Effectiveness of Structured Teaching Programme on COVID-19 Antenatal Management among Fourth Year BSc Nursing Students at Geetanjali College of Nursing, Kurnool-A.P.

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Abstract: *This pre-experimental study evaluated the effectiveness of a Structured Teaching Programme (STP) on COVID-19 antenatal management among 40 fourth-year BSc Nursing students at Geetanjali College of Nursing, Kurnool, Andhra Pradesh. Pregnant women are at increased risk of severe COVID-19, making it crucial for nursing students to have adequate knowledge and skills in managing COVID-19 during pregnancy. A self-structured questionnaire was used to collect data, and descriptive and inferential statistics were applied to analyse the results. The study found that 90% of students were aged 20-22 years, 75% were females, and 60% were Hindus. After the STP, 62.5% of students had good knowledge scores regarding COVID-19 antenatal management. The 't' test value (2.022) indicated a significant difference between pre-test and post-test knowledge scores. The study concludes that STP is effective in improving the knowledge and skills of nursing students regarding COVID-19 antenatal management, which is essential for providing quality care to pregnant women during the pandemic. The findings have implications for nursing education and practice, highlighting the importance of structured teaching programs in improving student outcomes and ultimately, maternal, and foetal health.*

Keywords: Effectiveness, Structured Teaching Programme, Covid-19, Antenatal Management

1. Introduction

The novel coronavirus disease is a Global public health emergency. There are concerns relating to the impact of SARS-CoV-2 infection on pregnant women and their foetuses, and patient management in the context of covid-19 poses a challenge. All pregnant women, including those with confirmed or suspected covid-19 infection, have the right to high quality care before, during and after childbirth. This includes antenatal, newborn, postnatal, intrapartum, and mental health care.

-Journal ISUOG2020

Pregnancy is a state of partial Immune suppression which makes pregnant women more vulnerable to viral infections, and the morbidity is higher even with seasonal Influenza. Therefore, the covid19 epidemic may have serious consequences for pregnant women. Interim guidance has been issued by the World Health Organization and Centers for Disease Control and Prevention on Managing covid19, which include some recommendations specific to pregnant women, mostly drawn on sources from previous corona virus outbreaks.

-Journal AOGS 2020

Pregnancy increases the risk of adverse obstetric and neonatal outcomes from many respiratory viral Infections. The physiologic and Immunologic changes that occur as a normal component of pregnancy can have systemic effects that increase the risk for complications from respiratory Infections. Changes in the maternal cardiovascular and respiratory systems, including increased heart rate, stroke volume, oxygen consumption, and decreased lung capacity, as well as the development of immunologic adaptations that allow a mother to tolerate an antigenically distinctive fetus, increase the risk for pregnant women to develop severe respiratory disease. Outcomes data from multiple studies of Influenza have demonstrated an increased risk of maternal morbidity and mortality when compared with non-pregnant women.

Aly Youssef, (2020) conducted a retrospective study includes 116 pregnant women with coronavirus disease 2019 pneumonia from 25 hospitals in China, on clinical characteristics and outcomes in pregnancy and the vertical transmission potential of severe acute respiratory syndrome coronavirus 2 infection. There were 8 cases of severe pneumonia but no maternal deaths. One of 8 patients who presented in the first trimester and early second trimester had a missed spontaneous abortion. The rate of spontaneous preterm birth before 37 weeks' gestation was 6.1% (6/99). 86 of 100 neonates tested for severe acute respiratory syndrome coronavirus, had negative results, and concluded that SARS-CoV-2 infection during pregnancy is not associated with an increased risk of spontaneous abortion and spontaneous preterm birth, and there is no evidence of vertical transmission of SARS-CoV-2 infection when the infection manifests during the third trimester of pregnancy.

As the covid-19 pandemic continues to affect millions of people across continents, it follows that pregnancy and childbirth will also be affected. Data are emerging on the consequences of the infection on mother and baby; we need to plan and prepare ourselves proactively. Providing appropriate clinical management and support to patients while adequately protecting healthcare professionals should be our goal.

2. Need for the Study

Pregnant women are at a higher risk of developing more severe illness from covid-19, as pregnancy weakens the

immune system. Another reason that pregnant women may develop more severe outcomes is because during pregnancy, the upper respiratory tract tends to be swollen due to high levels of estrogen and progesterone and restricted lung expansion, which may make such women susceptible to respiratory pathogens.

- **Journal of Reproductive Immunology (2020)**

Fanny De Marcillac, LoïcSentilhes (2020), conducted a retrospective study includes 54 pregnant women with confirmed 38 and suspected16 covid-19 infection on the maternal characteristics and clinical outcomes of pregnant women with covid-19 disease at Strasbourg University Hospital at France. Of these, 32 had an ongoing pregnancy, 1 miscarriage, and 21 live births: 12 vaginal and 9 cesarean deliveries, oxygen support was required for 13 of 54 women, including high-flow oxygen 2, noninvasive 1, and invasive 3, mechanical ventilation, and extracorporeal membrane oxygenation, of these 3 aged 35 years. Study concluded that covid-19 in pregnancy was associated with maternal morbidity and preterm birth and association with other well-known risk factors for severe maternal morbidity in non-infected pregnant women, including maternal age above 35 years, overweight, and obesity.

From the above stated studies and personal experience of the investigator it is observed that the propensity of this virus affects large numbers, it will be inevitable that we will be caring for women infected with covid-19 in pregnancy and for childbirth in the shortly foreseeable future. The maternity healthcare providers and facilities need to prepare for the situation with a view to prevent the consequences of the infection on the mother and her newborn. Healthcare providers should be aware that many of the standard risk factors associated with severe maternal morbidity without covid-19, such as maternal age above 35 years, overweight or obesity, and preexisting and/or gestational hypertension or diabetes, may also increase the risk of severe maternal morbidity of pregnant women with covid-19. The researcher felt there is a need to improve the knowledge of student nurses on covid-19 antenatal management by providing structured teaching programme to promote safe motherhood and child health survival.

Problem Statement
"Effectiveness of structured teaching programme on covid-19 antenatal management among fourth year BSc nursing students at Geetanjali College of Nursing, Kurnool-A.P."

Objectives of the Study
- To assess the knowledge of fourth year BSc nursing students on covid-19 antenatal management by pre-test.
- To compare the pre and post-test knowledge on covid-19 antenatal management among fourth year BSc nursing students.
- To assess the post-test knowledge of fourth year BSc nursing students after structured teaching programme on covid-19 antenatal management.
- To associate the post-test knowledge with selected demographic variables among fourth year BSc nursing students.

Operational Definitions

Effectiveness: It refers to difference of post-test score over pre-test scores after structured teaching programme on covid-19 antenatal management among fourth year BSc nursing students.

Structured Teaching Programme: It refers to a systematically organized tool prepared and used by investigator to provide knowledge to fourth year BSc nursing students on covid-19 antenatal management.

COVID-19: COVID-19 is also known as the corona virus, which is a contagious disease caused by severe acute respiratory distress syndrome which has symptoms of fever, cough, shortness of breath, loss of smell.

Antenatal Management: It refers to care, advice and support to pregnant women on changes during pregnancy, diet, hygiene, immunization and antenatal checkups in times of covid-19 pandemic.

Fourth Year BSC-Nursing Students: Students who are studying the fourth year BSc nursing at Geetanjali College of Nursing, Kurnool, at the time of Data collection.

Assumptions
It is assumed that
- Fourth year BSc nursing students will have some knowledge on covid-19 antenatal management.
- Knowledge of fourth year BSc nursing students on covid-19 antenatal management may vary with demographic variables.
- Structured teaching programme will help to improve their knowledge on covid-19 antenatal management.

Delimitations
- The study is limited to fourth year BSc nursing students who are studying at selected college, Kurnool.
- The study is limited to forty fourth year BSc nursing students.

Variables
- **Independent variables**
  The structured teaching programme on covid-19 antenatal management among fourth year BSc nursing students.

- **Dependent variables**
  It is the knowledge scores of fourth year BSc nursing students on covid-19 antenatal management.

- **Extraneous variables**
  Extraneous variables in this study are age, gender, religion, education, marital status and sources of information, of fourth year BSc nursing students.

Hypothesis
H_1- There is no significant difference between the pre-test and post-test knowledge scores of fourth year BSc Nursing students on covid-19 antenatal management.

H_2. There is significant difference between the pre-test and post-test knowledge scores of the fourth year BSc nursing students on covid-19 antenatal management.

Expected Outcome

The study expects to demonstrate that the Structured Teaching Programme (STP) will significantly improve the knowledge and skills of fourth-year BSc Nursing students regarding COVID-19 antenatal management, enabling them to provide quality care to pregnant women and reducing the risk of complications. The expected outcomes include improved knowledge, enhanced skills, better preparedness, and increased confidence among nursing students, ultimately contributing to improved maternal and fetal health outcomes and informing nursing education and practice.

3. Methodology

Research Approach: Research approach adopted for the study is a quantitative research approach.

Research Design: The Research design used for this study is pre-experimental one group pre-test and post-test method.

Setting: The setting of study is at Geetanjali College of Nursing, Kurnool.

Population: The target population of the present study is fourth year BSc nursing students at Geetanjali College of Nursing, Kurnool at the time of data collection.

Sample and Sample Size

Sample is a subset of the population selected to participate in a research study. In the present study the sample consisted of 40 fourth year BSc nursing students who satisfied the inclusive criteria of study were selected.

Sampling Technique: In this study convenient sampling technique is used based on non-probability sampling Methods.

Criteria For Sample Selection

Inclusion Criteria

- Fourth year BSc nursing students who are willing to participate in the study
- Fourth year BSc nursing students who are available during the time of data collection.

Exclusion Criteria

- Fourth year BSc nursing students who are not willing to participate in the study.
- Fourth year BSc nursing students who are not present at the time of data collection.

Description of Variables

Independent variable

The structured teaching programme on covid-19 antenatal management among fourth year BSc nursing students.

Dependent Variable

The dependent variable in the present study is the knowledge on covid-19 antenatal management among fourth year BSc nursing students.

Demographic variables

In the present study, the demographic variables which would influence the knowledge scores of the students includes age, gender, religion, education, marital status and source of information.

Description of the Tool

The tool used in the present study two parts.

Part- A: It includes demographic variables
Part- B: It includes structured knowledge questionnaire.

Part A: Demographic Data

It contains 6 items for obtaining information regarding age, gender, religion, education, marital status, and source of information.

Part B: Structured knowledge questionnaire

Part B consists of four sections.

Section-I: knowledge regarding covid-19 antenatal management.
Section-II: Impact of covid-19 on pregnancy.
Section-III: Effect of covid-19 on maternal outcome.
Section-IV: Management of antenatal mother with covid-19.

The structured knowledge questionnaire on covid-19 antenatal management consists of 35 multiple choice questions. Each question has 3 incorrect responses and one correct answer. Score one was given for each correct response in a single question and score 0 was given for wrong answer.

Score Interpretations

The resulting knowledge scores were categorized into
1) Above Average knowledge >75%
2) Average knowledge 51-74%
3) Below Average knowledge < 50%

Ethical Consideration

- Confidentiality and anonymity of the subject will be obtained.
- A written formal administrative permission from institutional authority will be obtained prior to the study.
- An informed consent will be obtained from the fourth year BSc nursing students who are involved in the study before collecting the Data.

Pilot Study

A pilot study was conducted from April 24-30, 2021, among 5 fourth-year BSc nursing students at Viswabharathi College of Nursing, Kurnool, to assess the feasibility and practicability of the study. The students underwent a pre-test, followed by a structured teaching programme on COVID-19 antenatal management. Statistical analysis using the Spearman Brown Efficiency formula yielded a reliability coefficient of 0.782, indicating high reliability. The pilot study demonstrated that

the main study was feasible, practicable, and significant, allowing the researcher to proceed with the actual study with confidence. The pilot study helped refine the research design and methodology.

Data Collection Procedure

Data collection was a crucial aspect of this study, conducted from May 1-24, 2021. The researcher obtained written permission from Geetanjali College of Nursing, Kurnool, and selected students using convenient sampling technique. The purpose of the study was explained to the students, and a pre-test was administered. A structured teaching programme on COVID-19 antenatal management was then provided to the students. After one week, a post-test was conducted to assess the effectiveness of the programme. The researcher systematically gathered information relevant to the research purpose, ensuring precise and relevant data for the study.

Plan for Data Analysis

The collected data was analysed using descriptive and inferential statistics to answer research questions and test hypotheses. Descriptive statistics included frequency, percentage, mean, and standard deviation to describe demographic variables and knowledge levels. Inferential statistics involved paired 't' test to determine the effectiveness of the structured teaching programme and chi-square test to associate post-test knowledge with demographic variables. Data was presented in tables and diagrams. The analysis aimed to assess the knowledge of fourth-year BSc nursing students on COVID-19 antenatal management before and after the programme, and to identify significant relationships between variables. Statistical analysis was systematic and thorough.

4. Results

Presentation of Data

Table 1: Frequency and percentage distribution of students according to demographic variables, N=40

S. No	Demographic Variables	Frequency	Percentage
	Age in Years		
	a. 19-20 Years	0	0.00%
1	b. 21-22 Years	36	90.00%
	c. 23-24 Years	4	10.00%
	d. Above 24 Years	0	0.00%
	Gender		
2	a. Female	30	75.00%
	b. Male	10	25.00%
3	**Religion**		
	a. Christian	14	35.00%
	b. Hindu	24	60.00%
	c. Muslim	2	5.00%
	d. Others	0	0.00%
4	**Education**		
	4th year BSc(N)	40	100.00%
	Marital Status		
5	a. Un married	40	100.00%
	b. Married	0	0.00%
	Sources of Information		
	a. 'Family and Friends	7	17.50%
6	b. Mass media	21	52.52%
	c. Books and Journals	5	12.50%
	d. Health Personal	7	17.50%

Table-1 shows analysis of demographic variables of fourth year BSc nursing students

- With respect to age majority 36 (90.00%) were aged between 21-22 years and only 04 (10.00%) were aged between 23-24 years of age.
- With regard to gender, out of 40 students, 30 (75.00%) were female and 10 (25.00%) were male.
- Considering the religion, Hindus formed majority 24 (60.00%), 14 (35.00%) were Christians and only 02 (05.00%) were Muslims.
- Regarding education majority of them 40 (100.00%) were belonged to fourth year BSc nursing students.
- Considering the marital status, 100.00% (40) students were unmarried and none of them were married.
- Regarding source of information 17.50% (07) students had information from family and friends, 52.52% (21) students from mass media, 12.50% (05) students from books and journals and remaining 17.50% (07) students from health personnel.
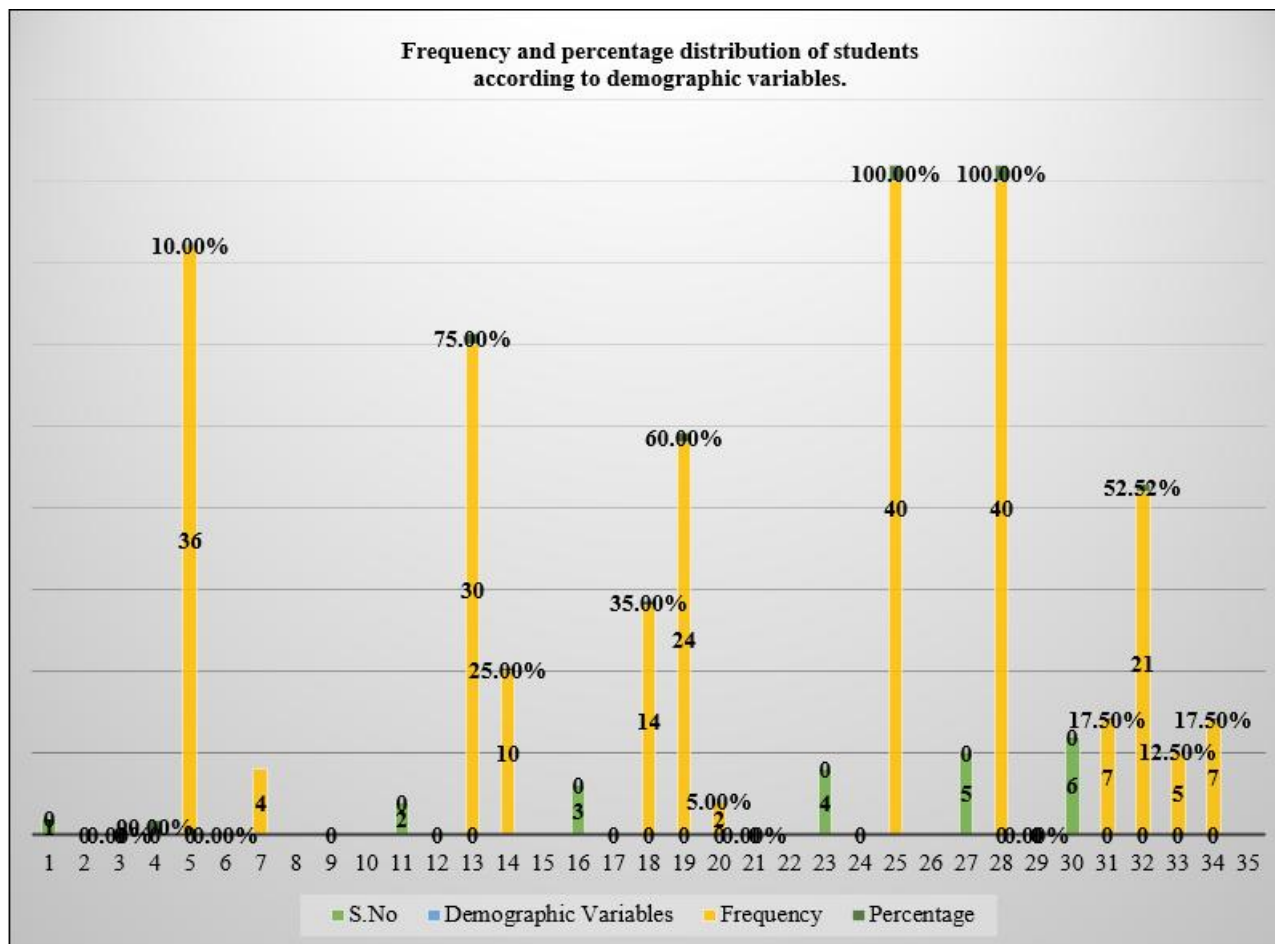
Frequency and percentage distribution of students according to demographic variables.

Table 2: Comparison of frequency and percentage distribution of students according to pre-test and post-test knowledge levels on covid-19 antenatal management, N=40

Grading	Score%	Pre –test		Post-test	
		Frequency	Percentage	Frequency	Percentage
Above average	More than 75%	0	0.00%	25	62.50%
Average	51-75%	10	25.00%	15	37.50%
Below average	Less than 50%	30	75.00%	0	0.00%

Table-2 shows that pre-test knowledge level of students was below average 30 (75.00%), 10 (25.00%) average, and none of them were above average, whereas in post-test knowledge level 25 (70.00%) were above average and 15 (37.50%) were average and none of them were below average knowledge.

Comparision of frequency and percentage distribution of students according to pre-test and post-test knowledge levels on covid-19 antenatal management.

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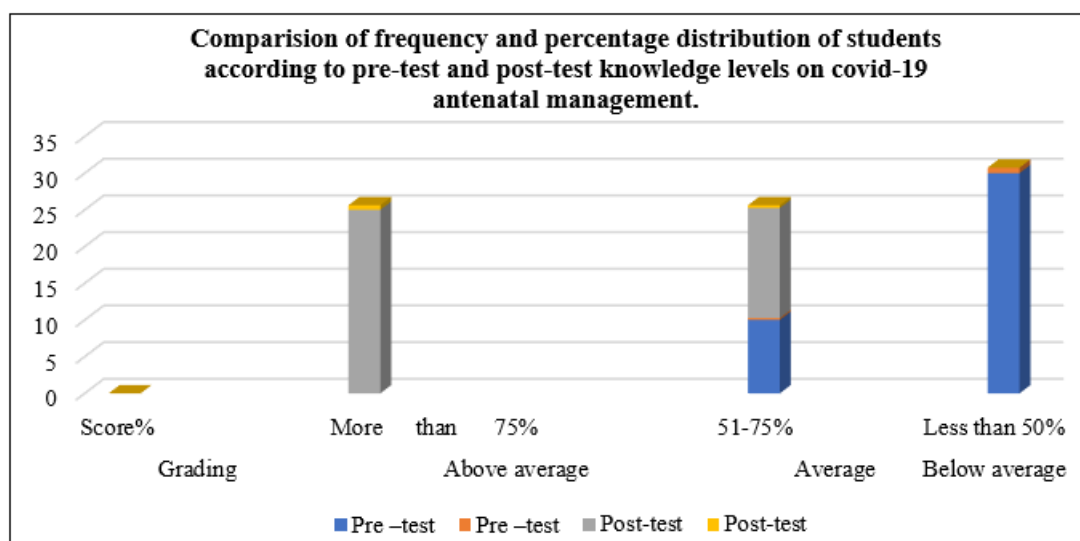
Table 3: Mean, standard deviation, mean percentage of pre-test and post-test knowledge scores of students on covid-19 antenatal management, N=40

S. No	Knowledge regarding	No. of Items	Pre Test			Post Test		
			Mean	Standard Deviation	Mean%	Mean	Standard Deviation	Mean%
1	Covid-19 antenatal management	35	15.85	2.248	45.28%	32.87	1.284	93.91%

Table-3 shows the comparison of mean, standard deviation, and mean percentage of pre-test and post-test scores. In pre-test mean 15.85, standard deviation 2.248, and mean percentage 45.28%, where as in post-test mean 32.87, standard deviation 1.284 and mean percentage was 93.91% respectively.
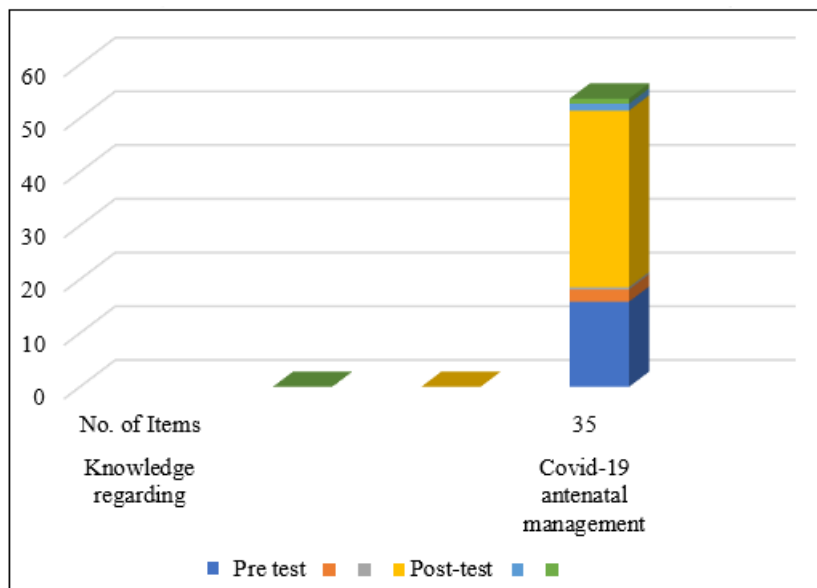
Table 4: Mean, standard deviation and paired "t" test of pre-test and post-test knowledge score regarding Braden Scale, N=40

Test	Mean	Standard Deviation	Standard Error	Paired t-value	Result
Pre-test	15.85	2.248	0.6894	Calculated t – value= 43.03	t-cal=43.03 t- tab=2.022
Post-test	32.87	1.284	0.3841	Critical value of t at 39 Degrees of freedom t-value=2.022	t-calculated >t- table value is Significant

Table-4 shows that the mean post-test knowledge score (32.87) was apparently higher than mean pre-test knowledge score (15.85). Standard deviation of post-test score is (1.284) and standard deviation of pre-test is (2.248) and computed paired 't' test value (t cal=43.03) is greater than the table value (t tab=2.022) at 39 degrees of freedom, which represents significant of knowledge through the structured teaching programme.
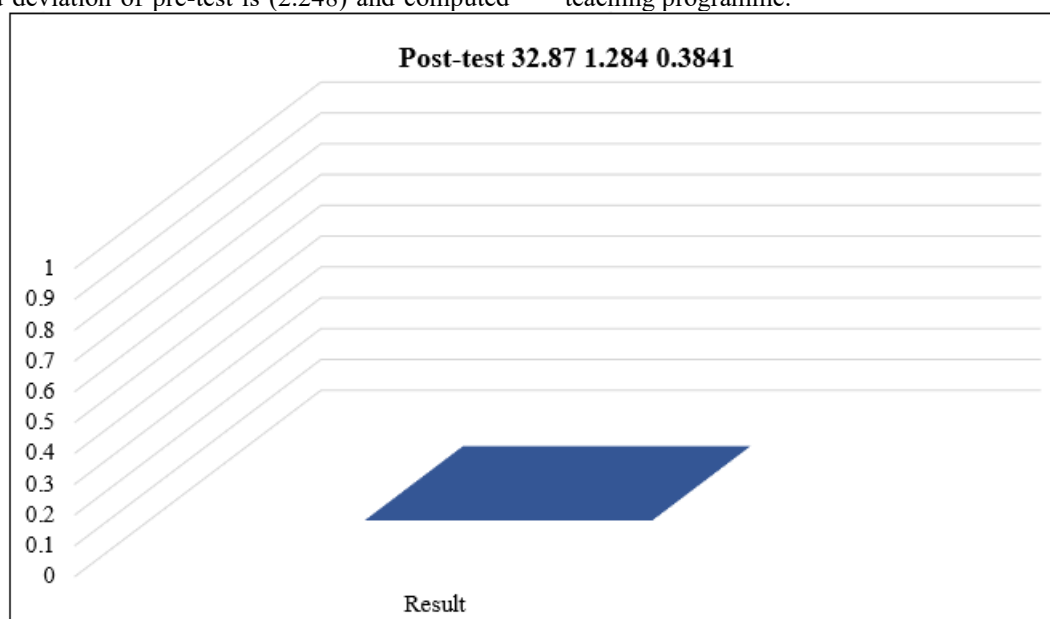
Table 5: Association between the post-test knowledge with demographic variables, N=40

Demographic Variables	Category	Sample		Student's knowledge						Chi square value	Chi square table value and results
				Below Average ≤50%		Average 50-75%		Above Average >75%			
		F	%	F	%`	F	%	F	%		
1.Age in Yeas	19-20 years	00	00.00%	00	00.00%	00	00.00%	00	00.00%	=11.62	2 DF table value = 5.89 Is significant
	21-22 years	36	90.00%	06	15.005	20	50.00%	10	25.00%		
	22-23 years	04	10.00%	00	00.00%	02	05.00%	02	05.00%		
	Above 24 Years	00	00.00%	00	00.00%	00	00.00%	00	00.00%		
2. Gender	Male	30	75.00%	02	05.00%	18	45.00%	10	25.00%	=8.56	2 DF table value =5.89 Is not significant
	Female	10	25.00%	01	02.50%	04	10.00%	05	12.50%		
3.Religion	Christian	14	35.00%	02	05.00%	04	10.00%	08	20.00%	=14.38	2 DF table value = 5.89 Is significant
	Hindu	24	60.00%	04	10.00%	12	30.00%	08	20.00%		
	Muslim	02	05.00%	00	00.00%	00	00.00%	02	05.00%		
	Others	00	00.00%	00	00.00%	00	00.00%	00	00.00%		

Table-5 shows the following associations
- There was significant association between knowledge level with age and religion of the fourth year BSc nursing students.
- There was no significant association between knowledge level and gender of the fourth year BSc nursing students.

Table 6: Association between the post-test knowledge with demographic variables, N=40

Demographic Variables	Category	Sample		Student's knowledge						Chi square cal value	Chi square table value and results
				Below Average ≤50%		Average 50-75%		Above Average >75%			
		F	%	F	%	F	%	F	%		
1.Marital status	Unmarried	40	100.00%	04	10.00%	14	35.00%	22	55.00%	=7.82	2 DF table value = 5.89 is significant
	Married	00	00.00%	00	00.00%	00	00.00%	00	00.00%		
2. Education	4th Year B.Sc (N)	40	100.00%	03	07.50%	11	27.50%	26	65.00%	=8.53	2 D, F table value =5.89 Is Significant
3. Sources of Information	Family and Friends	07	17.50%	00	00.00%	02	05.00%	05	12.50%	18.452	6 D, F table value =12.59 Is not Significant
	Mass media	21	52.50%	02	05.00%	13	32.50%	16	40.00%		
	Books and Journals	05	1250%	00	00.00%	01	02.50%	04	10.00%		
	Health Personal	07	17.50	01	02.50%	02	05.00%	04	10.00%		

Table-6 shows the following associations
- There was significant association between knowledge level with education and marital status of the fourth year BSc nursing students.
- There was no significant association between knowledge level source of information of the fourth year BSc nursing students.

5. Discussion

Summary of Key Findings
The study found that the structured teaching program was effective in improving the knowledge of fourth-year BSc nursing students on COVID-19 antenatal management. The mean score increased from 15.85 in the pre-test to 32.87 in the post-test, indicating a significant gain in knowledge.

Strengths of the Study

The study's strengths include its ability to demonstrate the effectiveness of a structured teaching program in improving knowledge among nursing students. The significant difference in pre-test and post-test scores highlights the program's impact. Additionally, the study's relevance to nursing education is a notable strength, as it emphasizes the importance of targeted educational interventions.

Limitations of the Study

Despite its strengths, the study has several limitations. The small sample size of 40 students may limit the generalizability of the findings. Furthermore, the study's findings are limited to a single college, which may not be representative of nursing students in other institutions or regions. The pre-experimental design used in the study is also a limitation, as it may not be as robust as other designs in establishing cause-and-effect relationships.

Controversies raised by the Study
The study raises several controversies, including the need for ongoing education and training for nursing professionals to stay updated on emerging health issues like COVID-19. The study's findings also highlight the knowledge gaps among nursing students regarding COVID-19 antenatal management, which raises concerns about the preparedness of nursing professionals to handle COVID-19 cases in pregnant women. Additionally, the study's results may spark debate about the effectiveness of traditional teaching methods in nursing education and the need for more innovative approaches.

6. Conclusion

The study concluded that the structured teaching program was effective in enhancing the knowledge of fourth-year BSc nursing students on COVID-19 antenatal management. The post-test scores showed a significant improvement, with

62.50% of students performing above average levels. The study also found a significant association between knowledge and demographic variables. The findings suggest that the program was effective in increasing knowledge, with a post-test mean percentage of 93.91 compared to 45.28 in the pre-test.

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