

## **“A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Arterial Blood Gas (ABG) Analysis among Undergraduate Nursing Students of Arya Nursing College, Changsari, Assam.”**

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### **Abstract:**

*Background: Arterial blood gas (ABG) analysis is an essential investigation for critically ill patients for diagnosis and managing patient's oxygenation status and acid base balance. It is an important routine investigation and is necessary for all the health care professionals including the nursing students to have adequate knowledge and skill to perform it. Yet, it is important for the undergraduate nursing student to have adequate knowledge regarding arterial blood gas (ABG) analysis, in order to work efficiently in different arena of health care settings. The objectives of the study are: 1) To assess the pre-test knowledge regarding arterial blood gas (ABG) analysis among undergraduate nursing students. 2) To assess the post-test knowledge regarding arterial blood gas (ABG) analysis among undergraduate nursing students. 3) To assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas (ABG) analysis among undergraduate nursing students. 4) To find out the association between pre test knowledge score on arterial blood gas (ABG) with the selected social demographic variables.*

*MATERIAL AND METHODS: A pre experimental design study (one group pre-test post-test) was conducted among undergraduate nursing students of Arya Nursing College, Changsari, Assam. Total numbers of participants were 43. Simple random sampling technique was used for selection of the samples. Both male and female students of Post Basic B.Sc 1<sup>st</sup> year and B.Sc 3<sup>rd</sup> year nursing were included. Tool used for the data collection were socio demographic proforma, self-structured questionnaire. Data collection process consists of pre-test followed by structured teaching programme and post-test after seven days of structured teaching programme on arterial blood gas (ABG) analysis. Descriptive and inferential statistics, paired 't' and Chi square were used for data analysis.*

*RESULTS: The findings of the study reveals that out of 43 students majority 67.4% (f=29) of the participants were 22-25 years of age group , 95.3% (f=41) of the participants were living in the rural areas 62.8% of the participants are from 3<sup>rd</sup> B.Sc nursing students, 81.4% (f=35) of the participants have no clinical experience, 30% (f=4) of the participants have less than 1 year of experience, 88.4% (f=38) of the participants are having previous knowledge, 65% (f=28) of the participant get the information from medical and surgical nursing theory class. Pre-test knowledge mean is 13.70 SD is 3.69 and post-test knowledge mean is 18.70 SD is 3.34.*

*Knowledge of undergraduate nursing students on regarding arterial blood gas (ABG) analysis was statistically significant ( $p < 0.05$ ). This revealed that the structured teaching programme was quite helpful in enhancing the knowledge of undergraduate nursing students regarding arterial blood gas (ABG) analysis. There was a significant association found between pre-test knowledge score with selected socio demographic variables such as years of experience ( $\chi^2 = 36.1$ ). There was no significant association found between pre-test knowledge score with other selected socio demographic variables.*

*CONCLUSION: The study concluded that mean post-test knowledge (18.70) was higher as compared to the pretest score (13.70) and paired t-test= 6.923 the structured teaching was effective in improving the level of knowledge of Undergraduate nursing students.*

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**Keyword:** *Assess, Effectiveness, Structured teaching programme, Knowledge, ABG analysis, Undergraduate nursing student.*

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## I. Introduction

Arterial blood gas (ABG) test is a relatively swift and a low risk method which helps health care professionals to gain information (oxygen saturation, acid-base balance, partial pressure of oxygen, partial pressure of carbon dioxide, metabolic parameter and arterial oxygen saturation).<sup>1</sup> It is the most common investigation in Emergencies department and intensive care units for monitoring patients. Nurses play an important role in early detection of pH imbalance in high risk patients in Intensive Care Unit (ICUs) and collaborate in the administration of drug therapy, O<sub>2</sub> therapy or mechanical ventilation when indicated. Therefore the nurses must have the necessary knowledge and skills required to perform arterial blood gas (ABG) analysis.<sup>2</sup> Over the last few years, there has been a tremendous increase in the knowledge, technology and skills required to treat critically ill patients. This has led to the development of intensive care units (ICUs), which are essentially areas, where severely ill patients can be concentrated and looked after and provided with the infrastructure and expertise necessary to treat critical illness. For instance undergraduate nursing student must have necessary knowledge and skills to work in these settings and they must also know regarding the arterial blood gas (ABG) analysis and update more knowledge on it, as it is one of the most commonly used tests to measure a patient's clinical status. Correct analysis can lead to quicker and more accurate changes in the plan of patient care. In several setting nurses become more autonomous in patient management including ordering and interpreting diagnostic studies.<sup>3</sup> It is important for the undergraduate nursing students to educate and train them on arterial blood gas (ABG) analysis as this is the key to ensure the accuracy and precision that can be obtained while performing arterial blood gases (ABG).

Research hypothesis

H<sub>1</sub>: There will be significant differences between pre-test and post-test knowledge score regarding arterial blood gas (ABG) analysis among undergraduate nursing students after structured teaching programme. H<sub>2</sub>: There will be significant association of pre-test knowledge score on arterial blood gas (ABG) analysis with selected demographic variables

## II. Materials And Method

Research Approach: Quantitative Approach

Research Design: Pre-Experimental (One-group pretest – post-test research design)

Study Location: Arya Nursing College. It is one of the best institutes for nursing education in Assam. It is surging ahead to make nursing a glorious profession and to establish it in the society as a

“PROFESSION OF CHOICE”. It is a good Nursing college which provides various courses such as Post Basic B.Sc Nursing, B.Sc Nursing, General Nursing & Midwifery (GNM) and Auxilliary Nurse Midwife (ANM) courses. It is recognized by the Indian Nursing Council (INC) and the Government of Assam.

Study duration: 7days

Sample size: 43 undergraduate nursing students

Sample: Undergraduate Nursing students of Arya Nursing College

Sampling Techniques: Selection of undergraduate nursing student: Purposive sampling.

Selection of sample: Simple random sampling

Inclusion criteria:

- Male and female students of Post Basic B.Sc Nursing 1<sup>st</sup> Year and B.Sc Nursing 3<sup>rd</sup> Year.
- Those who are present during the time of structured teaching programme and data collection

Exclusion criteria

- Students who are not willing to participate in the study.
- Students who were absent during data collection.

Data collection: Written permission were taken from the college authority and the class co-ordinators to collect data for the study. Study participants were selected by using Simple Random sampling technique (excel random sampling). Participants were explained about the nature and procedure of the study. Consent was distributed to the study participants via email and Whatsapp. Assured confidentiality and anonymity of the subjects' information. Explained about the guidelines to fulfill the questionnaires. Pre test was conducted on 20<sup>th</sup> August, 2021 by distributing questionnaires among the subjects in Google Form via Whatsapp and it consist of Socio

demographic Proforma- 8 items, Self structured knowledge questionnaire -30 items. Pre-test knowledge questionnaires were collected after 30 minutes. Intervention: Structured teaching programme on knowledge regarding arterial blood gas (ABG) analysis was given to study participants via online mode (Google Meet) on 20<sup>th</sup> August 2021. Post test was conducted on 27<sup>th</sup> August, 2021 by distributing self structured knowledge questionnaires among the subjects in Google Form. Post-test knowledge questionnaires were collected after 30 minutes.

### III. Result:

Data was analyzed by using SPSS 2016 version Distribution of samples according to descriptive analysis of demographic variables. Descriptive analysis of pre-test and post-test knowledge regarding arterial blood gas (ABG) analysis was used to find out frequency and percentage. Inferential analysis of pre-test and post-test knowledge regarding arterial blood gas (ABG) analysis to find out the standard deviation and to evaluate the effectiveness of structured teaching program. Chi-square to find out the association of the pre-test knowledge regarding arterial blood gas (ABG) analysis with selected demographic variables.

The finding of the study are discussed

SECTION A: Distribution of samples according to descriptive analysis of demographic variables.

SECTION B: Descriptive analysis of pre-test and post-test knowledge regarding arterial blood gas (ABG) analysis.

SECTION C: Inferential analysis of pre-test and post-test knowledge regarding arterial blood gas (ABG) analysis to evaluate the effectiveness of structured teaching program.

SECTION D: Chi square to find out the association of the pre-test knowledge regarding arterial blood gas (ABG) analysis with selected demographic variables.

SECTION A: DESCRIPTIVE ANALYSIS OF DEMOGRAPHIC VARIABLES.

This section describes the demographic profiles of 1<sup>st</sup> Year Post Basic B.sc Nursing and 3<sup>rd</sup>Year B.sc Nursing students of Arya Nursing College.

**Table1 (a):** Distribution of Frequency and Percentage according to the age, gender, residential location and academic year.

n=43			
Variables	Category	Frequency	Percentage (%)
AGE GROUP	18-21 Years	12	27.9%
	22-25 Years	29	67.4%
	26-29 Years	2	4.7%
	30 Years and Above	0	0%
GENDER	Male	2	4.7%
	Female	41	95.3%
RESIDENTIAL LOCATION	Urban Area	13	30%
	Rural Area	30	70%
ACADEMIC YEAR	1 <sup>st</sup> Year Post Basic B.sc (N)	16	37.21%
	3 <sup>rd</sup> Year B.sc (N)	27	62.8%

Data presented in table1 (a) shows that majority 67.4% (f=29) of the participant were 22-25 years of age group. Regarding gender majority 95.3% (f=41) of the participants were female. Majority 70% (f=30) of participants are living in a rural area. 62.8% (f=27) of the participants were 3<sup>rd</sup> year B.sc nursing student.

n=43

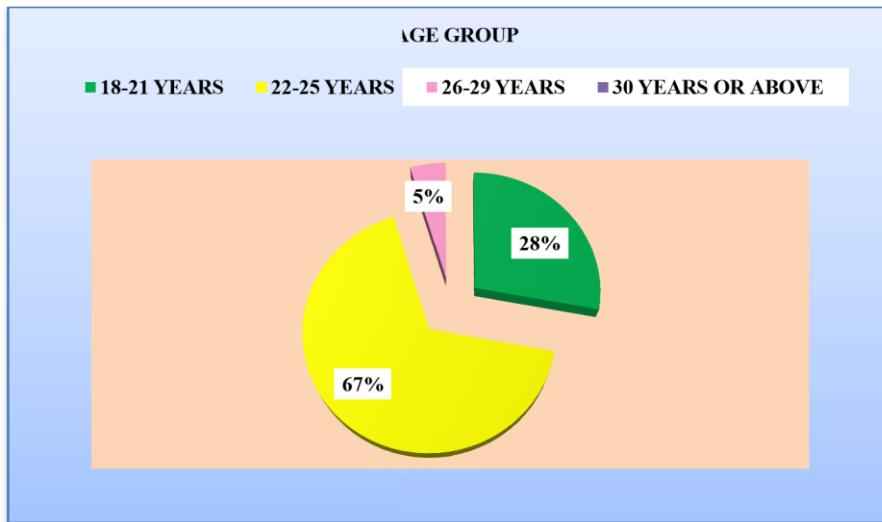


Figure 1: Pie diagram showing percentage distribution according to age group

n=43

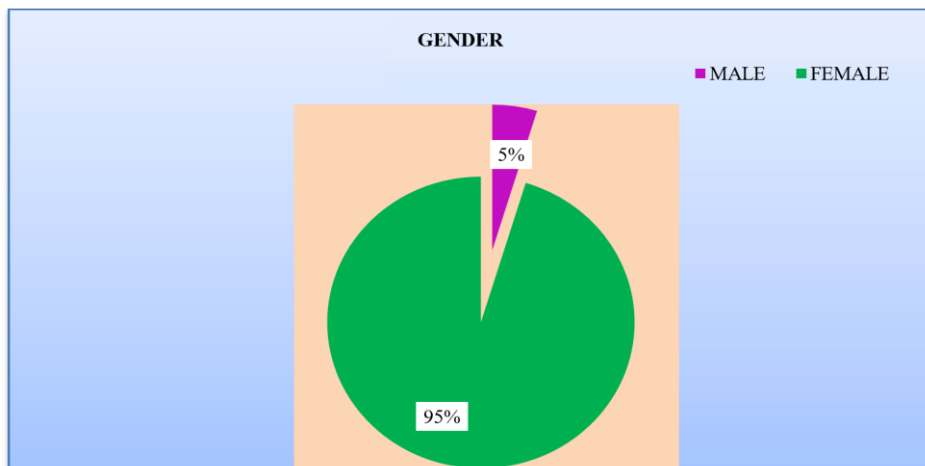


Figure 2: Pie diagram showing percentage distribution of gender

n=43

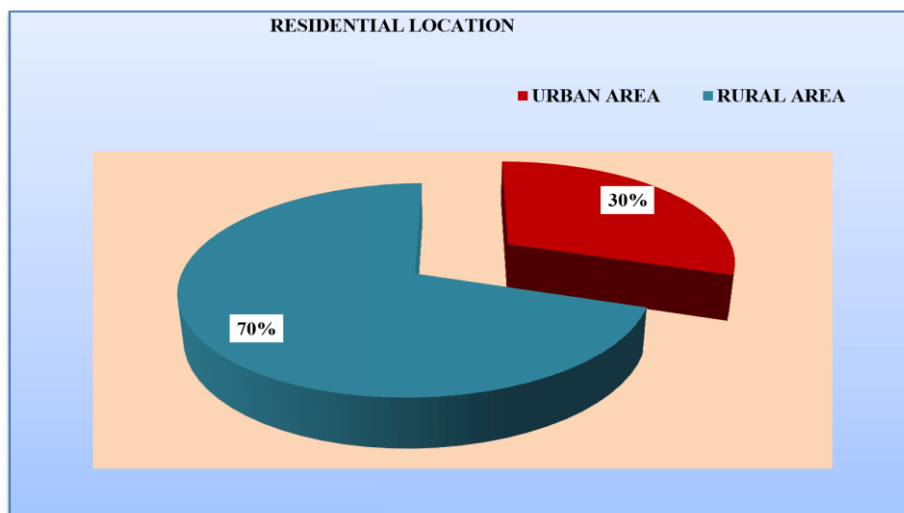


Figure 3: Pie diagram showing percentage distribution of residential location

n=43

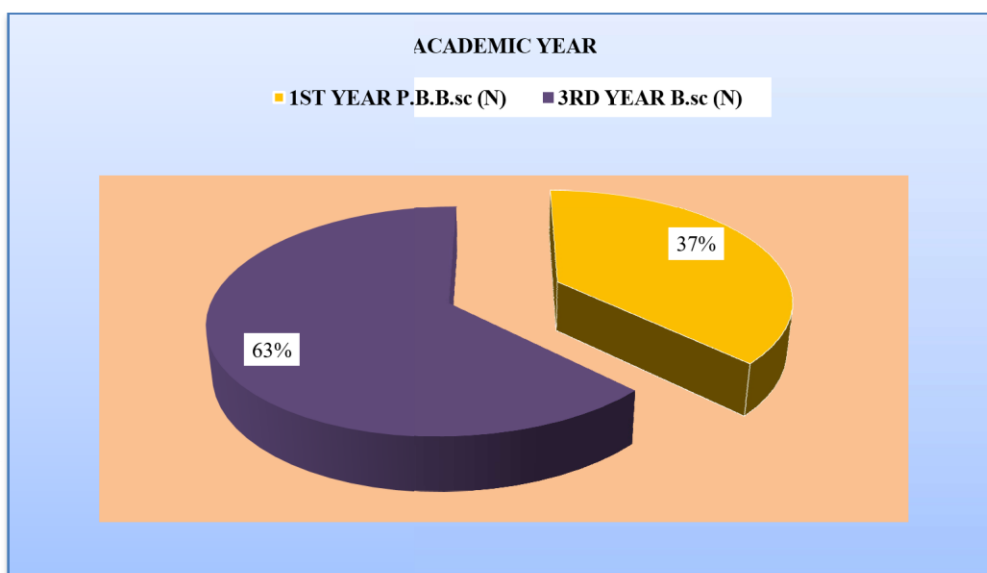


Figure 4: Pie diagram showing percentage distribution for academic year

TABLE 1(b): FREQUENCY AND PERCENTAGE DISTRIBUTION OF CLINICAL EXPERIENCE, YEARS OF EXPERIENCE, PREVIOUS KNOWLEDGE AND SOURCE OF INFORMATION

n = 43

VARIABLES	CATEGORY	FREQUENCY	PERCENTAGE
CLINICAL EXPERIENCE	YES	8	18.6%
	NO	35	81.4%
YEARS OF EXPERIENCE	LESS THAN 1YEAR	4	9.30%
	1 YEAR	2	4.65%
	2 YEARS	2	4.65%
	3 YEARS	0	0
PREVIOUS KNOWLEDGE	YES	38	88.4%
	NO	5	11.6%
SOURCE OF INFORMATION	ICU	2	4.7%
	CLINICAL EXPERIENCE	6	14%
	WORKSHOPS	2	4.7%
	MEDICAL-SURGICAL NURSING THEORY CLASS	28	65%

Data presented in table1 (b) shows that 81.4% (f=35) of the participant have no clinical experience. 9.30% (f=4) of the participants have less than 1 year of clinical experience. Majority 88.4% (f=38) of participants are having previous knowledge regarding ABG analysis. Majority 65% (f=28) get the information from medical – surgical nursing theory classes.

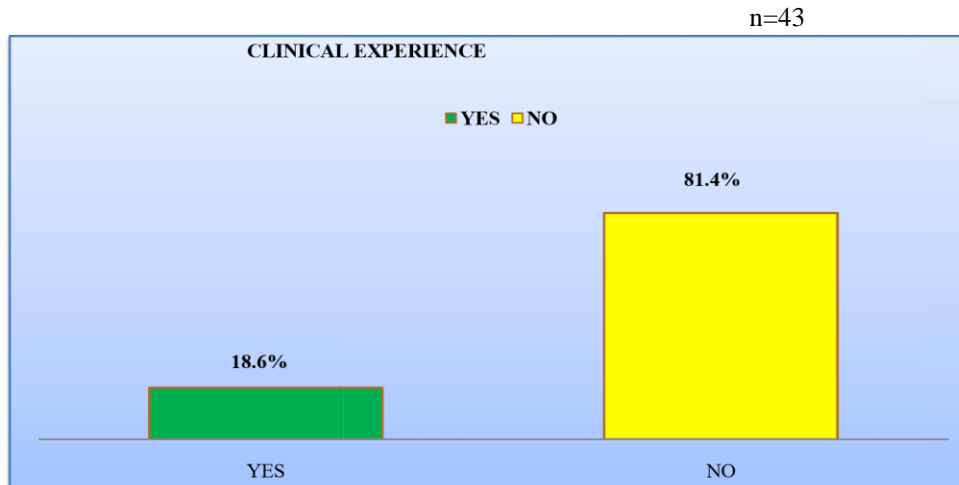


Figure 6: Bar diagram showing percentage distribution of clinical experience

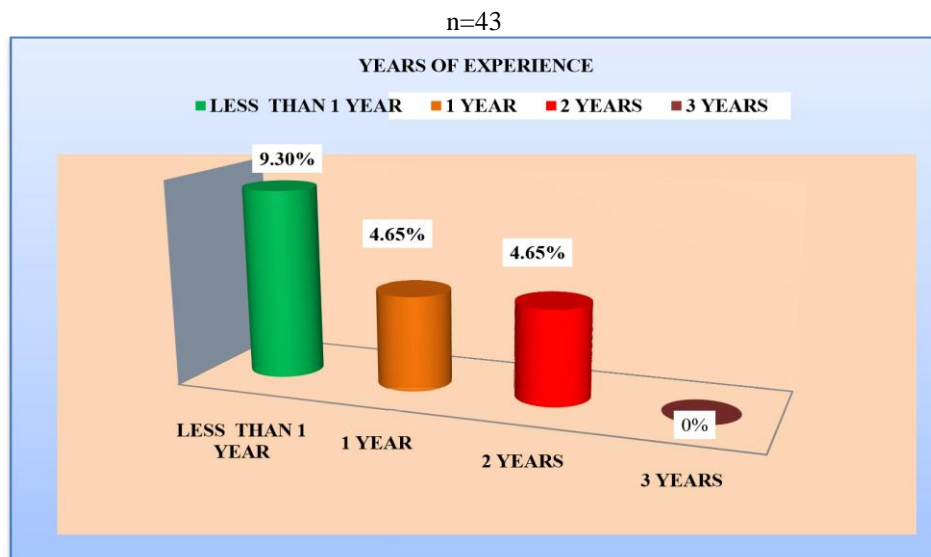


Figure 7: Column showing percentage distribution of years of experience

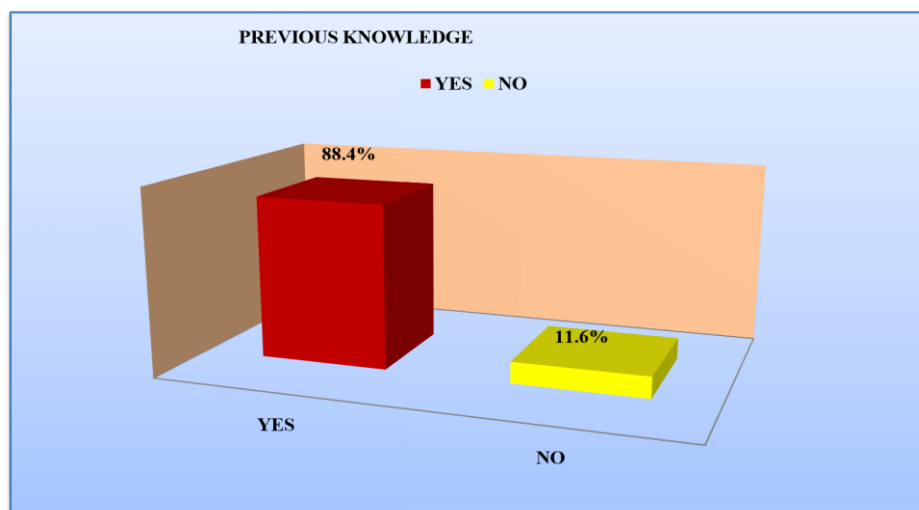


Figure 7: Column showing percentage distribution of previous knowledge

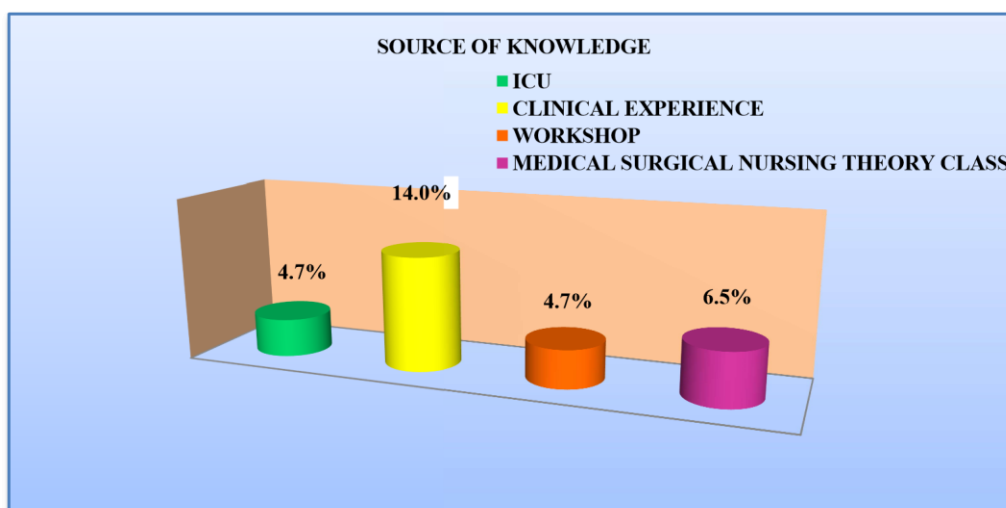


Figure 8: Column showing percentage distribution of source of knowledge

SECTION B: DESCRIPTIVE ANALYSIS OF PRE- TEST AND POST- TEST KNOWLEDGE REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS.

**TABLE-2:** Comparison between pre-test and post test knowledge score regarding arterial blood gas (ABG) analysis among the under graduate nursing students of Arya Nursing College, Changsari, Assam. n=43

PRETEST AND POSTTEST KNOWLEDGE SCORE		
PRE-TEST KNOWLEDGE SCORE	FREQUENCY	PERCENTAGE (%)
INADEQUATE	7	16%
MODERATE	33	77%
ADEQUATE	3	7%
POST-TEST KNOWLEDGE SCORE	FREQUENCY	PERCENTAGE (%)
INADEQUATE	6	14%
MODERATE	26	60%
ADEQUATE	11	26%

The above Table 2 shows that in the pre- test assessment of knowledge on regarding Arterial Blood Gas (ABG) 16% (f=7) of the participants had inadequate knowledge followed by 77% (f=33) of the participants had moderate knowledge and 7% (f=3) of the participants had adequate knowledge regarding ABG analysis. It also shows that post-test assessment of knowledge on regarding Arterial Blood Gas (ABG) analysis 14% (f=6) of the participants had inadequate knowledge, 60% (f=26) of the participants had moderate knowledge and only 26% (f=11) of the participants had adequate knowledge.

n=43

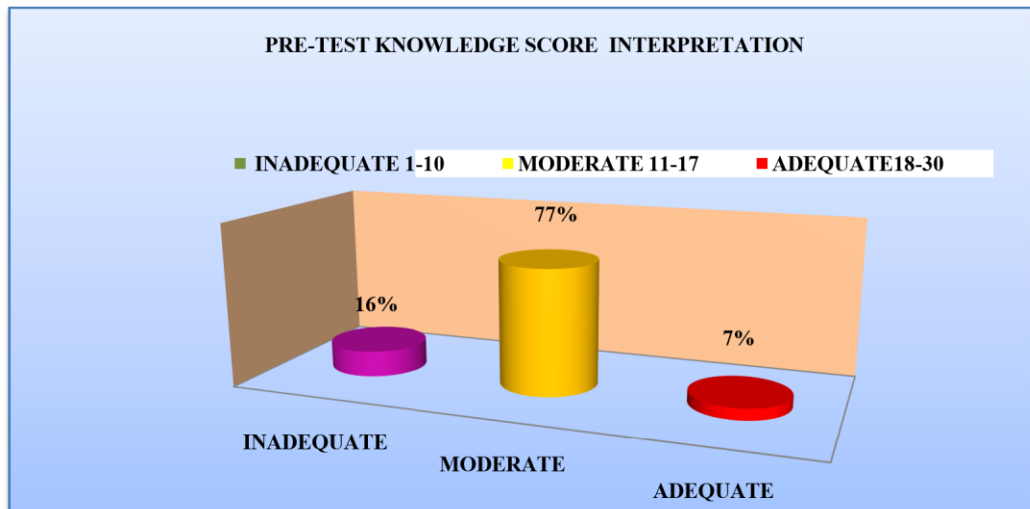


Figure 9: Column diagram showing pre-test scoring interpretation

n=43

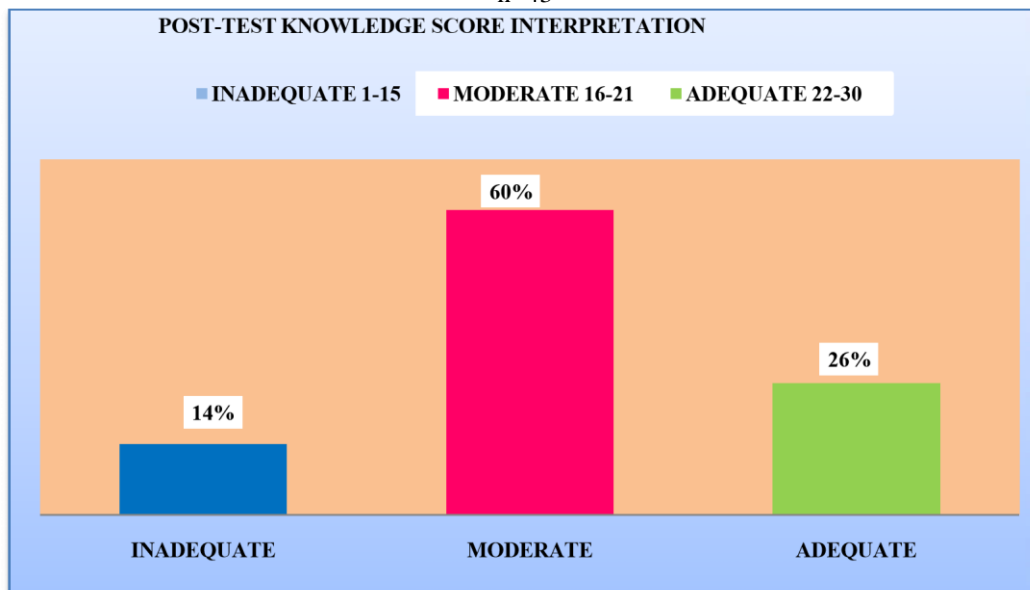


Figure 10: Bar diagram showing post – test score interpretation

**SECTION C: INFERENCE ANALYSIS OF PRE- TEST AND POST-TEST KNOWLEDGE REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS**

TABLE 3: Mean, standard deviation and comparison of pre-test and post-test Knowledge score  
n = 43

KNOWLEDGE	RANGE		MEAN	STANDARD DEVIATION	PAIRED t-TEST	
	MINIMUM	MAXIMUM			CALCULATED VALUE	TABULATED VALUE
PRE- TEST	6	22	13.70	3.69	6.923	2.37
POST- TEST	12	25	18.70	3.34		

(0.05 level of significance)

The above Table 3 shows the mean knowledge of pre-test and post- test respectively.



This indicates that there is an improved in the knowledge level of the undergraduate nursing students after getting structured teaching programme on ABG analysis. From the above table it is also seen that calculated paired t-test value is 6.923 and the tabulated value is 2.37.

This indicates that there is a significant difference on the pre-test and post-test knowledge regarding arterial blood gas (ABG) analysis and the structured teaching programme was effective among the undergraduate nursing students of Arya Nursing College. Hence  $H_1$  is accepted.

**SECTION D: CHI SQUARE ANALYSIS TO FIND OUT THE ASSOCIATION OF PRE-TEST KNOWLEDGE SCORES REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS WITH SELECTED DEMOGRAPHIC VARIABLES.**

TABLE 4(a): Association of pre-test knowledge scores with selected demographic variables- age group, gender, residential location , academic year, clinical experience, year of experience, previous knowledge and source of information.

n = 43

Demographic Variables	Mean		Chi-square		df	Remarks
	≤13	>13	Calculated Value	Tabulated Value		
Age						
18-21 Years	21	19	0.215	3.84	1	NS
26 & Above	2	1				
Gender						
Male	2	0	2.21	3.84	1	NS
Female	21	20				
Residential Location						
Urban area	7	6	0.001	3.84	1	NS
Rural area	16	14				
Academic Year						
1 <sup>st</sup> Year P.B.B.Sc (N)	9	7	0.34	3.84	1	NS
3 <sup>rd</sup> Year B.Sc (N)	14	13				
Clinical Experience						
Yes	5	3	0.32	3.84	1	NS
No	18	17				
Year of Experience						
Less than 1 year	1	2	36.1	3.84	1	S*
1-3 years	4	1				
Previous Knowledge						
Yes	21	17	0.249	3.84	1	NS
No	2	3				
Source of information						
Theory and clinical experience	19	15	0.65	3.84	1	NS
Others	2	2				

NS=Not Significant, S\*= Significant

(P< 0.05)

The above table shows that there is no association of pre-test knowledge score regarding Arterial Blood Gas (ABG) analysis with selected demographic variables such as age, sex, residential location, academic year, clinical experience, previous knowledge and source of information.. But there is a significant association between years of experience ( $\chi^2=36.1$ ) of participants with pre test knowledge score.

**IV. Discussion**

This section included the findings of the study and discussion of the results with others related studies.

The present study was conducted to assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas (ABG) analysis among undergraduate nursing students of Arya Nursing College, Changsari, Assam. The investigator adopted an experimental research design for the study. The study was conducted on Arya Nursing College, Changsari, Assam. In order achieve the objectives of the study the

instruments used were socio demographic proforma, self-structured knowledge questionnaire and structured teaching programme. Data was collected from 43 undergraduate nursing students studying in Arya Nursing College, Changsari, Assam

Data was organized and presented in the forms of tables and graphs. Frequencies, percentage were used to analyze socio demographic variables, pre-test and post-test knowledge score. Range, mean, standard deviation was used to analyze pre-test and post-test knowledge score. Paired ‘t’ test was used to find out the effectiveness of structured teaching programme. Chi-square test was used to find out the association of pre-test knowledge mean score on Arterial Blood Gas (ABG) analysis with the selected socio demographic variables.

Findings of the study were discussed under the following heading based on the objectives:

1. To assess the pre test knowledge regarding arterial blood gas (ABG) analysis among nursing students.
2. To assess the post test knowledge regarding arterial blood gas (ABG) analysis among nursing students.
3. To assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas (ABG) analysis among nursing students.
4. To find out the association between pre test knowledge score on arterial blood gas (ABG) analysis with the selected social demographic variables.

#### RESEARCH HYPOTHESIS

H<sub>1</sub>: There is a significant difference between pre-test and post-test knowledge score regarding arterial blood gas (ABG) analysis among undergraduate nursing students after structured teaching programme.

H<sub>2</sub>: There is a significant association of pre-test knowledge score on arterial blood gas (ABG) analysis with selected demographic variables.

#### SECTION-I DESCRIPTIVE STATISTICS

##### DESCRIPTION OF THE SOCIO-DEMOGRAPHIC VARIABLES OF THE UNDERGRADUATE NURSING STUDENTS

In the present study majority 67.4% (f=29) of the participant were 22-25 years of age group. According to Indian Nursing Council the minimum age for admission is 17 years for the course of B.Sc Nursing. Some get admitted after a year or two which can be due to pursuing another course or other reason. So, eventually in this study majority of the participants are studying in 3<sup>rd</sup> year B.Sc Nursing belongs to the age group of 22-25 years. The present study finding was also similar with a study conducted by Sehwat.V. et.al where it was found that half 50% of the subjects were between the age group (20-28) years.<sup>5</sup>

Data in the study shows majority 95.3% (f=41) of the participants were female.<sup>10</sup> In a survey conducted by Javed J state that women are in the majority, in every healthcare profession including nursing profession. Men form one-third of a typical medical school’s population. Rests of the seats are all occupied by women. Present study findings also similar with the study conducted by Basnett S et.al where the researcher found that majority 70% (f=21) of the participants were female gender.<sup>11</sup> Study finding is also consistent with the study conducted by Rokesh T et.al. where majority of the participants was female (70%) gender.

In the present study majority 70% (f=30) of the participants are living in a rural area. As per the Provisional Census in the year 2011, in India the rural population stands at 833.1 million which is more than the urban population i.e. 377.1 million. Moreover most of the area of Assam is also belongs to rural area so most participants were found from in rural background of Assam.

In the present study majority 62.8% of the participants were from 3<sup>rd</sup> year B.sc nursing students. According to the Indian Nursing Council guidelines the authorized colleges have the authority to enrolled minimum 40-60 B.Sc Nursing per batch which is more in number comparing to Post Basic B.Sc Nursing. Even in the present study, the study setting allocation of students for B.Sc Nursing is more than the Post Basic B.Sc Nursing which eventually makes majority of the participants from B.Sc (N). Study findings are similar with the study conducted by Rokesh T et.al. where 30% of the participants of B.Sc Nursing staff and 14% Post Basic B.Sc Nursing staff.

Data in the study shows that majority 81.4% (f=35) of the participant have no clinical experience. Majority of the participants in this study were undergraduate nursing students and still in the learning period of their profession. Though they may be having a clinical exposure in relation to the curriculum of their courses they do not have any independent clinical experience. In order to have an independent clinical experience one must be a licensed nurse or a registered nurse or a registered midwife.

In the present study 9.30% (f=4) of the participants have less than 1 year of experience.

In the present study majority 88.4% (f=38) of participants were having previous knowledge. ABG analysis is topic which is already included in the B.Sc Nursing and Post Basic B.Sc Nursing curriculum by the Indian Nursing council. Students from B.Sc Nursing and Post Basic B.Sc nursing are exposed to this topic even during their clinical exposure. As it is not a new topic for the both the course, majority of the participants had previous knowledge. Present study findings is consistent with study conducted by Veerabhadra B, et.al

regarding the effectiveness of structured teaching programme on ABG analysis on 3<sup>rd</sup> year B.Sc Nursing students where the researcher have found that 38.4% (f=23) of them got information or had previous knowledge from seminars and workshops..

In the present study majority 65% (f=28) of the participants get the information from medical-surgical nursing theory class. As per INC syllabus all the undergraduate nursing has Medical Surgical Nursing theory class where it has chapter regarding Management of Critically Ill patient, where the students get to learn regarding different diagnostic evaluation for the patient in ICU setting and ABG analysis is one of it. Therefore, the majority participants got the information from the theory classes.

#### DESCRIPTION OF PRE-TEST KNOWLEDGE REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS

It has been observed from the study that on pre-test assessment on knowledge regarding Arterial Blood Gas (ABG) analysis 16% had inadequate knowledge, 77% had moderate knowledge and 7% had adequate knowledge. Present study finding is consistent with the study conducted by Reshma B. et.al where in pre-test majority of respondents 55.88%(f=38) had inadequate knowledge and 44.12% (f=30) had moderately knowledge. Present study finding is also consistent with the study conducted by Deepa A et.al where pre-test 70.8% of respondents had average knowledge 15.3% of respondents have adequate and 13.9% had inadequate.

#### DESCRIPTION OF PRE-TEST KNOWLEDGE REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS

On post-test assessment on knowledge regarding Arterial blood Gas (ABG) analysis 14% had inadequate knowledge, 60% had moderate knowledge and 26% had adequate knowledge. Present study finding is consistent with a study conducted by Apsara N et al where 2% had inadequate knowledge 36% had moderate knowledge and 62% had adequate. Present study findings is also similar with the study conducted by Deepa A et.al , where majority of the post- test respondents had 63.1% adequate knowledge 35.4% had average knowledge and 1.5% had inadequate knowledge.

#### SECTION-II INFERENTIAL STATISTICS

##### EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ARTERIAL BLOOD GAS (ABG) ANALYSIS AMONG UNDERGRADUATE NURSING STUDENTS.

Paired‘t’ test was used to evaluate the effectiveness of structured teaching programme. It was found that‘t’ values of knowledge is 6.923 and the tabulated value is 2.37 (p<0.05). This shows that there was effectiveness of structured teaching programme on knowledge regarding Arterial Blood Gas (ABG) analysis. Present study finding is consistent with the study conducted by Reshma B, et.al where STP was effective in increasing the knowledge of staff nurses on ABG analysis.Present study finding is consistent with the study conducted by Akashpreet K and Gopal Singh C where the researcher have found STP was effective (t calculated value is 10.492, which is more than the tabulated value at 5% level of significance) had significant effect on knowledge and practice on ABG analysis.

##### ASSOCIATION OF PRE TEST KNOWLEDGE SCORE REGARDING ABG ANALYSIS WITH SOCIO-DEMOGRAPHIC VARIABLES

Findings of the present study reveals that there was significant association between year of experience ( $\chi^2 = 36.1$ , p= 0.05) of participants with pre test knowledge score. Study finding is similar with the study conducted by Reshma B et al conducted a study where the result showed that there was significant association of pre-test knowledge score with total working experience, on ABG analysis.

In the present study the researcher found that there was no significant no association on pre-test knowledge score regarding Arterial Blood Gas (ABG) analysis with selected demographic variables such as age ( $\chi^2=0.215$ ), gender ( $\chi^2=2.21$ ), residential location ( $\chi^2= 0.001$ ) academic year ( $\chi^2=0.34$ ), clinical experience ( $\chi^2=0.32$ , previous knowledge ( $\chi^2= 0.249$ ) and source of information ( $\chi^2=0.65$ ).

#### V. Conclusion

The study concludes that the structured teaching program was effective in improving the knowledge regarding arterial blood gas (ABG) analysis among undergraduate nursing students of Arya Nursing College, Changsari Assam as the value of paired t-test calculated value is 6.923 with 0.05 level of significance.

The study results revealed that pre-test knowledge score on arterial blood gas (ABG) analysis is associated with years of experience ( $\chi^2=36.1$ ). Whereas demographic variables such as age ( $\chi^2=0.215$ ), gender ( $\chi^2 =2.21$ ), residential location ( $\chi^2= 0.001$ ), academic year ( $\chi^2=0.34$ ), clinical experiences ( $\chi^2=0.32$ ), previous of knowledge ( $\chi^2=0.249$ ), and source of knowledge ( $\chi^2= 0.65$ ) are not associated with pre-test knowledge score.

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