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The Effect of Pre-Colonoscopy Education and Telephone Monitoring on Patients' Anxiety Level and Bowel Preparation: A Randomized Controlled Trial

Kolonoskopi Öncesi Eğitim ve Telefonla İzlemenin Hastaların Kaygı Düzeyi ve Bağırsak Hazırlığı Üzerindeki Etkisi: Randomize Kontrollü Çalışma

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This study was presented as an oral presentation at the 3rd International 7th National Basic Nursing Care Congress, October 22-24, 2024, İzmir, Türkiye.

ABSTRACT Objective: Colonoscopy is an anxiety-provoking process for individuals. Adequate colonoscopy preparation of the individual contributes to the success of the colonoscopy. The aim of this study is to investigate the effects of pre-colonoscopy education and phone calls on patients' anxiety and bowel preparation levels. **Material and Methods:** This is a randomized controlled study. The sample consists of 80 people determined by power analysis. Individuals were divided into 40 experimental and 40 control groups. Data were collected using the Boston Bowel Readiness Scale and the State Anxiety Inventory. **Results:** Compared with the control group, our experimental group participants exhibited lower anxiety levels and higher bowel preparation levels. The experimental group demonstrated a greater water intake and required fewer enemas before the procedure than the control group. Furthermore, the experimental group reported fewer procedural problems, such as nausea and defecation than the control group. These results highlight the positive impact of pre colonoscopy training on reducing procedural anxiety and mitigating procedural problems. In addition, the findings suggest that patients who receive pre-colonoscopy training exhibit better levels of bowel preparation. **Conclusion:** Nurses should develop and implement educational programs for patients undergoing colonoscopy. Phone calls can increase the effectiveness of training.

Keywords: Education pre-colonoscopy; bowel preparation; nursing, anxiety; telephone follow-up

ÖZET Amaç: Kolonoskopi bireyler için anksiyete yaratan bir süreçtir. Bireyin kolonoskopi hazırlığının yeterli olması kolonoskopinin başarısına katkıda bulunur. Bu çalışmanın amacı, kolonoskopi öncesi eğitimi ve telefon görüşmelerinin hastaların anksiyete ve bağırsak hazırlık düzeyleri üzerine etkilerini araştırmaktır. **Gereç ve Yöntemler:** Bu randomize kontrollü bir çalışmadır. Örneklem güç analizi ile belirlenen 80 kişiden oluşmaktadır. Bireyler 40 deney ve 40 kontrol grubuna ayrılmıştır. Veriler Boston Bağırsak Hazırlığı Ölçeği ve Durumluk Anksiyete Envanteri kullanılarak toplanmıştır. **Bulgular:** Kontrol grubu ile karşılaştırıldığında, deney grubu daha düşük kaygı düzeyli ve daha yüksek bağırsak hazırlığı düzeyi sergilemiştir. Deney grubu kontrol grubuna kıyasla daha fazla su tüketmiş ve işlemden önce daha az lavmana ihtiyaç duymuştur. Ayrıca, deney grubu kontrol grubuna kıyasla daha az bulantı ve dışkılama gereksinimi yaşamıştır. Bu sonuçlar, kolonoskopi öncesi eğitimin prosedürel kaygıyı azaltma ve prosedürel sorunları hafifletme üzerindeki olumlu etkisini vurgulamaktadır. Ayrıca bulgular, kolonoskopi öncesi eğitim alan hastaların daha iyi düzeyde bağırsak hazırlığı sergilediğini göstermektedir. **Sonuç:** Hemşireler kolonoskopi yapılacak hastalar için eğitim programları geliştirmeli ve uygulamalıdır. Telefon görüşmeleri eğitimin etkinliğini artırabilir.

Anahtar Kelimeler: Kolonoskopi öncesi eğitim; bağırsak hazırlığı; hemşirelik; anksiyete; telefonla izlem

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Colonoscopy is an endoscopic procedure commonly used for d the diagnosis of large intestine diseases.[1] However, it induces stress and anxiety in patients undergoing the procedure.[2,3] Effective nursing training and interventions play a crucial role in reducing patients' stress and anxiety levels during colonoscopy.[4,5]

Proper bowel preparation is essential before a colonoscopy to ensure that the bowel is free from fecal material.[1] This thorough cleansing allows doctors to visualize even the smallest polyps, measuring less than 0.5 mm.[6] Therefore, achieving adequate bowel preparation is crucial for the successful execution of colonoscopy. Before the procedure, it is vital to provide patients with detailed information regarding the procedure, dietary restrictions, recommended fluid intake, and laxatives. Insufficient information can lead to both insufficient bowel preparation and the patient's inability to feel comfortable.[3,6,7]

Extensive research has been conducted on various aspects of bowel preparation for colonoscopy. Studies have explored the impact of bowel preparation on factors such as colonoscopy adherence and patient comfort as well as the influence of dietary habits or phone-based training on bowel preparation.[1,6-8] However, there is a notable research gap regarding the effects of pre-colonoscopy and follow-up phone training on patients' anxiety levels and bowel preparation. It has been explained that the training given to the patient before colonoscopy reduces anxiety and improves bowel readiness.[2] In 2 separate studies, the success rates of colonoscopy patients who were trained were higher during the colonoscopy preparation process.[4,5] Many studies have suggested that patients should be trained by nurses before the colonoscopy attempt and that the training should be repeated.[4-6,9,10] Therefore, this study examined the effects of pre-colonoscopy training and follow-up phone-based training on patients' anxiety levels and bowel preparation.

Research Hypothesis

Experimental and control groups;

H1: There is a difference between anxiety scores

H2: There is a difference between bowel readiness scores

H3: There is a difference between the preparation status before the colonoscopy procedure.

H4: There is a difference between their experiences during colonoscopy.

MATERIAL AND METHODS

This was a randomized controlled study with parallel groups.

The study was conducted in accordance with the Declaration of Helsinki. Participants were informed about the study and written informed consent was obtained. The article was reported in accordance with Consort criteria. Ethical approval: Necmettin Erbakan University Health Sciences Scientific Research Ethics Committee (date: April 7, 2021; no: 18) and hospital approval (date: October 6, 2021; no: E-14567952-900-100066) were obtained before the study.

POPULATION AND SAMPLE

The population of the study consisted of patients undergoing colonoscopy in the Adult Gastroenterology outpatient clinic of Necmettin Erbakan University Health Sciences. The sample was determined by power analysis and 80 people constituted the sample. Power analysis was performed using data from a similar study.[9] The calculation was made using the G-Power 3.1.9.4 package program. According to this calculation, there should be at least 32 people in each group with an effect size of 0.83, alpha error margin of 0.0 and 95% power. The sample was increased by 25% compared to the literature, taking into account possible losses. The study was completed with 80 participants (M: 40, C: 40). There were no missing data. During the study, the researcher encountered 142 patients for colonoscopy. Of these, those who refused to participate in the study (n=42) and those who did not fulfill the inclusion criteria (n=20) were excluded. There were no missing data. The "post hoc" power of the study was 0.980.

Randomization

First, envelopes labeled with 40 experimental and 40 control groups were prepared for the draw. Patients who decided to undergo colonoscopy were evaluated for compliance with the inclusion criteria. The patient

was informed about the research. When the patient declared that he wanted to participate, a lottery was drawn, and it was determined which group he would be in.

Blinding

The person doing the sample calculation, the statistician, the doctor and nurse performing the colonoscopy, and the person collecting the post-intervention data were blinded. Data collected by someone outside the study. To ensure blinding of the statistician, the experimental group was coded as "X" and the control group was coded as "Y". Participants, the nurse who collected data, and the nurse who provided the training were not blinded. The inclusion criteria were (1) being 18-65 years of age, (2) having no communication problems, (3) having no cognitive impairment, and (4) having a phone. The exclusion criteria were (1) undergoing an emergency colonoscopy, (2) being an inpatient and (3) having previous colonoscopy experience.

DATA COLLECTION TOOLS

The data were collected using a pre and post colonoscopy personal information form, the Boston Bowel Preparation Scale (BBPS), and the State Anxiety Inventory (SAI). The data of the study were collected between July 1, 2022, and March 30, 2023. The study was terminated after the sample number was completed.

Pre And Post Colonoscopy Personal Information Form

The pre and post colonoscopy personal information form were based on a literature review.[1,3,8] It consisted of 14 items on sociodemographic and disease-related characteristics.

Boston Bowel Preparation Scale

The BBPS is a validated rating scale specifically developed for assessing bowel cleanliness during colonoscopy-oriented research. It involves assigning a score ranging from 0 to 3 for each segment: right colon, transverse colon, and left colon. A score of 0 indicates an unprepared segment where the mucosa is not visible because of the presence of solid stool that cannot be cleared. A score of 1 indicates liquid or semisolid stool in a portion of the intestine. A score of 2 suggests the presence of small fragments of stool and/or opaque liquid, but the colon is relatively clear. Finally, a score of 3 indicates well-visualized mucosa throughout the entire segment, with no small fragments of stool or opaque liquid present. The segment scores are then summed to yield a total score ranging from 0 to 9, where 0 indicates inadequate bowel preparation and, 9 represents complete cleanliness.[11] Evaluation using the BBPS is typically performed by a physician.[11-13] Since the Turkish version was used in the Turkish study without Turkish validity and reliability, it was used in this form.[13] In this study, the assessment was performed by the practicing physician during colonoscopy.

State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory was developed by Spielberger et al. (1964) and adapted to Turkish by Oner and Le Comte (1983). The SAI measures anxiety about an event, whereas the Trait Anxiety Inventory measures anxiety level as a personal characteristic. Each inventory comprises 20 items. This study employed SAI. The items are rated on a 4-point Likert scale of 1-4 (1=never, 2=sometimes, 3=often, 4=always). Ten SAI items (1, 2, 5, 8, 10, 11, 15, 16, 19, and 20) are reverse scored. The total score ranged from 20 to 80, with higher scores indicating higher anxiety levels. The total score of the reverse-scored items is subtracted from that of the other items. Then 50 are added to that score. The original SAI has a Kurder-Richardson alpha of 0.83-0.92, while the Turkish version has a Kurder-Richardson alpha of 0.94-0.96. No permission was obtained from the author for this scale, and the annotated booklet of the scale was used, In this study, 0.86.[14]

Procedure

During the initial interview, the researchers obtained informed consent from the participants and conducted a random drawing. Before the colonoscopy, the researchers administered the SAI and the BBPS to all participants. These assessments were conducted to measure the participants' state of anxiety and the cleanliness of their bowels, respectively. After the colonoscopy, each participant was discharged from the hospital when they felt better, and their condition was stable. Implementation steps are given in the

flowchart (Figure 1) and explained below. It has been determined which group the individual will be in;

The Experimental Group

If the participant was assigned to the experimental group, the researchers provided training based on a booklet that they developed. Training was provided by the researcher in the colonoscopy unit. At the participant's request, a family member was also included in the training. The training session lasted approximately 20 min. After the training, the researchers scheduled the colonoscopy and allowed the participant to return home. They provided the participant with the booklet and encouraged her to review it thoroughly, reminding her to contact them if she had any questions. To ensure continued support, the nurse re-

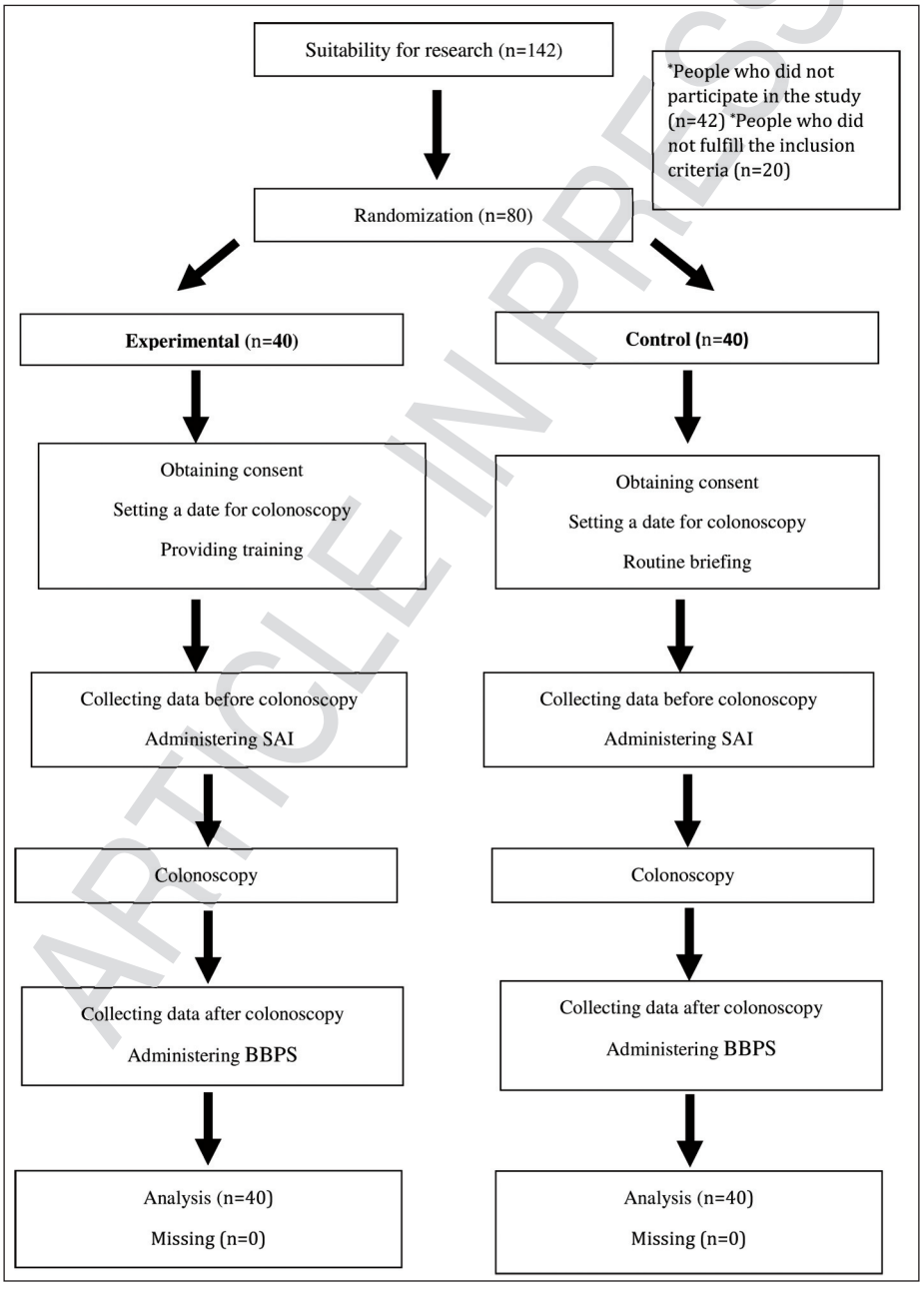

FIGURE 1: Flowchart
SAI: State Anxiety Inventory; BBPS: Boston Bowel Preparation Scale

searcher called the participant 48 h. before the colonoscopy to reinforce instructions regarding diet, fluid intake, and medication use. In addition, each participant called the nurse researcher at least once before the appointment to inquire about fluid intake and medication use.

The researchers developed a training booklet (TB) based on a literature review.[15] The booklet contained detailed information about colonoscopy, encompassing its purpose, procedure, and the specific location. The primary aim of the booklet was to educate the participants about the importance and necessity of colonoscopy by providing clear explanations of how the procedure is conducted and where it occurs. To enhance participants' understanding, the booklet included photographs of the colonoscopy unit. To ensure the accuracy and quality of the booklet, the researchers sought the input of nine experts who provided valuable feedback. The experts evaluated the booklet using the Davis technique. Based on their suggestions, the authors have made revisions. The content validity of the booklet was calculated to be 0.94, indicating a high level of validity. In addition, the Atesman Readability Index was determined to be 72.6, indicating that individuals at a 7th grade reading level could comprehend the content. A family member with at least a primary school degree was included in the training to support younger participants or those with limited education. The primary outcome criteria in this study were the anxiety level and bowel readiness status of the groups. Secondary outcome criteria were differences related to the preparation and post-colonoscopy process of the groups.

Control Group

If the participant was assigned to the control group, the researchers gave him a routine briefing and a short fact sheet. At the request of the participant, a family member was also included in the training. The training session lasted about 15 minutes. This is a routine program in the clinic. After the training, the researchers scheduled the colonoscopy and allowed the participant to return home. The patient came to his appointment on the day of the colonoscopy. They are monitored and evaluated in the same way as in the experimental group.

STATISTICAL ANALYSIS

Data were analyzed using IBM SPSS Statistics for Social Windows, Version 25.0. Armonk, NY: IBM Corp.) was used at a significance level of 0.05. Descriptive statistics were presented as numbers, proportions, means and standard deviations. Minimum and maximum values and means and standard deviations were used for continuous variables. Number, percentage, and mean values were calculated for categorical variables. Normality was tested using Skewness and Kurtosis values, histograms, and Q-Q plot values. Although age, and SAI and BBPS scores, were normally distributed, the duration of hospital stay after the procedure was not normally distributed. Tobacco use, alcohol use, need for enema, abdominal pain, should defecate, nausea, and vomiting after the procedure were not normally distributed. The independent sample test and Pearson's chi-square test statistics were used to compare the groups. For further analysis, group variances were determined using Levene's test. There was no data loss. All analyzes were performed according to the assigned groups.

RESULTS

The mean age of the participants E: 49.65±15.403, C: 49.13±15.941, mean SAI score E: 51.08±4.962, C: 50.90±3.874. More than half were women (52.5%). The experimental group (E) consisted of 20 men and 20 women. The control group consisted of 18 men and 22 women. Most participants had primary school degrees (E: 45%, C: 50%) and chronic diseases (E: 65%, C: 70%). Most participants had never undergone a colonoscopy before (E: 52.5%, C: 57.5%). Most participants underwent colonoscopy because they had occult (hidden) blood in the stool (E: 37.5%, C: 35%). The experimental and control groups were similar before the procedure ($p<0.05$) (Table 1).

The control group participants (65%) needed more enemas than the experimental group participants (25%) after the colonoscopy ($p<0.05$). The control group participants (72.5%) had more inadequate bowel prep levels than the experimental group participants (12.5%) ($p<0.05$). The control group participants (67.5%) needed more defecation than the

TABLE 1: Descriptive and disease-related characteristics

		Experimental		Control		Sig.	
Characteristics		**n**	**%**	**n**	**%**	**$\bar{X}$**	**p value**
Gender	Woman	20	50	22	55.0	0.201	0.654*
	Man	20	50	18	45.0		
Education (degree)	Primary school	18	45.0	20	50.0	0.742	0.690*
	Middle school	13	32.5	14	35.0		
	Bachelor's	9	22.5	6	15.0		
Chronic diseases	Yes	26	65.0	28	70.0	0.228	0.633*
	No	14	35.0	12	30.0		
Having a colonoscopy before	Yes	19	47.5	17	42.5	0.202	0.653
	No	21	52.5	23	57.5		
Reason for having a colonoscopy	Occult blood in the stool	15	37.5	14	35.0	0.746	0.862*
	Stomachache	6	15.0	6	15.0		
	Changes in the bowel habits	12	30.0	10	25.0		
	Other	7	17.5	10	25.0		
		$\bar{X}$±SD	**Minimum-maximum**	**$\bar{X}$±SD**	**(Minimum-maximum)**		
Age		49.65±15.403	19-65	49.13±15.941	18-65	0.115	0.881**
SAI		51.08±4.962	43-57	50.90±3.874	43-56	0.412	0.759**

*Pearson's chi-square test; **Independent samples t-test. Sig: Significance; SAI: State Anxiety Inventory

experimental group participants (45%) after the colonoscopy ($p<0.05$). The control group participants (57.5%) felt sick more often than the experimental group participants (25%) after the colonoscopy ($p<0.05$). The experimental group participants consumed more water than the control group before the colonoscopy ($p<0.05$) (Table 2).

The control group (61.80±1.418) had a significantly higher mean SAI score than the experimental group (55.08±3.963). The control group (3.80±0.369) had a significantly lower mean BBPS score than the experimental group (6.93±0.296). The intervention greatly affected both anxiety (*Cohen's d*=0.759) and bowel preparation levels (*Cohen's d*=0.978). The effect of the intervention on the BBPS scores of the right and transverse columns was determined at a moderate level. The effect on the BBPS score of the left colon was at a smaller level ($p<0.05$) (Table 3).

The correlation between SAI scores and length of hospital stay after the procedure was negative and weak ($p<0.05$). The correlation between SAI and BBPS scores was also negative and moderate ($p<0.05$). Individuals with high anxiety scores may perform less bowel preparation and want to leave the hospital more quickly (Table 4).

DISCUSSION

In this study, a difference was determined between the experimental and control groups in terms of state anxiety score, bowel preparation score, pre-procedure preparation, and what happened during the procedure. In this context, all hypotheses were accepted. The results were discussed in light of the literature.

Approximately half of colonoscopy patients experience moderate to severe anxiety.[16] Shahrbabak et al. conducted a study and found that patients who had a better understanding of the procedure experienced lower anxiety levels. In their experimental group, the mean pretest and posttest SAI scores were 2.71±0.48 and 0.52±2.07, respectively, indicating a significant reduction in anxiety levels ($p<0.05$).[4] Similarly, Ahadi et al. divided patients into 2 groups and provided colonoscopy-related training using different methods. The group that received training through a TB had significantly lower mean SAI scores than the group that received training with multimedia ($p<0.05$).[5] Overall, existing research suggests that patients who receive adequate training and information about colonoscopy experience less pre-procedural anxiety.[5,6] Patients who are well-informed about the

TABLE 2: Procedural characteristics

Characteristics		Experimental n	Experimental %	Control n	Control %	Sig. $\bar{X}$	p value
Finishing the medication	None	0	0	1	2.5	2.269	0.686*
	¼	0	0	1	2.5		
	½	13	32.5	14	35.0		
	¾	11	27.5	9	22.5		
	All	16	40.0	15	37.5		
Needing enemas	Yes	10	25.0	27	67.5	14.532	**0.000***
	No	30	75.0	13	32.5		
Amount of fluid taken in (Lt)	>3	15	37.5	4	10.0	11.393	**0.003***
	1-3	20	50.0	21	52.5		
	>1	5	12.5	15	37.5		
Problems encountered during colonoscopy	Yes	8	20.0	18	45.0	5.698	**0.017***
	No	32	80.0	22	55.0		
Inadequate bowel preparation	Yes	5	12.5	29	72.5	35.957	**0.000***
	No	35	87.5	11	27.5		
Post-procedural pain	Yes	33	82.5	32	80.0	0.082	0.775*
	No	7	17.5	8	20.0		
Post-procedural defecation	Yes	18	45.0	27	67.5	4.114	**0.043***
	No	22	55.0	13	32.5		
Post-procedural nausea	Yes	10	25.0	23	57.5	0.8.717	**0.003***
	No	30	75.0	17	42.5		
Post-procedural vomiting	Yes	7	17.5	4	10.0	0.949	0.330*
	No	33	82.5	36	90.0		
		$\bar{X}$±SD	Minimum-maximum	$\bar{X}$±SD	Minimum-maximum	$\bar{X}$	p value
Soft food intake before colonoscopy (day)		2.35±0.662	1-4	2.40±0.816	1-4	3.010	0.454**
Water intake before colonoscopy (hour)		4.55±0.783	2-5	4.67±0.770	2-5	0.322	0.576**
Length of hospital stay after colonoscopy (minutes)		36.00±8.412	35-36	36.13±9.302	30-60	0.433	0.950**

*Pearson's chi-square test; **Independent Samples t-test; ***Patients with multiple problems. Sig: Significance

TABLE 3: Post-procedure SAI and BBPS scores

	Experimental 95% confidence interval		Control 95% confidence interval		Test statistics	
	$\bar{X}$±SD	Minimum-maximum	$\bar{X}$±SD	Minimum-maximum	p value	Cohen's d
SAI	55.08±3.963	48-62	61.80±1.418	58-64	**0.000**	0.759
BBPS total	6.93±0.296	0-9	3.80±0.369	0-9	**0.000**	0.978
BBPS, right colon	2.25±0.776	0-3	1.05±0.986	0-3	**0.000**	0.560
BBPS, transverse colon	2.40±0.672	0-3	1.28±0.784	0-3	**0.000**	0.608
BBPS, left colon	2.28±0.816	0-3	1.48±0.816	0-3	**0.000**	0.440

SD: Standard deviation; SAI: State Anxiety Inventory; BBPS: Boston Bowel Preparation Scale

TABLE 4: Correlations

Variables	SAI r value	SAI p value	BBPS r value	BBPS p value
Age	-0.300	0.791*	-1.33	0.239*
Soft food intake before colonoscopy (day)	0.063	0.580*	0.046	0.686*
Water intake before colonoscopy (hour)	0.044	0.701*	0.004	0.974*
Length of hospital stay after colonoscopy (minutes)**	-0.299	**0.007****	-0.213	0.058
BBPS	-0.446	**0.000***		

*Pearson's Correlation; **Spearman's correlation. SAI: State Anxiety Inventory; BBPS: Boston Bowel Preparation Scale

procedure are more likely to adhere to the instructions provided.[17] In our study, participants in the experimental group had significantly lower mean SAI scores than those in the control group. These findings indicate that providing training and information about colonoscopy helps patients gain knowledge and reduces their anxiety levels.

Being informed about the colonoscopy procedure reduces pre-procedural anxiety and improve patients' ability to prepare their bowels adequately.[2] Notably, 2-thirds of patients demonstrate good bowel preparation for the colonoscopy procedure. Educational interventions are crucial in increasing patients' knowledge about bowel preparation for colonoscopy.[18] Diniz et al. divided patients into experimental and control groups, with the former receiving training on the colonoscopy procedure. The results indicated that more than half of the experimental group participants achieved a BBPS score of 9 (54%), while only slightly over a quarter of the control group participants achieved the same score (27%).[1] Nurse-led phone calls before colonoscopy have also been shown to significantly improve bowel cleansing in patients by 83%.[6] In their study, Lam et al. provided reinforced education to their patients 4 days before colonoscopy to improve bowel preparation and found that the quality of bowel preparation (44%) improved in the post-education group.[10]

Similarly, Kızılcık Özkan et al. reported that patients receiving short text messages before colonoscopy demonstrated better bowel preparation.[19] This study implemented a comprehensive 3-stage training program. First, the researchers provided training to the experimental group participants using a booklet. Second, they encouraged the participants to contact them with any questions. Finally, a nurse called all the experimental groups participants 2 days before the colonoscopy procedure, providing additional information and guidance. The findings of our study suggest that when patients participate in a training program that incorporates phone calls and written materials, their ability to prepare their bowels for the colonoscopy procedure improves significantly.

Inadequate bowel preparation in patients has been associated with a higher likelihood of requiring enemas before the colonoscopy procedure.[20,21] Patients with adequate bowel preparation tend to experience less post-procedural nausea and have a reduced frequency of defecation.[8] In our study, the experimental group participants required fewer enemas and had a higher water intake than the control group participants before the procedure. In addition, the experimental group participants experienced less postprocedural nausea and had reduced defecation frequency. These findings suggest that patients who achieve adequate bowel preparation are more likely to adhere to the instructions, resulting in fewer complications following the procedure.

LIMITATIONS

This study had 2 strengths. First, this was a randomized controlled trial. Second, the people who randomized the participants, analyzed the data, performed colonoscopy, and collected the post-procedure data were blinded to the group assignment. However, this study was conducted in a single center. Therefore, the results are sample-specific and cannot be generalized to all patients. Another limitation is that the study's results, except for the evaluations made with the scale, were limited to the answers given by the patients.

CONCLUSION

Compared with the control group, our experimental group participants exhibited lower anxiety levels and higher bowel preparation levels. The experimental group demonstrated a greater water intake and required fewer enemas before the procedure than the control group. Furthermore, the experimental group reported fewer procedural problems, such as nausea and defecation than the control group. These results highlight the positive impact of pre colonoscopy training on reducing procedural anxiety and mitigating procedural problems. In addition, the findings suggest that patients who receive pre-colonoscopy training exhibit better levels of bowel preparation.

To enhance patient outcomes, it is recommended that nurses incorporate pre-colonoscopy training into their practice, which includes providing patients with phone calls and written materials. Moreover, these interventions can contribute to increased visibility

and recognition of the nursing profession, ultimately enhancing the overall quality of nursing care.

Highlights

- Colonoscopy is uncomfortable for the patient and increases anxiety
- The success of the colonoscopy procedure is directly related to adequate bowel preparation
- Reducing patient anxiety before colonoscopy is recommended
- Adequate bowel preparation of the patient and reduction of anxiety may be possible with nurse support

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Rukiye Burucu, Elif Öğmen;* ***Design:*** *Rukiye Burucu, Elif Öğmen;* ***Control/Supervision:*** *Rukiye Burucu;* ***Data Collection and/or Processing:*** *Rukiye Burucu, Elif Öğmen;* ***Analysis and/or Interpretation:*** *Rukiye Burucu;* ***Literature Review:*** *Rukiye Burucu, Elif Öğmen;* ***Writing the Article:*** *Rukiye Burucu, Elif Öğmen;* ***Critical Review:*** *Rukiye Burucu, Elif Öğmen;* ***References and Fundings:*** *Rukiye Burucu, Elif Öğmen;* ***Materials:*** *Rukiye Burucu, Elif Öğmen.*

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