

Rheumatic fever and rheumatic heart disease in children: mothers' knowledge and attitude in Najran, Saudi Arabia

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A – Study Design, B – Data Collection, C – Statistical Analysis, D – Data Interpretation, E – Manuscript Preparation, F – Literature Search, G – Funds Collection

Summary Background. Rheumatic fever (RF) is considered an inflammatory disease intermediated by an unusual immune reaction to group A streptococcal (GAS) infections that may lead to rheumatic heart disease (RHD). Patients with RHD have high mortality and morbidity rates despite being young. It was estimated that 3.49/per 1,000 RF patients had acute recurrent attacks yearly in middle and low-income countries. Examining the predictors of Saudi women's knowledge and attitude regarding RF and RHD is very important to help policymakers and healthcare providers address these predictors whilst raising public awareness regarding these important health issues. Thus, improving knowledge and attitudes may help in the early identification of symptoms, the application of effective treatment, an increase in prevention rates and a decrease in prevalence rates.

Objectives. The study aimed to assess the knowledge and attitude about RF and RHD among mothers in Najran, Saudi Arabia.

Material and methods. A descriptive cross-sectional design was used to recruit 389 participants in the maternity and children's hospital in Najran, Saudi Arabia. The data was collected from November 2021 to March 2022 using a self-reported questionnaire for data collection; it consisted of study participants' basic data and health history, RF- and RHD-related knowledge quiz, and the RF and RHD treatment and preventive measures attitude scale.

Results. The mean age of the participants was 30.59 years, although more than half (59.1%) of the participants had unsatisfactory knowledge concerning RF and RHD, and four-fifths (80.2%) of them had a positive attitude regarding its treatment and preventive measures. Satisfactory knowledge was statistically associated with mothers' education, age, history of a child with RHD and positive attitude toward preventive and treatment measures ($p < 0.05$).

Conclusions. Unsatisfactory knowledge regarding RF and RHD was prevalent among the current study participants. At the same time, most had a positive attitude toward its treatment and preventive measures. Education level, mother's age, history of a child with RHD and positive attitude are significant positive predictors of RF and RHD knowledge.

Key words: knowledge, attitude, rheumatic fever, rheumatic heart disease.

Almedhesh SA. Rheumatic fever and rheumatic heart disease in children: mothers' knowledge and attitude in Najran, Saudi Arabia. *Fam Med Prim Care Rev* 2024; 26(1): 12–18, doi: <https://doi.org/10.5114/fmpcr.2023.134698>.

Background

Cardiovascular disease is considered an important health concern in the Gulf region, including Saudi Arabia, accounting for more than 45% of deaths [1, 2]. Rheumatic fever (RF) is considered an inflammatory disease intermediated by an unusual immune reaction to group A streptococcal (GAS) infections that may lead to rheumatic heart disease (RHD). It is considered a life-threatening cardiovascular disorder, and its severity ranges from silent condition to cardiac valve damage and heart failure, with a higher risk between 5–15 years of age [3]. Patients with RHD have high mortality and morbidity rates despite being young. It was estimated that 3.49/per 1,000 RF patients had acute recurrent attacks yearly in middle and low-income countries [4]. RHD affects 33.4 million people and claims about 300,000 people each year. It still has a distressing effect as it is responsible for > 10 million disability-adjusted lives worldwide. RHD is the main health concern in many regions, including south-central Asia, Africa and the Arabian Gulf [5–7].

Although Saudi Arabia is located in an area of high occurrence of RHD, little data is presented on its prevalence and prognosis among the Saudi population [8]. A study conducted in 2018 in Taif city, Saudi Arabia, documented that the overall RHD prevalence among cardiac patients was 8% [9]. Although RF and RHD are still uncontrolled, affecting mostly low- and mid-

dle-income countries, it is also common among marginalised populations within higher-income countries [2]. Risk factors predisposing one to RF and RHD are low economic condition, host immunity and living in crowded areas, which act as a cause of GAS infection and should be taken as a target for preventive actions [10, 11].

Gewitz et al. classified RF diagnosis into major and minor diagnostic criteria. Carditis, arthritis, choreiform movements, erythema marginatum and subcutaneous nodules are the major diagnostic criteria. The minor diagnostic criteria are joint pain, high fever, high erythrocyte sedimentation rate and high C-reactive protein [12]. An early sign of RHD is often exertion dyspnoea, which becomes gradually worse. Heart failure signs develop with advanced damage to the heart valve. It should also be considered that patients may not distinguish symptoms because of the slow, progressive nature of damage due to numerous valve lesions that gradually limit a person's daily activity [13]. The efficient management of RF and acute tonsillitis through adequate antibiotic treatment and echocardiographic diagnosis for early detection of RHD symptoms is important to protect against it [14].

A recent Saudi study concluded that there is inadequate knowledge regarding RF and RHD preventive and curative measures. They further elaborated that poor knowledge was most common among older women living in the central region of Saudi Arabia who have 4–7 children [15]. Examining the predictors



of Saudi women's knowledge and attitude regarding RF and RHD is very important to help policymakers and healthcare providers address these predictors whilst raising public awareness regarding these important health issues. To our knowledge, there are no studies that have investigated the knowledge and attitudes about RF and RHD in the Najran region. Najran is a large area in south Saudi Arabia with only one large hospital specialising in maternal and child health. Therefore, the region urgently needs to explore the population's knowledge and attitudes regarding different health problems, including RF and RHD. Such studies may direct the policymakers and healthcare providers' efforts toward vulnerable populations whilst addressing specific knowledge and attitude predictors.

Objectives

The current study aims to evaluate the knowledge and attitudes about RF and RHD among mothers in Najran, Saudi Arabia.

Material and methods

Study design and setting

A descriptive cross-sectional design was utilised for this study. It was implemented in the maternity and children's hospital in Najran city, KSA, which serves more than 120,000 beneficiaries [16].

Participants and sample size

The sample size was computed by using Kergcie & Morgan's (1970) equation:

$$n = \frac{\chi^2 N P (1-P)}{d^2 (N-1) + \chi^2 P (1-P)},$$

where:

n = Sample size

N = Population size

P = Population Proportion, where

Kirgese and Morgan proposed (0.5)

d = the error percentage and the largest value for it is (0.05)

χ^2 = Chi-square value with one degree of freedom = 3.841 at a significance level (0.05)

when $n = 46644$ (according to Saudi Ministry of health, 2021) then

$$n = \frac{3.841 (46644) (0.5) (0.5)}{(0.05)^2 (46644-1) + (3.841) (0.5) (0.5)} = 381 \text{ sample size.}$$

A convenience sampling technique was used to recruit the sample. Inclusion criteria were women aged 20 to 55 years who had children, who could read and write and who agreed to participate in the study.

Data collection instrument

Data was collected using a self-reported questionnaire. The researchers developed it after reviewing the related literature. It consisted of 3 main parts: *The first part* included basic data and health history of the study participants like age, education, marital status, income, residence, occupational status, history of sore throat, acute RF, RHD in child and past attending educational programmes concerning RHD. *The second part*, a knowledge quiz about RF and RHD, was adapted from prior studies [15]. It comprised 18 questions, 10 dichotomous and 8 multiple-choice questions, to assess the participants' knowledge regarding RF and RHD causes, high-risk group, antibiotic regimen, symptoms, duration and preventive treatment. The scoring system for the dichotomous and multiple-choice questions was 0 for an incorrect answer and 1 for the correct answer; therefore, the overall

knowledge quiz score was 18. The sum of items obtained the overall knowledge score; it was then categorised as unsatisfactory if the overall score was < 60% and satisfactory if the overall score was \geq 60%. The reliability of the knowledge quiz was assessed using Cronbach's alpha, and its result indicated good internal consistency ($r = 0.866$). *The third part*: the attitude scale toward RF and RHD preventive and treatment measures, was adapted from previous literature [15, 17]. The scale comprises 8 items ranked on a 5-points Likert scale from strongly agree (5) to strongly disagree (1). The overall scale score ranged from 8 to 40. The participant had a negative attitude if the overall score was < 24 and a positive attitude if the overall score was \geq 24. The reliability of the attitude scale was assessed using Cronbach's alpha, and its result indicated good internal consistency (0.822). In addition, the self-reported questionnaire was examined for face validity by a jury of 4 consultant cardiologists and a biostatistician.

Ethical considerations

The ethical committee of Najran University approved the study. Each woman signed informed consent before data collection. The participants were informed that the data was personal and used only for the research objective. Each participant was informed about their right to refuse participation without any penalties.

Data collection procedure and analysis

The data was collected from November 2021 to March 2022. A self-reported questionnaire was disseminated to the mothers during the waiting time at the children's clinic. The participants were concisely informed about the purpose and benefits of contributing to the study as they were grouped in the waiting room of the children's clinic in the hospital under the researcher's observation to guide them when needed. Data analysis was performed using IBM Statistical software, version 23 (IBM Corp., Armonk, N.Y., USA). The participants' basic characteristics and health history, knowledge toward RF and RHD and attitude regarding its treatment and preventive measures were described in numbers, percentages for categorical variables and mean and standard deviation (SD) for continuous variables. Binary logistic regression was used to predict participants' knowledge regarding RF and RHD. The 1st category was used as a reference for all categorical variables. A p -value < 0.05 was considered statistically significant.

Results

Table 1 represents the participants' basic characteristics and health history. The mean age of the participants was 30.59 years, and the mean number of children was 3. The majority were married (95.9%) and Saudi (80.7%). Most had a university education (64.5%), and nearly 90% resided in urban areas. More than half were working (58.6%) and had sufficient monthly income for the necessities of life (56.3%). Only 10.8% of the participants had attended educational programmes related to RHD. Concerning the previous history of sore throat, acute RF and RHD in their children, the majority had a history of sore throat (87.7%), while acute RF amounted to 10.3% and RHD totalled 8.2%.

The knowledge of RF and RHD is presented in Table 2. It was clear that cold water (76.9%) was the most prevalent cause of sore throat as reported by the participants, and the suggested person to describe the treatment of a recurrent sore throat was a physician among the majority of participants (89.5%). Antibiotics prescribed by the physician were reported by 36.2% of participants as the appropriate treatment for recurrent sore throat. Concerning the common cause of RHD, 64.3% reported "virus" as a common cause, and only 16.3% stated "complications of

Table 1. Participants' basic characteristics and health history (n = 389)		
Basic data	No.	%
Age (mean ± SD) years	30.59 ± 7.56	
Number of children (median)	2.00	
Education		
read and write	40	10.3
secondary school	98	25.2
university or postgraduate	251	64.5
Marital status		
married	373	95.9
divorced	16	4.1
widow	0	0.0
Nationality		
Saudi	314	80.7
non-Saudi	75	19.3
Income		
insufficient for the necessities of life	104	26.7
sufficient for the necessities of life	219	56.3
sufficient and more than sufficient	66	17.0
Residence		
rural	40	10.3
urban	349	89.7
Occupational status		
housewife	161	41.4
employed	228	58.6
History of sore throat in her child		
no	48	12.3
yes	341	87.7
History of acute RF in her child		
no	349	89.7
yes	40	10.3
History of RHD in her child		
no	357	91.8
yes	32	8.2
Previous attendance of educational programmes related to RHD		
no	347	89.2
yes	42	10.8

untreated streptococcal infection". Nearly 90% reported fever as the most common symptom of RF, while only 29% stated that children between 5–15 years of age are the most vulnerable to RF. Less than half of the participants responded correctly that RF is most common in developing countries (43.4%) and that a sore throat can cause RHD (49.9%). Approximately 15% of the participants reported "Benzathine Penicillin" as the appropriate treatment for preventing sore throat that leads to RF and RHD. The preventive treatment should be taken for at least 5 years (29.8%).

Table 2. Participants' knowledge about RF and RHD (n = 389)		
Knowledge regarding RF and RHD	Answer	
	n	%
What are the causes of a recurrent sore throat?*		
cold water	299	76.9
exposure to cold air draft	290	74.6
contact with an infected person	252	64.8

Who is the right person to describe the treatment for recurrent sore throat?		
mother	16	4.1
friends	8	2.1
physician [#]	348	89.5
experienced seniors	17	4.4
What is the appropriate treatment for recurrent sore throat?		
antibiotic prescribed by the doctor [#]	141	36.2
herbs and honey	218	56.0
gargling with water and salt	30	7.7
When should one stop the antibiotic prescribed by the doctor?		
when the symptoms disappear	216	55.5
when the dose is completed as prescribed by the doctor [#]	149	38.3
when the temperature drops	24	6.2
What causes RHD?		
complications of untreated streptococcal infection [#]	64	16.5
scarlet fever	75	19.3
virus	250	64.3
What are the symptoms of acute RF?*		
fever	348	89.5
joint pain	324	83.3
rash	26	6.7
involuntary jerking movements	61	15.7
chest pain or palpitations	196	50.4
Who is the most vulnerable group to RF?		
children under the age of 5 years	155	39.8
children aged from 3 to 10 years	121	31.1
children aged from 5 to 15 years [#]	113	29.0
Is RF most common in developing countries?		
yes [#]	169	43.4
no	220	56.6
Can a sore throat lead to RHD?		
yes [#]	194	49.9
no	195	50.1
What is the interval between a sore throat and the onset of acute RF?		
1–5 days after symptoms disappear	163	41.9
1 week after symptoms disappear	178	45.8
2–3 weeks after symptoms disappear [#]	48	12.3
What is the appropriate treatment for a sore throat to prevent acute RF and RHD?		
Vancomycin	33	8.5
Benzathine Penicillin [#]	58	14.9
Azithromycin	24	6.2
I don't know	274	70.4
Should the patient take preventive treatment at a minimum:		
5 years [#]	116	29.8
10 years	48	12.3
20 years of age	16	4.1
I don't know	209	53.7

[#]Represents the right answer, *total is not manually exclusive.

Table 3 illustrates that nearly two-thirds of the participants agreed that it is necessary to treat a sore throat with antibiotics (64.0%) and that everyone who suffers from a sore throat

Table 3. Participants' attitudes toward treatment and preventive measures of RF and RHD (n = 389)

Attitude items	Strongly disagree		Disagree		Neutral		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
1. Do you think it is necessary to treat a sore throat with antibiotics?	14	3.6	85	21.9	41	10.5	73	18.8	176	45.2
2. Everyone who suffers from a sore throat should consult a doctor	7	1.8	121	31.1	26	6.7	146	37.5	89	22.9
3. Only some home remedies can be used to treat a sore throat, such as honey*	72	18.5	183	47.0	94	24.2	28	7.2	12	3.1
4. It is necessary to improve the socio-economic status of societies to reduce the burden of RHD	19	4.9	84	21.6	54	13.9	122	31.4	110	28.3
5. Reducing one's presence in crowded places reduces the risk of sore throat	15	3.9	56	14.4	63	16.2	128	32.9	127	32.6
6. Enhancing housing and living conditions is a preventive measure that helps decrease the incidence of RF	12	3.1	64	16.5	71	18.3	91	23.4	151	38.8
7. Neglect in treating a sore throat and tonsillitis leads to heart disease	3	0.8	110	28.3	44	11.3	125	32.1	107	27.5
8. Awareness of RF and RHD is adequate in Saudi Arabia	16	4.1	122	31.4	88	22.6	107	27.5	56	14.4

*Reversed item.

should consult a physician (60.4%). Approximately 66% disagreed that only some home remedies like honey can be used to treat a sore throat. In addition, 59.4% agreed with the statement "It is necessary to improve the socio-economic status of societies to reduce the burden of RHD", and 65.5% agreed that reducing one's presence in crowded places reduces the risk of sore throat. Around two-thirds of the participants thought that enhancing housing and living conditions is a preventive measure that helps in decreasing the incidence of RF, and neglecting the treatment of a sore throat and tonsillitis leads to RHD (62.2% and 59.6%, respectively). Only 41.9% of the participants thought that awareness of RF and RHD was adequate in Saudi Arabia.

The overall evaluation of knowledge toward RF and RHD and their attitude regarding its treatment and preventive measures are illustrated in Table 4. More than half (59.1%) of the participants had unsatisfactory knowledge concerning RF and RHD. In contrast, more than three-quarters (80.2%) had a positive attitude regarding its treatment and preventive measures.

Table 4. Participants' overall knowledge toward RF and RHD and their attitude regarding its treatment and preventive measures (n = 389)

	No.	%
Overall knowledge		
unsatisfactory	230	59.1
satisfactory	159	40.9
Overall attitude		
negative	77	19.8
positive	312	80.2

Table 5 clarifies the associations between participants' basic characteristics and their knowledge regarding RF and RHD using binary logistic regression. The association of the level of education with RF and RHD knowledge was statistically significant. The odds ratio of satisfactory knowledge was increased

Table 5. Binary logistic regression to predict participants' knowledge regarding RF and RHD

Variables	Knowledge predictors	p
	OR [95% CI]	
Age	1.313 [1.248–1.381]	0.000*
Number of children	0.924 [0.849–1.006]	0.068
Education		0.020*
read and write	Reference	
secondary school	1.055 [1.007–1.105]	0.024
university or postgraduate	1.764 [1.102–2.847]	0.017
Marital status		
married	Reference	
divorced	0.664 [0.239–1.844]	0.432
Nationality		
Saudi	Reference	
non-Saudi	0.755 [0.424–1.344]	0.340
Income		
insufficient for the necessities of life	Reference	0.185
sufficient for the necessities of life	1.451 [0.695–3.029]	0.321
sufficient and more than sufficient	0.916 [0.482–1.740]	0.788

Table 5. Binary logistic regression to predict participants' knowledge regarding RF and RHD		
Variables	Knowledge predictors	p
Residence		
rural	Reference	
urban	0.816 [0.384–1.732]	0.596
Occupational status		
housewife	Reference	
working	0.523 [0.252–1.083]	0.081
History of RHD in her child		
no	Reference	
yes	5.815 [2.577–13.125]	0.000*
Previous attendance of educational programmes in RHD		
no	Reference	
yes	2.38 [1.50–3.75]	0.000*
Total attitude		
negative	Reference	
positive	1.072 [1.019–1.128]	0.007*

* Statistically significant $p < 0.05$.

in secondary-educated participants (OR = 1.055, 95% CI: 1.007–1.105) and university-educated participants (OR = 1.764, 95% CI: 1.102–2.847) compared to low-educated participants. Older participants were more likely to have satisfactory knowledge (OR = 1.313, 95% CI: 1.248–1.381) when compared with younger participants. Furthermore, the participants with a child with RHD were more likely to have satisfactory knowledge than those who did not have a child with RHD (OR = 5.815, 95% CI: 2.577–13.125). In addition, satisfactory knowledge was statistically associated with a positive attitude (OR = 1.072, 95% CI: 1.019–1.128) and previous attendance of educational programmes on RHD (OR = 2.38, 95% CI: 1.50–3.75). Finally, the association between number of children, marital status, nationality, residence, income and occupational status with RF and RHD knowledge was not statistically significant.

Discussion

RF disease is a serious condition that endangers both children and adults and imposes a huge burden on people's health and the healthcare facilities. It is known to be a poverty disease, and it is the most common disease below the age of 25. A serious complication may develop, including bacterial endocarditis and a ruptured or severely narrowed heart valve. Heart failure may require surgical intervention. At the same time, RHD is 100% preventable by simple measures and meticulous follow-up, as well as appropriate sore throat treatment [14, 18]

The current study revealed that about two-thirds of women had inadequate knowledge of RF disease. The weak areas included treatment, antibiotic utilisation, causes, high-risk group and prevalence, the interval between a sore throat and the onset of acute rheumatic fever and the period of penicillin utilisation. Poor knowledge regarding preventive practice and treatment can negatively influence children's health and the prognosis of cases of diagnosed RF disease. Knowledge regarding RF is greatly affected by culture and social awareness. A recent Saudi study conducted in different Saudi regions through an online survey conducted by El Tellawy et al. reported that slightly less than two-thirds of their participants had poor knowledge regarding RHD. The important point in El Tellawy's study was that they explored parental knowledge regarding RF. Parents are the primary healthcare providers and the protectors of their children; therefore, improving their knowledge about the causes of RF disease and preventive practice is very important [19]. Another recent Saudi study conducted by Almadhi et al. to explore the

knowledge, attitude and practice of Saudi women regarding RF disease reported a much higher level of poor knowledge among their participants than the current study. They reported that 80.2% of their participants had poor knowledge levels, and only 3.6% had good knowledge levels [15]. Furthermore, Mougabi et al. explored RHD awareness in Taif city, KSA. They found that female awareness about sore throat complications, primary prevention, penicillin use and RF primary or secondary prevention ranged from 16.5% to 56%. They further added that the weakest area of awareness was the causes, sore throat management, antibiotic utilisation and the complications of recurrent sore throat [20]. The problem of poor knowledge regarding RHD was also found internationally. Nkoke et al. explored knowledge and attitude regarding RHD in the southwest region of Cameroon. They reported that the total knowledge of participants regarding RHD was low. They further elaborated that around three-quarters of the participants did not know the causes, complications and the appropriate management of sore throat. They also did not know the relation between sore throat and RHD, and only around half of the participants had adequate knowledge [21]. Surprisingly, poor knowledge regarding RHD was also found among senior medical students in a study performed by Chelo et al. in 2020 in Cameroon. They found that only 25% of senior medical students had satisfactory knowledge regarding RHD. The results provided by Chelo et al. in 2020 highlighted the importance of giving RHD-related knowledge more attention, even among medical students [17].

An important point found by the present study was that although two-thirds of the participants had inadequate knowledge regarding RF and RHD, more than four-fifths had a positive attitude toward treatment and preventive measures. Nearly three-fifths of the participants agreed that antibiotics were necessary to treat a sore throat and that everyone who suffers from a sore throat should consult a physician, but they disagreed that only some home remedies like honey can be used. They also saw that it was necessary to improve the socio-economic status of societies and decrease crowds and reduce the burden of RHD. Around two-thirds of the participants thought that enhancing housing and living conditions was a preventive measure that helps decrease the incidence of RF and that neglecting the treatment of a sore throat and tonsillitis leads to RHD. Only two-fifths of the participants thought that awareness of RF and RHD was adequate in Saudi Arabia. Such results reflected that the participants understand the seriousness of RHD and are ready to learn more about preventive measures. Healthcare provid-

ers should consider such a thirst for knowledge about preventive action as the first and most important action to activate preventive practices. El Tellawy et al. reported that 82.3% of their participant confirmed the importance of appropriate sore throat treatment with a complete course of antibiotics. In addition, 70.5% of their participants agreed that healthcare providers should prescribe antibiotics [19]. Chelo et al. also reported that although only one-quarter of their participants had good RHD knowledge, 89.6% had a positive attitude toward RHD preventive practices [17]. The positive attitude present in different populations in different studies indicates their readiness to receive educational intervention regarding RHD preventive practice [22, 23]. On the contrary, Almadhi et al. reported that only one-quarter of their participants reported a good attitude toward RHD. However, a large proportion of their participants confirmed the importance of using antibiotics prescribed by the physician to treat sore throat [15]. The difference in the percentage of the positive attitude between the current study and Almadhi may be due to the different categorisation systems for attitude in the two studies. Almadhi divided the attitude into poor, fair and good, whilst the present study categorised the attitude as negative or positive.

The current study results showed that the odds ratio of satisfactory knowledge was increased in secondary and university-educated participants. Older participants who had a child with a history of RHD were more likely to have satisfactory knowledge regarding RF and RHD. In addition, satisfactory knowledge was statistically associated with a positive attitude and previous attendance of educational programmes about RHD. Determining the predictors of public awareness of RHD is very important as it may be directly related to early diagnosis of RF and adherence to the penicillin regimen [24]. The participants' education level significantly predicted satisfactory knowledge in different studies [25, 26]. Other literature found an acceptable relation between being highly educated, consequently of an older age and the ability to control some RHD modifiable factors. These modifiable risk factors include recurrent sore throat, home crowding, a damp, cold environment, health illiteracy and poor nutritional conditions [27].

In addition, Almadhi et al. reported a statistically significant relationship between the participants' knowledge and their age. They further elaborated that those participants 40 years of age and more had better knowledge than younger participants [15]. El Tellawy et al. also emphasised that 76% of the participants between 26–30 years of age had good knowledge regarding RHD [19]. Similar results were reported by Mougri et al. in

2020 who examined the relationship between age and education with each item of the participants' knowledge. They found that participants' age was significantly related to all knowledge items, while education was significantly related to most knowledge items [20]. Concerning the international bias, Nkoke et al. found that older age and higher education were significant positive predictors of good knowledge regarding RHD [21]. Another Egyptian study conducted by Sayed et al. in 2021 found that age and education were positive predictors of RHD knowledge [28]. Based on the current study results, public awareness programmes are greatly required for the Saudi population in Najran city. Special attention should be paid to low education, young age and new mothers with a negative attitude toward RHD preventive practices.

Study strengths and limitations

The current study is the first one that assesses the knowledge and attitude about RF and RHD in Najran city. However, it has some limitations; first, a cross-sectional design was followed in the current study; therefore, no causal relationships could be drawn. Second, although this study provides important information on preventive measures and treatment regarding RF and RHD among women in the Najran society, it is considered a first-phase study. To deal with these limitations, further intervention studies directed toward women and guided by the results of our study are needed in larger geographical areas in KSA that include different segments of Saudi populations.

Conclusions

The study indicates that although two-thirds of the women had inadequate knowledge regarding RF and RHD, more than four-fifths had a positive attitude toward its treatment and preventive measures. Education level, mother's age, history of a child with RDF and positive attitude are significant predictors of RF and RHD knowledge. Therefore, the identified predictors should be emphasised during the planning and implementation of RF and RHD educational interventions. Addressing such predictors will likely increase RF and RHS knowledge and enhance one's attitude.

Acknowledgment. The authors are thankful to all the women who participated in the study.

Source of funding: This work was funded from the authors' own resources.

Conflicts of interest: The authors declare no conflicts of interest.

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Received: 06.06.2022

Reviewed: 21.01.2023

Accepted: 14.04.2023

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