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ORIGINAL ARTICLE

The Effect of Discharge Training Given to Patients with Pilonidal Sinus Surgery According to Gordon's Functional Health Patterns: A Quasi-experimental Study

Pilonidal Sinüs Ameliyatı Olan Hastalara Verilen Taburculuk Eğitiminin Gordon'un Fonksiyonel Sağlık Örüntülerine Göre Etkisi: Yarı-deneysel Bir Çalışma

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Abstract

Objective: This quasi-experimental study aims to determine the effect of discharge training given to patients who underwent pilonidal sinus surgery using the primary closure method, on Gordon's functional health patterns.

Method: The sample of the study consisted of 70 patients. Patients in the intervention group were exposed to discharge training given by one of the researchers using a tablet computer and a training booklet based on functional health patterns was handed to patients to straighten the training. The control group was exposed to routine clinical nursing care and patient information. The efficacy of discharge training was evaluated using a checklist developed by researchers. Both groups of patients were phoned on postoperative days by the researcher.

Results: Patients in the control group had insufficient knowledge of what kind of food should select to eat on the 1st postoperative day ($p<0.001$). Patients in the control group reported pain/discomfort during defecation, difficulty, and knowledge deficiency on perianal cleaning ($p<0.05$). Patients in the control group had higher anxiety levels and less knowledge on what position they resume while sleeping during the postoperative period ($p=0.000$).

Conclusion: The planned discharge training based on Gordon's functional health patterns and patient follow-up form developed according to this model was an effective intervention in patients who underwent pilonidal sinus surgery.

Keywords: Discharge planning, nursing care pilonidal sinus surgery, Gordon's functional health patterns

Öz

Amaç: Bu araştırma, pilonidal sinüs ameliyatı geçiren teknik olarak primer kapatma yöntemi kullanılan hastalara verilen taburculuk eğitiminin Gordon'un fonksiyonel sağlık örüntülerine, etkisini belirlemek amacıyla yarı deneysel olarak yapıldı.

Yöntem: Araştırmanın örneklemini 70 hasta oluşturdu. Müdahale grubundaki hastalara fonksiyonel sağlık örüntülerine temellendirilen taburculuk eğitimi ve hazırlanan broşür verildi, kontrol grubundaki hastalara klinikteki rutin uygulamalar ve bilgilendirmeler yapıldı. Taburculuk eğitiminin etkinliği her iki gruptaki hastalar araştırmacı tarafından ameliyat sonrası günlerde telefonla aranarak bir kontrol listesi ile değerlendirildi. Araştırma sonuçları sayı, yüzde, ortalamalar şeklinde verildi.

Bulgular: Kontrol grubundaki hastaların ameliyat sonrası 1. günde tüketmeleri gereken yiyecekler konusunda güçlük yaşadıkları ($p<0,001$) belirlendi. Kontrol grubundaki hastaların ameliyattan sonrası günlerde defekasyon sırasında ağrı/rahatsızlık yaşadıkları, perianal bölge temizliğine yönelik bilgilerinin yetesiz olduğu ve güçlük yaşadıkları görüldü ($p<0,05$). Kontrol grubundaki hastaların ameliyat sonrası dönemde daha fazla anksiyete yaşadıkları ve uyurken hangi pozisyonda olmaları gerektiği konusnda yetersiz bilgilerinin olduğu belirlendi ($p=0,000$).

Sonuç: Fonksiyonel sağlık örüntülerine temellendirilmiş planlı taburculuk eğitimi ve aynı model doğrultusunda geliştirilen hasta izlem formunun, pilonidal sinüs cerrahisi geçiren hastalarda etkili bir girişim olduğu belirlendi.

Anahtar Kelimeler: Taburculuk eğitimi, pilonidal sinus cerrahisi, Gordon'un fonksiyonel sağlık örüntüleri

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Introduction

The pilonidal sinus is a hairy cystic formation in the intergluteal cleft on the posterior surface of the lower sacrum (1). In Turkey, the prevalence of pilonidal sinus was found as 6.6% in a study conducted on soldiers (2). Although its incidence varies by society, it is challenging to give a precise number. Its incidence in the USA is around 26 per 100,000 (3). In different studies done with patients who underwent pilonidal sinus surgery, the patient's mean age ranged between 21-26 years (4,5). Pilonidal sinus risk factors include early age, obesity, male gender, Mediterranean ethnicity, deep natal cleft, hairiness, and poor hygiene. It has been shown that PSD incidence increases in parallel with body weight. The precise etiology of pilonidal sinus disease is unclear (3,4,6). Pilonidal sinus disease can initially begin as either a discharging sinus or an acute abscess. After treatment of an acute disease episode, many treatment options are available (7,8). Treatment options are either medical or surgical, where the treatment depends on the clinical progression and the stage of the disease. Surgical treatment is often used method for most cases. Pilonidal sinus surgeries are commonly performed using spinal/epidural or local anesthesia (9,10).

Studies that were done with pilonidal surgery patients introduce, and compare contemporary surgical techniques, where these techniques are compared with conservative methods (11,12). Primary closure of chronic pilonidal sinus allows patients early return to their activities, it also has a low recurrence rate (13). Like any other surgical procedure, pilonidal surgery patients are prone to complications after surgery such as hematoma, wound dehiscence, infection, recurrence, and disrupted body image (12).

The nurse plays a significant role in the care of a patient with sacrococcygeal pilonidal sinus which can be complex and challenging. This includes a holistic nursing assessment of the wound, including surgical site infection and wound epithelization that is associated with quality of life related to daily activities, pain, patient history, and vital signs (14).

Nursing studies done on this topic were very limited. One nursing study represents that patient training before surgery does not influence the anxiety and comfort levels of pilonidal surgery (5,15). Two other studies focused on the well-being of patients after surgery, pain experience, and embarrassment levels (5,16). Another recent study evaluated the effectiveness of nurses' dressings for patients with pilonidal sinus (17).

Main Points

- Discharge training given by nurses is of great importance for minimising postoperative complications and enabling patients to return to their daily life activities in a shorter time.
- The theories aim to develop nursing interventions to provide quality care to the patient.
- Discharge training is of great importance for patients with pilonidal sinus surgery.

Thus, nurses' discharge training is critical to prevent postoperative complications and enable patients to recover and return to their daily activities in a short period. Theories broaden the perspective of nurse researchers and guide nurses with their systematic nature. No study could be found that evaluates the efficacy of discharge training given to patients who underwent pilonidal sinus surgery or in which such training is based on a nursing model (18).

Purpose of the Study

This is a quasi-experimental study to determine the effect of discharge training on patients who underwent pilonidal sinus surgery on Gordon's functional health patterns (FHP). Gordon's FHP Model was developed by Marjory Gordon to make a more comprehensive inpatient care assessment. Eleven mean categories compose the FHP Model. Perception of health and health management, nutrition and metabolic status, excretion, activity and exercise, sleep and rest, cognitive perception, self-perception and self, role and relationships, sexuality and reproduction, coping and stress, values, and beliefs. Gordon's FHP allows health professionals to determine patient complaints and how patients and their relatives manage problems they encounter, and which coping mechanisms they use (18).

Material and Method

Study Population and Sample

The study population consisted of patients who underwent pilonidal sinus surgery with the primary closure method in June-September 2019 in one state hospital located in Turkey. With a significance level of 0.05 (α), a statistical power of 0.80 (1-β), and an effect size of 0.75, 70 patients were required (35 for the intervention and 35 for the control group) for this study. Considering patients who would leave the study during data collection, 80 patients who were eligible for this study were randomly assigned to groups. The intervention group consisted of 41 and the control group consisted of 39 patients). Patients were randomized by assigning them to intervention group (located in rooms with odd numbers) and control group (located in rooms with even numbers). Since six patients from the intervention group and four patients from the control group could not be reached by phone during the study, the study was completed with a total of 70 patients. The Consort diagram is given for this study in Figure 1 (19).

Development of the Patient Discharge Plan and Training Booklet

A patient discharge training plan compatible with Gordon's FHP's developed by the researchers for the intervention group. Following the model, the training plan consisted of the following 11 headings according to Gordon's FHP. Under these headings, related subheadings are included (20,21).

Perception of health and health management: Included information on when to seek medical help and guidance on resuming personal hygiene practices (information on

showering, foot care, dressing/undressing, practices that need attention).

Nutrition and metabolic status: In this section, information on changes that should be done in the diet, the amount of water that should be consumed, the importance of eating three main meals, and the foods that should be consumed after surgery were included.

Excretion: Information about avoiding constipation and diarrhea, and resuming perianal care expressed.

Activity and exercise: The importance of putting emphasis on physician's recommendations. Activities that may cause difficulty in daily routines were explained in detail (standing/sitting, walking, going up and down stairs, using public transportation, driving).

Sleep and rest: This section contained information about the correct sleeping position, and required adjustments emphasized.

Cognitive perception: This section included interventions to alleviate pain.

Self-perception and self-respect: Since weakness/powerlessness may occur after the surgery, assurance were given that this situation is temporary.

Role and relationships: Influence of surgery on roles in the family and relationships with friends were clarified.

Sexuality and reproduction: In this section, information on need for resuming sexual activities were explained.

Coping and stress: This section included information on strategies for coping with stress.

Values and beliefs: In this section, it was noted that some difficulties he/she may have in fulfilling his religious duties, and these are temporary.

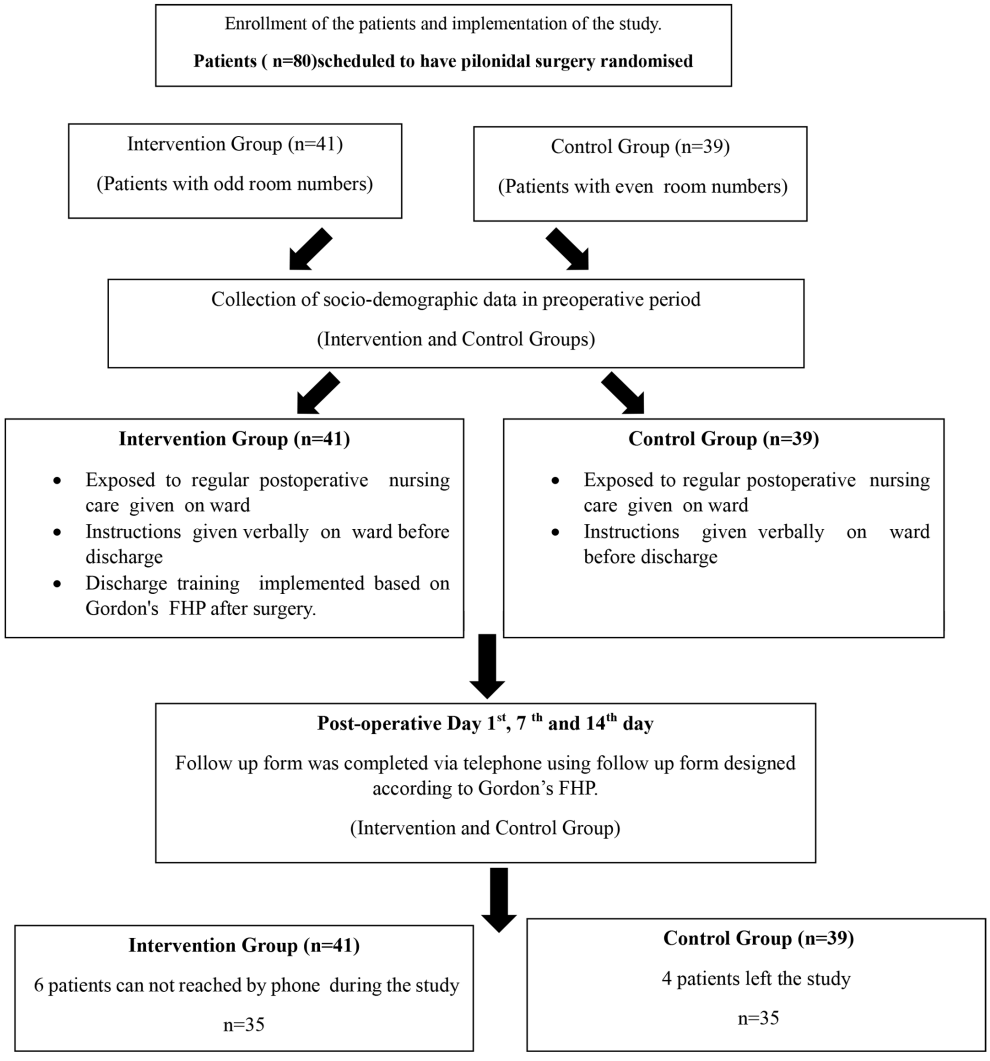

Figure 1.
CONSORT diagram of the study

A patient discharge training plan developed by researchers for patients who underwent pilonidal sinus surgery was prepared as a PowerPoint presentation, supported by pictures and visuals. The presentation did not include complex medical terminology, where short and clear sentences consisting of a maximum of 4-5 words were used. The relevant literature was used for the development of the discharge plan (20). A lecturer from the nursing field and two surgeons who perform these surgeries in the relevant hospital were consulted on the clarity and appropriateness of the discharge plan developed. According to the suggestions received, the necessary arrangements were made on the discharge plan. The PowerPoint materials were transformed into a training booklet format using the Publisher program, printed in color. The booklet included the same information as the intervention group of patients exposed during discharge training.

Data Collection Tools

1. The demographic data collection form

2. Patient follow-up form [a patient follow-up form developed according to Gordon's (FHP)].

Development of the demographic data collection form

The data collection form developed by researchers according to the relevant literature included 14 questions (5,22). Questions related to the patient's age, gender, marital status, occupation, education level, family history of pilonidal sinus disease, duration of hospital stays after surgery, and type of anesthesia they received.

Development of the patient follow-up form

The researchers developed a patient follow-up form to evaluate the patients' situation after discharge which is underlined on 11 headings and 32 subheadings according to Gordon's FHP model the form included a total of 32 subheadings with 0-10 visual analog scale (VAS), yes/no questions, and open-ended questions (Gordon, 18). The forms were implemented in a group of five patients and their comprehension of the forms was assessed.

The procedure

All patients who were included in the study were informed of the purpose of it, and they were reassured that their privacy would be protected, and participation was voluntary. Each participant signed an "informed volunteer consent form," and reassurance was given that they could leave the study at any time if they want to. Demographic data was collected by the first researcher on the preoperative period using to face interview method.

Interventions group: The intervention group exposed to routine caring procedures as control group patients did. The discharge training was introduced to the patients using a tablet computer, and patients' questions were answered on the day of discharge (0^{th} post-operative day). A total discharge training lasted an average of 15-20 minutes for each patient in the intervention group.

Control group: Patients in the control group received standard nursing care and received verbal instruction on the day of discharge as a routine practice implemented in the hospital.

Patients in both groups were informed that they would be called by the researcher on the 1^{st}, 7^{th}, and 14^{th} postoperative days, whereby their postoperative health condition and compliance with treatment would be evaluated according to Gordon's FHP. Patients in both groups (intervention and control groups) were called via phone on the previously specified days, and their responses were noted on the patient follow-up form. The phone calls made by the researcher lasted about 5-10 minutes.

Ethical Considerations

An Ethics Committee approval was obtained from Tekirdağ Namık Kemal University Non-Invasive Research Ethics Committee (number: 2018.146.10.11, date: 27.12.2018) and institutional permission from Provincial Health Directorate. All the patients received both written and verbal explanations of the purpose, expected benefit, and method of the study. An "informed consent form" was signed by all patients who participated in the study.

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) 22.00 Program. Demographic data of the patients were presented in number, percentage, and mean standard deviation. Normality distribution was determined by Shapiro-Wilks test, chi-squared, and Mann-Whitney U tests were used for the statistical analysis. A p-value of less than 0.05 was considered statistically significant (23).

Results

Patients in the intervention and control groups were similar according to their demographic data (age, gender, education level, owing a job requires prolonged sitting, nutritional regimen, habit of wearing tight underwear, family history of pilonidal sinus disease, type of anesthesia received; $p>0.05$). The mean age of patients in the intervention group was 24.42±6.2 years, 68.6% were male, and 48.6% used to wear tight underwear. The mean age of patients in the control group was 24.85±7.17 years, 57.1% were male, and 57.1% used to wear tight underwear (Table 1).

Table 2 represents the comparison of patients in the intervention and control groups categories related to "perception of health and health management" and "nutrition." Accordingly, no significant difference was found between the scores of patients in both groups according to preoperative days ($p>0.05$). Health perception scores on the 1^{st} postoperative day were higher in the intervention group

Table 1.
Comparison of Groups According to Demographic Variables (n=70)

Demographic variables	**Intervention group**	**Control group**	**Significance**
Age (mean ± SD)	24.42±6.2	24.85±7.17	U= 0.976, p>0.05
	n (%)	**n (%)**	**X^2, p**
Gender Female Male	 11 (31.4) 24 (68.6)	 15 (42.9) 20 (57.1)	X^2=0.322, p>0.05
Marital status Married Single Other	 12 (34.3) 22 (62.9) 1 (2.9)	 14 (40.0) 18 (51.4) 3 (8.6)	*X^2=0.502, p>0.05
Job/occupation Salaried employee Own job Student Not working Other	 8 (22.9) 10 (28.6) 10 (28.6) 4 (11.4) 3 (8.6)	 4 (11.4) 8 (22.9) 10 (28.6) 13 (37.1) 0 (0.0)	X^2=0.054, p>0.05
Income level Good Fair Bad	 3 (8.60) 19 (54.3) 13 (37.1)	 2 (5.70) 22 (62.9) 11 (31.4)	*X^2=0.750, p>0.05
Education level Elementary Middle school High school University	 12 (34.3) 9 (25.7) 8 (22.9) 6 (17.1)	 11 (31.4) 10 (28.6) 11 (31.4) 3 (8.60)	*X^2=0.706, p>0.05
Place of living Town County City	 13 (37.1) 10 (28.6) 12 (34.3)	 11 (31.4) 16 (45.7) 8 (22.9)	X^2=0.309, p>0.05
Owing a job requires prolonged sitting			
Yes No	19 (54.3) 16 (45.7)	11 (31.4) 24 (68.6)	X^2=0.063, p>0.05
Having a habit of wearing tight underwear/trousers			
Yes No	17 (48.6) 18 (51.4)	20 (57.1) 15 (42.9)	X^2=0.473, p>0.05
Type of nutrition			
Mainly carbohydrate Protein Fiber Fast food	8 (22.9) 6 (17.1) 4 (11.4) 17 (48.6)	7 (20.0) 10 (28.6) 5 (14.3) 13 (37.1)	*X^2=0.646, p>0.05
Smoking Yes No	 21 (60.0) 14 (40.0)	 19 (54.3) 16 (45.7)	X^2=0.629, p>0.05
Having an illness that requires taking medications regularly			
Yes No	10 (28.6) 25 (71.4)	7 (20.0) 28 (80.0)	X^2=0.403, p>0.05
Pilonidal sinus history in the family			
Yes No Not aware	13 (37.2) 11 (31.4) 11 (31.4)	18 (51.4) 3 (8.60) 14 (40.0)	X^2=0.057, p>0.05
Type of anesthesia received during surgery			
Spinal/epidural Local	23 (65.7) 12 (34.3)	28 (80.0) 7 (20.0)	X^2=0.179, p>0.05

**X^2=Fisher's Exact test, X^2=Pearson chi-square, SD=standard deviation, U=Mann-Whiney U, n=numbers, %=percentage*

compared to control group their scores on postoperative days were insignificant (p>0.05). The intervention group had difficulty in showering on 1st postoperative day (p=0.005), this subsided on the following days dressing/undressing was compelling for the control group patients. The intervention group of patients reported that they have changed their nutrition regimen, and a significant difference was found on the 1st and 7th postoperative days p=0.020; p=0.015). Fluid consumption was much higher in the intervention group on the 7th and 14th postoperative days significantly (p=0.02; p=0.000) (Table 2).

Table 3 shows the comparison of patients in the intervention and control groups according to "excretion," and "activity-exercise". Intervention group patients did not experience constipation as much as control group patients on the 14th postoperative day (p=0.040). Pain/discomfort experienced during defecation was significant

Table 2.
Differences Between Groups on the Parameters of Health Perception and Management of Health and Nutrition

	Post-operative days			
	1st day	**7th day**	**14th day**	**Sig. (intergroup)**
	Mean ± SD n (%) intervention/control	**Mean ± SD n (%) intervention/control**	**Mean ± SD n (%) intervention/control**	**Intervention/control**
Health perception and health management				
How do you perceive your general health since surgery?				
0= Bad 10= Considerably good	4.9±2.5/4.8±2.8 NS	6.7±2.2/5.8±2.64 NS	8.2±1.6/6.7±3.0 NS	36.222, **p=0.000** 13.109, **p=0.000**
How do you feel in general since your surgery?				
0= Fairly bad 10= Considerably good	3.3±1.8/3.3±2.2 NS	5.8±2.3/4.8±2.8 NS	6.9±2.1/6.7±2.5 NS	41.828, **p=0.000** 42.135, **p=0.000**
Your knowledge level of when to seek medical help/call your physician				
0= Not sufficient 10= Considerably sufficient	7.3±2.3/3.2±2.3 U=137, **p=0.000**	7.3±2.2/3.1±2.6 NS	7.9±2.1/3.3±2.7 NS	10.212, **p=0.000** 0.06, p=0.860
The level of difficulty you experience during personal hygiene practices				
Taking a shower 0= Not at all 10= Considerable	8.5±1.8/7.3±1.8 U=380, **p=0.005**	6.1±2.2/6.9±2.5 U=352, **p=0.002**	3.7±2.3/5.3±2.8 U=264, **p=0.000**	52.777, **p=0.000** 55.513, **p=0.000**
Brushing your teeth 0= Not at all 10= Considerable	0.7±1.5/0.1±0.6 U=491, **p=0.02**	0.1±0.2/0.0±0.1 U=491, p**=0.002**	0.0±0.0/0.0±0.0 NS	2.565, p=0.060 0.556, p=0.520
Care of feet 0= Not at all 10= Considerable	8.2±1.9/7.0±3.0 NS	7.1±2.3/6.2±3.0 NS	5.0±2.9/5.6±3.42 U=349, **p=0.02**	42.463, **p=0.000** 5.845, p=0.540
Dressing and undressing 0= Not at all 10= Considerable	7.4±1.8/6.9±2.7 NS	3.9±1.9/4.8±3.0 U=343, **p=0.000**	1.9±1.8/2.5±2.9 U=442, **p=0.040**	63.188, **p=0.000** 44.673, **p=0.000**
Knowledge level of practices you need to be careful of after your surgery				
0= Not sufficient 10= Considerably sufficient	7.3±2.0/3.2±2.4 U=128, **p=0.000**	7.5±2.3/2.4±2.1 U=462, **p=0.001**	7.6±2.3/2.6±2.4 U=444, **p=0.003**	2.191, p=0.330 0.334, p=0.360
Nutrition and metabolic status				
Making any changes to a nutrition regimen				
Yes No	21 (60%) 8 (22.9%) 14 (40%) 27 (57.1%) X^2=9.95, **p=0.020**	19 (54.3%) 9 (25.7%) 16 (45.7%) 26 (74.3%) X^2=5.95, **p=0.015**	17 (48.6%) 10 (28.6%) 18 (51.4%) 25 (71.4%) NS	1.846, p=0.397 0.333, p=0.846

Table 2.
Continued

	Post-operative days			
	1st day	**7th day**	**14th day**	**Sig. (intergroup)**
	Mean ± SD n (%) intervention/control	**Mean ± SD n (%) intervention/control**	**Mean ± SD n (%) intervention/control**	**Intervention/ control**
Difficulty in choosing which food to eat or not				
0= Not at all 10= Considerable	2.4±2.5/6.6±2.4 U=138, p**=0.000**	1.7±2.1/5.0±2.9 NS	1.6±1.8/4.1±3.3 NS	9.756, **p=0.008** 14.233**, p=0.001**
The amount of water consumed a day after your surgery				
0-10 glasses/day	8.0±2.7/7.4±2.5 NS	8.9±2.6/7.3±2.3 U=425, **p=0.020**	9.1±2.3/7.1±2.3 U=332, **p=0.000**	14.928, **p=0.001** 1.012, p=0.608
Having 3 main meals a day				
Yes No	21 (60%) 19 (54.3%) 14 (40%) 16 (45.7%) NS	24 (68.6%) 17 (48.6%) 11 (31.4%) 18 (51.4%) NS	26 (74.3%) 19 (25.7%) 9 (54.3%) 16 (45.7%) NS	2.714, p=0.257 0.471, p=0.790
The main food group consumed in your meals after your surgery				
CHO Liquid Fiber Vegetables + fruits Protein	3 (8.6%) 14 (40.0%) 19 (54.3%) 7 (20.0%) 3 (8.6%) 5 (14.3%) 4 (11.4%) 3 (8.6%) 6 (17.1%) 6 (17.1%) X^2=13.5, **p=0.007**	3 (8.6%) 11 (31.4%) 13 (37.1%) 7 (20.0%) 8 (22.9%) 8 (22.9%) 5 (14.3%) 3 (8.6%) 6 (17.1%) 6 (17.1%) NS	6 (17.1%) 6 (17.1%) 9 (25.7%) 6 (17.1%) 3 (8.6%) 5 (14.3%) 6 (17.1%) 13 (37.1%) 7 (20.0%) 9 (25.7%) NS	13.299, **p=0.007** 2.495, p=0.143

**X^2=chi-squared, SD:=standard deviation, U=Mann-Whitney U, Sig.=significance, NS=not significant, CHO=carbohydrate*

in the control group on the 14th postoperative day (p=0.020). Having difficulty cleaning the perineal area after defecation was significant on the 1st postoperative day (p=0.040), it was a challenging experience for the control group. The comparison of groups was significant in activity- exercise category. Feeling tired was more specific in the intervention group (p=0.009, Table 3).

Table 4 shows the comparison of both groups according to "sleep-rest", "cognitive perception", and "self-perception-self-esteem". Patients in the control group were more concerned about their position during sleeping (p=0.000). There was a difference in the pain intensity of patients in the intervention group on the first postoperative day (p=0.000). Weakness/powerlessness in the control group on the 7th (p=0.030) and 14th postoperative days (p=0.000) was significant (Table 3).

Table 4 compares the groups according to "role and relationships", "sexuality and reproduction", "coping and stress", and "values and beliefs". Accordingly, there was no significant difference between the groups on all postoperative days in terms of role and relationships (p>0.05). However, comparisons of the two groups were significant. These results were the same for the sexuality and reproduction category. Patients in the intervention group were more successful in coping with stress on 1st post-operative day, whereas there was no significant difference between the groups on the other days (p>0.05). No statistically significant difference was found between the groups on the postoperative days in the values-beliefs category (p>0.05) Table 4 and 5.

Discussion

Perception of health and health management

A qualitative study that examined patient experiences of living with a wound healing by secondary intention with the pilonidal disease described the outcomes as shock, disbelief, harming daily life, and deterioration in physical-psychosocial functioning wellbeing. In addition, feelings of frustration, powerlessness, and guilt were common (24). Although discharge education did not have any influence on the physical functions of the patients in Aşkın et al. (25) study, the present study determined that patients' postoperative health perceptions in both groups were low on the 1st postoperative day and significantly increased on the following days. However, the difference between the groups was not significant on postoperative days. The intervention group's perception of health was better, this could be the fact of feeling better and more confident after discharge training. Being free of some discomfort due to pilonidal sinus disease might have caused some relief as well.

Intervention group patients were aware of situations that require medical assistance on the first postoperative day.

Table 3.
Differences Between Groups on the Parameters of Excretion and Activity-exercises

	Post-operative days			
	1st day	**7th day**	**14th day**	**Sig. (intergroup)**
	n (%) Mean ± SD intervention/control	**n (%) Mean ± SD intervention/control**	**n (%) Mean ± SD intervention/control**	**Intervention control**
Excretion				
Having constipation after surgery				
Yes No	24 (68.6%) 24 (68.6%) 11 (31.4%) 11 (31.4%) NS	14 (40%) 14 (40%) 21 (60%) 21 (60%) NS	4 (11.4%) 11 (31.4%) 31 (88.6%) 24 (68.6%) X^2=4.15, **p=0.04**	31.885, **p=0.000** 35.658, **p=0.003**
Having diarrhea after surgery				
Yes No	3 (8.6%) 9 (25.7%) 32 (91.4%) 26 (74.3%) NS	6 (17.1%) 7 (20%) 29 (82.9%) 28 (80%) NS	6 (17.1%) 9 (25.7%) 29 (82.9%) 26 (74.3%) NS	1.636, p=0.441 0.400, p=0.819
Having pain/feeling uncomfortable during defecation after surgery				
Yes No	29 (82.9%) 27 (77.1%) 6 (17.1%) 8 (22.9%) NS	21 (60%) 24 (68.6%) 14 (40%) 11 (31.4%) NS	10 (28.6%) 23 (65.7%) 25 (71.4%) 12 (34.3%) X^2=9.68, **p=0.020**	17.613, **p=0.000** 1.300, p=0.522
Knowledge of cleaning the perianal area after the surgery				
Yes No	28 (80%) 13 (37.1%) 7 (20%) 22 (62.9%) X^2=13.24, **p=0.000**	32 (91.4%) 14 (40%) 3 (9.6%) 21 (60%) X^2=20.54, **p=0.000**	31 (88.6%) 12 (65.7%) 4 (11.4%) 23 (34.3%) X^2=21.76, **p=0.000**	6.500, **p=0.032** 0.286, p=0.867
Difficulty in cleaning the perianal area after the surgery				
0= None 10= Considerable	5.9±2.2/6.8±3.0 U=445, **p=0.040**	4.0±2.7/5.9±3.5 NS	2.6±2.8/3.9±3.6 NS	34.937, **p=0.000** 21.475, **p=0.000**
Activity-exercise				
Felling of tiredness after surgery				
0= None 10= Considerable	6.9±2.7/5.7±2.9 U=469, **p=0.009**	4.4±2.8/3.5±2.9 NS	2.2±2.3/1.5±1.4 NS	42.448, **p=0.000** 45.712, **p=0.000**
The affection of activities due to surgery				
Sitting/standing 0= None 10= Considerable	 8.0±2.1/7.6±2.5 NS	 6.3±2.3/5.6±2.5 NS	 4.6±3.1/4.4±2.7 NS	 35.961, **p=0.000** 40.212, **p=0.000**
Walking 0= None 10= Considerable	 7.6±1.9/6.5±2.3 NS	 5.7±2.5/4.8±2.9 NS	 3.7±2.8/3.6±3.2 NS	 54.121, **p=0.000** 32.574, **p=0.000**
Climbing up and coming downstairs				
0= None 10= Considerable	8.6±1.8/8.2±2.3 NS	7.0±2.5/5.7±3.0 NS	5.9±2.8/4.6±3.1 NS	37.523, **p=0.000** 34.929, **p=0.000**
Using public transportation				
0= None 10= Considerable	7.3±3.4/7.0±3.1 NS	5.7±3.4/5.8±2.9 NS	3.8±3.2/4.1±3.2 NS	39.747, **p=0.001** 33.327, **p=0.000**
Driving your car				
0= None 10= Considerable	7.8±4.3/8.8±1.45 NS	6.3±3.9/8.3±2.1 NS	5.3±3.6/6.5±2.4 NS	16.595, **p=0.000** 14.381, **p=0.010**

**X^2=chi-squared, SD=standard deviation, U=Mann-Whitney U, Sig.=significance, NS=not significant*

Table 4.
Differences Between Groups on the Parameters of Sleep-rest, Cognitive-perception, and Self Respect

	Postoperative days			
	1st day	**7th day**	**14th day**	**Sig. (intergroup)**
	Mean ± SD n (%) intervention/control	**Mean ± SD n (%) intervention/control**	**Mean ± SD n (%) intervention/control**	**Intervention control**
Sleep and rest				
Having concerns about which position to sleep				
0= None 10= Considerable	2.5±2.8/6.6±2.7 U=186, **p=0.000**	1.7±2.5/5.7±2.6 U=530, **p=0.000**	1.5±2.4/3.7±2.7 U=368, **p=0.000**	4.651, p=0.098 30.100, **p=0.000**
Change in sleep patterns				
0=None 10= Considerable	4.9±3.5/6.3±2.8 NS	3.3±3.0/3.1±3.0 NS	2.0±2.9/2.1±2.5 NS	15.836, **p=0.000** 35.078, **p=0.000**
Cognitive-perception				
Degree of pain right now				
0= None 10= Considerable	3.3±1.8/5.3±2.8 U=401, **p=0.000**	2.6±2.2/3.5±2.5 NS	1.0±1.4/1.9±1.7 NS	19.812, **p=0.000** 34.084, **p=0.000**
Any intervention you have done to relieve your pain				
Yes No	21 (60%)/12 (34.3%) 14 (40%)/23 (65.7%) X^2=4.64, p**=0.030**	21 (60%)/14 (40%) 14 (40%)/21 (60%) X^2=5.75, **p=0.010**	11 (31.4%)/13 (37.1%) 24 (68.6%)/22 (62.9%) NS	11.111, **p=0.040** 0.375, p=0.890
Self perception and self esteem				
Degree of weakness/powerlessness after surgery				
0= None 10= Considerable	6.4±2.6/6.1±3.0 NS	4.0±2.6/5.5±2.5 U=431, **p=0.030**	1.3±1.7/3.5±2.5 U=317, **p=0.000**	52.111, **p=0.000** 0.975, **p=0.000**

**X^2=chi-squared, SD=standard deviation, U=Mann-Whitney U, Sig.=significance, NS=not significant*

This may result from the patients receiving relevant information on the related subject during their visits to the outpatient clinic for dressing changes. Although showering was challenging for patients in both groups on all postoperative days, the intervention group faced some difficulties on the first postoperative day which decreased over time consequently. Patients in the intervention group may have uneasiness on the first postoperative day due to discharge training Although education usually forces patients to act attentively it might as well cause stress.

Some difficulties experienced by the intervention group in oral care/brushing teeth 1st and 7th day postoperatively. As patients in the control group did not receive any special training, they were considered to have difficulties in dressing-undressing (7th and 14th postoperative days) and foot care (14th postoperative day). Patients in the intervention group had a better understanding of issues that need consideration postoperatively, which may be due to the discharge training implemented. Kara and Andsoy (5) observed that 97.1% of the patients who were exposed to discharge education intently cared about their surgical area while this rate was low in the uneducated group (57.1%).

Nutrition and metabolic status

Intervention group patients resumed diet changes on postoperative days. In the first post-operative day control group, patients had some difficulties in selecting the foods they should consume, but this situation disappeared in the following days. This result could be obtaining information from different sources (e.g., surgeons, the internet, or peers) in the following days. Fluid consumption was similar in both groups on the first postoperative day, but patients in the intervention group were more careful on this subject in the following days. This result could be linked to discharge training implemented in the intervention group. This result is also relevant to the main foods selected for meals. Kara and Andsoy (5) also reported that almost all patients (90%) who were, informed before the surgery consumed sufficient fluid.

Excretion

There was no significant difference between the groups in experiencing constipation on the 1st and 7th days postoperatively. Patients in the control group had constipation on the 14th postoperative day which was significant Patients in the intervention group were more intense in fluid intake and diet regulations, as well as food selection. Having diarrhea in the postoperative period was

not significant, and this was considered favorable. Keeping the perianal area clean after defecation requires attention after pilonidal surgery. Specifically, personal hygiene and increasing bathing frequency, ensuring wound care after surgery are substantial practices. Patients in the intervention group were more aware of perianal cleaning while control group patients reported difficulty on the first day but subsided in the following days as they learned to do some implementations by trial and error as time progresses. A study done with 841 patients who underwent pilonidal sinus surgery reported that patients had difficulty during voiding and/or defecation since remaining in a sitting position was compelling (9). There was a significant difference between the groups on the 14th postoperative day in terms of having pain/discomfort during defecation in this study This may be due to the influence of discharge training introduced.

Activity-exercise

Primary closure of chronic pilonidal sinus allows patients early return to their activities, it also has a low recurrence

Table 5.
Differences Between Groups on the Parameters of Role and Relationships, Sexuality and Reproduction, Copying and Stress Values and Beliefs

	Post-operative days			**Sig. (intergroup)**
	1st day	**7th day**	**14th day**	
	Mean ± SD n (%) intervention/control	**Mean ± SD n (%) intervention/control**	**Mean ± SD n (%) intervention/control**	**Intervention control**
Role and relationships				
The affection of roles in the family due to surgery				
0= None 10= Considerable	6.6±3.2/6.2±3.0 NS	5.4±3.2/5.9±3.1 NS	4.4±3.3/4.5±2.9 NS	15.228, **p=0.000** 20.388, **p=0.000**
The affection of relationships with friends and family due to surgery				
0= None 10= Considerable	4.9±3.2/4.0±2.8 NS	3.2±3.4/3.1±2.5 NS	1.4±2.5/1.8±2.4 NS	31.750, **p=0.000** 31.952, **p=0.000**
The affection of relationships with spouse/friend due to surgery				
0= None 10= Considerable	5.1±3.5/5.4±3.3 NS	4.0±3.5/5.0±3.0 NS	3.0±3.4/3.0±2.8 NS	14.273, **p=0.001** 24.146, **p=0.000**
Having difficulty starting school/work again due to surgery				
0= None 10= Considerable	7.2±3.2/6.9±2.9 NS	6.2±3.1/5.5±2.9 NS	5.0±3.0/3.9±3.2 NS	28.714, **p=0.000** 32.209, **p=0.000**
Difficulty experienced in talking about the current health problem to others				
0=None 10= Considerable	5.0±3.4/4.3±3.1 NS	3.8±3.1/3.3±2.8 NS	2.9±3.3/2.1±2.3 NS	14.824, **p=0.001** 33.857, **p=0.000**
Sexuality and reproduction				
Difficulty in the perception of his/her body				
0= None 10= Considerable	4.6±3.7/4.5±3.4 NS	3.9±3.7/3.8±3.1 NS	3.2±3.6/3.4±2.9 NS	9.443, **p=0.009** 7.000, **p=0.030**
The affection of sexual life				
0= None 10= Considerable	4.4±4.3/4.4±4.0 NS	3.6±3.9/4.1±3.8 NS	3.0±3.6/3.7±3.8 NS	16.42, **p=0.000** 4.255, p=0.119
Coping and stress				
Extend help coping strategies used with stressful situations				
0= None 10= Considerable	4.6±3.1/3.1±2.8 U=441**, p=0.040**	5.1±3.7/4.1±2.9 NS	6.4±3.4/7.8±6.3 NS	16.000, **p=0.000** 18.231, **p=0.000**
Values and beliefs				
Having difficulty fulfilling religious duties				
0= None 10= Considerable	5.5±4.0/5.3±3.5 NS	4.9±3.7/4.2±3.1 NS	4.0±3.6/2.6±2.3 NS	12.610, **p=0.002** 12.614, **p=0.002**

**X^2=chi-squared, SD=standard deviation, U=Mann-Whitney U, Sig.=significance, NS=not significant*

rate (26). Fatigue scores of patients in both groups decreased significantly in the following days during this study. Fatigue severity on the first postoperative day was significant, where patients in the intervention group reported being tired. This result may be the result of patients' characteristics and/or their expectations Stewart et al. (16), determined that most of the patients experienced both losses of control and weakness. Patients started to resume their-daily living activities 3 weeks after the surgery, and the body weight of male patients increased due to lack of exercise after surgery. In this study, there was no significant difference between the groups in other parameters related to activity exercise (walking, climbing up and down stairs, getting on public transport, driving their vehicles). In a study comparing patients who underwent phenol administration and surgical intervention, the phenol-administered group experienced less postoperative pain and rapid epithelization. In the same study, 85.4% of patients in the excision group returned to their daily activities two weeks after the surgery (26). Çağlayan et al. (27), compared patients with primary closure and Limberg flap surgery and reported that resuming daily activities (walking without pain, remaining in the comfortable position during voiding/defecation, and going back to work) was faster in patients with Limberg flap.

Sleep-rest

In the present study, the intervention group's concerns were lower on which position to retain during sleeping. Patients in both groups had great concerns about maintaining the right sleeping position on the first postoperative day, which decreased in the following days. This difference could be a positive outcome of discharge training in reducing patients' anxiety in the intervention group. Kara and Andsoy (5) reported that patients who were exposed to education (94.3%) and the ones who did not receive any discharge education (88.6%) were careful not to lie in the surgical area.

Cognitive perception

Pain can occur in the surgical area for a few days after the operation because of nociceptors. Demiryas Donmez (9) reported that patients' pain scores seven days after pilonidal sinus surgery ranged between 1-3 in 94.8% of the patients, and between 4-6 in 5.2% according to the (VAS 0-10). Patients usually report pain during dressing changes after surgery (9,28).

In addition to the analgesic effect of medications taken, patients should be informed on practices that are important in pain management before discharge from the hospital. The present study shows that pain severity in the control group is the higher first postoperative day and pain intensity was higher in the control group on all postoperative days although the result is statistically insignificant. Patients in the intervention group may have benefited from methods thought them to cope with pain during discharge training and helped them during recovery.

Self-perception and self-esteem

McCaughan et al. (24) have argued that surgical wounds affect the psychological well-being of patients. In the present study, patients in both groups had similar self-perception in the first interview; however, mean scores of the self-perception subheadings decreased in the control group on the following days and they continued to perceive themselves as powerless. This result could be linked to training introduced to patients in the intervention group, or due to the personality traits of this sample.

Role and relationships

Embarrassment was reported as low among pilonidal surgery patients which decreased over time (29). In this study, no significant difference was found between the groups on postoperative days regarding their role and relationships, talking about their current health problem The mean scores decreased gradually after the first postoperative day in both groups which is considered a positive development in the patients' roles and relationships as they started to return to their daily lives.

Sexuality and reproduction

Concerns about sexuality and reproduction may be related to the nature of the surgery experienced however it is not seen as a significant determinant of patients either before or after surgery. A significant reduction in sexual dysfunction 6 and 12 weeks after surgery compared to preoperatively was reported (26). In this study, patients did experience some difficulty with self-perception, and affection for sexual life was moderate postoperatively, although results were statistically insignificant This result may be because patients in both groups might have had less concerns on sexuality and reproduction as they recovered and felt better. Since sexuality and reproduction are very hard topics to discuss by patients, they may have acted reluctant on speaking about sexuality as well (30).

Coping and stress

Rudd et al. (31), stated in pilonidal sinus surgery, patients experience stress (in this study, there was a significant difference in the efficacy of patients' coping methods in both groups, only on the 1st postoperative day. The intervention group may have used effective coping strategies during recovery, and this could be related to discharge training.

Values and beliefs

Patients' beliefs facilitate their adaptation to both the disease and the postoperative period. In some cases, not being able to fulfill the requirements of religious beliefs due to surgery can cause some burden on patients (Nolan, 32). In this study, there was no significant difference between the groups in terms of values and beliefs pattern on postoperative days, although comparisons of groups were significant.

Conclusion

Parameters of health perception/health management, nutrition, excretion, sleep and rest, cognitive perception, self-perception-self-esteem patterns were influenced by discharge education. The planned discharge training based on Gordon's FHP patient follow-up form developed according to this model was an effective intervention in patients who underwent pilonidal sinus surgery.

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