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Research Article

Investigation of Preoperative Fasting Time and Preoperative and Postoperative Well-Being of Patients

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Abstract

AIM: This study aimed to investigate the preoperative fasting time and preoperative and postoperative well-being of patients.
METHOD: This is a descriptive study. In Istanbul, between January and June 2016, 130 patients from the Training and Research Hospital Urology Clinic were included in the study. In collecting the data of the research, the information form, which included the descriptive features and surgical intervention information of the patients, and together with the scale of "Quality of Recovery-40 Questions (QoR-40)" was used. Mean, Standard Deviation, Median, Frequency, Ratio, Minimum, Maximum, Students' t-Test, Mann Whitney U-test, Paired Samples T-Test, Pearson and Spearman's Correlation Analysis were used for data analysis.
RESULTS: The mean age was 57.48 ± 11.12, 79.2% of the patients were male and 63.8% of them underwent robotic prostatectomy. It was observed that the mean of times for preoperative fasting, solid foods, liquid foods were 11.26 ± 2.17, 12.56 ± 2.47, 11.26 ± 2.17 hours. The percent score of patients who felt hungry, thirsty, and dryness of the mouth was 30.8, 48.5, and 40, respectively, and patients had complaints such as nausea, fatigue, and feeling anxious before surgery.
CONCLUSION: It was determined that patients were still hungry after midnight until surgery and remained hungry for a long time. The preoperative and postoperative well-being was adversely affected; however, there was no statistically significant relationship between the preoperative fasting time and postoperative well-being of patients, duration of hospitalization ($p > .05$).
Keywords: Fasting, nursing, surgery, well-being

Introduction

One in 20 people in the whole world, in other words, 5% of the entire population undergo elective surgery at some point in their lives (Ersoy & Gündoğdu, 2005). Before elective surgery, fasting of the patients after midnight has been practiced for a long time. The reason for this practice is to empty the stomach to reduce the risk of aspiration, which is a complication that was feared and was defined shortly after general anesthesia practice in the 1840s (Yılmaz, 2009). However, it was later observed that prolonged hunger does not fully provide the discharge of the stomach contents, does not reduce gastric fluid volume and acidity, and the risk of related aspiration (Phillips et al., 1993). Although the preoperative fasting was examined only for the risk of aspiration, the metabolic effects of this condition were investigated in the recent past. It was reported that preoperative fasting is the most important factor in the development of insulin resistance after surgery, prolonging the preoperative fasting, thirst, restlessness, hypovolemia, and dehydration times in patients and increasing surgical stress. It was determined that there was a significant increase in insulin level within 24 hours after surgical tarauma, and despite this increase, glucose clearance did not increase but instead decreased and plasma glucose level increased. (Ersoy & Gündoğdu 2005; Yılmaz, 2009). More than half of the glycogen in the liver is lost during overnight fasting, and the loss continues to increase during surgical intervention. Insulin levels drop and muscle proteins begin to break down. In order to eliminate these undesirable effects, clear liquids that are rich in carbohydrates and do not pose a risk in terms of safety have been developed. The use of carbohydrates together with oral clear liquids ensures that the stomach is empty, and the patient turns from catabolic to the anabolic state during surgery and fills glycogen stores (Yıldız, 2009).

The practice of fasting after midnight before surgery is changed and updated in many countries in the western world. It was stated in previous reports that an appropriate fasting period would reduce the risks that might occur in the patient and accelerate the recovery after surgery (Yılmaz, 2009). In the guidelines published in recent years on preoperative fasting, there are changes related to solid and liquid foods that the patient can take. The American Society of Anesthesiologists (ASA) announced that solid foods should not be taken 6 hours before surgery, and clear liquids should not be taken 2 hours

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before surgery. It is emphasized in the 2011 guidelines by the members of the European Society of Anesthesiology-ESA that a 2-h fasting time for clear liquids and 6 hours for solid foods is adequate (American Society of Anesthesiologists, 2017; Dolgun et al., 2011; Smith et al., 2011). In the anesthesia application guidelines, preoperative evaluation guide that was prepared by the Turkish Anesthesiology and Reanimation Association (TARD) in 2015, it is stated that patients may have clear liquids up to 6 hours before surgery and solid foods up to 2 hours before surgery (TARD, 2016).

In Turkey, the principle of fasting after 12 a.m. is still applied to patients. In some cases, patients are delayed until afternoon hours for surgery, and therefore, patients starve for longer times (Dolgun et al., 2011). New arrangements for the preoperative fasting period of patients in our country will reduce complications patients will experience before, during, and after surgery and provide better outcomes in terms of surgical stress and preoperative preparation, accelerate recovery in the postoperative period, decrease hospital stay durations, accelerate the recovery, and improve the quality of patient care. It is very important that surgical nurses, who have an active and important role in the healthcare team from admission to the hospital for surgery to the discharge process, have the necessary knowledge and experience to improve the quality of care of patients, as well as know current developments. It is necessary that the fasting period is re-evaluated and changes are made in the applications in our country according to the results of research in this field.

This study was planned and conducted in a descriptive fashion to examine the relationship between preoperative fasting periods of patients and their preoperative and postoperative well-being.

Research Questions

1. How long are preoperative fasting periods before surgery?
2. Is there a relationship between preoperative fasting periods of patients and the experience of symptoms such as hunger, thirst, dry mouth, nausea, vomiting, feeling tired?
3. Is there a relationship between preoperative fasting periods of patients and their postoperative well-being?
4. Is there a relationship between preoperative fasting periods of patients and the duration of discharge in the postoperative period?

Method

Study Design

This is a descriptive study.

Sample

In determining the sample size of the study, it was aimed to reach 128 patients by using theoretical power analysis. For the analyses to be performed using the independent sample *t*-test, the required minimum sample size was calculated at certain type 1 error and type 2 error levels. Type 1 error probability (α) was accepted as 0.05 (95% CI), Type 2 error probability (β) was accepted as 0.20 (80% power level) (Machin et al., 1997; Zar, 1984).

The study was conducted in Istanbul between January and June, 2016 at the Training and Research Hospital Urology Clinic. The sampling of the study consisted of 130 patients, who underwent surgeries under general anesthesia with laparoscopic and robotic technique, who were treated and cared in the surgery service for at least 2 days in the postoperative period, who were literate, whose general conditions were suitable for discussion, and who were volunteers.

Data Collection

Depending on the preoperative fasting periods of the patients, the "problems and well-being experienced before and after the surgery" were determined according to the patients' expressions on the variables related to moods and physical symptoms such as nausea, vomiting, pain, and feeling tired and were expressed as preoperative fasting durations and preoperative and postoperative well-being scores. The data were collected by the researchers from the patients with 15- to 20-min face-to-face interviews on the second day after surgery.

The introductory characteristics/information form containing data on sociodemographic characteristics of the patients, information about surgical intervention and on the conditions that might occur due to fasting period in the preoperative period, and the quality of recovery-40 questionnaire (QoR-40), which measures the quality of improvement in the postoperative period, were used in the collection of the study data. Since the QoR questionnaire that was used in the study evaluated only the period of patients after the surgery, the table that consisted of seven questions (nausea, vomiting, retching, feeling tired, dizziness, anxiety, and sleepiness) was developed by the researcher by using the relevant literature (Karaman et al., 2014; Myles et al., 2000) to measure the physical and emotional well-being status in the preoperative period.

Quality of Recovery-40 Questionnaire (QoR-40): Myles et al. (2020), and its Turkish validity and reliability study was conducted by Karaman et al., (2014). The QoR-40 is a 40-item questionnaire in which the individual evaluates his own condition and consists of five sub-dimensions (emotional state, physical comfort, patient support, physical independence) to evaluate the pain levels and physical and emotional states of patients. Each item is evaluated on a 5-point Likert scale ranging from 1 to 5. The questionnaire, which has become more comprehensive with 5-point Likert scale items, is scored by "never: 1" for positive items, "always: 5" for positive items, and inverted for negative items. Sub-dimension scores are obtained by the sum of related items, and the total score is obtained by summing all items. The total score ranges from 40 to 200. The QoR-40 is advantageous in that the patient can do it on his own in a short time and does not require special training (Karaman et al., 2014; Myles et al., 2000).

Statistical Analysis

The NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) program was used for the statistical analyses. The descriptive statistical methods (mean, standard deviation, median, frequency, ratio, minimum, maximum), as well as the Student's *t*-test, were used in comparisons of normally distributed variables, and the Mann–Whitney *U*-test was used

in comparisons to two groups of variables that did not show normal distribution. The paired samples *t*-test was used in the preoperative and postoperative evaluations of the normally distributed variables. Pearson correlation analysis and Spearman's correlation analysis were also used to evaluate the relationships between parameters. The significance level was evaluated at least $p < .05$.

Ethical Considerations

The ethical board permission for the study was obtained from Training and Research Hospital, Clinical Research Ethics Board (Approval date: September 14, 2015, Protocol no: 2015–183), and written and voluntary permissions were obtained from the patients. Permission was obtained from the researchers who conducted the Turkish validity and reliability study of the scale that was used in the study.

Results

The study was conducted with a total of 130 patients whose ages varied between 18 and 70 years. The mean age was 57.48 ± 11.12, and 79.2% of the patients were male. It was determined that 63.8% ($n = 83$) of the patients were hospitalized with the diagnosis of prostate tumor and 63.8% ($n = 83$) of the patients underwent robotic prostatectomy.

It was determined that all of the patients ($n = 130$) were informed about fasting before surgery, and 79.2% ($n = 103$) were informed by both the doctor and the nurse. It was determined that the fasting period varied between 8 and 16 hours with an average of 11.26 ± 2.17 hours, fasting for solid foods ranged between 8.5 and 19 hours with an average of 12.56 ± 2.47 hours, and fasting for liquid foods varied between 8 and 16 hours with an average of 11.26 ± 2.17 hours. The rate of sense of hunger was 30.8% ($n = 40$%), the rate of feeling thirst was 48.5% ($n = 63$), the rate of feeling dryness of the mouth was 40.0% ($n = 52$%) (Table 1).

It was determined that most of the patients (44.6%, $n = 58$) had nausea in the preoperative period, but none of them ($n = 130$) had vomiting (Table 2). The majority of patients (53.1%, $n = 69$) stated that they did not experience preoperative fatigue and dizziness (70.8%, $n = 92$); 36.2% ($n = 47$) "mostly" felt anxious; 31.5% ($n = 41$) said they "usually" had difficulty in falling asleep (Table 2).

A complaint score was calculated from the situations related to fasting and dehydration before surgery. These scores ranged from 7 to 22, with an average of 13.08 ± 3.43. The hospitalization durations of the patients varied between 2 and 20 days, and it was 3.94 ± 2.16 on average.

The recovery questionnaire total scores varied between 120 and 185 and were 160.28 ± 13.37 on average (Table 3).

The preoperative mean total score was 1.87 ± 0.49; and the preoperative mean total score was 4.01 ± 0.33. The increase in the postoperative scores was found to be statistically significant compared to preoperative scores ($p = .001$; $p < .01$) (Table 4).

In the study, no statistically significant relations were detected between the QoR questionnaire physical comfort, emotional state, physical independence, psychological support, and pain sub-dimension scores and total scores ($p > .05$) (Table 5).

No statistically significant relations were detected between fasting times and hunger, thirst, dryness of the mouth of the patients, and the periods of hospitalization after the surgery ($p > .05$) (Table 6).

Discussion

The study was conducted with a total of 130 patients whose ages varied between 18 and 70 years. It was determined that 63.8% ($n = 83$) of the patients were hospitalized with the diagnosis of prostate tumor and underwent robotic prostatectomy. In the present study, it was determined that the patients starved after midnight (24:00) before the surgery, their fasting period was 11.26 ± 2.17 hours (the mean time of not receiving solid food was 12.56 ± 2.47 hours, and the average of taking non-liquid food period was 11.26 ± 2.17 hours) (Table 1). TARD recommends preoperative fasting time as 2 hours after clear fluids (valid for everybody), 4 hours after breastfeeding in newborns and infants, 6 hours after baby food and solid food, 6 hours after light food in adults, 8 hours for fatty and fried food (TARD, 2016). It was determined that the preoperative fasting periods were not the same as stated in the guidelines, and patients starved for longer than recommended durations before surgeries. In the study conducted by Demirdağ and Karagöz (2015), it was stated that patients had an average fasting period of 11.12 ± 2.35 hours, 14.69 ± 3.11 hours for solid foods, and 13.64 ± 3.10 hours for liquid foods. Similar to these results, in a study that was conducted by Crenshaw and Winslow (2002), it was concluded that the average fasting period was 12–14 hours and could even last up to 37 hours for solid foods for some patients and up to 20 hours for liquid foods. However, Furrer et al. (2006) found it as 15.5 hours for solid foods and 12.8 hours for liquid foods. In the study conducted by Dolgun et al. (2011) it was reported that the average preoperative fasting duration of patients was 13.53 hours, and the fluid restriction duration was 12.21 hours. In the study that was conducted by Gürkan and Yağcıoğlu (2016), the actual preoperative hunger duration and its effect on the patient in terms of wellness were examined. It was reported that all patients fasted after midnight, the actual fasting duration was 14.4 ± 3 hours on average in liquids (8–28), and 16.6 ± 3 (8–28) hours in solid foods. The findings of this study are parallel to those reported in the literature. The reason why prolonged fasting is still applied is that both surgeons and anesthesiologists considered "the risk of aspiration" of patients after surgery. In the study conducted by Hausel et al. (2005) with 172 patients who underwent elective laparoscopic cholecystectomy in 2005, the patients who fasted after midnight, the placebo group (given flavored water), and who were given a carbohydrate-containing solution were examined in three groups. The patients in the experimental group ($n = 15$) were given 800 mL of fluid containing 12.5% carbohydrate the night before the surgery, the patients in the placebo group ($n = 23$) were given the same amount of flavored water, and the patients in the control group ($n = 23$) were given nothing. All patients fasted after midnight.

Table 1.
Distribution of Preoperative Characteristics of the Patients (N = 130)

Receiving information on preoperative fasting period, *n* (%)	Yes	130 (100.0)
Informing person, *n* (%)	Doctor	0 (0.0)
	Nurse	27 (20.8)
	Doctor and nurse	103 (79.2)
Hunger duration (hour)	Min–max (median)	8–16 (11)
	Mean ± SD	11.26 ± 2.17
Duration of not having solid food (hours)	Min–max (median)	8.5–19 (12)
	Mean ± SD	12.56 ± 2.47
Duration of not having liquid food (hours)	Min–max (median)	8–16 (11)
	Mean ± SD	11.26 ± 2.17
Feeling hunger, *n* (%)	Yes	40 (30.8)
	No	90 (69.2)
Level of feeling hunger (*n* = 40)	Min–max (median)	3–7 (4.0)
	Mean ± SD	4.73 ± 1.13
Feeling thirst, *n* (%)	Yes	63 (48.5)
	No	67 (51.5)
Level of feeling thirst (*n* = 63)	Min–max (median)	4–8 (6.0)
	Mean ± SD	6.35 ± 1.18
Feeling dryness of mouth, *n* (%)	Yes	52 (40.0)
	No	78 (60.0)
Level of feeling dryness of mouth (*n* = 52)	Min–max (median)	2–7 (4.50)
	Mean ± SD	4.60 ± 1.40

Table 2.
Distribution of Patients according to Conditions about Preoperative Fasting and Wellness (N = 130)

	Never		Sometimes		Usually		Mostly		Always	
	n	**%**	***n***	**%**	***n***	**%**	***n***	**%**	***n***	**%**
Nausea	56	43.1	58	44.6	16	12.3	0	0.0	0	0.0
Vomiting	130	100	0	0.0	0	0.0	0	0.0	0	0.0
Retching	120	92.3	10	7.7	0	0.0	0	0.0	0	0.0
Feeling tired	69	53.1	31	23.8	28	21.5	2	1.5	0	0.0
Dizziness	92	70.8	36	27.7	2	1.5	0	0.0	0	0.0
Feeling anxious	8	6.2	35	26.9	30	23.1	47	36.2	10	7.7
Having difficulty in falling asleep	5	3.8	34	26.2	41	31.5	34	26.2	16	12.3

However, patients in the experimental and placebo groups were given 400 mL of the appropriate drink 2 hours before premedication. There were no serious complications in the experimental and placebo groups in the postoperative period. Early and late nausea and vomiting were observed in 40% of the patients who fasted for 24 hours before the surgery, in 39% of the placebo group, and in 27% of the experimental group. Although there was no difference between the groups in terms of nausea and vomiting in the first 12 hours, it was more common in patients who fasted before the surgery for 12–24 hours compared to the other patients. There was no statistically significant difference between the placebo and the experimental group.

In a study that was conducted by de Andrade Gagheggi Ravanini et al. (2015) 38 patients who underwent laparoscopic cholecystectomy were divided into two groups, and one of the groups was asked to fast according to the traditional method, and the other group was asked to apply for reduced fasting program. According to the results of the study, it was determined that no pulmonary complications like aspiration pneumonia were

Table 3.
Evaluation of the Sub-dimension and Total Scores of Patients in Postoperative Recovery Questionnaire

	Number of Questions	Min–Max (Median)	Mean ± SD
Physical comport	12	28–57 (49)	48.04 ± 5.71
Emotional state	9	22–40 (33)	33.32 ± 3.96
Physical independence	5	15–24 (20)	19.68 ± 1.99
Psychological support	7	21–35 (33)	31.34 ± 3.65
Pain	7	21–34 (27)	27.89 ± 2.80
Total	40	120–185 (161)	160.28 ± 13.37

Table 4.
Evaluation of Mean Total Scores of Preoperative and Postoperative Recovery Quality Questionnaire

	Recovery Quality Questionnaire Mean Total Scores			
	Min–Max (Median)	Mean ± SD	Test Value	*p*[a]
Preoperative complaint score	1–3.14 (1.86)	1.87 ± 0.49	*t* = –34.836	*.001***
Postoperative complaint score	3–4.63 (4.02)	4.01 ± 0.33		

Note: [a]Paired samples *t*-test.
***p* < .01.

Table 5.
Relation between Preoperative Fasting Durations and Postoperative Recovery Quality Questionnaire Sub-dimension and Total Scores

	Fasting Durations (hours)	
	r	*p*
Physical comfort	–0.001	*.987*
Emotional state	–0.055	*.538*
Physical independence	–0.060	*.500*
Psychological support	0.000	*1.000*
Pain	0.056	*.525*
Total	–0.014	*.876*

Note: r = Pearson correlation coefficient.

observed in any of the patients, and shortening the preoperative fasting duration and giving liquids rich in carbohydrate and protein to patients 2 hours before was safe. They also reported that taking such fluids reduced insulin resistance and did not increase the risk of broncho-aspiration (de Andrade Gagheggi Ravanini et al., 2005). Both surgeons and anesthesiologists should change their opinions about "the risk of aspiration" of patients after surgery. Current practices should be reviewed for the comfort and well-being of patients because of the negative metabolic and psychological effects of prolonged preoperative fasting durations on patients.

Table 6.
Relation between Preoperative Fasting Durations, and Feeling Hunger, Thirst, Dryness of Mouth Levels and Postoperative Hospitalization Durations

	Fasting Duration (hours)	
	r	*p*
Level of feeling hunger	–0.053	*.746*
Level of feeling thirst	0.037	*.771*
Level of feeling dryness of mouth	–0.104	*.462*
Postoperative hospitalization duration (days)	–0.075	*.394*

Note: r = Spearman's correlation coefficient.

In this study, it was determined that 30.8% (*n* = 40) of the patients felt hunger before surgery, 48.5% (*n* = 63) felt thirst, 40% (*n* = 52) felt dryness of the mouth (Table 1). In a study conducted by Dolgun et al. (2011) it was reported that 30.3% of the patients felt hunger before surgery, and 47.6% felt thirst. In the study of Gürkan and Yağcıoğlu (2016), it was also stated that 60.5% of patients felt moderate hunger before surgery, and 58.5% of them felt thirst. Because of the prolonged starvation, the findings of patients regarding hunger and thirst before surgery are parallel in similar research. Patients' comfort can be increased by applying the up-to-date guidelines on preoperative fasting.

It was determined that many of the patients had nausea complaints before the surgery, but none of them had vomiting, the majority of them did not experience preoperative fatigue and dizziness, 36.2% (*n* = 47) felt "mostly" anxious, 31.5% (*n* = 41) "usually" had difficulty in falling asleep (Table 2). A complaint score was calculated from the situations related to fasting and dehydration before surgery. These scores ranged from 7 to 22, with an average of 13.08 ± 3.43. In a study conducted by Özkan et al. (2016) it was found that patients were hungry and dehydrated for longer than they should be, and this increased the hunger, thirst, and anxiety felt. It is considered that the preoperative anxiety of patients about surgical intervention to be applied stems from the fear of the unknown, fear of death, fear of being away from social life, and surgical stress, and being hungry and dehydrated for a long time also negatively affects the mood of patients.

In the present study, the hospitalization durations of the patients after surgery varied between 2 and 20 days, and the average duration was 3.94 ± 2.16 days. In a study conducted by Kennedy et al. (2007) the average hospital duration of patients to whom enhanced recovery after surgery-ERAS was applied was 7 days, and 13 days in patients to whom classical methods were applied (Kennedy et al., 2007). In the present study, since only the preoperative fasting period and well-being of the patients were examined, the comparison is not possible with studies involving ERAS protocol. However, it is also known that preoperative hunger, which is included among the ERAS protocol criteria, has important effects on the recovery and discharge process of patients. Today, some centers have begun to change their protocols in line with ERAS, and some countries have even started to formally apply the criteria for preoperative

fasting and intestinal cleansing (Demirhan & Pınar, 2014; Ersoy & Gündoğdu, 2007). Although publications with high levels of evidence and positive results increased with each passing day, it is impossible to argue that the protocol is widespread around the world including our country. To implement this, healthcare employees, especially surgeons and anesthesiologists must be informed, and the subject should be discussed in scientific settings.

In the study, the total QoR questionnaire scores of the patients ranged between 120 and 185 with an average of 160.28 ± 13.37 (Table 3). With the QoR-40 that was used in the study, it was determined that the recovery scores of the patients whose physical comfort, emotional state, physical independence, psychological support, pain levels were at an average level, and they did not experience any serious complications in the postoperative period (Table 3). In a study conducted by Yolcu and Akın by using the "QoR" to evaluate the recovery status and care requirements of patients in the period after heart surgery and general surgery, the total score of the QoR questionnaire was found to be 162.75 ± 20.81 (Yolcu & Akın, 2015). The postoperative physical comfort, emotional state, physical independence, psychological support, and pain levels of patients undergoing surgical intervention were similar.

The increase in postoperative complaint scores of the patients was found to be statistically significant ($p = .001$; $p < .01$) (Table 4). It can be speculated that it is normal to have this result because of the changes in the body integrity of patients in the postoperative period and the changes in the nutrition resulting in nausea and vomiting and pain caused by surgical trauma, decreased comfort level, anesthetics, narcotics, and prolonged hunger.

In the study, no statistically significant relations were detected between QoR questionnaire physical comfort, emotional state, physical independence, psychological support, and pain subdimension scores and total scores that measured the period of fasting in the preoperative period and the post-period well-being ($p > .05$) (Table 5). However, it is clearly stated in the literature that the prolonged fasting periods in the preoperative period negatively affect the well-being of patients (Ersoy & Gündoğdu, 2005). For this reason, nurses and other health professionals should be trained about preoperative fasting and the up-to-date guidelines on preoperative fasting should be applied for patients comfort and health.

In the present study, no statistically significant relations were detected between the fasting times of the patients and the degree of feeling hunger, thirst and dryness of the mouth, and postoperative hospitalization times ($p > .05$) (Table 6). It was concluded that prolonging the preoperative fasting period caused patients to experience hunger, thirst, and dryness of the mouth but did not increase the severity of the hunger, thirst, and dryness of the mouth and did not affect the duration of hospitalization after the surgery.

Study Limitations

The present study was conducted at a clinic of a Training and Research Hospital in the city of Istanbul and does not reflect the province of Istanbul and the whole of Turkey. The results cannot be generalized because our descriptive study was conducted in one single center, and the sampling was small.

Conclusion and Recommendations

As a result of this study, it was determined that the up-to-date guidelines on preoperative fasting were not applied. Although it was stated that 6-h fasting is adequate for solid foods and 2-h fasting is adequate for liquids, the patients were still asked to practice fasting preoperatively as of midnight; and depending on this fasting, they felt thirst and dryness of the mouth with prolonged starvation periods, and the preoperative and postoperative well-being was affected negatively, but the result was not statistically significant. It is considered that the present study will increase the awareness of nurses and other healthcare employees who are present at the patient's surgical process, have important roles and responsibilities in the healthcare team, and bring questioning and innovative approach to the existing practices.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Bakırköy Dr. Sadi Konuk Training and Research Hospital (Approval date: 14.09.2015 Protocol no: 2015-183).

Informed Consent: Informed consent was obtained from all individual participants included in the study.

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