



## Original Article

## Lifestyle of Patients with Atrial Fibrillation Following Self-Management Interventions: a Randomized Clinical Trial

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## ABSTRACT

**Introduction:** Cardiovascular diseases are the most common cause of death in most countries, such as Iran. Cardiac arrhythmias, including Atrial Fibrillation (AF) comprise an important category of these diseases. During recent years, AF has become a serious medical condition. This study aimed to investigate the effect of self-management interventions on the lifestyle of patients with AF.**Methods:** In this Randomized Clinical Trial study, 88 patients were selected and randomly assigned to intervention and control groups. The intervention group received self-management interventions, including education and telephone follow-ups. The data were collected using a demographic questionnaire and Walker's health-promoting lifestyle profile II, before the intervention and four and twelve weeks after the intervention. The significance level was considered to be 0.05.**Results:** The results showed a significant increase in the intervention group's lifestyle mean score, four and twelve weeks after the intervention as compared with control group. However, this increase was not similar in all the lifestyle dimensions.**Conclusion:** In conclusion, implementation of self-management interventions could improve the lifestyle of the patients with Atrial Fibrillation. The results can help nurses to conduct self-management interventions into such patients' care plan and prevent many physical, psychological, and social problems that negatively affect patients and their lifestyle.**Citation:** Rakhshan M, Najafi H, Valizadeh GA. Lifestyle of patients with atrial fibrillation following self-management interventions. J Caring Sci 2019; 8 (2): 83-88. doi: 10.15171/jcs.2019.012

## Introduction

Cardiovascular diseases are the most common cause of death in most countries, such as Iran. Cardiac arrhythmias, including Atrial Fibrillation (AF) comprise an important category of these diseases.<sup>1,2</sup> Currently, AF has become a serious medical condition and has affected at least<sup>3</sup> million Americans and is projected to exceed 10 million by the year 2050.<sup>2,3</sup> Nevertheless, no definite statistics regarding patients with AF is available in Iran.

AF has been defined as a supraventricular tachyarrhythmia that entails many complications for patients.<sup>4</sup> This disorder severely affects mortality, morbidity, quality of life, consumption of health resources and exacerbates heart problems, such as coronary artery disease, heart failure, and cardiomyopathy.

Moreover, AF leads to an increased risk of stroke in individuals who do not take anticoagulants.<sup>5-8</sup> In addition, limited daily activities, anxiety and frequent hospitalizations have been reported in these patients.<sup>9,10</sup> So, healthcare team endeavors to control symptoms, improve quality of life, save costs, and modify the lifestyles of such patients.<sup>5</sup> In this respect, patients and their caregivers can play a critical role in the management of this disorder through self-management interventions. Such interventions include all programs, solutions, models, and strategies used to improve the quality of care for patients with a chronic disease.<sup>11</sup> By contrast, lifestyle can surely affect general health and influence longevity.<sup>12</sup> The American Heart Association has

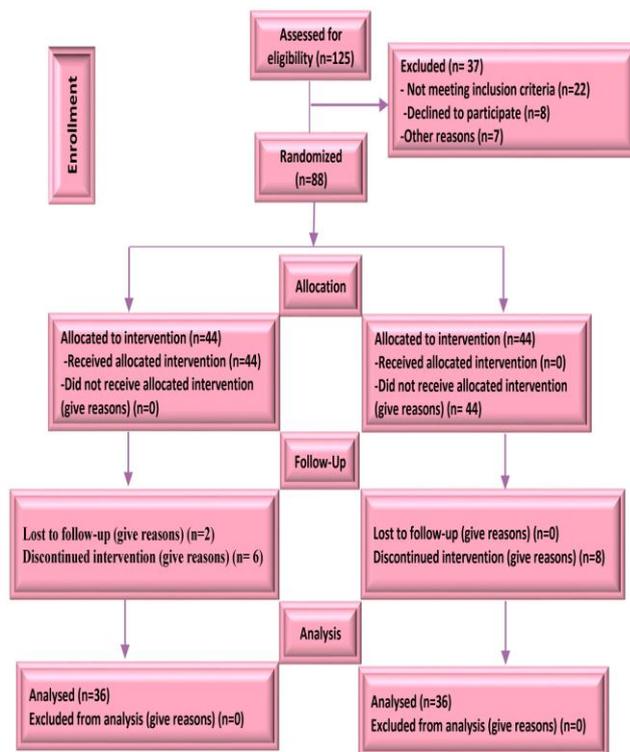
emphasized some considerations related to lifestyle, including diet, avoiding alcohol, cigarettes and caffeine, and controlling blood pressure and cholesterol in the treatment of patients with AF.<sup>13</sup> The results of a study showed that interventions led to reduction of fat intake and the increase of physical activities in patients with type 2 diabetes.<sup>14</sup> Another study evaluated the effect of education on the lifestyle of patients with ischemic heart disease and indicated that self-management education resulted in modification of these patients' lifestyle.<sup>15,16</sup>

Overall, evidence has demonstrated that proper lifestyle has a significant impact on chronic diseases control. On the other hand, a broad approach has been created in the new healthcare system to make use of self-management interventions. So, the present study aimed to evaluate the effects of self-management interventions on different aspects of lifestyle in patients with AF.

## Materials and methods

This Randomized Clinical Trial (RCT) (No. IRCT2015082023606N) study was approved by the Ethics Committee of Shiraz University of Medical Sciences (CT-9377-7347) and was conducted in Vali-e-Asr Hospital, Fasa, Iran from April to September 2015. The study population included all patients with AF who had referred to this hospital. Based on the study objectives and the previous studies conducted on this issue, considering 95% confidence interval and 85% power and by using power and sample size calculator (SCC) software, a 70-subject sample size was selected for the

study. Considering the attrition rate of 25%, the sample size for each group was increased to 44 subjects.<sup>16</sup> (Figure 1)



**Figure 1.** Consort flow diagram

The samples were selected in Fasa Vali-e-Asr hospital via convenience sampling. In doing so, the names of the patients with AF were registered by CCU and Post CCU personnel and clinic doctors during the above-mentioned period. Also the patients' names were extracted from the hospital archive unit by the researcher. Then the samples were extracted from the prepared list based on inclusion and exclusion criteria. Inclusion criteria: Patients older than 18 years with recurrent or persistent AF. Exclusion criteria: Physical problems (stroke, cancer, liver failure, and heart failure class IV (NYHA)), the presence of known mental illnesses.

First of all, the study objectives were fully explained to the selected patients who were willing to participate, and then were enrolled as the study samples. Having obtained informed written consents, we asked the participants to fill out the demographic questionnaire and Walker's Health-Promoting Lifestyle Profile II (HPLP II). The 52-item HPLP II is composed of a total scale and six subscales to measure behaviors in theorized dimensions of health-promoting lifestyle: Spiritual growth, interpersonal relations, nutrition, physical activity, health-responsibility and stress management.

The reliability and validity of the Persian version of HPLP II were confirmed by Isa Mohammadi Zeidi *et al.*, the alpha reliability coefficient was 0.82 for the total scale and ranged from 0.64 to 0.91 for the subscales. All items had acceptable item-total correlations ( $P > 0.34$ ).

Test-retest results showed stability for HPLP II, as well as for the subscales while the confirmatory factor analysis related to the six-factor model represented an acceptable fit. Examining the latent constructs of the measurement model reduced the number of items from 52 to 49.<sup>17</sup>

Then the participants were randomly allocated to intervention and control groups. By doing so, first random permutations as A and B were determined and then, even codes were allocated to AB and odd codes to BA. Using a random number table, 44 numbers were chosen according to even-odd numbers alternation; the samples were allocated to the appropriate groups. The intervention group received self-management intervention that consisted of two parts. The first part was patient education, which was performed in 6 one-hour sessions during three weeks. The subjects were divided into two groups of 22, who received educational program presented by the researcher, a clinical psychologist and a drug-warfarin adviser, in the conference hall of Vali-e-Asr hospital. The content of the training was compiled based on the review of the related texts and articles and opinions of the experts.<sup>18</sup>

The training involved nature of AF (causes, consequences, complications, and course of the disease), treatments, functional programs, signal control, and managing psychosocial challenges of living with AF.<sup>18</sup>

Also, the training manual was given to the patients and they were provided with the researcher's phone number to call him if necessary. The second part included telephone follow-ups to assess the implementation of the educated tips by the patients, answering their questions, and encouraging them to participate actively in self-management activities. The issues assessed by telephone follow-ups included adherence to medications, timely performance of coagulation tests, timely visits to the doctor, having blood pressure and heart rate checked on a daily basis, reforming habits of smoking, alcohol abuse, diet, reviewing the techniques taught to reduce stress and depression, and taking reasonable precautions to prevent trauma. In this part, the patients were followed-up on every four weeks (at the end of the fourth, eighth, and twelfth weeks of the intervention). The control group received the usual care. However, for moral considerations, the training manual was available to them at the end of the study.

The lifestyle questionnaire was completed in two stages after the educational program (at the end of the fourth and twelfth weeks of the intervention) as it had been completed before the program in order to determine the impact of self-management interventions on the patients' lifestyle. Statistical analysis was done, using the SPSS statistical software for windows (version 13, SPSS Statistics; IBM Corporation, Chicago, Illinois, USA). Descriptive tests were conducted to determine the characteristics of the samples. Frequency and percentage were used for categorical variables while mean and SD were employed for continuous ones. Non-parametric tests were also used for categorical variables. The difference in distribution of basic specifications was studied, using chi-square test, Fisher's exact test, and

independent t-test. Besides, the analysis of variance was used to assess the differences in lifestyle variables and their dimensions. Finally, Spearman's correlation test was utilized to investigate the relationships between the study variables. The significance level was set at  $P < 0.05$ .

### Results

This study was conducted on 72 patients. The demographic characteristics of the samples were shown in (Table1).

**Table 1.** Comparison of participants' distribution based on qualitative demographic variables

Group	Intervention (n=36)	Control (n=36)	Total	P
Frequency Variable	N (%)	N (%)	N (%)	
Age	57.77 (13.61)	60.58 (13.45)	59.18 (13.09)	0.13*
Gender				0.16**
Male	20 (55.6)	23 (63.89)	43 (71.67)	
Female	16 (44.4)	13 (43.33)	29 (48.33)	
Marital status				0.27**
Single	2 (5.56)	0 (0)	2 (2.78)	
Married	24 (66.67)	23 (63.88)	47 (65.28)	
Widowed	5 (13.88)	7 (19.44)	12 (16.67)	
Divorced	5 (13.88)	6 (16.66)	11 (15.27)	
Education level				0.32**
Illiterate	19 (52.77)	17 (47.22)	36 (50)	
Primary school	12 (33.33)	15 (41.66)	27 (37.5)	
High school	4 (11.11)	2 (5.56)	6 (8.33)	
Academic Degree	1 (2.77)	2 (5.56)	3 (4.17)	
Job status				0.33**
Employed	10 (27.8)	10 (27.8)	20 (27.8)	
Retired	13 (36.1)	16 (44.4)	29 (40.3)	
Unemployed	13 (36.1)	10 (27.8)	23 (31.9)	
Place of living				0.41**
Urban	22 (61.1)	20 (55.6)	42 (58.33)	
Rural	14 (38.9)	16 (44.4)	30 (41.66)	

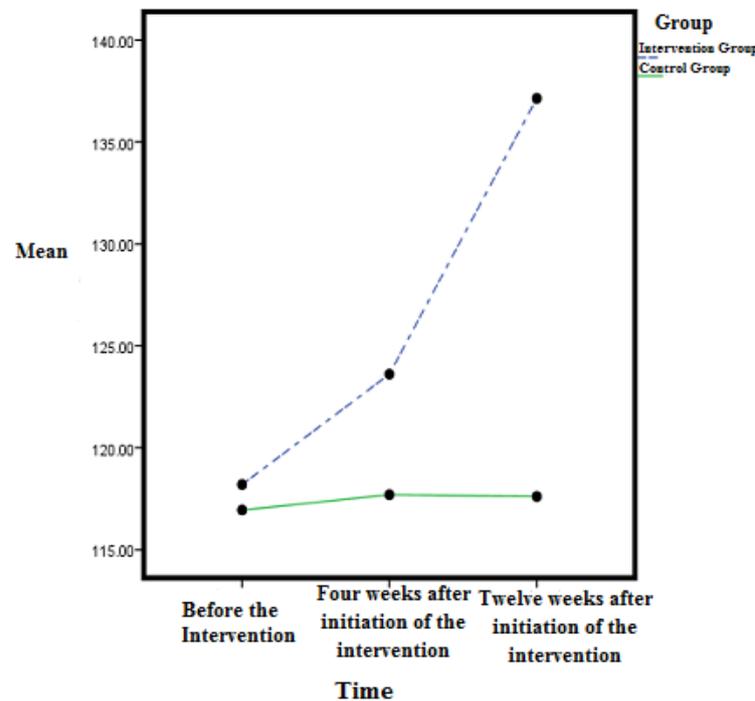
\*Independent t test, \*\* $\chi^2$

The mean age of the participants was 57.77 years in the intervention group and 60.58 years in the control group (Table1).

Comparison of the two groups using chi-square test, Fisher's exact test, and independent t-test revealed no significant difference between the two groups in terms of quantitative and qualitative characteristics of clinical and unhealthy habits (alcohol, drugs, and cigarettes) ( $P > 0.05$ ). The most common unhealthy habit was cigarette smoking in both groups (25% in the intervention group and 22.22% in the control group). The results indicated no significant difference between the two groups regarding the mean score of lifestyle pre intervention ( $P = 0.61$ ). But,

the results of repeated measures ANOVA showed a significant difference between the two groups in this matter after the intervention. As well, time was a significant factor in creating change in the total score of lifestyle ( $P < 0.05$ ).

The changes in the total mean score of lifestyle was higher in the intervention group compared to the control group. These changes ranged from 118.19 to 137.13 in the intervention group, but from 116.94 to 117.69 in the control group (Figure 2, Table 2). Then, the results related to the effect of time / group interaction demonstrated the impact of the intervention on the intervention group ( $P < 0.05$ ). Hence, the mean score of lifestyle increased by 5.42 in the intervention group, but increased by 0.75 in the control group four weeks after intervention in comparison to pre intervention. Furthermore, the mean score of lifestyle increased by 18.94 in the intervention group and by 0.67 in the control group twelve weeks after intervention, but the difference was not statistically significant ( $P > 0.05$ ) (Table 3).



**Figure 2.** The changes in the two groups' mean scores of lifestyle before, four and twelve weeks after intervention

**Table 2.** Comparison of the two groups regarding the mean score of lifestyle before, four and twelve weeks after the intervention

Time	Three months before the intervention	Total twelve weeks the intervention	P		
Variable	Mean(SD)	Mean(SD)	Time	Group	T/G
Lifestyle					
Intervention	118.19 (24.27)	123.16 (26.47)	0.05	0.05	0.05
Control	116.94 (23.32)	117.61 (22.64)			

\*\*Significant at 0.05

The results of repeated measures ANOVA showed a significant increase in the scores of different aspects of lifestyle in the intervention group ( $P < 0.001$ ). This increase was not similar in different

dimensions, such as nutrition, physical activity, stress management, and responsibility. However, no significant difference was observed in this circumstance in the control group ( $P > 0.001$ ) (Table 3).

**Table 3.** Comparison of the two groups' mean scores of lifestyle dimensions before and four and twelve weeks after initiation of the intervention

Variables	Time	Three months before the intervention Mean (SD)	Four weeks after the intervention Mean (SD)	Twelve weeks after the intervention Mean (SD)	P		
					Time	Group	T/G
<b>Nutrition</b>							
Intervention		14.36 (4.51)	19.11 (4.81)	21.33 (4.73)	0.005	0.006	0.007
Control		14.87 (4.24)	15.01 (3.63)	14.16 (3.47)			
<b>Physical activity</b>							
Intervention		13.70 (3.91)	18.93 (4.71)	20.73 (4.32)	0.006	0.005	0.006
Control		14.01 (4.11)	13.13 (3.78)	14.13 (4.37)			
<b>Responsibility</b>							
Intervention		29.77 (8.04)	33.12 (7.78)	37.33 (7.78)		0.003	
Control		28.41 (7.21)	29.69 (7.60)	29.61 (7.48)	0.005		0.004
<b>Stress management</b>							
Intervention		29.77 (8.04)	33.12 (7.87)	37.33 (8.78)	0.003	0.005	0.004
Control		28.41 (7.21)	29.69 (7.60)	29.61 (7.48)			
<b>Interpersonal relationships</b>							
Intervention		20.47 (3.61)	24.20 (3.30)	28.31 (3.83)	0.005	0.004	0.004
Control		21.12 (3.17)	22.32 (3.12)	22.15 (4.11)			
<b>Spiritual growth</b>							
Intervention		28.05 (8.92)	34.31 (8.07)	37.93 (7.83)	0.003	0.005	0.005
Control		27.27 (7.36)	28.07 (7.91)	27.59 (6.61)			

## Discussion

This study aimed at studying the effect of self-management interventions on lifestyle of the patients with AF. According to the results, most of the participants were male and over fifty years old. Furthermore, the most common unhealthy habit was smoking. Arthur *et al.*, also mentioned that increasing age, male sex, obesity, and hypertension could increase the prevalence of AF.<sup>19</sup> Similarly, Allen *et al.*, reported that AF was common in older adults and yet more common among males.<sup>20</sup> Based on the American Heart Association, nicotine in cigarettes can stimulate the heart and exacerbate AF.<sup>13</sup>

The findings of the current study indicated that the mean score of lifestyle increased in both groups, but the increase was more remarkable in the intervention group. On that account, self-management interventions had a positive impact on the patients' lifestyle. In addition, the intervention group's mean score of lifestyle was significantly higher at twelve weeks compared to four weeks after the intervention. This implies that in case of training if it is accompanied by telephone follow-ups, it can have a greater impact on lifestyle modification.

Besides, the increase in the mean scores was not similar in different dimensions. Based on the results, the increase in the mean scores was more significant in nutrition, physical activity, stress management, and responsibility in comparison to interpersonal relationships and spiritual growth. Our study findings were consistent with those obtained by Marie Clark *et al.*, in their study on the lifestyle of patients with type II diabetes. Their results showed that the designed interventions changed the patients' nutritional status and increased their physical

activity. It should be noted that only nutrition and physical activity were examined in that study, while all the aspects were considered in the present one.<sup>14</sup> The results of the research by Nasrabadi *et al.*, also showed that every all lifestyle domain of patients with ischemic heart disease can be modified by applying self-management intervention and education.<sup>15</sup> Similar results were also obtained by Jun Yan *et al.*, In consequence, the utilized intervention had a positive effect on the improvement of nutritional status and physical activity in the twelfth week, but it did not have any significant impacts on anxiety control.<sup>21</sup> Yan *et al.*, only assessed physical activity, nutrition, and stress management and the results concerning physical activity and nutrition were in agreement with those of the current study. However, the results of the two studies were different in terms of anxiety, which can be related to the type of intervention.

That study included one educational session and three telephone follow-ups, while the present one involved six training sessions and three telephone follow-ups. Additionally, methods of mental health promotion and stress reduction were taught through a workshop run by a clinical psychologist in the fifth session in the present study. Also, the results of a previous study showed that the educational intervention caused a significant difference between the intervention and control groups in terms of the total score of stress.<sup>22</sup>

Patient education is one of the most important roles of nurses and is known as an independent function in nursing care. On the other hand, training is the best strategy for improving self-management behaviors. What is more, the results of the present study demonstrated that self-management interventions involving education

and telephone follow-up could effectively improve various aspects of lifestyle in the patients with AF. The results can help the medical staff, including nurses to incorporate self-management interventions into such patients' care plan and prevent many physical, psychological, and social problems that negatively affect patients and their lifestyle.

## Conclusion

Patient education is one of the most important roles of nurses and is known as an independent function in nursing care. On the other hand, training is the best strategy for improving self-management behaviors. What is more, the results of the present study demonstrated that self-management interventions involving education and telephone follow-up could effectively improve various aspects of lifestyle in the patients with AF. The results can help the medical staff including nurses to incorporate self-management interventions into such patients' care plan and prevent many physical, psychological, and social problems that negatively affect patients and their lifestyle.

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## Ethical issues

None to be declared.

## Conflict of interest

The authors declare no conflict of interest in this study.

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