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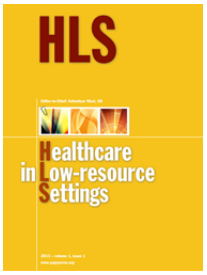

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Comparison of the effect of interactive and non-interactive education on the self-efficacy of COVID-19 patients

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Abstract

The purpose of the present study was to investigate the effect of interactive and non-interactive education on the self-efficacy of COVID-19 patients. This is a randomized clinical trial that was conducted on 80 COVID-19 patients in Zahedan in 2022. The samples were randomly assigned to intervention (interactive) and control (non-interactive) groups (n=40 people per group). The patients of each group received two initial education sessions in the hospital and at the time of discharge. Patients of the intervention group participated in 5 sessions of face-to-face interactive education along with practical education using a video projector by the researcher. The control group only received education ions by ward nurses during discharge and only one educational PDF file was given to them to study. The results showed that the mean and standard deviation of the self-efficacy score of the patients of the two interactive and non-interactive education groups did not differ significantly before the intervention (P = 0.024), but it was significantly higher in the interactive education group than the non-interactive education group ($p<0.0001$). That is, the mean and standard deviation of the self-efficacy score of patients in the interactive education group increased significantly from 49.8 ± 14.77 to 96.77 ± 18.29. The same score in the non-interactive education group increased from 57.85 ± 16.35 to 62.45 ± 14.52, which was not a significant increase. The results showed this intervention helps patients to make informed decisions about their goals, treatments, and self-care behaviors.

Introduction

COVID-19 disease was a pandemic with social problems[1] for different societies, which affected all important economic, political, social, and even military aspects of all countries of the world due to the lack of permanent treatment.[2,3]

Due to the pathogenic nature of this virus, the speed of its spread, and also its subsequent deaths, this disease may have different effects on the mental health of people at different levels of society, from patients, health care workers, children, families, students, psychological patients and even the personnel of different jobs. Therefore, in the current high-risk situation, it is necessary to identify people prone to psychological disorders at different levels of society, whose mental health may be endangered, so that the mental health of these people can be maintained using appropriate psychological solutions and techniques.[4,5]

In this regard, numerous previous types of research on COVID-19 survivors showed a high prevalence of a number of these psychological disorders including anxiety and especially death anxiety,[2] fear, depression, emotional changes, insomnia, and post-traumatic stress disorder among these patients, which in turn have had a great impact on their self-efficacy.[6,7]

Self-efficacy is basically an important concept in Bandura's theory of social cognition and means a person's belief in the ability to respond to a specific situation. This means that efficacy expectations have an effect on people's choices, hope, level of effort and persistence, resistance to difficulties and problems, and vulnerability to diseases.[8] According to the perspective of social cognitive theorists, people who are efficacious against stressors, will be less vulnerable to stressors, and social dysfunction.[9] A relationship has been reported between low self-efficacy and depressive symptoms in COVID-19 survivors.[8]

The panic responses of people to this disease make a person very vulnerable mentally and psychologically. The results of studies show a very high level of death anxiety among COVID-19 patients. Death anxiety is a multifactorial phenomenon that affects recovery and severity of illness. On the other hand, there are factors that increase fear such as the nature of the pandemic, hospitalization, insufficient knowledge about COVID-19 and its treatments, unknown prognosis of the disease, use of protective equipment by doctors and medical staff, poor communication skills medical staff.[4] It is clear that a person who has lost hope will not have a good life even after recovery. Therefore, these patients need psychological support and necessary education to fight this disease during the post-recovery period.[10]

COVID-19 is one of the diseases the patient has a major contribution in its treatment, therefore, the use of an appropriate, interactive, and patient-centered educational method that improves the patient's adherence and participation in self-care behaviors may increase the self-efficacy of these patients.[11] Researchers have provided different educational methods in this regard. For example,

Hesarki *et al.* have stated that social networks and webinars play a significant role in increasing the level of awareness of COVID-19.[12] Shaygan *et al.* (2023) have also investigated the effect of interactive psychoeducational online interventions (social networks) on the self-efficacy and anxiety of COVID-19 patients.[13]

Interactive education is one of the effective methods of learning. Lectures are effective in the cognitive domain of university students' learning. While in order to increase people's practice, their knowledge, attitude, and practice must change at the same time.[14] Interactive learning is one of the most effective teaching methods in this regard. This method enables the use of multimedia features as well as the combination of text, sound, and image, learners being active, repetition, and providing feedback. In this method, which is called the active method of teaching, in addition to the fact that the teacher plays an active role in the class and explains the content to the audience, the audience also has a central role and actively participates in the discussions and asks their questions.[15] This method enhances mental engagement in the discussed topic, and also increases the level of learning, strengthens thinking, and raises the level of information in the teacher and audience.[16] While the one-way transfer of information is used (such as animated films, slides, and television) in non-interactive learning where the audience is considered the only information recipient and does not perform any activity in response to the information provided, and as a result, they are passive learners.[17]

Overall, the evaluation must be first carried out by the individual him/herself, and this learning approach (non-interactive learning) is distinguished from other educational methods since the learner's need is regarded as the standard and the basis for the end of teaching. Therefore, this type of teaching method has diagnostic, corrective, and therapeutic aspects. That is, a person feels the adjustment or non-adjustment of the required knowledge and skills in an experimental and perceptible manner and spontaneously strives to achieve balance on his own.[18]

Patient education is one of the most important duties of nurses, especially in the case of such a disease that has caused high mortality, and has imposed a lot of work pressure and psychological stress on all people, especially nurses.[1,4,19] Therefore, it is very important to choose an efficient patient education method that increases the patient's self-efficacy and accelerates his recovery. Therefore, taking into account the characteristics of the interactive method and the fact that there is limited research on this educational method in COVID-19 survivors in Iran,[20] on the one hand, and considering the importance of self-efficacy of COVID-19 patients, on the other hand, the purpose of the present research was to compare the effect of interactive and non-interactive education on the self-efficacy of COVID-19 patients.

Materials and Methods

This was a randomized clinical trial that was conducted on 80 COVID-19 patients admitted to Ali Bin Abi Taleb Hospital of Zahedan in 2022. A total of 80 people were selected using the convenience random sampling method and were assigned to the interactive education group and non-interactive education group (n=40 per group). The sample size was estimated to be 40 people per group based on a similar study by Amiri *et al.*[17] with a 99% confidence interval and a test power of 80%, taking into account 20% drop-out. Inclusion criteria included being admitted for at least 48 hours, having a positive PCR test, being over 18 to 70 years old, submitting informed consent, having at least reading and writing literacy, confirmed coronavirus, contracting coronavirus for the first time, and absence of a history of mental disorders. Exclusion criteria also included withdrawing from the study for any reason, death or worsening of the disease conditions, one of the first-degree family members being affected by the disease, participation in other educational courses related to the research topic during the duration of the study, and being transferred to another hospital ward. The data collection tools include a demographic characteristics checklist, which includes questions on the patient's gender, occupation, age, marital status, and level of education) and SUPPH, which is based on Bandura's self-efficacy theory. This 29-item instrument was used to measure self-efficacy and questions are answered based on a five-point Likert scale including Very low confidence = 1, Low confidence = 2, Moderate confidence = 3, high confidence = 4, and Very high confidence = 5. It also consists of three areas of stress reduction (10 questions), decision-making (3 questions), and positive attitude (16 questions). The possible scores range is 29 to 145, and higher scores indicate higher self-efficacy. This questionnaire was used by Tsi & Hong. They reported a reliability coefficient of 0.93. This questionnaire has also been approved by Moatarian (2012) and Royani (2013) with $\alpha = 0.91$ and $\alpha = 0.93$ in Iran, respectively.

First, a written letter of introduction, the necessary permission, and the code of ethics (IR.ZBMU.REC.1401.025) were obtained from the relevant authorities. 80 eligible hospitalized COVID-19 survivors were selected using convenience sampling and according to the study inclusion criteria, and the objectives of the research were explained to them. Other ethical considerations included obtaining informed consent to participate in the research, and assuring the patients about the confidentiality of anonymity of their information. Questionnaires were first given to the patients to collect primary data. Then, using the needs assessment form, the educational needs of the research samples were determined, and the educational intervention content was designed based on the needs assessment conducted by nursing and medical sources. Then each patient was given a number from 1 to 80 and the patients were randomly divided into two groups A and B. Then the people of groups A and B (n=40 people per group) received the interactive and non-interactive

education by drawing lots. The patients then received the first two education sessions on the last days of hospitalization and at the time of discharge. Then, according to the extracted needs and based on the date of the patients' visit for monthly visits, they were divided into 4 groups (n= 10 people per group). The patients of each group received two initial education sessions in the hospital and at the time of discharge, and continued education face to face during 5 sessions with a maximum of 60-min duration and a maximum of 6-day intervals. First, an interactive educational intervention was designed for COVID-19 patients. This intervention was performed for at least 7 sessions, and approved by the professors of the research team. The maximum duration of each session was considered 60 minutes based on the patient's desire or her/his learning level. The first and second sessions were held for both groups twice, *i.e.* during hospitalization and upon discharge. Then, the remaining 5 educational sessions were held for the intervention group upon referral to Ali Bin Abi Talib of Zahedan Hospital after discharge in the educational classrooms of the above hospital. The educational content of each session was taught to the patient in an interactive way, *i.e.* face-to-face with practical education and using a video projector, then the patient was asked to express the educational content in his own language. If the patient did not understand the content correctly, he was taught the educational content again. One month after the intervention, in order to encourage participants to follow the education materials, they were contacted via telephone based on the predetermined time schedule, and their questions were answered. The patients of the non-interactive group received routine education during discharge by the ward nurses according to the referral procedure and were given only one educational PDF file to study. One month after the intervention, the patients of both groups were contacted and an appointment was made where the patients' self-efficacy was measured again using the same questionnaires. In order to perform statistical analysis, the data was collected, coding, and entered into SPSS software ver. 21. Necessary permissions were obtained from the University Research Center and the Ethics Committee. Explanations regarding the confidentiality of the information and obtaining informed consent were given to the patients. To ensure ethical considerations, all educational content was provided to them and their questions were also answered when the questionnaires were completed.

Results

The results of the demographic questionnaire showed that there were 18 women and 22 men in the interactive group and 20 men and 20 women in the non-interactive group. With regard to gender, 55% of the COVID-19 patients in the interactive education group and 50% of the patients in the non-interactive education group were male. The chi-square test showed no statistically significant difference between the two studied groups in terms of gender distribution (P=0.82). With regard to

marital status, 62.5% of COVID-19 patients in the interactive education group and 75% of patients in the non-interactive group were married. The chi-square test showed no statistically significant difference between the two groups in terms of marital status (P=0.33). With regard to employment status, 30% of the COVID-19 patients in the interactive education group and 32.5% of cases in the non-interactive education group were housewives. The result of the Pearson chi-square test also showed no significant difference between the two groups in terms of employment status (P=0.29). Regarding the educational level of the COVID-19 patients, only 13.8% of the patients in the interactive education group and 42.5% of the patients in the non-interactive group had a bachelor's degree or higher. The chi-square test showed no statistically significant difference between the two groups in this regard (P=0.35) (Table 1).

The results of the independent t-test showed no significant difference between the interactive and non-interactive groups in terms of the mean and standard deviation of the self-efficacy score before the intervention (P = 0.024), but the same score increased more significantly in the interactive education group than the non-interactive education group after the intervention (p<0.0001). That is, this score in the interactive education group increased significantly from 49.8 ± 14.77 to 96.77 ± 18.29 and from 57.85±16.35 to 62.45±14.52 in the non-interactive education group (Table 2).

Discussion and Conclusions

The purpose of the present study was to compare the effect of interactive and non-interactive education on the self-efficacy of COVID-19 patients admitted to Ali Bin Abi Taleb Zahedan of Hospital in 2021. The results showed a significant increase in the mean and standard deviation of the self-efficacy score of the patients in the interactive education group from 49.8 ± 14.77 to 96.77 ± 18.29 (p < 0.0001) but there was no significant increase in the above score in the non-interactive education group (57.85 ± 16.35. to 62.45 ± 14.52) (P = 0.39).

Shub *et al.*'s showed that interactive education outperforms the conventional self-efficacy method, which is consistent with the present study.[18] In a study on the effect of patient simulation education on the ease of learning and self-efficacy of nursing and medical students of Mazandaran University of Medical Sciences, Kolaie *et al.* also showed that simulation is an interactive teaching technique that helps the person to learn without fear of personal weaknesses or harming the client through interactive activities by enabling him to experience a safe clinical environment partly or fully, which is consistent with the results of this study.[21] Rahmanipour *et al.* (2020) also showed that the mean treatment adherence score in the interactive group increased significantly after the interactive intervention, while there was little change in the non-interactive education group in this regard. The difference was statistically significant, which is consistent with the results of our study.[14]

The results of the study by Zarshenas *et al.* (2017) also showed that both interactive and non-interactive methods increased students' knowledge of healthy bones and self-efficacy, self-efficacy scores increased significantly after education in both groups, and students obtained almost two-thirds of the total scores, which thus showed a greater effect on the interactive multimedia group that.[22]

According to the study of Shaygan *et al.* (2020), interactive psycho-educational interventions were effective in increasing self-efficacy and positive attitude and reducing stress in COVID-19 patients under home quarantine conditions, which is consistent with our study.[13,14]

In a study on the effectiveness of interactive diabetes management education on the self-care of diabetic patients, Amiri *et al.* concluded that interactive education is also effective in the self-care of diabetic patients, which is consistent with the results of the present study.[17] Merrill *et al.* (2022) showed that the interactive relationship between the patient and the therapist improves the self-care of patients. In his research, Ayoobi came to the conclusion that cooperative and interactive learning increases academic progress more than traditional learning.[23] To explain the effect of the interactive method compared to the non-interactive method, it seems that due to the need for patients to be active in the interactive learning method and considering that one of the essentials for the proper implementation of the interactive learning method is the continuous activity of the group members and their exchange of opinions with each other and also the appointment of one person as the spokesperson of the group. However, the patients of the non-interactive group are mostly silent and passive and just listen to their teacher. However, patients of the interactive learning group are required to meticulously receive the opinions of other members, and they are thus obliged to provide logical and reasoned answers in order to accept or reject their opinions, which may in turn improves their self-efficacy.

Interventions help patients make informed decisions about treatment goals and methods and self-care behaviors and feel responsible for their own management, which is thus highly effective. Also, interactive education increases the knowledge and skill of managing the situation, self-awareness, and individual independence and enables the patients to accept individual care. In this method, patients are sufficiently educated about the disease, the interaction between life and COVID-19, its symptoms, and how to manage it, so, they can choose personalized goals for self-care and achieve them. The limitations of the present study include caution in generalizing the results to all patients and a lack of complete control of all influencing variables. It is suggested to investigate the longer-term effects of these interventions by conducting follow-ups in similar studies.

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Table 1. Frequency distribution of demographic information of COVID-19 patients in two groups of interactive and non-interactive education.

Variable / Group		Frequency (%)		Test statistic*	P-value
		Interactive	Non-interactive		
Gender	Female	18 (45)	20 (50)	0.2	0.82
	Male	22 (55)	20 (50)		
Marital status	Single	15 (37.5)	10 (25)	0.45	0.33
	Married	25 (62.5)	30 (75)		
Employment status	Unemployed	11 (27.5)	9 (22.5)	0.96	0.29
	Housewife	12 (30)	13 (32.5)		
	Self-employed	9 (22.5)	9 (22.5)		
	Employee	8 (20)	9 (22.5)		
Level of education Gender	Reading and writing	7 (8.8)	10 (25)	0.41	0.31
	High-school diploma	15 (18.8)	10 (25)		
	Associate Degree	7 (8.8)	3 (7.5)		

	Bachelor's degree and higher	11 (13.8)	17 (42.5)		

* Chi-square test

Table 2. Comparison of the mean and standard deviation of the self-efficacy score of COVID-19 patients before and after the intervention in the interactive and non-interactive groups.

Self-efficacy	Mean ± **SD**		T score	95% confidence interval	P-value
	Intervention (interactive)	Control (non-interactive)			
Before intervention	49.8 ± 14.77	57.85 ± 16.35	2.310	45.720	P = 0.24
After intervention	96.77 ± 18.29	62.45 ± 14.52	9.293	103.585	P < 0.0001

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