

The Effect of a Pre-Colonoscopy Education Program on Fear and Anxiety of Patients: A Randomized Clinical Trial Study

Abstract

Background: Due to the increasing prevalence of intestinal diseases, colonoscopy is considered a safe and fast diagnostic and treatment method for these patients. According to studies, most patients waiting for a colonoscopy experience fear and anxiety. This study aimed to investigate the effect of a pre-colonoscopy education program on the fear and anxiety of patients undergoing colonoscopy. **Materials and Methods:** This randomized clinical trial study was conducted on patients undergoing colonoscopy in hospitals in southeast Iran. A total of 90 participants were selected by convenient sampling and randomly assigned to two groups control ($n = 45$) and intervention ($n = 45$). The patients in the intervention group received nursing interventions before colonoscopy, while the patients in the control group received only routine care. The data were collected using a researcher-made fear of colonoscopy scale, its Cronbach's alpha coefficient (0.92), and the Spielberger State-Trait Anxiety Inventory. The data were analyzed with a Chi-square t -test and pair t -test. **Results:** The data showed that anxiety and fear of colonoscopy in the patients in the intervention group significantly decreased compared to the patients in the control group ($p < 0.001$). **Conclusions:** Using non-pharmacological methods before colonoscopy can reduce the fear and anxiety in patients who are candidates for this procedure and similar invasive procedures. The intervention performed in this study can be used together with other methods to control patients' fear and anxiety. Especially for nurses, It is recommended to do pre-colonoscopy education programs for these clients.

Keywords: Anxiety, colonoscopy, fears, nurses

Introduction

In today's world, there is a high incidence of gastrointestinal diseases, and diagnostic methods have also found a growing range of applications in the treatment and diagnosis of diseases. One of these methods is colonoscopy, which induces high levels of stress and anxiety in patients due to its invasiveness.^[1] Colonoscopy is a safe and fast diagnostic and therapeutic procedure performed by bypassing a flexible endoscope into the rectum.^[2] According to previous studies, most patients awaiting colonoscopy experience fear and anxiety^[3-6] due to inadequate knowledge about the procedure, fear of pain and equipment, the hospital environment, the physician, or the shame and embarrassment of the procedure.^[7-9] Paying attention to this fear and anxiety is important because^[5,10] it may lead to a patient avoiding the procedure, increasing the use of sedative medications,

prolonging or completing the procedure, and eventually increasing side effects.^[11]

Many different drugs are used to control anxiety. However, the use of pharmacological treatments is not without adverse effects, not to mention increased costs and time required for the relief and care of patients.^[12] Non-pharmacologically safe and cost-effective methods are currently available to reduce anxiety in patients before taking an invasive procedure. The medical staff especially doctors and psychologists have long been trying to reduce the anxiety of patients.^[13] Some believe that giving information causes more concern for patients. Others, on the contrary, believe that providing accurate information reduces the intensity of anxiety and fear and improves patient collaboration.^[14-16] The time interval for providing the information is also very important. Some people believe that they will provide information shortly

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before the procedure, while others recommend at least one week in advance.^[17] In any case, most people tend to get information about the situation, the implementation of the procedure, and self-care.^[18] Nevertheless, the content of the information and how to present this content may not be the same in different cultures and environments.^[19]

The ambiguity caused by unawareness of diagnostic procedures and lack of knowledge about self-care, increases fear, anxiety, and related complications in patients.^[20-22] Psychologically prepared can manage negative emotions in patients with fear of Colonoscopy pain^[6] These factors increase fear, anxiety, and related complications in patients considering the importance of this issue and contradicting ideas about how to present information to patients, the present study aimed to investigate the effect of a pre-colonoscopy education program on the fear and anxiety of patients undergoing colonoscopy.

Materials and Methods

This randomized clinical trial study was performed from June 2018 to April 2019 with the Iranian Registry of Clinical Trials (IRCT): IRCT20160914029817N5. The participants in this study were selected from candidates for colonoscopy admitted to the Afzalipour hospital affiliated with Kerman University of Medical Sciences, which is one of the largest health service providers in southeastern Iran. The sample size was estimated with a 95% confidence level and a test power of 80%. However, 45 patients were considered for each group to eliminate the effect of any probable dropout and increase the rigor of the study power. The criteria for enrollment in the study were having a colonoscopy order and being aged 18 to 80 years old. The inclusion criteria were the use of hypnotic and antipyretic drugs, having pain, addiction, or strong analgesics, and a history of colonoscopy. The participants were selected by convenient sampling and randomly assigned to two control ($n = 45$) and intervention groups ($n = 45$). The patients in the intervention group received the nursing intervention, while the patients in the control group received only routine care [Figure 1].

A demographic information scale, Spielberger's clear anxiety questionnaire, and the fear questionnaire were used. A demographic information scale was used to assess age, gender, marital status, occupation, insurance status, location, income adequacy, educational level, colonoscopy, and information about this process. Spielberger Manifest Anxiety inventory, containing 20 four-choice items, was completed by the researcher through interviews with the patients. The responses were scored on a four-point Likert scale: very little (4), low (3), high (2), and very high (1). The total score on the inventory ranges from 20 and 80, with higher scores indicating more anxiety. The validity and reliability of this questionnaire have been confirmed by Gholami Booreng *et al.*^[23] in Iran and its Cronbach's alpha was 0.80. In addition, the reliability of the instrument

was estimated as 0.80 through Cronbach's alpha.^[24] The Fear of Colonoscopy Scale contained 19 items about the procedure, complications, hospital stay, shame from the area, bad outcomes, and hospitalization. The items in this scale were reviewed and validated by 10 professors. The reliability of the instrument was assessed by administering it to 20 patients, and its Cronbach's alpha coefficient (α) was estimated as 0.92.

To conduct the study, the researcher attended the patient's bedside one day before colonoscopy in the gastrointestinal and medical wards. The researchers filled out the items in the demographic information questionnaire, Spielberger anxiety inventory, and colonoscopy fear scale by interviewing the patients in both control and intervention groups. Afterward, the researcher conducted the educational intervention program for the patients in the intervention group individually. The content of the program focused on questions and answers. The intervention was performed for 1 to 1.5 h at a time the patient was physically and mentally prepared and in a suitable place on the day before the colonoscopy. The educational intervention aimed to provide information on colonoscopy, its importance and benefits, and the procedures before, during, and after colonoscopy. It also focused on pre-colonoscopy training, taking a suitable position during the test, expressing feelings, answering the patient's questions, deep breathing instruction, and post-procedure care to patients. The content of the intervention program was prepared based on valid texts and confirmed by professors in gastroenterology and clinical psychology. Finally, the fear and anxiety levels of the patients in both control and intervention groups were measured on the day the procedure was to start.

The data were analyzed with SPSS software version 19 (SPSS for Windows, version 19.0. Chicago, SPSS Inc.) and summarized using descriptive statistics including mean, standard deviation, frequency, and percentage. The Chi-square test was used to assess the demographic differences between the patients in the intervention and control groups. The Kolmogorov-Smirnov test was also applied to find out whether the data were normally distributed. The independent samples *t*-test and pair *t*-samples test were performed to identify intragroup and intergroup differences in the fear and anxiety scores before and after performing the colonoscopy procedure.

Ethical considerations

This study was approved under number IR.Kmu.REC.2467.1396 by the Ethics Committee of Kerman University of Medical Sciences. The researcher explained the objectives of the study to the patients. Written informed consent was obtained from all patients. Participation was voluntary, and the patients had the right to withdraw at any time.

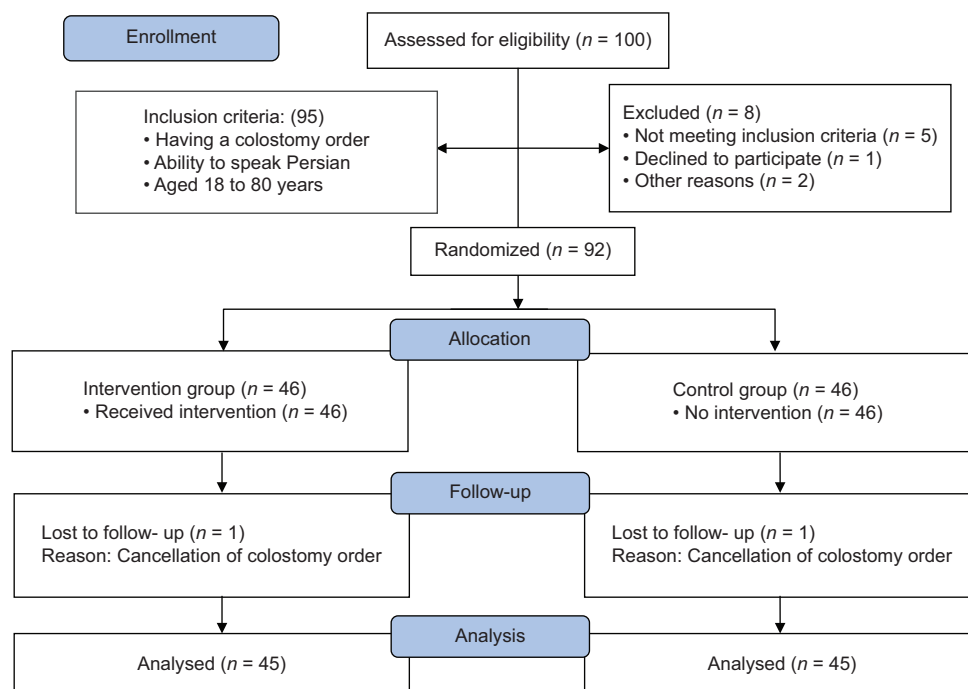


Figure 1: The flowchart of the study's inclusion, allocation, and follow-up phases

Results

The results showed no significant difference between the two intervention and control groups in terms of demographic variables such as age, sex, marital status, occupation, insurance coverage, place of residence, income adequacy, education, and cause(s) of colonoscopy, and thus the two groups were homogeneous in terms of the demographic characteristics [Table 1]. The findings showed that the anxiety levels before and after the intervention significantly differed in the intervention group and the patients in this group reported significantly lower levels of anxiety after the intervention ($p = 0.001$). Moreover, the anxiety level reported by the patients in the control group decreased significantly after the intervention. However, the changes in the anxiety experienced by the patients in the intervention group were significantly higher compared to the changes in the anxiety levels reported by the patients in the control group ($p < 0.001$) [Table 2].

As given in Table 3, the mean score of fear for the patients in the control group increased significantly after the intervention compared to their fear scores before the intervention ($P = 0.001$). However, the level of fear reported by the patients in the intervention group significantly decreased after the intervention compared to their fear scores reported before the intervention ($p < 0.001$).

The relative changes in the anxiety and fear scores were compared for the patients in the two groups to find out if the intervention affected their fear and anxiety. The results showed a significant difference between the two groups in the level of fears reported by them. Thus, the patients in the intervention group experienced less fear after the

intervention ($p < 0.001$). In addition, there was also a significant difference between the two groups in terms of their anxiety after the intervention, indicating that the patients in the intervention group were significantly less anxious after the intervention ($p < 0.001$) [Table 4].

Discussion

This research is one of the studies that evaluate the effectiveness of pre-colonoscopy educating on the psychological aspects of colonoscopy candidate patients and emphasizes the importance of developing participants' information to achieve safer outcomes. The results indicated that the training intervention was effective in reducing the fear and anxiety experienced by the patients before colonoscopy. In this study, the patients who were candidates for colonoscopy reported moderate levels of anxiety and fear, as indicated in other studies^[22,25] Although the anxiety may be induced due to the diagnosis of the disease, patients' unawareness of the colonoscopy procedure causes higher levels of anxiety in them. Given that anxiety and fear affect physical and mental responses to gastrointestinal procedures, endoscopic units should adopt strategies to minimize this anxiety and fear.

The data in this study showed no significant relationship between the patients' demographic data and the anxiety and fear reported by them. However, other studies can assess the impact of social and cultural factors on patients' anxiety and fear. Eng *et al.*^[26] (2011) and Jones *et al.*^[27] (2004) also did not report any significant relationship between anxiety and fear and factors such as age, sex, and education. While Pająk *et al.* (2013) and Jafari *et al.* (2014) considered

Table 1: Demographic characteristics of candidates for colonoscopy (n=90)

Group	control (n=45)	Experiment (n=45)	Statistics	p
Demographic characteristics	n (%)	n (%)		
Gender				
Man	24 (53.30)	24 (53.30)	0.39*	0.506
Female	21 (46.70)	21 (46.70)		
Marital status				
Married	33 (73.30)	34 (75.60)	1.024*	0.599
Single	9 (20.0)	10 (22.20)		
Widow	3 (6.70)	1 (2.20)		
Education				
Illiterate	8 (17.80)	15 (33.30)	4.57*	0.206
Diploma and graduation	21 (46.70)	19 (42.20)		
Undergraduate Diploma	15 (33.30)	11 (24.50)		
Master s degree and higher	1 (2.20)	0		
Job				
Employed	5 (11.10)	9 (20.0)	0.27*	0.383
Unemployed	8 (17.80)	8 (17.80)		
housewife	11 (24.50)	13 (28.90)		
The worker	7 (15.50)	6 (13.40)		
Government employee	5 (11.10)	7 (15.50)		
Free	9 (20.0)	2 (4.40)		
Information about Colonoscopy				
Yes	6 (13.30)	5 (11.10)	0.59*	0.532
No	39 (86.70)	40 (88.90)		
How to get information?				
Self-study	4 (8.90)	4 (8.90)	0.24*	0.576
Family Counseling	2 (4.40)	1 (2.20)		
None of them	39 (86.70)	40 (88.90)		
Age				
Mean (SD)	52.17 (17.30)	51.89 (16.35)	0.08**	0.94

*Chi-square test, **t-test

Table 2: Comparison of anxiety in experimental and control groups

Variable	group	Mean (SD)	Minimum	Maximum	Z	p
Before intervention	Experiment	2.71 (0.48)	1.80	3.70	-4.39	0.001
After intervention		0.52 (2.07)	1.150	3.90		
Before intervention	control	2.45 (0.24)	1.90	2.90	-5.36	<0.001
After intervention		2.6 (0.32)	1.95	3.35		

Table 3: Comparison of fears in intervention and control groups

Variable	group	M (SD)	Minimum	Maximum	t	p
Before intervention	Experiment	3.02 (0.87)	1.16	4.42	11.75	<0.001
After intervention		1.65 (0.31)	1.16	2.47		
Before intervention	control	2.64 (0.56)	1.47	3.47	-6.01	<0.001
After intervention		2.83 (0.56)	1.42	3.63		

factors such as age and gender at the level of patient tolerance and reported that anxiety of endoscopic patients is associated with their age, sex, education, and history of performing procedures.^[24,28,29]

This study also showed that patients need information about procedures, medications, and length of the procedure to experience less anxiety, pain, and complications after

the procedure. Information, strong communication, nurses' full support of patients, their emotional perception, and answering their inaudible questions can help patients experience lower levels of anxiety before a procedure. Several studies showed that patients who had been trained before endoscopy experienced less anxiety.^[30-32] Jones *et al.*^[27] reported anxiety is not related to the awareness

Table 4: Comparison of the percentage of relative changes in anxiety and fear in two groups

Variable	Mean (SD)	Minimum	Maximum	Z	p
Anxiety before intervention	-20.63 (27.67)	-63.49	71.05	-6.72	<0.001
Anxiety after intervention	6.27 (8.33)	48.89	-2.50		
Fear before intervention	-41.08 (18.73)	-69.62	29.17	-7.68	<0.001
Fear after intervention	8.09 (9.43)	-21.74	35.48		

of the procedure. Thus, if effective training is provided to patients, they will perceive less fear and anxiety.

The results of the present study revealed that 86.6% of patients did not receive any information about colonoscopy and only 13.3% of patients received information through self-study and peer counseling. Nikbakht Nasr Abadi *et al.*^[32] showed that nursing counseling significantly affects the anxiety in patients undergoing endoscopy. Nurses have more time for patient education and are more available than doctors. Education is a major component of nursing care.

Following the data in this study and the findings of other studies, the patients who do not receive any information about treatment procedures are more likely to experience higher levels of fear and anxiety. Thus, it is important to carry out training interventions for these patients before any procedure. In line with the data in the present study, Poursharifi *et al.*^[33] reported that preoperative training reduced the anxiety experienced by patients. Nasiri *et al.*^[34] indicated that a low-cost intervention can increase patients' satisfaction and reduce their anxiety. Kutlutürkan *et al.*^[14] examined the effect of written materials on endoscopy on the anxiety experienced by patients before gastrointestinal endoscopy. Significant differences were found in the mean anxiety scores between the case and control groups. Behrouzian *et al.*^[35] investigated the effect of psychosocial preparation on the level of anxiety in patients undergoing an upper GI endoscopy. The authors concluded that psychological preparation significantly affected the anxiety level of patients under endoscopy and could be considered an effective method for reducing anxiety in patients. Given that education is provided a little before the procedure, there may not be enough time to practice and improve the patient's anxiety, but giving information about the procedure and its advantages can reduce the patient's anxiety. Patient education also promotes therapeutic relationships. By giving time to training, the patient's confidence will be improved, and their anxiety and fear will be reduced. One of the limitations of the present study was that the completion of the questionnaires and their mental conditions at that moment could increase their anxiety. We tried to motivate patients to participate in sessions at times that did not interfere with patients' activities and treatment.

Conclusion

The intervention performed in this study can be used by nurses and physicians in conjunction with other methods to control patients' fear and anxiety. In addition to reducing

patients' fear and anxiety caused by invasive procedures, patient education reduces the health care and additional costs imposed by patients' anesthesia.

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Conflicts of interest

Nothing to declare.

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