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"A descriptive study to assess the knowledge of staff nurses regarding central line associated blood stream infections(CLABSI) with a view to develop information booklet on prevention of (CLABSI) in selected hospital of Srinagar(J&K)."

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Abstract:
Central lines associated blood stream infections (CLABSIs), are important cause of increased length of hospital stay, mortality and cost among hospitalized patients. Patients with central venous access devices are at highest risk for central line associated blood stream infections for a variety of reasons such as frequent manipulation of the catheter, access required for an extended period of time, and urgent placement of some catheters without regard to strict aseptic technique. Nurses in ICU have a vital role in reducing catheter related blood stream infection if they are well educated to use strategies to decrease central venous catheter infection rates which are based on the Center for Disease Control and prevention guidelines (CDC) to improve patient's outcomes. Aim: The aim of the study was to assess the knowledge of staff nurses regarding central line associated blood stream infections (CLABSI) with a view to develop information booklet on prevention of central line associated blood stream infections (CLABSI) in selected hospital of Srinagar(J&K) and to find out association between knowledge scores of staff nurses with their selected demographic variables such as(age, gender, educational qualification, years of experience in ICU and in-service education attended).Materials and methods: A descriptive study was conducted to assess the knowledge of staff nurses regarding central line associated blood stream infections(CLABSI) with a view to develop information booklet on prevention of (CLABSI) in selected hospital of Srinagar(J&K).". The study was conducted in medical and surgical intensive care unit of SMHS hospital Srinagar. The sample was selected by purposive sampling technique. The sample size was 30. Self Structured questionnaire was used to assess the knowledge of staff nurses and information booklet was given after data collection. Results and Conclusion: Findings of the study revealed that most of the study subjects i.e. 21(70%) had inadequate knowledge regarding central line associated blood stream infections. The (Mean±SD) knowledge score was (12.93±4.25) . The association of demographic variables with knowledge scores was analyzed by using chi square test, the study revealed that there was no significant association between the knowledge score and selected demographic variables (age gender, educational qualification, years of experience in ICU and in-service education attended). Hence the Null hypothesis which states that "there is no significant association between knowledge score regarding central line associated blood steam infections with their selected demographic variables (age, gender, educational qualification, years of experience in ICU, in-service education attended,)" was accepted. Thus it can be concluded that most of the staff nurses in medical and surgical intensive care unit of selected hospital of Srinagar have inadequate knowledge regarding CLABSI.

Keywords: Central line associated blood stream infections, Staff nurses and knowledge.

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INTRODUCTION

A Central venous catheter (CVC), also known as central line is long ,soft, thin hollow tube introduced into a large vein ,in the neck (internal jugular vein), chest (sub-clavian or axillary vein), groin (femoral vein), or through veins in the arms.[1]

This catheter can be used to administer medication as long term intravenous antibiotics, it usually remains in place for a longer period than other venous access devices, especially when the reason for their use is long standing(such as total parenteral nutrition in a chronically ill person), pain medications, drugs that are prone to cause phlebitis in peripheral veins such as potassium chloride, chemotherapy, dialysis and monitoring of central venous pressure in acutely ill people to quantify fluid balance, obtain blood tests (specifically the central venous oxygen saturation).

A central line associated blood stream infection is a laboratory confirmed blood stream infection in a patient who had a central line within 48 hour period before the development of the blood stream infection and that is not related to an infection at another site.[2] Central line associated blood stream infections (CLABSIs),are important cause of increased length of hospital stay, mortality and cost among hospitalized patients.

The incidence of central line associated blood stream infection among adult ICUs patients ranged from 1.6 to 44.6 cases per thousand central line days while neonatal ICU patients ranged from 2.6 to 60.0 cases per thousand central line days in addition the mortality rate ranging from 2.8 to 9.5.[3]

Several strategies have been proposed to prevent CLABSIs including hand hygiene, aseptic technique, catheter securement devices and anti microbial impregnated catheters. Prevention of catheter related blood stream infections among patients admitted into Intensive Care Unit will improve patient's outcomes and decrease admission duration in the hospital.

Need of the study:

About 250000 blood stream infections related to central venous catheter placement develop in patients in U.S Hospitals annually. Most catheter related blood stream infections develop in patients in Intensive Care Units and result in an estimated 90000 deaths a year.

Sarah et al: 2007, conducted a study to examine the extent to which U.S acute care Hospitals have adopted recommended practices to prevent central venous catheter related blood stream infections. A survey of infection control coordinators was conducted at a National Random sample of non-federal hospitals with an Intensive Care Unit and more than 50 hospital beds(n=600)and at all department of veterans affairs medical centers(n=119). Primary outcomes were regular use of 5 specific practices and the composite approach for preventing catheter related blood stream infections. The overall survey response rate was 72 % (n=516). The authors concluded that the most U.S Hospitals are using maximal sterile barrier precaution and chlorhexidine gluconate, two of the most strongly recommended practices to prevent catheter related blood stream infections[4].

Nurses in ICU have a vital role in reducing catheter related blood stream infection if they are well educated to use strategies to decrease central venous catheter infection rates which are based on the Center for Disease Control and prevention guidelines (CDC) to improve patient's outcomes.

The findings of the current study will provide the base of knowledge for ICU Nurses on central venous catheter management and ensure the highest standards of nursing management that is aiming at improving patients outcomes. It is hoped that this effort might help nurses to improve their practice in assessment, planning, implementation and evaluation of such patients which will reflect on shortening patient's length of stay as well as decreasing hospital costs. Moreover it might generate an attention and motivation for further researches into this area.

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Statement of the problem:

"A descriptive study to assess the knowledge of staff nurses regarding central line associated blood stream infections(CLABSI) with a view to develop information booklet on prevention of Central line associated blood stream infections (CLABSI) in selected hospital of Srinagar(J&K)."

Objectives

1. To assess the existing level of knowledge of staff nurses regarding central line associated blood stream infections.

2. To develop information booklet on prevention of central line associated blood stream infections.

3. To associate knowledge of staff nurses regarding central line associated blood stream infections with their selected demographic variables such as age, gender, educational qualification, years of experience in ICU, in-service education attended.

Hypothesis

H01: There is no sufficient knowledge of staff nurses regarding central line associated blood stream infections.

H1 There is sufficient knowledge of staff nurses regarding central line associated blood stream infections.

H02: There is no significant association between knowledge of staff nurses regarding central line associated blood stream infections with their selected demographic variables such as age, gender, educational qualification, years of experience, in-service education attended.

H2: There is significant association between knowledge of staff nurses regarding central line associated blood stream infections with their selected demographic variables such as age, gender. Educational qualification, years of experience, in-service education attended.

Review of literature

1. **Abeer E-Sol, Amina I. Badawy(2017)[5]** Conducted a study to assess the effect of a Designed Teaching Module Regarding Prevention of Central-Line Associated Blood Stream Infection on ICU Nurses' Knowledge and Practice in Saudi Arabia. A quasi-experimental research design was used to achieve the study aim and pre/post-test was used. A convenience sample of 44 nurses working in Intensive Care was taken, the findings revealed that mean total knowledge score of studied sample was 5.09±76 However, the mean score of total knowledge increased immediately after the teaching module and continued to be high at the next evaluation sessions (9.86±.69, 9.16±.49 and 9.66±.56 respectively) (statistically significant, $p<0.001$).

2. **Barbosa CV, Canhestro MR, Marinho BR et-al(2017)[6]** Conducted a study to evaluate the knowledge of the nursing team about good practices on maintenance and dressing of central venous catheter (CVC) in accordance with the institutional protocol in Brazil. A quantitative, descriptive, exploratory, cross-sectional study with 107 nursing professionals in hospitalization, adult intensive therapy and transplant units were taken. Findings revealed that 56% of the participants had less than 75% of correct answers, characterizing deficient knowledge.

3. **Kurian R N, John N (2017)[7]** Conducted a Study to Assess the Knowledge of Staff Nurses regarding Central Line Associated Blood Stream Infection (CLABSI) with a View to Develop Information-Booklet on Prevention of CLABSI in a Selected Hospital of Delhi .The research approach adopted for the study was quantitative approach and the research design was descriptive survey design. The tool for data collection was a structured knowledge questionnaire and 50 staff nurses working in HAHC Hospital, New Delhi, were selected using convenient sampling technique. The findings of the study concluded that majority (96%) of staff nurses had inadequate knowledge and only 4% had adequate knowledge.

4. **Pushpakala K.J, Ravinath. A (2014)[8]** Conducted a study to assess the Effectiveness of Self Instructional Module on Central Venous Catheter Care among ICU Nurses in Chettinad Hospital and Research institute, Tamil Nadu, India. An Evaluative approach was used for the present study. Using purposive sampling

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technique 50 samples were selected . The tool used was self administered questionnaire. The collected data was analyzed using descriptive and inferential statistics. The findings of the study revealed a significantly increase in the staff nurses knowledge score after administration of self instructional module. The mean pre test score was 9.80 % and the mean post test score was 16.58 % and the difference between pre test and post test knowledge score was 6.78%.

5. **Deshmukh M, Shinde M (2014)**[9] Conducted a study on Impact of Structured Education on Knowledge and Practice Regarding Venous Access Device Care among Nurses in karad India The quasi-experimental study with pre-test-post-test design was used. The sample size for the study was 60. Findings revealed that the maximum of 43.33 % of samples scored between 0-13 (Poor) in the knowledge pre-test before structured education to the experimental group and 65 % samples scored between 18-25 (Good) in the post-test after structured to experimental group. In control group, the mean score of knowledge score was increased from 15.3 to 16.4 in the post test. In Experimental group of the study, the mean score of knowledge regarding venous access device care was increased from 14.6 to 21.3 in the post-test after structured education. In experimental group, the maximum of 75 % of samples scored between 14-17 (Average) in the practice pre-test before structured education and 48.33 % samples scored between 18-25 (Good) score in the practice post-test score after structured education. In control group, the mean score of practice score was increased from 15.4 to 15.5 in the post test

Materials and Methods:

Data collection process:

The study was conducted from 20thOctober 2018 to 20thNovember 2018 after getting ethical clearance from the ethical committee of GMC Srinagar. Samples of 30 staff nurses working in SICU &MICU of SMHS Hospital were included in the study. The investigators established good rapport and written consent was obtained from respondents. The research design selected for this study was descriptive research design and research approach was quantitative research approach. Self structured questionnaire was administered to the staff nurses working in surgical and medical ICU in a selected hospital of Srinagar, Kashmir, and information booklet related to central line associated blood stream infections was distributed among them after data collection. The staff nurses on the basis of inclusion and exclusion criteria were selected by using purposive sampling technique. The tool used for the study I.e. self structured questionnaire consists of 2 sections . section 1 consisted of Items related to demographic variables such as (Age, gender, educational qualification years of experience in ICU, in-service education attended) section II consists of items related to central venous catheters (8 items), knowledge regarding central line associated blood stream infections (7 items), preventive measures of central line associated blood stream infections (15 items). The content validity of self structured questionnaire was ensured by submitting the tool to the experts who had specialization in various areas. The questionnaire was given to the respondents on one to one basis and each respondent was given a time of 30 minutes to complete the questionnaire. At the 4th day the respondents were given self-instructional module and 10 minutes were given for discussion regarding CLABSI. A pilot study was conducted on 10% of total sample size at surgical intensive care unit. Reliability of tool was established by Karl Pearson's Correlation coefficient. The reliability coefficient of tool was calculated and it was 0.88. Hence tool was found to be reliable.

Results and Findings

In this study, 30 staff nurses working in surgical and medical ICU participated. The data and the findings were entered in a master data sheet followed by the analysis and interpretation using descriptive statistics (i.e. frequency, percentage, mean, median and standard deviation) and inferential statistics (chi-square) according to the objectives of the study. The results obtained were presented in the following headings:

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Section I: Distribution of study subjects according to demographic variables.

Table 1: **Distribution of study subjects according to demographic variables**

N=30

Age in years	**Study subjects**	
	Frequency	**Percentage**
20-30	**15**	**50%**
30-40	13	43%
40-50	2	7%
Gender		
Male	1	3%
Female	**29**	**97%**
Educational qualification		
Diploma	**17**	**57%**
B.SC nursing	12	40%
M.SC nursing	1	3%
Years of experience		
0-10	**27**	**90%**
10-20	3	10%
20-30	0	0%
In-service education attended		
No	**27**	**90%**
Yes	3	10%

SECTION 2: Analysis and interpretation of knowledge scores of study subjects regarding central line associated blood stream infections.

Table 2: Distribution of study subjects according to knowledge scores regarding central line associated blood stream infections

N=30

Knowledge score	**No of study subjects**	
	Frequency	**Percentage**
Highly adequate knowledge.(23-30)	0	0%
Moderately adequate knowledge.(16-22)	9	30%
Inadequate knowledge.(0-15)	**21**	**70%**

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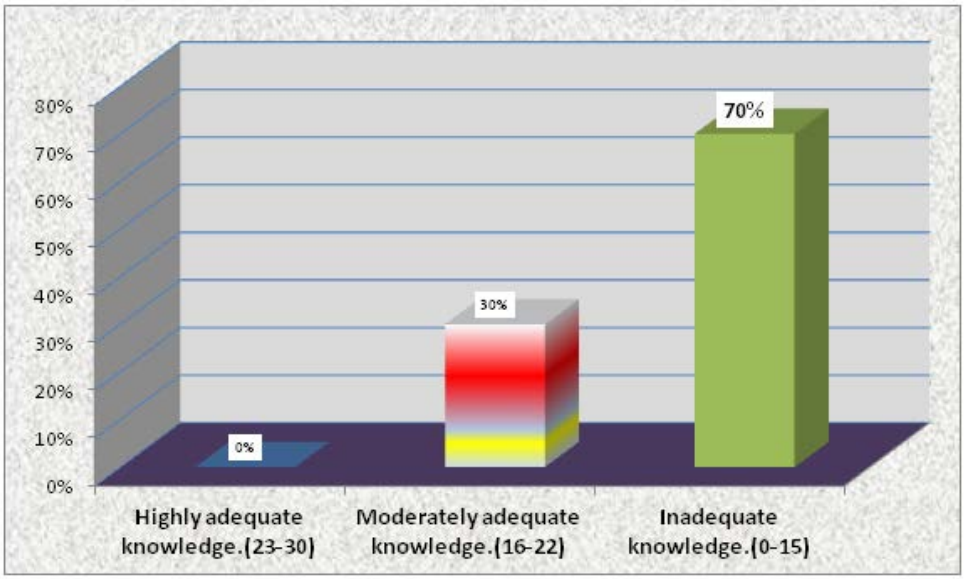

The data presented in table.2 and fig .1 shows that most of the study subjects i.e. 21(70%) had inadequate knowledge, 9(30%) had moderately adequate knowledge and only 0(0%) had highly adequate knowledge

Table 3: Mean, Median, Range, Standard deviation, Mean percentage of knowledge score of study subjects

N=30

Knowledge score	Mean± S.D	Median	Maximum	Minimum	Range	Mean%
	12.93±4.25	13.5	20	**6**	**14**	**43.11**

Table.3 shows that (Mean±SD) knowledge score of the study subjects was (12.93±4.25), Median was 13.5, Range was 14, and Mean percentage i.e. 43.11%

Table 4: Knowledge score of study subjects according to areas of knowledge regarding central line associated blood stream infections

N=30

Areas of knowledge	Mean±SD	Median	Maximum	Minimum	Range	Mean%
General information about central venous catheters	4.27±2.34	4	8	0	8	**53.33**
Central line associated blood stream infections	3.47±1.13	4	5	1	4	49.52
Preventive measures of central line associated blood stream infections	5.20±2.02	5	10	1	9	34.67

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Table.4 shows that (Mean±SD) knowledge score among study subjects was higher in the areas of preventive measures of central line associated blood stream infections i.e. (5.20±2.02) followed by " General information about central venous catheters I.e. 4.27±2.34 followed central line associated blood stream infections I.e. 3.47±1.13 mean percentage was higher in the areas of general information about central venous catheters I.e. 53.33 .

SECTION 3: Association between knowledge scores of study subjects regarding central line associated blood stream infections with their selected demographic variables (age, gender, educational qualification, years of experience in ICU, in-service education attended).

To test the association between mean knowledge score and selected demographic variable following null hypothesis was formulated:

- **H0.** There is no significant association between knowledge scores regarding central line associated blood stream infections with their selected demographic variables (age, gender, educational qualification, years of experience in ICU, in-service education attended) at 0.05 level of significance

Table 5: **Association of knowledge scores of study Subjects regarding central line associated blood stream infections with their selected demographic variables like age, gender, educational qualification, years of experience, in-service education attended.**

N=30

Demographic Variables	**Highly Adequate**	**Moderately adequate**	**Inadequate**	**Chi square Test**	**P Value**
Age in years	Highly adequate knowledge	Moderately adequate knowledge	Inadequate knowledge	2.418	0.299NS
20-30		6	9		
30-40		2	11		
40-50		1	1		
Gender					
Male		0	1	0.443	0.406NS
Female		9	20		
Educational Qualification					
Diploma		3	14		
B.SC Nursing		5	7	4.346	0.114NS
M.SC Nursing		1	0		
Years of experience in icu					
0-10		7	20		
10-20		2	1		
20-30		0	0		
Inservice Education Attended				2.134	0.144NS*
No		8	19		
Yes		1	2	0.018	0.894NS

NS=Non significant

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Based on the 3rd objectives used to Chi-square test used to associate the level of knowledge and selected demographic variables such as age, gender, educational qualification, years of experience in icu, in-service education attended. There is no significance association between the level of scores and other demographic variables age, gender, educational qualification, years of experience in icu, in-service education attended .The calculated chi-square values were less than the table value at the 0.05 level of significance

Hence the Null hypothesis, which states that "there is no significant association between knowledge score and selected demographic variables" is accepted Discussion:

According to scores, most of the study Subjects i.e. (70%) had inadequate knowledge, (30) had moderately adequate knowledge, whereas none had highly adequate knowledge. The (Mean ±SD) knowledge score in the was (12.93±4.25)

The findings of the present study are consistent with the findings studies conducted by **Kurian R N, John N (2017)** to assess the Knowledge of Staff Nurses regarding Central Line Associated Blood Stream Infection (CLABSI) with a View to Develop Information-Booklet on Prevention of CLABSI in a Selected Hospital of Delhi . The findings of the study concluded that majority (96%) of staff nurses had inadequate knowledge and only 4% had adequate knowledge[5].

Another study Conducted by **Barbosa CV, Canhestro MR, Marinho BR et-al(2017)** to evaluate the knowledge of the nursing team about good practices on maintenance and dressing of central venous catheter (CVC) in accordance with the institutional protocol in Brazil. Findings revealed that 56% of the participants had less than 75% of correct answers, characterizing deficient knowledge[6].

There was no significant association between the knowledge score of study subjects with their selected demographic variables (age, gender, educational qualification, years of experience in icu, in-service education attended).no such similar study was found.

Recommendations:

Keeping in view the findings of the study the following recommendations are made for further studies.

- The similar study can be replicated on a large sample, thereby findings can be generalized.
- A follow up of study can be conducted to evaluate the long term impact of Planned Teaching Programme in terms of knowledge retention.
- A similar study can be conducted in different settings
- A similar study can be done using other teaching strategies i.e. planned teaching programme

Conclusion:

Based on the analysis of the findings, the following inferences were drawn. There was deficient knowledge of staff nurses working in surgical intensive care unit and medical intensive care unit regarding central line associated blood stream infections. Thus, there is need for in service education programmes ,Workshops, training programmes for staff nurses working in selected hospital of Srinagar to improve and update their knowledge regarding central line associated blood stream infections.

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