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A study to assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas analysis among the staff nurses at selected hospital, Chennai

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Abstract

Arterial blood gas analysis is a basic and useful laboratory test for the critical care of patients. Arterial blood gas analysis is an essential investigation for assessing clinical oxygenation and acid-base status in critically ill patients, providing information about ventilation, oxygenation, and acid-base status, the three closely and interrelated physiological parameters that maintain pH homeostasis. A pre experimental study, therefore, was undertaken to assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas analysis among the staff nurses at selected hospital, Chennai. 30 samples were selected using purposive sampling technique. In order to assess the level of knowledge regarding arterial blood gas analysis, a structured questionnaire was used. The study concluded that structured teaching programme improves the level of knowledge regarding arterial blood gas analysis among the staff nurses. The difference was found to be statistically significant at $p < 0.001$ level which indicates the effectiveness of structured teaching programme in improving the level of knowledge.

Keywords: Assess, effectiveness, structured teaching programme, knowledge, arterial blood gas analysis.

1. Introduction

Arterial blood gas analysis is a basic and useful laboratory test for the critical care of patients. Arterial blood gas analysis is an essential investigation for assessing clinical oxygenation and acid-base status in critically ill patients, providing information about ventilation, oxygenation, and acid-base status, the three closely and interrelated physiological parameters that maintain pH homeostasis. Measurement of arterial blood gas involves analysis of components: pH, Partial pressure (PP), Base excess (BE), Bicarbonate (HCO_3), Electrolytes Lactate Haemoglobin (Hb), Glucose, Carbon monoxide (CO), Methaemoglobin (metHb). Non-invasive methods, such as pulse oximetry, transcutaneous monitoring of oxygen and carbon dioxide, and end tidal carbon dioxide have been proven to be useful, but they do not give information about pH, PO_2 , base excess and bicarbonate. Interpreting an arterial blood gas (ABG) is a crucial skill for physicians, nurses, respiratory therapists, and other health care personnel. As arterial blood gas (ABG) analysis is the most effective way to evaluate acid-base balance and oxygenation therefore any deviation from a normal value will indicate that the client is experiencing an acid-base imbalance. Disorders of acid-base balance can lead to severe complications in many disease states, and occasionally the abnormality may be so severe as to become a life-threatening risk factor.

2. Objectives of the Study

- To assess the level of knowledge regarding arterial blood gas analysis among staff nurses.
- To evaluate the effectiveness of structured teaching programme on knowledge regarding arterial blood gas analysis among staff nurses.

- To find out the association between the post-test level of knowledge of staff nurses with selected demographic variables.

3. Hypothesis

H₁: There is significant difference between pre-test and post-test level of knowledge of staff nurses regarding arterial blood gas analysis.

H₂: There is a significant association between the post-test level of knowledge of staff nurses with selected demographic variables.

4. Material and Method

A pre experimental study, therefore, was undertaken to assess the effectiveness of structured teaching programme on knowledge regarding arterial blood gas analysis among the staff nurses at selected hospital, Chennai. 30 samples were selected using purposive sampling technique. In order to assess the level of knowledge regarding arterial blood gas analysis, a structured questionnaire was used. The data was collected by delivering the question sample to the

participants and then collected after 1 hour each for pretest and posttest.

The score was interpreted as follows:

| Sl.NO | Level Of Knowledge | Percentage |
|-------|---------------------|------------|
| 1. | Adequate | >75% |
| 2. | Moderately adequate | 51-75% |
| 3. | Inadequate | <50% |

5. Results

Results reveals that before implementing structured teaching programme, out of 30 samples 4(13.3%) had inadequate knowledge, 20 (66.7%) had moderate adequate knowledge and only 6 (20%) had adequate knowledge about arterial blood gas analysis. However in posttest 4 (13.3%) had moderate adequate knowledge and 26(86.7%) had adequate knowledge and none had inadequate knowledge about arterial blood gas analysis. The pretest mean value is 19.5 and the standard deviation value is 3.03. The posttest mean value is 25.1 and standard deviation value is 2.14. The mean difference is 5.6 and the standard deviation difference is 9. The Paired “t” value is 8.4, which is statistically significant at $p < 0.001$.

| Variables | Pretest knowledge | | Posttest knowledge | | Difference | | Paired ‘t’ test value |
|-------------------|-------------------|------|--------------------|------|------------|----|-----------------------|
| | MEAN | SD | MEAN | SD | MEAN | SD | |
| Overall Knowledge | 19.5 | 3.03 | 25.1 | 2.14 | 5.6 | 9 | 8.4*** $p < 0.001$ |

6. Conclusion

The study reveals that 4 (13.3%) had moderate adequate knowledge and 26(86.7%) had adequate knowledge and none had inadequate knowledge about arterial blood gas analysis in the post test after implementation of structured teaching programme. The difference was found to be statistically significant at $p < 0.001$ level which indicates the effectiveness of structured teaching programme in improving the level of knowledge regarding arterial blood gas analysis among staff nurses.

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