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Original Article

The Effect of peer education on health-promoting behaviors in patients with COVID-19 referred to Urmia educational and therapeutic centers, Iran

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Abstract

***Background & Aims*:** The COVID-19 pandemic has brought more attention to health promotion. The present study aimed to evaluate the effect of peer education on health-promoting behaviors in patients with COVID-19.

***Materials & Methods*:** In 2021, 80 COVID-19 patients were enrolled in a randomized clinical trial, including 40 patients each in the intervention and control groups. Demographic and Health Promoting Lifestyle Profile-II (HPLP-II) questionnaires were used to collect the data. The sessions were conducted in groups of 10 people, face-to-face, and by phone over 5 days. After one month of implementation, the HPLP-II was completed by both groups again. The data were analyzed using SPSS software version 16, with a significance level of less than 0.05 taken into account.

***Results*:** Most of the patients were in the 46-65 age group. Based on the results of the paired t-test, there was no statistically significant difference in health promotion behaviors before and after the intervention in the control group ($p > 0.05$). The paired t-test revealed a significant increase in the mean of health-promoting behaviors before and after the peer education intervention in the experimental group ($p < 0.05$). Health promotion behaviors based on the independent t-test after the intervention revealed a significant difference between the two groups across all domains ($p < 0.05$).

***Conclusion*:** Peer instruction can lead to an expanded level of well-being- advancing behaviors in patients with COVID-19. It is proposed that future studies center on the impact of peer instruction on health-promoting behaviors in people with other illnesses.

***Keywords*:** COVID-19, Health Promotion, Peer Education

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Introduction

The COVID-19 pandemic has caused widespread concern due to its highly infectious nature and severe impact on global health (1).The World Health Organization (WHO) has officially confirmed the virus, with over 200,000 confirmed cases and more

than 8,000 fatalities in 160 countries. The virus first emerged in Wuhan. As of March 18, 2020, the number of positive cases had surged past 4,600, resulting in 2,500 deaths (2).The virus has rapidly spread to 199 countries, with Iran ranked fourth in the number of cases and sixth in terms of fatalities (3). COVID-19 has a direct impact on human health (4).

Health promotion and improvement are crucial issues that the international community has undertaken significant efforts to achieve. Promoting health, science, and art can be seen as a means of assisting individuals in transitioning to a state of optimal health through lifestyle changes. Nurses have directed their attention toward this issue as well. Various nursing theorists have proposed different models and frameworks in response. One of these models, presented by Pender in 1982, is the health promotion model, which emphasizes promoting health and empowering individuals to achieve optimal well-being (5,6). One crucial aspect of nursing care and the key role that nurses play in delivering healthcare services is patient education during hospitalization (7). Patient education is commonly referred to as a deliberate combination of educational activities aimed at assisting individuals who are dealing with a disease. The goal is to facilitate behavior change in such a way that it promotes and maintains their overall health (8).

Today, patient education is a fundamental requirement of hospitals and one of the most critical rights of patients (9). Peer education is a highly impactful form of education that not only facilitates and enhances health but also fosters a conducive learning environment (10). Peers play a crucial role in promoting self-confidence and influencing health-related behaviors among participants (11).

Given the shortage of nurses and the primary responsibility of nurses, which is patient education, peer education emerges as a cost-effective educational approach for patients. It has been shown to reduce hospital stays, increase patient satisfaction, and reduce both the utilization of hospital resources and associated expenses. As peer group education has not been implemented to promote health among COVID-19 patients, there is a justified need to design more effective and efficient interventions. Given this, the researcher wants to investigate how peer education affects patients with COVID-19 in terms of health promotion.

Materials & Methods

This randomized clinical trial was conducted at Imam Khomeini Teaching Hospital in Urmia in 2021. The research population consisted of 80 patients with COVID-19 who were referred to Urmia educational and therapeutic centers. The sample size was estimated using the average comparison formula, considering the power of the test at 90% and the confidence level at 95%, while also taking into account the dropout rate. The number of samples in each intervention and control group was considered to be 40 people, and a total of 80 people were included in the study (12). This involved painting 40 balls black and 40 balls white, and subsequently placing them into a bag that prevented the participants from observing the color of the balls. After placing the balls in the bag, the participants were asked to remove a ball from the bag. Black and white balls were randomly distributed among the patients. Patients who drew a black ball were considered the control group, and patients who drew a white ball were considered the intervention group.

The inclusion criteria for the study were as follows: being under COVID-19 treatment, aged 18-65 years, possessing the ability to communicate with others, expressing willingness, having a minimum level of reading and writing literacy, and not experiencing acute mental illness. The exclusion criteria for the study included recent participation in similar educational and research sessions, a lack of necessary cooperation to participate in the research, and non-participation in educational sessions in the intervention group.

All patients in both groups received routine training as part of the study. The intervention in this study involved education by peers. Four peers were selected and trained for this purpose. Peers were individuals

who possessed effective communication skills, expressed interest in participating in educational activities, and were not part of the research group. The selection of peer trainees was carried out through internal specialists who evaluated the evidence in patient records, including test results and periodic examinations conducted by internal and lung physicians. The selection criteria for peer trainees were based on their success in managing their disease. The success criteria for selecting peers were determined based on the assessments and opinions of internal specialists and pulmonary specialists, as well as compliance with the teaching in the inpatient department. The researcher conducted two two-hour training sessions for the peers, focusing on the educational needs of COVID-19 patients. The educational content included the definition of peer education, the most effective ways of communication, the effects of nutrition in accelerating recovery, stress management methods, the effects of spirituality in patient relaxation, the limitations of communication with others, and the amount of physical activity during the illness. Educational tools were prepared for the peer group in the form of educational booklets, videos, and pamphlets, and two question-and answer-sessions were held with the peer group to clarify ambiguities. Meetings were held in the conference hall of Imam Khomeini Teaching Hospital in Urmia.

Initially, both groups completed a demographic questionnaire and the Health Promoting Lifestyle Profile-II (HPLP-II). Afterward, peer education was implemented for the intervention group, while the patients in the control group received routine education provided by the ward, which included education delivered by physicians, nurses, or informational posters within the ward. In addition to the routine education, patients in the intervention group also received education from their peers. The training consisted of five sessions, with each session lasting two hours.

The content of the materials was taught to the intervention group based on the Pender health promotion model. On the first day of the intervention (the zero phase of the Pender model), evaluation and familiarization with the patients, recording the characteristics, and filling out the consent form, as well as the perceived benefits of complying with the treatment principles of the patients and the necessary recommendations to improve the perceived benefits, were carried out.

The second day of training focused on interpersonal and situational effects, with the presence of the most influential person in the patient's life to evaluate family support and increase family support to implement the educational points. On the third day, patient self-efficacy assessment training and necessary recommendations to increase self-efficacy were conducted. On the fourth day, the level of commitment of the patients to implement the educational materials was evaluated, and the necessary recommendations were given to improve their commitment to implementing the materials. In the last session, the evaluation of the patients in terms of the level of health improvement after one month was conducted by completing the questionnaire.

The sessions were conducted in groups of 10 people, face-to-face and by phone, over 5 days. Peers, under the supervision of the researcher, provided training in the educational hall of the inpatient wards of COVID-19 patients, while observing the safety points. Videos, booklets, and pictures were used to convey the information, and the researcher or a peer could respond to any questions regarding the subject. During these sessions, the participants had the opportunity to express their experiences and engage in interactive discussions.

This educational method encountered some problems and limitations, including the withdrawal of patients from continuing the education and not participating at the scheduled time for face-to-face education. In order to solve these problems, training times were coordinated with patients' idle time, and patients were informed about how this method could speed up recovery with the help of peers.

The data collection instrument used in this study was a two-part questionnaire. The first part focused on collecting demographic information, while the second

part consisted of a questionnaire based on the Health Promoting Lifestyle Profile-II (HPLP-II) to assess the extent to which individuals engage in health-promoting behaviors. This questionnaire is graded on a 4-point Likert scale (1 = never, 2 = sometimes, 3 = often, and 4 = always) and has six dimensions, including responsibility for one's health (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relationships (9 items), and stress management (8 items). The subject's score in each dimension is obtained from the sum of the answers given to the questions in that dimension. The range of scores that can be obtained from the entire questionnaire is between 52 and 208. A higher score indicates a better condition of the subject in terms of a health-promoting lifestyle.

The scientific validity and psychometrics of the HPLP-II questionnaire were translated and confirmed in Iran by Mohammadi et al. (13). The ethical considerations of the study involved introducing the researchers to the participants and clearly explaining the objectives and nature of the research. Written consent was obtained from the patients, and their voluntary participation in the study was sought. The results of the study were shared with hospital officials and the families of the patients. Patients were also given the assurance that their private information would be kept confidential.

Following data collection, the collected data were analyzed using SPSS 16 software. Descriptive statistics such as frequency and percentage were calculated for qualitative data, while central indicators and dispersion measures (mean and standard deviation) were calculated for quantitative data. Statistical tables and graphs were utilized as necessary. Following the evaluation of data normal distribution using the Kolmogorov-Smirnov test, a separate t-test was performed to compare average scores of the control and intervention groups. Additionally, a paired t-test was used to compare the mean scores within each group. A significance level of less than 5% was considered for all statistical tests.

Results

The demographic findings reveal that the majority of participants in both groups were women, single, aged between 46-65 years, had a sub-diploma education, and had more than four family members. It is worth noting that the groups were homogeneous in all characteristics, as indicated by a p-value greater than 0.05 (Table 1).

Table 1. Demographic characteristics of the participants in the study

Demographics		Intervention group		Control group		*P* value
		Number	Percent	Number	Percent	
Age Range	18-35 years	5	12.5%	5	12.5%	0.79
	36-45 years	6	15%	4	10.0%	
	46-65 years	29	72.5%	31	77.5%	
Gender	Man	17	42.5%	13	32.5%	0.33
	Woman	23	57.5%	27	67.5%	
Marital Status	Married	30	75.0%	28	70.0%	0.41
	Single	6	15.0%	4	10.0%	
	Divorced and widowed	4	10.0%	8	20.0%	
Education	Sub-diploma	18	45.0%	19	47.5%	0.07
	Diploma	7	17.5%	15	37.5%	
	University	15	37.5%	6	15.0%	
Job	Employed	15	37.5%	23	57.5%	0.79
	Unemployed	25	62.5%	17	42.5%	

Demographics		Intervention group		Control group		*P* value
		Number	Percent	Number	Percent	
History of mental illness	Yes	14	35%	17	42.5%	0.31
	No	26	65%	23	57.5%	
History of Covid in the family	Yes	20	50%	19	47.5%	0.52
	No	20	50%	21	52.5%	

The paired t-test revealed a significant increase in the mean of health-promoting behaviors before and after the peer education intervention in the experimental group. The findings indicated that the most significant increases in health promotion behaviors were observed in physical activity, spiritual growth, and interpersonal communication. On the other hand, the least significant increase was observed in stress management behavior (Table 2).

Table 2. Comparing the health-promoting behaviors in the Intervention group, before and after the intervention

Health-promoting behaviors	Before intervention		After intervention		Paired t test
	Mean	SD	Mean	SD	*P* value
Responsibility for health	1.80	0.71	2.36	0.76	< 0.001
Physical activity	1.70	0.70	2.60	0.67	< 0.001
Nutrition	1.96	0.92	2.66	0.84	0.01
Spiritual growth	1.70	0.70	2.66	0.80	< 0.001
Interpersonal relationships	1.93	0.94	2.90	0.80	< 0.001
Stress management	2.13	1.04	2.66	0.80	0.02

Based on the results of the paired t-test, there was no statistically significant difference in health promotion behaviors before and after the intervention in the control group (Table 3).

Table 3. Comparing the health-promoting behaviors in the control group, before and after the intervention

Health-promoting behaviors	Before intervention		After intervention		Paired t-test
	Mean	SD	Mean	SD	*P* value
Responsibility for health	1.66	0.84	1.80	0.84	0.10
Physical activity	2.00	0.98	2.10	0.92	0.08
Nutrition	2.10	0.88	2.20	0.76	0.54
Spiritual growth	1.96	0.88	2.00	0.82	0.08
Interpersonal relationships	2.03	0.99	2.13	0.93	0.08
Stress management	1.73	0.78	1.80	0.76	0.10

The results of the independent t-test conducted prior to the intervention showed no significant difference in health-promoting behaviors between the intervention and control groups. However, comparing

the mean of health promotion behaviors based on the independent t-test after the intervention revealed a significant difference between the two groups across all domains. The most significant difference was observed in the domains of responsibility for health, spiritual growth, and stress management, while the least significant difference was found in the domain of interpersonal communication (Table 4).

Table 4. Comparison of health promotion behaviors before and after the intervention in two intervention and control groups

Health-promoting behaviors		Before intervention		Independent t-test	After intervention		Independent t-test
		Mean	SD	*P* value	Mean	SD	*P* value
Responsibility for health	Control	1.66	0.84	0.51	1.80	0.84	< 0.001
	Intervention	1.80	0.71		2.36	0.76	
Physical activity	Control	2.00	0.98	0.17	2.10	0.92	0.02
	Intervention	1.70	0.70		2.60	0.67	
Nutrition	Control	2.10	0.88	0.57	2.20	0.76	0.02
	Intervention	1.96	0.92		2.66	0.84	
Spiritual growth	Control	1.96	0.88	0.12	2.00	0.82	0.01
	Intervention	1.70	0.70		2.66	0.80	
Interpersonal relationships	Control	2.03	0.99	0.69	2.13	0.93	0.03
	Intervention	1.93	0.94		2.90	0.80	
Stress management	Control	1.73	0.78	0.09	1.80	0.76	0.01
	Intervention	2.13	1.04		2.66	0.80	

Discussion

The purpose was to investigate the effect of peer education on health-promoting behaviors among COVID-19 patients. The results of this study show a significant increase in health promotion behaviors in the intervention group compared to the control group. These results suggest that peer intervention can be an effective approach in promoting health behavior changes among COVID-19 patients.

Bijani et al.'s findings show that utilizing peer instruction rooted in Pender's health promotion model enhances the self-efficacy, stress management, and quality of life (QOL) of patients with MS. With these findings in mind and the elusive characteristic of MS, it is plausible that by fostering a sense of community, permitting individuals with the disease to freely exchange their encounters without worry of criticism, and offering them a chance to enhance their coping abilities, social support, and peer assistance, the negative effects of the illness on both physical and mental health can be eliminated. This reduces their stress, enhances their self-efficacy, and improves their overall QOL (14). In this study, the peer education method was used to teach the patients, and with the help of Kadel Pender, the level of stress and self-efficacy of the patients was examined after the education.

Findings from Yao et al. (2021) show that a combination of nursing interventions and peer support led to significant enhancements in self-management,

lifestyle, pulmonary function, and QOL among non-smoking individuals with COPD at the 3-month mark following the intervention. Another research study found that a self-care strategy organized by individuals within the same group can enhance the QOL for individuals with a long-term mental health condition. One significant benefit of peer support is the precise guidance on the practical aspects of managing a disease. Peer support is based on the belief that people who have faced and overcome similar challenges can provide valuable support, motivation, and guidance to others in similar situations. In general, clinical and healthcare specialists today place great value on peer support as it shifts the focus from treatment to health improvement. Improved peer communication in interventions aiming to boost patient support can enhance the quality of care and health outcomes (15). In these studies, similar to the present study, the effect of peer education on the QOL of patients has been investigated, and the results have shown a significant difference in the intervention group. Research conducted by Madani et al. showed that utilizing a peer education method can effectively influence the behavior of young adults towards adopting healthier habits (16).

The results of Ghasemi et al.'s study showed that peer education improved total QOL scores in patients with diabetes. Additionally, three subscales showed much improved outcomes: satisfaction, impact of diabetes treatment, and concerns about disease effects, compared to the researcher training group, particularly right after the training session (17).

Khodaveisi et al.'s research findings demonstrated that training based on Pender's HPM enhanced nutritional behavior and various components of the model. Therefore, this educational model can be used by healthcare providers to improve dietary and other health-promoting behaviors (18). In this study, Pender's method was used to measure the effect of training on children's breakfast consumption and nutrition.

The research findings from Masoud et al. demonstrated that implementing an educational program rooted in Pender's health promotion model boosted the average levels of self-efficacy and treatment compliance in hemodialysis patients. This program was designed around the six dimensions of health promotion (responsibility, physical activity, nutrition, interpersonal relationships, stress management, and spiritual growth). Considering the substantial impact on self-efficacy and adherence behaviors in hemodialysis patients, it is recommended to use the program to improve the well-being of these patients without time constraints (19).

The study by Habibzadeh et al. aimed to determine the impact of education based on Pender's health promotion model on QOL and health promotion in patients with heart failure. Despite some limitations, the educational intervention improved QOL in these patients (20). While this study used a different educational method from the present study, it similarly shows the impact of education on the QOL of patients.

Some limitations of this study include the use of self-report questionnaires completed by the participants and the potential influence of individual personality characteristics on monitoring educational content. Therefore, it is recommended that future research focus on identifying educational programs that can positively impact the health promotion of patients with COVID-19.

Conclusion

Overall, it can be said that patients with COVID-19 who took part in peer education programs had a much higher level of health-promoting behaviors than those who did not. It is believed that the results of this research can attract the attention of authorities to peer education and cause them to view it as an essential aspect of the education program for patients with chronic conditions. Future research should concentrate on how peer education affects the health-promoting behaviors of people who have other illnesses.

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Authors' Contributions

All authors contributed equally to this research.

Data Availability

The raw data supporting the conclusions of this article are available from the authors upon reasonable request.

Conflict of Interest

The authors declared no conflict of interest.

Ethical Statement

This study was approved by the ethics committee of Islamic Azad University, with the code of ethics (IR.IAU.URMIA.REC.1399.059).

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