Evaluating Atrial Fibrillation Perceptions Among the General Population in Saudi Arabia

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ABSTRACT

Heart diseases are common and spread among people all over the world. This article aims to evaluate atrial fibrillation (AF) perceptions among the general population in Saudi Arabia. This is an online cross-sectional survey study that was conducted in Saudi Arabia in June and July 2025. The convenience sampling technique was employed to invite the population to participate in the study. This research utilized a previously validated questionnaire, the Atrial Fibrillation Knowledge Assessment. A multiple logistic regression was performed to assess the factors associated with better knowledge. A total of 695 participants were included in the study. Most participants demonstrated good knowledge regarding AF. A large proportion correctly recognized that AF may cause blood clots in the heart (81.6%), increase the risk of stroke (84.6%), and that episodes may recur (90.4%). A total of 87.9% acknowledged that early diagnosis and treatment can prevent stroke, and 82.0% knew AF can be treated with medications. Some misconceptions were evident; for example, 54.7% incorrectly believed that AF is a condition where the heart beats slower than normal, and 33.7% thought it can only be treated with surgery. Participants aged 55-64 years had significantly higher odds of knowledge compared to the 18-24 group (odds ratio (OR) = 20.50, 95% confidence interval (CI): 5.81–72.38, p < 0.001). Those residing in the middle region were also more likely to have higher knowledge (OR = 2.94, 95% CI: 1.43–6.01, p = 0.003). Students showed increased odds compared to the unemployed group (OR = 1.94, 95% CI: 1.04–3.65, p = 0.038). Moreover, participants who had heard of atrial fibrillation were more knowledgeable (OR = 3.47, 95% CI: 2.36–5.10, p < 0.001). The results of our study revealed that we need more spreading of knowledge among people especially those who were younger or unemployed. In contrast to many previous studies, the knowledge among our sample was significantly high, as many of them had a good knowledge and understanding of AF complications. According to therapy approaches, there are misconceptions related to this topic. Therefore, as a result, awareness and knowledge must be developed to ensure that all patients receive the appropriate information related to AF.

Keywords: Atrial Fibrillation; Perception; Public; Saudi Arabia; Understanding

INTRODUCTION

Heart diseases are common and spread among people all over the world. These diseases are divided into coronary heart disease, stroke, and peripheral artery disorders. These diseases are associated with some complications, such as atrial fibrillation (AF), congestive heart failure, and long-term disability[1-4]. Atrial fibrillation is considered one of the most common cardiovascular events, characterized by cardiac dysrhythmia, and it increases the risk of death among patients[5,6]. This condition can be identified by specific symptoms, which are chest tightness, shortness of breath, lethargy, irregular heartbeat, and dizziness[7]. In addition to that, AF increased with some risk factors such as older age, hypertension, history of cardiovascular or pulmonary diseases, and drinking alcohol. AF has three types, which are proximal, persistent, and permanent[8]. Moreover, AF has some complications that affect the overall health, including abnormal heartbeat, hemodynamic instability, and the development of embolism[9]. When a patient is exposed to AF, the treatment of it includes several approaches such as pharmacological therapy, catheterization, radiofrequency ablation, surgical ablation, and left atrial appendage closure[10]. There is an increase in the number of patients with AF, and according to the American Heart Association (AHA), 2.7 and 4.5 million people in the United States of America (USA) and Europe were recorded as AF cases, respectively. Furthermore, there is a possibility to increase these numbers in 2050 to reach 16 million in the USA and 16-17 million in Europe[5]. For instance, in Saudi Arabia, there were more than 60% of patients diagnosed with chronic AF according to AHA[11]. Because AF considers life-threatening conditions and the need for restricted management, the need for awareness among patients is critical, as

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many patients have low knowledge about this topic[12,13]. The education related to this topic is a key point in the management of condition to ensure patients' adherence to their medications, improve their quality of life, reduce the possible complications, and early diagnosis[14]. This article aims to evaluate atrial fibrillation perceptions among the general population in Saudi Arabia.

METHODS

Study design: This is an online cross-sectional survey study that was conducted in Saudi Arabia in June and July 2025.

Study population: The research population consisted of adult individuals in Saudi Arabia who were 18 years of age or older. There were no exclusion criteria regarding sociodemographic characteristics in this study, as it included both male and female participants from all age groups.

Participants recruitment: The convenience sampling technique was employed to invite the population to participate in the study. Participants from diverse demographic backgrounds were invited to partake in this study through the use of social media platforms (Twitter, WhatsApp, and Telegram). We emphasized the study inclusion criteria in the initiation letter to ensure that only participants who satisfy the inclusion criteria are invited to participate in the research.

Questionnaire tool: This research utilized a previously validated questionnaire, the Atrial Fibrillation Knowledge Assessment Tool (AFKAT) scale [15]. Items of the original questionnaire were generated based on a review of the literature. The AF knowledge scope covered by this tool included basic AF information, risk factors, detection, prevention, and management. The original tool had good internal consistency reliability (Cronbach's alpha = 0.91). The item-total correlation was in the preferred range of 0.23 to 0.71. Besides, we collected data related to participants' socioeconomic characteristics (age, gender, nationality, region, education level, occupation, field, whether they have ever heard of atrial fibrillation before, and whether they know someone with atrial fibrillation).

Ethical approval: Ethical approval for this research was obtained from the Imam Mohammad Ibn Saud Islamic University's institutional review board (Number: 846/2025).

Data analysis: Data were analyzed using descriptive and inferential statistical analysis. Frequencies and percentages were used to summarize participants' sociodemographic characteristics, and awareness of atrial fibrillation. The continuous data, as the knowledge score was expressed as mean and standard deviation (SD). To assess the hypothesis about the difference in knowledge score based on the sociodemographic characteristics, a Student's t-test and analysis of variance (ANOVA) tests were performed when applicable. A Tukey post hoc test was applied to assess the difference among multiple groups. A multiple logistic regression was performed to assess the factors associated with better knowledge. Prior to regression, the knowledge score was categorized into two groups depending on the median point, which was 15. The logistic regression results were expressed as odds ratios (ORs) and corresponding 95% confidence intervals (CIs). All statistical analyses were two-tailed, conducted at a significance level of $p < 0.05$ and performed using Statistical Package for Social Science (SPSS).

RESULTS

A total of 695 participants were included in the study. The largest age group was 18-24 years (303, 43.6%), followed by 35-44 years (128, 18.4%) and 25-34 years (121, 17.4%). Females represented 441 (63.5%) of the respondents, while 254 (36.5%) were males. Most participants were citizens, and lived in the middle region (302, 43.5%). Regarding educational level, most participants held a bachelor's degree (407, 58.6%), followed by 147 participants (21.2%) with a secondary school level. Most participants were students (243, 35.0%), followed by 241 participants (34.7%) who were employed. Most of them (483, 69.5%) were from non-medical fields. Concerning awareness, 287 (41.3%) had heard of atrial fibrillation, and 69 (9.9%) reported knowing someone diagnosed with the condition, Table 1.

Most participants demonstrated good knowledge regarding atrial fibrillation (AF). A large proportion correctly recognized that AF may cause blood clots in the heart (567, 81.6%), increase the risk of stroke (588, 84.6%), and that episodes may recur (628, 90.4%). Similarly, 611 (87.9%) acknowledged that early diagnosis and treatment can prevent stroke, and 570 (82.0%) knew AF can be treated with medications. However, some misconceptions were evident; for example, 380 (54.7%) incorrectly believed that AF is a condition where the heart beats slower than normal, and 234 (33.7%) thought it can only be treated with surgery, Table 2.

The mean of the knowledge score among participants was 14.84±2.82, and 291 participants (41.9%) had a score of knowledge higher than the median. However, significant differences were observed across several variables. Participants from the middle and southern regions reported higher mean scores (15.11 ± 2.89 and 15.18 ± 2.67, respectively; *p*

Table 1. Sociodemographic characteristics of participants regarding atrial fibrillation

Sociodemographic characteristics		N	%
Age (years)	18-24	303	43.6%
	25-34	121	17.4%
	35-44	128	18.4%
	45-54	103	14.8%
	55-64	32	4.6%
	>65	8	1.2%
Gender	Female	441	63.5%
	Male	254	36.5%
Nationality	Non-citizens	17	2.4%
	Citizens	678	97.6%
Region	North	52	7.5%
	Middle	302	43.5%
	South	157	22.6%
	West	65	9.4%
	East	119	17.1%
Education level	Non	2	0.3%
	Primary	9	1.3%
	Secondary	147	21.2%
	Bachelor's	407	58.6%
	Diploma	73	10.5%
	Master's or higher	57	8.2%
Occupation	Non	168	24.2%
	Student	243	35.0%
	Working	241	34.7%
	Retired	43	6.2%
Field	Non-medical	483	69.5%
	Medical	212	30.5%
Have you ever heard of atrial fibrillation before?	No	408	58.7%
	Yes	287	41.3%
Do you know someone with atrial fibrillation?	No	626	90.1%
	Yes	69	9.9%

Table 2. Knowledge about atrial fibrillation among participants.

Knowledge items	TRUE	FALSE
Atrial fibrillation is a medical condition in which the heart beats slower than normal. *	380 (54.7%)	315 (45.32%)
Atrial fibrillation may cause blood clots in the heart.	567 (81.6%)	128 (18.42%)
Atrial fibrillation episodes can always be predicted. *	261 (37.6%)	434 (62.45%)
People with atrial fibrillation can live active lives.	414 (59.6%)	281 (40.43%)
Atrial fibrillation can only be treated with surgery. *	234 (33.7%)	461 (66.33%)
Episodes of atrial fibrillation may recur.	628 (90.4%)	67 (9.64%)
Early diagnosis and proper treatment of atrial fibrillation can prevent stroke.	611 (87.9%)	84 (12.09%)
Low blood pressure increases the risk of atrial fibrillation. *	533 (76.7%)	162 (23.31%)
Atrial fibrillation greatly increases the risk of stroke.	588 (84.6%)	107 (15.40%)
Atrial fibrillation affects only people with pre-existing heart disease. *	276 (39.7%)	419 (60.29%)
Shortness of breath or fainting may be symptoms of atrial fibrillation.	564 (81.2%)	131 (18.85%)
Atrial fibrillation affects only older adults. *	181 (26.0%)	514 (73.96%)
A person may have atrial fibrillation without showing any symptoms.	512 (73.7%)	183 (26.33%)
Symptoms of atrial fibrillation may be intermittent, persistent, or permanent.	600 (86.3%)	95 (13.67%)
Atrial fibrillation often has a significant psychological impact on patients' lives. *	579 (83.3%)	116 (16.69%)
The risk of atrial fibrillation can be reduced through lifestyle changes.	599 (86.2%)	96 (13.81%)
Atrial fibrillation can be detected by checking pulse regularity.	618 (88.9%)	77 (11.08%)
Early screening for atrial fibrillation is safe.	637 (91.7%)	58 (8.35%)
Once a person develops atrial fibrillation, it always lasts for life. *	309 (44.5%)	386 (55.54%)
Atrial fibrillation can be treated with medications.	570 (82.0%)	125 (17.99%)
Anticoagulant (blood-thinning) drugs are often used to reduce the risk of stroke in people with atrial fibrillation.	600 (86.3%)	95 (13.67%)

* False statement

= 0.02). Education level was also associated with knowledge, with those holding a master's degree or higher achieving the highest mean score (15.40 ± 2.66; $p = 0.007$). Students scored higher (15.25 ± 3.04) compared to other occupational groups ($p = 0.03$). Moreover, participants from medical fields had significantly higher knowledge (15.48 ± 3.12) than those from non-medical fields (14.56 ± 2.64; $p < 0.001$). Importantly, participants who had previously heard of AF demonstrated notably higher knowledge scores (15.82 ± 2.65) compared to those who had not (14.15 ± 2.74; $p < 0.001$), Table 3.

Multivariate analysis revealed that participants aged 55-64 years had significantly higher odds of knowledge compared to the 18-24 group (OR = 20.50, 95% CI: 5.81–72.38, $p < 0.001$). Those residing in the middle region were also more likely to have higher knowledge (OR = 2.94, 95% CI: 1.43–6.01, $p = 0.003$). Students showed increased odds compared to the unemployed group (OR = 1.94, 95% CI: 1.04–3.65, $p = 0.038$). Moreover, participants who had heard of atrial fibrillation were more knowledgeable (OR = 3.47, 95% CI: 2.36–5.10, $p < 0.001$), Table 4.

DISCUSSION

In our study, most participants demonstrated good knowledge regarding AF. A large proportion correctly recognized that AF may cause blood clots in the heart (567, 81.6%), increase the risk of stroke (588, 84.6%), and that episodes may recur (628, 90.4%). The knowledge and awareness among AF patients were extremely poor, as many studies revealed that most of them had lack in knowledge related to the condition. For instance, the awareness of AF among patients in a study conducted by Joshi et al showed that those patients had a poor understanding of AF, as their percentage was 56.34%. This result was inconsistent with our study result[16]. Xu et al also found that 53% of patients had poor knowledge related to AF, which reflects the need to increase the education regarding AF[17]. In a study to evaluate the knowledge of AF complications, 87.2% of patients identified the stroke as one of the main negative outcomes which is associated with AF[18]. Regarding blood clots and the level of knowledge of patients with atrial fibrillation, there was a study that showed the relationship between the use of anticoagulants and their effect on blood clots. It was noted that many patients have sufficient awareness of the use of these medications because they reduce the risks of complications which is associated with AF[19]. Strokes are among the most common complications associated with AF, as they have a significant impact on the patient's life, reducing the quality of life in addition to some diseases, such as the formation of clots and thromboses, and increasing the chance of their presence[20]. Therefore, the importance of increasing awareness and knowledge about AF and its complications is highlighted here to reduce the economic problems associated with it, in addition to reducing the risk of mortality rate among patients, and the process of controlling the medications that the patient can take[21,22].

In our study, a total of 611 (87.9%) acknowledged that early diagnosis and treatment can prevent stroke, and 570 (82.0%) knew AF can be treated with medications. In contrast to our results, a study on several patients suffering from AF aimed to demonstrate the awareness of taking treatment related to thrombosis. In this study, the findings showed that these patients had a few awareness about anticoagulants, as these medications help in reducing the risk of developing stroke in the future. Their percentage reached 21% before they received education on this topic, and after education, their percentage reached only 27%[23]. Strokes cause many complications that can affect the individual's life, including those that affect the lungs, heart, kidneys, intestines, blood pressure, and joints. They can also affect the nerves in some patients, in addition to an imbalance after exposure to stroke, which leads to some injuries for some patients[24]. Due to the increasing number of cases diagnosed with AF, it has become important to diagnose this condition early to avoid complications that can affect the patient, such as strokes. In addition, the early diagnosis process helps in early intervention by giving the proper medication to the patient[25].

In our study, some misconceptions were evident; for example, 380 (54.7%) incorrectly believed that AF is a condition where the heart beats slower than normal, and 234 (33.7%) thought it can only be treated with surgery. In a study conducted to assess the level of

knowledge and awareness of patients about AF, only 16.4% knew the meaning of the term, which contrasts with our study. In the same study to assess patients' knowledge of treatments related to AF, patients confirmed their knowledge that anticoagulants are one of the treatments used to reduce complications. The percentage of these patients reached 92.7%[26]. In agreement with our study, the study conducted by Potpara et al confirmed that most people prefer surgical treatment, as 71% of them confirmed their preference for this method over others[27]. Treatment of AF includes several approaches, including anti-coagulant medications and medications to regulate the heart rhythm, ablation, and surgical procedures. Many studies have shown that patients' knowledge of treatments related to AF is limited. Therefore, it is necessary to work on increasing this knowledge and awareness so that the patient can manage his disease carefully and know everything related to it. There is a need to provide the patient with the necessary information regarding his condition. Also, healthcare providers must be educated about the treatment options for each patient, how to administer the treatment to the patient, and what is the best course of action for the patient based on their condition[28].

In our study, participants aged 55-64 years had significantly higher odds of knowledge compared to the 18-24 group (OR = 20.50, 95% CI: 5.81–72.38, $p < 0.001$). Lane et al conducted a study on AF patients to determine how much their knowledge related to their condition. According to stroke, it has been found that patients who were aged less than 65 years had 16.7% while their knowledge related to taking oral anticoagulants was 77.7%. However, in the other age group, which was more than 65 years old, the knowledge among patients related to stroke and anticoagulant therapy was 25.2% and 84.4%, respectively. These results were consistent with the results from our study, where the older age group had more awareness about AF[19]. Here we must highlight a

Table 3. Sociodemographic characteristics and knowledge scores on atrial fibrillation.

Sociodemographic characteristics and knowledge scores		Mean ± SD	p value
Age (years)	18-24	14.95 ± 3.05	0.07
	25-34	14.69 ± 2.78	
	35-44	14.58 ± 2.53	
	45-54	14.68 ± 2.64	
	55-64	16.16 ± 2.38	
	>65	13.88 ± 2.03	
Gender	Female	14.95 ± 2.83	0.18
	Male	14.65 ± 2.82	
Nationality	Non-citizens	15.18 ± 2.74	0.62
	Citizens	14.83 ± 2.83	
Region	North	14.52 ± 2.72	0.02
	Middle	15.11 ± 2.89	
	South	15.18 ± 2.67	
	West	14.55 ± 2.42	
	East	14.02 ± 2.96	
Education level	Non	13.50 ± 4.95	0.007
	Primary	12.89 ± 3.41	
	Secondary	14.89 ± 2.94	
	Bachelor	14.96 ± 2.75	
	Diploma	13.90 ± 2.80	
	Master's or higher	15.40 ± 2.66	
Occupation	Non	14.67 ± 2.48	0.03
	Student	15.25 ± 3.04	
	Working	14.52 ± 2.84	
	Retired	14.98 ± 2.58	
Field	Non-medical	14.56 ± 2.64	<0.001
	Medical	15.48 ± 3.12	
Have you ever heard of atrial fibrillation before?	No	14.15 ± 2.74	<0.001
	Yes	15.82 ± 2.65	
Do you know someone with atrial fibrillation?	No	14.83 ± 2.83	0.82
	Yes	14.91 ± 2.75	

Table 4. Factors associated with knowledge of atrial fibrillation

Factors associated with knowledge of atrial fibrillation		OR (95% CI)	P value
Age (years)	18-24	Reference	
	25-34	1.78 (0.96–3.29)	0.067
	35-44	1.09 (0.57–2.07)	0.804
	45-54	1.56 (0.77–3.14)	0.213
	55-64	20.50 (5.81–72.38)	0.000
	>65	1.68 (0.21–13.69)	0.626
Gender	Female	Reference	
	Male	0.76 (0.51–1.13)	0.175
Nationality	Non-citizens	Reference	
	Citizens	0.96 (0.32–2.90)	0.940
Region	North	Reference	
	Middle	2.94 (1.43–6.01)	0.003
	South	1.65 (0.77–3.56)	0.201
	West	1.57 (0.66–3.74)	0.306
	East	1.04 (0.46–2.36)	0.919
Education level	Non	Reference	
	Primary	0.23 (0.01–7.67)	0.409
	Secondary	0.94 (0.04–19.74)	0.968
	Bachelor	1.06 (0.05–22.26)	0.969
	Diploma	0.53 (0.02–11.34)	0.683
	Master's or higher	1.23 (0.06–26.73)	0.895
Occupation	Non	Reference	
	Student	1.94 (1.04–3.65)	0.038
	Working	1.17 (0.71–1.95)	0.540
	Retired	0.54 (0.18–1.58)	0.259
Field	Non-medical	Reference	
	Medical	1.30 (0.83–2.03)	0.246
Have you ever heard of atrial fibrillation before?	No	Reference	
	Yes	3.47 (2.36–5.10)	0.000
Do you know someone with atrial fibrillation?	No	Reference	
	Yes	0.39 (0.21–0.73)	0.003
	Constant	0.15 (0.00–0.00)	0.272

point about AF and its relationship with age, as the elderly significantly have lake in knowledge according to AF compared with the younger age group[16]. Therefore, this gives a key to increasing the knowledge among older patients to reduce the complications and improve the quality of life.

In our study, those residing in the middle region were also more likely to have higher knowledge (OR = 2.94, 95% CI: 1.43–6.01, p = 0.003). There are no specific studies on the level of knowledge among patients who live in the middle regions in Saudi Arabia, but the overall results showed that patients had lower awareness and understanding about their condition, their risk factors, causes, and treatment. Therefore, providing them with information is considered critical for their health[29].

In our study, students showed increased odds compared to the unemployed group (OR = 1.94, 95% CI: 1.04–3.65, p = 0.038). Moreover, participants who had heard of atrial fibrillation were more knowledgeable (OR = 3.47, 95% CI: 2.36–5.10, p < 0.001). The association between employment status and risk of AF is a direct relationship. It has been found that unemployed people have low knowledge and a high chance of developing AF compared with employees[30]. Another study confirmed that knowledge is also influenced by education, as the higher education, the more awareness will exist[31]. These findings from our study showed that some demographic characteristics affect the level of education and awareness of AF, such as employment status and education level.

CONCLUSION

Atrial fibrillation is a prevalent condition among patients that affects patient health and quality of life. Some complications can be associated with it, such as stroke and blood clots, in addition to increasing the morbidity and mortality rate among patients. The treatment of AF can be divided into medications, ablation, and surgery. This study aims to assess the perceptions of this condition among the general population in Saudi Arabia. The results of our study revealed that we need more spreading of knowledge among people, especially those who were younger or unemployed. In contrast to many previous studies, the knowledge among our sample was significantly high, as many of them had a good knowledge and understanding of AF complications. According to therapy approaches, there are misconceptions related to this topic. Therefore, as a result, awareness and knowledge must be developed to ensure that all patients receive the appropriate information related to AF.

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