International Journal of Nursing Education
Volume 14 No. 3, July-September 2022

Effect of a Planned Teaching Programme (PTP) on Knowledge Regarding Identification and Management of Cardiac Arrhythmias Among Staff Nurses Working in a Selected Hospital at Kerala

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How to cite this article: Devaraj AT, Rohini T. A Effect of a Planned Teaching Programme (PTP) on Knowledge Regarding Identification and Management of Cardiac Arrhythmias Among Staff Nurses Working in a Selected Hospital at Kerala. 2022;14(3):35-41.

ABSTRACT

Cardiac arrhythmias are cardiac rhythm disorders that comprise an important epidemiological and public health problem. **Objectives:** The objectives of the study were to evaluate the effect of a Planned Teaching Programme on knowledge regarding identification and management of Cardiac Arrhythmias among staff nurses and find the association between the pretest knowledge level regarding identification and management of Cardiac Arrhythmias among staff nurses and the selected sociodemographic variables. **Methodology:** A quantitative research approach was used with quasi experimental design (one group pretest posttest design). The sample consists of 40 staff nurses, selected conveniently. Data were collected using the tools - socio-demographic data and structured knowledge questionnaire. Pretest was conducted on day 1. Planned Teaching Programme was given for 45 minutes on the same day. Posttest was conducted on day 14. **Results:** The paired 't' test showed that the calculated 't' value (12.37) was greater than the table 't' value (3.55) which was significant at $P < 0.001$. There was significant association between the sociodemographic variable - area of working and the pretest knowledge level of staff nurses. **Conclusion:** Planned Teaching Programme is highly effective in improving the knowledge of staff nurses regarding identification and management of cardiac arrhythmias.

Key words: Cardiac Arrhythmias, Knowledge, Planned Teaching Programme.

INTRODUCTION

Cardiac rhythm disorders occurs when the heart's electrical system malfunctions. Depending upon the abnormality, the heart may begin to beat too fast, too slow, irregularly, or not at all.[1] Cardiac arrhythmias are cardiac rhythm disorders that comprise an important epidemiological and public health problem.[2] Cardiac arrhythmias are increasingly present in developed countries and represent a major health and economic burden.[3]

Arrhythmia affects millions of people. Arrhythmias may occur at any age but are more common among older people.[4] Cardiac arrhythmias are one of the most complex, insufficiently studied, and therefore one of the most urgent problems of modern cardiology.[5]

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Knowledge is essential for prevention of errors and providing higher quality care.[6] Studies in India and other developed countries revealed that nurses are having less knowledge regarding identification and management of cardiac arrhythmias.

A pre-experimental study was conducted in 2017 to assess the effectiveness of Self Instructional Module on knowledge regarding identification and management of cardiac arrhythmias among staff nurses in Pune. One group pretest posttest design was used and the sample size was 50. The findings of the study revealed that majority of the sample 58% had poor knowledge and 42% had average knowledge regarding identification and management of cardiac arrhythmias.[7]

Cardiac arrhythmias are significantly associated with increased risks of cardiovascular complications and sudden death, consequently leading to decreased quality of life, disability, high mortality, and healthcare expense.[2] All staff nurses should have sufficient knowledge to manage such patients with life threatening arrhythmias effectively.

Though it is deemed important, there are hardly few studies which have examined the effect of interventions on knowledge regarding identification and management of cardiac arrhythmias in Kerala. The investigator during her clinical experience has also observed that only senior nurses are capable to identify cardiac arrhythmias. All these motivated the investigator and felt that there is a need to conduct a research study, to test the effect of a Planned Teaching Programme on identification and management of cardiac arrhythmias.

OBJECTIVES

Objectives of the study were to,

1. assess the knowledge of staff nurses regarding identification and management of Cardiac Arrhythmias before and after giving the Planned Teaching Programme.
2. evaluate the effect of a Planned Teaching Programme on knowledge regarding identification and management of Cardiac Arrhythmias among staff nurses.
3. find the association between the pretest knowledge level regarding identification and management of Cardiac Arrhythmias among staff nurses and the selected socio-demographic variables.

OPERATIONAL DEFINITIONS

a) Effect

It refers to the outcome of a Planned Teaching Programme on identification and management of cardiac arrhythmias in terms of knowledge score as measured by the structured knowledge questionnaire.

b) Planned Teaching Programme

It refers to systemically organized information with audio visual aids prepared and delivered by the investigator to the staff nurses for duration of 45 minutes regarding conduction system of heart, normal ECG, definition, etiology, main types, its ECG characteristics and management of cardiac arrhythmias.

c) Knowledge

Ability of the staff nurses to recall and give correct responses related to identification and management of cardiac arrhythmias as measured by the structured knowledge questionnaire.

d) Cardiac Arrhythmias

In this study, cardiac arrhythmias refers to a group of atrial and ventricular conditions in which the electrical activity of the heart is irregular or is faster than the normal. It includes Atrial Flutter, Atrial Fibrillation, Paroxysmal Supraventricular Tachycardia, Premature Ventricular Contractions, Ventricular Tachycardia and Ventricular Fibrillation.

e) Staff nurses

Professionals possessing nursing degrees (B.Sc, Post Basic B.Sc, M.Sc) or certificates (GNM) with valid license and practicing nursing duties in cardiology/MICU of the selected hospital.

Hypotheses

H_1: The mean posttest knowledge score of staff nurses regarding Cardiac Arrhythmias is significantly higher than the mean pretest knowledge score at 0.05 level of significance.

H_2: There is significant association between the pretest level of knowledge and the selected socio-demographic variables at 0.05 level of significance.

Conceptual Framework

The conceptual framework of the present study was developed based on Imogene M. King's 'Theory of Goal Attainment'.

MATERIALS AND METHODS

Research approach and design : A quantitative approach with Quasi-experimental, one group pretest posttest design was used.

Variables: Dependent, independent and extraneous variables.

Independent Variable: Planned Teaching Programme regarding identification and management of cardiac arrhythmias.

Dependent variable: Knowledge regarding identification and management of cardiac arrhythmias among staff nurses.

Extraneous variables: Age in years, gender, educational status, area of working, total years of experience, years of experience in cardiology/MICU, experience in managing cardiac arrythmias, exposure to in-service education regarding cardiac arrhythmias more than two times within six months.

Setting of the study: The study was conducted in Samaritan Hospital, Pazhanganad.

Population: All staff nurses working in cardiology/MICU of Samaritan Hospital.

Sample: Staff nurses working in cardiology/MICU in Samaritan Hospital who fulfilled the inclusion criteria.

Sample size : 40. It was estimated based on the power analysis and statistician's opinion. The obtained sample size was 36 and considering 10% attrition it was decided to take a sample of 40 staff nurses.

Sampling Technique: Convenient sampling was used in the present study.

Inclusion criteria

Staff nurses who are,

- working in cardiology or MICU
- male or female
- willing to participate in the study

Exclusion criteria

Staff nurses who have,

- attended in-service education on cardiac arrhythmias more than two times within six months.

Development of tool: The tools developed for the study were socio-demographic data and structured knowledge questionnaire.

Description of the tool

Part 1: Socio-demographic data

The socio-demographic data consists of eight items such as age in years, gender, educational status, area of working, total years of experience, years of experience in cardiology/MICU, experience in managing cardiac arrhythmias, exposure to in-service education regarding cardiac arrhythmias more than two times within six months.

Part 2: Structured Knowledge Questionnaire

A structured knowledge questionnaire with 40 items was constructed to assess the knowledge of staff nurses regarding identification and management of cardiac arrhythmias. Each right answer was given a score of one and wrong answer was given a score of zero. The maximum score was 40.

Planned Teaching Programme

The Planned Teaching Programme was prepared in English and contents included were: conduction system of heart, normal ECG, definition, etiology, main types of cardiac arrhythmias (Atrial Flutter, Atrial Fibrillation, Paroxysmal Supraventricular Tachycardia, Premature Ventricular Contractions, Ventricular Tachycardia and Ventricular Fibrillation) its ECG characteristics and management.

Content validity and reliability of the tool

The content validity of tools were obtained from seven experts (nursing and medical) and necessary modifications were made in the tool based on their valuable suggestions and opinions. The reliability of the structured knowledge questionnaire was done by test-retest method. Scores of the tool administered were calculated by using the formula of Karl Pearson's correlation coefficient. The 'r' value was 0.96 which indicated that the tool was reliable.

Data collection process

The study was conducted after obtaining approval of Institutional Ethics committee. The data was collected during the period between 08/02/2019 to 23/02/2019. Forty staff nurses, satisfying the sampling criteria were selected conveniently and informed consent was obtained from the participants. As there was difficulty in getting the sample together during the pilot study, it was decided that the main study would be conducted in two sessions. On 08/02/19 pretest was conducted for the first group of staff nurses (morning and evening shift) working in cardiology (n=25). Similarly on 09/02/19 pretest was conducted for the remaining staff nurses from cardiology (night shift), and MICU (n= 15). Planned Teaching Programme regarding identification and management of cardiac arrhythmias was administered to the group on the same day of the pretest for 45 minutes. Planned Teaching Programme was administered using power point. Posttest was conducted using the same structured knowledge questionnaire for the group on day 14 (on 22/02/19 for the first group and on 23/02/19 for the second group).

RESULTS

Description of sample characteristics

Majority of sample 50% have studied GNM and 87.5% were working in cardiology with 100% no exposure to in-service education regarding cardiac arrhythmias more than 2 times within 6 months (table 1).

Table 1: Frequency and percentage distribution of sample based on socio-demographic ariables. (N = 40)

Demographic variable	*Frequency (f)*	*Percentage (%)*
Age in years		
20-30	25	62.5
31-40	13	32.5
>40	2	5
Gender		
Male	6	15
Female	34	85
Educational status		
GNM	20	50
B.Sc (N)	14	35
PB.BSc (N)	6	15
M.Sc (N)	0	0
Area of working		
Cardiology	35	87.5
MICU	5	12.5
Total years of experience		
<5 years	21	52.5
5-10 years	15	37.5
>10 years	4	10
Years of experience in cardiology/MICU		
<5 years	25	62.5
5-10 years	13	32.5
>10 years	2	5
Experience in managing cardiac arrhythmias		
Yes	28	70
No	12	30
Exposure to in-service education regarding cardiac arrhythmias more than 2 times within 6 months		
Yes	0	0
No	40	100

Knowledge of staff nurses regarding identification and management of cardiac arrhythmias

The mean 31.7 and mean percentage 79.25% of posttest knowledge score is higher than the mean 21.9 and mean percentage 54.75% of pretest knowledge score (table 2).

Table 2: Mean and mean percentage of knowledge regarding identification and management of cardiac arrhythmias among staff nurses

(N=40)

Variable	*Maximum score*	*Pretest*		*Posttest*	
		Mean	Percentage	Mean	Percentage
Knowledge	40	21.9	54.75	31.7	79.25

Table 3: Comparison of the pretest and posttest knowledge score of staff nurses

(N=40)

Group	Mean	Standard deviation	t(calculated value)	t(table value)
Pretest	21.9	5.82	12.37***	3.55
Posttest	31.7	4.75		

*** Significant level at 0.001

Effect of a Planned Teaching Programme on knowledge of staff nurses regarding identification and management of cardiac arrhythmias.

As the p value is <0.001, it is found to be statistically significant. Hence the null hypothesis (H_{01}) is rejected and the research hypothesis (H_1) is accepted (table 3). This shows that there is significant improvement in the knowledge score of the sample after the Planned Teaching Programme.

Association of pretest knowledge level of staff nurses regarding identification and management of cardiac arrhythmias with the selected socio-demographic variables

There was significant association between the socio-demographic variable - area of working and the pretest knowledge level of staff nurses. Hence the null hypothesis (H_{02}) was rejected and the research hypothesis (H_2) was accepted for this variable. Hence the null hypothesis was accepted for all the other variables as there was no significant association.

DISCUSSION

The frequency and percentage distribution of the demographic variables in the present study revealed that the majority of sample were females 34 (85%) and majority of sample 20 (50%) had studied GNM . The study is compared to a descriptive cross sectional study that was conducted to assess the knowledge and skill level of nurses in identification of life threatening arrhythmias in Tanzania in 2018. Total sample size was 141. Majority of the sample 112 (79.4%) were females and had diploma in nursing 99 (70.2%) as their qualification.[8] This supports the present study findings with respect to gender and educational status.

In the present study the mean posttest knowledge score 31.7 was higher than the mean pretest knowledge score (21.9). The calculated 't' value (t=12.37) was greater than the table value (t=3.55).As the p value was <0.001, it was found to be statistically significant. Hence the null hypothesis (H_{01}) was rejected and the research hypothesis (H_1) was accepted. This supports the hypothesis that there is significant improvement in the knowledge score of the group after the Planned Teaching Programme.

A similar finding of improvement in knowledge was observed in a true experimental study which was conducted in Erode in 2016 with the purpose to assess the effectiveness of Video Assisted Teaching Programme on level of knowledge regarding identification and management of cardiac arrhythmias among staff nurses. The findings revealed that the posttest mean of experimental group (29 ± 5.4) was higher than the posttest mean of control group (16 ± 5.8). The result concluded that

video assisted teaching programme was most effective in improving knowledge.[9]

In the present study there was significant association between pretest knowledge level and the socio-demographic variable - area of working. The present study findings were compared with a pre-experimental study that was done in 2017 to assess the effectiveness of Self Instructional Module on knowledge regarding identification and management of cardiac arrhythmias among staff nurses in Pune. Sample (n=50) were selected using convenient sampling technique. The study revealed that, there was a significant association between knowledge regarding identification and management of cardiac arrhythmias with the work experience in critical care unit as p value is < 0.001. There was no association between the knowledge score and other selected demographic variables like age gender, area of working.

CONCLUSION

Nurses play a critical role in arrhythmia identification and management at the bedside.[10] Nurses knowledge and practices regarding life threatening cardiac arrhythmias are inadequate and need to be improved.[11] From the study it is evident that staff nurses had deficit knowledge regarding identification and management of cardiac arrhythmias and Planned Teaching Programme was an effective strategy in improving the knowledge of staff nurses regarding identification and management of cardiac arrhythmias.

NURSING IMPLICATIONS

Nursing Practice

- The findings of the study provide an insight to the poor knowledge of the staff nurses regarding identification and management of cardiac arrhythmias. Being a primary care provider the nurse can utilize the PTP as a reference material for early identification of cardiac arrhythmias and managing it to save the life of the patients.

Nursing Education

- Planned Teaching Programme prepared for the present study can be utilized by the nurse educator to teach the nursing students regarding identification and management of cardiac arrhythmias.

Nursing Administration

- Nurse administrator can plan and organize in-service education programme to improve the knowledge of staff nurses regarding identification and management of cardiac arrhythmias.

Nursing Research

- The present study findings can be utilized as a background for further study.

LIMITATIONS

- Planned Teaching Programme was done in two sessions due to the non-availability of all sample together. The staff nurses from cardiology (morning and evening shift) were included in the first session and the remaining staff nurses of cardiology (night shift) and MICU in the second session.

RECOMMENDATIONS

- The present study can be conducted on the same topic with other selective cardiac arrhythmias.

ACKNOWLEDGEMENT

The researcher would like to acknowledge Dr.Sr.Salini S.D, Principal and Dr.Sr. Sajeena S.D, Vice Principal of Samaritan College of Nursing for all their guidance, constructive suggestions, and support extended towards the study.

Conflict of Interest: Nil

Source of Funding: Self

ETHICAL CLEARANCE: The study was conducted after obtaining approval of Institutional Ethics committee.

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