

**EFFECTIVENESS OF NURSE-LED EDUCATION ON KNOWLEDGE
REGARDING INTERPRETATION OF ABG ANALYSIS AMONG ICU
STAFF NURSES WORKING IN SELECTED HOSPITALS AT KANPUR,
UP.**

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ABSTRACT

A common practice in hospital settings is the direct vascular puncture method of arterial blood gas (ABG) sampling. Its ability to be performed at the patient's bedside, its quick analysis, and the comparatively low incidence of serious complications make it a valuable tool that doctors use to guide and reroute their patients' treatment, particularly in critically ill patients, to measure blood gas exchange levels related to respiratory, metabolic, and renal function. Nurses are essential in helping patients learn about and adjust to having a cardioverter defibrillator implanted.

A quasi-experimental one-group pre-test and post-test study design was used, along with an evaluative research approach. 60 staff nurse samples were chosen using a convenient sampling technique. Section I consisted of sociodemographic data, and Section II consisted of self-administering knowledge questionnaires. Both descriptive and inferential statistics were used to gather and examine the data. Out of 60 subjects, 60% (36) had inadequate knowledge, 30% (18) had moderate knowledge, and 10% (6) had adequate knowledge regarding the interpretation of ABG analysis following the administration of STP, according to the analysis of the pre-test total knowledge scores. Of the 60 subjects, 5% (3) had inadequate knowledge, 36.67% (22) had moderate knowledge, and 58.33% (35) had adequate knowledge regarding the interpretation of ABG analysis among ICU staff nurses. In order to evaluate and validate the hypothesis, chi square was used to calculate the relationship between the post-test level of knowledge and certain characteristics, such as the age, education, job experience, and prior experience of ICU staff nurses. These variables were shown to be substantially associated at the $P < 0.05$ level.

Key Words: Nurses, defibrillator, quasi-experimental research design, ABG analysis.

INTRODUCTION

In critical care units, nurses are crucial to the early identification of high-risk patients with acid-base imbalance. When necessary, the nurse assists with the administration of medication, oxygen, and artificial ventilation. The nurse should be aware of the possible dangers associated with this medication and be able to closely monitor administration rates and therapeutic responses in extreme situations where therapeutic compensation is necessary¹.

Critical care units do not house critically ill individuals. Practitioners in acute settings deal with arterial blood gas (ABG) readings on a daily basis, which they might not be able to interpret. Finding the time to learn new things might be challenging. All nurses working in acute areas must, however, be able to read ABGs in order to guarantee that patients receive timely and appropriate care, as stated in guideline and policy documents. As the number of patients receiving care in general clinical settings increases, so does the need for more sophisticated care and treatment. As a result, being able to interpret test results accurately and promptly has become crucial for nurses to perform their jobs well. Many nurses, however, believe that interpreting arterial blood gas (ABG) findings is outside the purview of their practice since they regard acid-base balance to be perplexing².

NEED FOR STUDY

A blood test called an arterial blood gas (ABG) research quantifies the concentrations of several gases in blood that is oxygen-rich. While some of these values are computed from measurements of other gases, some are detected directly. Before the blood feeds the body, a doctor can measure the gases in arterial blood to ascertain its contents. how well respiratory therapy and other therapies work for people with long-term lung, cardiac, or metabolic conditions³.

The efficiency of gaseous exchange and ventilation, whether mechanical or spontaneous, is evaluated using ABG. Therefore, it would make sense to ask for an ABG from any patient who is or could become seriously unwell. Patients in critical care units and those on wards that activate early-warning scoring systems are included in this. ABG analysis and acid-base balance are difficult ideas that take a lot of learning to grasp. The majority of medical personnel, including nurses, do not need such in-depth expertise to perform

the requisite degree of interpretation. All nurses may accurately interpret ABGs and obtain crucial information about their patients' conditions by using a straightforward, methodical four-step process⁴.

The usefulness of a need-based education protocol on nurses' responsibilities in ABG analysis for the nursing staff working in the critical care units was investigated by Sonali Ganguli, Mangalore (2007). The study's conclusions showed that the instructional program was successful in raising students' understanding of ABG analysis because the calculated t-test was significant at the 0.05 level. The nursing staff was driven to learn, and the key to keeping their knowledge current and enabling them to deliver comprehensive nursing care is continuing nursing education⁵.

One commonly used method for determining arterial blood oxygenation is arterial blood gas analysis. As part of the assessment and treatment of acutely and critically sick patients, doctors, registered nurses, and respiratory therapists are in charge of accurately interpreting ABG data. Nurses in critical care units should be more knowledgeable because they care for patients on ventilators and interpret ABGs more frequently. If they can correctly interpret, they can help the patient's condition progress and avoid difficulties and mistakes⁶.

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STATEMENT OF PROBLEM

“A Study to Assess the Effectiveness of Nurse-Led Education on Knowledge Regarding Interpretation of ABG Analysis Among ICU Staff Nurses Working in Selected Hospitals at Kanpur, UP”.

OBJECTIVES

- To assess the pre test knowledge of staff nurses regarding ABG analysis.
- To determine the effectiveness of structured teaching programme by comparing the pre and post test knowledge score.
- To find out the association between pre-test knowledge score with selected their demographic variables.

HYPOTHESIS

H₁: There will be significant difference between the pre and post test knowledge score of staff nurses regarding ABG analysis.

H₂: There will be significant association between pre-test knowledge score with selected demographic variables.

METHODS AND MATERIALS

Research approach

In the present study a evaluative approach was adopted.

Research design

A Quasi- experimental research design was adopted for the present study.

SETTING OF THE STUDY

The study setting for the present study was Rama Hospital and research center Kanpur.

VARIABLES

Independent Variable

In this study, nurse led education was the independent variable.

Dependent variable

In this study, knowledge of ABG analysis was the dependent variable.

Demographic variables

In this study, the dependent variables are Age, gender, religion, education, work experience and previous experience to information regarding ABG analysis are the demographic variables.

POPULATION

The population for this study comprises of staff nurses.

Target population

In this study the target population was staff nurses working in the selected hospital Kanpur, UP.

Accessible Population

The accessible population is staff nurses working in Rama Hospital, Kanpur, UP.

SAMPLE

The sample for the present study comprises of staff nurses working in Rama Hospital and research centre.

SAMPLE SIZE

The sample size for the present study consists of 100 staff nurses working who will fulfill the inclusion and exclusion criteria.

SAMPLING TECHNIQUES

In the present study, convenient sampling technique was used to select 50 bronchial asthma patients.

Inclusion criteria

Staff Nurses: -

- who have completed Diploma, Bachelor or Master in nursing.
- who are willing to participate in this research study.
- both gender
- who are in Intensive care unit with direct pulmonary patient care.
- who knows to read and write English & Hindi

Exclusion criteria

Staff Nurses : -

- who are not willing to participate in the study
- who are working in other departments like ward, day care etc.
- who are exposed to previous teaching programme on ABG analysis.
- Who are in administrative side

METHODS OF DATA COLLECTION

Assessment of knowledge regarding the interpretation of ABG analysis was measured with the help of administering self structured questionnaire.

DEVELOPMENT OF RESEARCH TOOL

On the basis of developed framework, to achieve the objectives of the study, A self-structured knowledge questionnaire was prepared to assess the knowledge regarding the interpretation of ABG analysis.

DESCRIPTION OF THE TOOL

Section A: A self-structured questionnaire was used to collect socio-demographic data.

Section B: A self-structured questionnaire was used to assess the knowledge regarding interpretation of ABG analysis.

RESULTS & FINDINGS

Section A:

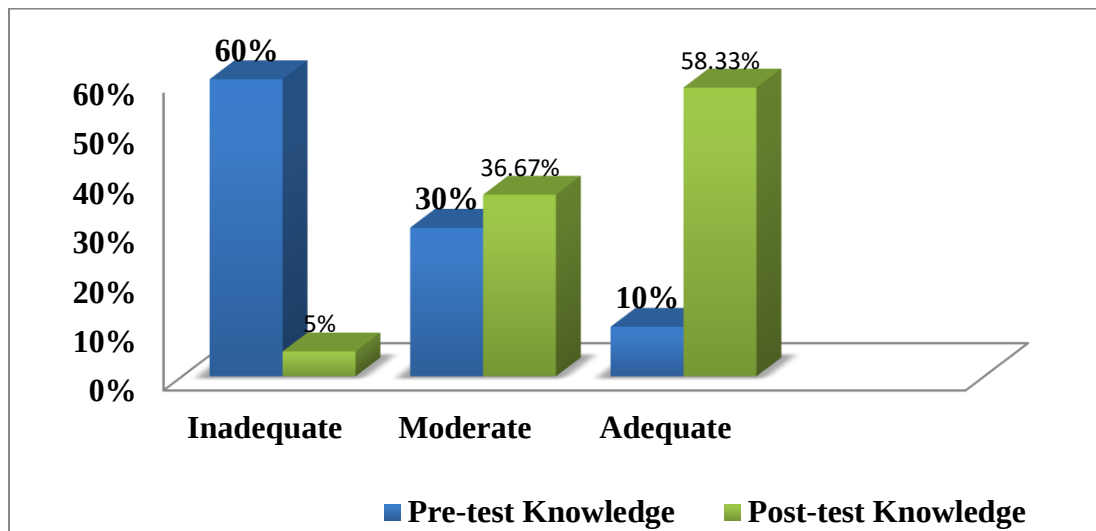
The major findings of the present study are;

- Majority 40.34% samples were between the age group of 26-30 years.
- Majority 60% samples were females.
- Majority 56.67 % samples belonged to Hindu religion.
- Majority 41.67% samples have GNM qualification.
- Majority 35% samples have 1 – 2 years of experience.
- Majority 70% samples don't expose to any teaching program regarding ABG analysis.

Section B

Knowledge of staff nurses regarding interpretation of ABG analysis

The below given bar diagram shows that, in pre-test, out of 60 subjects 60% (36) had inadequate knowledge, 30% (18) had moderate knowledge, and 10% (6) had adequate knowledge regarding interpretation of ABG analysis. After the education in post- test, out of 60 subjects 5% (3) had Inadequate, 36.67% (22) had moderate, 58.33% (35) had adequate knowledge regarding interpretation of ABG analysis which means that Nurse Led Education was effective. Hence the research hypothesis H₁ was accepted.



Section C:

Association between pre-test knowledge levels regarding the interpretation of ABG analysis with selected demographic variables

Sl. No	Variables	Inadequate Knowledge	Moderate knowledge	Adequate Knowledge	d. f	Chi-square	Results
1	Age				6	13.932	Significant
	21-25 Yrs	2	12	6			
	26-30 Yrs	1	9	16			
	31-35 Yrs	0	1	8			
	Above 36 Yrs	0	0	5			

2	Gender						
	Male	1	8	15	2	0.296	Not Significant
	Female	2	14	20			
3	Religion						
	Hindu	2	12	20	6	0.759	Not Significant
	Muslim	0	3	3			
	Christian	1	7	12			
4.	Educational qualification						
	GNM	2	15	8	6	13.74	Significant
	B. Sc (N)	1	5	16			
	P.B.B. Sc (N)	0	2	6			
	M. Sc (N)	0	0	5			
5	Work experience						
	0-1 Yrs	2	8	4	6	14.832	Significant
	1-2 years	1	10	10			
	2-3 years	0	1	11			
	> 3 years	0	3	10			
6	Previous exposure to teaching program on ABG analysis						
	Yes	0	3	15	2	6.846	Significant
	No	3	19	20			

From the above mentioned statistical finding, it shows that, there is a significant association between the pre-test knowledge staff nurses regarding the interpretation of ABG analysis with their selected demographic variables. Hence the H₂ was accepted.

NURSING IMPLICATIONS

Nursing education:

A nurse as an educator has a vital role to play in imparting knowledge regarding the interpretation of ABG analysis among student nurses in order to reduce the mistakes in clinical settings. The findings of the study can be used by the nurse educator to educate the student nurses, who will help them to provide an effective nursing care and to practice.

Nursing administration:

Nursing administrator can influence the quality of nursing care in hospitals, nursing homes and community by planning health programmes and supervising care at different levels. The nurse administrator can also co-ordinate and discuss about the interpretation of ABG analysis at various forums and meetings so that health programs are organized at various levels.

Nursing practice

The findings of the study could be utilized as a basis for orientation programs and in-service education of the community health nurses so that constant awareness and clear understanding may be created regarding the interpretation of ABG analysis.

Nursing research:

The study helps the nurse researchers to develop appropriate health education tools for educating ICU staff nurses regarding ABG analysis. Nurses should come forward to take up unsolved aspects in the field of care to public. The study will motivate the beginning researchers to conduct some study with different variables on a large scale. The public and private agencies should also encourage research in this field through needed materials and funds.

RECOMMENDATIONS

- A study can be undertaken with a large sample to generalize the findings
- An experimental study can be undertaken with control group
- A comparative study can be done between the private and government hospital people.
- A study can be conducted to assess the knowledge, attitude and practice of nurses regarding the interpretation of ABG analysis.

CONCLUSION

The study was conducted assessto effectiveness of nurse led education on knowledge regarding interpretation of ABG analysis among ICU staff nurses working in selected hospitals at Kanpur, UP. On the basis of findings of the study showed that, the nurse led education, improved the knowledge of the staff nurses regarding the interpretation of the ABG analysis.

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