Original Article

The Effect of Planned Education on Sexual Satisfaction of Patients after Lumbar Disc Surgery

Serdar Saritas, PhD of Surgical Nursing
Inonu University, Faculty of Nursing, Department of Surgical Nursing, Inonu University, Malatya, Turkey

Neziha Karabulut, PhD of Surgical Nursing
Professor, Ataturk University Faculty of Nursing, Department of Surgical Nursing, Ataturk University, Erzurum, Turkey

Correspondence: Serdar Sarıtas, Inonu University, Faculty of Nursing, Campus 44280, Malatya, Turkey E-mail: serdar.saritas@inonu.edu.tr

Abstract

Abstract The purpose of this study is to examine the effect of education on sexual satisfaction in patients who underwent lumbar disc herniation surgery. This research was conducted with pre-test/post-test control group semi-trial model between April 2009 and April 2011. The population of the study is consisted of male patients who underwent lumbar disc herniation surgery in a neurosurgery department of a hospital in Turkey. The sample of the study is consisted of 80 patients chosen by non-probabilistic random sampling method, who are literate; applied to the neurosurgery department for lumber disc herniation surgery; had no visual and auditory problems, no verbal communication problems and no diagnosed psychiatric disorders; and met the research criteria. Of these patients, 40 were included in the study group and 40 were included in the control group. The study group was given education before surgery, after surgery and before discharge, whereas the control group was subjected only to the routine applications of the neurosurgery department. An Introductory Information Form and the Golombok-Rust Inventory of Sexual Satisfaction (GRISS) (for male) were used for the collection of data. For the evaluation of the data, the t-test was used for independent groups, whereas the t-test and Pearson's correlation analysis were used for dependent groups. After the education, the sexual satisfaction levels of the study group were found to be statistically significantly higher than the control group ($p < 0.001$). The planned education was found to be effective in increasing sexual satisfaction levels in patients who underwent lumbar disc herniation surgery.

Keywords: Lumbar disc herniation, planned education, sexual satisfaction.

Introduction

Lumbar disc herniation (LDH) is considered to be a very important disease because it lowers the quality of life and causes a great loss of labor force in the society (Luchtmann and Firsching, 2016; Bono and Schoenfeld, 2011). Lumbar disc herniation is usually more common in males with an incidence of 65-80% (Jordan et al., 2011; TİK, 2012; Kılıç, 2015). Kuru et al. found a high prevalence level of 62% for the back pain in the Turkish population (Kuru et al., 2011).

Sexuality can be defined as a special experience that is shaped by biological, psychological and social interactions determined by social norms, value judgments and taboos, which include sexual satisfaction and coexistence of two people in harmony. Sexuality is considered an important indicator of the quality of life (Davison et al., 2009).

Diseases and surgeries are factors that have adverse effects on sexual behavior and sexual health (Odole and Olugbenga-Alfred, 2018; Dundon and Rellini, 2010; Sezgin and Ekinci, 2016; Reitz et al., 2004).

In a patient with lumbar disc herniation, both neural compression and pain and psychological conditions can affect sexual life and functions (Odole and Olugbenga-Alfred, 2018). Literature studies, however, do not adequately address this issue. In Turkey, sexual ignorance and behaviors that are part of the understanding of sexuality, including embarrassment and concealment, make it difficult to get assistance in this matter (Sezgin and Ekinci, 2016).

In a study, it was found that the incidence of sexual intercourse in patients with LDH was reduced by 78%, and that 64% of patients experienced sexual reluctance (Berg et al., 2009). In another study, it was determined that healthcare professionals did not provide adequate information about when and how to maintain sexual life in the postoperative period (Akbaş et al., 2010).

Considering that nurses do not provide sufficient level of patient education (Sezgin and Ekinci, 2016), it appears that this topic will be taboo.

Therefore, nurses should be sensitive to affected patients and their spouses. Today, nurses have basic knowledge about sexuality and the diagnosis and treatment of sexual dysfunction. Nurses can contribute to the maintenance and improvement of sexuality, which is a sub-dimension of quality of life, by providing education about sexuality to individuals, families and collecting sexuality (Ekmekçioğlu and Demiralp, 2006).

Nurses have important duties on LDH which is common in society and can be treated with surgery. Patient education, which is as important as patient care after spinal surgery, should be provided to patients undergoing LDH surgery. Planned education can increase the level of sexual satisfaction.

Aim of the Research

The purpose of this study is to examine the effect of planned education on sexual satisfaction in patients who underwent lumbar disc herniation surgery.

Hypotheses

H1. The planned education raises the level of sexual satisfaction in patients who underwent lumbar disc herniation surgery.

Materials and Methods

This research was conducted with pre-test/post-test control group semi-trial model in a neurosurgery department of a government hospital in northern Turkey April 2009 and April 2011.

The population of the study is consisted of male patients who underwent lumbar disc herniation surgery in the neurosurgery department of the government hospital. Power analysis showed a sample size of 80 patients with an effect size of 0.8, an alpha level of 0.05 and a representative power of 0.94. Of these patients, 40 were included in the study group and 40 were included in the control group.

The sample of the study is consisted of 80 patients chosen by random sampling method, who are literate; applied to the neurosurgery department for lumber disc herniation surgery; and had no visual and auditory problems, no verbal communication problems and no diagnosed psychiatric disorders. We included the study group first, then the control group.

Collection of Data

An Introductory Information Form created by the researcher and the Golombok Rust Inventory of Sexual Satisfaction (GRISS) (for male) were used for the collection of data. The data were collected by the investigator by a face-to-face interview at the hospital and in the patients' homes.

Collection of Pre-Test Data

In the patients hospitalized in the neurosurgery department, Introductory Information Form and the Golombok Rust Inventory of Sexual Satisfaction were administered in the study group before the education and in the control group after the admission. (1st measurement)

Collection of Post-Test Data

The Golombok Rust Inventory of Sexual Satisfaction was administered in the homes of the study group 4 (2nd measurement) and 12 weeks (3rd measurement) after the education given at

discharge and in the homes of the control group 4 (2nd measurement) and 12 weeks (3rd measurement) after performing only routine clinical practices.

Data Collection Tools

Introductory Information Form

This form was prepared by the investigator to determine the socio-demographic characteristics of the patients. This form contains a total of 9 question categories (age, educational status, body mass index, occupation, familial structure, income status, duration of the disease, and history and type of an accident.)

Golombok Rust Inventory of Sexual Satisfaction (GRISS)

The scale was developed by Golombok and Rust in 1986 (Rust and Golombok, 1986). It is a measurement tool for assessing the quality of sexual intercourse and the sexual dysfunction.

There are two different forms for males and females, each consisting of 28 questions.

The male form was used since this study was performed on male patients. The overall score gives a general idea of the quality of sexual functions, whereas the subscale scores provide more detailed information about the various aspects of sexual intercourse.

There are seven sub-dimensions in male form; avoidance, satisfaction, communication, touching, frequency of sexual intercourse, premature ejaculation and impotence. The frequency of sexual intercourse and communication are questioned by 2 items, while the other sub-dimensions are questioned by 4 items. In addition, in both forms, there are 4 items related to the quality of the sexual intercourse, other than these sub-dimensions.

The inventory was a five-point Likert type scale with items of "never", "rarely", "sometimes", "mostly", and "always". For the scoring of the scale, both the overall score and the scores obtained from the sub-dimensions can be used. High scores indicate any deterioration in the sexual functions and the quality of sexual intercourse. The raw scores obtained can then be converted into standard scores ranging from 1 to 9, with a separate profile for males and females or a common profile for couples. In the male form, 5th, 6th, 10th, 11th, 14th, 17th, 18th, 22nd to 24th and 26th to 28th questions were scored in the order of "0-1-2-3-4", whereas the remaining questions were scored in the order of "4-3-2-1-0".

Patients who received 5 points or more on the subscales of the scale were grouped as "having problems", whereas patients who received under 5 points were grouped as "having no problem" (Rust and Golombok, 1986).

The Turkish validity and reliability study of the scale was conducted by Tuğrul et al. The reliability coefficient of this scale was found as 0.94 in males. Internal consistency coefficients for sub-dimensions ranged from 0.63 to 0.83 (Tuğrul et al., 1993). The internal consistency coefficient of this scale was 0.84 in this study.

Nursing Interventions

In order to increase the sexual satisfaction levels of the patients in the study group, a presentation was first made on patient education. The topics included in this presentation were lumbar herniation, structure of vertebral column, mechanism of lumbar herniation, candidates for lumbar herniation, symptoms and tretment of lumbar herniation, issues to be considered in daily life after surgery, and post-operative sexual-life.

In the study group, an average of 20 minutes of education was provided using face-to-face interview method in patients' rooms the day before the operation, about the operation to be performed (operating theater environment, mean duration of operation, reanimation unit) and the issues that need to be paid attention after the operation (deep breathing exercises, coughing exercises, turning in bed, getting upright and going into a lying position). In this training process; verbal expression, question-answer and teaching-practice methods were used.

The patients in the study group were informed about the causes and symptoms and the effects of lumbar disc herniation on sexual life during a mean of 20 minutes using the presentation prepared on the first day after the operation

During the discharge, the study group was given a 20-minute education about the body mechanics in everyday life (driving, weight control, muscle strengthening exercises, etc.) and issues to be paid attention to in their sexual life (considering that post-operative sexual life can be reversed after 10-30 days on average; preferring passive positions that do not injure the lumbar region, clearly sharing the distress of sexual life with their partner and getting support from them).

During this education, "teaching-practice" technique on body mechanics was emphasized. All of the LDH-related questions of the patients were tried to be answered. A paper-copy of the presentation prepared by the investigator was distributed to the patients in order to ensure the continuity and permanence of the information provided. The dates of the interviews of the 2nd and 3rd measurements were decided with the patients.

In accordance with the schedule of the study, the scales were reapplied at 4 and 12 weeks after discharge in the homes of the patients in the study group.

Variables of Study

Dependent variables of the study: mean scores of sexual satisfaction scale.

Independent variable of the study: planned education.

Control variables of the study: the educational status and age of the patients

Analysis of Data

Descriptive statistics, Cronbach's α, chi-square test, Fisher's chi-square test, t-test, independent t-test were used for statistical analysis of the data. In all analyses, the statistical significance level was set at 0.05.

The Ethical Principles of the Study

Prior to the initiation of the study, we obtained the written permission from the hospital where the study was to be conducted and Ethical approval from the Ethics Committee of Ataturk University, Institute of Health Sciences (2009.1.1/5). Verbal approvals were taken from the patients included in the study after explaining the purpose and duration of the study and the procedures to be carried out during the study.

Results

The comparison of descriptive characteristics of the study and control group showed a mean age of 42.5 (9.00) years in the study group and 41.9 (8.40) years in the control group. It was found that 32.5% of the study group and 50% of the control group were primary school graduates. In addition, 50% of the study group and 42.5% of the control group were farmers, whereas 60% of the study group and 57.5% of the control group had an elementary family. It was found that the income was equal to expense in the majority of the patients (study 70%, controls 62.5%).

The vast majority of patients in the study and control groups experienced LDH problems for 1-5 years, but not experienced any accidents; whereas 80% of the patients in the study group, who experienced any accidents, were found to have a fall accident. Patients in the study group had a mean BMI of 27.95, whereas the control group had a mean BMI of 26.30 (Table 1).

The mean sexual satisfaction score of patients recruited in the study and control groups are shown in Table 2. In the first measurement, there was a statistically insignificant difference between the groups in terms of all sub-dimensions excluding sexual satisfaction ($p = .03$) and overall scores ($p = .03$). In the second measurement, there was a statistically significant difference between the groups in terms of the sub-dimensions of frequency ($p = .002$), premature ejaculation ($p = .005$) and impotence ($p = .021$).

There were statistically insignificant differences between the groups in terms of the sub-dimensions of communication, satisfaction, avoidance, touching and overall scores. In the third measurement, there was a statistically significant difference between the groups in terms of the sub-dimensions of frequency ($p = 002$), communication ($p = .0004$), satisfaction ($p = .000$), avoidance ($p = .000$), touching ($p = .000$), impotence ($p = .000$) and overall ($p = .000$) scores, there was a statistically insignificant difference in terms of sub-dimension of premature ejaculation.

The mean sexual satisfaction score of patients at the first and third measurements are shown in Table 3. Intra-group comparison of the mean sexual satisfaction score of the study group showed a statistically significant difference in terms of all sub-dimensions (frequency $p = .001$, communication $p = .000$, satisfaction $p = .000$, avoidance $p = .002$, touching $p = .001$, premature ejaculation $p = .000$, impotence $p = .000$) and overall scores ($p = .000$). However, there was a statistically insignificant difference in terms of the sub-dimensions of communication ($p = .59$), avoidance ($p = .27$), touching ($p = .36$), premature ejaculation ($p = .29$), impotence ($p = .33$) excluding the sub-dimensions of frequency ($p = .013$) and satisfaction ($p = .028$).

Table 1. Comparison of Descriptive Characteristics of Patients in the Study and Control Groups

Characteristics	Study (n = 40) Number	%	Control (n = 40) Number	%	Test and Significance
Educational status					
Literate	3	7.5	2	5.0	
Primary school	13	32.5	20	50.0	
Secondary school	11	27.5	7	17.5	X^2=2.77 p=.596
High school	11	27.5	9	22.5	
University	2	5.0	2	5.0	
Occupation					
Farmer	20	50.0	17	42.5	
Officer	10	25.0	10	25.0	X^2=11.81 **p=.01**
Retired	10	25.0	4	10.0	
Worker	0	0	5	12.5	
Artisan	0	0	4	10.0	
Family type					
Nuclear family	24	60.0	23	57.5	X^2 = .052 p=.820
Extended family	16	40.0	17	42.5	
Income status					
More than expense	10	25.0	10	25.0	
Equal to expense	28	70.0	25	62.5	X^2=1.456 p=.483
Less than expense	2	5.0	5	12.5	
Duration of the disease					
Less than 6 months	6	15.0	2	5.0	
6 months to 1 year	7	17.5	9	22.5	X^2=5.02 p=.158
1 to 5 years	23	57.5	19	47.5	
6 years and over	4	10.0	10	25.0	
History of an accident					
Yes	5	12.5	1	2.5	Fisher's $_X{}^2$=2.883
No	35	87.5	39	97.5	p=.090
Type of accident					
Fall	4	80.0	0	0	Fisher's $_X{}^2$=2.400
Traffic accident	1	20.0	1	100	p=.121
BMI	X=27.95		X=26.30		*t*=.295 p=.090
Age	X=42.5±9.00		X=41.9±8.40		*t*=.29 p=.41

Table 2. Comparison of the Mean Sexual Satisfaction Score of Patients in the Study and Control Groups

Sub-dimensions of the Scale		Study (X ± SD)	Control (X ± SD)	Significance
Frequency	1st measurement	5.10 ± 1.58	5.42±.90	*t*=1.12 p=.26
	2nd measurement	4.07 ± 1.34	4.92±.97	*t*=3.23 **p=.002**
	3rd measurement	4.07 ± 1.34	4.92±.97	*t*=3.23 **p=.002**
Communication	1st measurement	3.37 ± 1.64	2.92 ± 1.95	*t*=1.11 p=.26
	2nd measurement	2.40 ± 1.35	2.70 ± 1.55	*t*=.92 p=.361
	3rd measurement	1.97 ± 1.04	2.75 ± 1.27	*t*=2.96 **p=.004**
Satisfaction	1st measurement	5.62 ± 1.90	5.00 ± 2.45	*t*=1.27 **p=.03**
	2nd measurement	4.32 ± 1.84	4.42 ± 2.09	*t*=.22 p=.82
	3rd measurement	2.20 ± 1.85	3.90 ± 2.23	*t*=3.69 **p=.000**
Avoidance	1st measurement	5.92 ± 1.62	5.90 ± 1.15	*t*=.07 p=.93
	2nd measurement	5.77 ± 1.16	6.22 ± 1.20	*t*=1.69 p=.094
	3rd measurement	4.92 ± 1.42	6.20 ± 1.45	*t*=3.96 **p=.000**
Touching	1st measurement	3.95 ± 2.33	3.42 ± 2.29	*t*=1.01 p=.31
	2nd measurement	12.02 ± 1.57	11.72 ± 1.69	*t*=8.2 p=.415
	3rd measurement	2.47 ± 2.02	3.77 ± 1.91	*t*=2.95 **p=.004**
Premature Ejaculation	1st measurement	4.72 ± 2.17	4.20 ± 2.42	*t*=1.02 p=.31
	2nd	12.82 ± 1.51	11.80 ± 1.66	*t*=2.87 **p=.005**

	measurement			
	3rd measurement	3.12 ± 1.62	3.82 ± 1.97	*t*=1.73 p=.087
Impotence	1st measurement	4.12 ± 1.78	3.65 ± 1.81	*t*=1.17 p=.24
	2nd measurement	13.60 ± 1.58	12.65 ± 1.87	*t*=2.35 **p=.021**
	3rd measurement	1.77 ± 1.59	3.30 ± 1.71	*t*=4.12 **p=.000**
Overall	1st measurement	39.72 ± 9.49	34.57 ± 11.28	*t*=2.20 **p=.03**
	2nd measurement	34.02 ± 7.99	34.45 ± 9.42	*t*=.17 p=.828
	3rd measurement	23.80 ± 8.98	31.45 ± 9.74	*t*=3.65 **p=.000**

Table 3. Intragroup Comparison of the Mean Sexual Satisfaction Score at the 1st and 3rd Measurements

Sub-dimensions of the Scale	**Study group**		**Control Group**	
	1st Measurement (X ± SD)	**3rd Measurement (X ± SD)**	**1st Measurement (X ± SD)**	**3rd Measurement (X ± SD)**
Frequency	5.10±1.58	4.07±1.34 *t*=3.62 **p=.001**	5.42±.90	4.92±.97 *t*=2.59 **p=.013**
Communication	3.37±1.64	1.94±1.04 *t*=6.53 **p=.000**	2.92±1.95	2.75±1.27 *t*=.58 p=.559
Satisfaction	5.62±1.90	2.20±1.85 *t*=11.36 **p=.000**	5.00±2.45	3.90±2.23 *t*=2.27 **p=.028**
Avoidance	5.92±1.62	4.92±1.42 *t*=3.29 **p=.002**	5.90±1.15	6.20±1.45 *t*=1.09 p=.279
Touching	3.95±2.33	2.47±2.02 *t*=3.73 **p=.001**	3.42±2.29	3.77±1.91 *t*=.92 p=.360
Premature Ejaculation	4.72±2.17	3.12±1.62 *t*=4.56 **p=.000**	4.20±2.42	3.82±1.97 *t*=1.06 p=.293
Impotence	4.12±1.78	1.77±1.59 *t*=7.18 **p=.000**	3.65±1.81	3.30±1.71 *t*=.98 p=.331
Overall	39.72±9.49	23.80±8.98 *t*=12.08 **p=.000**	34.57±11.28	31.45±9.74 *t*=1.73 p=.091

Discussion

Lumbar disc herniation is considered to be a very important disease because it lowers the quality of life and causes a great loss of labor force in the society (Kockar and Uzun, 2007; Luchtmann and Firsching, 2016). LDH adversely affects the quality of life in communities, with common pain and limitation of movement (Sánchez-Fuentes et al., 2014; Shahbandar and Press, 2005; Veresciagina et al., 2007). LDH also influences sexuality, which is an important part of human life, through various mechanisms. LDH may cause a decrease in sexual desire, erectile dysfunction, arousal disorders and orgasmic disorders with potential pain and neural compression (Akbaş et al., 2010).

Although surgical intervention, which plays an important role in the treatment of LDH (Veresciagina et al., 2007; Strömqvist et al., 2008; Daffner et al., 2010; Akagi et al., 2010), makes a significant contribution to the rapid return of the patient to healthiness and fulfillment of daily life activities (Kılıç, 2015), it is known that in the early postoperative period, daily life is affected negatively by significant activity restriction, social isolation, sleep disturbances and intense pain (Koçkar and Uzun, 2007). Therefore, there is a clear need to provide education for the patients about the issues to be considered in the postoperative period. In a study, Karada (Karada and Aksoy, 2002) found that 40.8% of the patients participating in the study had no knowledge of lumbar disc herniation surgery and 39.5% of the patients were afraid of experiencing stroke. The same study revealed an important finding that only 2.6% of patients were informed by nurses. Karahan's (Karahan and Bayraktar, 2013) study on the effectiveness of the education program developed to prevent low back pain in nurses showed that the mean nurse knowledge scores increased after the education. In conclusion, the provision of education about the nature of the disease, surgical intervention and postoperative period will both increase the knowledge levels of the patients and will also affect their sexual satisfaction.

Sexuality can be defined as a special experience that is shaped by biological, psychological and social interactions determined by social norms, value judgments and taboos, which include sexual satisfaction and coexistence of two people in harmony (Sánchez-Fuentes et al., 2014; Sezgin and Ekinci, 2016). There was a significant decrease in the mean sexual satisfaction scores after the education in the study group, while there was almost no difference in the patients in the control group. There is an inverse relationship between the mean sexual satisfaction scores and and the sexual satisfaction. Accordingly, a decrease in the mean score indicates an increase in sexual satisfaction.

These results confirm the hypothesis that the planned education raises the level of sexual satisfaction in patients who underwent lumbar disc herniation surgery.

The study conducted by Kanayama et al. (Kanayama et al., 2010) found that 50% of patients had a decrease in sexual desire and 59% had a decrease in the frequency of sexual intercourse due to LDH. The same study reported that 54% of male patients should have sexual position adjustment (position that improves the comfort of the patient and minimizes back pain). In a study, it was found that the incidence of sexual intercourse in patients with LDH was reduced by 78%, and that 64% of patients experienced sexual reluctance (Akbaş et al., 2010). A study of the premarital sexual counseling program revealed that the mean sexual satisfaction score in males in the study group was lower than that of the males in the control group. It has been stated that the wrong information and beliefs of the individuals can be changed and a more seamless and satisfying sexual life and a happy marriage can be achieved thanks to the counseling service (Kırya Vural and Bayık Temel, 2010). A study in a different group found that positive partner support increased male sexual satisfaction (Blackmore et al., 2011).

The mean sexual satisfaction scores of all sub-dimensions and the overall scores of the study group were found to be decreased in the first and third measurements, indicating an increase in sexual satisfaction levels. In the control group, there was a decrease in the mean scores of only the sub-dimensions of frequency and satisfaction. A study by Hagg et al. (Hägg et al., 2006) found that patients with chronic low-back pain who underwent surgery had a significantly better sexual life than patients who underwent non-operative treatment. Our study also showed that the mean scores of frequency and satisfaction sub-dimensions decreased in the control group. Our result indicating that a successful operation was associated with an increase in frequency and satisfaction, is similar to Hagg et al.'s (Hägg et

al., 2006) result showing that patients who underwent surgery had better sexual life.

Results and Recommendations

Our study examining the effect of education on sexual satisfaction in patients who underwent lomber disc herniation surgery found that there was a significant increase in the sexual satisfaction level after the education in the study group compared to that in the control group.

In the light of this result, the following suggestions can be made;

- In neurosurgery clinics, materials such as brochures and booklets related to the education (containing the contact information of the nurse) should be given to the patients underwent LDH surgery, and pre-discharge education should be done and its continuity should be ensured.

- Patient care services should be planned considering factors affecting sexual satisfaction after LDH surgery.

- In the care of patients underwent LDH surgery, it may be advisable to protect and improve health condition, and to conduct further studies with higher number of patients and longer follow-up periods in different neurosurgery clinics to develop clinical and rehabilitative practices.

- This study was not funded from any fund. The financial support for this study was provided by the investigators themselves.

Compliance with Ethical Standards

- **Ethical Approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

References

Akagi R, Aoki Y, Ikeda Y, et al. (2010) Comparison of early and late surgical intervention for lumbar disc herniation: is earlier better? *Journal of Orthopaedic Science* 15: 294-298.

Akbas NB, Dalbayrak S, Kulcu DG, et al. (2010) Assessment of sexual dysfunction before and after surgery for lumbar disc herniation. *Journal of Neurosurgery: Spine* 13: 581-586.

Berg S, Fritzell P and Tropp H. (2009) Sex life and sexual function in men and women before and after total disc replacement compared with posterior lumbar fusion. *The spine journal* 9: 987-994.

Blackmore DE, Hart SL, Albiani JJ, et al. (2011) Improvements in partner support predict sexual satisfaction among individuals with multiple sclerosis. *Rehabilitation psychology* 56: 117.

Bono CM and Schoenfeld A. (2011) Lumbar Disc Herniations. In: Herkowitz HN GS, Eismont FJ, Bell GR ve Balderston RA (ed) *Rothman-Simeone The Spine.* Sixth edition ed. Philadelphia: Elsevier Saunders, 887-914.

Daffner SD, Hymanson HJ and Wang JC. (2010) Cost and use of conservative management of lumbar disc herniation before surgical discectomy. *The spine journal* 10: 463-468.

Davison SL, Bell RJ, LaChina M, et al. (2009) PSYCHOLOGY: The Relationship between Self-Reported Sexual Satisfaction and General Well-Being in Women. *The journal of sexual medicine* 6: 2690-2697.

Dundon CM and Rellini AH. (2010) More than sexual function: Predictors of sexual satisfaction in a sample of women age 40–70. *The journal of sexual medicine* 7: 896-904.

Ekmekcioglu O and Demiralp A. (2006) Diagnosis and Therapy of Erectile Dysfunction in Man. Erciyes Medical Journal: 28 (24) 220-225.

Hägg O, Fritzell P, Nordwall A, et al. (2006) Sexual function in men and women after anterior surgery for chronic low back pain. *European Spine Journal* 15: 677-682.

Jordan JL, Konstantinou K and O'Dowd J. (2011) Herniated lumbar disc. *BMJ clinical evidence* 2011.

Kanayama M, Horio M, Umi Y, et al. (2010) How does surgery affect sexual desire and activities in patients with lumbar disc herniation? *Spine* 35: 647-651.

Karadag M and Aksoy G. (2002) Lumbar disc hernia surgery is an effect of the educative role of the nurse in helping the patients recover at home. The Journal of Psychiatry and Neurological Sciences 15(4), 245-253

Karahan A and Bayraktar N. (2013) Effectiveness of an education program to prevent nurses' low back pain: an interventional study in Turkey. *Workplace health & safety* 61: 73-78.

Kılıc B. (2015) Lumbar disc herniation. *Advances in Environmental Biology* 9: 44-49.

Kırya Vural B and Bayık Temel A. (2010) Examination of some factors in the prediction of sexual satisfaction.*Journal of Anatolia Nursing and Health Sciences* 13. (1): 24-34

Kockar C and Uzun O. (2007) Investigation of the relationship between the social support perceived and the life quality of patients undergoing lumbar

disc hernia operation. *Journal of Anatolia Nursing and Health Sciences* 10. (4): 30-41

Kuru T, Yeldan I, Zengin A, et al. (2011) . Prevalence of pain and different pain treatments in adults. The Journal of the Turkish Society of Algology 23: 22-27.

Luchtmann M and Firsching R. (2016) Lumbar Disc Herniation: Evidence-based Guidelines-a Review. *The Indian Practitioner* 69: 61-66.

Odole AC and Olugbenga-Alfred AA. (2018) Sexual Functioning and Selected Clinical and Psychosocial Factors Among Individuals with Chronic Non-specific Low Back Pain in Ibadan, Nigeria. *Sexuality and Disability* 36: 185-194.

Reitz A, Tobe V, Knapp P, et al. (2004) Impact of spinal cord injury on sexual health and quality of life. *International journal of impotence research* 16: 167.

Rust J and Golombok S. (1986) The GRISS: a psychometric instrument for the assessment of sexual dysfunction. *Archives of Sexual Behavior* 15: 157-165.

Sánchez-Fuentes MdM, Santos-Iglesias P and Sierra JC. (2014) A systematic review of sexual satisfaction. *International Journal of Clinical and Health Psychology* 14.

Sezgin S and Ekinci M. (2016) In-depth investigation of feelings and thoughts of multiple sclerosis patients regarding sexuality *International Journal of Psychiatry and Psychological Researches*.

Shahbandar L and Press J. (2005) Diagnosis and nonoperative management of lumbar disk herniation. *Operative Techniques in Sports Medicine* 13: 114-121.

Strömqvist F, Ahmad M, Hildingsson C, et al. (2008) Gender differences in lumbar disc herniation surgery. *Acta orthopaedica* 79: 643-649.

TSI. (2012) Turkey Statistics Institution. corrected newsletter Available at: http://www.tuik.gov.tr/PreHaberBultenleri.do?id=15843.

Tugrul C, Oztan N and Kabakcı E. (1993) Standardization study of Golombok-Rust sexual satisfaction scale. Turkish Psychiatry Review 4: 83-89.

Veresciagina K, Ambrozaitis KV and Spakauskas B. (2007) Health-related quality-of-life assessment in patients with low back pain using SF-36 questionnaire. *Medicina* 43: 607-613.