ABSTRACT

Background: Rheumatic fever (RF) is an autoimmune disease associated with group A-β-hemolytic streptococcal infection, in the course of which the patient develops carditis, arthritis, chorea, subcutaneous nodules, and erythema marginatum. The present study aims to evaluate knowledge, awareness, and attitude of the Saudi population toward RF.

Methodology: A questionnaire-based cross-sectional study was conducted from October 2016 to May 2017. The questionnaire included a total of 19 questions. Sixteen were close-ended questions and 3 were open-ended questions. After excluding incomplete questionnaires, data of 1,596 participants were obtained and entered into the Statistical Package for Social Sciences (SPSS) statistical software version 22.

Results: A total of 1,596 respondents completed the questionnaire. The respondents were from all the regions of Saudi Arabia. Regarding age, the participants were classified into four groups, most of them (60.7%) were aged between 18 and 30 years. More than half of them (55.8%) were females. Regarding occupation; 38% of participants were educated. The knowledge and attitude about RF among our participants was 70%. The statistical analysis showed a significant correlation between; knowledge regarding age, gender, occupation, and attitude regarding age, gender, and accommodation and practice regarding age and occupation.

Conclusion: Levels of knowledge, attitude, and awareness of RF were high when compared with other studies reported. Age, gender, and occupation were significant factors for knowledge, attitude, and awareness regarding RF.

Keywords: Rheumatic fever, Saudi Arabia.

Introduction

Rheumatic heart disease (RHD) is the most common cardiovascular disease worldwide in those under 25 years of age and it is thought to be a late sequela of group A streptococcal infection of the throat, the rheumatic fever (RF) affects the central nervous system, skin, and heart. RF almost is an entirely preventive disease [1]. The disease trends in Africa, the Americas, Southeast Asia, and Europe [2]. It is estimated that there are 282,000 new cases and 233,000 deaths annually and there are 15 million cases of RHD worldwide. The last large study that has been done in Saudi Arabia in 1991 has shown the prevalence of RF to be 0.3 per 1,000 and the chronic RF to be 2.8 per 1,000 with a total of 3.1 per 1,000 [3]. RHD occurs due to the autoimmune reaction between M protein of streptococcus and cardiac laminin and myosin
Knowledge, awareness, and attitude of Saudi population toward rheumatic fever

[4]. All the layers of a heart may be affected (Epicardium, Myocardium, and Endocardium) with the presence of characters lesion ascoff nodule [5]. A mean incidence of 19 per 100,000 acute RF has been reported in the school-aged individuals residing in the United States [6]. Also, the highest rate in Australia per 100,000 children aged between 5 and 14 years has been reported to be 153–380 new cases [7]. Also, a study in Bangladesh has been conducted which shows the prevalence of RHD and RF to be 0.9 per 1,000 (95% confidence interval) [8].

Subjects and Methods

A questionnaire-based cross-sectional study was conducted from October 2016 through May 2017 among Saudi population men and women aged between 18 and 25 years from any region of the Kingdom of Saudi Arabia. The study included distribution of an anonymous, electronic, validated, questionnaire for the assessment of knowledge, awareness, and attitude of Saudis on RF. The questionnaire was an Arabic self-administered semi-structured questionnaire. The questionnaire included a total of 19 questions. Sixteen were close-ended questions and 3 were open-ended questions. A pilot test including 15 participants was performed before the distribution of the questionnaire. The questions were categorized into three groups of questions: (1) the first group included data on age, gender, educational background, and marital status, number of children and region of inhabitance. (2) The second group included three questions on the number of children if any of the children had a recurrent sore throat or upper respiratory tract infection, and the management of the sore throat. (3) The third group included eight questions on the parents’ information RF. such questions included: causes of throat pain or dryness, relation between throat infections and heart disease, and management of throat infections may reduce incidence of heart disease, if any family member has a history of RF, the age groups at risk of developing RF, symptoms of RF, diagnosis, and treatment of RF. The questionnaire was delivered through the social media networks; the questionnaire published through twitter and WhatsApp. After excluding incomplete questionnaires, data of 1596 participants were obtained and entered into the Statistical Package for Social Sciences (SPSS) statistical software version 22. The validated questionnaire was developed on Google a document using a convenient sampling method was used during the distribution of the questionnaire. The questionnaire was posted on Twitter or WhatsApp from February 14, 2017 through 7 March 2017. The translated questionnaire was distributed through social media to all the regions of Saudi Arabia.

Results

A total of 1596 respondents completed the questionnaire. The respondents were from all the regions of Saudi Arabia. Table 1 summarizes the demographics of the respondents. Regarding age the participants were classified into four groups, most of them (60.7%) were aged between 18 and 30 years, 19.4% were between 31 and 40 years, 12.3% were more than 40 years, and 7.6% were less than 18 years. More than half of them (55.8%) were females. Regarding occupation; 38% of participants were in the educational field, 15.5% were in private work, 11% were in the health field, 4% were in the military, and 31.5%
were in other fields. Regarding the highest education level; more than two thirds (70.2%) of participants had a bachelor degree, 22.9% were of high school level, 1.9% had master degree, 1.8% were of intermediate school level, 1.1% had an educational diploma, 0.8% were equally distributed between elementary school level and PhD degree, finally 1.3% didn’t answer these questions. Most of the participants (58.1%) were residing in the central region, 18.4% were in the western region, 10.7% in the eastern region, 6.1% in the northern region, 5.9% in the southern region and 0.9% in other places. Regarding accommodation; more than two thirds (68.5%) were landlords and 31.5% were leasehold. Regarding marital status; more than half of participants (59.3%) were single, 36.5% were married, and 4.2% were others. More than two thirds (67.8%) had children, most of them (40.7%) had more than three children, 22.8% had two children, 18.9% had one child, and 17.7% had three children. The knowledge and attitude about RF among our participants was 70% (Figures 1 and 2).

The statistical analysis showed significant correlation between; knowledge regarding age, gender, occupation, and accommodation (p-value = 0.06, 0.03, 0.07, and 0.02, respectively), attitude regarding age, gender, and accommodation (p-value = 0.002, 0.09, and 0.08, respectively), and practice regarding age and occupation (p-value = 0.04 and 0.006) (Table 2).

Discussion

The epidemiological association between group A b-haemolytic streptococcal infections and the subsequent development of acute RF has been well established. RF is a delayed autoimmune response to Group A streptococcal pharyngitis, and the clinical manifestation of the response and its severity in an individual is determined by host genetic susceptibility, the virulence of the infecting organism, and a conducive environment [9]. Although streptococci from serogroups B, C, G, and F can cause pharyngitis and trigger a host immune response, they have not been linked to the etiology of RF or RHD [10,11]. To the best of our knowledge, this is the first survey of RF awareness in Saudi Arabia. Factors associated with adequate knowledge of RF were age, gender, occupation, and accommodation, regarding those associated with awareness, were age, gender, and accommodation, while attitude associated with age and gender. The present study population reported high knowledge and attitude regarding RF (70%) this result was mismatched with Nkoke et al. [12] who reported low knowledge regarding RHD including RF in the South West region of Cameroon where only 51.1% of the participants had adequate knowledge of RHD. The present results reported a significant correlation between knowledge regarding age, gender, occupation, and accommodation; these results were comparable with Nkoke et al. [12] who reported age ≤35 years and post-secondary level of education to be significantly associated with adequate knowledge. However, the present results matched with Gurney et al. [13] who reported that almost all respondents had heard of RF, with no difference observed between case (92%) and control respondents (95%; p = 0.458). Wide variety of population did not give a precise overview regarding RF. The cross-sectional design is time and cost-consuming design which could be considered as a limitation for this study.
Conclusion

Level of knowledge, attitude, and awareness of RF were high when compared with other studies reported. Age, gender, and occupation were significant factors for knowledge, attitude, and awareness regarding RF.

List of Abbreviations

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<tr>
<th>Abbreviation</th>
<th>Description</th>
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<td>RF</td>
<td>Rheumatic fever</td>
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<td>RHD</td>
<td>Rheumatic heart disease</td>
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<td>SPSS</td>
<td>Statistical Package for Social Sciences</td>
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Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

Informed consent was obtained from all the participants.

Ethical approval

The study was approved by Institutional Review Board, College of Medicine, Prince Sattam Bin Abdulaziz University, via letter number: PSAU/COM/RC/IRB/p/60 dated 28 Nov, 2019.

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