DOI: 10.4274/tjcd.72677
Turk J Colorectal Dis 2016;26:39-46

RESEARCH ARTICLE

Impact of Pre-Operative Anxiety on Post-Operative Constipation

Ameliyat Öncesi Anksiyetenin Ameliyat Sonrası Konstipasyona Etkisi

Meryem Arı[1], Emel Yılmaz[2]
[1]Celal Bayar University Institute of Health Sciences, Manisa, Turkey
[2]Celal Bayar University Faculty of Health Sciences, Manisa, Turkey

ABSTRACT

Aim: The aim of this study was to determine the impact of pre-operative anxiety on post-operative constipation.
Method: A defininig and cross-sectional study sample consisted of 162 patients who conformed to the study criteria and had surgery in general surgery department of a university hospital which is located in Western Turkey. Ethics committee approval and informed consent was obtained before the study. Data was collected using Personal Information Form, Spielberg State/Trait Anxiety Inventory (SSAI/STAI), Constipation Risk Assessment Scale (CRAS), Constipation Severity Scale (CSS). Data was evaluated using descriptive statistics and correlation analysis.
Results: Rate of patients who had constipation was found to be 31.5%. The mean scores of CRAS (5.1±2.1), total (29.6±11.1) and subscale of CSS were found to be low, SSAI (43.0±8.3) and STAI (47.5±9.2) mean scores were found to be moderate level. Post-operative first mobilization, bowel gas extraction and the first defecation time were 7.1±3.1, 11.0±6.4 and 27.6±14.9 hours, respectively. There was no statistical significant difference between patients' STAI and SSAI scores and CRAS and CSS scores ($p>0.05$). There was a poor positive correlation between SSAI scores and first bowel gas extraction ($r=0.173$, $p<0.05$). Also, a poor positive correlation was found between STAI score and post-operative pain severity ($r=0.219$, $p<0.01$).
Conclusion: First bowel gas extraction time was prolonged in patients who have more anxiety before the operation, but no constipation was observed. This study results suggest nurses to inform the patients pre-operatively to reduce anxiety level and to follow bowel movements closely.
Keywords: Constipation, pre-operative anxiety, elective surgery, mobilization, bowel movements

ÖZ

Amaç: Araştırmada; ameliyat öncesi anksiyetenin ameliyat sonrası konstipasyona etkisinin belirlenmesi amaçlandı.
Yöntem: Tanımlayıcı ve kesitsel türdeki bu araştırmanın örneklemine Türkiye'nin Batı bölgesindeki bir üniversite hastanesinin genel cerrahi kliniğinde ameliyat olan ve çalışma kriterlerine uyan 162 hasta dahil edildi. Araştırma öncesinde etik kurul onayı ve hastalardan onam alındı. Veriler Kişisel Bilgi Formu, Spielberg Durumluk-Sürekli Kaygı Ölçeği (SDKÖ/SSKÖ), Konstipasyon Risk Değerlendirme Ölçeği (KRDÖ) ve Konstipasyon Ciddiyet Ölçeği (KCÖ) ile toplandı. Verilerin değerlendirilmesinde tanımlayıcı istatistikler ve korelasyon analizi kullanıldı.
Bulgular: Hastaların %31,5'inin konstipasyon yaşadığı saptandı. Araştırma grubunun KRDÖ (5,1±2,1), KCÖ toplam (29,6±11,1) ve alt boyut puan ortalamaları düşük, SDKÖ (43,0±8,3) ve SSKÖ (47,5±9,2) puan ortalamaları orta düzey olarak bulundu. Ameliyattan sonra ilk mobilizasyon süresi 7,1±3,1, ilk gaz çıkarma süresi 11,0±6,4 ve ilk defekasyona çıkma süresi 27,6±14,9 saattir. Hastaların SDKÖ/SSKÖ puanları ile KCÖ ve KRDÖ puanları arasında istatistiksel olarak anlamlı fark belirlenmedi ($p>0,05$). Araştırma grubunu oluşturan hastaların SDKÖ puanı ile ameliyattan sonra ilk gaz çıkarma süresi arasında pozitif yönde zayıf korelasyon ilişkisi saptandı ($r=0,173$, $p<0,05$). SSKÖ puanı ile ameliyattan sonraki ağrı şiddeti arasında pozitif yönde zayıf korelasyon ilişkisi belirlendi ($r=0,219$, $p<0,01$).
Sonuç: Ameliyat öncesi kaygısı yüksek olan hastaların ameliyattan sonra ilk gaz çıkarma süresi uzadı fakat konstipasyon gözlenmedi. Araştırma sonuçlarına göre bireylerin ameliyat öncesi hemşireler tarafından bilgilendirilerek anksiyete düzeylerinin azaltılması ve barsak hareketlerinin yakından takip edilmesi önerilebilir.
Anahtar Kelimeler: Konstipasyon, ameliyat öncesi anksiyete, elektif cerrahi, mobilizasyon, barsak hareketi

Address for Correspondence/Yazışma Adresi: Emel Yılmaz MD,
Celal Bayar University Faculty of Health Sciences, Manisa, Turkey
Phone: +90 236 239 13 18 **E-mail:** emelyilmazcbu@gmail.com
Received/Geliş Tarihi: 22.02.2016 **Accepted/Kabul Tarihi:** 11.04.2016

Introduction

It is known that any kind of surgical decision creates pre-operative anxiety in individuals. In surgical patients, anxiety can result from various reasons including fear of the unknown, fear of death or failure to wake up after anesthesia, loss of control, pain, being isolated, leaving loved ones, and social withdrawal.[1,2]

Constipation is quite common in the general population and its prevalence depends on the definition used. It is more prevalent in women than in men, in people of African descent than in Caucasians, in children than in adults, and in elderly than in younger population.[3,4]

Bed rest after surgery, suppression of the urge to defecate, use of bedpan, lack of privacy in hospital environment, difficulty of patients to express discomfort, particular assignment of non-professional allied health personnel to this service, analgesic medications (namely, opioid and non-opioid agents) used for the management of pain, and handling of the bowel at operation can lead to incomplete evacuation of the bowel associated with abdominal distension.[5] Previous studies reported that anxiety affected bowel movements.[6,7,8] It was also indicated that constipation was observed frequently after surgery.[2,5,9,10]

Anesthesia and laparotomy cause the inhibition of the bowel movements. Intestinal peristalsis recovers spontaneously by 0-24 hours in small intestine and by 24-48 hours in stomach. This period may last up to 120 hours in large intestine.[11] Constipation and subsequent intestinal dilation result in elevated intra-abdominal pressure, impair diaphragmatic movements and cardiopulmonary system, and consequently increase the duration of hospital stay and the cost of health care of the patients.[9,12] Furthermore, the discomfort of the patient augments and the process of recovery is hindered. Nursing interventions such as early mobilization, nutrition, use of bedpan, and proper hydration should be implemented for prevention and management of post-operative constipation problem.[13]

When current literature is analyzed, the number of studies about the influence of pre-operative anxiety on post-operative constipation is insufficient. The results of the present study are thought to help the risk stratification and prevention of post-operative constipation and to provide a different point of view for further research.

Materials and Methods

Research Question

It was defined as follows: Does pre-operative anxiety have an impact on post-operative constipation?

Research Objective

This study was planned to determine the effect of pre-operative anxiety on post-operative constipation.

Type of Study

This is a descriptive, cross-sectional study.

Study Population and Sample

The study population included the patients operated in the general surgery department of Celal Bayar University Hafsa Sultan Hospital between October 15, 2014 and January 31, 2015. Considering the post-operative constipation prevalence (25%) reported by Yetkin and Kara[9], the smallest sample size for the study was estimated to be 125 with Epi info program according to a deviation rate of 10% and a probability of type 1 error (α) of 0.01; the study ultimately included 162 patients.

Inclusion Criteria

Inclusion criteria comprised voluntary participation, age 18 or above, operations in general surgery department excluding bowel operations, openness to communication and cooperation, absence of loss of senses such as sight and hearing, consciousness and ability to answer questions, and lack of any disease impairing the decision-making capacity of the patient (such as dementia and psychological disorders).

Data Collection Tools

The following forms were filled out for enrolled patients.

- Personal Information Form
- Spielberg State-Trait Anxiety Inventory
- Constipation Risk Assessment Scale (CRAS)
- Constipation Severity Instrument (CSI)

Personal Information Form: The information form used to collect personal data was composed of two parts. The first part included demographical characteristics such as age, weight, height, body mass index (BMI), gender, marital status, occupation, educational status, and level of income. On the other hand, the second part contained questions about defecation habits and risk factors for constipation, which were prepared by utilizing the constipation questionnaire developed by Dedeli et al.[14]

Spielberg State-Trait Anxiety Inventory: This scale developed by Spielberger[15] in 1964 to measure situational and enduring anxiety levels of individuals in normal and abnormal settings had been adapted into Turkish by Öner and Le Compte.[16] It consisted of short expressions of self-report items. State Anxiety Inventory reflected temporary emotions while Trait Anxiety Inventory was developed to represent what have been felt for the last seven days. Trait and state anxiety inventories included 20 items each and were Likert-type scales scoring between 1 (not at all) and 4 (very much so).

State-Trait Anxiety Inventory involved two types of expression: direct-worded items expressed the negative feelings and reverse-worded items the positive ones. Reverse-worded items were the items numbered 1, 2, 5, 8, 10, 11, 15,

16, 19, and 20 in State Anxiety Inventory and those numbered 21, 26, 27, 30, 33, 36, and 39 in Trait Anxiety Inventory. After calculating the total weighted scores of direct-worded and reverse-worded items separately, the total weighted score of reverse-worded items was subtracted from the total weighted score of direct-worded items. A predetermined and constant value was added to this difference, which was 50 for State Anxiety Inventory and 35 for Trait Anxiety Inventory. The final sum was the individual's anxiety score. The total score of every scale ranged between 20 and 80. A high score indicated an increased level of anxiety.[15,16]

CRAS: This scale had been developed by Richmond and Wright[17] and its validity and reliability in Turkish had been demonstrated by Kutlu et al.[18] The scale consisted of 33 items. The maximum score of the scale was 63 and the minimum score was 1. The risk of constipation was graded according to the score into three groups: 1-10 as low, 11-15 as medium, and 16 or above as high.

CSI: Developed by Varma et al.[19] in 2008, this scale aimed to determine defecation frequency, density, and difficulty/pain of the individuals. The validity and reliability in Turkish had been demonstrated by Kaya and Turan.[20] Moreover, this scale could be utilized to measure constipation symptoms. CSI included 16 items and three subscales, namely obstructive defecation (OD), colonic inertia (CI), and pain. The scores of the subscales ranged from 0 to 28 for OD, from 0 to 29 for CI, and from 0 to 16 for pain. The total score of CSI could be between 0 (min) and 73 (max). High scores indicated severe symptoms.

Method and Duration of Data Collection

This study was approved by the research ethics committee and the hospital where the study was conducted. All the patients eligible and volunteering for inclusion in the study were informed about the objective of the study using an informed consent form. The data of the patients giving consent were collected using the above-mentioned forms with face-to-face interview technique between October 15, 2014 and January 31, 2015. The response time to questionnaire was about 25-30 minutes. The durations of pre-operative fasting, anesthesia, and operation; post-operative pain severity; and the times of first mobilization, first oral intake, first flatulence, and first defecation after surgery were recorded.

Data Analysis

The analysis of data was executed with SPSS 15.0 software program. The data obtained from the study were evaluated with quantitative methods. To analyze the data, descriptive statistics (mean ± standard deviation, number-percentage, minimum, and maximum) and correlation analysis were employed. The results were assessed with a confidence interval of 95%, a p value less than 0.05 being significant.

Ethical Considerations

Prior to initiation, the study was approved by the research ethics committee. A written permission was obtained from the institution where the study was conducted. The patients who participated in the study gave oral and written consent after being informed about the study objective.

Results

As shown in Table 1, 50% of the patients included in the study were aged 49 or below (mean age: 49.0±16.2), 66% were female, and 42% had normal body weight (mean BMI: 26.8±4.9). Of the patients, 73.3% were married, 40.1% were primary school graduate or just literate, 47.5% were housewife, and 85.5% underwent general anesthesia. Of the study population, 31.5% suffered from constipation (mean duration: 3.6±3.4 years) and 54.9% had lumpy or hard stools in at least 25% of defecations.

As seen in Table 2, the mean score of CRAS in the study population was 5.1±2.1. Pre-operative constipation risk of the patients was low. Pre-operative mean scores of CSI were 29.6±11.1 in total, 13.6±5.4 for OD subscale, 10.3±4.3 for CI subscale, and 1.5±2.9 for pain subscale. Total and subscale scores of CSI were low in the participants. The patients involved in the study had a Spielberg Anxiety Inventory score of 43.0±8.3 and a Spielberg Trait Anxiety Inventory score of 47.5±9.2 in average, which were moderate.

In the patients constituting the study group, pre-operative fasting duration was 10.9±5.7 hours, anesthesia duration 104.2±53.8 minutes, operation duration 80.7±53.4 minutes, post-operative pain severity 4.6±1.4, number of analgesics taken after surgery 3.6±1.2, time of first mobilization after surgery 7.1±3.1 hours, time of first oral intake after surgery 11.7±18.6 hours, time of first flatulence after surgery 11.0±6.4 hours, and time of first defecation after surgery 27.6±14.9 hours (Table 3).

There was a positive correlation between CSI and its subscales in the patients constituting the study population ($p<0.01$). No statistically significant relation was observed between the scores of Spielberg State-Trait Anxiety Inventory and the scores of CSI and CRAS ($p>0.05$) (Table 4).

A moderate level of positive correlation was found between the state anxiety scores and the trait anxiety scores ($p<0.01$). As the state anxiety score increased, the trait anxiety score augmented (Table 4).

When the association between Spielberg State-Trait Anxiety Inventory scores of the patients and the healthcare practices during and after surgery was investigated, a weak positive correlation was identified between the state anxiety score and the time of first flatulence after surgery ($r=0.173$, $p<0.05$). As the anxiety score increased, the time of first flatulence

Table 1. Descriptive characteristics of the patients constituting the study population (n=162)

Variables	n (%)
Age group	
49 years or below	81 (50)
50 years or above	81 (50)
Age, mean ± standard deviation	49.0±16.2 (minimum:18, maximum:20)
Gender	
Male	55 (34)
Female	107 (66)
Marital status	
Married	119 (73.5)
Single/widow/divorced	43 (26.5)
Body mass index	
Normal weight (18.5-24.9 kg/m^2)	68 (42.0)
Overweight (25-29.99 kg/m^2)	54 (33.3)
Obesity (30 kg/m2 or above)	40 (24.7)
Educational level	
Illiterate	25 (15.4)
Just literate or primary school graduate	65 (40.1)
Secondary school graduate	24 (14.8)
High school graduate or more	48 (29.6)
Professional status	
Retired	30 (18.5)
Housewife	77 (47.5)
Worker/civil servant/others	55 (34.0)
Anesthesia type	
General anesthesia	139 (85.8)
Spinal /epidural anesthesia	23 (14.2)
Presence of constipation	
Yes	51 (31.5)
No	111 (68.5)
Constipation duration (years, mean ± standard deviation)	3.6±3.4 (minimum:1.0, maximum:12.0)
Rome 2 criteria	
Straining in at least 25% of defecations	14 (27.5)
Lumpy or hard stools in at least 25% of defecations	28 (54.9)
Sensation of incomplete evacuation in at least 25% of defecations	4 (7.8)
Less than 3 defecations per week	5 (9.8)
Total	**51 (100)**

was delayed. There was a weak positive correlation between the trait anxiety score and post-operative pain severity (r=0.219, p<0.01). As the trait anxiety level of the patients increased, so did the severity of pain (Table 4).

Pre-operative fasting duration had weak positive correlations with the severity of pain, first mobilization time, and first defecation time; moderate positive correlations with the duration of anesthesia, the duration of operation, and first flatulence time; and a strong positive correlation with first oral intake time (p<0.05). As the duration of fasting before surgery increased, the other aforementioned variables increased as well (Table 4).

The durations of anesthesia and operation had weak positive correlations with first mobilization time; moderate positive correlations with fasting duration, pain severity, number of analgesics, first oral intake time, first flatulence time, and first defecation time; and a strong positive correlation with each other (p<0.05). As the durations of anesthesia and operation were prolonged, the other variables increased (Table 4).

Post-operative pain severity had weak positive correlations with first flatulence time and first defecation time, and moderate positive correlations with the number of analgesics and first oral intake time (p<0.05). As the severity of pain augmented, the number of analgesics increased and the times of first flatulence, first defecation, and first oral intake were delayed (Table 4).

The number of analgesics had weak positive correlations with first mobilization time and first flatulence time, and moderate positive correlations with the durations of anesthesia and operation, and the severity of pain (p<0.05). As the number of received analgesics increased, all the durations were prolonged (Table 4).

First mobilization time had weak positive correlations with the time of first defecation and the durations of fasting, anesthesia, and operation; and moderate positive correlations with first oral intake time and first flatulence time (p<0.05). As the first mobilization time was delayed, all the durations were prolonged (Table 4).

First oral intake time had a strong positive correlation with fasting duration and moderate positive correlations with the durations of anesthesia and operation, pain severity, first mobilization time, first flatulence time, and first defecation time (p<0.05). As the time of first oral intake was delayed, all the other durations were prolonged (Table 4).

First flatulence time had weak positive correlations with pain severity and number of analgesics, and moderate positive correlations with the durations of fasting, anesthesia, and operation, and the times of first mobilization, first oral intake, and first defecation (p<0.05). As the time of first flatulence was delayed, all the other durations were prolonged (Table 4).

First defecation time had weak positive correlations with fasting duration, pain severity, and first mobilization time; and moderate positive correlations with the durations of anesthesia and operation, and the times of first oral intake and first flatulence (p<0.05). As the time of first defecation was delayed, all the other durations were prolonged (Table 4).

Table 2. Distribution of the patients constituting the study population according to mean scores of employed scales

Scales	Mean ± standard deviation (minimum-maximum)
Constipation Risk Assessment Scale	5.1±2.1 (1-11)
Obstructive defecation	13.6±5.4 (6-28)
Colonic inertia	10.3±4.3 (3- 25)
Pain	1.5±2.9 (0-16)
Constipation Severity Instrument (total)	29.6±11.1 (18-64)
Spielberg State Anxiety Inventory	43.0±8.3 (24-71)
Spielberg Trait Anxiety Inventory	47.5±9.2 (22-27)

Table 3. Distribution of the patients constituting the study population according to healthcare practices before, during, and after surgery

Characteristics	Mean ± standard deviation (minimum-maximum)
Duration of pre-operative fasting (hours)	10.9±5.7 (1-48)
Duration of anesthesia (minutes)	104.2±53.8 (30-560)
Duration of operation (minutes)	80.7±53.4 (20-540)
Post-operative pain severity	4.6±1.4 (2-8)
Number of analgesics taken after surgery	3.6±1.2 (1-6)
Post-operative first mobilization time (hours)	7.1±3.1 (2-24)
Post-operative first oral intake time (hours)	11.7±18.6 (1-50)
Post-operative first flatulence time (hours)	11.0±6.4 (1-50)
Post-operative first defecation time (hours)	27.6±14.9 (2-72)

Discussion

This study showed that 31.5% or the patients had constipation in pre-operative period and more than half of them had lumpy or hard stool in at least 25% of defecations. About one third of the patients suffered from constipation in their daily life. Current literature reported the prevalence of constipation to be between 2-28%.[4] In studies conducted abroad, the prevalence of chronic constipation was reported

Table 4. Relations between the scores of constipation and anxiety scales and the healthcare practices during after surgery in the patients constituting the study population

Variables	CRAS	Obstructive defecation	Colonic inertia	Pain	CSI	State anxiety	Trait anxiety	Fasting duration	Anesthesia duration	Operation duration	Pain severity	Number of analgesics	Mobilization time	Oral intake time	Flatulence time	Defecation time
CRAS	-	0.01	0.22	0.16*	0.12	-0.02	-0.10	-0.12	-0.10	-0.11	0.01	0.02	-0.03	-0.12	-0.0	-0.05
Obstructive defecation	0.01	-	0.74**	0.65**	0.93**	0.26	0.25	0.32*	-0.12	-0.10	-0.18	-0.15	0.15	0.19	-0.03	0.28
Colonic inertia	0.22	0.74**	-	0.43**	0.86**	-0.02	-0.07	0.04	-0.12	-0.15	0.11	0.10	0.07	-0.03	-0.15	0.12
Pain	0.16*	0.65**	0.43**	-	0.74**	-0.01	0.05	-0.01	-0.11	-0.10	-0.02	-0.03	-0.02	-0.04	-0.06	0.02
CSI	0.12	0.93**	0.86**	0.74**	-	0.28	0.04	0.208	-0.03	-0.06	-0.12	-0.01	0.12	-0.15	-0.13	0.20
State anxiety	-0.02	0.26	-0.02	-0.01	0.28	-	0.40**	0.05	0.05	0.05	0.126	0.14	0.08	0.11	0.17*	0.02
Trait anxiety	-0.10	0.25	-0.07	0.05	0.04	0.40**	-	0.12	0.06	0.08	0.22**	0.09	0.01	010	0.10	0.10
Fasting duration	-0.12	0.31*	0.04	-0.01	0.20	0.05	0.12	-	0.50**	0.50**	0.29**	0.11	0.16*	0.77**	0.32**	0.27**
Anesthesia duration	-0.10	-0.12	-0.12	-0.12	-0.03	0.05	0.06	0.50**	-	0.99**	0.43**	0.33**	0.24**	0.56**	0.33**	0.36**
Operation duration	-0.11	-0.10	-0.15	-0.10	-0.06	0.05	0.08	0.50*	0.99**	-	0.42**	0.34**	0.24**	0.56**	0.33**	0.37**
Pain severity	0.01	-0.18	0.11	-0.02	-0.12	0.13	0.22**	0.29**	0.43**	0.42**	-	0.37**	0.13	0.33**	0.25**	0.20*
Number of analgesics	0.02	-0.15	0.10	-0.03	-0.01	0.14	0.09	0.11	0.33**	0.34**	0.37**	-	0.17*	0.11	0.19*	0.03
Mobilization time	-0.03	0.15	0.07	-0.03	0.12	0.08	0.01	0.16**	0.24**	0.24**	0.13	0.17*	-	0.36**	0.49**	0.30**
Oral intake time	-0.12	0.19	-0.03	-0.04	-0.15	0.11	0.10	0.77**	0.56**	0.56**	0.33**	0.11	0.36**	-	0.50**	0.42**
Flatulence time	-0.05	-0.03	-0.15	-0.06	-0.13	0.17*	0.10	0.32**	0.33**	0.33**	0.25**	0.19*	0.49**	0.50**	-	0.36**
Defecation time	-0.05	0.28	0.12	0.02	0.20	0.02	0.10	0.27**	0.36**	0.37**	0.20*	0.03	0.30**	0.42**	0.36**	-

*Pearson correlation 0.05, **Pearson correlation 0.01

CRAS: Constipation Risk Assessment Scale, CSI: Constipation Severity Instrument

between 12-19% (15% in average).[21] In our country, the prevalence of functional constipation was found to be 8.3% in the first comprehensive study by Kasap and Bor,[3] which involved 20 provinces and a population sample (n=3214) representing 52% percent of the country's population. The study results differed from those in the literature; the prevalence of constipation was found to be higher than reported by others. This difference was attributed to the study population consisting of only patients in contrast to normal populations of other studies in the literature and to their treatments associated with their diseases.

Delay in the post-operative mobilization, suppression of the urge of defecation, use of bedpan, and administration of analgesic drugs (opioid and non-opioid agents) could result in bowel evacuation problems.[13] A study by Yetkin and Kara[9] showed the prevalence of post-operative constipation to be 25%. A study by İzveren and Dal[5] reported this rate to be 50.7% in days 1 and 2 after surgery. Post-operative constipation in early phase was observed in 50% of the patients who underwent thoracic surgery.[12] In the seventh day after operation, constipation was found in 50.9% of the patients who received morphine after thoracolumbar spine fusion surgery.[22] Constipation was not observed in any of the study participants and all the patients achieved defecation within 72 hours after surgery.

In the patients constituting the study group, mean CRAS score was 5.1±2.1. In a study by Kutlu et al.,[18] total CRAS score was determined as 12.4±4.2. The literature contained several studies evaluating the constipation risk in various patient groups; reported results were 12.7±4.7 in orthopedic patients, 11.7±7.8 in patients who underwent abdominal surgery and 12.9±4.8 in general surgery patients.[23,24,25] Constipation risk in the study group appeared to be lower than those in other patients.

In this study, mean pre-operative CSI scores were 29.6±11.1 in total, 13.6±5.4 in OD subscale, 10.3±4.3 in CI subscale, and 1.5±2.9 in pain subscale. The patients had low total and subscale scores of CSI. In a study by Turan et al.26 including nursery students, mean CSI scores were 26.0±6.4 in total, 13.7±6.45 in OD subscale, 10.07±6.60 in CI subscale, and 2.2±3.0 in pain subscale. In the above-mentioned study of Varma et al.,[19] scale scores in patients with constipation were higher than ours but lower than healthy control group. The results of the study were similar to those of Turan et al.[26]

The mean scores of the patients in the study group were 43.0±8.3 for Spielberg State Anxiety Inventory and 47.5±9.2 for Spielberg Trait Anxiety Inventory. In the patients participating in the study, mean state and trait anxiety scores were at moderate levels. The levels of pre-operative anxiety found in previous studies were similar to our results.[27,28] The study results were in parallel with the literature.

In the study, the mean duration of pre-operative fasting was 10.9±5.7 hours. In recent years, it has been stated that prolonged fasting before surgery caused distress in the patients. Prolonged fasting can harm the patient both during and after anesthesia and operation. In this situation, the patients can suffer from negative experiences such as stress, dehydration, anxiety, irritability, thirst, dry mouth, fatigue, and headache. It can also increase the risk of vomiting after surgery. Current guidelines about the subject recommend the decrease of fasting time by giving clear liquids until two hours before surgery.[29] de Aguilar-Nascimento et al.[30] reported that traditional protocol of fasting after midnight could prolong the fasting duration up to 10-16 hours whereas Osugi et al.[31] reported the pre-operative fasting duration as nine hours in low-risk patients who underwent tympanoplasty. In a study by Dolgun et al.,[32] pre-operative fasting duration was 13.5 hours and fluid restriction duration was 12.2 hours. The mean duration of fasting in Japanese hospitals providing anesthesia training was determined to be nine hours in cases before midday and six hours after midday.[33] The fasting duration in this study was found to be comparable to those in the literature. Shorter durations of pre-operative fasting would ameliorate the patients' comfort by decreasing hunger and thirst, and would also reduce post-operative complications.

The first mobilization time after surgery was 7.1±3.1 hours in average. Being mobilized after surgery would allow a faster recovery of stomach and bowels which were affected due to anesthesia into their original working order. This, in turn, is important for early initiation of nutrition after surgery. Additionally, it also helps the individual feel better. Being mobilized accelerates the recovery process and reduces the incidence of deep vein thrombosis and respiratory complications. Moreover, it assists early discharge and return to daily life.[34] Short mobilization time in the study was important for its positive impact on healing process.

The first flatulence time in the study was 11.0±6.4 hours and the first defecation time was 27.6±14.9 hours. The literature stated that intestinal peristalsis resumed shortly after surgery.[11] First flatulence and defecation times in our study were not delayed.

The study revealed a weak correlation between pre-operative Spielberg state anxiety score and the time of first flatulence after surgery. As the anxiety score increased, the time of flatulence was delayed. In the literature, anxiety was determined to influence bowel movements.[6,7,8] Our findings were similar to those in the literature.

The study revealed as findings that the patients had pre-operative constipation at the rate of 31.5%, received low scores of CRAS and CSI, and had moderate levels of score in Spielberg State-Trait Anxiety Inventory. Pre-operative

constipation risk was low for the patients. Post-operative first flatulence and first defecation times were normal.

According to these findings;

- Reducing the anxiety level of the individuals by providing more information by nurses before surgery,
- Close monitoring of the patients with regard to bowel movements,
- Expanding this study with a larger sample to include general surgery departments of different hospitals and abdominal surgery cases could be suggested.

Ethics

Ethics Committee Approval: Celal Bayar University Faculty of Medicine Local Ethics Committe 08.10.2014/20478486-337, Informed Consent: It was taken.

Peer-review: External and Internal peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: Meryem Arı, Emel Yılmaz, Concept: Meryem Arı, Emel Yılmaz, Design: Meryem Arı, Emel Yılmaz, Data Collection or Processing: Meryem Arı, Emel Yılmaz, Analysis or Interpretation: Meryem Arı, Emel Yılmaz, Literature Search: Meryem Arı, Emel Yılmaz, Writing: Meryem Arı, Emel Yılmaz.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Cimilli C. Cerrahide anksiyete. Klinik Psikiyatri 2001;4:182-186.
2. Sertbaş G, Bahar A. Anksiyete ve anksiyete ile başetmede hemşirelik girişimleri. Hemşirelik Forumu 2004:39-44.
3. Kasap E, Bor S. Fonksiyonel barsak hastalığı prevalansı. Güncel Gastroenteroloji 2006;10:165-168.
4. Korkmaz M, Yüksel F, Ünlüalacak M, Ünlüoğlu, İ. Kabızlık yakınması olan hastanın birinci basamakta yönetimi. Konuralp Tıp Dergisi 2011;3:35-41.
5. İzveren AÖ, Dal Ü. Abdominal cerrahi girişim uygulanan hastalarda görülen erken dönem sorunları ve bu sorunlara yönelik hemşirelik uygulamaları. Sağlık Bilimleri Fakültesi Hemşirelik Dergisi 2011:36-46.
6. Whitehead WE, Crowell MD, Robinson JC, Heller BR, Schuster MM. Effects of stressful life events on bowel symptoms: subjects with irritable bowel syndrome compared with subjects without bowel dysfunction. Gut 1992;33:825-830.
7. Hosseinzadeh ST, Poorsaadati S, Radkani B, Forootan M. Psychological disorders in patients with chronic constipation. Gastroenterol Hepatol Bed Bench 2011;4:159-163.
8. Zhao L, Liao XJ, Yang GG, Mao WM, Zhang XF, Deng Q, Wu WJ. Distribution characteristics of basic syndromes of chronic functional constipation and its related factors analysis. Zhongguo Zhong Xi Yi Jie He Za Zhi 2014;34:1173-1177.
9. Yetkin A, Kara M. Post-operatif konstipasyon ve yapılan girişimlerin değerlendirilmesi. Atatürk Üniv HYO Dergisi 1998;1:16-27.
10. Zhang CY, Jiang Y, Yin QY, Chen FJ, Ma LL, Wang LX. Impact of nurse-initiated preoperative education on postoperative anxiety symptoms and complications after coronary artery bypass grafting. J Cardiovasc Nurs 2012;27:84-88.
11. Lubawski J, Saclarides T. Postoperative ileus: strategies for reduction. Ther Clin Risk Manag 2008;4:913-917.
12. Rasmussen LS, Pedersen PU. Constipation and defecation pattern the first 30 days after thoracic surgery. Scand J Car Sci 2010;24:244-250.
13. Büyükyılmaz F, Şendir M. Cerrahi hastalarında barsak boşaltımı sorunlarına yönelik hemşirelik bakımı. Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi 2009;2:74-81.
14. Dedeli Ö, Turan İ, Fadıloğlu Ç, Bor S. Konstipasyon Yaşam Kalitesi Ölçeği'nin Türkçe uyarlaması ve geçerlilik güvenilirlik çalışması. MN Dahili Tıp Bilimleri Dergisi 2007;2:36-43.
15. Spielberger Charles. Theory and Research in Anxiety. In: Spielberger CD, ed. Anxiety and Behavior. New York: Academic Press, 1966.
16. Öner N, Le Compte A. Süreksiz Durumluk/Sürekli Kaygı Envanteri El Kitabı. İstanbul: Boğaziçi Üni. Yayınları, 1998.
17. Richmond JP, Wright ME. Development of a constipation risk assessment scale. Clin Eff Nurs 2005;9:37-48.
18. Kutlu KA, Yilmaz E, Ceçen D, Eser E. The reliability and validity of the Turkish version of the constipation risk assessment scale. Gastroenterol Nurs 2011;34:200-208.
19. Varma MG, Wang JY, Berian JR, Patterson TR, McCrea GL, Hart SL. The constipation severity instrument: a validated measure. Dis Colon Rectum 2008;51:162-172.
20. Kaya N, Turan N. Konstipasyon ciddiyet ölçeğinin güvenilirlik ve geçerliliği. Turkiye Klinikleri J Med Sci 2011;31:1491-1501.
21. Higgins PD, Johanson JF. Epidemiology of constipation in North America: a systematic review. Am J Gastroenterol 2004;99:750-759.
22. Stienen MN, Smoll NR, Hildebrandt G, Schaller K, Tessitore E, Gautschi OP. Constipation after thoraco-lumbar fusion surgery. Clin Neurol Neurosurg 2014;126:137-142.
23. Şendir M, Büyükylmaz F, Aştı T, Gürpınar Ş, Yazgan İ. Postoperative constipation risk assessment in Turkish orthopedic patients. Gastroenterol Nurs 2012;35:106-113.
24. Celik S, Atar NY, Ozturk N, Mendes G, Kuytak F, Bakar E, Dalgiran D, Ergin S. Constipation risk in patients undergoing abdominal surgery. Iran Red Crescent Med J 2015;17:23632.
25. Ucuzal M, Aldanmaz N. Genel cerrahi hastalarında ameliyat sonrası konstipasyon riski. İnönü Üniversitesi Sağlık Bilimleri Dergisi 2015;4:17-22.
26. Turan N, Kaya N, Kaya H, Öztürk A, Eskimez A, Yalçın N. Hemşirelik öğrencilerinin bazı değişkenler açısından konstipasyon sorunları. İ.Ü.F.N Hem. Derg 2011;19:168-178.
27. Demir A, Akyurt D, Ergün B, Haytural C, Yiğit T, Taşoğlu İ, Elhan AH, Erdemli Ö. Kalp cerrahisi geçirecek olgularda anksiyete sağaltımı. Turkish J Thorac Cardiovasc Surg 2010;18:177-182.
28. Turhan Y, Avcı R, Özcengiz D. Elektif cerrahi hazırlığında preoperatif ve postoperatif anksiyetenin hasta memnuniyeti ile ilişkisi. J Anesth 2012;20:27-33.
29. Yıldız H. Preoperatif açlık sürecinde yeni yaklaşımlar. AÜTD 2006;38:1-5.
30. de Aguilar-Nascimento JE, Perrone F, de Assunção Prado LI. [Preoperative fasting of 8 hours or 2 hours: what does evidence reveal?]. Rev Col Bras Cir 2009;36:350-352.
31. Osugi T, Tatara T, Yada S, Tashiro C. Hydration status after overnight fasting as measured by urine osmolality does not alter the magnitude of hypotension during general anesthesia in low risk patients. Anesth Analg 2011;112:1307-1313.
32. Dolgun E, Taşdemir N, Ter N, Yavuz M. Cerrahi hastalarının ameliyat öncesi aç kalma sürelerinin incelenmesi. F.Ü. Sağ. Bil. Tıp Derg 2011:25:11-15.
33. Itou K, Fukuyama T, Sasabuchi Y, Yasuda H, Suzuki N, Hinenoya H, Kim C, Sanui M, Taniguchi H, Miyao H, Seo N, Takeuchi M, Iwao Y, Sakamoto A, Fujita Y, Suzuki T. Safety and efficacy of oral rehydration therapy until 2h before surgery: a multicenter randomized controlled trial. J Anesth 2012;26:20-27.
34. Akyolcu N. Ameliyat sonrası hemşirelik bakımı. İçinde: Aksoy G, Kanan N, Akyolcu N, eds. Cerrahi Hemşireliği I. İstanbul: Nobel Tıp Kitapevleri, 2012:355-364.