Impact of Skill Training Programme (STP) Regarding Postnatal Care of Mothers Who Underwent Lower Segment Caesarean Section on Competencies among Students: A Quasi-Experimental Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Background: In the twenty-first century, Caesarean section is the most frequent operation in obstetrics. Throughout the twentieth century, Caesarean sections have proven to be one of the most efficient abdominal procedures. Over the last three decades, the number of caesarean sections has risen considerably. Around the world, the number of caesarean sections performed is on the rise. From 2003 to 2018, it is more than doubled, reaching a peak of 21% and is growing at a rate of 4% every year. Today's student nurse will become future nurse, so it's vital create them competent while providing care to the mothers after lower section caesarean section.
Objective: To assess current competencies among students on postnatal care of mothers who underwent lower section caesarean section in study group , to assess the impact of the skill training programme on the competencies of students in focused group & to find out the association between post-test competencies with the demographic variables of students of study group.
Methods and Materials: The quasi-experimental with non-equivalent pre-test post-test design

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study was conducted on 30 students in each of experimental and control group by convenient sampling technique in two nursing institutions at Gurugram, Haryana.

Results: Experimental group subjects enhanced the level of knowledge from 11.6 to 17.8 and their skill from 11.7 to 35.5 after implementing the skilled training programme, while the control group showed no improvement. There is a statistically significant transformation between the pre-test and post-test scores. Paired sample 't' test was used to observe differences between pre and post-test mean scores. Students with prior knowledge were more competent, which is statistically noteworthy with a P value of < 0.001. Age, sex, religion, parents' education, and home location are not significant demographic characteristics. The Pearson chi square test was used to determine statistical significance.

Conclusion: Skill training not only enhance knowledge in a specific field, but then also clarifies students how to network, accomplish to timeline, and connect efficiently with people. A competent student nurse can become a competent staff nurse by developing skill through effecting skill training program during study period.

1. INTRODUCTION

Health and survival of mothers and children are vital to society's well-being. Every woman and her family regard childbirth as a significant life event [1]. A Caesarean section is a surgical procedure in which the infant is extracted through incisions made in the mother's abdomen said as laparotomy and uterus said as hysterotomy. In present scenario the fast growth in rate of caesarean section is an extreme burden for the society. About 15% of Caesarean section rate is acceptable by WHO [2].

The global organization's Sustainable Development Goals (SDG) target 3.1 intends to reduce the world maternal mortality rate to 70/100000 live births [3-5]. In some nations, the caesarean sections technique of delivery has doubled in 15 years, reaching "alarming" proportions.WHO Updates, 28 March 2019 - According to data from 12 million pregnancies, maternal mortality due to caesarean sections are more than hundred times higher in lower- and middle-income nations than in developed countries, with up to a 1/3 of all babies dying [6]. A caesarean section may develop many complications such as wound infections, endometritis, DVT, Thrombophlebitis and pulmonary embolism. After a caesarean section the chance getting re-admission to hospital is more than vaginal delivery. And this is particular amongst ladies who've gone through emergency surgery [7-9]. All kinds of caesarean section are related to poor health and quality of lifestyles as compared to spontaneous vaginal deliveries [10].

Health professionals must not use caesarean sections to meet a specific goal or rate, but rather as an alternative option for patients' needs based on the situation, as clearly stated by WHO [11-15]. In hospital institution setting where no adequate resource and manpower to conduct safe operations for Caesarean sections can be a reason of arising numerous complications, mortality and morbidity [16-21]. Excessive rates of unnecessary caesarean sections can divert resources away from other services in health institutions that are already overburdened and vulnerable [22].

Many studies have found that through a 'skills and drills' type of instruction, obstetric skills laboratories can play a critical role in developing students' or staffs' capacities and self-confidence.

1.1 Conceptual Framework

Conceptual frame work used for this study is based on **Ludwig von Bertalanffy's General System Theory.**

1.2 Research Hypothesis

H1- There will be significant difference between Pre-test and post-test competencies scores of nursing students on postnatal care of mothers who underwent emergency lower section caeserean section at the level of 0.05%.

H2- There will be a statistically significant association between post-test competencies score of nursing students within experimental

group students per selected demographic variables at the level of 0.05%.

2. RESEARCH METHODOLOGY

Research approach – Quantitative Approach.

Pre-testing is done in this paper by means of a self-structured questionnaire and OSCE Checklist. Experimental group was then given a skill training programme. The identical tool will be utilised for the post-test as it was for the pre-test.

O^1= Measure the pre-test level of competencies among students on selected post-operative care of mothers in both control & experimental group by using self-structure knowledge questionnaire & OSCE checklist.

X= Skill training programme includes selected skills on post natal care of mothers after caesarean section like Breast feeding Technique, wound care technique & post-natal exercise. These skills were provided to the study group by following the tools developed by the researcher which includes steps of procedure for each skill station. And the training was provided in the institution laboratory by using the mannequins [12-15].

O^2= Assess the post assessment in level of competencies amongst students on selected post-operative care 7 days after Skill training programme in both study group by using self-structured knowledge questionnaire & OSCE checklist.

2.1 Variables

2.1.1 Demographic Variables

In this study, age, sex, religion, educational qualification of parents, area of residence & previous knowledge and source of information regarding postnatal care of mothers who underwent emergency lower section caesarean section.

2.1.2 Independent variable

In this study the skill-based training on postnatal care of mothers who underwent emergency lower section caesarean section is the independent variables.

2.1.3 Dependent variable

In this study the dependent variables are competencies of the nursing students regarding postnatal care of mothers who underwent emergency lower section caesarean section.

2.2 Research Setting

Faculty of Nursing, SGT University and RR College of Nursing situated at Gurugram, Haryana.

2.2.1 Sample

Students studying Basic B.Sc. Nursing at nursing Institution at NCR, who fulfilled the inclusion criteria.

2.2.2 Sample size

Total 60 nursing students – 30 experimental group & 30 control group.

2.2.4 Sampling technique

The samples are selected using convenient sampling technique.

2.3 Procedure of Data Collection

A prior formal permission obtained from the higher authorities of institution. The purpose of the study explains prior to the students in both the groups. Administered self-structure questionnaires & OSCE to collect the demographic data and to assess the Knowledge & Skills regarding postnatal care of mothers who underwent lower section caeserean section among students. Provided skill training to experimental group for consecutive 3 days and no intervention given to control group Post test was conducted after 7 days of intervention in both the groups. The duration of the data collection is 4 weeks.

Chart 1. Research design – Quasi-experimental with non-equivalent pre-test post-test design

Group	Pre-Test	Intervention	Post test
study group	O^1	X	O^2
control group	O^1		O^2

Chart 2. Development and description of the tool

Tool	Purpose	Explanation	Scoring Interpretation	Technique
Sample characteristics	SECTION 1: To collect the demographic characteristics of the sample.	The tool includes age , sex , religion, parents education, area of residence & about previous knowledge among participants who were under the study. There are total of 6 items.	NA	Interview- Participants will mark/ write the correct response using pen/pencil against each item.
Structured Knowledge Questionnaire	SECTION 2: To measure the knowledge regarding selected postnatal care of mothers who underwent lower section caeserean section.	The structure knowledge questionnaire includes knowledge about breast feeding technique, wound care & post-natal exercise. There is total 6 items.	Total Score-26 Level of Knowledge Inadequate (0-8) Average (9-17) Adequate (18-26)	Interview- Participants will mark/ write the correct response using pen/pencil against each item.
Objective structure clinical observation (OSCE)	SECTION 3: Used to evaluate the skills of students regarding selected postnatal care of mothers who underwent lower section caesarean section - Technique of Breast Feeding, Wound Care & Post-natal Exercise	The OSCE includes the selected 3 procedures like breast feeding technique, wound care & post-natal exercise. There are steps to be followed for each procedure.	Total Score-44 Score Under each Procedure- Breast Feeding-16 Wound care-15 Post-natal exercise-13 Level of skill Inadequate (0-14) Average (15-29) Adequate (30-44)	Demonstration- The skill assessment was done by using OSCE checklist which was developed by the researcher. The researcher will give the score against each step done by the participants.

3. RESULT

3.1 Data Analysis and Interpretation

The collected data were tabulated and presented according to the objectives under the following headings.

Demographic characteristics distribution of nursing students those who are contributed in the study.

The data discovered, maximum of the participants 53% (32) remained in the age cluster of 22 – 23 years & 46% (28) remained in the age cluster of 20 – 21 years in control cluster. Majority of the participants were female 95% (57) & 5% (3) were male. 96.6% (58) students go to Hindu religion and 3.4% (2) remained in others religion category and no one is from Muslim and Christian. Regarding parents' education 56.6% (34) were studied up to graduation level. 55% (33) were from urban areas where as 45% (27) were from rural areas. Majority of them were having previous knowledge 65% (39).

Fig. 1 shows in overall, 80.0% (24) experimental group and 86.7% (26) control group of the

students are remained in average knowledge and, 16.7% (5) experimental group and 13.3% (4) control group of the students are remained in inadequate knowledge and & 3.3% (1) experimental group having adequate knowledge whereas none of students from control group are remained in adequate knowledge category.

Fig. displays in overall, 50% (15) experimental group & nil in control group of subjects remained in adequate knowledge and, 50% (15) experimental group & 86.7% (26) control group of subjects remained at average knowledge and none of the students from experimental group is having inadequate knowledge whereas 13.3% (4) remained in Inadequate knowledge category.

Figure displays, in overall, 26.7% implemented group and 53.3% control group of the students remained at average skill and, 73.3% experimental group and 46.7% control group of students remained at Inadequate skill and none of the students is having Adequate skill according to OSCE score.

Fig. 4 explains in overall, 60% implemented group and nil in control group of the students remained at Adequate skill and, 40% in experimental group and 46.7% in control group of the students remained at average skill and none of the students from experimental group is having Inadequate skill whereas 53.3% control group remained at Inadequate skill category.

Table 1. Explanation of study participants as per demographic characteristics N-60

| Variables	Categories of Variables	Experimental Group n-30 (%)	Control Group n-30(%)	Total n-60(%)
Age	21-22 years	12 (40%)	16 (53.33%)	28(46.6%)
	22-23 years	18 (60%)	14 (46.7%)	32(53.3%)
Gender	Male	3 (10%)	0	3(5%)
	Female	27 (90%)	30 (100%)	57(95%)
Religion	Hindu	28 (93.33%)	30 (100%)	58(96.6%)
	Others	2 (6.67%)	0	2(3.3%)
Parents	Primary	2 (6.6%)	3 (10%)	5(8.3%)
Education	Secondary	11 (36.6%)	10 (33.3%)	21(35%)
	Graduate	17 (56.6%)	17 (56.6%)	34(56.6%)
Area of	Rural	14 (46.7%)	13 (43.3%)	27(45%)
Residence	Urban	16 (53.33%)	17 (56.6%)	33(55%)
Previous	Yes	16 (53.33%)	23 (76.6%)	39(65%)
Knowledge	No	14 (46.7%)	7 (23.3%)	21(35%)
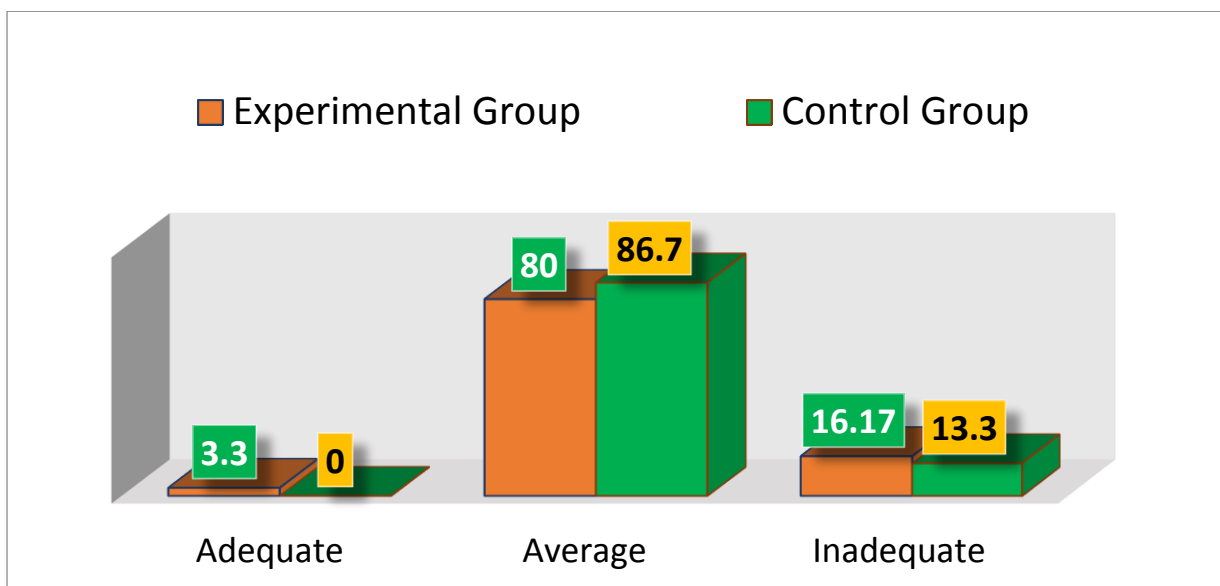
Fig. 1. Comparison of the pre-test level of knowledge among students in experimental group & control group before skill training program
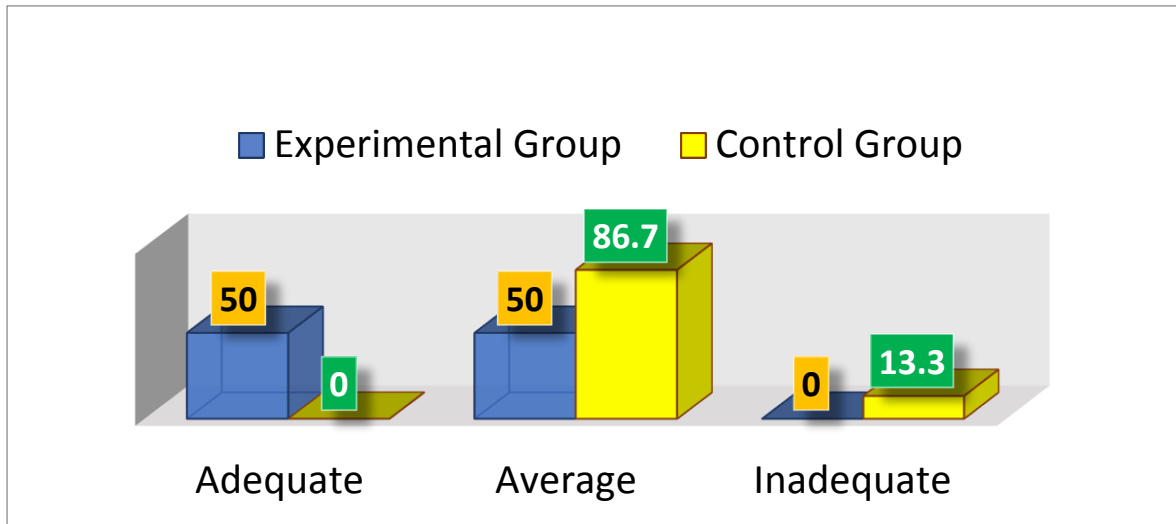
Fig. 2. Comparison of the post assessment level of knowledge between students in experimental group & control group after skill training program
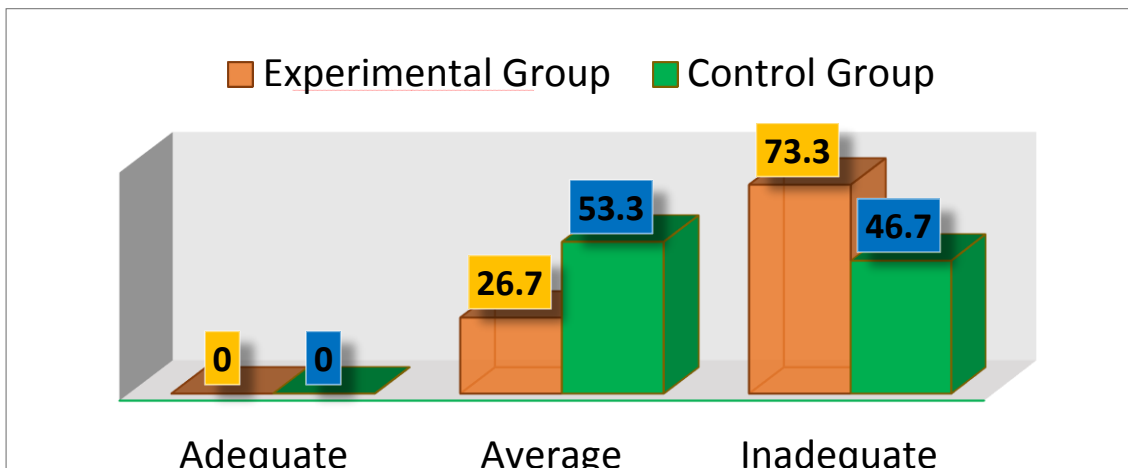

Fig. 3. Comparison of the pre assessment level of skill among students in experimental group & control group before skill training program
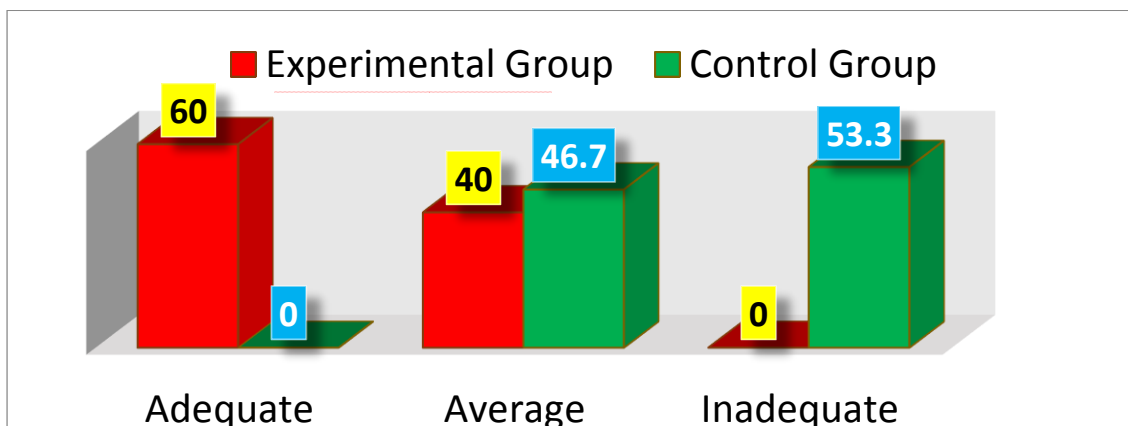

Fig. 4. Comparison of the post evaluation level of skill amongst students in experimental group & control group after skill training program

Table 2. Effectiveness of the skill training program on competencies among students by using 't' test

	Group	No. of students	Pre-test Mean ± SD	Post-test Mean ± SD	Mean difference Mean	P value
Overall Knowledge Score	Experimental	30	11.6±2.71	17.8±2.04	6.20	<0.001S*
	Control	30	10.07±2.03	9.87±2.45	.20	.339 NS
Overall Skill Score	Experimental	30	11.7±5.1	35.53±3.96	23.83	<0.001S*
	Control	30	14.37±4.63	14.63±4.60	.27	.624 NS

Significance at the level of 0.05

Table 3. Association between post-assessment level of knowledge and their demographic characteristics of experimental group

Demographic Variables χ2=0.53 P=0.76 (NS)		Post-test Level of knowledge						N (30)	Chi square test	Inference
		Inadequate		Moderate		Adequate				
		n	%	n	%	n	%			
Age	21-22 years	0	0	6	50	6	50	12	χ2=0.00 P=0.64	NS
	22-23 years	0	0	9	50	9	50	18		
Gender	Male	0	0	1	33.3	2	66.7	3	χ2=0.37 P=0.50	NS
	Female	0	0	14	51.85	13	48.15	27		
Religion	Hindu	0	0	15	53.57	13	46.43	28	χ2=2.14 P=0.24	NS
	Muslim	0	0	0	0	0	0	0		
	Christian	0	0	0	0	0	0	0		
	Others	0	0	0	0	2	100	2		
Parents Education	Primary	0	0	2	100	0	0	0	χ2=4.29 P=0.12	NS
	Secondary	0	0	7	63.64	4	36.36	11		
	Graduate	0	0	6	35.29	11	64.71	17		
Area of Residence	Rural	0	0	7	50	7	50	14	χ2=0.00 P=0.64	NS
	Urban	0	0	8	50	8	50	16		
Previous Knowledge	Yes	0	0	3	18.75	13	81.25	16	χ2=13.39 P=<0.001*	S*
	No	0	0	12	85.71	2	14.29	14		

Significance at the level of 0.05

Table no 2 explains Students were enhanced their knowledge from 11.6 to 17.8 in and skill from 11.7 to 35.5 in experimental group afterward the implementation of skilled training programme and there is no improvement in control group. Variances between pre and post assessment score was analysed via students paired 't' test. and the 't' value in knowledge is 10.09 and in skill is 0.50 with the p value is 0.00 in both knowledge and skill. So, the skill training program was effective and it is statistically significant.

Table 3 displays the association amongst post assessment level of knowledge with demographic characteristics. The P value for past knowledge is 0.00, indicating that students with prior knowledge received greater knowledge, which is statistically significant. Age, sex, religion, parents' education, and home location are not important demographic characteristics.

Table 4 displays the association between post evaluation level of skill with demographic characteristics. The P value for past knowledge is 0.00, indicating that students with prior knowledge received greater skill, which is statistically significant. Age, sex, religion, parents' education, and home location are not important demographic characteristics. As a result, students with prior knowledge received more knowledge than those who did not. Pearson chi square test was used.

Table 4. Association between post evaluation level of skill and their demographic characteristics of study group

Demographic Variables		Post-test Level of Skill						N	Chi square test	Inference
		Inadequate		Moderate		Adequate				
		n	%	n	%	n	%			NS
Age	21-22 years	0	0	5	41.67	7	58.33	12	χ2=0.02	
	22-23 years	0	0	7	38.89	11	61.11	18	p=0.59	
Gender	Male	0	0	0	0	3	100	3	χ2=0.22	NS
	Female	0	0	12	44.44	15	55.56	27	p=0.20	
Religion	Hindu	0	0	12	42.86	16	57.14	28	χ2=1.43	NS
	Muslim	0	0	0	0	0	0	0	p=0.35	
	Christian	0	0	0	0	0	0	0		
	Others	0	0	0	0	2	100	2		
Parents Education	Primary	0	0	1	50	1	50	2	χ2=1.85	NS
	Secondary	0	0	6	54.55	5	45.45	11	p=0.39	
	Graduate	0	0	5	29.41	12	70.59	17		
Area of Residence	Rural	0	0	7	50	7	50	14	χ2=1.09	NS
	Urban	0	0	5	31.25	11	68.75	16	p=0.25	
Previous Knowledge	Yes	0	0	0	0	16	100	16	χ2=22.86	S*
	No	0	0	12	85.71	2	14.29	14	p=<0.001*	

Significance at the level of 0.05

4. DISCUSSION

The study's findings were constructed on statistical analysis. The Paired 't' test was used to evaluate the efficiency of the skill training programme. Chi-Square test applied on the way to invent relationship between competencies levels with demographic characteristics. The study's findings are described below in light of the study's goals.

4.1 Objective 1: To Evaluate the Existing Competencies of Students about Postnatal Care of Mothers Who Underwent Lower Section Caesarean Section in Study Group

Most of participants from both groups remained in average Knowledge group while a smaller number of students are remained in adequate knowledge & inadequate knowledge group. Total pre-test mean & SD in knowledge score is 11.60±2.71 in experimental group and 10.07±2.03 in control group. Overall pre-test mean & SD of skill (OSCE) is 14.37±4.63 in implemented group and 11.7±5.1 in control group.

Study result were congruent with the main findings of Sarkar M (2021) among 64 prenatal

women, a quasi-experimental study approach was used. The results show that the experimental group's mean post-test knowledge score (18.68) and practise score (26.06) are higher than the control group's mean post-test knowledge score (7.93) and mean post-test practise score (17.71), with true mean differences in both cases (t values 16.79, 15.18, p=0.05).

This study results are congruent with the findings of Maharjan, Muna, and Singh's [6] Knowledge on Postnatal Care Among Postnatal Mothers: A Hospital Based Study. More than half of the participants had somewhat adequate knowledge, 40.35 percent had insufficient information, where as 7.02 percent had satisfactory knowledge about post-operative care, according to the data. This investigation also yielded analogous results.

4.2 Objective 2: To Assess the Impact of the Skill Training Programme in the Competencies of Students in Study Group

The evaluation of overall pre and post-test knowledge score earlier and afterward the implementation of STP experimental group. Students were enhanced their knowledge from 11.6 to 17.8 in and skill from 11.7 to 35.5 in

experimental group afterward the implementation of structured teaching programme and there is no improvement in control group. Considering overall score the competencies in students is improved because there is vast transformation between pre and post evaluation score. Variances between pre and post assessment score was analysed via students paired 't' test. And the 't' value in knowledge is 10.09 and in skill is 0.50 with the p value is 0.00 in both knowledge and skill. So, the STP was effective and it is statistically significant.

Study supported by Mehdipour-Rabori R., Nematollahi M., Bagherian B [22], who found that simulation-based mastering rises nursing abilities in BSc nursing students. the intervention, the entire mean value of the students' clinical abilities improved from 101.6 to 141.6 in the experimental group, however there was no enhancement in second group, the findings propose that by imposing a mastery-based learning system, various nursing and health programmes might be improved. In present study the intervention group carried out well in post-test than control group.

4.3 Objective 3: To Identify the Relationship amongst Post Assessment Competencies with the Selected Demographic Characteristics

Current study displays the association amongst post assessment level of knowledge with demographic characteristics. The P value for past knowledge is 0.00, indicating that students with prior knowledge received greater knowledge, which is statistically significant. Age, sex, religion, parents' education, and home location are not important demographic characteristics.

The association between post evaluation level of skill with demographic characteristics. The P value for past knowledge is 0.00, indicating that students with prior knowledge received greater skill, which is statistically significant. Age, sex, religion, parents' education, and home location are not important demographic characteristics. As a result, students with prior knowledge received more knowledge than those who did not. Pearson chi square test was used.

This study was congruent with the study conducted by M. Roja Rani, S. Hema Latha & M.

Bhagya Lakshmi (2020) . Their study determined the efficacy of a structured teaching programme on training skills among nursing students at the 0.05 level of implication, there was a statistically noteworthy connection between their geographical origins and educational degree in terms of demographic variables. This investigation came up with similar conclusions.

5. CONCLUSION

❖ The outcomes of this present research show that students are fairly capable of providing post-operative care to mothers who underwent lower section caesarean section afterward skill training program. They had Adequate enough knowledge & desirable skill about Breast feeding technique, wound care & post-natal exercise, overall, the competencies level has increased. Skill training also helps the students to construct and enhance networking, time management, communication abilities along with developing skill in a selected area.

6. RECOMMENDATION

❖ The study might be repetitive with a larger sample of nurses from various nursing institutions, allowing the researcher to generalize the results.
❖ Further the skill training program used in this study can provide a comprehensive learning experience in all nursing institute by taking care of all the stages of learning transfer: before, during, and after training.
❖ The skill training program also can be planned for working staff nurses and the effectiveness of skill training program can be find out by the research study
❖ To evaluate the competences connected to the course, a comparative research between degree and diploma holder nursing students might be done.
❖ A study comparing vaginal birth mothers with lower section caesarean section mothers' post-natal care could be done.

CONSENT

Consent of all the participants obtained to prior to the study.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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