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Araştırma Makalesi/ Research Article

Investigation of Postdischarge Functionality of Patients Undergoing Lumbar Disc Hernia Surgery

Lomber Disk Hernisi Cerrahisi Olan Hastaların Taburculuk Sonrası Fonksiyonelliklerinin İncelenmesi

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ABSTRACT

Objective: This study aims to examine the problems experienced by patients who underwent lumbar disc herniation (LDH) surgery in their home activities after discharge, their pain levels, and their functionality during follow-up.

Methods: This descriptive and correlational study was conducted in the neurosurgery outpatient clinic of a university hospital. Patients who underwent LDH surgery between April and December 2019 were invited to the neurosurgery outpatient clinic by their doctors for a post-discharge control examination. Of these 121 patients who met the inclusion criteria were included in the study sample. Data were collected from the patients using the "descriptive characteristics data form", "disease information form", "visual analog scale" and "Oswestry Disability Index (ODI)".

Results: 55.6% of elderly patients (65 years and older) experienced severe functional disability ($p<0.05$). It was determined that functional disability was not a problem in daily life in 58.3% of the patients who felt their general health condition was "very good" and in 100% of the patients who felt their general health condition was "excellent" ($p<0.05$). ODI results of the patients revealed that pain levels increased as functional disability increased (1.00, 1.60, and 3.00, respectively; $p<0.05$).

Conclusions: More than half of elderly patients experience serious functional disabilities after discharge. Pain experienced after discharge negatively affects the patient's functionality and comfort.

Keywords: Lumbar disc hernia, functional disability, pain, patients, surgery

ÖZ

Amaç: Bu çalışmanın amacı lomber disk hernisi (LDH) ameliyatı geçiren hastaların taburcu olduktan sonra evdeki aktivitelerinde yaşadıkları sorunları, takip sırasındaki ağrı düzeylerini ve fonksiyonelliklerini incelemektir.

Yöntem: Tanımlayıcı ve korelasyonel nitelikteki bu çalışma bir üniversite hastanesinin beyin cerrahisi polikliniğinde gerçekleştirildi. Nisan-Aralık 2019 tarihleri arasında LDH ameliyatı geçiren hastalar, taburculuk sonrası kontrol muayenesi için doktorları tarafından beyin cerrahisi polikliniğine davet edildi. Bunlardan dahil edilme kriterlerini karşılayan 121 hasta çalışmanın örnekleme dahil edildi. Hastalardan "tanımlayıcı özellikler veri formu", "hastalık bilgi formu", "görsel analog ölçek" ve "Oswestry Disabilite İndeksi (ODİ)" kullanılarak veriler toplandı.

Bulgular: Yaşlı hastaların (65 yaş ve üzeri) %55.6'sında ciddi fonksiyonel yetersizlik yaşandı ($p<0.05$). Genel sağlık durumunu "çok iyi" hisseden hastaların %58.3'ünde, genel sağlık durumunu "mükemmel" hisseden hastaların ise %100'ünde fonksiyonel özürüllüğün günlük yaşamda sorun olmadığı belirlendi ($p<0.05$). Hastaların ODİ sonuçları fonksiyonel yetersizlik arttıkça ağrı düzeylerinin de arttığını ortaya koydu (sırasıyla 1.00, 1.60 ve 3.00; $p<0.05$).

Sonuç: Yaşlı hastaların yarısından fazlası taburcu olduktan sonra ciddi fonksiyonel yetersizlikler yaşamaktadır. Taburculuk sonrası yaşanan ağrı hastanın fonksiyonelliğini ve konforunu olumsuz etkiler.

Anahtar Kelimeler: Lomber disk herni, fonksiyonel yetersizlik, ağrı, hastalar, cerrahi

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Introduction

Disorders of the spinal cord are quite common throughout life. These disorders cause pain and neurological problems and negatively affect individuals' lives. Disc herniations are the most common form of spinal cord disorder. The most common disc herniation is lumbar disc herniation (LDH) (Isik and Yilmaz, 2018; Sener et al., 2017).

Approximately 15% of the global population experiences low back pain, LDH, and other lower back defects (Jordan et al., 2011). According to the 2019 data from the Turkish Statistical Institute, 29.7% of all individuals aged ≥ 15 years who stated that they had a disease/health problem reported low back pain, LDH, and other lower back defects (Turkish Statistical Institute, 2019). According to the health statistics published by the General Directorate of Public Hospitals of Türkiye, approximately 52.000 LDH surgeries (fusion surgery, microsurgical lumbar discectomy, lumbar discectomy, and lumbar laminectomy) were performed in 2017 in Türkiye, which has a population of approximately 85 million. With a population of 53 million, approximately 10.000 LDH excisions were performed in England between 2011 and 2012. In the United States, over 287.000 lumbar discectomies were performed in 2002 (General Directorate of Public Hospitals, 2017; Oosterhuis et al., 2014).

LDH is an important health problem owing to its high prevalence and healthcare expenditures. Despite advances in surgical treatment and perioperative care, the morbidity rate remains high (Li et al., 2018; Sivaganesan, 2019). Patients who undergo surgical intervention for the treatment of LDH may experience some problems in the early postoperative period, such as significant activity restriction, intense pain, and inability to meet personal care, which may negatively affect their quality of life. In some patients, these problems may persist for a long time after surgery (Jansson et al., 2005).

In previous studies, patients are readmitted to the clinic for medical or surgical treatment due to complications such as infection and persistent pain after surgery (Adogwa et al., 2017; Morgan et al., 2018). In some studies, data determine the risk factors (e.g. educational status, gender, chronic disease, etc.) of patients that may affect postoperative recovery (den Boer et al., 2006; Dorow et al., 2017). Apart from this, there are studies evaluating patient-reported surgical outcome measures (focused on pain) related to the surgery

performed. Predictive models are being developed to predict the success of the surgery with these data (Sivaganesan et al., 2019; Khor et al., 2018). The above studies show that postoperative patients experience various problems such as persistent pain, infection, and decreased functionality which can be effective in re-hospitalization. However, studies examining the functional competence levels of patients who underwent LDH surgery in the early post-discharge period are quite limited. Evaluating patients' self-reports of pain, functional adequacy, and related activity levels in the early period after discharge may be important for the rehabilitation of patients. Therefore, this study aimed to examine the problems experienced by the patients who underwent LDH surgery regarding daily activities at home after discharge, their pain levels at the first follow-up examination, and the functional status of the patients.

Method

Study Design

This descriptive and correlational study was conducted in the neurosurgery outpatient clinic of a university hospital in the southeastern Anatolia region of Türkiye. Patients who underwent LDH surgery with minimally invasive surgical technique between April and December 2019 were invited to the neurosurgery outpatient clinic by their respective physicians for a follow-up examination after discharge. During the specified period, 183 patients underwent LDH surgery. Of these, 121 patients who met the inclusion criteria constituted the sample of the study.

Inclusion Criteria

Patients who underwent LDH surgery for the first time, were aged ≥ 18 years, could understand and speak Turkish, were not diagnosed with a psychiatric disease, applied to the neurosurgery outpatient clinic for the first postoperative follow-up examination, and volunteered to participate in the study were included in the study. Of the 62 patients who were not included in the study, 37 did not agree to participate, 11 had undergone LDH surgery before, 12 did not speak Turkish, 1 was aged < 18 years, and 1 did not come to the follow-up examination after surgery.

Data Collection Forms

Introductory Characteristics Form

The form consisted of seven questions including age, gender, marital status, body mass index (BMI), educational status, occupation, and working time of the participants.

Disease Information Form

This form consisted of 13 questions, including the postoperative day the patients were discharged, their chronic disease status, who provided the discharge training, the training content, and the problems they experienced at home after discharge. This form was created by the researchers in accordance with the relevant literature (Jansson et al., 2005; Ozkara et al., 2015).

Visual Analog Scale (VAS)

The VAS was used to determine the pain levels of the patients. The VAS is a longitudinal straight line, which is 10 cm long, with 0 = "no pain" at one end and 10 = "unbearable pain" at the other end. The validity and reliability study of the scale was performed by Price et al., and it was stated that the VAS is suitable for the unidimensional assessment of acute and chronic pain (Price et al., 1983; Ozkara et al., 2015). In the evaluation, a score of 1–4 on the VAS is defined as "mild pain," 4–7 as "moderate pain," and >7 as "severe pain" (Jones et al., 2007).

Oswestry Disability Index (ODI)

It is a 10-item scale developed by Fairbank and Pynsent to evaluate functional disability, and its Turkish validity and reliability were determined by Yakut et al. (Fairbank and Pynsent, 2000; Yakut et al., 2004). Each item is scored between 0 and 5. The ODI sub-dimensions are pain intensity, personal care, lifting, walking, sitting, standing, sleeping, social life, traveling, and degree of change in pain. The Cronbach alpha value of the scale is 0.895. Permission to use the scale was obtained from the relevant author. In the present study, the Cronbach alpha value of the scale was found to be 0.816.

ODI Calculation: For each item, the score is calculated based on A = 0, B = 1, C = 2, D = 3, E = 4, and F = 5 points. Questions that are not answered by the patient are not evaluated. The maximum score that can be obtained from the scale is 50. Based on the questions answered, evaluation is conducted as follows:

Patient score = (Score obtained/Highest possible score) × 100

Calculation of percentage values:

0% to 20% - minimal disability

20% to 40% - moderate disability

40% to 60% - severe disability

60% to 80% - crippled

80% to 100% - bed bound (or exaggerating symptoms)

Application of Research

Patients who underwent LDH surgery were invited by a neurosurgeon to the polyclinic for a follow-up examination to evaluate their recovery after a certain period of time after discharge, and an appointment was made. According to the clinical procedure, patients are invited to the outpatient clinic for a control examination 15 days after surgery. However, the examination date may vary according to the patient's condition, the physician's decision, and the patient's distance from the city. Therefore, the researcher paid daily visits to the neurosurgery outpatient clinic to invite patients to participate in the study and collect data from voluntary patients. The patients who came for their follow-up examination were informed about the study after they were examined by the physician. The patients who met the inclusion criteria and volunteered to participate in the study were taken to a separate room (suitable for interviews) within the hospital, and data collection forms were used. All forms, except for the VAS used for pain assessment, were read aloud to the patients by the researcher during face-to-face interviews and filled out by the researcher. The VAS was filled out by patients. This method was used because there were illiterate patients in the sample group. Relatives of the patients were also allowed in the interview room while the patients were being interviewed. The data collection process took 20–25 minutes for each patient.

Ethics Issues

Ethics approval was obtained from the research institutional review board (dated 08.04.2019, numbered HRÜ/19.04.08). The study was performed according to the principles defined by the Declaration of Helsinki. Written informed consent was received from the patients.

Statistical Analysis

SPSS 25.0 for Windows was used to analyze the research data. Number (n) and percentage (%) values were calculated for discrete data, whereas arithmetic mean ± standard deviation and median values were calculated for continuous data. Normality was evaluated with the Kolmogorov–Smirnov test, and it was observed that the data were not normally distributed ($p < 0.05$). Continuous numerical values were compared between two groups using the Mann–Whitney U test, and the Kruskal–Wallis test was used to compare variables between three or more groups. The Chi-Square and Fisher Exact tests were used to compare categorical data. Spearman's correlation test was used for the

relational analysis of continuous numerical values. $P < 0.05$ was accepted as statistically significant in all analyses.

Results

Of the patients, 50.4% were female, 44.6% were in the 35–49 age group, 97.5% were married, 39.7% were primary school graduates, and 59.5% were unemployed. Of the patients, 33.9% had a chronic disease (18.2% hypertension; 9.9% diabetes mellitus; 5.0% chest diseases; and 2.5% rheumatoid arthritis). It was determined that 71.9% of the patients were overweight or obese according to BMI (Table 1).

Table 1. Descriptive characteristics of the patients

Characteristics	n	%
Gender		
Female	61	50.4
Male	60	49.6
Age groups (years)		
20–34	23	19.0
35–49	54	44.6
50–64	35	28.9
65 and over	9	7.4
Mean Age \pm SD = 46.12 \pm 12.30 (years)		
Minimum–Maximum: 20–79		
Marital status		
Married	118	97.5
Single	3	2.5
Educational status		
Illiterate	39	32.2
Literate	6	5.0
Primary school graduate	48	39.7
Secondary school graduate	11	9.1
High school graduate	10	8.3
Undergraduate and postgraduate	7	5.8
Working status		
Not working	72	59.5
Working	39	40.5
Duration of Work (years)		
Mean \pm SD = 10.57 \pm 14.81		
Min–Max (years) = 0–60		
Chronic disease status		
No	80	66.1
Yes	41	33.9
Body mass index		
Underweight (BMI < 18.5)	1	0.8
Normal (BMI = 18.5–24.9)	33	27.3
Overweight (BMI = 25–29.9)	52	43.0
Obese (BMI \geq 30)	35	28.9

Note. SD = Standard deviation; Body Mass Index (BMI) Classification (Centers for Disease Control and Prevention, 2021)

It was determined that the patients stayed in the hospital for at least 1 day and up to 8 days following surgery. The mean day of the first follow-up (DFF) was 17.56 ± 5.86 days after discharge. The earliest DFF was the 3rd day, and the latest DFF was the 35th day. The mean pain intensity perceived by the patients according to VAS during the first follow-up examination was 2.18 ± 1.76 (min, 0; max, 7.4). Spearman's correlation analysis was performed to examine the relationship between the DFF and pain levels at the time of the examination, and no statistically significant correlation was found ($r = 0.159$, $p > 0.05$). It was found that 92.6% of the patients received discharge training before going home after LDH surgery. Furthermore, 86.0% of the patients received training from nurses and 60.3% received training from physicians. The most common subjects of training were body mechanics (58.7%), exercise (57.9%), and corset use (46.3%) (Table 2).

Table 2. Postoperative characteristics of the patients in the hospital

Characteristics	Minimum–Maximum	Mean \pm SD*
Duration of Hospitalization (days)	1–8	2.98 \pm 1.42
DFF	3–35	17.56 \pm 5.86
DFF Pain Levels (VAS, cm)	0–7.4	2.18 \pm 1.76
	n	%
Status of Receiving Discharge Training		
No/Can't remember	9	7.4
Yes	112	92.6
Persons Who Provided Discharge Training		
Nurse	104	86.0
Physician	73	60.3
Discharge Training Topics		
Body mechanics	71	58.7
Exercise	70	57.9
Corset usage	56	46.3
Wound care	23	19.0
Nutrition	18	14.9
Excretion	20	16.5
Emergencies (neurological)	14	11.6
Sexuality	5	4.1
Smoking	2	1.7

Note. DFF = Day of First Follow-up: The day the patient presented for the first follow-up examination after discharge (discharge was accepted as the 0th day); Pain levels on the DFF were evaluated one time using the Visual Analog Scale; More than one response could be given by each patient; VAS = Visual Analog Scale

It displays information about the patients' lives at home after discharge (Table 3). When asked how they felt about their health at home after being discharged from the hospital, 55.4% answered "good" and 23.1% answered "not bad." The activities that the patients had the most difficulty with during the period between discharge and the first follow-up examination were "standing up" (33.9%), "changing position" (30.6%), and "emptying bowels" (28.1%). Most caregivers who assisted the patients after discharge were spouses (49.6%) and children (44.6%).

Table 3. Patients' health perception at home, difficult activities, and characteristics of caregivers

Characteristics	n	%
How Do You Perceive Your Health At Home?		
Bad	12	9.9
Not bad	28	23.1
Good	67	55.4
Very good	12	9.9
Excellent	2	1.7
Most Difficult Activities After Discharge		
Standing up	41	33.9
Changing position	37	30.6
Emptying bowel	34	28.1
Sitting	15	12.4
Walking	8	6.6
Sleeping	4	3.3
Oral food intake	3	2.5
Fulfilling family role	3	2.5
Worshipping	2	1.7
Taking a bath	2	1.7
Caregivers at Home		
Spouse	60	49.6
Child	54	44.6
Relative (2nd and 3rd degrees)	18	14.6
Sibling	9	7.4
Mother	7	5.8
Nurse	1	0.8

Note. Patients were able to give more than one answer; Relative; 2nd and 3rd degrees (Pediatric Genetic Diseases Association, 2021)

The pain levels determined by the VAS on the DFF and patients' perceptions of their health were statistically compared (Kruskal–Wallis test=22.764, $p<0.05$). Accordingly, when patients were asked how they felt on the DFF examination, it was

determined that those who felt "good," "very good," and "excellent" had lower pain levels than those who felt "not bad," and those who felt "very good" did not experience pain. The pain levels of all patients varied between 0.00 and 7.40. The median values of pain levels were 1.95 for those who felt "bad," 2.75 for those who felt "not bad," 1.60 for those who felt "good," 0.70 for those who felt "very good," and 0.00 for those who felt "excellent" ($p<0.05$). According to the ODI scores on the DFF, low back pain did not constitute a significant problem in the lives of 36 (29.8%) patients, while it mildly restricted the daily life activities of 50 patients (41.3%) and severely restricted the daily life activities of 35 patients (22.3%).

Table 4. Comparison of postdischarge ODI results of the patients with some variables

Age Range (n/%)	ODI Score		
	a	b	c
	n(%)	n(%)	n(%)
20–34	7/34.0	11/47.8	5/21.7
35–49	19/35.2	27/50.0	8/14.8
50–64	9/25.7	9/25.7	17/48.6
>65	1/11.1	3/33.3	5/55.6
Fisher Exact Test and p	15.649, 0.012		
How the Patient Feels			
Bad	3/25.0	6/50.0	3/25.0
Not bad	3/10.7	8/28.6	17/60.7
Good	21/31.3	31/46.3	15/24.4
Very good	7/58.3	5/41.7	0/0.0
Excellent	2/100	0/0.0	0/0.0
Fisher Exact Test and p	24.679, 0.000		
Gender			
Female	18/29.5	23/37.7	20/32.8
Male	18/30.0	27/45.0	15/25.0
Chi-square (X²) and p	1.026, 0.590		
Working Time (n/median)	36/10.00	50/0.00	35/0.00
Kruskal–Wallis and p			
	3.769, 0.152		
Pain Level (n/median)	36/1.0	50/1.6	35/3.0
Posthoc: a<b<c	28.542		
p	0.000		

Note. ODI=Oswestry Disability Index; a=Low back pain does not constitute a significant problem in the patient's life; b=Low back pain slightly restricts the patient's daily life; c=Low back pain severely/completely restricts the patient's daily life, or the patient is bedridden.

It shows the statistical comparison of the patient's post-discharge ODI functional disability levels in terms of several characteristics (Table 4). When the functional disability levels of the patients were

compared according to their age, it was observed that 55.6% of patients aged ≥ 65 years experienced severe disability ($p < 0.05$). In terms of how the patients felt, it was determined that 58.3% of those who felt "very good" and all of those who felt "excellent" (100%) did not have any significant problems in their daily lives ($p < 0.05$). Patients who had worked for a certain period during their lifetime had fewer functional disabilities, although no significant difference was observed ($n=36$ (a), $n=50$ (b), $n=35$ (c); $p > 0.05$). Based on the ODI scores of the patients, it was found that pain levels increased as functional disability increased (1.00, 1.60, and 3.00, respectively; $p < 0.05$).

Discussion

This study was conducted to determine the problems, pain levels, and functional disability of patients who underwent LDH surgery and visited the neurosurgery outpatient clinic for their first routine check-ups after discharge. The pain levels of the patients were evaluated using the VAS on the day of the check-up. While one-third of the patients reported no pain on the day of their check-up, more than half reported mild pain. Pain levels were unaffected by the number of days between discharge and the first routine check-up. This suggests that there could be other factors affecting pain level, and the use of multidimensional pain scales could be useful in future studies to evaluate the factors affecting patients' pain perception.

In the present study, most patients received discharge training from the physician and/or nurse before discharge. The discharge training provided to the patients in the study consists of various topics. In addition, the proportion of patients who receive training on each subject varies. This could be attributed to the physician or nurse evaluating the patients' knowledge level before training. However, there is no standard measurement tool in the clinic for this purpose. Therefore, the evaluation of the patient's knowledge levels may not fully reflect reality. In future experimental studies that include discharge training, a pre-test can be conducted to measure the knowledge level of patients on the subject.

When the patients were asked how they felt at home after being discharged from the hospital, 9.9% of the participants answered that they felt bad. In the present study, it was found that as functional disability indicated by ODI scores increased, the pain levels of the patients also increased, making them feel worse. As a result, the presence of a factor

that limits the patient's independence may negatively affect his or her well-being. These findings are consistent with the literature (Catal and Cebeci, 2020; Królikowska et al., 2022). Królikowska et al conducted a study similar to ours on patients who had lumbar disc herniation surgery. This study revealed that the functional capacity of the patients was low in the early postoperative period. The majority of respondents showed moderate (53%) and high (31%) degrees of disability. As the severity of pain increased, the degree of disability also increased (Królikowska et al., 2022). Considering these results, patients may need professional and systematic support to minimize experiences that may lead to delayed postoperative recovery and rehospitalization. This support system can begin in the preoperative period and includes postoperative and post-discharge home recovery.

In the present study, patients had the most difficulty standing up, changing positions, and emptying their bowels. This may be due to the pain associated with the surgical wound, the fear of causing a complication by making a wrong move, or a sense of weakness caused by the continued tingling and numbness in their legs. One of the most common causes of difficulty in bowel emptying may be changes in bowel habits and constipation caused by inactivity. Another reason is that they may postpone going to the toilet because they experience pain while sitting on the toilet.

Similarly, in a quasi-experimental study conducted by Karadag and Aksoy in 2002, it was determined that the most common problems experienced by patients during the recovery process after discharge were low back and leg pain, tingling and numbness in the legs and feet, pain in the incision area, change in bowel habits, gas accumulation in the intestines and urinary problems (Karadag and Aksoy, 2002). The findings of this study support our evaluation. Apart from this study, no study has been found in the literature examining the daily life activities of patients after discharge, such as movement and bowel habits. It seems that similar problems still occur.

After LDH surgery, pain should be at an acceptable level for patients to recover, resume daily activities, and increase comfort. In addition, avoiding straining during bowel evacuation will benefit the healing process by reducing strains in the surgery area and the pain experienced by patients. It is essential to ensure that patients receive adequate information regarding the relationship between pain

and movement, the methods for bowel emptying, and the composition of an appropriate diet to prevent constipation.

In the present study, most patients aged 65 years and older had more functional disability compared to younger patients. In addition, pain levels also increase with increasing age. Dincer and Kurşun examined the problems experienced by elderly individuals at home after surgical intervention. According to their results, pain was one of the most common problems in elderly patients (Dincer and Kursun, 2019). Lagman et al. compared the outcomes of LDH surgery in individuals classified into adult (18–79 years) and elderly (80–103 years) patients and concluded that elderly patients had more complications after discharge (Lagman et al., 2017). Similarly, in the studies of Hu et al. and Strömqvist et al., it was found that elderly patients had lower functional capacity and higher pain levels (Hu et al., 2017; Strömqvist et al., 2016). According to these results, the authors stated that elderly patients should be supported and guided more during the recovery process compared to adult patients. In addition to discharge training, elderly patients can be provided with tele-guidance for some time for their daily life at home. Apart from discharge education, initiatives such as tele-guidance for a certain period can be provided to elderly patients at home for their daily lives.

In the present study, no significant relationship was found between gender, working time, and functional disability ($p > 0.05$). However, when the results were examined in detail, it was found that functional disability was lower in patients who worked for a certain period than in those who did not work. This is most likely because working life forces people to be more active. However, no study regarding this finding could be found in the literature. Therefore, further studies are needed to conclude this subject. We think that patients can be better rehabilitated with these studies. We predict that all healthcare professionals, especially nurses who prepare patients for discharge, can make discharge plans based on the results of these studies.

Limitations

This study was conducted in only one center. Therefore, the research results cannot be generalized. The training content provided by the postoperative healthcare team to the patients participating in the study could not be evaluated. The pain levels of the patients could only be determined at the time of data collection. In

addition, patients' pain management was not examined, and the surgical team (surgeon, nurse, anesthetist, etc.) was different for each patient. Therefore, pain management, patient evaluations, and discharge training may differ. It was not possible to observe the patients' physical activities at home after discharge. Physical activity data were evaluated according to patient statements. In addition, the time of data collected from patients is not the same due to differences in the days they come to the outpatient clinic.

Conclusion and Recommendations

According to the results obtained in the present study, patients who underwent LDH surgery experience various problems at home after discharge. More than half of the elderly patients have severe functional disabilities after discharge. Pain experienced after discharge negatively affects the functionality and comfort of the patient. Further multicenter studies with larger samples can be performed. Studies can be planned to investigate the effectiveness of the roles of nurses who plan and implement discharge education and the factors affecting this issue. In addition, studies consisting of elderly patients (≥ 65 years) alone can be conducted.

Ethics Committee Approval: Ethics approval was obtained from the research institutional review board (dated 08.04.2019, numbered HRÜ/19.04.08).

Peer-review: External referee evaluation.

Author Contributions: Concept: YY, AY; Design: YY, AY; Consultancy: AY, AK; Data Collection and Data Processing: YY; Analysis and Interpretation: YY, AY, AK; Literature Search: YY, AY, AK; Preparation of the manuscript: YY, AY, AK; Critical Reviews: AY, AK

Conflict of interest: The authors declare that they have no conflict of interest.

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What did the study add to the literature?

- This study shows that patients who undergo LDH surgery may experience functional disability at home after discharge.
 - They also experienced difficulties in various vital activities at home.
 - This study may contribute to the planning of patients' discharge education in the clinic.
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