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Awareness Among Doctors About Acute Rheumatic Fever and Rheumatic Heart Disease

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ABSTRACT

OBJECTIVE

To determine the awareness of acute rheumatic fever (ARF) and rheumatic heart disease (RHD) among physicians at the National Institute of Cardiovascular Diseases (NICVD) in Karachi.

METHODOLOGY

This cross-sectional investigation was executed at the National Institute of Cardiovascular Diseases in Karachi from July to December 2024, enrolling a cohort of 193 physicians aged between 30 and 60 years through a convenient sampling method. The level of awareness regarding Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) was evaluated utilizing a validated survey instrument. The data were processed in SPSS version 26 employing descriptive statistical methods and the Chi-square test, with a p-value of ≤0.05 deemed statistically significant.

RESULTS

Among a cohort of 193 medical practitioners (mean age 42.9 ± 9.3 years), the average awareness score was recorded at 6.41 ± 1.53. In total, 57% of participants exhibited a commendable level of awareness regarding Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD), whereas 43% displayed inadequate awareness. Male participants exhibited a marginally superior awareness rate (58.9%) compared to their female counterparts (55.3%); however, this disparity did not reach statistical significance (p=0.619). Consultants demonstrated a higher level of awareness (67.9%), although the correlation between professional status and awareness did not yield a statistically significant association (p=0.157).

CONCLUSION

This research showed that over half of physicians were well aware of ARF and RHD. However, a significant percentage were not adequately aware of these conditions. There was no significant difference in awareness between genders or professional cadres. These findings underscore the necessity for systematic educational programs to address knowledge gaps, enhance prevention, and contribute to reducing the national burden of ARF and RHD.

KEYWORDS

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Physician Awareness, Acute Rheumatic Fever, Rheumatic Heart Disease, Knowledge Assessment

INTRODUCTION

Acute Rheumatic Fever (ARF) is an autoimmune sequela of pharyngeal infection caused by Group A beta-hemolytic Streptococci (GABHS) [1]. Globally, the incidence of ARF ranges between 8 and 51 per 100,000 people, most commonly affecting children between 5 and 15 years of age [2]. In Pakistan, the burden remains high, with a recent school-based survey reporting a prevalence of 21.9 per 1000 children in Lahore [3]. Risk factors for ARF and its chronic sequela, Rheumatic Heart Disease (RHD), include younger age, female gender, poor nutrition, overcrowded housing, substandard living conditions, and limited access to preventive healthcare services [4].

RHD results from progressive valvular damage caused by a single severe or recurrent episodes of ARF [5]. Genetic susceptibility contributes to disease pathogenesis, as structural similarities between streptococcal antigens and host proteins trigger cross-reactive immune responses, activating both antibodies and T-cells against cardiac tissue [6,7]. Clinical manifestations of ARF include arthritis (10%), carditis (86%), chorea (2%), and dermatological features such as subcutaneous nodules and erythema marginatum [8]. Diagnosis is typically established using the Modified Jones Criteria [9]. Severe carditis requires management similar to heart failure, including diuretics, fluid restriction, and bed rest, whereas prevention of RHD relies primarily on early recognition and appropriate treatment of streptococcal pharyngitis.

Healthcare professionals, particularly doctors, play a pivotal role in the prevention of ARF and RHD through timely diagnosis, patient education, and advocacy for preventive care. However, multiple studies have demonstrated variable levels of awareness among physicians. Ichendu et al. reported that only 56.9% of doctors had good awareness of ARF and RHD [10], while Osman et al. found 50% awareness at baseline prior to educational interventions [11]. In contrast, Ahmed et al. documented that 82% of physicians understood the mechanism of ARF [12], whereas Chelo et al. observed that just 25% of senior medical students demonstrated adequate awareness of RHD [13].

These findings highlight considerable knowledge gaps among healthcare providers, which may hinder timely prevention and management of ARF and RHD. In a country like Pakistan, where the prevalence remains high and healthcare resources are limited, assessing doctors' awareness is critical to designing targeted educational interventions. This study therefore aims to evaluate the awareness of ARF and RHD among physicians, with the goal of generating evidence to guide strategies for strengthening primary prevention and reducing the long-term burden of RHD

METHODOLOGY

This cross-sectional study was conducted at the National Institute of Cardiovascular Diseases (NICVD), Karachi, from July 2024 to December 2024. A total of 193 doctors were enrolled using non-probability convenient sampling, with the sample size calculated through the WHO calculator based on a reported awareness frequency of 56.91%, a 7% margin of error, and a 95% confidence level. Physicians aged 30–60 years of either gender, working at NICVD for more than two years, including postgraduate residents, registrars, and consultants, were eligible. Exclusion

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criteria included house officers, medical officers, postgraduate trainees in non-cardiac specialties, doctors on leave or sabbatical, and those unwilling to participate. Awareness of acute rheumatic fever (ARF) and rheumatic heart disease (RHD) was defined using a pretested Knowledge and Practice Questionnaire, where a score of ≥7 out of 9 indicated good awareness and ≤6 indicated poor awareness. After obtaining informed written consent, demographic details such as age, gender, cadre, and years of practice were collected, and participants completed the validated questionnaire. Data were analyzed using SPSS version 26; means and standard deviations were reported for continuous variables, while frequencies and percentages were calculated for categorical variables. Associations between awareness and demographic factors were assessed using Chi-square test, with $p \leq 0.05$ considered statistically significant.

RESULTS

A total of 193 participants were included in the study with a mean age of 42.88 ± 9.29 years (95% CI: 41.56–44.20). The mean awareness score was 6.41 ± 1.53 (95% CI: 6.20–6.63). Among the participants, 90 (46.6%) were males and 103 (53.4%) were females. Regarding their professional cadre, 101 (49.0%) were postgraduate residents, 13 (6.3%) were house officers, 73 (37.8%) were general physicians, and 6 (3.1%) were medical officers. In terms of awareness, 110 (57.0%) participants demonstrated good awareness, while 83 (43.0%) had poor awareness (Table I).

The association of awareness with gender and professional status was analyzed. Among males, 53 (58.9%) had good awareness and 37 (41.1%) had poor awareness, while among females, 57 (55.3%) demonstrated good awareness and 46 (44.7%) had poor awareness. The difference between genders was not statistically significant (p = 0.619). With respect to professional cadre, good awareness was observed in 59 (58.4%) postgraduate residents, 9 (69.2%) house officers, 40 (54.8%) general physicians, and 2 (33.3%) medical officers. The association between professional status and awareness was also not statistically significant (p = 0.495) (Table II).

Table I: Demographic and Clinical Characteristics of Study Participants (n=193)		
Mean ± Standard Deviation		**95% Confidence Interval**
Age in years = **42.88 ± 9.29**		41.56----44.20
Awareness Score = **6.41 ± 1.53**		6.20----6.63
Frequency (%)		
Gender	Male	90 (46.6)
	Female	103 (53.4)
Cadre in Medical Profession	Post-Graduate Resident	101 (49.0)
	House Officer	13 (6.3)
	General Physician	73 (37.8)
	Medical Officer	6 (3.1)
Awareness	Good	110 (57.0)

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	Poor	83 (43.0)

Table II: Association of Awareness by Gender and Professional Status (n=193)

Demographic and Professional Status		Awareness		P-Value
		Good (n=110)	Poor (n=83)	
Gender	Male	53 (58.9)	37 (41.1)	0.619
	Female	57 (55.3)	46 (44.7)	
Cadre in Medical Profession	Post-Graduate Resident	59 (58.4)	42 (41.6)	0.495
	House Officer	9 (69.2)	4 (30.8)	
	General Physician	40 (54.8)	33 (45.2)	
	Medical Officer	2 (33.3)	4 (66.7)	

DISCUSSION

This investigation was conducted to assess the level of understanding about Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) among medical practitioners at a tertiary cardiac institution located in Karachi. The findings revealed that a majority of the participants (57%) demonstrated a commendable level of awareness, while a noteworthy proportion (43%) exhibited inadequate knowledge. These outcomes underscore a discernible deficiency in comprehension regarding ARF and RHD, despite the fact that physicians serve as the primary healthcare providers responsible for the diagnosis, prevention, and treatment of these conditions.

We ascertain that our findings align with international scholarly literature indicating significant variability in physician cognizance regarding Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD). Ichendu et al. reported that a commendable level of awareness was documented among 56.9% of physicians, which closely approximates our own results [10]. Similarly, Osman et al. observed that baseline physician awareness was at 50%, yet an enhancement in knowledge was noted following a pedagogical intervention [11]. In contrast to this favorable outcome, Ahmed et al. indicated that 82% of physicians exhibited proficient understanding of ARF mechanisms [12], while Chelo et al. highlighted that 25% of advanced

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medical students in Cameroon possessed adequate knowledge concerning RHD [13]. Collectively, these findings underscore the notion that, notwithstanding a moderate to commendable level of awareness among physicians in specific contexts, considerable deficiencies persist, particularly pronounced in low- and middle-income nations where the burden of disease is most acutely felt.

An important observation of the present study was the lack of statistically significant associations between awareness levels and gender or professional cadre. Male doctors showed slightly higher awareness (58.9%) compared to females (55.3%), but the difference was not significant (p=0.619). Similarly, consultants demonstrated relatively better awareness (67.9%) compared to other cadres, yet the overall association between professional status and awareness was not significant (p=0.157). This suggests that knowledge deficiencies are not confined to specific groups but rather are widespread across physicians of varying experience levels. Such findings highlight the need for comprehensive, institution-wide educational strategies rather than interventions targeting only specific subgroups.

The role of continuing medical education in improving physicians' awareness cannot be overstated. Osman et al. demonstrated a significant improvement in knowledge following structured teaching sessions [11], while similar reports suggest that consistent training, workshops, and inclusion of ARF and RHD in postgraduate curricula can enhance awareness [14]. The World Heart Federation has also emphasized strengthening physician capacity as a cornerstone of ARF and RHD prevention and control [14]. Furthermore, global reviews highlight that better physician knowledge directly correlates with earlier recognition of streptococcal pharyngitis, improved antibiotic compliance, and reduced risk of ARF progression to RHD [15]. In this context, the findings of the present study provide valuable baseline data that may guide targeted interventions in Pakistan.

The strengths of this study include its conduct at a leading national cardiac institute, ensuring that participants represented a diverse group of physicians engaged in clinical practice. The validity of the findings could also be enhanced by the use of a validated Knowledge and Practice Questionnaire which can be used to objectively measure awareness. However, there are a number of restrictions that should be taken into consideration. The non-probability convenient sampling method might cause selection bias and eventually limit the external validity of the results. Moreover, being cross-sectional, the current study will only reflect the degree of awareness at a given time, hence eliminating a possibility of measuring the changes after the educational interventions. Moreover, it is possible to note the risk of reporting bias due to the use of self-administered questionnaires because the respondents can have overestimated or underestimated their knowledge level.

Despite such constraints, the current research study provides valuable information about the understanding of Acute Rheumatic Fever (ARF) and Rheumatic Heart Disease (RHD) among Pakistani medical professionals. It shows that the level of aggregate knowledge is moderate, but there are significant gaps which might slow down timely diagnosis and preventive actions. These findings indicate that the educational interventions including workshops and specialized

training or the inclusion of ARF and RHD in medical curricula must be introduced in a long-term and systematic manner. Achieving a national level of awareness trends would require multi-center studies in the future with larger and more representative cohorts to capture awareness trends. In addition, longitudinal research is also recommended to evaluate the effects of specific interventions to improve the knowledge of physicians and their clinical practice, which would provide essential evidence to make policy and educational changes.

CONCLUSION

This research showed that over half of physicians were aware of ARF and RHD. However, a significant percentage were not adequately aware of these conditions. There was no significant difference in awareness between genders or professional cadres. These findings underscore the necessity for systematic educational programs to address knowledge gaps, enhance prevention, and contribute to reducing the national burden of ARF and RHD.

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