

**“A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ABG ANALYSIS AMONG STAFF NURSES IN SELECTED HOSPITALS AT HONAVAR UTTARA KANNADA”**

By

**MS. SUPRITHABIRNUR**

**Submitted to**

Rajiv Gandhi university of Health sciences, Bangalore, Karnataka.



Under short term Research Grants for Undergraduate Students of Institutions affiliated to  
RGUHS for the year 2020 – 21  
and in Partial fulfillment of the requirements for the degree of  
**Bachelor of Science in Nursing.**

Under the guidance of

**MRS. ANU SUSAN PAUL**



St. Ignatius Institute of Health Sciences,  
Honavar, Uttara Kannada.

**2021**

## **DECLARATION BY THE CANDIDATE**

I hereby declare that this thesis titled “**A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ABG ANALYSIS AMONG STAFF NURSES IN SELECTED HOSPITALS AT HONAVAR UTTARA KANNADA**” is a bonafide and genuine work to carried out by me under the guidance of **Mrs. Anu Susan Paul** , Associate Professor, St. Ignatius Institute of Health Sciences, Honavar.

**Date:**

**Ms. Supritha Birnur**

**Place:**

**Final year B.Sc. Nursing**

## **CERTIFICATE BY THE GUIDE**

This is to certify that thesis “**A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ABG ANALYSIS AMONG STAFF NURSES IN SELECTED HOSPITALS AT HONAVAR UTTARA KANNADA**” is a bonafide research work done by **Ms. Supritha Birnur** under Short term Research Grants for Undergraduate Students of Institutions affiliated to RGUHS for the year 2020 – 21.

**Date :**

**Place:** Honavar.

**Signature of the Guide**

**MRS. ANU SUSAN PAUL**

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Honavar.

**ENDORSEMENT BY THE PRINCIPAL /HEAD OF THE INSTITUTION**

This is to certify that the dissertation entitled “**A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ABG ANALYSIS AMONG STAFF NURSES IN SELECTED HOSPITALS AT HONAVAR UTTARA KANNADA**” is a bonafide research work done by **Ms. Supritha Birnur** under Short term Research Grants for Undergraduate Students of Institutions affiliated to RGUHS for the year 2020 – 21 under the guidance of **Mrs. Anu Susan Paul** , Associate Professor, St. Ignatius Institute of Health Sciences, Honavar.

**Date :**

**Place:** Honavar.

ST. IGNATIUS INSTITUTE OF HEALTH SCIENCES, HONAVAR.

SHORT-TERM RESEARCH GRANT FOR UNDERGRADUATE STUDENTS

2020-2021

FINAL REPORT

1.	<b>TITLE OF THE PROJECT</b>	<b>“A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ABG ANALYSIS AMONG STAFF NURSES IN SELECTED HOSPITALS AT HONAVAR UTTARA KANNADA”</b>
2.	<b>RGUHS PROJECT CODE</b>	<b>UGNUR419</b>
3.	➤ <b>NAME OF THE STUDENT</b>	<b>Ms. Supritha Birnur</b>
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5.	<b>NAME OF THE DEPARTMENT</b>	<b>NURSING</b>
6.	<b>DATE OF COMMENCEMENT OF THE RESEARCH ACTIVITY</b>	<b>5/3/21</b>
7.	<b>DATE OF COMPLETION</b>	<b>28/6/21</b>
8.	❖ <b>OBJECTIVES STATED</b>	<b>The objectives of the study are;</b>  1. To assess the pre and post-test knowledge level of staff nurses regarding arterial blood gas analysis.  2. To administer a structured teaching programme on ABG analysis among nurses.  3. To evaluate the effectiveness of structured teaching programme among staff nurses in terms of enhancement post -test knowledge score.

	4. To find out association between demographic variables, and pre-test knowledge score.
❖ <b>OBJECTIVES ACHIEVED</b>	<ol style="list-style-type: none"> <li>1) Assessed the pre- and post- test knowledge level of staff nurses regarding arterial blood gas analysis.</li> <li>2) Structured teaching programme among staff nurses was found to be effective.</li> <li>3) Significant association Found between the pre-test knowledge score and selected demographic variables</li> </ol>

**9. FIELD /EXPERIMENTAL WORK GIVING FULL DETAILS OF RESEARCH METHOD ADOPTED.**

**METHODOLOGY:**

This part of a research work is the deciding one about what, when, where and how the researcher will conduct present study to achieve the aim set at the beginning by the investigator. It explains the whole concept of the present study.

**RESEARCH APPROACHES**

It says about how the researcher is planning to deal with the selected problem. This indicates that how the problem is solved either by measurable data or quality-based observation. The present study was conducted as quantitative evaluative approach as it assess STP on ABG analysis among the staff nurses.

**RESEARCH DESIGN:**

Based on the objective of the study, the research design selected for the staff nurses study is pre experimental, non-randomized one group pre and post-test group design was adopted for the Study as it enables to determine the effectiveness of Structured Teaching Program on Knowledge Regarding ABG analysis among the staff nurses in selected hospital at Honavar Uttara Kannada.

**VARIABLES UNDER STUDY:**

These are the factors denotes the nature or characteristics of the study subjects.

- **Independent Variable:** Structured Teaching Programme on ABG analysis.
- **Dependent Variable:** Knowledge level on ABG analysis.
- **Demographic Variable:** In the study, the demographic variables are Age of in years, Gender of nurses, educational qualification, year of experience, area of experience, previously performed the ABG analysis, specifying the area of performing the ABG analysis.

**SETTING OF THE STUDY:**

It is the geographical area or the place where the study will be conducted. The present study will be conducted in St. Ignatius hospital at Honavar Uttara Kannada.

**POPULATION:**

Complete set of individual all over the world who meets the criteria. In this study the population is the staff nurses in the selected Hospitals at Honavar Uttara Kannada.

**• Target population:**

The target population consist of the total members of a define set of staff nurses from whom the data will be generalized. In the present study the target population was all the staff nurses in the selected Hospitals at Honavar Uttara Kannada.

**• Accessible population:**

In the study the accessible population was staff nurses who are present in SIHS Honavar Uttara Kannada.

**SAMPLE**

A sample is a small portion of population selected to participate in the research study. The sample for this research is staff nurses at SIHS Honavar Uttara Kannada.

**SAMPLE SIZE:**

The Sample size taken for this study is consisted of 30 Staff nurses at SIHS Honavar Uttara Kannada.

**SAMPLING TECHNIQUE:**

Sampling defines the process of selecting a group of people (or) other elements with which to conduct a study. In this study Non Random[Purposive] sampling procedure where the subject selected, in part of whole, at the purposive of researcher, or entitle using the most conveniently available people as a study participants.

**SAMPLING CRITERIA:**

These are the eligible points or limits that the researcher develop according to his study objectives and expect in every sample to be in the sampling frame.

**Inclusion criteria:**

- The staff nurses of SIH Honavar Uttara Kannada.
- The staff nurses who are available during data collection.

**Exclusion criteria:**

- The staff nurses those who are not available during data collection.
- ANM staffs

**SELECTION & DEVELOPMENT OF TOOL:**

Research tool must be developed legible, reliable and valid in order to measure exactly what meant to be measured.

- An extensive review of research and non-research literature.
- Based on consultation with experts in the field and related field.
- Based on opinion of the expert to ascertain for the clarity and appropriateness of the items of given structured questionnaire.
- Based on informal discussion with peer group.

**DESCRIPTION OF THE TOOL:**

The tool used was Structured knowledge questionnaire was developed to assess the effectiveness of Structured Teaching Program on ABG analysis among Staff nurses.

**Self- structured questionnaire consist of two sections-**

- **Section I:** It consists of sample characteristics (Demographic Variables)
- **Section II:** It consists of structured Knowledge questionnaire regarding among Staff nurses.

**SECTION-I:** This section consisted of 07 items obtaining information regarding subjects Age of nurses in years, Gender of nurses, religion, education of father, educational qualification, year of experience, age of experience, previously performed ABG analysis, specifying the area if perform.

**SECTION-II:** This section consist of 34 multiple choice questions covering of introduction of ABG analysis, indication, purposes, contraindication, preparation of patient and the site, modified Allen test, procedure, complication and role of nurses to assess the knowledge of staff nurses with a maximum score of 34 and the entire question has 4 options where as one will be the correct answer and other three will be the wrong answers. Each correct answer score "1" mark and incorrect answer scores "0" mark.

## CRITERIAN MEASURES

The multiple choice question were used to assess the knowledge of the staff nurses Regarding ABG analysis, the assessment of knowledge will be identified through following scale –

Knowledge Level	Score Range	Percentage (%)
Poor	0-9	0-26.4
Average	10-18	29.4-52.9
Good	19-27	55.8-79.4
Excellent	28-34	82.3-100

**Score interpretation Total: 34 Minimum Score: 1, Maximum Score: 34**

### TESTING OF THE TOOL:

#### CONTENT VALIDITY:

To ensure the content validity of tool, the prepared tool along with problems statement, objectives, operational definition, hypothesis, self-structured booklet was submitted to 5 experts, in the field of Clinical pathology, Physician, and Anesthetist. Expert requested to judge the items on the basis of their relevance, clarity, feasibility organization of the items included in the study.

#### RELIABILITY OF TOOL:

Statistical method used for calculating reliability of research instrument is Split Half method. The reliability co-efficient calculated using split half formula to determine Reliability co-efficient for self-structured knowledge questionnaire. The “r” was found to be  $r=0.89$  This correlation coefficient was reliable and it is good tool for assessing the effectiveness of structured teaching programme on Knowledge regarding ABG analysis among staff nurses of SIH Honavar Uttara Kannada.

#### PILOT STUDY:

The miniature of the actual study is the pilot study was conducted in Honavar Hospital from 02/06/2021 to 10/06/2021 on 3 staff nurses and they were excluded from the main study. The average time taken by each subject to attend the questionnaire and given answer was about 1 hour within a period of one week. The data analysis was done using descriptive and inferential statics. Pilot study confirmed practicability and provide confidence to the researcher for main study. After pilot study the tool was found to be feasible and acceptable. The pilot study schedule is

Pre-test			Post Test		
Date	No of sample	Duration	Date	No of sample	Duration
02/06/2021	03	1 hour	10/06/2021	03	1 hour

#### DATA COLLECTION PROCESS:

Data collection is precise, systematic method of gathering information relevant the research to conduct the main study at SIH. A formal written permission was obtained from concerned authorities before data collection from Director of the institution. Data collection period was from 12/06/2021 to 22/06/2021. The Procedure was the same as in the pilot study valid and reliable self-knowledge questionnaire was used for data collection. Self-introduction and establishing rapport with the subject 30 Staff nurses. Explained the importance of research study, the confidentiality of their responses was assured and consent was obtained from each Participant.

Pre-test				Post-test			
Date	sample	Time	Area	Date	sample	Time	Area
12/06/21	09	9-10 am	Seminar hall	19/06/21	09	2-3pm	Seminar hall
13/06/21	11	9-10am	Seminar hall	20/06/21	11	2-3pm	Seminar hall
14/06/21	10	9-10am	Seminar hall	21/06/21	10	2-3pm	Seminar hall

#### The process used for data collection was as follows

- The research investigator introduced her and explained the purpose of the study to the staff nurses.
- The written consent was obtained from the subjects.
- The self-structured knowledge questionnaire was used to assess the Knowledge Regarding ABG analysis.
- The participants were thanked for their co-operation.
- Data collected was then tabulated and analyzed.

## **Data collection process is scheduled as following**

### **PLAN FOR DATA ANALYSIS**

Analysis of the data was planned on the basis of objective and hypothesis. The data plan to be analysis by using both descriptive and inferential statistics and the following plan for analysis would be worked out.

#### **Descriptive statistics:**

- Demographic data was analyzed in items of frequency and percentage.
- The knowledge and practice regarding ABG analysis.
- Mean, mean percentage and standard deviation was computed.

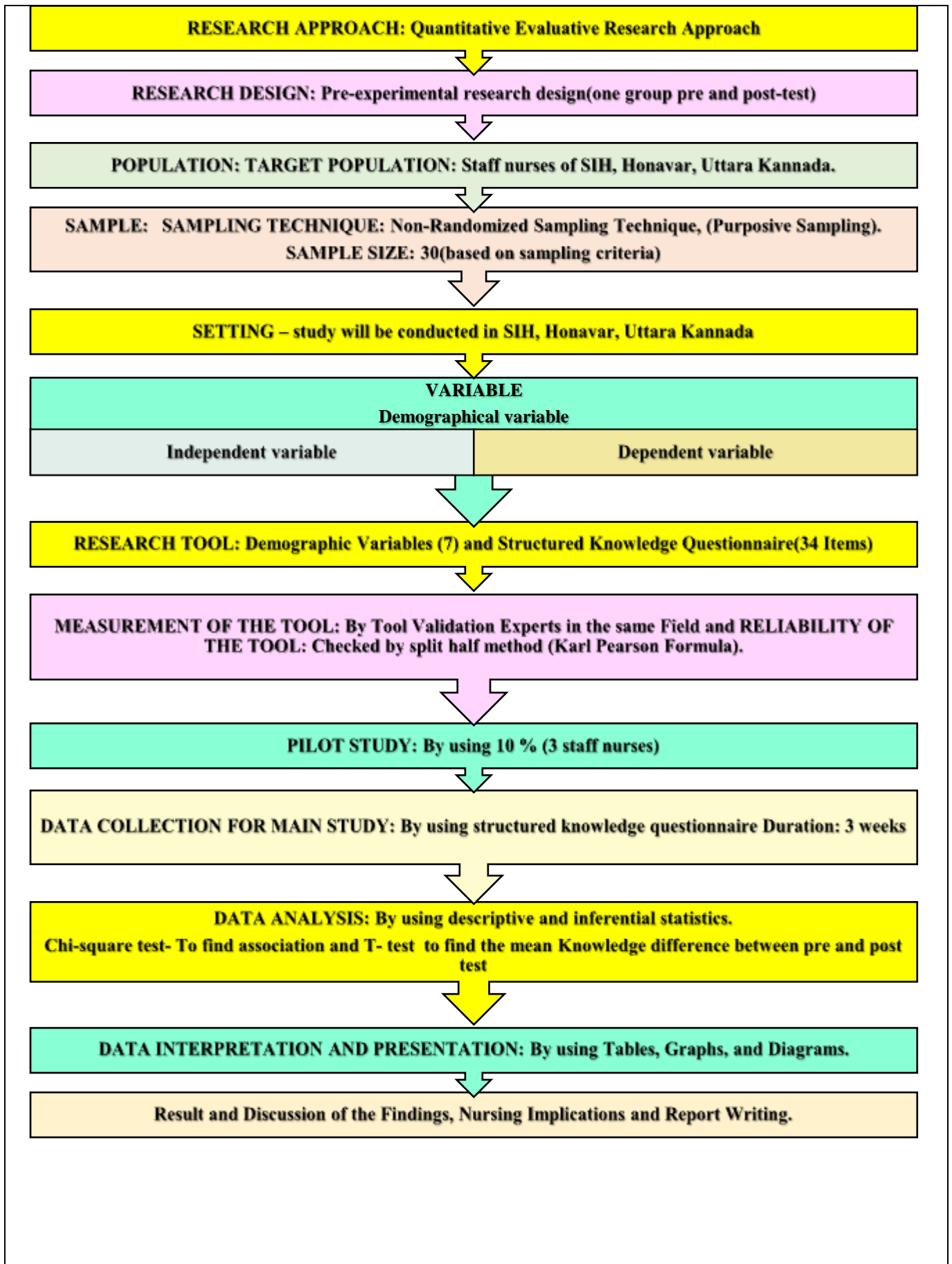
#### **Inferential statistics:**

- Chi-square test is to find out association between the selected demographic variables and level of knowledge regarding ABG analysis.
- Paired “t” test to find the mean difference in the pre-test and post-test knowledge at 0.05 level.

### **ETHICAL CONSIDERATION**

- Permission was obtained from research committee of SIIHS Honavar Uttara Kannada.
- Due permission from authorities was sought and obtained.
- Informed written consent was taken from participants.
- Anonymity of the participants and confidentiality was ensured.

FIGURE NO: 2 SCHEMATIC DIAGRAM OF RESEARCH METHODOLOGY



## **10: DETAILED DATA ANALYSIS.**

The steps involved in data analysis are a function of the type of information collected; however, returning to the purpose of the assessment and the assessment questions will provide a structure for the organization of the data and a focus for the analysis.

### **OBJECTIVES OF THE STUDY**

- To assess the pre and post-test knowledge level of staff nurses regarding arterial blood gas analysis.
- To administer a structured teaching programme on ABG analysis among nurses.
- To evaluate the effectiveness of structured teaching programme among staff nurses in terms of enhancement post -test knowledge score.
- To find out association between demographic variables, and pre-test knowledge score.

### **HYPOTHESIS**

**H<sub>1</sub>**-There will be significant difference between pre and post - test knowledge score among staff nurses regarding ABG analysis.

**H<sub>2</sub>** -There will be significant association between post -test the knowledge scores of staff nurses and their selected demographic variable.

### **ORGANIZATION AND PRESENTATION OF DATA:**

**The data and finding have been organized and presented under the following sections.**

**SECTION: I-** Frequency and Percentage Distribution of study subjects according to demographic variables.

**SECTION: II-** Frequency and Percentage Distribution of overall pre and post-test knowledge of the samples.

**SECTION: III-** Findings of mean difference between pre and post-test knowledge of the samples.

**SECTION: IV-** Analysis of paired t-test value showing the effectiveness of structure teaching programme.

**SECTION: V-** Analysis of Chi - square test showing significant association between the pre-test knowledge levels among the selected demographic variable.

## SECTION- I

**Table1: Frequency and Percentage and Distribution of study subjects according to demographic variables.**

**N=30**

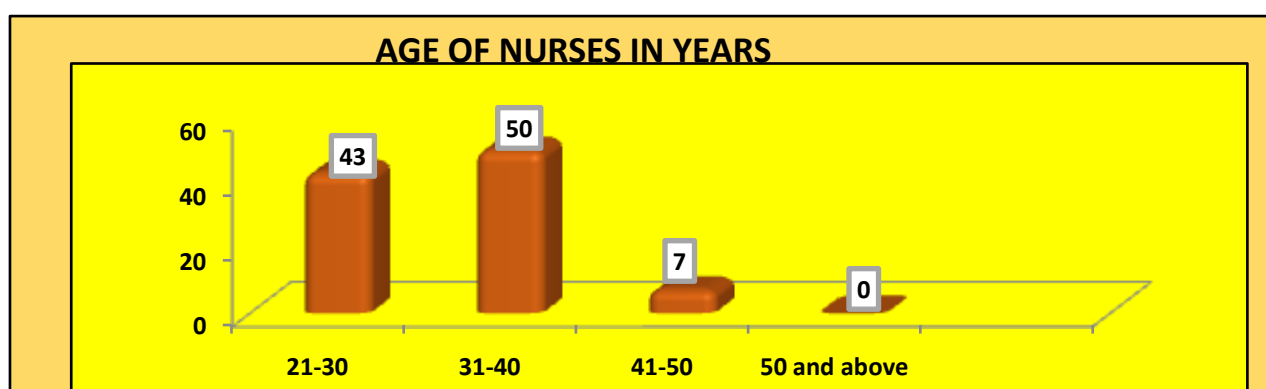
S. No.	Demographical variable	Frequency	Percentage (%)
<b>1.</b>	<b>Age of Parent in year</b>		
	a) 21-30	13	43
	b) 31-40	15	50
	c) 41-50	02	07
	d) 50 and above	00	00
<b>2.</b>	<b>Gender of Parent</b>		
	Male	01	03
	Female	29	96
<b>3.</b>	<b>Educational qualification</b>		
	a) G.N.M(N)	26	87
	b) BSc(N)	00	00
	c) PB.BSc(N)	04	13
<b>4.</b>	<b>Year of experience</b>		
	a) 0-5 years	14	47
	b) 6-10years	09	30
	c) 11-15years	05	17
	d) 16 and above	02	07
<b>5.</b>	<b>Area of experience</b>		
	a) Emergency	14	47
	b) OT	01	03
	c) Medical surgical ward	12	40
	d) ICU	03	10
<b>6</b>	<b>Have you performed ABG analysis?</b>		
	a) Yes	13	43
	b) No	17	57
<b>7.</b>	<b>If Yes, specify the area of work</b>		
	a) Emergency	04	13
	b) OT	02	07
	c) Medical surgical ward	03	10
	d) ICU	03	10

**Table 1:** Shows the demographic information of the staff nurses those who are participated in the present study Age of nurses in years, Gender of subjects, educational qualification, Year of experience, Area of experience, previously performed ABG analysis, specifying the area of performance.

**Table 1.1: Frequency and distribution of the staff nurses according to age in year.**

**N=30**

Age of the staff nurses	Frequency	Percentage
a) 21-30	13	43%
b) 31-40	15	50%
c) 41-50	02	7%
d) 50 and above	00	0%
<b>Total</b>	<b>30</b>	<b>100%</b>



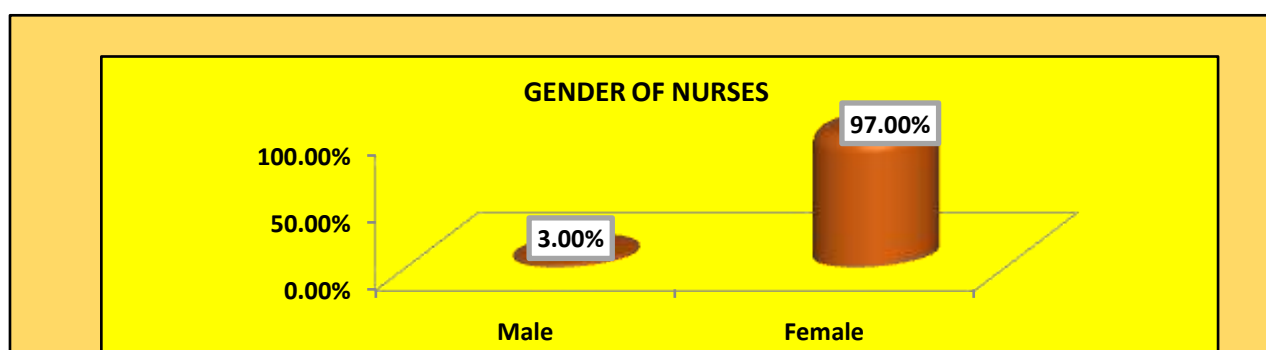
**Figure No -3.1: Column diagram shows the percentage distribution of subjects according to their age.**

Table 1.1: Depicts that according to the age of staff nurses the maximum number of subjects 13(43%) were 21-30, 15(50%) were 31-40, 2(7%) were 41-50.

**Table 1.2: Frequency and distribution of nurses according to gender.**

**N= 30**

Gender	Frequency	Percentage
a) Male	01	3%
b) Female	29	97%
<b>Total</b>	<b>30</b>	<b>100%</b>



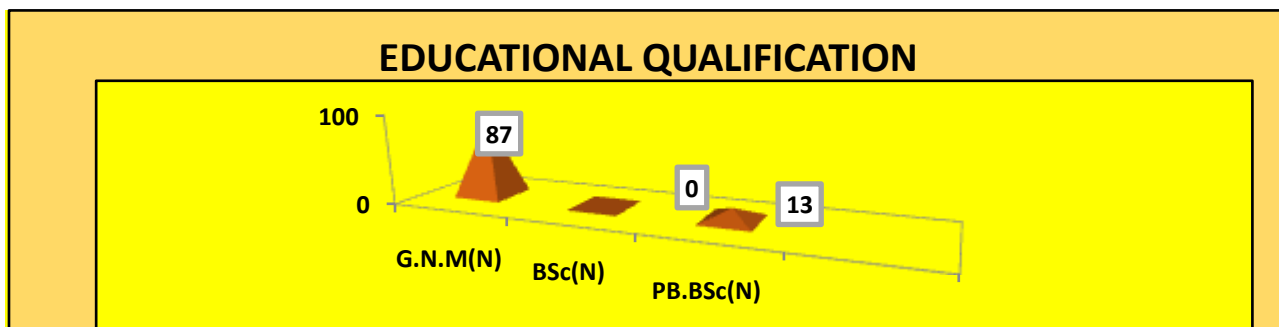
**Fig3.2: Cylindrical graph shows the percentage distribution of the subjects according to gender of the nurses.**

**Table 1.2:** Depicts that according to gender of the nurses the maximum number subjects 29(97%) were female and 1 (3%) were male.

**Table no 1.3: Frequency distribution of nurses according to the education qualification.**

**N=30**

Educational qualification	Frequency	percentage
a) G.N.M(N)	26	87%
b) BSc(N)	00	0%
c) PB.BSc(N)	04	13%
<b>Total</b>	<b>30</b>	<b>100%</b>



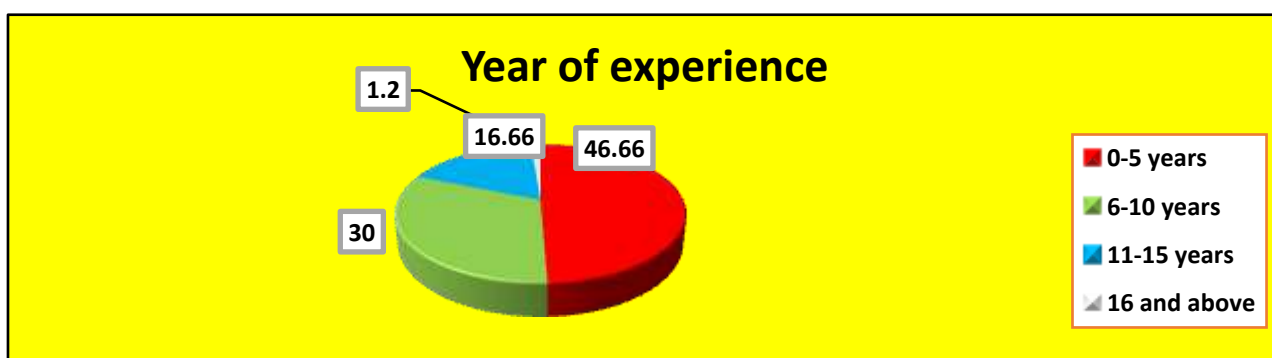
**Fig no3.3: Pyramidal Graph shows the percentage distribution of subjects according to the educational qualification of the nurses.**

**Table 1.3:** Depicts that according to educational qualification of the nurses the maximum number of subjects 26(87%) were G.N.M (N), 0(0%) were B.Sc. (N) and 4(13%) were of P B B.Sc. (N).

**Table 1.4: Frequency and distribution of Nurses according to year of experience.**

**N=30**

Year of experience	Frequency	Percentage
a) 0-5	14	47%
b) 6-10	09	30%
c) 11-15	05	17%
d) 16 and above	02	7%
<b>Total</b>	<b>30</b>	<b>100%</b>



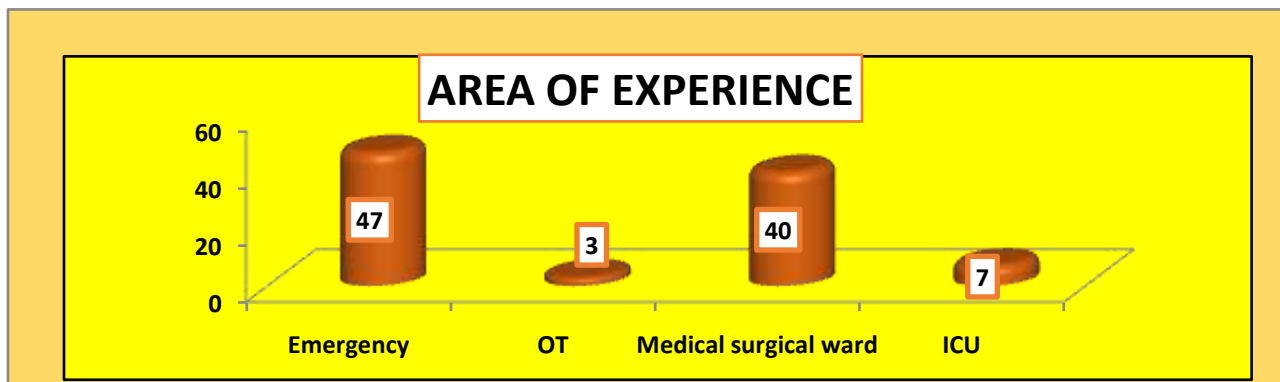
**Fig no3.4: Pie chart shows the percentage distribution of subjects according to occupation of the students.**

**Table 1.4:** Depicts that according to year of experience of the nurses the maximum number of subjects 14(47%) were 0-5 years, 9(30%) were 6-10years, 5(17%) were 11-15years and 2(7%) were 16 and above.

**Table 1.5: Frequency and distribution of Nurses according the area of experience.**

**N=30**

Area of experience	Frequency	Percentage
a)Emergency	14	47%
b)OT	01	03%
c)Medical surgical ward	12	40%
d)ICU	03	10%
<b>Total</b>	<b>30</b>	<b>100%</b>



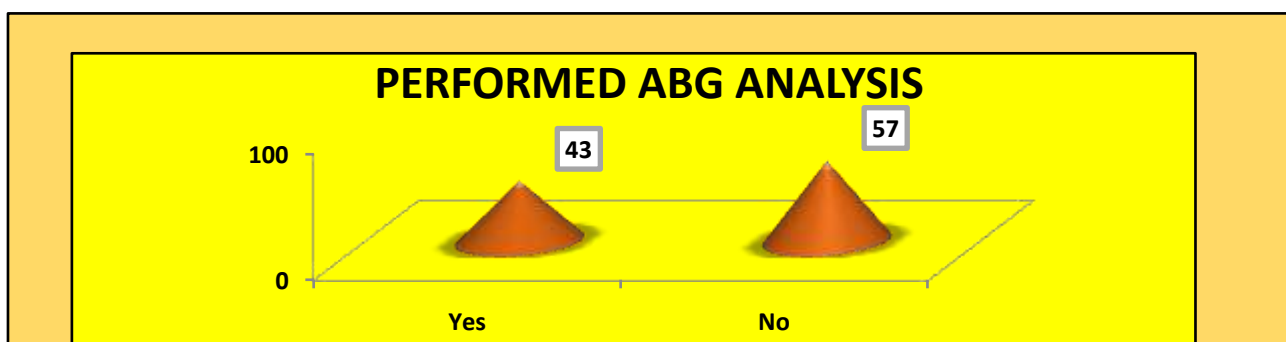
**Fig 3.5: Cylindrical graph shows the percentage distribution of the subjects according to area of experience.**

**Table 1.5:** Depicts that according to area of experience of the nurses the maximum number of subjects 14(47%) were from emergency, 1(3%) were from OT, 12(40%) were Medical surgical ward and 2(7%) were from ICU and above.

**Table 1.6: Frequency and distribution of Nurses according to performed ABG analysis.**

**N=30**

Have you performed ABG analysis?	Frequency	Percentage
a) Yes	13	43%
b) No	17	57%
<b>Total</b>	<b>30</b>	<b>100%</b>

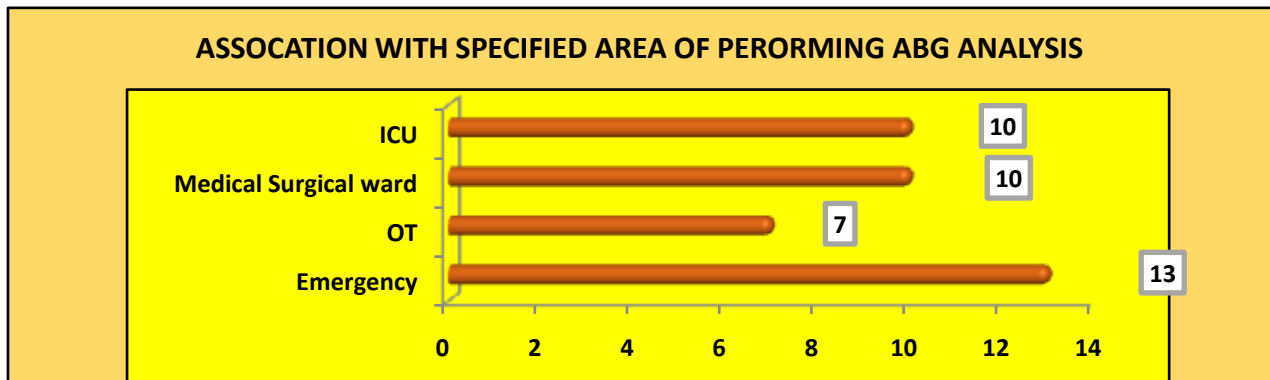


**Fig 3.6: Conical graph shows the percentage distribution of the subjects according to the performance of ABG analysis.**

**Table 1.6:** Depicts that according to area of experience of the nurses the maximum number of subjects 13(43%) were Yes and 17 (57%) were No.

**Table 1.7: Frequency and distribution of Nurses according to specified area of performing ABG analysis.**

N=30		
IF Yes, specify the area of work	Frequency	Percentage
a)Emergency	04	13%
b)OT	02	07%
c)Medical surgical ward	03	10%
d)ICU	03	10%
<b>Total</b>	<b>12</b>	<b>40%</b>



**Fig 3.7: Bar graph shows the percentage distribution of the subjects according to the specified area of performing ABG analysis.**

**Table 1.7 (Fig 3.7):** Depicts that according to area of experience of the nurses the maximum number of subjects 4(13%) were in emergency, 2(7%) were OT,3(10%) was in Medical surgical ward ,3(10%) were in ICU.

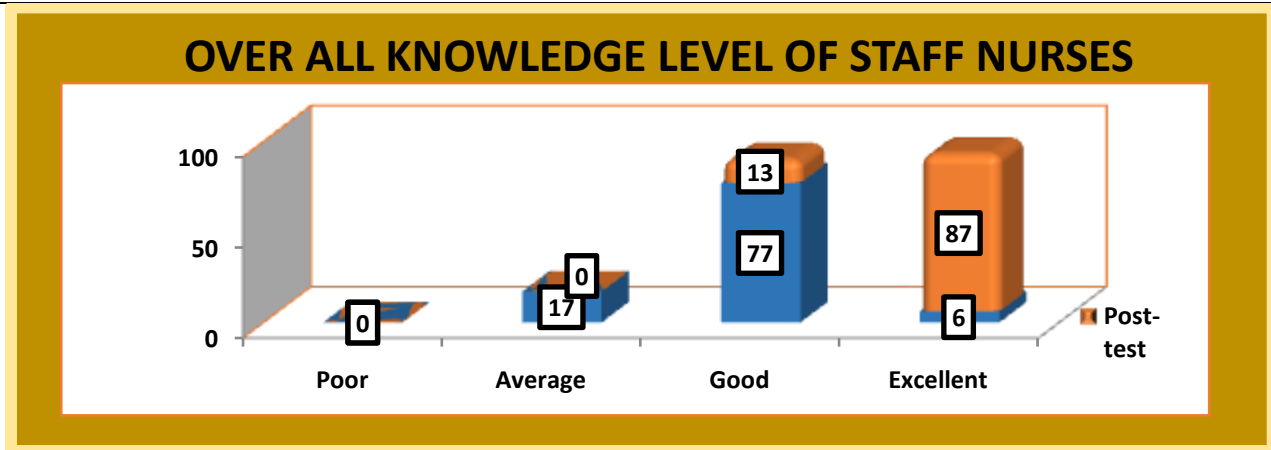
## SECTION- II

### Finding of overall Knowledge Level of staff Nurses regarding ABG analysis.

**Table No.-2:** Shows the frequency and percentage distribution of overall knowledge level of the staff nurses in the selected Hospital of Uttara Kannada.

N =30

Knowledge Level	Pre-test		Post test	
	Frequency	Percentage (%)	Frequency	Percentage (%)
Poor	00	00%	00	00%
Average	05	17%	00	00%
Good	23	77%	04	87%
Excellent	02	6%	26	25%



**Figure No.-4: Stacked Bar diagram representing the pre-test and post-test Knowledge score of Staff Nurses in selected Hospitals of Uttara Kannada.**

**Table No.2.1 (Figure No.-4)** Depict that only 02 (6%) had excellent knowledge, 23 (77%) of subject had good knowledge, 5 (17%) have average in pre-test whereas in post-test 4 (13%) has good knowledge, 26(87%) has excellent knowledge.

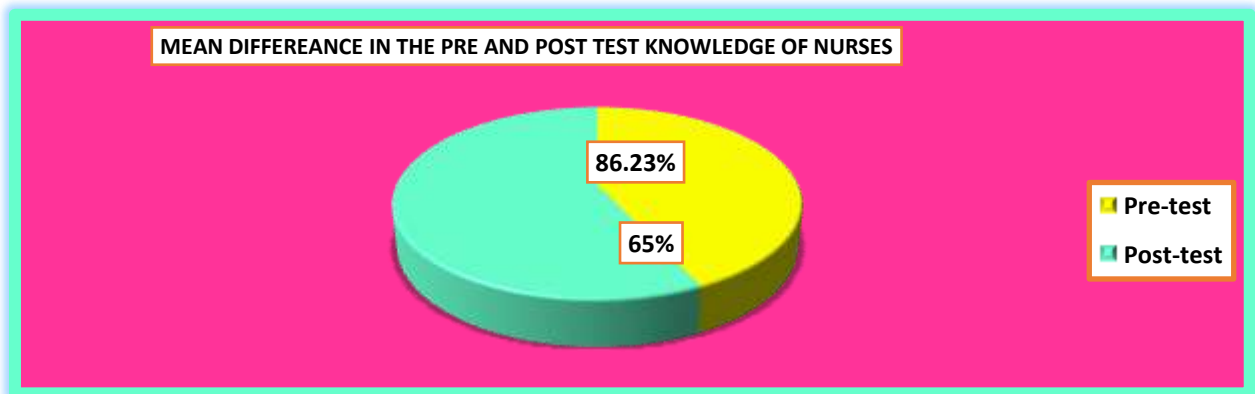
**SECTION –III**

**Finding of mean difference in the pre and post-test knowledge of the Staff Nurses Regarding ABG analysis.**

**Table No. -3:** shows the mean difference in the pre-test and post-test knowledge regarding ABG analysis.

**N=30**

knowledge Level	Mean score	Mean percentage	Standard deviation	Mean percentage difference
Pre-test	22.1	65%	3.208	21.26%
Post-test	29.33	86.26%	1.67	



**Figure No.-5. Pie diagram shows the mean difference between Pre-test and post-test knowledge scores.**

**Table No.-3.1 (figure no. 6)** Shows the Pre-test mean knowledge score of subject was 22.1, mean percentage was 65% and SD was 3.208. Where as in post-test mean knowledge score was 29.33, mean percentage was 86.26% and SD was 1.67 percentage difference was 2

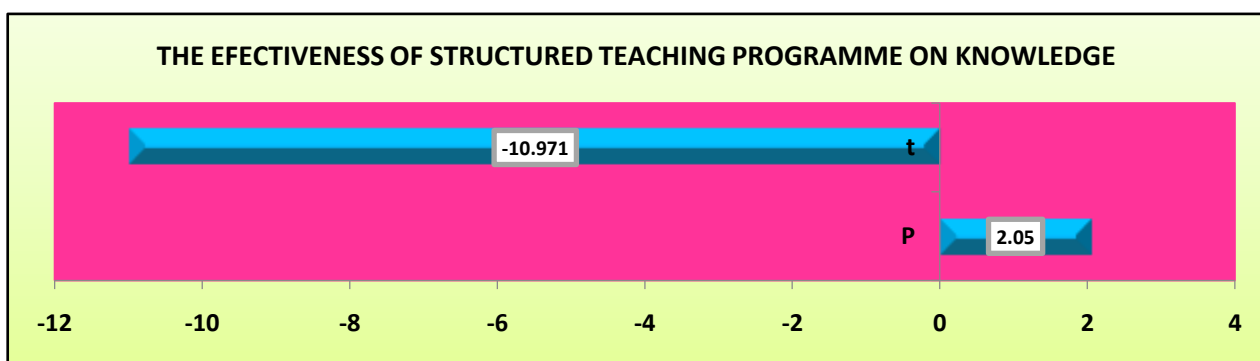
## SECTION – IV

### Paired t- Test finding for the effectiveness of Structured teaching program on knowledge regarding ABG analysis.

**Table No. - 4:** Shows the ‘t’ test finding the effectiveness of structure teaching program on knowledge regarding Revised ABG analysis.

N=30

Knowledge level	Mean	SD	SE	‘Z’ Test value		Inference
				P	t	
Pre-test	22.1	3.208	0.659	2.05	-10.971	P <0.05 significant
Post-test	29.33	1.67				



**Figure No.- 6** Bar diagram shows the effectiveness of Structure Teaching Programme on the knowledge gain after teaching and pre-test and post-test knowledge score.

**Table No.-4 (figure No.8)** Depict that the pre-test means knowledge score of subject is 22.1, SD was 3.208 whereas in post-test mean knowledge score is 29.33, and SD is 1.67. SE was 0.659. The calculated t-test value is -10.971 ( $p > 0.05$ ) lesser than table value 2.05 at 0.05 level of highly significance

## SECTION-V

**Chi square test finding of association between the pre-test and post-test knowledge regarding ABG analysis.**

**Table No.-5:** Shows the chi-square test value of association between the pre-test knowledge regarding ABG analysis with demographic variables.

N=30

Sl.No.	Demographical variables	Pre-test knowledge score				Chi-square		DF	Inference
		P	A	G	E	P	$\chi^2$		
<b>1.</b>	<b>Age in year</b>								
	a) 21-30	00	02	11	00	16.92	2.692	09	<b>P&gt;0.05</b> <b>S*</b>
	b) 31-40	00	02	12	01				
	c) 41-50	00	01	01	00				
	d) 50 and above	00	00	00	00				
<b>2.</b>	<b>Gender</b>								
	a) Male	00	00	01	00	7.82	0.303	03	<b>P&lt;0.05</b> <b>NS</b>
	b) Female	00	05	22	02				
<b>3.</b>	<b>Educational qualification</b>								
	a) G.N.M(N)	00	00	03	01	12.59	3.101	06	<b>P&gt;0.05</b> <b>S*</b>
	b) BSc(N)	00	00	00	00				
	c) PB.BSc(N)	00	05	20	01				
<b>4.</b>	<b>Year of experience</b>								
	a) 0-5 years	00	02	12	00	16.92	4.795	09	<b>P&gt;0.05</b> <b>S*</b>
	b) 6-10 years	00	01	07	01				
	c) 11-15 years	00	01	03	01				
	d) 16 and above	00	01	01	00				
<b>5.</b>	<b>Area of experience</b>								
	a) Emergency	00	02	08	02	16.92	5.336	09	<b>P&gt;0.05</b> <b>S*</b>
	b) OT	00	00	02	00				
	c) Medical surgical ward	00	02	12	00				
	d) ICU	00	01	01	00				
<b>6.</b>	<b>Have you performed ABG analysis?</b>								
	a) Yes	00	02	10	01	7.82	6.963	03	<b>P&gt;0.05</b> <b>S*</b>
	b) No	00	03	13	01				
<b>7</b>	<b>If Yes, specify the area of experience</b>								
	a) Emergency	00	00	05	00	16.92	6.452	9	<b>P&gt;0.05</b> <b>S*</b>
	b) OT	00	00	02	00				
	c) Medical surgical ward	00	01	02	00				
	d) ICU	00	01	01	01				

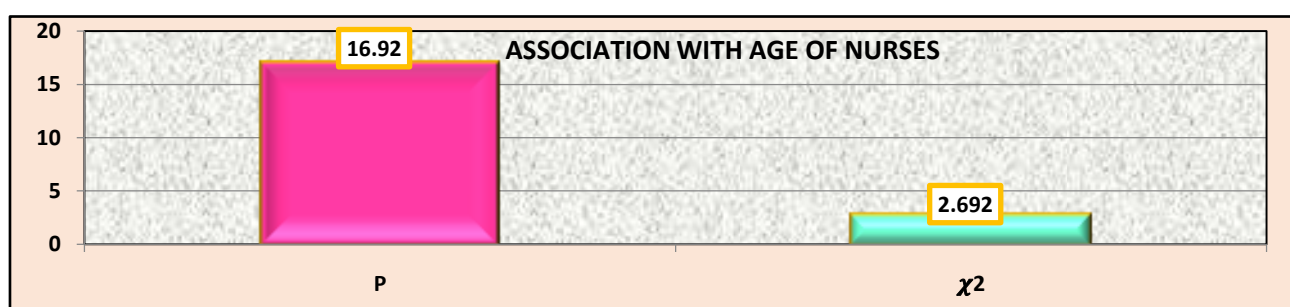
**Table no.-5:** Shows the chi square test value of association between the pre-test knowledge

regarding ABG analysis with Age of Nurses in years, Gender of Nurses, educational qualification, Year of experience, Age of experience, previously performed ABG analysis.

**Table No.-5.1:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with Age of the staff nurses.

N=30

Sl.No.	Age in year	Pre-test knowledge score				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a)	21-30	00	02	11	00	16.92	2.692	09	<b>P&gt;0.05</b> <b>S*</b>
b)	31-40	00	02	12	01				
c)	41-50	00	01	01	00				
d)	50 and above	00	00	00	00				



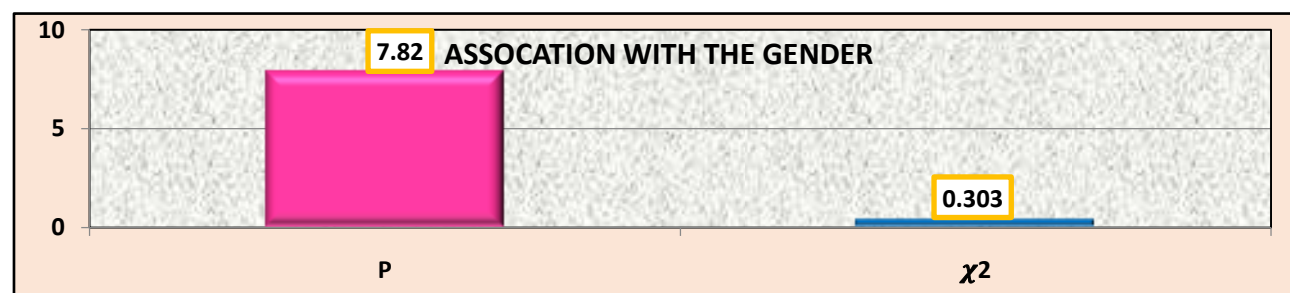
**Figure No.-7.1:** Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with the Age of nurses.

**Table No.-5.1:** Depict that the association between Pre-test knowledge regarding ABG analysis with Age of Parent. Hence the chi-square value is 2.692 (P>0.05 S\*) at 0.05 level of significance, it shows that there is a high significant association with age of Nurses

**Table No.-5.2:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with Gender.

N=30

Sl.No.	Gender	Pre - test knowledgescore				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a)	Male	00	00	01	00	7.82	0.303	3	<b>P&gt;0.05</b> <b>S*</b>
b)	Female	00	05	22	02				



**Figure No.-7.2:** Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with Gender.

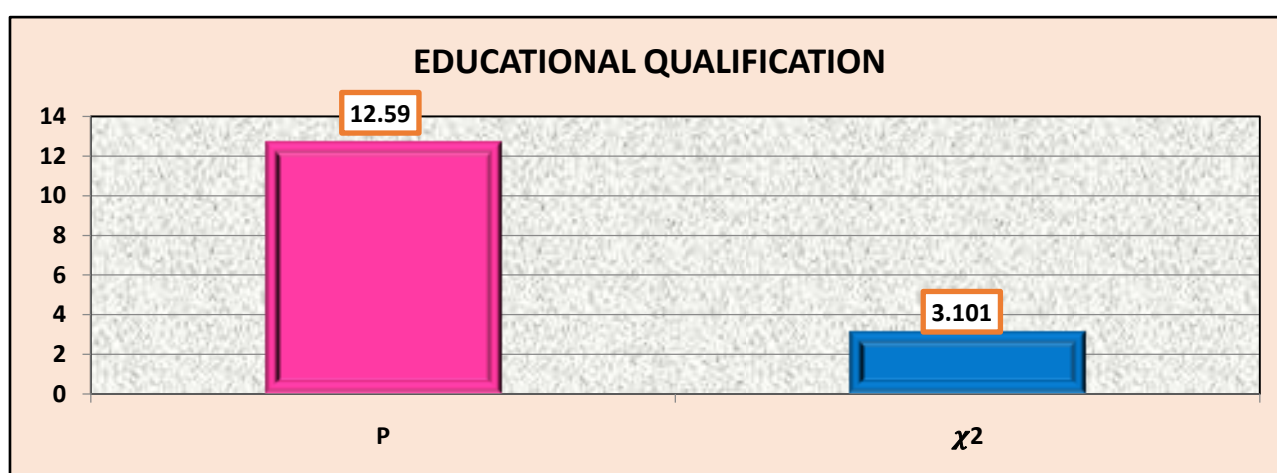
**Table No.-5.2:** Depict that the association between pre-test knowledge regarding ABG analysis

with Gender Hence the chi-square value is 0.303 ( $P > 0.05$  S\*) at 0.05 level of significance, it shows that there is a high significant association with Gender.

**Table No.-5.3:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with educational qualification.

N=30

Sl.No.	Educational qualification	Pre-test knowledge score				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a)	G.N.M(N)	00	00	03	01	12.59	3.101	06	<b>P&gt;0.05</b> <b>S*</b>
b)	BSc.(N)	00	00	00	00				
c)	PB.BSC(N)	00	05	20	01				



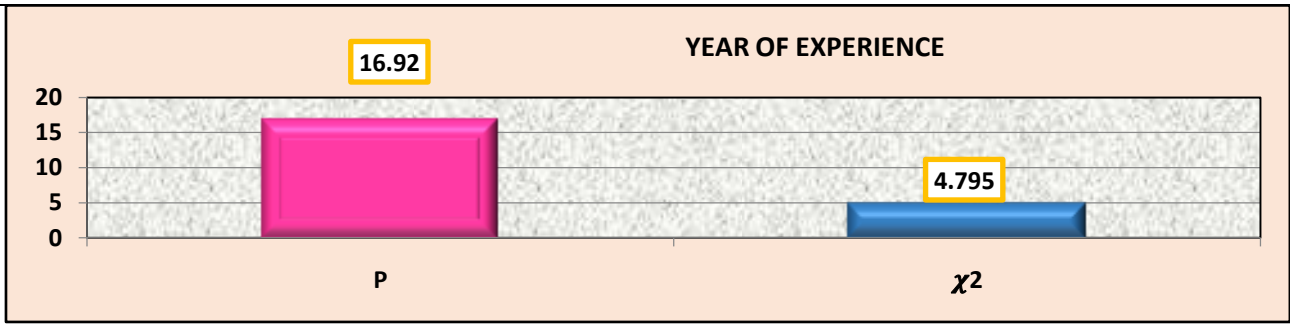
**Figure No.-7.3:** Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with educational qualification.

**Table No.-5.3:** Depict that the association between pre-test knowledge regarding ABG analysis with educational qualification Hence the chi-square value is 3.101 ( $P > 0.05$  S\*) at 0.05 level of significance, it shows that there is a high significant association with educational qualification.

**Table No.-5.4:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with year of experience.

N=30

Sl.No.	Year of experience	Pre-test knowledgescore				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a)	0-5years	00	02	12	00	16.92	4.795	09	<b>P&gt;0.05</b> <b>S*</b>
b)	6-10years	00	01	07	01				
c)	11-15years	00	01	03	01				
d)	16 and above	00	01	01	00				



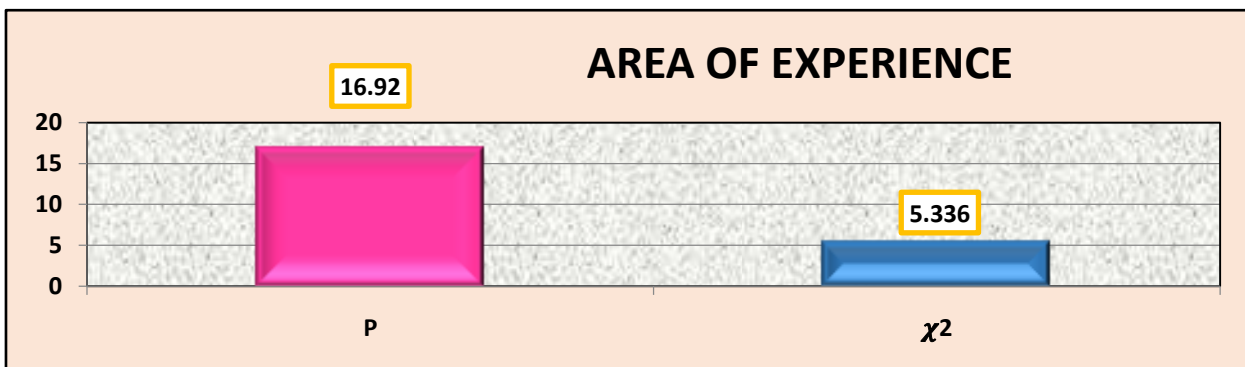
**Figure No.-7.4:** Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with Year of experience.

**Table No.-5.4:** Depict that the association between Pre-test knowledge regarding ABG analysis with Year of experience Hence the chi-square value is 4.795 ( $P>0.05$  S\*) at 0.05 level of significance, it shows that there is a high significant association with Year of experience.

**Table No.-5.5:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with Area of experience.

N=30

Sl.No.	Area of experience	Pre-test knowledge score				Chi-square		DF	inference
		P	A	G	E	P	χ <sup>2</sup>		
a.	Emergency	00	02	08	02	16.92	5.336	09	P>0.05 S*
b.	OT	00	00	02	00				
c.	Medical surgical ward	00	02	12	00				
d.	ICU	00	01	01	00				



**Figure No.-7.5:** Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with Area of experience.

**Table No.-5.5:** Depict that the association between Pre-test knowledge regarding ABG analysis with Area of experience Hence the chi-square value is 5.336 ( $P>0.05$  S\*) at 0.05 level of significance, it shows that there is a high significant association with Area of experience.

**Table No.-5.6:** Shows the chi square test value of association between the pre-test knowledge regarding ABG analysis with Performing ABG analysis.

N=30

Sl.No.	Have you performed ABG analysis?	Pre-test knowledge score				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a	Yes	00	02	10	01	7.82	6.963	03	P>0.05 S*
b	No	00	03	13	01				

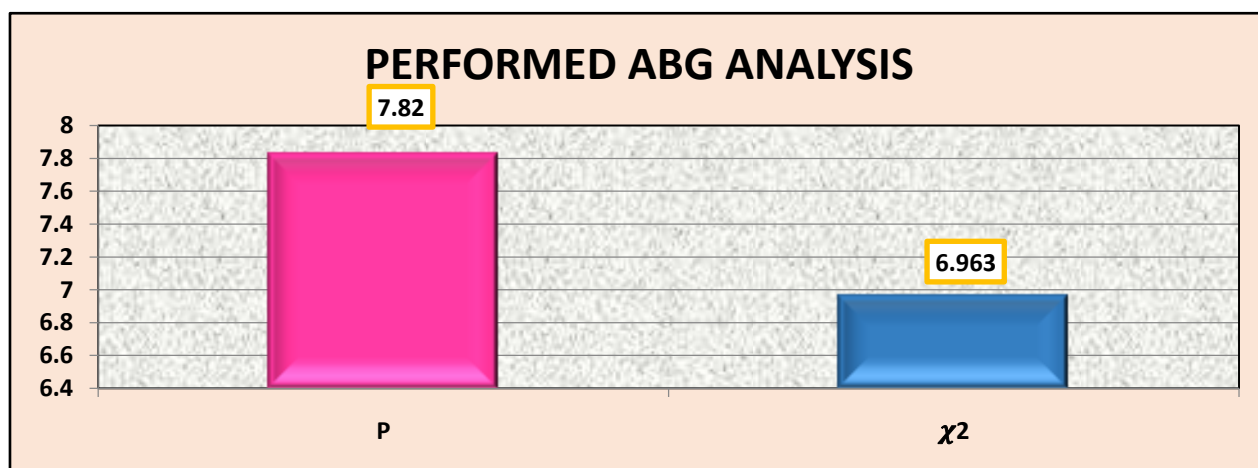


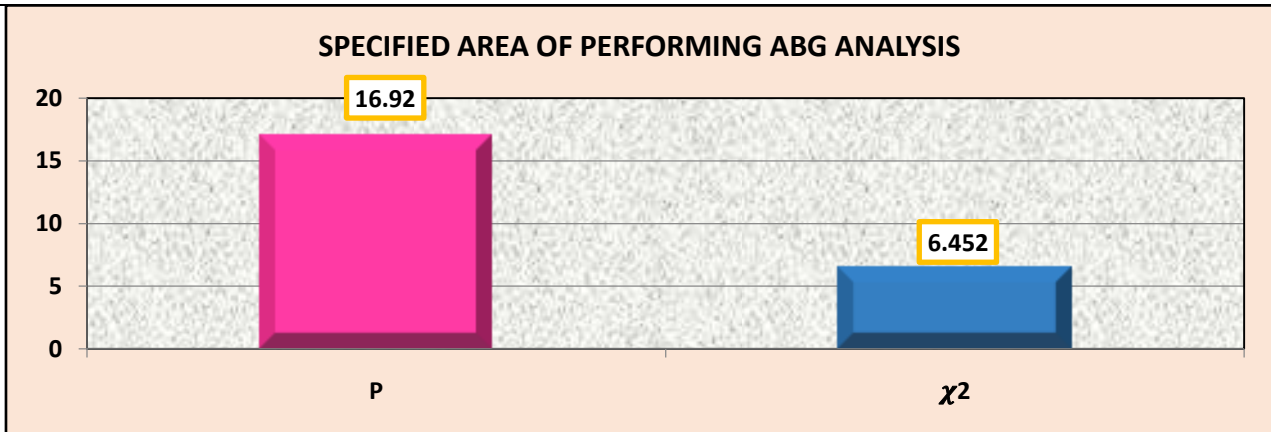
Figure No.-7.6: Column diagram shows the chi-square test value of association between Pre-test knowledge regarding ABG analysis with Area of Performing ABG analysis.

Table No.-5.6: Depict that the association between Pre-test knowledge regarding ABG analysis with Performing ABG analysis Hence the chi-square value is 6.963 (P>0.05 S\*) at 0.05 level of significance, it shows that there is a high significant association with performing ABG analysis.

Table No.-5.7: Shows the chi square test value of association between the Pre-test knowledge regarding ABG analysis with Specified area of performing ABG analysis.

N=30

Sl.No.	Area of experience	Pre-test knowledge score				Chi-square		DF	inference
		P	A	G	E	P	$\chi^2$		
a.	Emergency	00	00	05	00	16.92	6.452	09	P>0.05 S*
b.	OT	00	00	02	00				
c.	Medical surgical ward	00	01	02	00				
d.	ICU	00	01	01	01				



**Figure No.-7.7:** Column diagram shows the chi-square test value of association between pertest knowledge regarding ABG analysis with Specified area of Performing ABG analysis.

**Table No.-5.7:** Depict that the association between pertest knowledge regarding ABG analysis with specified area of Performing ABG analysis Hence the chi-square value is 6.452( $P > 0.05$  S\*) at 0.05 level of significance, it shows that there is a high significant association with specified area of performing ABG analysis.

## 11: CONTRIBUTIONS MADE TOWARDS INCREASING THE STATE OF KNOWLEDGE LEVEL IN THE SUBJECT

Administered STP on ABG analysis with the following teaching aids

### PPT ON ABG ANALYSIS PREPARATION

**PPT ON ABG ANALYSIS PREPARATION**  
BY MS. SUPRITHA BIRNUR

**PREPARATION OF PATIENT CLIENT.**

- Explain to the patient why he is receiving an arterial puncture.
- Explain the position of the hands to be maintain during procedure.
- Inform the client that there will be little discomfort while doing arterial puncture.
- Obtained informed consent.

- Watch for reperfusion or return of color to hand. Should occur within one minute, ideally within 10 to 15 seconds.
- If reperfusion of the hand does not occur, collateral circulation may be inadequate. Inform the practice manager for further direction.

- using aseptic technique, draw-up 0.25 cc's of 2% lidocaine solution with a 25 G tuberculin syringe. This will be used for local anesthesia of the puncture site.
- palpate the radial pulse and prepare with an alcohol swab.

**PREPARATION OF THE SITE**

- Palpate right and left radial pulses. Select vessel with the most prominent pulse for puncture. If pulse is not palpable, see practice manager for further direction.
- perform modified Allen's test on the hand with the most prominent radial pulse to insure adequate collateral circulation.

**PREPARATION OF THE SITE**

- Compress both radial and Ulnar arteries at the wrist to obliterate pulses.
- Have patient clench and release a fist until blanching of the hand occurs (about three times).
- With radial artery still compressed, release pressure on ulnar artery.

**THANK YOU**

**INFORMATION BOOKLET  
ON  
ABG ANALYSIS  
PROCEDURE.**



**Step 01**

Wash your hands, introduce yourself to the patient and clarify their identity. Explain what you would like to do and obtain consent. This is a slightly uncomfortable procedure so you should let the patient know this.



**Step 02**

Gather the necessary equipment:

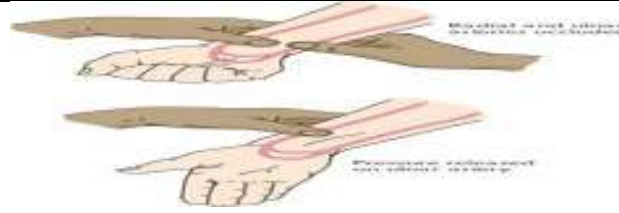
- A blue (23 G) needle.
- 2ml syringe with heparin.
- A cap for the syringe.
- A plastic bung.
- Local anaesthetic (plus needle and syringe for giving).
- Alcohol gel.
- Gauze.
- Gloves.
- A sharps bin.

Usually, the syringe, needle, cap and bung are all provided in one pack.



**Step 03**

Position the patient's arm with the wrist extended.



#### Step 04

Locate the [radial artery](#) with your index and middle fingers.

Perform [Allen's test](#) where you compress both the radial and ulnar arteries at the same time. The hand should become white, release the ulnar artery and the colour should return to the hand. This ensures that there will still be a blood supply to the hand should the ABG cause a blockage in the radial artery.



#### Step 05

Put on your gloves and attach the needle to the heparinized syringe.

Prepare your local anesthetic and give a small amount over the palpable radial artery.



#### Step 06

Take the cap off the needle, flush the heparin through the syringe and again locate the *radial artery* **using your non-dominant hand**.



#### Step 07

Let the patient know you are about to proceed and to expect a sharp scratch.

Insert the needle at 30 degrees to the skin at the point of maximum pulsation of the *radial artery*. Advance the needle until arterial blood flushes into the syringe. The arterial pressure will cause the blood to fill the syringe.

Remove the needle/syringe placing the needle into the bung. Press firmly over the puncture site with the gauze to halt the bleeding. Remain pressed for 5 minutes.



### Step 08

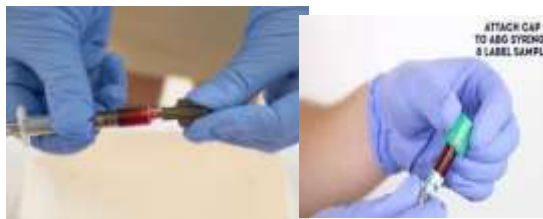
Remove the needle and discard safely in the sharps bin.



### Step 09

Cap the syringe, push out any air within it, and send immediately for analysis ensuring that the sample is packed in ice.

Remove your gloves and dispose them in the clinical waste bin. Wash your hands and thank the patient.



### **FLANNEL GRAPH:**



### **HAND OUT :**

### The Modified Allen Test

This test is used to check the overall blood supply to the hand.



Locate the ulnar and radial arteries. Have the patient make a tight fist for about thirty seconds.



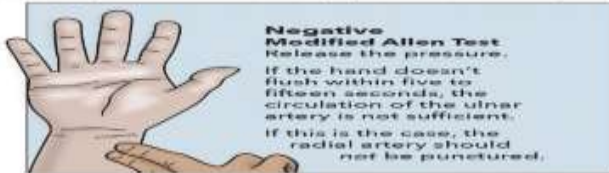
To obstruct blood flow, press down on the ulnar artery with two fingers. At the same time, press down on the radial artery.



Tell the patient to unclench their palm should blanch. If it doesn't, you are not applying enough pressure → start again.



**Positive Modified Allen Test**  
Release the pressure on the ulnar artery. If the hand flushes within five to fifteen seconds, this shows that the hand has good blood flow.



**Negative Modified Allen Test**  
Release the pressure. If the hand doesn't flush within five to fifteen seconds, the circulation of the ulnar artery is not sufficient. If this is the case, the radial artery should not be punctured.

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## 12.CONCLUSIONS SUMMARIZING THE ACHIEVEMENTS AND INDICATION OF SCOPE FOR FUTURE.

### SUMMARY:

The present study was to assess the effectiveness of structured teaching programme on knowledge regarding ABG analysis among staff nurses and it was carried out as quantitative evaluative research approach with one group pre and post-test design. Effectiveness is measured by inferential statistics and interpreted appropriately.

### CONCLUSION:

Periodic skilled based teaching program is necessary to educate the nurses in area about ABG analysis to reduce morbidity and mortality in the clinically ill patients. The study was undertaken to A Study to Evaluate the Effectiveness of Structure Teaching Program (STP) on Knowledge Regarding ABG analysis among the staff nurses in the selected Hospital Uttara Kannada. The study was conducted in a sample of 30 Staff Nurses. Among In Pre-test, only 02 (06%) had excellent knowledge, 23 (77%) of subject had good knowledge, 5 (17%) have average in the study and post-test, 26 (87%) of subject had excellent knowledge, 4 (13%) had good knowledge. It shows that maximum number of subject had got excellent knowledge in the study after post-test. Thus Structured Teaching was highly effective in upgrading the knowledge level of Staff nurses regarding ABG analysis. Null Hypothesis ( $H_0$ ) is rejected

## **RESEARCH OBJECTIVES:**

1. To assess the knowledge of staff nurses regarding arterial blood gas analysis in terms of pre-test knowledge score.
2. To administer a structured teaching program on ABG analysis among nurses.
3. To determine the effectiveness of structured teaching programme among staff nurses in terms of post-test knowledge score.
4. To find out association between demographic variables, and post-test knowledge score.

## **HYPOTHESIS:**

**H1**-There will be significant difference between pre and post-test knowledge score among staff nurses regarding ABG analysis.

**H2** -There will be significant association between post-test the knowledge scores of staff nurses and their selected demographic variable.

## **MAJOR FINDING OF THE STUDY:**

The present study to evaluate the effectiveness of structure teaching program on ABG analysis among the staff nurse in selected hospital Uttara Kannada.

The major findings shows that evaluate Effectiveness of structure teaching program in improving knowledge regarding ABG analysis among in selected Hospitals Uttara Kannada. The pre-test knowledge score of subject was 22.1, mean percentage was 65% and SD was 3.208. Where in post-test mean knowledge score was 29.33, mean percentage was 86.26% and SD was 1.67 and the mean percentage difference was 21.26%. The calculated test value is -10.971 ( $p > 0.05$ ) was greater than the value of 2.05 at 0.05 level of highly significance. So that, there is an effectiveness of Structured teaching programme regarding ABG analysis and the research hypothesis ( $H_1$ ) significant.

## **NURSING IMPLICATION:**

### **❖ Nursing Education:**

- The nursing curriculum should consist of knowledge related to ABG analysis and its effective implementation.
- Nurses at the post-graduate level need to develop skills in preparing health teaching material in

various health aspects in ABG analysis, newer techniques have to be used for motivating staff participation. Emphasis should be made on in service education and training programmes in the department to increase the knowledge of staff nurses.

❖ **Nursing Practice:**

- Nurses have a vital role in Immunization
- Nurses should enhance their professional knowledge.
- The finding of the study can be used to bring about awareness among the Nurses regarding ABG analysis which will help in the improvement in the Patient care.
- Nurses can also plan teaching in clinical as well as in the Community.

❖ **Nursing Administration:**

- The finding of the study reveals the need to conduct an ongoing in-service education program for the nurses who are working in the clinical settings as well as in the community. The in-service education program should include both theoretical and practical input. This can also bring awareness among nurse administrators of the need to provide training to new staff nurses regarding ABG analysis. Nurse administrators can prepare a new protocol about the teaching.
- Nurses can also teach to student nurses about the same. She/he should be able to plan and organize Program taking in to consideration the cost effectiveness and carry out successful educational Programme.

❖ **Nursing researcher:**

- The finding of the study can be utilized for conducting research on the knowledge regarding ABG analysis among Nurses.
- Future investigators can use the finding and the methodology as reference material. It highlights the area, which requires future exploration.
- The suggestion and the recommendation can be utilized by other researchers for conducting further studies in the same field.

## **LIMITATIONS:**

### **The following factors were beyond the control of the investigator:**

- This study is limited to the Nurses only who are readily available.
- Purposive sampling was done which restrict the generalization of the study.
- The assessment of effect of structured teaching is limited to one post test conducted on the eighth day of structured teaching Program.
- Since the study was mainly based on the responses of the subjects through multiple choice questionnaire, and no other tool was undertaken for the generalization of the finding remains limited.
- The study is limited to Staff Nurses.
- The study will be limited to Nurses the study was limited to the experience level of the investigator.

## **RECOMMENDATIONS:**

Measures which can be implemented for the staff nurses in order to improve their knowledge regarding ABG analysis:

- The topics can be taught through video assisted teaching.
- The same work can be done in the form of a comparative study between different hospitals.
- Nurse researcher can study through research activities on the same topic to update the knowledge regarding ABG analysis.

## **SCOPE FOR FUTURE:**

The findings of analysis in the present study will be an opportunity to educate health care personnel regarding an important procedure in an ICU and critical care unit. Such studies will motivate people to acquire new knowledge on the ABG analysis.

### **13. ABSTRACT**

**Background:** Arterial blood gas (ABG) analysis is an essential part of diagnosing and managing a patient's oxygenation status and acid-base balance. The usefulness of this diagnostic tool is dependent on being able to correctly interpret the results. Disorder of acid-base balance can create complications in many disease states, and occasionally the abnormality may be so severe so as to become a life-threatening risk factor. A thorough understanding of acid-base balance is mandatory for any physician, and intensivists, and anaesthesiologist is no exception. Meaning of ABG: Arterial blood gas analysis is an essential part for diagnosing the patient's oxygenation status, ventilation status and acid-base balance. Drawn from artery – radial, brachial, femoral. It is an invasive

**Objectives:** The study aimed at evaluating the effectiveness of structured teaching programme [STP] on knowledge regarding ABG analysis among staff nurses in selected Hospitals at Honavar, Uttara Kannada. The study focused on enhancing the knowledge level of staff nurses regarding the ABG analysis.

**Methodology:** An evaluative approach with pre -experimental one group pre and post-test research design was adapted in this work. The sample size was 30 staff nurses, were selected by purposive sampling technique. Data were collected by using self-administered structured knowledge questionnaire with 34 multiple choice questions. Data analysed by using t'-test to draw out the inference by comparing the mean score difference.

**Results:** The computed t'-test value showed there is significant difference in the pre( $\bar{x}_1=22.1$ ) and post-test ( $\bar{x}_2=29.33$ ) knowledge score ( $t_{29}=2.05, < t=-10.971$ ), at 0.05 level of significance. chi square test [ $\chi^2$ ] score reveals that there was significant association in the pre-test knowledge score with th Age ( $df_9=16.92, > \chi^2=2.692$ ), Gender ( $df_3=7.82, > \chi^2=0.303$ ), educational qualification ( $df_6=12.59 > \chi^2=3.101$ ) Year of experience ( $df_9=16.92 > \chi^2=4.795$ ) Area of experience ( $df_9=16.92 > \chi^2=5.336$ ) previously performed ABG analysis ( $df_3=7.82, > \chi^2=6.963$ ) and specified are of performing ABG analysis ( $df_9=16.92 > \chi^2=6.452$ ) at 0.05 level of significance.

**Conclusion:** The study was concluded as the structured teaching programme on staff nurses was effective in promoting the knowledge level of staff nurses. This kind of fruitful future studies may ensure effective implementation of ABG analysis.

**Keywords:** (Staff nurses, ABG analysis, Effectiveness, Knowledge, and Structured Teaching Programme).

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