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# The Effectiveness of a Multimedia Educational Program on the Lifestyle and Perception of Patients with Atrial Fibrillation: A Study Protocol

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***ABSTRACT***

**Background**: Atrial fibrillation is a globally common cardiac dysrhythmia and preventable with education. The study protocol aimed to investigate the effectiveness of a multimedia educational program on the lifestyle and perception of patients with atrial fibrillation.

**Methods:** The present clinical trial protocol will be conducted to investigate the effect of multimedia training on the lifestyle and perception of patients with atrial fibrillation in two phases. The multimedia training (audio, video, image, and animation) was provided in the form of two 2-hour training sessions per week for patients on the coordinated date and time on a web platform. The patients also received a weekly phone call for one month through which some educational content was covered as a type of training intervention. The second phase included the administration of pre-test and post-test interventions using standard questionnaires by an intervention (who receive training) and a control (without training) group.

**Conclusion**: The present study provides a useful protocol regarding the design of a multimedia educational intervention program on promoting the lifestyle and perception of patients with atrial fibrillation. It can also reduce treatment costs. The strategies of this program can be cost-effective therefore the success of such a program can be effective in improving the health status of atrial fibrillation patients.Registration of this randomized control trial has been completed with the Iranian Registry of Clinical Trials.

**Keywords**: Education, Life Style, Illness Perception, Atrial Fibrillation

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## Background

Some cardiovascular diseases are associated with disorders such as dysrhythmias (Pasyar, Sharif, Rakhshan, hossein Nikoo, et al., 2017; Pasyar et al., 2015; Pasyar, Sharif, Rakhshan, Nikoo, et al., 2017). Atrial fibrillation is a common cardiac dysrhythmia, which is one of the important reasons for reducing the quality of life and sudden death(Michniewicz et al., 2018). Atrial fibrillation-related deaths are predicted to reach 12.1 to 15.9 million people by 2050(Rahman et al., 2014). In the case of lack of control and lifestyle enhancement, this disease can lead to severe heart palpitations, changes in blood circulation, syncope, formation of blood clots, and thromboembolic events (Farahani et al., 2017; Lip et al., 2012). Considering that about 70% of deaths caused by heart attacks can be prevented via changing lifestyles, patients should be encouraged to change and enhance risky dimensions of their health behaviors. In fact, the development of such preventive strategies at the national, organizational, and local levels is a significant measure that should be taken by medical and nursing staff(Pasyar et al., 2015). Considering many evidence that show the existence of a relationship between people's lifestyle and cardiovascular diseases, the need to emphasize lifestyle modification as an important factor in determining the prognosis and complications of this disease is very prominent and justifiable (Mesbahi et al., 2020). When people deal with any stressful factor, they create a general idea of that problem in their mind, which is called disease perception, and it is generally effective in the outcome of the disease. Misunderstanding of the stressor leads to non-compliance with the treatment process(Man et al., 2020). Loenthal's self-regulation model is effective in understanding and recognizing the patient and leads to the creation of adaptive behaviors to deal with the disease(Rajabloo et al., 2021). According to the Leventhal model, understanding of the disease includes five main areas, including the nature of the disease, the cause of the disease, the consequences of the disease, the course of the disease, and control and treatment (Leventhal et al., 2012). Since a major part of the disease management burden is on the patients (Gross et al., 1983), Leventhal believes that patients show their disease perception by following the provided health advice and training to manage their disease. A correct perception of health status can reduce the disease mortality rate, complications, and consequences while improving the patients' quality of life(McAndrew et al., 2010). Although this perception affects their health behavior, adaptation to the disease, control of the disease, and overall outcome of the disease,and developing a wrong perception of the disease play an important role in decreasing therapeutic compliance in patients (Karamanidou et al., 2008).

One of the basic tools in changing the patients' lifestyle and disease perception is the existence of a patient education program as a stage of caring process. Although several methods exist for patient education, traditional strategies cannot fully respond to the changes, the rapid growth of information, and the educational needs of patients with chronic diseases(Mohammad et al., 2014). Education through multimedia software is a new method of education that affects all dimensions of human life with the advent of computers and the ever-increasing expansion of information and communication (Beranova & Sykes, 2007). Education and support are two effective factors in rehabilitating patients. Regular telenursing follow-up, as an essential component of health care services, provides patients with the opportunity to actively participate in the treatment process to succeed in controlling chronic diseases(Ataee et al., 2013).

Maddkar Dehkordi et al. (2021) designed a multimedia educational intervention program using a family-oriented approach based on telephone call follow-up (telenursing) to improve the quality of life and self-efficacy in patients with myocardial infarction. They found that the multi-media intervention program is significantly effective in cardiac patients. By using telephone follow-up, it is possible to establish better communication with

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patients and prevent patients from returning to the hospital.

Unfortunately, patient education has received less importance compared to other clinical practices and educational interventions for patients have been usually conducted unplanned and random in most cases (Aghakhani et al., 2018). In other words, designing an educational program according to the patient needs, experiences, and interests is still considered a big challenge for healthcare workers (Van Hecke et al., 2011). In this regard, health service providers, including nurses, can help patients with atrial fibrillation by conducting well-organized educational programs to successfully solve their problems and guiding them toward the highest possible level of health, nurses are one of the largest professional group in the health system, who can lead to follow-up treatment, reduce the frequency and duration of hospitalization, and reduce treatment and hospital costs by providing services(Rostami et al., 2011; Salavati et al., 2017). So, nursing care can be designed more carefully, efficiently, and effectively based on the individual needs of patients by having awareness of their perception and knowing about the effect of educational interventions based on the Loenthal model. In Iran, no research has been done in patients with atrial fibrillation in the field of multimedia training using the Levant model. Based on this, the aim of this study is to determine the effectiveness of a multimedia educational program on the lifestyle and perception of patients with atrial fibrillation.

## Methods

Study design

The present clinical trial protocol aimed to investigate the effectiveness of a multimedia educational program on the lifestyle and perception of patients with atrial fibrillation in two phases. Followed by reviewing the related literature and collecting the opinions of a panel of experts, an online educational program was designed. The educational course was presented through online multimedia training and telephone calls. The multimedia training (audio, video, image, and animation) was provided in the form of two 2-hour training sessions per week for patients on the coordinated date and time on a web platform. The patients also received a weekly phone call for one month through which some educational content was covered as a type of training intervention. The researcher's contact time was determined and fixed by the patient or their companion. The content of phone call conversations was verbal encouragement and persuasion to perform health behaviors according to the educational materials and information presented in workshops. The second phase included the administration of pre-test and post-test interventions using standard questionnaires among an intervention (who receive training) and a control (without training) group.

Study setting and participants

Participants included all patients admitted to the CCU of hospitals affiliated to Shahrekord University of Medical Sciences in Iran. The sample size was calculated based on previous studies and according to the first type error of 0.05 and the test power of 0.80 (30 participants in each group).

Random sampling method was used to divide people into intervention and control groups. Using a table of random numbers, participants were selected to enter the study, and to randomize the number of people in the control and intervention groups, cards were prepared and placed in envelopes, and then the participant was asked to choose. By choosing a card and based on a lottery, it was placed in the control or intervention group.

Inclusion criteria

- Definitive diagnosis of the atrial fibrillation by a cardiovascular specialist for the first time
- Admission to the CCU in hospitals affiliated to Shahrekord University of Medical Sciences in Iran
- Age range over 20 years
- Having no problem in speaking, hearing, and seeing;
- Access and ability to use the computer and mobile

Exclusion criteria

- Refusal to continue participating in the study;

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- Patient's death during the research;
- Prolonged hospital stay due to the disease complications;

**Interventions**

Phase I: Designing the multimedia and tele-nursing curriculum

At this stage, the research design and participant selection was performed according to the information gathered from the literature review, similar studies, Leventhal's model and previously administered questionnaires. The educational content prepared by the researcher was organized and presented to the participants after obtaining approval from a panel of experts. With regard to the training program, the first part entailed two training sessions carried out through multimedia software (sound, video, image and animation, inclusive activity, repeatability and feedback) held under the title of ‘a 4-hour training workshop for patients’ on a coordinated date and time in one of the platforms available on the web.

In Leventhal's model, five main areas in the disease are proposed and discussed. It contained:

the cause of the disease (reasons that the person considers to be the cause of the disease), the nature of the disease (the label that a person puts on himself when he is sick), duration of the illness (one's beliefs about the duration of the illness), consequences of the disease (a person's perception of the possible effects of the disease on the quality of life), and control and treatment (the individual's beliefs about the controllability and cure of the disease by themselves and medical authorities)In order to teach topics related to the nature, symptoms and cause of the disease, sound, image, inclusive activity and reproducibility were used.

In addition to images, films and animations were also used to teach topics related to the consequences of the disease, the course of the disease, how to control and treat it, side effects and medications. In the second part, which is questions and answers to patients' questions, being active and providing feedback was used.

The educational program was evaluated with the opinions of relevant experts. The members of the panel of experts consisted of one expert from health education, three experts from cardiovascular diseases and two experts from nursing field.

Phase II: Implementation of educational intervention

The training sessions were presented according to the disease dimensions (nature, cause, time course, consequences, control, and intervention) discussed in Leventhal's self-regulation model. The training workshops aimed to improve the patients’ comprehension of the disease process and collect information about the patients' beliefs and perceptions of the atrial fibrillation disease. To this end, the disease nature and symptoms are explained, the effective factors for exacerbation of the symptoms were clarified from the patients' viewpoints, and the areas where patients show a wrong perception were revised. In the second training session, after the discussion, the patients' beliefs about the consequences of the disease, duration, control and treatment processes, side effects and drugs were presented.

The second part dealt with the patients’ questions and answers at the end of each session through which they can find answers to their questions and problems related to the educational content.

In the third part, the researcher made a telephone call to each patient at an agreed-upon time once a week for a one-month period. In these conversations, the patient was provided with verbal encouragement and persuasion about health behaviors introduced in the educational workshops. Furthermore, the researcher answered the patients’ questions, tried to solve their possible problems regarding the educational contents, and evaluated the patients’ behavioral change process. The details of the educational intervention program are presented in (Table 1).

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**Table 1.** The multimedia and tele-nursing software curriculum

| Program | The educational contents | The manner and place of presentation | Audience |
|---|---|---|---|
| Multimedia educational program | • Improving the patients' comprehension of the disease process<br>• Searching for patients' beliefs about the disease and their perceptions of atrial fibrillation<br>• Explaining the nature and symptoms of the disease<br>• Discussing the effective factors for exacerbation of the symptoms from the patient's viewpoints and revising the patient's misunderstandings<br>• Expressing correct beliefs about the disease consequences, duration, control and treatment, side effects, and medications | In the form of a two-hour training session using sound, video, image, and animation on the web platform | Patient |
| Questions and answer | Questions and answers about the content of the meeting | In the form of questions/answers and discussions at the end of the training session | Patient |
| Telephone call follow-up | Verbal encouragement and persuasion of healthy behaviors related to educational contents | 1 month (once a week)<br>The time of the telephone call was determined and agreed upon by patients or their companions | Patient |

The effectiveness of the protocol was evaluated at this stage using a randomized controlled clinical trial. The participants were randomly divided into two intervention and control groups. The control group was without intervention and the designed protocol was implemented in the experimental group.

The pre-test questionnaires were completed after completing the written informed consent forms, and the intervention group received the educational package made by the researcher. During this time, the control group received only the usual nursing care. One month after the intervention, in the post-test phase, the questionnaires were completed and the collected data was analyzed.

**Outcome measures**

1.Walker HPLP II Health-Promoting Lifestyle Profile questionnaire

In order to measure the patients' lifestyle, Walker's 54-item health-promoting lifestyle questionnaire was administered based on a 4-point Likert scale using options of never (1 score), sometimes (2 scores), often (3 scores), and usually (4 scores). The questionnaire measured health-promoting behaviors in six dimensions of nutrition (eating patterns and food choices (6 questions), exercise, responsibility for health, stress management, interpersonal support, and self-actualization. The attainable scores ranged from 52 to 208 and a separate score was calculated for each behavioral dimension. The respondents' lifestyle would be considered poor, moderate, or good levels if their total scores were ≤102, 103-156, and 157-208, respectively. The validity and reliability of the Persian version of the questionnaire was confirmed by Mohammadi Zaid et al. (Cronbach's alpha = 80%)(Mohammadi Zeidi et al., 2012).

2. IPQ-R Illness Perception Questionnaire

This questionnaire was originally designed by Weinman et al. (1996) based on the Leventhal model that has been widely used to evaluate different diseases. The minimum and maximum attainable scores were 8 and 80, respectively. This questionnaire consisted of nine parts: 1) the

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disease's nature, 2) time course (acute or chronic disease), 3) consequences, 4) controllability, 5) treatability, 6) continuity (the patient's general perception of the disease and their ability to attribute various symptoms of the disease to atrial fibrillation), 7) periodicity, 8) the patient's emotional representation (the amount of negative emotional reactions, such as fear caused in the person suffering from the disease), and 9) the disease causes (psychological, internal, and environmental). The respondents were supposed to answer these questions on a 5-point Likert scale ranging from 'completely agree' to 'completely disagree'(Weinman et al., 1996). The Cronbach's alpha values calculated for different components of this questionnaire ranged from 79% to 89% and the test-retest reliability scores after six weeks ranged from 46% to 88% for different subscales of the questionnaire. The correlation coefficient between different parts of the questionnaire was also noted as 46% to 88%. The discriminant validity of the questionnaire was calculated and corroborated followed by examining nine chronic diseases (Valipoor & Rezaei, 2013).

**Data analysis**

The data were evaluated using SPSS version 22 software and the mean score of the main research variables. The mean and standard deviation of the main research variables (lifestyle and disease perception) were reported to describe the statistical situation. Comparison of data (if the data is normal) was done with the paired t test and (if the data is not normal) with the non-parametric Wilcoxon test. P-value<0.05 significant.

## Discussion

The present study provided a useful protocol regarding the effectiveness of a multimedia educational program patients with atrial fibrillation.

Maddkar Dehkordi et al. (2021) designed a multimedia educational intervention program using a family-oriented approach based on telephone call follow-up improving quality of life and self-efficacy in patients with heart disease. They found that the multi-media intervention program was significantly effective in cardiac patients (MadadkarDehkordi et al., 2021). By using telephone follow-up, it was possible to establish better communication with patients and prevent patients from returning to the hospital (Ghiyasvandian, 2019). Telephone follow-up, regardless of time and place, can lead to improvement of lifestyle and understanding of cardiovascular disease(Faraji et al., 2015). Multimedia training and telephone follow-up were positive points of this study. In this method, remote follow-up and cooperation with health care providers and nurses helped to promote the growth, knowledge and experimental skills of patients. One of the strengths of this study was to help improve the lifestyle and perception of the disease in heart patients. The perception of the disease was a changeable and potential factor that will play an effective role in better adherence to treatment and reducing the complications of the disease. Also, improving the lifestyle of patients in a theoretical framework suitable for guiding will be effective interventions in improving the health of heart patients . According to the literature, patients' perceptions of breast cancer(Fernandes, 2020), diabetes(Ghiyasvandian, 2019), and pregnancy diabetes(Khodaparast et al., 2019) improved followed by attending the interventions designed based on Leventhal's self-regulation model. In the same vein, Faraji et al. (2015) indicated that patients' pre-discharge training and telephone call follow-ups had a significant impact on the disease perception of patients with cardiovascular diseases and myocardial infarction(Faraji et al., 2015). In addition, telenursing has been introduced as a communication method in providing education to patients, especially patients with heart failure(Piscesiana & Afriyani, 2020). Educational interventions can be effective in supporting patients with cardiovascular diseases and reducing costs. In addition, the programs used in this protocol can be used to provide care and implement remote nursing in other chronic diseases..

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## Conclusion

The present study provides a useful protocol regarding the effectiveness of a multimedia educational program on the lifestyle and perception of patients with atrial fibrillation. It can also be effective in reducing their medical and treatment costs. The strategies of this program can be used in the design of interventions to improve the health status of atrial fibrillation patients.

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## Conflicts of interest

There was no conflict of interest

## Funding

Islamic Azad University, Shahrekord Branch, Shahrekord, Iran.

## Ethical considerations

Ethical approval for this study has been obtained by the ethics committee affiliated with Islamic Azad University, Shahrekord Branch, Shahrekord, Iran .Registration of this randomized control trial has been completed with the Iranian Registry of Clinical Trials, IRCT20181122041720N3. registered 5/8/2022, https://www.irct.ir/search/result? query=IRCT20181122041720N3

## Code of ethics

IR.IAU.SHK.REC.1401.010

## Authors' Contributions

All authors have read and approved the final version of the manuscript.

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