



“TO ASSES THE EFFECTIVENESS OF VIDEO ASSISTED TEACHING ON KNOWLEDGE REGARDING NURSING MANAGEMENT OF PATIENTS UNDERGOING SONOGRAPHY GUIDED TRANSCERVICAL ABLATION (SONATA) AMONG STAFF NURSES OF SELECTED HOSPITALS”

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ABSTRACT

Introduction: Uterine fibroids are common benign gynecological conditions that may cause heavy menstrual bleeding, pelvic pain, and infertility. Sonography-guided transcervical ablation using the SONATA system is a minimally invasive, uterus-sparing treatment. Adequate nursing knowledge is essential for safe and effective patient care. **Objective:** To assess the effectiveness of video-assisted teaching on knowledge regarding the nursing management of patients undergoing sonography-guided transcervical ablation (SONATA) among staff nurses of a selected hospital. **Methodology:** A pre-experimental one-group pre-test and post-test design was used among 50 staff nurses selected by convenient sampling. Data were collected using a self-structured knowledge questionnaire. A video-assisted teaching programme was administered, and pre- and post-test knowledge scores were compared using descriptive and inferential statistics. **Results:** The mean pre-test knowledge score was 8.88 ± 3.09 , which increased to 21.94 ± 3.10 in the post-test. The Wilcoxon Signed Rank Test showed a statistically significant improvement in knowledge ($Z = -6.168$, $p < 0.001$). **Conclusion:** Video-assisted teaching was effective in improving staff nurses' knowledge regarding the nursing management of patients undergoing SONATA. It may be incorporated into routine in-service nursing education. **Keywords:** SONATA, Transcervical Ablation, Uterine Fibroids, Video-Assisted Teaching, Nursing Management, Staff Nurses

INTRODUCTION

Uterine fibroids are common benign tumors of the female reproductive system that may cause heavy menstrual bleeding, pelvic pain, pressure symptoms, anemia, and infertility, significantly affecting quality of life.

Ultrasound-guided transcervical ablation is a minimally invasive, uterus-preserving treatment that combines intrauterine ultrasound guidance with radiofrequency energy to precisely ablate fibroid tissue. The Sonata® System allows treatment through the cervical canal without abdominal incisions.²

Clinical evidence has demonstrated that the Sonata® System provides significant and sustained improvement in fibroid-related symptoms, with reduction in fibroid volume, rapid recovery, and a favorable safety profile. Emerging evidence also supports its potential as a fertility-preserving treatment option in appropriately selected women.⁷

Objectives:

- 1) To assess the pre existing knowledge regarding nursing management of patients undergoing sonography guided transcervical ablation (SONATA) among staff nurses of selected hospitals.
- 2) To evaluate the effectiveness of video assisted teaching regarding nursing management of patients undergoing sonography guided transcervical ablation (SONATA) among staff nurses of selected hospitals.
- 3) To determine the association of study finding with selected demographic variable.

Research Hypothesis

- 1) **H₀(Null hypothesis)** - There is no significant difference between pre test and post test knowledge score of video assisted teaching on nursing management of patients undergoing sonography guided transcervical ablation (SONATA)
- 2) **H₁(Research hypothesis)** - There is significant difference between pre test and post test knowledge score of video assisted teaching on nursing management of patients undergoing sonography guided transcervical ablation (SONATA)

Conceptual Framework

The conceptual framework of the present study was based on Ludwig von Bertalanffy's General System Theory using the Input–Throughput–Output (ITO) Model. The framework explains the study through input, process, and output. In the present study, staff nurses' existing knowledge regarding the nursing management of patients undergoing sonography-guided transcervical ablation (SONATA) was assessed through a pre-test. The Video-Assisted Teaching Programme was provided as the intervention, followed by a post-test to assess improvement in knowledge. The framework demonstrates how the inputs are processed through the teaching intervention, resulting in the desired outcome of improved knowledge regarding nursing management of patients undergoing SONATA.

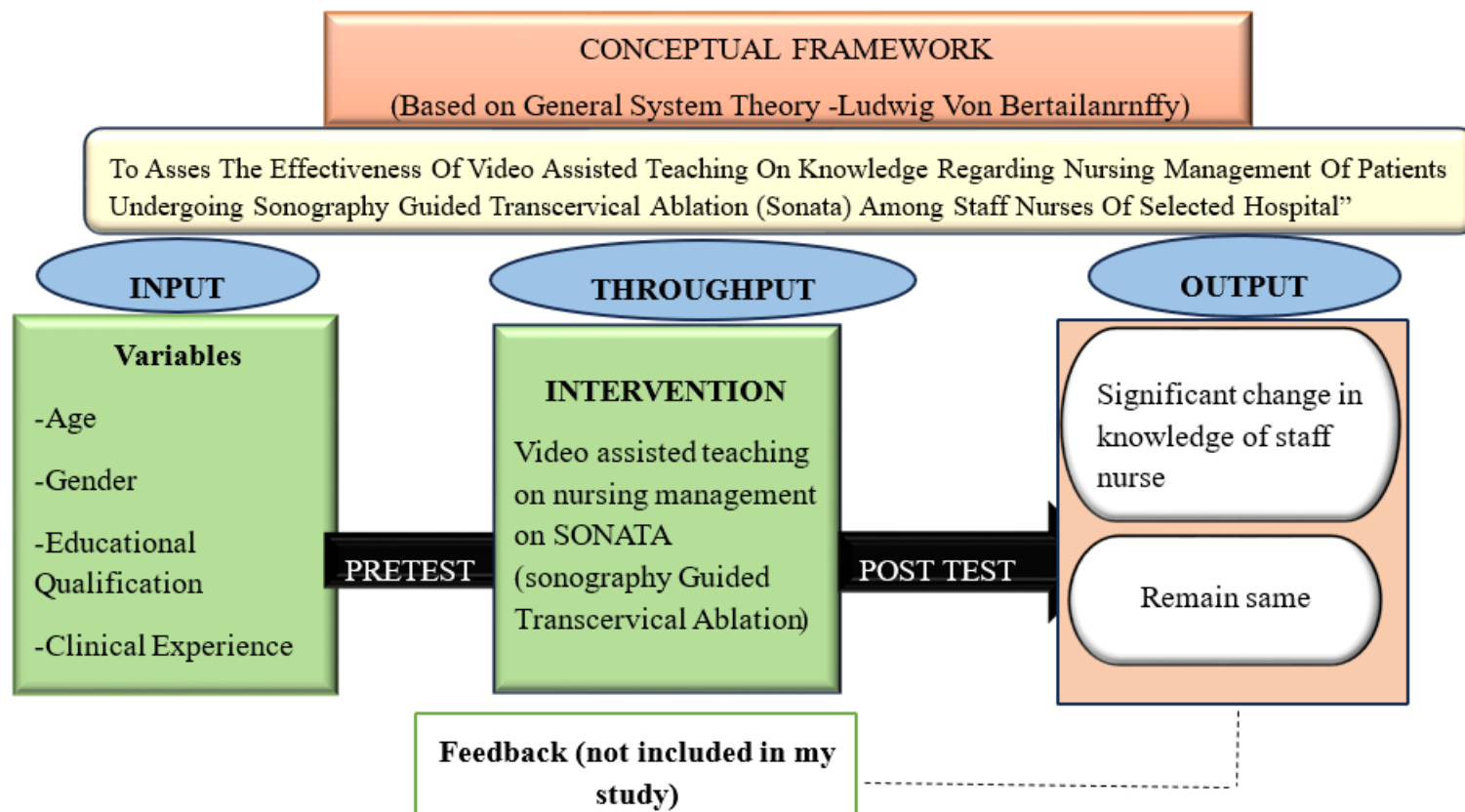


Fig no.1.1 Conceptual Framework on Ludwig von Bertalanffy



III METHODOLOGY

Research Approach :

The present study adopted a quantitative research approach to evaluate the effectiveness of video-assisted teaching on the knowledge of staff nurses regarding nursing management of patients undergoing sonography-guided transcervical ablation (Sonata).

Research Design :

A pre-experimental one group pre-test post-test research design was adopted to assess the effectiveness of video-assisted teaching on the knowledge of staff nurses regarding nursing management of patients undergoing sonography guided transcervical ablation (SONATA). Post test after 7 days .

Setting Of The Study :

The setting was selected based on its geographical convenience, availability of the required study population, and feasibility in terms of time, cost, and resources. The chosen hospital had an adequate number of staff nurses who met the inclusion criteria for the study.

Population :

The identification of a population helps in selecting participants who are suitable for achieving the study objectives. In the present study, the population consisted of staff nurses working in selected hospitals.

Sampling :

In the present study, non-probability convenience sampling technique was used Staff Nurses from selected hospitals who were accessible and willing to participate.

Sample Size :

The sample size consisted of 50 Staff Nurses including 5% drop out and sample were selected according to sampling criteria.

Single Population Proportion Formula

$$N = \frac{2 Z_{\alpha}^2 p^2}{d^2}$$

$$Z_{\alpha} = 1.96 \text{ for } \alpha=0.05$$

p = Proportion of knowledge about hepatocellular carcinoma = 3.3% (reference article)
d = Absolute precision = 5%

Sample size was calculated to be 50.

Sampling Technique:

Non-probability convenience sampling technique was used. Prior to data collection, formal permission was obtained from the concerned hospital authorities.

Sampling Criteria:

The inclusion criteria was Staff Nurses working in selected hospitals, while those who had previously received training on SONATA are excluded .

Variable :

The independent variable was the video-assisted teaching programme on nursing management of patients undergoing sonography-guided transcervical ablation (SONATA), dependent variable was the knowledge of staff nurses regarding nursing management of patients undergoing the Sonata procedure and demographic variables included age, gender, educational qualification, professional experience, and area of work.

Development Of Instrument :

Data collection tool is well-structured and organized into two sections This approach ensures comprehensive data collection and aligns with research objectives.

Section A: Demographic data (This section consists of 4 items include age, gender, educational status and year of experience)

Section B: Self-Structured Questionnaire regarding nursing management of patients undergoing sonography guided transcervical ablation (SONATA)

Specification of instrument :

The data collection tool used in this study was well structured and systematically organized to obtain comprehensive information related to the study objectives. The tool consisted of two sections, namely Section A and Section B.

Grading Of Knowledge Score :

Rating	Score	Description
Poor	0 - 6	Indicates inadequate knowledge regarding nursing management of patients undergoing sonography-guided transcervical ablation (SONATA).
Average	07-12	Indicates moderate knowledge regarding nursing management of patients undergoing SONATA, with scope for improvement.
Good	13 - 18	Indicates adequate knowledge regarding nursing management of patients undergoing SONATA.
Very Good	19 - 24	Indicates good understanding of nursing care for patients undergoing the SONATA procedure.
Excellent	Above 24	Indicates comprehensive and thorough knowledge regarding nursing management of patients undergoing SONATA.

Specification Of Intervention :

Rapport was established and informed consent obtained. Pre-test knowledge was assessed using a structured questionnaire, followed by a video-assisted teaching programme on SONATA and nursing management. After 7 days, a post-test was conducted using the same questionnaire to assess effectiveness.

Validity :

Content validity was assessed by 15 experts from Obstetrics & Gynecology, Child Health Nursing, Medical-Surgical Nursing, and a statistician. Their suggestions regarding relevance, clarity, and completeness were incorporated to refine the questionnaire.

Reliability :

Reliability was tested on 12 samples by test-retest method to find the test-retest reliability coefficient, we need to find out the correlation between the test and the retest. In this case, we can use the formula for the correlation coefficient, such as Pearson's correlation coefficient.

Pilot study:

The pilot study was conducted to check the feasibility of the study and it is done on 12 samples on 19/09/2025 (pre-test and Intervention) and 26/09/2025 (post-test) .

Main study :

The main study was conducted on 17/11/2025 among selected staff nurses who met the inclusion criteria. After obtaining administrative permission and informed consent, the structured tools were administered as per the study protocol to assess the knowledge of staff nurses regarding nursing management of sonography guided transcervical ablation. The collected data were checked for completeness and prepared for analysis.

Data Collection :

Data were collected using self-structured questionnaire, with 1 mark for each correct answer and 0 for an incorrect answer followed by intervention and post test.

Data Analysis :

Data were coded and analyzed using SPSS, Descriptive Statistics, Wilcoxon Signed Rank Test, Chi – Square test were planned according to the objectives of study .

Statistical Plan For Data Analysis :

Frequency and percentage, mean standard deviation were used for descriptive analysis, Wilcoxon signed rank test, chi square test for inferential statistics.

RESULT AND DISCUSSION

The present study included 50 Staff Nurses. The demographic characteristics assessed were age, gender, educational status and year of experience.

SECTION A**Descriptive Statistics**

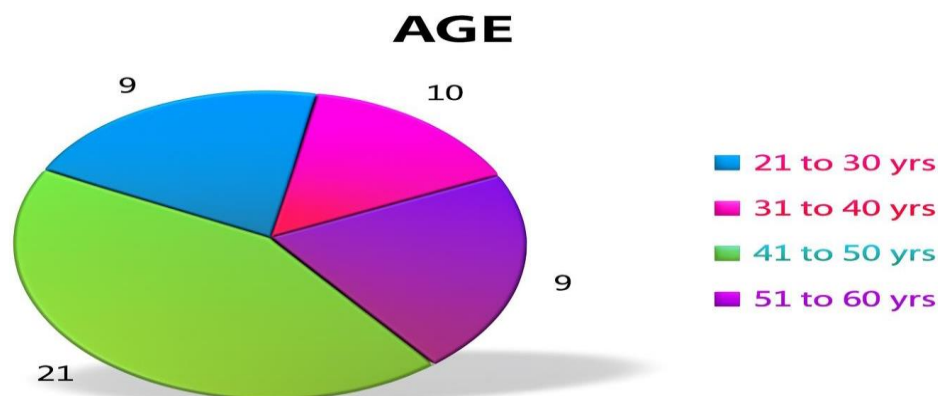
This covers the description over the demographic variables. This includes the summary over participants' records for their demographic characteristics. Following description covers section-wise descriptive & analytical summary for the study intended.

Descriptive statistics such as frequency and percentage were used for data summarization. A total of 50 participants were included in the study.

Table 4.1: Percentage wise distribution of Staff Nurses according to their age

		Frequency	Percent
Age	21 to 30 yrs	10	20.0
	31 to 40 yrs	10	20.0
	41 to 50 yrs	21	42.0
	51 to 60 yrs	9	18.0
	Total	50	100.0

The 4.1 table illustrates the age distribution of 50 participants. The largest group was 41–50 years (21 participants, 42%), followed by 21–30 years and 31–40 years (10 participants each, 20%). The 51–60 years group was the smallest with 9 participants (18%). Overall, the sample was predominantly middle-aged, with balanced representation of younger participants and fewer older individuals.



Graph 4.1: Percentage wise distribution of Staff Nurses according to their age in years

Table 4.2: Percentage wise distribution of Staff Nurses according to their Gender

	Frequency	Percent
FEMALE	50	100.0

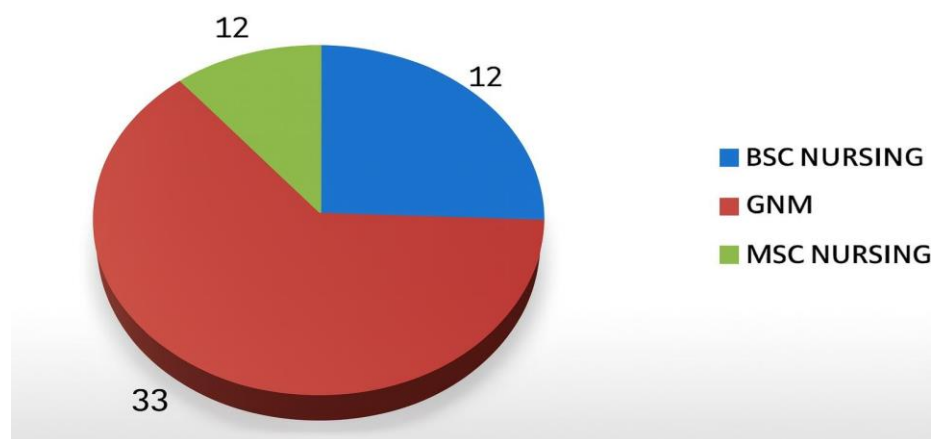
The table represents the distribution of participants according to gender. The data clearly shows that all 50 respondents (100%) were female, indicating a completely uniform gender composition within the study sample.

Table 4. 3: Percentage wise distribution of Staff Nurses according to their Educational Qualification

	Frequency	Percent
BSC NURSING	12	24.0
GNM	33	66.0
MSC NURSING	5	10.0
Total	50	100.0

The 4.3 table shows participants' nursing qualifications (n=50). Most held GNM diplomas (33, 66%), followed by B.Sc. Nursing graduates (12, 24%), and M.Sc. Nursing postgraduates (5, 10%). GNM was the most common qualification, while M.Sc. represented the smallest group with advanced training.

EDUCATIONAL QUALIFICATION



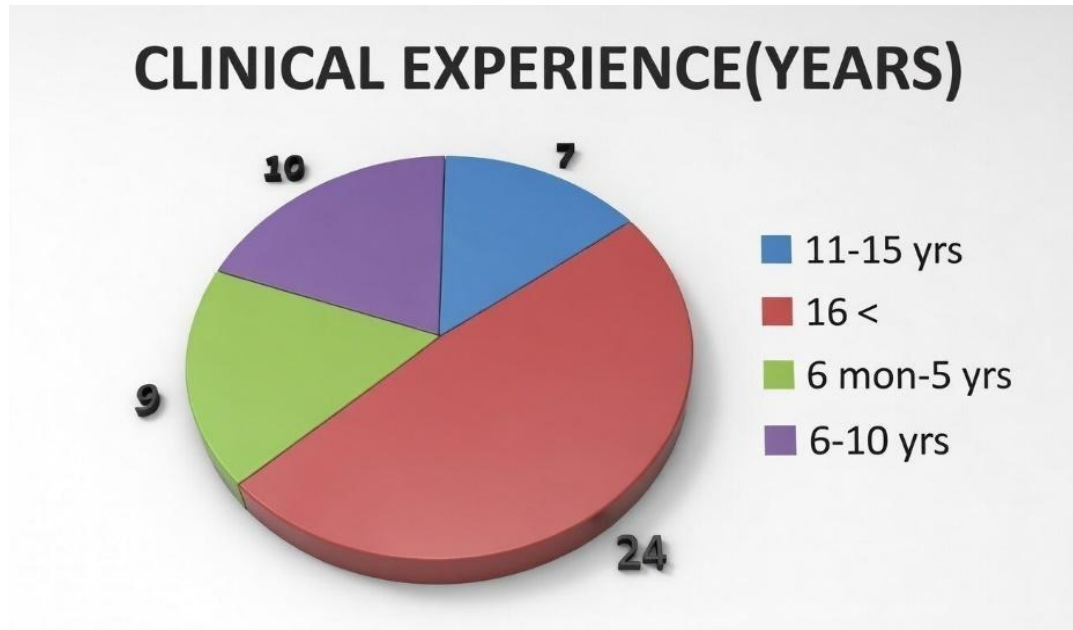
Graph 4.3: Percentage wise distribution of Staff Nurses according to their educational qualification

Table 4.4: Percentage wise distribution of Staff Nurses according to their clinical experience

	Frequency	Percent
11-15 yrs	7	14.0
16 <	24	48.0
6 mon -5yrs	9	18.0
6-10 yrs	10	20.0

Total	50	100.0
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The table shows participants' clinical experience (n=50). Most had >16 years of experience (24, 48%), followed by 6–10 years (10, 20%) and 6 months–5 years (9, 18%). The least represented group was 11–15 years (7, 14%), indicating a predominance of highly experienced nurses in the sample.

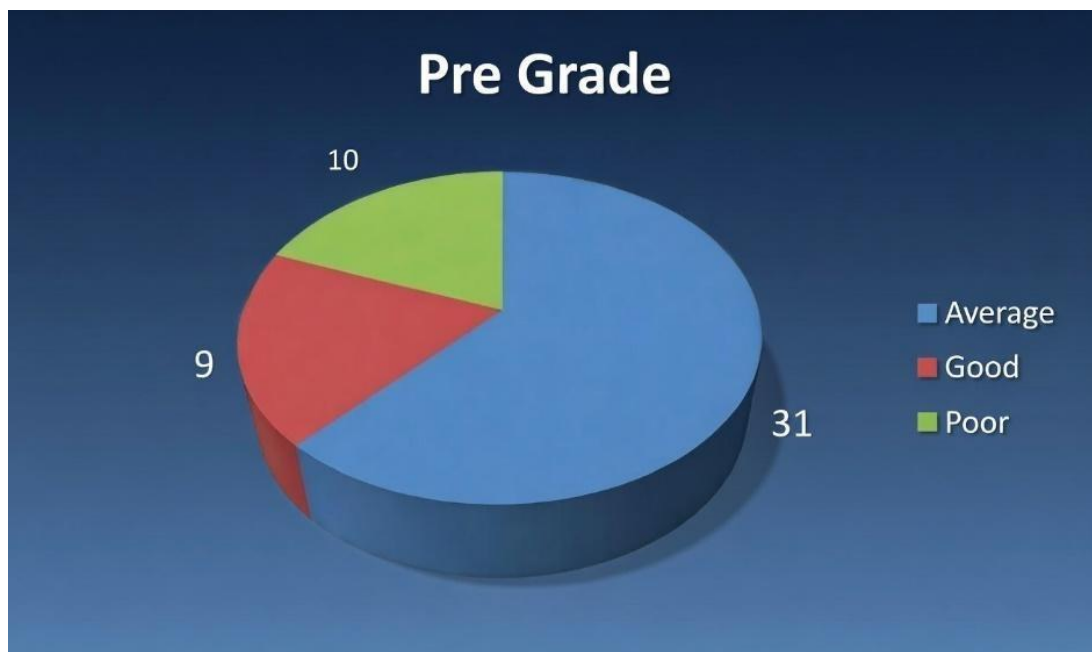


Graph4.4: Percentage wise distribution of Staff Nurses according to their clinical experience

Table 4.5: Frequency and Percentage Distribution of Participants According to their Level of Knowledge level pre grade score

	Frequency	Percent
Average	31	62.0
Good	9	18.0
Poor	10	20.0
Total	50	100.0

The table shows participants' levels (n=50). Most were at an average level (31, 62%), followed by poor (10, 20%) and good (9, 18%). Overall, performance was predominantly average, indicating a need for interventions to improve knowledge, especially among those with poor and average levels.

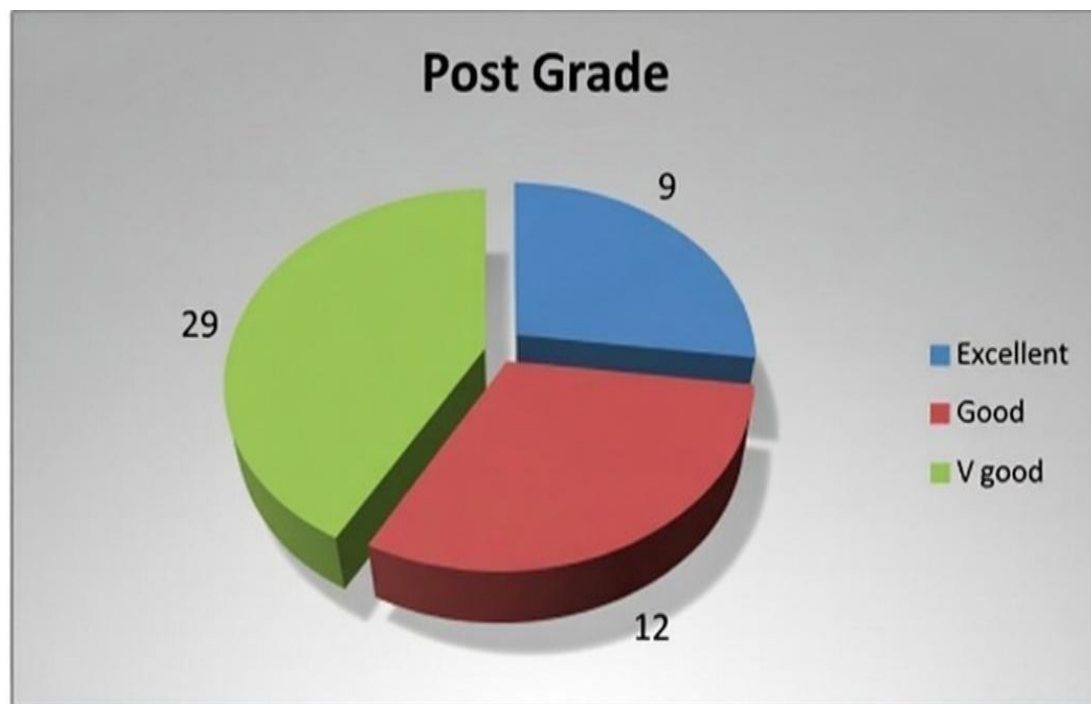


Graph 4.6 : Frequency and Percentage Distribution of Participants According to their Level of Knowledge level pre grade score

Table 4.6: Frequency and Percentage Distribution of Participants According to Their Level of Knowledge level post grade score)

	Frequency	Percent
Excellent	9	18.0
Good	12	24.0
V good	29	58.0
Total	50	100.0

Table 4.6 shows participants' post-assessment grades (n=50). Most scored very good (29, 58%), followed by good (12, 24%) and excellent (9, 18%). Overall, the majority achieved good to very good grades, indicating a positive improvement in performance and the effectiveness of the intervention.



Graph 4.6 : Frequency and Percentage Distribution of Participants According to their Level of Knowledge level post grade score.

SECTION B

Evaluation of the effectiveness of video assisted teaching regarding nursing management of patients undergoing sonography guided transcervical ablation (SONATA) among staff nurses of selected hospital.

This section deals with the effectiveness of level of knowledge regarding nursing management of sonography guided transcervical ablation (sonata) among staff nurses of selected hospitals. The level of knowledge score is divided under following heading of poor, average, good and very good and excellent respectively.

Section B deals with inferential analysis used to test the significance of differences using appropriate statistical tests such as the Wilcoxon Signed Rank test.

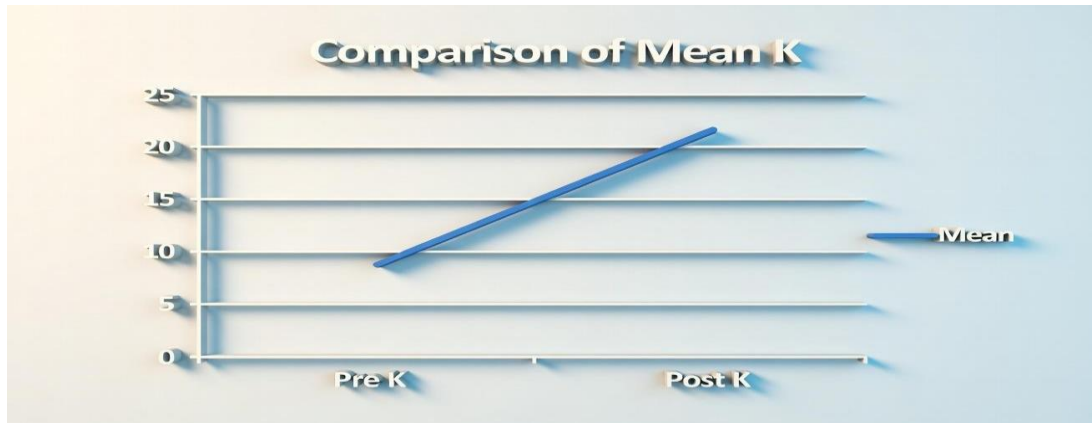
Wilcoxon Signed Rank test showed a statistically highly significant difference between pre-test and post-test knowledge scores ($p < 0.01$), with higher scores observed in the post-test Comparison of Pre-test and Post-test Knowledge Scores Using Wilcoxon Signed Rank Test

Table 4.7: - Comparison of Pre-test and Post-test Knowledge Scores Using Wilcoxon Signed Rank Test

		Mean	Std. Deviation	Median	Mean diff	SD diff	Z value	p value of Wilcoxon Signed Ranks Test
Knowledge	Pre	8.88	3.095	8	-13.060	2.113	-6.168	0.000**
	Post	21.94	3.100	22.5				

The table compares pre-test and post-test knowledge scores using the Wilcoxon Signed Ranks Test. The pre-test mean score was 8.88 (SD = 3.095, median = 8, 29.6%), indicating low baseline knowledge. After the intervention, the post-test mean increased to 21.94 (SD = 3.100, median = 22.5, 73.1%), showing substantial

improvement. The mean difference was -13.06 ($SD = 2.113$), and the Wilcoxon test showed $Z = -6.168$, $p = 0.000$, indicating a statistically significant increase in knowledge, demonstrating the intervention's effectiveness.



Graph 4.7 : Comparison of Pre-test and Post-test Knowledge Scores Using Wilcoxon Signed Rank Test

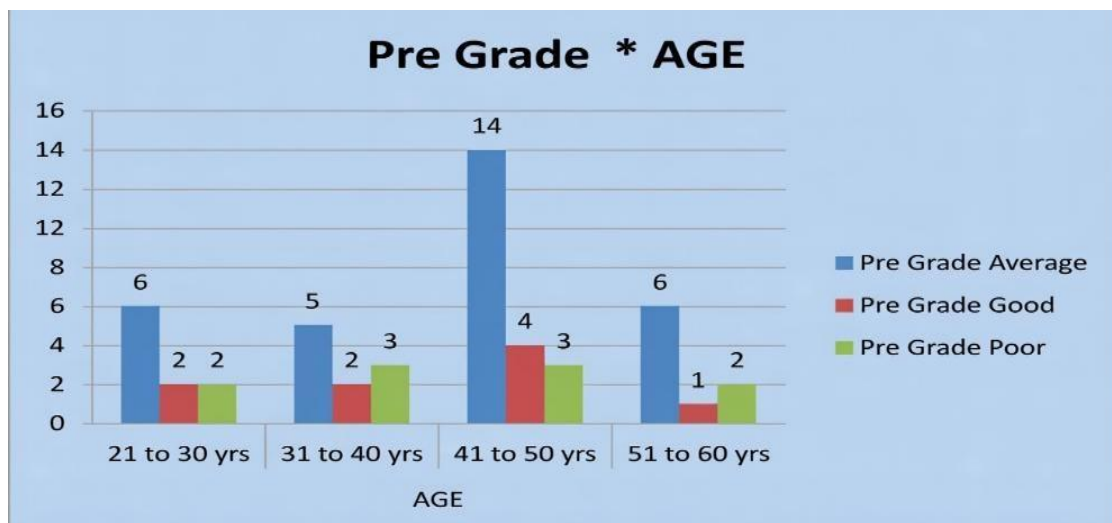
SECTION C: ASSOCIATION RESULTS

Association of the level of the pretest knowledge among staff hospitals in relation to their demographic variables

Table 4.8: Inter group comparison of frequencies of Pre Grade in AGE

		Pre Grade				ChiSquare value	P value of Chi-Square test
		Average	Good	Poor	Total		
AGE	21 to 30 yrs	6	2	2	10	1.504	0.959#
	31 to 40 yrs	5	2	3	10		
	41 to 50 yrs	14	4	3	21		
	51 to 60 yrs	6	1	2	9		
	Total	31	9	10	50		

The table shows the distribution of pre-test knowledge levels among participants according to age. Most participants aged 41–50 years ($n=21$) had average knowledge, while fewer participants in other age groups had good or poor knowledge. The Chisquare test ($\chi^2 = 1.504$, $p = 0.959$) indicates no significant association between age and pre-test knowledge levels.

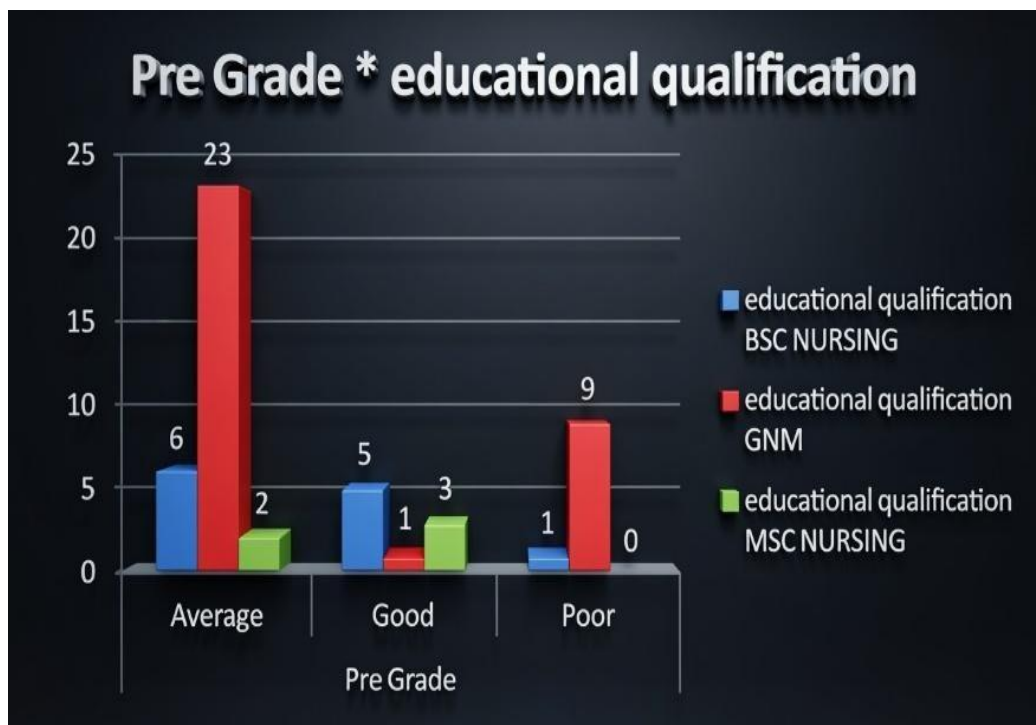


Graph 4.8 : Inter group comparison of frequencies of Pre Grade in educational qualification

Table 4.9 : Inter group comparison of frequencies of Pre Grade in educational qualification

		Pre Grade				ChiSquare value	P value of ChiSquare test
		Average	Good	Poor	Total		
Educational Qualification	BSC NURSING	6	5	1	12	16.416	0.003**
	GNM	23	1	9	33		
	MSC NURSING	2	3	0	5		
	Total	31	9	10	50		

The table shows the association between participants' educational qualification and their pre-grade performance (n=50). Most B.Sc. Nursing participants scored Average (6) or Good (5), GNM participants mostly scored Average (23) or Poor (9), and M.Sc. Nursing participants mainly scored Good (3) or Average (2). Chi-square analysis revealed a statistically significant association between educational qualification and pre-grade performance ($\chi^2 = 16.416$, $p = 0.003$).

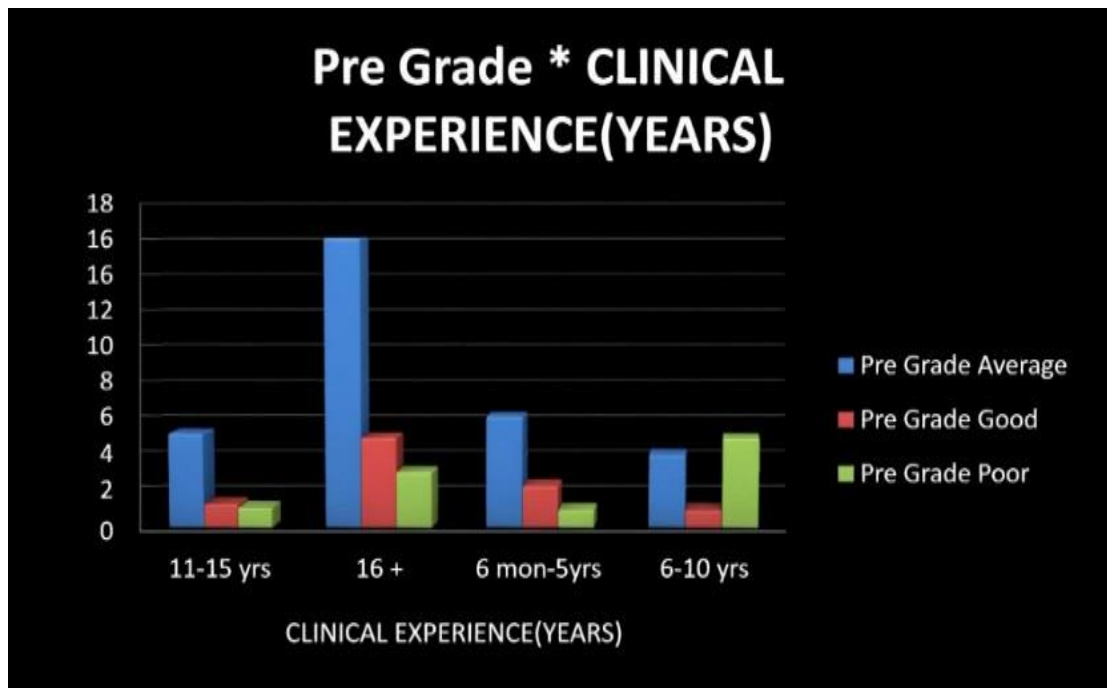


Graph 4.9: Inter group comparison of frequencies of Pre Grade in educational qualification

Table 4.10: Inter group comparison of frequencies of Pre Grade in clinical experience(years)

		Pre Grade				ChiSquare value	P value of ChiSquare test
		Average	Good	Poor	Total		
CLINICAL EXPERIENCE (YEARS)	11-15 yrs	5	1	1	7	7.247	0.299#
	16 <	16	5	3	24		
	6 mon - 5yrs	6	2	1	9		
	6-10 yrs	4	1	5	10		
	Total	31	9	10	50		

Table 15 shows the association between clinical experience and pre-grade performance (n=50). Participants with 16+ years of experience mostly scored Average (16) or Good (5), while other experience groups showed mixed distributions across Average, Good, and Poor. Chi-square analysis indicated no statistically significant association between clinical experience and pre-grade performance ($\chi^2 = 7.247$, $p = 0.299$).



Graph 4.10 : Inter group comparison of frequencies of Pre Grade in clinical experience(years)

Reliability Analysis :

Pearson Correlation Coefficient formula

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$

r = correlation coefficient

$\bar{x}$ = values of the x-variable in a sample $\bar{X}$ = mean of the values of the x-

variable $\bar{y}$ = values of the y-variable in a sample

$\bar{y}$ = mean of the values of the y-variable

Reliability = 0.87

Summary of Major Findings

- At pre-test, 62% of staff nurses had average knowledge, 20% had poor knowledge, and 18% had good knowledge regarding nursing management of SONATA.
- At post-test, 58% had very good knowledge, 24% had good knowledge, and 18% had excellent knowledge.
- The mean knowledge score increased from 8.88 ± 3.095 at pre-test to 21.94 ± 3.10 at post-test.
- The Wilcoxon Signed Rank Test showed a statistically significant improvement in knowledge ($Z = -6.168$, $p = 0.000$), indicating that video-assisted teaching was effective.
- A statistically significant association was found between pre-test knowledge and educational qualification ($\chi^2 = 16.416$, $p = 0.003$).

• No statistically significant association was found between pre-test knowledge and age ($\chi^2 = 1.504$, $p = 0.959$) or clinical experience ($\chi^2 = 7.247$, $p = 0.299$).

DISCUSSION

The present study was conducted to assess the effectiveness of a Video-Assisted Teaching Programme on knowledge regarding the nursing management of patients undergoing sonography-guided transcervical ablation (SONATA) among 50 staff nurses. The findings showed that the participants had limited knowledge before the intervention, with 62% having average knowledge, 20% having poor knowledge, and 18% having good knowledge. The mean pre-test knowledge score was 8.88 ± 3.095 . After the intervention, a considerable improvement in knowledge was observed, with 58% of participants achieving very good knowledge, 24% having good knowledge, and 18% having excellent knowledge. The mean post-test knowledge score increased to 21.94 ± 3.10 . The Wilcoxon Signed Rank Test showed a statistically significant improvement in knowledge ($Z = -6.168$, $p = 0.000$), indicating the effectiveness of the Video-Assisted Teaching Programme.

The findings of the present study highlight the importance of structured educational programmes in improving nurses' knowledge regarding newer and minimally invasive gynecological procedures. Video-assisted teaching provides standardized and visual information that can enhance understanding and facilitate better retention of important concepts related to SONATA, including patient preparation, nursing management, post-procedure care, and prevention of complications.

The significant improvement in post-test knowledge may be attributed to the systematic presentation of information through the video-assisted teaching programme. The findings support the use of video-assisted teaching as a simple and effective educational strategy for strengthening staff nurses' knowledge regarding the nursing management of patients undergoing SONATA.

CONCLUSION

The study concluded that staff nurses had limited knowledge regarding the nursing management of patients undergoing sonography-guided transcervical ablation (SONATA) before the intervention. The Video-Assisted Teaching Programme resulted in a significant improvement in knowledge, with the mean score increasing from 8.88 ± 3.095 in the pre-test to 21.94 ± 3.10 in the post-test ($Z = -6.168$, $p = 0.000$). Therefore, the Video-Assisted Teaching Programme was effective in improving the knowledge of staff nurses regarding the nursing management of patients undergoing SONATA.

These findings indicate that video-assisted teaching can be a practical and useful method for providing standardized education to nurses regarding newer gynecological procedures and their associated nursing care.

RECOMMENDATIONS

1. Larger studies involving multiple hospitals may be conducted to increase the generalizability of the findings.
2. Future studies may assess the effect of improved knowledge on the actual nursing practices and quality of patient care.
3. Comparative studies may be conducted to evaluate video-assisted teaching with other teaching methods such as demonstrations, workshops, simulation, and blended learning.
4. Longitudinal studies may be conducted to assess the retention of knowledge regarding SONATA nursing management over a longer period.
5. Regular education regarding SONATA and its nursing management may be included in continuing nursing education and in-service training programmes for staff nurses.

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