



## Original Article

## Knowledge of Nurses Regarding Cardiac Arrhythmias in Tertiary Care Hospital

Malka Azam Khan<sup>1</sup>, Aziz Ur Rehman Yousufzai<sup>1\*</sup>, Margret<sup>1</sup>, Huma<sup>2</sup>, Afsha Bibi<sup>3</sup> and Jehangir Khan<sup>1</sup><sup>1</sup>Horizon School of Nursing and Health Sciences, Karachi, Pakistan<sup>2</sup>Qatar College of Nursing, Karachi, Pakistan<sup>3</sup>Arham Institute of Medical Sciences and Nursing, Matta, Swat, Pakistan

## ARTICLE INFO

**Keywords:**

Arrhythmias, Cardiac Failure, Nurse Education, Coronary Disease

**How to Cite:**

Khan, M. A., Yousufzai, A. ur R., Margret, ., Huma, ., Bibi, A., & Khan, J. (2024). Knowledge of Nurses Regarding Cardiac Arrhythmias in Tertiary Care Hospital : Knowledge of Nurses Regarding Cardiac Arrhythmias . Pakistan Journal of Health Sciences, 5(03). <https://doi.org/10.54393/pjhs.v5i03.1324>

**\*Corresponding Author:**

AzizUrRehmanYousufzai  
 Horizon School of Nursing and Health Sciences,  
 Karachi, Pakistan  
[azizkhantrauma@gmail.com](mailto:azizkhantrauma@gmail.com)

Received Date: 21<sup>st</sup> February, 2024Acceptance Date: 15<sup>th</sup> March, 2024Published Date: 31<sup>st</sup> March, 2024

## ABSTRACT

An arrhythmia is a disorder in which the heart beats irregularly, too slow, or too fast, an arrhythmia can be harmless to life-threatening. **Objectives:** To assess the knowledge of nurses working in tertiary care hospital regarding cardiac arrhythmias of inpatients. **Methods:** A descriptive cross-sectional study was conducted to collect data from a random sample of 132 staff nurses from various clinical areas of public and private hospitals through structured questionnaire. Data was analyzed using SPSS. **Results:** The findings from this study show that the knowledge level of nurses regarding cardiac arrhythmias can be categorized into two groups: poor and good. From the total 132 nurses, 53 (40.2%) had poor and 79 (59.8%) had good level of knowledge regarding the information of the nurses on cardiac arrhythmias. **Conclusions:** Based on the findings, it is recommended that continuous education and training programs should be implemented to keep nurses updated with the latest evidence-based practices in the care of patients with cardiac arrhythmias. This will ensure that they can provide safe and high-quality care to patients.

## INTRODUCTION

An arrhythmia is a clinical condition wherein someone's heartbeat is ordinary or irregular this will include a heart rate that is too rapid too gradual or abnormal within the rhythm. It can vary in severity from mild and harmless to existence-threatening [1]. Cardiac arrhythmias deliberate with numerous types of atypical coronary heart rhythms consisting of tachycardia bradycardia (especially junctional bradycardia, 2nd and 3rd-degree blocks), and premature beats. These can cause critical complications along with stroke coronary heart failure and surprising cardiac arrest [2]. According to the World Health Organization (WHO) in Pakistan around 62% of fatalities are due to CVDs and injuries [3]. In Europe, heart sickness

accounts for approximately 1 in 10 deaths with a predicted 175,000 deaths in keeping with year [4]. In Asia, the trouble of heart disease is growing because of a growing old population and the weight of extended related hazard factors consisting of hypertension, diabetes, and weight problems [2]. Cardiovascular illnesses are the main cause of death in Pakistan accounting for approximately 17.9% of the full mortality [5]. A predicted 12,480 deaths in line with 12 months in Pakistan are because of simple cardiovascular ailments [6]. These findings imply a pressing want to control and save heart failure to reduce and enhance the mortality rate. According to Tahboub and Yilmaz, nurses play an important function in identifying and responding to

electrocardiogram (ECG) changes. An electrocardiogram abbreviated as EKG or ECG measures the electrical activity of the heartbeat [7]. With each beat, an electrical impulse (or "wave") travels through the heart. This electrical wave causes the muscles to squeeze and pump blood from the heart. A normal heartbeat on ECG will show the rate and rhythm of the contractions in the upper and lower chambers. Therefore, this will then offer well-timed interventions. Their observation determined that nurses' who are experts in ECG interpretation significantly inspired their clinical decision-making and better patient care. A thorough knowledge of ECG ideas and proper schooling can help nurses interpret ECGs and become aware of potential problems. Which in flip can improve patient outcomes and protection. It is therefore vital for nurses to constantly update their understanding and practices in ECG interpretation via education and education possibilities [7]. To control cardiac arrhythmias efficaciously healthcare professionals, especially nurses, want to have a comprehensive knowledge of the causes, signs, and management of those situations. Nurses play a vital role in the care and management of sufferers with cardiac arrest, as they may be often the primary person to interact with and offer ongoing medical care and interest at some stage in hospitalization [8]. However, studies have proven insufficient expertise among nurses about numerous aspects of simple heart failure, including threat elements, pathology, and management [5]. These gaps can result in suboptimal care and bad results in sufferers. Highlighting the want to assess nurses' contemporary expertise and understanding of coronary heart failure and perceive any suitable gaps emphasize that they're addressed to enhance patient care. It is crucial for practitioners to devise and enforce effective instructional sources and to recognize the extent of information and elements that affect it.

The purpose of this study was to assess the knowledge of nurses about cardiac arrhythmia among hospitalized patients in Pakistani healthcare settings. Likewise, we focused on the significance of nurses' understanding or knowledge of the management and prevention of clear-cut coronary heart failure and its impact on affected persons.

## METHODS

A descriptive cross-sectional study design was used for this research project this study was conducted in a tertiary care hospital in Karachi, Pakistan. The target population was staff nurses working in clinical areas of different departments. The study duration four months from September to December 2023. The sample size for a target population of N=250, the total sample size was n=132, with a 95% confidence level, which was calculated with the help of [www.openepi.com](http://www.openepi.com). Convenient sampling techniques

were used for this study. All those staff nurses whose experience was more than 1 year were included in the study. Nurses in managerial roles, on leave, or were not willing to participate were excluded from the study. An online self-developed questionnaire whose validity and reliability were checked along with a consent form was shared via WhatsApp groups after participants were informed about the objectives of the research. Data was collected through a valid and reliable self-structured questionnaire, which consists of a total 2 sections, section I consists of 4 questions about socio-demographics, age, gender, professional qualification, and years of experience as a nurse, and section II consists of 11 questions in which section. The tool total scores were converted into percentage those who obtained below 50% were considered poor knowledge and those who scored above 50% considered high knowledge. To conduct a statistical analysis for this study, the researchers utilized SPSS version 26. The analysis and findings were then expressed in an organized and easily understandable manner. Permission was taken from the management of the tertiary care hospital in Karachi, Pakistan. Written informed consent was taken from staff nurses after they were informed about the objective and purpose of the study. Their right to leave the study any time they want was assured. For this purpose, a consent form was attached as a cover page of each questionnaire, and staff nurses were also assured of their confidentiality and anonymity.

## RESULTS

The study found that the majority of the nurses (51.5%) were between the ages of 25 and 34, followed by 28.8% between the ages of 35 and 44. Only a small percentage of nurses were in the age groups of 17-24 (15.9%) and 45 and above (4.9%). In terms of gender, the sample was predominantly male (61.4%) with only 38.6% female nurses. The majority of the participants (62.9%) had a diploma in nursing, followed by 36.4% with a bachelor's degree. Only a small percentage (0.8%) had a master's degree. In terms of experience, the majority of nurses (46.2%) had 1-5 years of experience, followed by 30.3% with 6-10 years of experience. However, a considerable number (18.9%) had 11-15 years of experience, indicating a significant portion of experienced nurses in the sample. Only a small percentage (4.5%) had more than 15 years of experience (table 1).

**Table 1:** Demographic data of the participants (n=132)

Factors	n (%)
<b>Age</b>	
17 - 24	21(15.9)
25 - 34	68(51.5)
35 - 44	38(28.8)
45 - 54	3(2.3)

55 and Above	2 (1.5)
<b>Gender</b>	
Male	81 (61.4)
Female	51 (38.6)
<b>Professional Qualification</b>	
Diploma in Nursing	83 (62.9)
Bachelor in Nursing	48 (36.4)
Master in Nursing	1 (0.8)
Others (Please specify)	-
<b>Years of Experience</b>	
1 – 5 Years	61 (46.2)
6 – 10 Years	40 (30.3)
11 – 15 Years	25 (18.9)
More than 15 Years	6 (4.5)

From table 2, it can be seen that the majority of the nurses (73.5%) had received specific training in electrocardiogram (ECG) while 26.5% had not received any training.

**Table 2:** ECG Training

Have You Ever Received Specific Training in Electrocardiogram (ECG)?	n (%)
Yes	97 (73.5)
No	35 (26.5)
Total	132 (100.0)

The findings from this study show that the knowledge level of nurses regarding cardiac arrhythmias can be categorized into two groups: poor and good. From the total 132 nurses, 53 (40.2%) had poor and 79 (59.8%) had good level of knowledge regarding the information of the nurses on cardiac arrhythmias (table 3).

**Table 3:** Knowledge Level

Knowledge Level	n (%)
Poor Knowledge	53 (40.2)
Good Knowledge	79 (59.8)
Total	132 (100.0)

## DISCUSSION

The current study had parallel results with the study in Pakistan of Salman *et al.*, which concluded 60% of the nurses having good knowledge was found in cardiac arrhythmias [9]. Another study conducted widely in local level here at Karachi was by Kausar *et al.*, which resulted 57.89% of nurses were having good knowledge in cardiac arrhythmias [10]. Another significant finding was that 73% of our nurses indicated in our study that they have received training in ECG. A parallel can be drawn in the study performed by Mehmood *et al.*, in Karachi where 68% of the participants were found to have received formal cardiac monitoring training. This suggests that while Pakistan may not have formal cardiac nursing education it is making leaps in training its nurses in this area [11]. Conversely, the survey revealed that 40.2% of nurses possessed insufficient knowledge about arrhythmia in the target area,

which was slightly higher than the values from an identical study, in which the score was 32% of nurses with insufficient knowledge [12]. Possibly, the different sampling and application of different tools for determining might have caused different. These findings align with both national and local studies in Pakistan, underscoring the necessity for more extensive education and training of nurses in this area, which can optimize nursing care for this patient population and improve patient outcomes. In this study, 59.8% of the nurses having good level of knowledge as found in our study is lower compared to 80.2% in the study carried out in a cardiac care unit in Saudi Arabia [13]. Hence, it is seen that the nurses' knowledge is at a similar level in our country compared to its level in the neighboring countries. However, a slightly superior knowledge level was determined about cardiac arrhythmias in a study conducted among ICU nurses in Iran. 67% of the nurses were detected as having suitable knowledge on the subject [14]. It is possible that ICU nurses receive specific training on these subjects while caring for patients with cardiac arrhythmias. In terms of international studies, some studies have been conducted among nurses in Jordan working in cardiac care units too [15]. These researches declared that most of the participants had "good" knowledge 85.7% about cardiac arrhythmias. The higher of this rate can be explained the reason of the study that regulated topic-specific about nurses in cardiac care units will have more specialization. A similar study involving the nursing staff in the intensive care setting in the USA showed the poor knowledge among nurses about arrhythmias with good knowledge in only 22% and the rest having poor 22% or moderate knowledge [16]. This could be associated with the fact that the study involved both nursing students as well as nurse and the former may not have specialized in cardiovascular care training yet [17]. It seems as though knowledge regarding cardiac arrhythmias among nurses may differ by country, and therefore, the establishment and execution of continuous nursing education and training programs should be promoted so as to ensure safe and efficient nursing care of these patients and a proper knowledge base. The findings of this research are linking with the studies already existing in literature in developing countries. In a study performed in Nepal, inadequate knowledge of ECG interpretation and managing arrhythmias was found among nurses [18]. It was demonstrated that nurses had inadequate knowledge in identifying and managing cardiac arrhythmias in a study performed in Bangladesh [19]. A study in Brazil has demonstrated that nurses also face knowledge deficits in relation to cardiac arrhythmias and are unable to interpret patient ECGs [20]. This level of education is clearly lacking even in developing countries. Nurses in many developing

countries just might not have access to the cutting-edge technology. Sometimes, the opportunity to learn those skills just doesn't happen you can't teach the practice of interpreting ECGs if you're stuck with an out-of-date textbook. And there's likely the same kind of absence when continuous education is vital to managing cardiac arrhythmias. Nurses may not be required to have ongoing training or to update knowledge/skills in many developing countries, which can lead to outdated knowledge and inappropriate training in newer techniques and technologies related to cardiac arrhythmias. This study's results are consistent with earlier research performed in countries in development and show that nurses in these countries need continuing education and ongoing training to the highest degree in order to effectively manage and care for patients with cardiac arrhythmias. Healthcare policy makers and organizations should prioritize continuing training and education for nurses to eradicate knowledge deficits and improve patient outcomes. The current study has some similarity with studies conducted in developed countries. In a study conducted in United Kingdom, most of their participants showed good knowledge about cardiac arrhythmias [16]. Another study was conducted in Canada having quite similar findings regarding knowledge of nurses about cardiac arrhythmias, they found that nurses having good knowledge [12]. In contrast to tertiary world countries, the findings in the emerged countries there was a major discrepancy in to the application of formal training in the interpretation of ECGs from the following British study 75% went for formal training in the interpretation of ECGs [16]. The vast majority (97%) of Filipino nurses had ECG training, compared to only 73% of nurses in this study. This might be explained by the differences between the health systems of developing countries such as the Philippines and those of the first world. Not surprisingly, experience was also significant in a Canadian study, which found that knowledge of cardiac arrhythmias increased significantly with years of nursing experience nurses with more than ten years' experience were more knowledgeable about arrhythmias than those with less [12].

## CONCLUSIONS

The study shows that nurses' knowledge of cardiac arrhythmias is clearly divided, with 40.2% showing poor comprehension and 59.8% showing strong comprehension. This emphasizes the need for focused interventions to close knowledge gaps and raise nurses' general competency, which will eventually improve patient outcomes.

Conceptualization: MAK, AURY

Methodology: MAK

Formal analysis: H.

Writing-review and editing: M., AB, JK

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

The authors declare no conflict of interest.

## Source of Funding

The authors received no financial support for the research, authorship and/or publication of this article.

## REFERENCES

- [1] Wang Y, Wang Z, Tse G, Zhang L, Wan EY, Guo Y *et al.* Cardiac arrhythmias in patients with COVID-19. *Journal of Arrhythmia*. 2020 Oct; 36(5) :827-36. doi: 10.1002/joa3.12405.
- [2] Taha M, Mishra T, Shokr M, Sharma A, Taha M, Samavati L. Burden and impact of arrhythmias in asthma-related hospitalizations: Insight from the national inpatient sample. *Journal of Arrhythmia*. 2021 Feb; 37(1): 113-20. doi: 10.1002/joa3.12452.
- [3] Nadeemuddin, Yaqoob M, Ali A, Siddiqui F, Rehan M. 12-Leads Electrocardiogram Interpretation Competency among Nurses working in Critical Care Areas at Dow University Hospital, Karachi. *Journal of Liaquat University of Medical and Health Sciences*. 2023 Jul. doi: 10.22442/jlumhs.2023.00975.
- [4] Fållun N, Oterhals K, Pettersen T, Brørs G, Olsen SS, Norekvål TM *et al.* Cardiovascular nurses' adherence to practice standards in in-hospital telemetry monitoring. *Nursing in Critical Care*. 2020 Jan; 25(1): 37-44. doi: 10.1111/nicc.12425.
- [5] Gooda WK, Ahmed AR, Mohamed SM, Mohammed AF. Effect of Nursing Care Guideline on nurses knowledge and practice about pregnant women suffering from heart disease. *Egyptian Journal of Health Care*. 2020 Sep; 11(3): 163-84. doi: 10.21608/ejhc.2020.109228.
- [6] Ingul CB, Grimsø J, Mecinaj A, Trebinjac D, Berger Nossen M, Andrup S *et al.* Cardiac dysfunction and arrhythmias 3 months after hospitalization for COVID-19. *Journal of the American Heart Association*. 2022 Feb; 11(3): e023473. doi: 10.1161/JAHA.121.023473.
- [7] Tahboub OY and Yilmaz UD. Nurses' knowledge and practices of electrocardiogram interpretation. *International Cardiovascular Research Journal*. 2019 Sep; 13(3).
- [8] Jensen MT, Treskes RW, Caiani EG, Casado-Arroyo R, Cowie MR, Dilaveris P *et al.* ESC working group on e-

- cardiology position paper: use of commercially available wearable technology for heart rate and activity tracking in primary and secondary cardiovascular prevention—in collaboration with the European Heart Rhythm Association, European Association of Preventive Cardiology, Association of Cardiovascular Nursing and Allied Professionals, Patient Forum, and the Digital Health Committee. *European Heart Journal-Digital Health*. 2021 Mar; 2(1): 49-59. doi: 10.1093/ehjdh/ztab011.
- [9] Salman M, Mustafa ZU, Rao AZ, Khan QU, Asif N, Hussain K et al. Serious inadequacies in high alert medication-related knowledge among Pakistani nurses: Findings of a large, multicenter, cross-sectional survey. *Frontiers in Pharmacology*. 2020 Jul; 11: 1026. doi: 10.3389/fphar.2020.01026.
- [10] Kousar F, Yaqoob A, Afzal M, Khan MS. Effect of educational intervention on knowledge among female nurses regarding pre and post angiographic care. *Pakistan Journal of Medical and Health Sciences*. 2022; 16(01): 272-4. doi: 10.53350/pjmhs.22161272.
- [11] Mahmood SU. Cardiopulmonary Resuscitation-Knowledge and Attitude in a Tertiary Care Hospital in Karachi. *EC Emergency Medicine and Critical Care*. 2020; 4: 54-64.
- [12] Metwaly EA and Bayomi RR. Effect of Training Program on Nurses' Knowledge and Practice Regarding Patients with Cardiac Arrhythmias. *Assiut Scientific Nursing Journal*. 2021 Sep; 9(26): 52-61. doi: 10.21608/asnj.2021.100458.1247.
- [13] Alzahrani A, Alqahtani A, Saleh A, Aloqalaa M, Abdulmajeed A, Nadhrah A et al. Quality of life of cardiac outpatients with and without psychiatric disorders: a cross-sectional study. *The Egyptian Journal of Neurology, Psychiatry and Neurosurgery*. 2022 Dec; 58(1): 1-8. doi: 10.1186/s41983-021-00444-8.
- [14] Charosaei F, Rostami S, Esmaeili M, Molavynejad S, Vanaki Z. Challenges in implementation of patient-centred care in cardiac care unit: A qualitative study. *Nursing Open*. 2023 Feb; 10(2): 838-49. doi: 10.1002/nop2.1352.
- [15] Al-Tarawneh OM, D'emeh WM, Yacoub MI. An assessment of nurses' knowledge regarding noise in intensive care units in Jordan. *International Journal of Africa Nursing Sciences*. 2020 Jan; 12: 100183. doi: 10.1016/j.ijans.2019.100183.
- [16] Keller K, Eggenberger T, Leavitt MA, Sabatino D. Acute care nurses' arrhythmia knowledge: defining competency. *The Journal of Continuing Education in Nursing*. 2020 Jan; 51(1): 39-45. doi: 10.3928/0022-0124-20191217-08.
- [17] Hamilton R. Nurses' knowledge and skill retention following cardiopulmonary resuscitation training: a review of the literature. *Journal of Advanced Nursing*. 2005 Aug; 51(3): 288-97. doi: 10.1111/j.1365-2648.2005.03491.x.
- [18] Batal ME, Mohammad SY, Sobh Sobeh DE. Effect of an Educational Program Regarding Cardiac Arrhythmias on Nurses Knowledge in Critical Care Units. *Port Said Scientific Journal of Nursing*. 2023 Sep; 10(3): 309-30. doi: 10.21608/pssjn.2023.170456.1231.
- [19] Yesmin S, Rahman A, Akter F, Jahan SS, Rizwan AA. Knowledge regarding Myocardial Infarction (MI) among the Nurses in Dhaka, Bangladesh. *International Journal of Science and Business*. 2022; 14(1): 108-15.
- [20] Naves Carrijo MV, de Souza Oliveira W, Salles da Silva M, da Silva Flores CA, de Oliveira Maier SR. Knowledge of Nurses about Electrocardiography Basics. *Revista de Pesquisa: Cuidado e Fundamental*. 2022 Jan; 14(1). doi: 10.9789/2175-5361.rpcf.v14.11327.