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Awareness and knowledge of Rheumatic heart disease among medical students comparing to other health specialties students in Umm Al-Qura University, Makkah city, KSA: Analytic cross-sectional study

Waleed Alnemari[1]✉, **Salah Bakry**[1], **Saad Albagami**[1], **Sultan AL-Zahrani**[1], **Amr Almousa**[1], **Ammar Alsufyani**[1], **Muhammad Irfanullah Siddiqui**[2]

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Authors' Affiliation:
[1]Faculty of Medicine, Umm Al-Qura University, Makkah city, Saudi Arabia
[2]Department of Community Medicine and Pilgrims, UmmAl-Qura University, Makkah Al-Mukarrama, Saudi Arabia

ORCID
Waleed Alnemari[1] (orcid.org/0000-0002-6420-9706),
Salah Bakry[1] (orcid.org/0000-0002-2389-7952),
Saad Albagami[1] (orcid.org/0000-0002-0739-2073),
Sultan AL-Zahrani[1] (https://orcid.org/0000-0003-2989-1671),
Amr Almousa[1] (https://orcid.org/0000-0001-5508-393X),
Ammar Alsufyani[1] (orcid.org/0000-0003-3744-9656),
Muhammad Irfanullah Siddiqui[2] (orcid.org/0000-0001-8610-5388).

✉**Corresponding author**
Faculty of Medicine, Umm Al-Qura University, Makkah city, Saudi Arabia;
Email: waleedalnemari@gmail.com

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ABSTRACT

Background: Rheumatic heart disease (RHD) is an infectious disease that encompasses a global health dilemma. Early diagnosis and appropriate management of pharyngeal infections by group (A) streptococci are significant in prevention of RHD. Our study surveyed health students from various health-related departments in the Makkah city. We compared the knowledge and attitude of pharyngeal infections and RHD and recommended strategies to bridge this knowledge gap. *Methodology:* An observational cross-sectional survey study was distributed among students at various health departments at Umm Al-Qura University between March 2021 and September 2021. *Results:* The number of participant's students was 385. Their mean age was 22.19 ± 1.19 years. Altogether, 286 (74.3%) participants were female and 99 (25.7%) were male. The majority were 4th-year students, while second-year students were the smallest represented. Furthermore, the correlation between knowledge' level and participants' age, academic year, and collage were significantly positive. *Conclusions:* Rheumatic heart disease has a poor level of understanding and awareness among health related medical students. This study offers valuable information into the perceptions and practices around sore throat, which can be used to develop awareness campaigns focused at lowering the incidence of RHD.

Keywords: awareness, knowledge, risk factors, Rheumatic heart disease, sore throat, health students, Saudi Arabia.

1. INTRODUCTION

Rheumatic heart disease (RHD) is an infectious disease that causes chronic conditions (Alqanatish et al., 2019; Beaton et al., 2012). Mostly acute rheumatic fever (ARF) is responsible for RHD severity, which coexist with immunological reaction to a Group A streptococcus (GAS) bacterial infection that resulting permanent heart valves damage (Alqanatish et al., 2019; Beaton et al., 2012). RHD affects 33.4 million people worldwide and kills 347,000 people each year (Carapetis et al., 2005). The most common significant manifestations during the first episode of ARF (the "major criteria" for diagnosis) remain carditis (50%–70%), and arthritis (35%–66%) (Gewitz et al., 2015); these are followed in frequency by chorea (10%–30%), which has been demonstrated to have a female predominance, and then subcutaneous nodules (0%–10%) and erythema marginatum (<6%), (Gewitz et al., 2015).

The majority of ARF symptoms resolve on their own over weeks to months (Katzenellenbogen et al., 2017). However, about 60% of cardiac presentations may attack cardiac valves especially mitral valve, can results in permanent morbidity (Katzenellenbogen et al., 2017). Early valvular damage is characterized by annular dilatation, chordal elongation, increased mitral valve leaflet tip mobility, and mild-moderate regurgitation. These early defects are usually asymptomatic, but they can be detected on echocardiography, which is vital for patients screening (Nkoke et al., 2018; Roberts et al., 2013).

Controlling and preventing this lethal disease necessitates a complete knowledge of the general public, medical personnel, and the patient population (Beaton et al., 2012). Consequently, our study aimed to highlight the baseline level of knowledge and attitude of RHD among health-related students in Makkah city, Saudi Arabia.

2. METHODOLOGY

This cross-sectional study was conducted using a self-administered structured questionnaire was distributed among health students at different health departments in this cross-sectional investigation from March 2021 to September 2021. We granted an ethical approval from UQU's research ethics committee (ethical number: HAPO-02-K-012-2021-09-769).

Convenient sampling technique was applied for subject selection. All health-related departments were included, while those who had special training in rheumatic heart diseases were excluded. An online-informed consent was obtained from all participants. We utilized Stat Calc from the Open Epi software at Emory University's Rollin School of Public Health for sampling estimation (Sullivan et al., 2009). Thus, the minimum sample size required to achieve a precision of 5% with a 95% confidence interval is 353.

The questionnaire was classified into three parts. We first collected the students' demography. Then, we gathered general information on sore throat management's attitude, and risk factors. Lastly, we asked five questions to estimate students' knowledge about RHD. The questionnaire idea based on previously published articles (Mougrabi et al., 2021). In the third part of the questionnaire, each correct answer received a score, and each incorrect answer received a zero score. A 75% cut-off value with a modified Bloom was used to organize the value known to participants (Wildani et al., 2021). Therefore, scores below 75% were considered inadequate knowledge, and scores above 75% were considered good knowledge.

The data collected was statistically analysed in SPSS version 23 using appropriate statistical techniques. Frequency was estimated for categorical variables and mean ± standard deviation was calculated for continuous variables. We used a chi-square test to compare categorical variables.

3. RESULTS

Overall, 385 students of health-related students were surveyed. (Table 1) shows students' demography; about three-fourth of the participants were males 74.3%, while female students represents 25.7%. The mean (SD) was 22.19 ± 1.19 years; the 23-year-old age groups was the mode (30.6%). All age groups were labelled in (Table 1). Students of the College of Applied Medical Sciences were the most represented among all the colleges (36.4%), followed by collage of medicine (31.9%). Conversely, the least represented was the College of dentistry (0.8%). Moreover, 4th-year students were predominant (138, 35.8%) compared with 2nd year students (3, 0.8%). Concerning students' level of awareness of sore throat, the majority were aware (351, 91.2%). In contrast, most of respondents had poor knowledge about RHD (57.9%), (Table 1).

Regarding students' attitude about the sore throat, most of the students preferred to treat sore throat with antibiotics 59.48%, while the least favoured using analgesic in treatments (Figure 1). Conversely, self-prescription of the treatment was predominantly represented 42.34% (Figure 2). Furthermore, the treatment period for most students was one weak 52.73% (Figure 3).

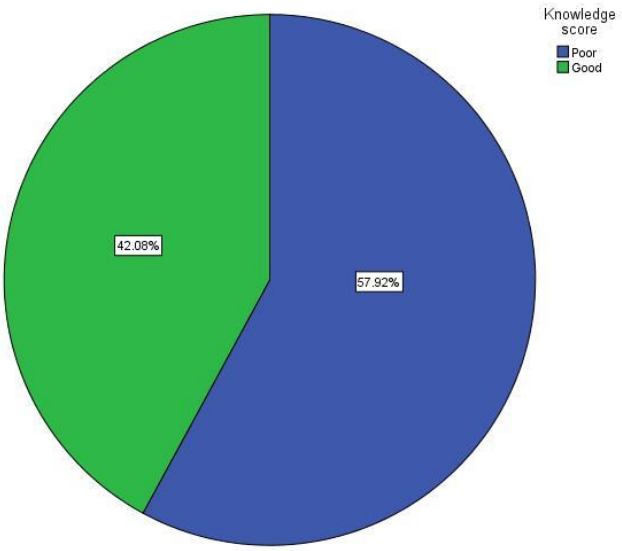

Figure 1 Pie chart for knowledge score

Table 1 Demographic data		
Variable	Category	Frequency (%)
Age *(mean [SD])*	(22.197 [1.196])	
Age	18-20	15(3.9%)
	21-24	363(94.3%)
	25-27	11 (1.8%)
Gender	Male	286 (74.3%)
	Female	99 (25.7%)
Academic year	2nd year	3 (0.8%)
	3rd year	62 (16.1%)
	4th year	138 (35.8%)
	5th year	66 (17.1%)
	6th year	23 (6.0%)
	Intern	93 (24.2%)
Collage	College of medicine	123 (31.9%)
	College of dentistry	3 (0.8%)
	College of pharmacy	58 (15.1%)
	College of applied medical sciences	140 (36.4%)
	College of nursing	61 (15.8%)
Heard about sore throat	Yes	351 (91.2%)
	No	34 (8.8%)
Heard about	Yes	214 (55.6%)

RHD	No	171 (44.4%)
Knowledge of RHD	Good Knowledge	223 (57.9%)
	Poor Knowledge	162 (42.1%)

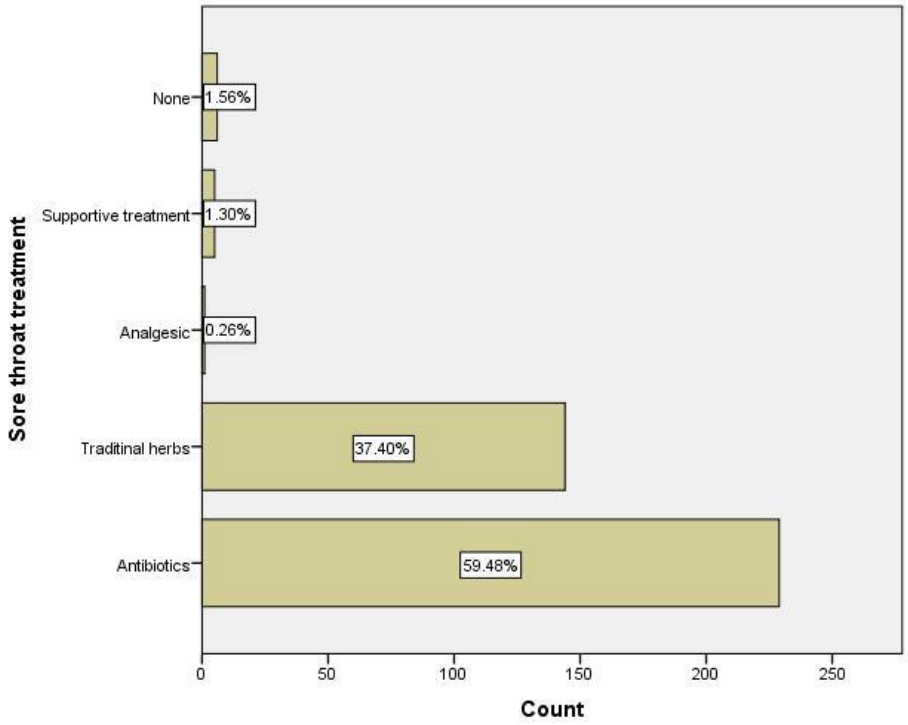

Figure 2 Percentage of treatments modality for sore throat among students

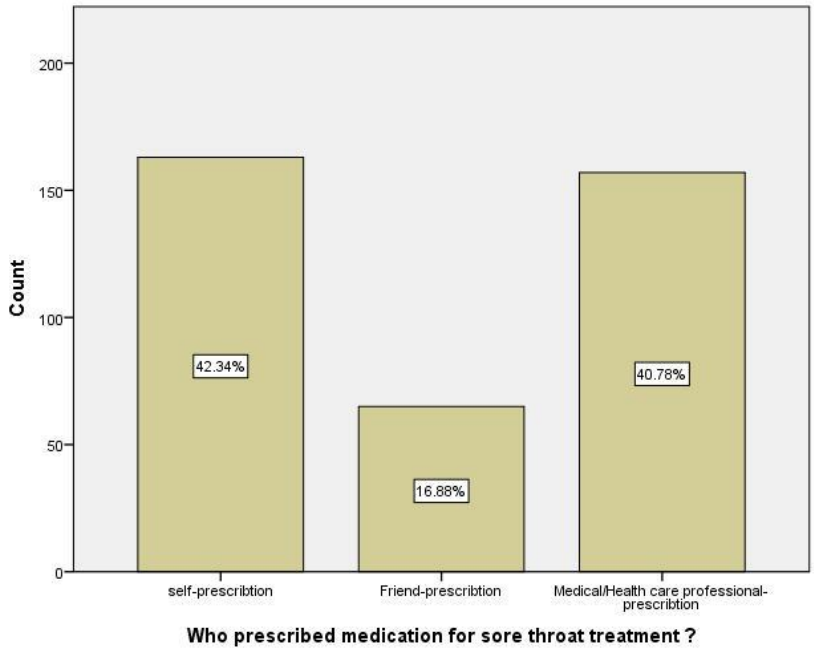

Figure 3 Treatments prescription for sore throat

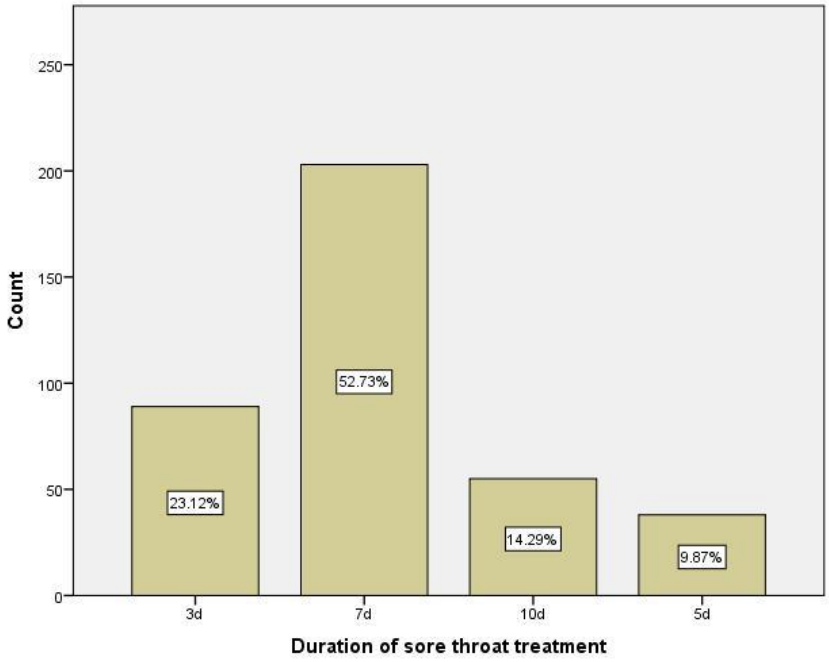

Figure 4 Sore throat treatments' duration

Five subgroups of questions aimed to evaluate the level of knowledge of RHD. RHD knowledge varied among the subgroups in association with respondents' demography, as described in (table 2); there were significant variations between participants' academic year, and collage (P-values, 0.000, and 0.000, respectively). No significant relationship on the other hand between students' gender and age (P-values, 0.077, 0.050, respectively).

Table 2 Association between level of awareness and Demographic data

Variable	Level of knowledge		P-value
	Good n (%)	Poor n (%)	
Age			
18-20	5(33.3%)	10(66.7%)	0.0500.001
21-24	151(41.6%)	212(58.4%)	
25-27	6(85.7%)	1(14.3%)	
Gender			
Male	128 (44.8%)	158 (55.2%)	0.077
Female	34 (34.3%)	65 (65.7%)	
Collage			
College of medicine	77 (62.6%)	46 (37.4%)	0.000*
College of dentistry	1 (33.3%)	2 (66.7%)	
College of pharmacy	26 (44.8%)	32 (55.2%)	
College of applied medical sciences	30 (21.4%)	110 (78.6%)	
College of nursing	28 (45.9%)	33 (54.1%)	
Academic year			
2nd year	0 (0.0%)	3 (100.0%)	0.000*
3rd year	21 (33.9%)	41 (100.0%)	
4th year	43 (31.2%)	95 (100.0%)	
5th year	29 (43.9%)	37 (90.2%)	
6th year	7 (30.4%)	16 (25.0%)	
intern	62 (66.7%)	31 (33.3%)	

4. DISCUSSION

This study' survey intended to assess students' knowledge and attitude of RHD at Umm Al-Qura University in Makkah city, KSA. In the current study, most of students acquainted with inadequate RHD knowledge, which is in line with the Cameron study (Nkoke et al., 2018). Thus, only 5.1% percent of their participants had sufficient knowledge of RHD (Nkoke et al., 2018), whereas this is in disagreement with (Chelo et al., 2020) study in which the majority of the students had moderate knowledge. Additionally, according to an Indian study findings conducted among schools (Ray et al., 2020) suggests that the total amount of knowledge regarding RHD among these school-aged adolescents in rural India was limited. Students had a decent understanding of the disease's impact but very little understanding of the disease's nature, prevalence, determinants, symptoms, treatment choices, and diagnosis (Ray et al., 2020). Annually, between 10% and 30% of people seek primary healthcare with a sore throat (Kenealy, 2007).

According to our findings, most participants have a high frequency of sore throat. This corresponds with (Mougrabi et al., 2021) study in which 77% had a prior history of sore throat. Our study highlighted the attitude of sore throat treatments between participants; thus, most students used antibiotics to treat sore throat. This is inconcordance with a Saudi study (Mougrabi et al., 2021), in which the majority use antibiotics 58.4%.

The current study shows that participants with higher academic years were significantly correlated with students' level of knowledge. Similarly, this corresponds with (Mougrabi et al., 2021), in which participants with higher educational level corresponds considerably with a level of knowledge of the cause and complications of sore throat.

Limitation of study

This study has possible limitations concerning the results, which are not indicative of all Saudi Arabia universities. Furthermore, 2nd-year students and collage of dentistry were poorly represented.

5. CONCLUSION

This study shows that the population lacks knowledge of all aspects of RHD and its treatment. This can have a severe impact on the occurrence of rheumatoid arthritis in the area. Our results utilized for awareness-raising activities and programmers to minimize RHD risks. Further investigations are required, and health campaigns as well to educate students about RHD.

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Authors Contributions

Waleed Alnemari: Concept – design – literature search. Salah Bakry: statistical analysis – manuscript editing and review – literature search. Saad Albagami: Manuscript editing and review – literature search – data analysis. Sultan AL-Zahrani: Manuscript editing and review – literature search. Amr Almousa: Manuscript editing and review – literature search. Ammar Alsufyani: Manuscript editing and review – literature search. Muhammad Irfanullah Siddiqui: Manuscript editing and review – General supervision

Ethical approval

The study was approved by the Medical Ethics Committee of Umm Al-Qura University (ethical approval code: (HAPO-02-K-012-2021-09-769).

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Conflict of interests

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Alqanatish J, Alfadhel A, Albelali A, Alqahtani D. Acute rheumatic fever diagnosis and management: Review of the global implications of the new revised diagnostic criteria with a focus on Saudi Arabia. J Saudi Heart Association 2019; 31(4):273-81. doi: 10.1016/j.jsha.2019.07.002.
2. Beaton A, Okello E, Lwabi P, Mondo C, McCarter R, Sable C. Echocardiography screening for rheumatic heart disease in Ugandan schoolchildren. Circulation. 2012; 125(25):3127-32. doi: 10.1161/circulationaha.112.092312.
3. Carapetis JR, McDonald M, Wilson NJ. Acute rheumatic fever. Lancet (London, England). 2005; 366(9480):155-68. doi: 10.1016/s0140-6736(05)66874-2.
4. Chelo D, Tasha L, Tamdja A, Nkoke C, Tewafeu D, Njedock N, Kingue S. Assessment of Knowledge, Attitudes and Practices (KAP) on Rheumatic Heart Disease among Senior Medical Students in Cameroon. World J Cardiovas Dis 2020; 10:363-78. doi: 10.4236/wjcd.2020.106035.
5. Gewitz MH, Baltimore RS, Tani LY, Sable CA, Shulman ST, Carapetis J, Remenyi B, Taubert KA, Bolger AF, Beerman L, Mayosi BM, Beaton A, Pandian NG, Kaplan EL. Revision of the Jones Criteria for the diagnosis of acute rheumatic fever in the era of Doppler echocardiography: a scientific statement from the American Heart Association. Circulation 2015; 131(20):1806-18. doi: 10.1161/cir.0000000000000205.
6. Katzenellenbogen JM, Ralph AP, Wyber R, Carapetis JR. Rheumatic heart disease: infectious disease origin, chronic care approach. BMC health services research 2017; 17(1):793. doi: 10.1186/s12913-017-2747-5.
7. Kenealy T. Sore throat. BMJ ClinEvid 2007; 1509. PMID: 19450346; PMCID: PMC2943825.
8. Marijon E, Mirabel M, Celermajer DS, Jouven X. Rheumatic heart disease. Lancet 2012; 379(9819):953-964. doi: 10.1016/S0140-6736(11)61171-9. PMID: 22405798.
9. Mougrabi MM, Aljuaid RS, Alrabie AD, Althumali NK, Alkhaldi LH, Alotaibi WD. Awareness of rheumatic fever and rheumatic heart disease among the population in taif, Saudi Arabia 2020. J Family Med Prim Care 2021; 10(8):3056-3063
10. Nkoke C, Luchuo EB, Jingi AM, Makoge C, Hamadou B, Dzudie A. Rheumatic heart disease awareness in the South West region of Cameroon: A hospital based survey in a Sub-Saharan African setting. PloS one 2018; 13(9):e0203864. doi: 10.1371/journal.pone.0203864. PubMed PMID: 30252868; PMCID: PMC6155442.
11. Ray M, Guha S, Ray M, Karak A, Choudhury B, Ray B, Hazra PC, Selker HP, Goldberg RJ, Bhatt DL. A questionnaire survey for improving awareness of rheumatic heart disease among school-aged children in India. Indian Heart J 2020; 72(5):410-5.
12. Roberts KV, Brown AD, Maguire GP, Atkinson DN, Carapetis JR. Utility of auscultatory screening for detecting rheumatic heart disease in high-risk children in Australia's Northern Territory. Med j Australia 2013; 199(3):196-9. Epub 2013/08/06. doi: 10.5694/mja13.10520. PubMed PMID: 23909543.
13. Sullivan KM, Dean A, Soe MM. OpenEpi: a web-based epidemiologic and statistical calculator for public health. Public Health Rep 2009; 124(3):471-4.
14. Wildani MM, Triatmono VR, Yo EC, Yosia M, Wahidiyat PA. Study protocol for a cross-sectional study on knowledge, attitude, and practice towards thalassemia among Indonesian youth. medRxiv. 2021: 2021.04.11.21255264.
15. Zühlke L, Mirabel M, Marijon E. Congenital heart disease and rheumatic heart disease in Africa: recent advances and current priorities. Heart 2013; 99(21):1554-61. doi: 10.1136/heartjnl-2013-303896. PMID: 23680886; PMCID: PMC3812860.