

The Effect of Educational Intervention on Anxiety and Quality of Life Among Individuals Referring to Healthcare Centers in the Face of COVID-19

Fariba Zahedifar¹, Zahra Nejatifar², Sima Rafiei³, Fariba Hashemi⁴

¹ School of Public Health, Qazvin University of Medical Sciences, Qazvin, Iran

² Student Research Center, School of Public Health, Qazvin University of Medical Sciences, Qazvin, Iran

³ Social Determinants of Health Research Center, Qazvin University of Medical Sciences, Qazvin, Iran

⁴ School of Para-Medicine, Qazvin University of Medical Sciences, Qazvin, Iran

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Abstract- Educational interventions are helpful strategies to empower communities encountering the threat of pandemics like Covid-19. This study was carried out to examine the effect of educational intervention on anxiety control and improvement in public quality of life. A quasi-experimental study. The study was conducted among individuals referred to healthcare centers of Qazvin province, Iran, in 2020. Given that Qazvin consists of nine urban healthcare centers, two centers were selected by a simple random selection method. After considering inclusion and exclusion mentioned criteria, 240 individuals were selected to participate in the research and were randomly assigned into two groups of experimental and control. Following the educational intervention, all study variables, including knowledge score, anxiety level, and quality of life, improved significantly in the experimental group compared to the pre-intervention phase ($P < 0.05$). The most significant change was in knowledge score with a nearly large effect size (0.63), presenting an increase of 40.09% from 11.1 to 18.8 exactly after intervention and 12.2 after passing one month from the date of educational intervention; while the quality of life presented a 3.2% increase with a small effect size (0.28). Our findings have implications for the development and implementation of psychological interventions, particularly educational programs. During the outbreak, such strategies can empower the public and diminish the negative emotional effects of the pandemic, helping people to cope with the current situation, and decrease the risk of suffering future psychological disorders.

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Introduction

Following the spread of the Coronavirus worldwide, including in Iran, sharp increases in fear and concern relating to the disease were reported among the population. According to many psychologists, such concerns result in considerable anxiety, stress, and discomfort (1,2). Fear and anxiety both represent emotional responses to actual or potential hazards. As anxiety increases, the patient's perception of what is happening around him is potentially biased so that the individual's threat detection system becomes

hypersensitive and perceives most of the circumstances to be threatening whether or not they actually are. As a result, the continuation of fear and the creation of anxiety along with hopelessness and lack of coping skills can impair every area of life and reduce the quality of life (3). Researchers also argued that such mental disorders mainly stem from inadequate knowledge of individuals about the disease, its main features, etiology, epidemiology, transmission modes, and preventive measures. This uncertainty is often associated with negative emotional impacts, which make it difficult for people to prepare properly for future events (4,5).

Corresponding Author: S. Rafiei

Social Determinants of Health Research Center, Qazvin University of Medical Sciences, Qazvin, Iran
Tel: +98 9123886817, Fax: +98 283336001, E-mail address: sima.rafie@gmail.com

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In fact, the Covid-19 pandemic affects not only physical well-being but also the mental health of the population who are suffering from the psychosocial consequences of the pandemic. As emotions are closely associated with organic life, anxiety and mood disorders resulting from the Covid-19 pandemic will cause significant impairments in both the physical and social life of people (6). A review of existing literature on Covid-19 and mental health revealed increasing symptoms of depression, stress, anxiety, and fear, particularly among older adults and those having pre-existing physical and psychological disorders (7). To address the increasing mental health crisis, findings emphasized the necessity for psychosocial support and increased awareness about Covid-19 across the offline and online platforms. Furthermore, to effectively live with Covid-19 as a novel disease, sufficient scientific understanding about the nature of the virus, safeguarding guidelines, and precautions to prevent community spread are essentially required (8). In this case, China's central health authority provides daily information on the number of infected people, fatality rate, and scientific knowledge of preventing Covid-19 for the population. Similarly, a number of initiatives have been set up by the Government of India to increase public awareness about Covid-19. Mental health education also has a key role in increasing public knowledge of mental health issues associated with the pandemic (7,9).

Researchers believe that it is important to get a real perspective of the disease using a science communication approach and problem-based learning sessions to strengthen public health awareness based on accurate and reliable information. Furthermore, an increasing turn to social media (e.g., Facebook, LinkedIn, WhatsApp, etc.) and Internet contacts have got particular importance in society's engagement strategies, especially for the purpose of educational intervention and provision of training. In addition, the public's knowledge has a significant impact on adherence to preventive measures; and can ultimately enhance community resilience and constructive engagement in crisis preparedness (10). A similar study conducted by Kail *et al.*, (2020) revealed that providing information to the public concerning the Covid-19 pandemic resulted in a significant overall increase in knowledge and resilience of the population, focusing those educational interventions are helpful strategies to empower communities encountering the threat of future outbreaks (11). Despite the increasing number of studies on the topic, none have been conducted to examine the effect

of educational intervention on anxiety and quality of life among the public. Therefore, this study was carried out to fill the research gap and examine the effect of educational intervention on anxiety control and improvement in public quality of life.

Materials and Methods

Study design and setting

This is a quasi-experimental study conducted among individuals referred to healthcare centers of Qazvin province, Iran, in 2020. Given that Qazvin consists of nine urban healthcare centers, two centers were selected by a simple random selection method. To do so, the city was divided into two areas according to the geographical map (the north and the south part) and based on the list of health centers in that area. A health center was randomly selected from each region. One of the centers in each region was randomly assigned to the experimental group and the other to the control group.

Participants

The centers covered nearly 250 individuals who were consulted on a monthly basis. Inclusion criteria were having access to the Internet and social networking, being in 30-59 years age band, living in Qazvin city, and consent to participate in the study. Those suffering from psychiatric disorders or major physical disabilities were excluded from the study. After considering all the mentioned criteria, 240 individuals were selected to participate in the research and were randomly assigned into two groups of experimental and control. In the first step, the pre-test was administered to both groups based on the study questionnaires. The first group was influenced by a planned educational program, and the control group was influenced by the routine education of the health centers. Then the participants were followed up for a month. After that period of time, individuals were asked to answer the questionnaires for the second time.

Data sources

Data were collected using the following instruments:

- 1) Demographic questionnaire: including individual's age, gender, education, marital status, and employment.
- 2) Questionnaire for knowledge assessment: To assess the knowledge of individuals on the infection source, disease epidemiology, incubation period, transmission modes, symptoms, preventive measures,

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treatment, and fatality rate, 25 multiple choice knowledge questions were asked from the study participants. The responses were classified as “correct,” “incorrect,” and “I don’t know.” A correct answer was given 1 point, while the other two answers were given 0 points. Finally, the total score was categorized as follows: 0-5 poor knowledge, 6-10 fair knowledge, 11-15 moderate knowledge, 16-20 good knowledge, and 21-26 excellent knowledge. The questionnaire was validated in a study conducted by Nooh *et al.*, (12).

3) Spielberger State-Trait Anxiety Inventory: This questionnaire is comprised of two self-rating questionnaires, each containing 20 statements that are rated on a four-point Likert scale. The first one evaluates the current state of an individual’s feelings, while the second questionnaire examines the general level of anxiety in study participants. Higher scores on both scales signify more anxiety symptoms (13).

4) WHO-QOL-BREF: To collect data regarding quality of life, a WHO QOL-BREF questionnaire containing 26 questions in four domains (physical health, psychological health, social relationships, and environment) was used. Responses were given on a five point-Likert scale so that a higher score represented a better quality of life (14).

Ethical approval was obtained from the Ethics Committee of Qazvin University of Medical Sciences for this research project, and written informed consent was obtained from each individual. Moreover, after the study, the training materials such as the training pamphlets and prepared booklets were given to the control group.

Educational intervention

An online Google form was used to create the research questionnaire. The provided link was shared among study participants in a Whats App group created for the study purpose. All the responses were gathered in an online spreadsheet to evaluate the impact of educational intervention programs regarding COVID -19 on knowledge, anxiety, and quality of life among participants. The online questionnaire was applied three times. First, it was used to assess the status of three main variables as a pre-educational intervention application. Then, it was used as an online assessment tool immediately after educational intervention and finally to evaluate the effect of the teaching program after one-month follow-up.

The content of educational intervention included comprehensible information to affect the individuals’ knowledge about the Covid-19 pandemic and improve their capabilities in effectively managing this troublesome crisis. Teaching materials included videos, audio files, booklet, and web-based brochures about Covid-19 and its preventive measures, which were prepared by educational interventionists, infectious disease specialists, and psychologists. The contents mainly focused on giving necessary information to the public concerning the etiology of Covid-19, its symptoms, transmission routes, and preventive guidelines. After the training sessions, people in the virtual group discussed their experiences and asked questions from experts to correct the wrong beliefs and strengthen their right ones. Objectives of each training session are depicted in Table 1.

Table 1. The contents of training sessions

Trainer	Training material	Educational method	Session duration	Behavioral Objectives	General-purpose
Educational interventionist in health promotion	Video and web-based booklet	Lecture	120 min	<ul style="list-style-type: none"> • Give necessary information about Covid-19 main features, epidemiology, and etiology • Give necessary information about the effects of the Covid-19 pandemic in daily life 	<ul style="list-style-type: none"> • Introduction of Covid-19 disease regarding its main features and characteristics • Introduction of Covid-19 impacts on the quality of daily life
Infectious specialist	Web-based brochures and pamphlets	Group discussion in virtual teams	120 min	Explain the most important health precautions and preventive measures against the Covid-19 disease	Introduction of health promotion guidelines and preventive measures against the Covid-19 disease
psychologist	Training video	Lecture	120 min	Give necessary information about stress reduction principles and coping strategies during Covid-19	Introduction of mental health promotion strategies and coping principles during stressful conditions brought about by Covid-19 disease
psychologist	Training video	Group discussion in virtual teams	120 min	Give necessary information about how to improve quality of life during the Covid-19 crisis	Introduction of mental health promotion strategies and ways to improve quality of life during the Covid-19 crisis
Psychologist and health promotion interventionist	PowerPoint slides and audio files	Lecture	120 min	Give necessary information about how to effectively manage stress and improve resilience and quality of life during the Covid-19 crisis	Introduction of new solutions on simultaneously reducing stress and enhancing the quality of life during the Covid-19 crisis

Statistical analysis

Data were analyzed using SPSS software version 20, and the level of significance was set at 5% for statistical tests. Descriptive statistics (mean, standard deviation, and 95% confidence intervals) were calculated, and to compare the scores within the groups, Paired t-test and repeated measures analysis of variance (ANOVA) were used.

The study evaluated 240 participants in two categories of people, including an experimental and a control group. Characteristics of study participants are shown in Table 2. Among individuals, 65.8% were female, with a mean age of 43 years old (10.2 SD). Regarding the educational status, 66.3% of participants had an academic education, 61.7% were married, and 49.2% were employed.

Results

Table 2. Comparison of study participants' characteristics between experimental and control groups

Characteristics		Experimental group	Control group	P
Age	30-40	178(74.16)	166(69.1)	0.2
	40-50	34(14.16)	62(25.8)	
	≥50	28(11.68)	12(5.1)	
Gender	Male	82(34.2)	92(38.3)	0.5
	Female	158(65.8)	148(61.7)	
Education	Illiterate	6(2.5)	5(2.08)	0.05
	Secondary education	14(5.8)	10(4.16)	
	Diploma	61(25.4)	77(32.08)	
	Academic education	159(66.3)	148(61.68)	
Marital status	Single	74(30.8)	56(23.3)	0.1
	Married	148(61.7)	178(74.1)	
	Divorced	18(7.5)	6(2.6)	
Employment	Unemployed	77(33.1)	82(34.1)	0.7
	Student	31(12.9)	22(9.16)	
	Employed	118(49.2)	128(53.3)	
	Retired	14(5.8)	8(3.44)	

Data are presented as frequency (% frequency). P is based on the Chi-square test.

Table 3 depicts that before the educational intervention, there was no statistically significant difference between experimental and control groups in terms of study variables ($P>0.05$); while one month after

intervention, a significant difference was observed between these groups in terms of knowledge score and anxiety ($P<0.05$).

Table 3. Comparison of study variables pre-post intervention in experimental and control groups

Variables	Before intervention		P	After intervention		P
	Experimental	Control		Experimental	Control	
Knowledge score	11.1±5.08	12.34±4.7	0.24	18.8±4.2	12.11±4.9	0.002
Anxiety	92±11.3	90.1±12.8	0.21	86.4±9.7	88.2±10.4	0.01
Quality of life	78.5±12.2	72.4±9.2	0.27	80.82±7.7	69.8±7.12	0.04

As presented in Table 4, following the educational intervention, all study variables, including knowledge score, anxiety level, and quality of life, improved significantly in the experimental group compared to the pre-intervention phase ($P<0.05$). As data depicts, the most significant change was in knowledge score with a nearly large effect size (0.63), presenting an increase of 40.09% from 11.1 to 18.8 exactly after intervention and

12.2 after passing one month from the date of educational intervention; while the quality of life presented a 3.2% increase with a small effect size (0.28).

The correlations between study variables are depicted in Table 5. As data shows, there was a statistically significant correlation between knowledge and anxiety before and after the intervention ($r=0.263$ $P<0.05$; $r=0.482$, $P<0.05$ respectively), while no

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correlation was found between the knowledge score and quality of life before and after the intervention ($P>0.05$).

Table 4. Differences of study variables in the experimental group before and after educational intervention

Variable	Pre-intervention	Post-intervention	% Change	Effect size	P
Knowledge score	11.1±5.7	18.8±4.2	40.09	0.63	0.001
Anxiety	92±11.3	86.4±9.7	6.2	0.42	0.04
Quality of life	78.5±12.2	80.82±7.7	3.2	0.28	0.00

Data are presented as mean (standard deviation). *P* is based on paired sample t-test. Effect size: 0.2 representing a small; 0.5 a medium and 0.8 a large effect size

Table 5. Pearson correlations between knowledge, anxiety, and quality of life in experimental group pre-post intervention

Variable	Anxiety	Knowledge score	Quality of life
Pre-intervention			
Knowledge score	r=-0.263 <i>P</i> <0.05		r=0.053 <i>P</i> >0.05
Anxiety		r=-0.263 <i>P</i> <0.05	r=-0.053 <i>P</i> <0.05
Quality of life	r=-0.053 <i>P</i> <0.05	r=0.053 <i>P</i> >0.05	
Post-intervention			
Knowledge score	r=-0.482 <i>P</i> <0.05		r=0.072 <i>P</i> >0.05
Anxiety		r=-0.482 <i>P</i> <0.05	r=-0.276 <i>P</i> <0.05
Quality of life	r=-0.276 <i>P</i> <0.05	r=0.072 <i>P</i> >0.05	

Discussion

Despite the considerable emphasis that most studies have put on the necessity for mental health supports for healthcare professionals, the general public has received little or no attention regarding the necessity of being trained about COVID-19 issues as a source of maintaining mental health during the pandemic (15). The critical situation with COVID-19 has significantly changed the lives of people living in different countries so that they have been experiencing a rapidly evolving condition which forced them to stay at home, restrict their social life, and reduce leisure activities (16). The work situation has also altered. Many people lost their jobs and were faced with increased levels of stress and anxiety. These situations seem to be linked with considerable concern about the pandemic and its consequences among the public. Furthermore, the uncertainty of the current crisis and lack of information about the context have made the condition more stressful (17). Despite the importance of the issue, there is a lack of information regarding the psychological impact of the COVID-19 pandemic on the general Iranian population. Thus, the present study was conducted to fill the gap and provide evidence-based

information on the effectiveness of the educational intervention as a mental health promotion strategy among study participants.

In line with Al Najjar *et al.*'s (2016), our findings revealed that the majority of study participants had moderate to severe psychological disorders during the crisis and were mainly suffered from moderate levels of anxiety and stress (18). Several studies affirmed that giving necessary information to people about COVID-19 increases their awareness and knowledge about the disease, which ultimately enhances their sense of control, leading to decreased anxiety and increased emotional well-being (19,20). In fact, a lack of knowledge about infectious diseases, their transmission routes, and the risk of exposure creates a sense of uncertainty, vulnerability, and a general state of fear. Literature also showed a significant mental disorder among the population during the COVID-19 outbreak, which caused a persistent feeling of sadness and increased level of anxiety among them (21,22).

A range of mental health services is required to meet the unique needs of people exposed to COVID-19. Educational intervention as a key strategy to enhance the awareness and knowledge of the general public about COVID-19 issues, including the nature of the disease, its

transmission modes, infection prevention, and control strategies, is widely recommended in several studies. The findings of this study demonstrated a significant overall increase in all three examined variables following the educational intervention. Previously educational interventions have similarly been mentioned as effective strategies for improving knowledge and awareness of study participants (23). The results of the present study expanded the benefits of an educational intervention to contain improved state of individuals' anxiety, fear, and quality of life. A study conducted by Kaim *et al.*, (2020) also introduced educational intervention as a cost-effective approach that gives required information to the public during pandemics and crises (24). Correspondingly, Elgzar *et al.*, (2020) showed that the implementation of the training program significantly improved the participants' awareness regarding COVID-19 (25). A study conducted by Zhou *et al.*, (2020) assessed the impact of consultation intervention on suspected COVID-19 individuals. Findings revealed that after receiving daily consultations from a knowledgeable nurse, a considerable improvement was observed in the anxiety and depression subscales of study participants (26). Another study examining the impact of psychosocial support programs on Liberian children during the Ebola pandemic revealed significant decreases in individuals' stress (27). Furthermore, a similar study containing a four-session educational intervention was conducted to improve public resilience toward the COVID-19 pandemic through improving their adjustment skills, sense of responsibility, and spirituality. Findings showed greater improvement in depression, anxiety, and stress scales of participants (28). In another trial containing an Internet-based self-care intervention, people also showed reduced anxiety after a two-week intervention (29). Carico *et al.*, (2020) added that educational programs could effectively lead to behavioral modification among the population toward adherence to COVID-19 guidelines (30).

Study Limitations

Our data correspond to the Iranian population of Qazvin province, so the results only provide information about the population's mental health in the mentioned area, which may limit the generalizability of the study. This study recommends that future research should investigate the longitudinal impacts of educational interventions on changing behavioral trends among participants.

Our findings have implications for the development

and implementation of psychological interventions, particularly educational programs. During the outbreak, such strategies can empower the public and diminish the negative emotional effects of the pandemic, helping people to cope with the current situation, and decrease the risk of suffering future psychological disorders. Furthermore, educational intervention can overcome existing barriers to practice preventive actions while dealing with COVID19.

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