AMERICAN JOURNAL OF ADVANCES IN NURSING RESEARCH
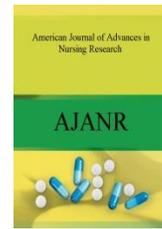
A STUDY TO ASSESS THE LEVEL OF KNOWLEDGE REGARDING AUTOMATED EXTERNAL DEFIBRILLATOR AMONG STAFF NURSES IN SELECTED HOSPITAL AT TIRUNELVELI

Vanaja R[1]*, Dr. Sharmila Jansi Rani S.S[2]

[1]Research scholar, department of medical surgical nursing, Christian college of nursing, Neyyoor, affiliated to The Tamilnadu Dr. MGR Medical University, Chennai, Tamil Nadu, India.
[2]Research guide/Vice Principal, department of medical surgical nursing, Christian college of nursing, Neyyoor, affiliated to The Tamilnadu Dr. MGR Medical University, Chennai, Chennai, Tamil Nadu, India.

ABSTRACT

Background: Research and studies consistently highlight the importance of Automated External Defibrillators (AEDs) and the ongoing need for continued research and optimized implementation strategies to maximize their life-saving potential. Studies provide evidence-based recommendations for policy makers and healthcare providers regarding AED programs, training initiatives, and regulations to ensure the safe and effective use of AEDs [3]. Objective: To assess the level of knowledge on automated external defibrillator among staff nurses and to correlate the association between the knowledge on automated external defibrillator among staff nurses with their selected demographic variables Methods: descriptive study conducted among 50 staff nurses in selected hospital at Tirunelveli. Results: This study proven that 76% of staff nurses have low knowledge on automated external defibrillator among staff nursesConclusion: Identify potential barriers to AED use, such as lack of training, fear of using the device, or inadequate access to AEDs. Providing nurses with the tools and knowledge to use AEDs can empower them to play a more active role in emergency care and potentially save lives.

INTRODUCTION

Cardiac arrest may occur anywhere in a hospital, early recognition and identification of cardiac arrest by healthcare professional is bit challenge in developing countries. The AED is highly specific and sensitive in recognizing the shockable and non-shockable rhythms. The shockable rhythms are ventricular tachycardia (VT) and ventricular fibrillation (VF). The non-shockable rhythms are Pulseless electrical activity (PEA) and Asystole.

A sense of parental satisfaction with care is determined by Therefore, it is essential to quantify and qualify the cardiac rhythms while patients experience cardiac arrest to further justify the employment of AED in hospital setting. Cardiac arrhythmias are some of the conditions which carry life threatening risks leading to heart failure or death, where early actions can play a great role in bringing back a patient from the clutches of death [1].

Automated external defibrillators (AEDs) are critical in cardiac arrest and survival outcome. Nurses play a pivotal role in providing care during in-hospital cardiac arrests, often serving as the first responders [2]. However, significant gaps in nurses' knowledge and

Corresponding Author
Vanaja R

Email: - vanajarajesh90@gmail.com

Research Article

confidence in using AEDs limit their effectiveness. As a result, county hospital nurses receive inadequate AED training, especially lacking hands-on experience .Continuous training and systematic evaluations of training effectiveness across hospital in south side of Tamilnadu are still lacking. Practical training in south side hospitals often lack of hands-on practice, limiting emergency response capability among nurses. This study explores the current status of level of knowledge among nurses on AED training and its impact on emergency response capabilities in the health care services [4].

Statement of the Problem

"A study to assess the level of knowledge regarding automated external defibrillator among staff nurses in selected hospital at Tirunelveli".

Objectives

i. To assess the level of knowledge automated external defibrillator among staff nurses.
ii. To find the association between the knowledge automated external defibrillator among staff nurses with their selected demographic variables.

Methodology:

- **Research Approach:** Quantitative
- **Design:** Descriptive research design
- **Sampling Technique:** Non-probability convenience sampling
- **Sample Size:** 50 staff nurses
- **Inclusion Criteria:** Nurses willing to participate; both male and female staff nurses included
- **Exclusion Criteria:** Nurses unavailable during data collection or unwilling to respond

Tool: A structured questionnaire with two sections:

- Section A: Demographics (age, gender, religion, qualification, experience, department, previous AED knowledge, actual AED use)
- Section B: Knowledge questions (15 items; 1 mark each).
  - o 11–15: Adequate knowledge
  - o 06–10: Moderately adequate knowledge
  - o 00–05: Inadequate knowledge

RESULT AND DISCUSSION

With respect to age, 24 staff nurses (48%) belonged to the age group of 21–30 years, 20 (40%) were in the age group of 31–40 years, and 6 (12%) were in the age group of 41–50 years. In relation to gender, out of 50 samples, 40 (80%) were female and 10 (20%) were male. With regard to religion, 20 participants (40%) were Hindu, 28 (56%) were Christian, and 2 (4%) were Muslim. Concerning previous knowledge regarding automated external defibrillators (AEDs)**,** 10 nurses (20%) reported having prior knowledge, whereas 40 (80%) had no previous knowledge. In terms of actual defibrillation experience**,** only 5 nurses (10%) reported having hands-on experience, while 45 (90%) had never used a defibrillator.

DESCRIPTION

Table 2 and Figure1.2 shows the frequency and percentage distribution of level of knowledge regarding automated external defibrillators among Staff nurses.

Scoring of the Items There were 15 knowledge items. Each item has multiple choices with one accurate answer. The score for correct response to each item was "one" and for incorrect response was "zero". Thus results interpreted as follow as 11-15 as adequate knowledge 06-10 scored as moderately adequate knowledge 0-5 were scored as inadequate knowledge. To find out the association between the selected demographic variables and knowledge scores from respondents.

With respect to level of knowledge 2 (4%) of them having adequate knowledge, 10(20%) of them having Moderately Adequate Knowledge and 38 (76%) of them having Inadequate Knowledge.

Fig.1.3 and table 3 shows that there is significant association between the level of knowledge and demographic variables such as age in years, education qualification, working department, previous knowledge regarding automated external defibrillator.

There is no significant association between the level of knowledge and demographic variables such as working experience, gender and religion.

Table 1: Frequency and Percentage Distribution of Demographic Variables among Staff Nurses (n = 50)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	21–30	24	48%
	31–40	20	40%
	41–50	6	12%
Gender	Female	40	80%
	Male	10	20%
Religion	Hindu	20	40%
	Christian	28	56%
	Muslim	2	4%

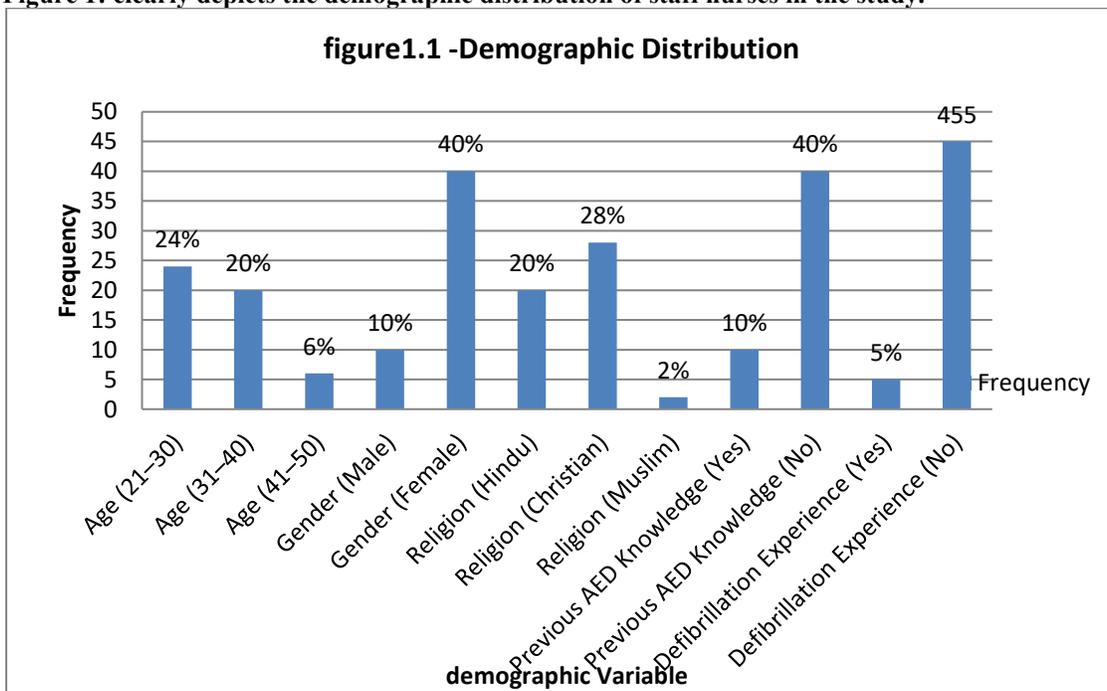| Previous AED Knowledge	Yes	10	20%
	No	40	80%
Defibrillation Experience	Yes	5	10%
	No	45	90%

Table 2: Frequency and percentage distribution of level of knowledge regarding automated external defibrillators among Staff nurses.
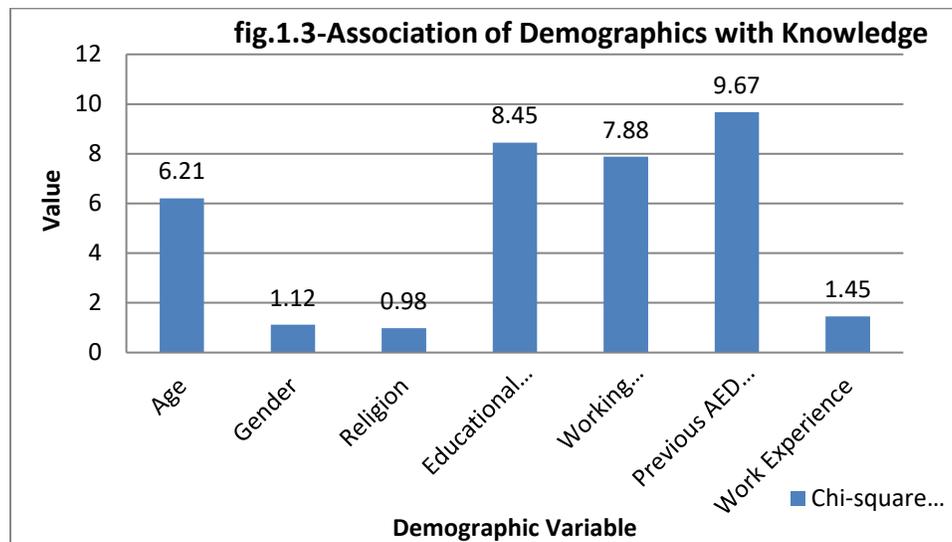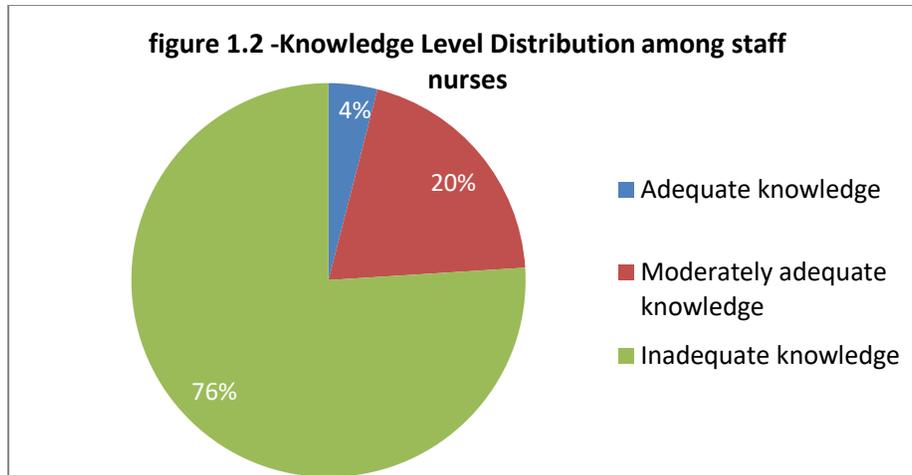
Sl. No	Level of Knowledge	Frequency	Percentage
1	Adequate knowledge	2	4%
2	Moderately adequate knowledge	10	20%
3	Inadequate knowledge	38	76%

Table 3: Association between the demographic variable and the level of knowledge.

Demographic Variable	χ^2	df	p-value	Association
Age	6.21	2	0.045	Significant
Gender	1.12	1	0.29	Not Significant
Religion	0.98	2	0.32	Not Significant
Educational Qualification	8.45	2	0.015	Significant
Working Department	7.88	2	0.02	Significant
Previous AED Knowledge	9.67	1	0.008	Significant
Work Experience	1.45	2	0.23	Not Significant

Figure 1: clearly depicts the demographic distribution of staff nurses in the study.

figure1.1 -Demographic Distribution

figure 1.2 -Knowledge Level Distribution among staff nurses

- Adequate knowledge (4%)
- Moderately adequate knowledge (20%)
- Inadequate knowledge (76%)

fig.1.3-Association of Demographics with Knowledge

Demographic Variable	Value
Age	6.21
Gender	1.12
Religion	0.98
Educational...	8.45
Working...	7.88
Previous AED...	9.67
Work Experience	1.45

Chi-square...

CONCLUSION

This study highlighted that the need for AED training and all health care services should emphasize practical scenario-based simulations through AED trainer on regular basis to retain knowledge particularly in resource-limited hospitals [5]. Targeted strategies could significantly improve nurses' emergency response capabilities, contributing to better cardiac arrest outcomes in hospital at Tirunelveli. In a study on CPR conducted in our country, knowledge questionnaire results showed that more than half of the participants reported never having heard of AED, and the majorities were unaware of AED devices [7].

This study highlights a critical training gap among staff nurses in Tirunelveli hospitals. Regular scenario-based AED simulations should be integrated into continuing nursing education. Addressing knowledge and skill deficits is essential for improving emergency preparedness and enhancing patient survival outcomes.

Limitations

- Small sample size (n=50), limited to one hospital.
- Descriptive design—cannot establish causality.

Recommendations

1. Incorporate AED training in nursing induction programs.
2. Conduct regular hands-on workshops using AED trainers.
3. Replicate the study with a larger sample across multiple hospitals.
4. Explore long-term retention of AED knowledge after training.

Conflict of Interest: None declared.

Funding: Self-funded.

Ethical Clearance

Ethical approval obtained. Confidentiality and voluntary participation were ensured.

REFERENCE

1. Matsuyama, T., Scapigliati, A., Pellis, T., Greif, R., & Iwami, T. (2020). Willingness to perform bystander cardiopulmonary resuscitation: A scoping review. *Resuscitation Plus, 4,* 10004.
2. Balaepra, N. (2021). International Journal of Multidisciplinary Research (IJMR) – Peer Reviewed Journal, *7(2).* SJIF Impact Factor 2021: 7.147. ISI Value: 1.188.
3. Kozamani, A., & Kapadochos, T. (2021). Factors that influence nursing staff attitudes towards initiating CPR and in using an automatic external defibrillator when outside of a hospital. *Health Science Journal, 6(1),* 88–101.
4. Elhussain, M. O., et al. (2023). The role of automated external defibrillator use in the out-of-hospital cardiac arrest survival rate and outcome: A systematic review. *Cureus, 15(10),* e47721. https://doi.org/10.7759/cureus.47721
5. Ebrahim, E. E. (2024). Evaluation of Sudanese nurse's competence in automated external defibrillator (AED) knowledge and performance: A quasi-experimental hospital-based study in Khartoum locality. *International Journal of Africa Nursing Sciences, 20,* 100689.
6. Soysal, G. E., & İzzet, B. A. (2024). Assessment of awareness and knowledge levels of individuals over the age of 18 regarding automated external defibrillator. *ResearchGate Journal.*
7. Long, Q., & Luo, Z. (2025). Evaluating the impact of AED training on nurses' emergency response capabilities in China: A cross-sectional survey. *BMC Nursing, 24,* 370.