from the Nandhivaram village counselor. The study was conducted in a Nandhivaram village. 50 women were selected by non probability convenient sampling technique. The data was collected by demographic variables and used of self structured questionnaire to assess the knowledge level on cervical cancer among women. The data was collected from the women for 2 days from 8.00 am – 12.00 pm. The descriptive statistical was Frequency and percentage distribution were used to determine demographic variables and to assess the level of knowledge among women regarding cervical cancer. Inferential statistics was chi square test were used to association the level of knowledge on cervical cancer among women with their demographic variables.

### Results and Discussion

Data was coded and entered in the excel sheet and analysed using the descriptive and inferential statistics. Distribution of demographic variables and level of knowledge were described using the mean and percentage values and the association of knowledge with the selected demographic variables was found using the chi square.

**Table 1:** Frequency and percentage distribution of the demographic variables.

Demographic Variables	Frequency	Percentage
<b>Age (in Years)</b>		
18 - 29 years	19	38%
30 - 39 years	18	36%
40- 49 years	13	26%
<b>Marital Status</b>		
Married	47	95%
Widow	03	6%
Divorced	0	0%
<b>Educational Status</b>		
No formal education	14	28%
Primary and secondary education	25	50%
Degree	11	22%
<b>Occupation</b>		
Employee	28	56%
Unemployee	22	44%
<b>Religion</b>		
Hindu	33	66%
Christian	12	24%
Muslim	5	10%
<b>Number of Children</b>		
One	11	22%
Two	32	64%
Three	7	14%
<b>Menstrual Cycle</b>		
Regular cycle	47	94%
Irregular cycle	3	6%
<b>Age of Marriage</b>		
14 - 20 year	19	38%
21 - 25 year	25	50%
26 - 30 year	6	12%
<b>Family History of Cervix Cancer</b>		
yes	2	4%
no	48	96%
<b>Source of Health Information</b>		
Mass media	0	0
Health care	12	24%
None	38	76%

Shows that demographic information of women who participate in this study. According to the age distribution, higher proportion 19(38%) belongs the year 18-29 years. According to marital status 47(94%) married. According to educational status 25(50%) primary and secondary education. According to occupation 28(56%) employee.

According to religion 33(66%) Hindu. According to number of children 32(64%) two children. According to menstrual cycle 47(94%) have a regular menstrual cycle. According to age of women at marriage in year 25(50%) 21-25 years. According to family history of cervix cancer 48 (96%) no family history of cervix cancer. Source of health information 38(76%) none of information.

The Study findings revealed that (54%) of women had inadequate knowledge, (40%) of women had moderate knowledge and (6%) women had adequate knowledge on cervical cancer.

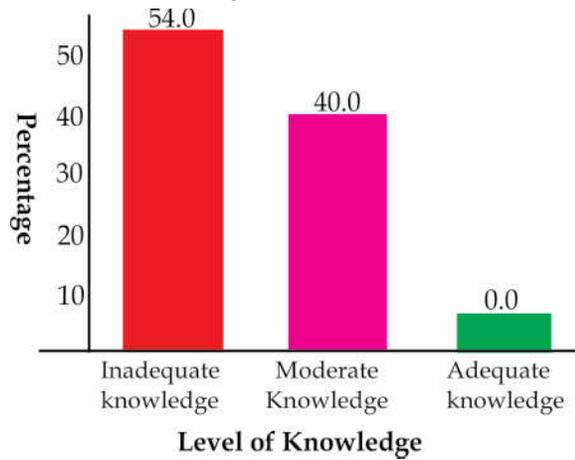


Fig. 1: Distribution of level of knowledge on cervical cancer.

There was a significant association between level of knowledge with age, menstrual cycle, family history of cervical cancer and source of health information and hence null hypothesis was rejected for age, menstrual cycle, family history of cervical cancer and source of health information and accepted for all other demographic variables such marital status, educational status, occupation, religion, number of children, age of marriage

A similar was conducted by, Tongue liu (2014), the conducted a study to assess the knowledge and attitude towards cervical cancer screening among rural women in Easter China, cervical cancer remains a major problem in Chinese women in especially in rural area they conducted a cross sectional study on rural women. The using multi stage sampling technique. Data were collected using a self administered questionnaire. The questionnaire includes specific section to test

the participants knowledge, attitude on screening on cervical cancer. Data analysis was done using descriptive statistics. The total sample was 495. The results were, the approximately half 51.9% of the study sample were classified with the higher knowledge level, only 67.3% of participants indicated that undergone cervical cancer screening.<sup>7</sup>

## Conclusion

The study finding concluded that (54%) samples had inadequate knowledge, (40%) samples had moderate knowledge and (6%) had adequate knowledge on cervical cancer. Hence, the study concluded that most of the women had inadequate knowledge regarding cervical cancer. Hence the community health nurse planned to create a awareness program and health camp regarding cervical cancer to promote health, to prevent the illness, to restore health, to rehabilitate the defects and reduce the women mortality rate due to cervical cancer. It help the women to ensure the healthy life.

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Sd/-

**(Dinesh Kumar Kashyap)**

# Study to Identify the Causes for Increase in the Incidence of CAUTI and to Implement Planned Teaching

Nikhil Nandaragi<sup>1</sup>, Sheeba Minerva Salins<sup>2</sup>

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## Abstract

**Background:** Urinary tract infection (UTI) is among the common bacterial infections worldwide and approximately 80% are associated with a urinary catheter. Catheter-associated UTI (CAUTI) has been associated with increased mortality, morbidity, length of hospital stay and the best way of CAUTI prevention is to adhere to recommended guidelines on infection control in the use of a urinary catheter. Complications associated with CAUTI cause discomfort to the patient, prolonged hospital stay, and increased cost and mortality.

**Aim:** The aim of this study is to assess the knowledge of nurses towards risk contributing to CAUTI and reduce the incidence of CAUTI.

**Methods:** An interventional study was performed to analyze the prevention of Catheter-associated Urinary tract infection. A prospective questionnaire was developed specially for this study. The questions regarding the indication for catheterization and measures for prevention of CAUTI were taken as per Centers for Disease Control (CDC) guidelines.

**Results:** The overall data for HAI was collected, out of which the incidences of CAUTI was high.

**Conclusion:** The conclusion of this study is, the CAUTI incidence is reduced through QCC (Quality Control Circle), providing a useful reference for the prevention of CAUTI and the development of medical quality improvement activities. There was a statistically significant gain in the knowledge of the nurses regarding the prevention of the CAUTI.

**Keywords:** UTI (Urinary Tract Infection); CAUTI (Catheter-associated Urinary Tract Infection).

## Introduction

Catheter-associated urinary tract infections (CAUTI) have been described in the scientific literature as one of the most common device-associated healthcare-associated infections (DA-HAI) developed by patients hospitalized in the intensive care unit (ICU). CAUTI acquired by critically ill patients has been associated with

prolonged hospital length of stay (LOS), bacterial resistance, morbidity, and increased healthcare costs. Catheter associated urinary tract infections (CAUTIs) occur with high incidence if preventive protocols are not maintained.

The indwelling urinary catheter is an essential part of modern medical care and a variety of different indwelling urinary catheters are used

for various purposes. Catheter associated urinary tract infections constitute 40%-50% of all hospital infections. Due to these infections, there is increase in the hospital stay of the patient along with increase in the use of higher antibiotics.

The overall cost of health care also increases. Multiple risk factors can affect the occurrence of CAUTI. These include quality of aseptic technique, duration of catheterization, appropriate hand hygiene and care of catheter. The most common bacteria causing CAUTIs in hospitalized patients includes E. coli, K. pneumoniae, P. aeruginosa, E. facials, and Candida species.

**Methods**

A test was conducted to check the knowledge on the prevention of CAUTI, in which 275 nurses took participation out of 305 nurses in the hospital. After the evaluation of the test the outcome was, 186 nurses were not able to clear the test.

For the nurses who were not able to clear the test, we conducted a teaching programme to implement the measures to prevent CAUTI and to help the nurses to improve in the aseptic procedure for insertion of catheters. After the teaching program, re-test was conducted for the nurses who did not clear the test.

In the re-test, most of the nurses had significant gain in the knowledge and were able to clear the test. After the test, the hospital staff nurses were asked to look into the prevention measures to reduce the incidences of the CAUTI.

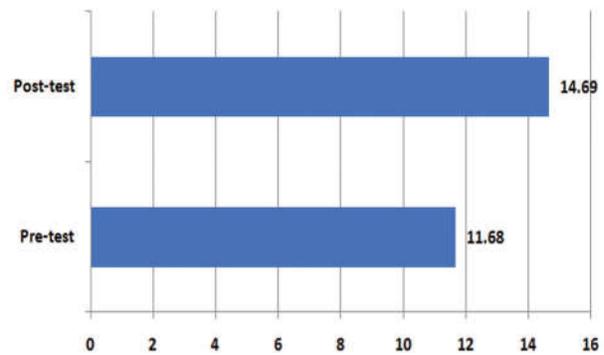
**Results**

As per the hospital bundle checklist for CAUTI, a survey was carried out to check if the care factor were documented. The test revealed that among 275 nurses, 32.85% had a very good level of knowledge, 60.64% had a moderate level of knowledge on the prevention of the incidents of CAUTI.

**Table 1:** Comparison between pre-test and post-test mean scoring.

	Group	N	Mean scores	Std. Deviation	P Test
<b>Total Score</b>	Pre-test	275	11.68	1.704	0.001*
	Post-test	186	14.69	1.099	

Paired sample t test \* Statistically significant



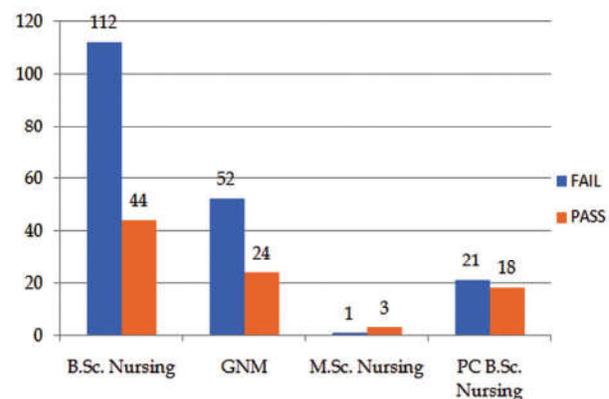
**Fig. 1:** The mean score at the pre-test was 11.68±1.704 which changed into 14.69±1.099 at post-test. The difference between pre-test and post-test was found to be statistically significant (p=0.001).

Comparison between the results of the knowledge assessment at pre-test with respect to qualification.

**Table 2:**

	Result		Total	P Value
	Fail	Pass		
<i>Qualification</i>				
B.Sc. Nursing	112	44	156	0.045*
GNM	52	24	76	
M.Sc. Nursing	1	3	4	
PC B.Sc. Nursing	21	18	39	
Total	186	89	275	

Fisher exact test \* Statistically significant



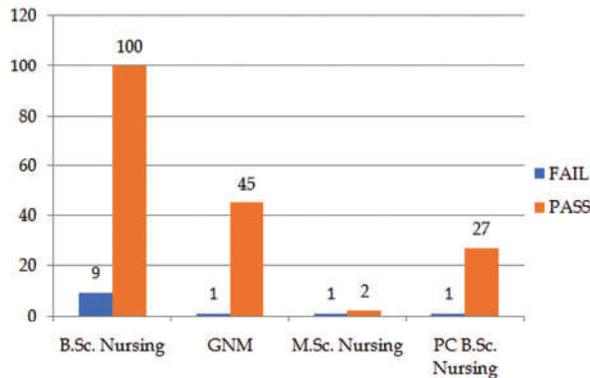
**Fig. 2:** There was a statistically significant difference between the knowledge assessment results with respect to the qualification at pre-test. (p=0.045).

Comparison between the results of the knowledge assessment at post-test with respect to qualification.

**Table 3:** There was no statistically significant difference between the knowledge assessment results with respect to the qualification at post-test. (p=0.106).

Qualification	Result Frequency		Total	P Value
	Fail	Pass		
B.Sc. Nursing	9	100	109	0.106
GNM	1	45	46	
M.Sc. Nursing	1	2	3	
PC B.Sc. Nursing	1	27	28	
Total	12	174	186	

Fisher exact test \* Statistically significant



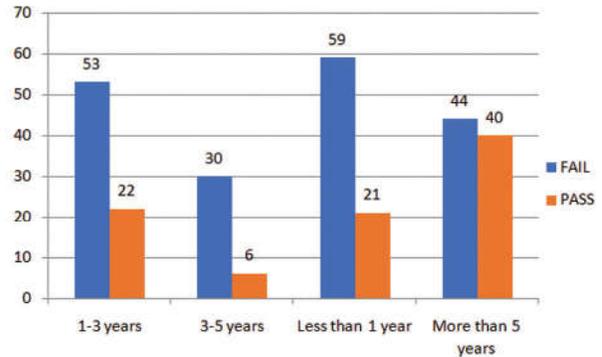
**Fig. 3:** There was no statistically significant difference between the knowledge assessment results with respect to the qualification at post-test. (p=0.106).

Comparison between the results of the knowledge assessment at pre-test with respect to years of experience

**Table 4:** There was a statistically significant difference between the knowledge assessment results with respect to the years of experience at pre-test. (p=0.001).

Year of experience	Result Frequency		Total	P Value
	Fail	Pass		
1-3 years	53	22	75	0.002*
3-5 years	30	6	36	
Less than 1 year	59	21	80	
More than 5 years	44	40	84	
Total	186	89	275	

Chi square test \* Statistically significant



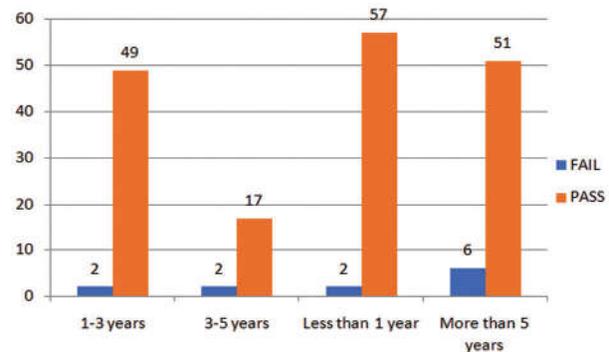
**Fig. 4:** There was a statistically significant difference between the knowledge assessment results with respect to the years of experience at pre-test. (p=0.001).

Comparison between the results of the knowledge assessment at post-test with respect to years of experience.

**Table 5:** There was no statistically significant difference between the knowledge assessment results with respect to the years of experience at post-test. (p=0.315).

Year of experience	Result-Frequency		Total	P Value
	Fail	Pass		
1-3 years	2	49	51	0.315
3-5 years	2	17	19	
Less than 1 year	2	57	59	
More than 5 years	6	51	57	
Total	12	174	186	

Fisher exact test \* Statistically significant



**Fig. 5:** There was no statistically significant difference between the knowledge assessment results with respect to the years of experience at post-test. (p=0.315).

## Discussion

The aim of the study is to check the knowledge level of the nurses on the reduce the incidents of the CAUTI. The most important preventive measure for decreasing the incidence of CAUTI is limiting catheter use. The lack of knowledge

regarding various indications itself points toward increased catheter usage. To reduce the incidence of CAUTI can be achieved by frequent visits to the catheterized patients by the infection control team members at different timings. The major reason includes prolonged catheterization as a major risk factor for the development of CAUTI. A complete knowledge regarding all effective preventive measures would help them prioritize the care of the urinary catheters.

The incidence of CAUTI increases with a prolonged catheter retention time, hence limiting unnecessary catheterization and the timely removal of the catheter are the most effective measures to prevent CAUTI.

### Conclusion

All the health care personnel including the doctors should have regular training regarding prevention of CAUTI. Infection prevention programs in every hospital must develop, implement, and monitor policies and procedures to minimize infections associated with the use of urinary catheters. The CAUTI incidence is reduced through QCC (Quality Control Circle), providing a useful reference for the prevention of CAUTI and the development of medical quality improvement activities.

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### Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. *J Oral Pathol Med* 2006; 35: 540-7.

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### Corporate (collective) author

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