



Effect of Self-Care Educational Program on Health Care Behavior and Health Outcomes for Patients with Lumbar Laminectomy

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Abstract:

Background: Lumbar laminectomy is one of the most commonly performed spinal surgical procedures for the treatment of a wide variety of pathologies. **This study aimed to** explore the effect of self-care educational program on healthcare behavior and health outcomes for patients with lumbar laminectomy. **Setting:** This study was conducted in the neurosurgery department and outpatient clinic health care authority hospitals which affiliated Port-Said city in Egypt, in Alsalam Hospital, is the only hospital managing neurological disorders in Port-Said city, which consists of two floors, each floor has 7 rooms plus one isolation room with 19 beds. **Sample:** A purposive sample of 60 patients who followed -up after surgery participated in the data collection with the following criteria; **Inclusion criteria:** Adult patients of both sexes, Patients free from mental disorders and able to verbalize and communicate. **Exclusion criteria:** Patients with chronic conditions such as rheumatic disorders, osteoporosis, spinal fracture, and end-stage renal disease. **Tools of data collection:** Three tools were used to collect data from patients in this study; **Tool (1): Structure interview questionnaire;** it included two parts: socio-demographic data, and medical and surgical history. **Tool (2): Healthcare behavior for patients with lumbar laminectomy. Tool (3): Health outcome questionnaire;** it included two parts; **Part 1:** Pain assessment that included Pain characteristics and Visual Analogue Pain scale (VAPS). **Part 2:** Patients complications. **Results:** The result of the present study showed that there was an improvement in patients' health behavior ($p < 0.001$), and health outcome ($p < 0.001^*$). **Conclusion:** The health behavior and health outcomes after lumbar laminectomy for patients have improved due to the educational program. **Recommendations:** To confirm the findings and generalizability, more studies should be conducted on a larger number of laminectomy patients.

Keywords: lumbar laminectomy, self-care, health outcome, healthcare behavior

1. Introduction

Demand for lumbar spine surgery has grown rapidly in recent years with an increased push toward ambulatory surgery including lumbar laminectomy. Lumbar laminectomy is one of the most commonly performed spinal surgical procedures for the treatment of a wide variety of pathologies (Teja et al., 2020). Lumbar laminectomy is commonly performed in patients with lumbar spinal stenosis to relieve low back pain, reduce radiculopathy, and improve overall function (Qiyi et al., 2021). Benefits of a minimally invasive laminectomy include a smaller incision, less muscular disruption, and pain, reduced blood loss and rate of blood transfusion, reduced rate of blood transfusion, preservation of components of the midline tension band including interspinous ligaments, spinous process, supraspinous ligament (Tender, 2018 ; Peene, Cacheux, Sauter, Girish, Joshi & Beloeil, 2021)

Lumbar laminectomy continues to be one of the most common lumbar procedures performed for spinal stenosis. According to the Healthcare Cost and Utilization Project (HCUP) Nationwide Inpatient Sample (NIS), the annual estimate of laminectomy discharges averages around 34 discharges per 100,000 adults from 1998- 2008 (Bydon et al, 2015).

Low back pain (LBP) specifically has been estimated to affect 80–85% of the world's population at some point during a lifetime related to lumbar spinal stenosis that has become the most common cause. The number of surgical treatments has increased dramatically, especially in the US, where the number of spinal laminectomy per year has increased by 55% during the last decade. Although a relatively low proportion of patients need to undergo surgery, the high number of LBP cases makes the total number of surgeries high (Ólafsson, 2019).

Self-care behavior is key to enhancing life and reducing mortality and morbidity among patients, but self-care behavior remains suboptimal in many patients worldwide. Self-care is a complex process of maintaining health through health-promoting activities and by managing illness, e.g; by exercising, monitoring body weight, taking prescribed medication, and seeking a healthcare provider when symptoms are deteriorating. Contributing factors to suboptimal self-care include the difficulty for patients in monitoring signs and symptoms, complex medical regimen, lack of motivation, cognitive decline, and lack of social support (Liljeroos et al., 2020)

Significance of the study:

The rates of lumbar laminectomies are increasingly growing related to the high prevalence of low back pain which is a very common health problem worldwide. The incidence of low back pain throughout a person's life is approximately 60% – 90 % (De Kelft, 2016). In Egypt, the prevalence of lumbar laminectomy is 1,679,060 out of 76,117,4212 estimated population (Mohamed & Mostafa, 2018).

Recovery after lumbar spine surgery involves reduced mobility, which impacts patients' independence, self-care activities of daily life, healthcare behavior, and employment. To counsel patients about the trajectories of their recoveries, surgeons rely upon existing outcomes literature (Bienstock et al., 2022).

No researches were done about the self-care behavior of patient with laminectomy in Port-Said City. Therefore, this study aims to explore the effect of self-care educational behavior on healthcare behavior for patients with lumbar laminectomy in Comprehensive health insurance hospitals in Port-Said City and to find out the effectiveness of an educational program for these patients as a main part of nursing management to encourage them to return to normal activities.

This study aimed to:

Explore the effect of self-care educational program on healthcare behavior and health outcomes for patients with laminectomy.

Research hypothesis:

To fulfill the aim of the study, the following research hypothesis will be formulated:

1. The healthcare behavior and health outcomes among patients after lumbar laminectomy will be improved after the implementation of an educational program about self-care on healthcare behavior and health outcomes for patients with Lumbar laminectomy.

SUBJECTS AND METHOD:

A quasi-experimental research design was used in conducting this study, one group (pre-, post & follow-up). The total sample size estimated for this study of male and female adult patients after lumbar laminectomy (n=60) in the neurosurgery department and outpatient clinic health care authority hospitals affiliated to Port-Said city in Egypt, in Alsalam Hospital is the only hospital managing neurological disorders in Port Said, which consists of two floors, each floor has 7 rooms plus one isolation room with 19 beds.

Tools for data collection:

- Three tools were used to collect data from patients in this study to fulfill the aim:

Tool (I): Structure interview questionnaire:

It was adopted from (Ahmed, Abo El-Ata, Hendam & Mohamed , 2018) in Arabic language and modified by the researcher to assess socio-demographic data, medical and surgical history for patients with lumbar laminectomy. It included two parts:

Part 1: Socio-demographic characteristics of patients which included (age, sex, level of education, marital status, and occupation)

Part 2: Patients' medical, surgical history and diagnosis:

- It is composed of 5 questions. It involved; past medical history, and past surgical history for the spine.

Tool (II): Healthcare behavior questionnaire:

It was adopted from (Ahmed, Abo El-Ata, Hendam & Mohamed , 2018) in Arabic form and modified by the researcher to assess healthcare behavior for patients with lumbar laminectomy.

It included questions to identify detailed descriptions of the actual healthcare behavior performed by patients after lumbar laminectomy in their daily living activities (personal care (5 questions), lifting (8 questions), walking (5 questions), sitting (8 questions), standing (5 questions), sleeping (5 questions), sex life (3 questions), social life (2 questions), traveling (5 questions))

Scoring system:

- As regards patients' health care behavior: the answer was evaluated using a model key answer prepared by the researcher, the answer of yes was given a score of 1, and the no was given a score of zero. The score was obtained for each question was summed up to get the total score of patients' healthcare behaviors. The total patient score was calculated at 46 degrees then converted to a percentage and evaluated as follows:
- Total score < 75 % was considered "an unsatisfactory level of patients' health care behavior"
- A total score $\geq$ 75 % was considered "a satisfactory level of patients' health care behavior" (Weheida, Khatab, Abdel Mowla & Mohamed, 2022).

Tool (III): Health outcome questionnaire: It included:

Part 1: Pain assessment and Pain scale:

It included Pain characteristics, Visual Analogue Pain scale (VAPS), and periodic follow-up that was adopted from (Ahmed, Abo El-Ata, Hendam & Mohamed, 2018) in Arabic language and modified by the researcher to assess pain after healthcare behavior and periodic follow-up. It is composed of 9 closed-ended questions. The total scores of the visual analogue pain scale ranged from zero-10, the higher scores, reflect the worst pain. It was categorized as the following:

- Zero was considered "no pain".
- 1-3 was considered "mild pain".
- 4-6 was considered "moderate pain".
- 7-9 was considered "severe pain".
- 10 was considered "worst pain possible".

Part 2: Patients' Complications:

- It adapted from (Hablass, Mahmoud & Abo El-Fadl, 2021) was aimed to assess patients' complications after lumbar laminectomy as nerve damage, blood clots, spinal fluid leak, bleeding, infection, and risks associated with anesthesia that worsen chronic back pain composed of 6 closed-ended questions.

Scoring system:

As regards patients' health outcomes: the answer was evaluated using the model key answer prepared by the researcher, A score of one was given for a satisfactory response, and zero for an unsatisfactory response.

- The score obtained for each question was summed up to get the total score of patients' health outcomes. The total patient's score was calculated 6 degrees then converted to a percentage and evaluated as follows:
- Total score < 75 % was considered "an unsatisfactory level of patients' health outcome".
- Total score $\geq$ 75 % was considered "a satisfactory level of patients' health outcome". (Weheida., Khatab., Abdel Mowla., & Mohamed., 2022)

The general aim of the program:

The educational program aimed to explore self-care on health care behavior and health outcomes for patients with lumbar laminectomy.

Specific objectives of the program:

- 1- Assess the patients' self-care after lumbar laminectomy before the implementation of an educational program.
- 2- Assess the patients' health behavior after lumbar laminectomy before the implementation of an educational program.
- 3- Assess the pain during self-care after lumbar laminectomy.
- 4- Design an educational program about self-care for patients after lumbar laminectomy based on the previous assessment.
- 5- Implement an educational program about self-care for patients after lumbar laminectomy based on the previous assessment.
- 6- Evaluate the effect of an educational program about self-care for patients after lumbar laminectomy based on the previous assessment.
- 7- Evaluate the patients' healthcare behavior after the educational program about self-care for patients after lumbar laminectomy.
- 8- Evaluate the patients' health outcomes after the educational program about self-care for patients after lumbar laminectomy.

The content of the program:

The program consisted of:

- Anatomy and physiology of the disc, definition of lumbar laminectomy, and indications of lumbar laminectomy.
- Contraindications of lumbar laminectomy and manifestation of lumbar laminectomy .
- Complications of lumbar laminectomy and predisposing factors of complications.
- Instructions about self-care (correct positions after lumbar laminectomy and exercises after operation).
- The diet (nutrition), preventive measures for complications, follow-up up and discharge instructions.

i. Implementation phase:

- The application of the program was aimed to explore self-care on health care behavior and health outcomes for patients with lumbar laminectomy. The program was implemented in 6 sessions; each session was taken in 45-60 minutes including 10 minutes for open discussion and feedback from patients.
- Before beginning the educational program, each group was given an explanation regarding educational program (as an introduction, its importance, training plan, and learning objectives). Patients were divided into small groups; (4- 6 in each group) according to availability of them. There were 3 sessions per week.
- The educational program was presented in a clear and concise form, following the principles of adult learning, focusing on interactive learning and active participation. It was implemented using different teaching methods such as lectures, group discussion, brainstorming, demonstration, and re-demonstration of practice. In addition, different audiovisual materials were used as PowerPoint, pictures, videos, and handouts to facilitate the teaching of each topic. Moreover, the educational booklet was given to each patient to attract attention, motivate, and help for reviewing at home.

ii. Evaluation phase:

- The effectiveness of the program was based on assessing the improvement in the patients' healthcare behavior and health outcomes. This was achieved through comparing the pre-test with immediate post done after the implementation of the program, and the follow-up test carried out 3 months later. In addition, a comparison between the incidence of VAP before and after 6 months of educational program implementation was done.

iii. Administrative Design:

Before starting any step in the study, an official letter from the dean of the faculty of nursing was sent to the health insurance authority about the selected area of the study to inform the directors of the mentioned hospitals and the head of each neurosurgery department in Port Said governorate to conduct the study after explaining the aim of the study.

Ethical Consideration:

An approval was taken from Research Ethics Committee of the Faculty of Nursing, Port-Said University. Moreover, approval was taken from universal health insurance to facilitate the cooperation of hospital directors in the study after an explanation of the study's aim. Additional to this, verbal consent was taken from each participant after an explanation of the study aim and data collection process to be familiar with the importance of her participation .

The studied patients were informed that their participation is voluntary & they have the right to withdraw from the study at any time without rationalization .

Additionally, all data collected from the studied subjects were processed in total confidentiality and used only for the study. Moreover, the process of data collection didn't disturb the harmony of the work of the above-mentioned setting.

D-STATISTICAL ANALYSIS:

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. (Armonk, NY: IBM Corp) Qualitative data were described using numbers and percentages. The **Kolmogorov-Smirnov** test was used to verify the normality of distribution Quantitative data were described using range (minimum and maximum), mean, standard deviation, and median. The significance of the obtained results was judged at the 5% level.

The used tests were

1 - Student t-test

For normally distributed quantitative variables, to compare between two studied groups

2 - F-test (ANOVA)

For normally distributed quantitative variables, to compare between more than two categories

3 - ANOVA with repeated measures

For normally distributed quantitative variables, to compare between more than two periods or stages

4 - Pearson coefficient

To correlate between two normally distributed quantitative variables

RESULTS

Table (1): Clarifies that 33.3% of the studied patients were at age group from 30 to less than 40 years, 55.0% of studied patients were males, and 83.3% were married. It was also found that 40.0% of the study patients got secondary education and 43.3% of study patients were a laborer.

Table (2): Shows that, 85.0 % of study patients didn't have any previous history of lumbar disc surgery, 63% also of the studied patients didn't have any chronic disease, and 36.4% of them had Diabetes Mellitus. It also shows that 78.3% didn't practice any sport.

Table (3): Regarding personal care, the mean $\pm$ SD was 1.27 ± 0.63 in the pre-phase then increased to 2.95 ± 0.22 in the post-phase of the educational program with statistically significant difference (p. value < 0.001), lifting and transporting objects, the mean $\pm$ SD was 4.12 ± 1.84 in the pre-phase of the program then increased to 6.77 ± 0.59 in the post with statistically significant difference (p. value < 0.001), walking, the mean $\pm$ SD was 2.25 ± 0.84 in the pre-phase of the program then increased to 3.98 ± 0.13 in the post with statistically significant difference (p. value < 0.001). Regarding sitting, the mean $\pm$ SD was 2.45 ± 1.25 in the pre-phase of the program then increased to 5.0 ± 0.0 in the post then decreased to 3.87 ± 1.14 in the follow-up phase with a statistically significant difference (p. value < 0.001). While sleeping the mean $\pm$ SD was 1.73 ± 0.82 in the pre-phase of the program then increased to 4.0 ± 0.0 in the post with a statistically significant difference (p. value < 0.001).

Table (4): Shows that the Mean $\pm$ SD of overall healthcare behavior was 16.42 ± 4.29 in the pre-program phase then increased to 32.50 ± 1.0 in the post then decreased to 25.93 ± 4.02 in follow-up with a statistically significant difference (p. value < 0.001).

Table (5): Clarifies that 61.7 % of studied patients reported unsatisfactory answers about local complications at the site of surgery in the pre, although 91.7 % of them reported satisfactory answers at the post, 61.7 % reported unsatisfactory answers about general complications in the pre and 95% reported satisfactory in the post, 68.3% reported unsatisfactory answers about the complications as a result of anesthesia in pre. 83.3% reported unsatisfactory answers about the complications after lumbar laminectomy in the pre and 98.3% reported satisfactory answers in the post. 85% reported unsatisfactory answers about the factors affecting the complications after laminectomy in the pre and 96.7 % reported satisfactory answers in the post.

Table (6): Illustrates that there was a highly statistically significant relation between overall health outcomes among studied patients at throughout the educational program phases p value= <0.001. It shows also that the mean $\pm$ SD was 1.83 ± 1.89 in the pre and 5.30 ± 0.59 in the post.

Table (7): Reveals that there was a negative correlation and there was no statistically significant difference between overall pain, and overall healthcare behavior throughout the educational program phases. There was a negative correlation and no statistically significance difference between overall pain and health outcomes in the pre- and post-program, but there is a positive correlation in the follow-up. There was a positive correlation and statistically significant difference between healthcare behavior and health outcomes in the post-phase, but there wasn't statistical significance between them in the follow-up.

Table (1): Distribution of the studied patients with lumbar laminectomy according to their socio-demographic characteristics n (60)

	No.	%
Age		
20< 30	10	16.7
30 <40	20	33.3
40 <50	15	25.0
50 – 60	15	25.0
Gender		
Male	33	55.0
Female	27	45.0
Job		
Housewife	12	20.0
Laborer	26	43.3
Employee	16	26.7
Trader	2	3.3
Dressmaker	1	1.7
Farmer	1	1.7
Sanitation worker	1	1.7
Unemployment	1	1.7
Educational level		
Illiterate	4	6.7
Read and write	11	18.3
Preparatory education	5	8.3
Secondary school	24	40.0
Higher education	16	26.7
Marital status		
Single	4	6.7
Married	50	83.3
Divorced	3	5.0
Widowed	3	5.0

Table (2): Medical and surgical history among patients with lumbar laminectomy (n = 60)

	No.	%
Other spinal surgeries before		

Yes	9	15.0
No	51	85.0
Yes, mention these surgeries		
Discectomy	4	44.4
Install vertebrae	2	22.2
Restoration of the spine vertebrae with slides and screws from the first fifth vertebrae	1	11.1
A herniated disc with a wire in the spinal canal	1	11.1
Cervical discectomy	1	11.1
Suffering from any other chronic diseases		
Yes	22	36.7
No	38	63.3
If yes, mention these diseases		
Asthma	1	4.5
Chronic migraine	6	27.3
Hypertension	8	36.4
Heart disease	1	4.5
Diabetes	6	27.3
Hepatitis C	1	4.5
Coronary artery disease	1	4.5

#: Answer not mutually exclusive

Table (3): Total reported healthcare behavior by studied patients with lumbar Laminectomy (n =60)

	Pre	Post	Follow up	F	p
Personal care					
Total Score (0 – 3)				154.061*	<0.001*
Min. – Max.	0.0 – 2.0	2.0 – 3.0	1.0 – 3.0		
Mean ± SD.	1.27 ± 0.63	2.95 ± 0.22	2.47 ± .65		
Median	1.0	3.0	3.0		
% Score	42.22 ± 21.14	98.33 ± 7.33	82.22 ± 21.67		
Lifting and transporting objects					
Total Score (0 – 7)				46.179*	<0.001*
Min. – Max.	0.0 – 7.0	5.0 – 7.0	1.0 – 7.0		
Mean ± SD.	4.12 ± 1.84	6.77 ± 0.59	5.40 ± 1.78		
Median	4.0	7.0	6.0		
% Score	58.81 ± 26.31	96.67 ± 8.47	77.14 ± 25.39		
Walking					
Total Score (0 – 4)				100.764*	<0.001*
Min. – Max.	0.0 – 4.0	3.0 – 4.0	1.0 – 4.0		
Mean ± SD.	2.25 ± 0.84	3.98 ± 0.13	3.40 ± 0.76		
Median	2.0	4.0	4.0		
% Score	56.25 ± 20.90	99.58 ± 3.23	85.0 ± 19.09		

Sitting					
Total Score (0 – 5)					
Min. – Max.	0.0 – 4.0	5.0 – 5.0	1.0 – 5.0		
Mean ± SD.	2.45 ± 1.25	5.0 ± 0.0	3.87 ± 1.14	127.293*	<0.001*
Median	2.50	5.0	4.0		
% Score	49.0 ± 25.09	100.0 ± 0.0	77.33 ± 22.84		
Standing					
Total Score (0 – 3)					
Min. – Max.	0.0 – 2.0	3.0 – 3.0	0.0 – 3.0		
Mean ± SD.	1.03 ± 0.69	3.0 ± 0.0	2.15 ± 0.88	154.476*	<0.001*
Median	1.0	3.0	2.0		
% Score	34.44 ± 22.94	100.0 ± 0.0	71.67 ± 29.32		
Sleeping					
Total Score (0 – 4)					
Min. – Max.	0.0 – 3.0	4.0 – 4.0	1.0 – 4.0		
Mean ± SD.	1.73 ± 0.82	4.0 ± 0.0	3.23 ± 0.95	152.229*	<0.001*
Median	2.0	4.0	4.0		
% Score	43.33 ± 20.52	100.0 ± 0.0	80.83 ± 23.64		
Sexuality					
Total Score (0 – 3)					
Min. – Max.	0.0 – 3.0	0.0 – 3.0	0.0 – 3.0		
Mean ± SD.	1.52 ± 0.93	2.87 ± 0.57	2.02 ± 1.13	54.275*	<0.001*
Median	2.0	3.0	2.0		
% Score	50.56 ± 30.99	95.56 ± 18.88	67.22 ± 37.58		
Social and Spiritual Life					
Total Score (0 – 1)					
Min. – Max.	0.0 – 1.0	1.0 – 1.0	0.0 – 1.0		
Mean ± SD.	0.58 ± 0.50	1.0 ± 0.0	0.90 ± 0.30	28.741*	<0.001*
Median	1.0	1.0	1.0		
% Score	58.33 ± 49.72	100.0 ± 0.0	90.0 ± 30.25		
Travelling					
Total Score (0 – 3)					
Min. – Max.	0.0 – 2.0	2.0 – 3.0	0.0 – 3.0		
Mean ± SD.	1.47 ± 0.68	2.93 ± 0.25	2.50 ± 0.75	144.254*	<0.001*
Median	2.0	3.0	3.0		
% Score	48.89 ± 22.52	97.78 ± 8.38	83.33 ± 24.93		

SD: Standard deviation

F: F for One way ANOVA test

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$ **Table (4): Overall reported healthcare behavior by studied patients with lumbar Laminectomy throughout the educational program (n = 60)**

	Pre	Post	Follow up	F	p
Total Score (0 – 33)					
Min. – Max.	6.0 – 23.0	29.0 – 33.0	17.0 – 33.0		<0.001*

Mean $\pm$ SD.	16.42 $\pm$ 4.29	32.50 $\pm$ 1.0	25.93 $\pm$ 4.02	344.972 *	
Median	17.50	33.0	27.0		
% Score	49.75 $\pm$ 13.0	98.48 $\pm$ 3.03	78.59 $\pm$ 12.20		

SD: Standard deviation

F: F for One way ANOVA test

p: p value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$ **Table (5): Health Outcomes as the educational program phases, pre-, post, and follow-up among patients with lumbar laminectomy (n = 60)**

	Tool 3: Health Outcomes	Pre				Post				Follow up			
		Unsatisfactory		satisfactory		unsatisfactory		satisfactory		unsatisfactory		satisfactory	
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	The local complications at the site of the lumbar laminectomy	37	61.7	23	38.3	5	8.3	55	91.7	11	18.3	49	81.7
2	Among the general complications in the initial period of the operation	37	61.7	23	38.3	3	5.0	57	95.0	4	6.7	56	93.3
3	The complications as a result of anesthesia	41	68.3	19	31.7	30	50.0	30	50.0	30	50.0	30	50.0
4	The complications that may occur as a result of immobility	34	56.7	26	43.3	1	1.7	59	98.3	3	5.0	57	95.0
5	The complications that may occur after lumbar laminectomy	50	83.3	10	16.7	1	1.7	59	98.3	4	6.7	56	93.3
6	The factors affecting the occurrence of complications after the operation	51	85.0	9	15.0	2	3.3	58	96.7	2	3.3	58	96.7

Table (6): Overall Health Outcomes among studied patients with lumbar laminectomy throughout the educational program phases (n = 60)

	Pre	Post	Follow up	F	P
Total Score				153.472 *	<0.001*
Min. – Max.	0.0 – 6.0	4.0 – 6.0	4.0 – 6.0		
Mean $\pm$ SD.	1.83 $\pm$ 1.89	5.30 $\pm$ 0.59	5.10 $\pm$ 0.60		
Median	1.0	5.0	5.0		
% Score	30.56 $\pm$ 31.47	88.33 $\pm$ 9.85	85.0 $\pm$ 10.04		

SD: Standard deviation

F: F for One way ANOVA test

p: p-value for comparing between the studied periods

*: Statistically significant at $p \leq 0.05$

Table (7): Correlation between overall pain with overall healthcare behavior and overall health outcomes among studied patients with lumber laminectomy throughout the educational program phases (n = 60)

	Pre		Post		Follow up	
	r	P	r	P	r	P
Overall Pain Vs. overall healthcare behavior	-0.144	0.272	-0.121	0.357	0.095	0.468
Overall Pain Vs. Health Outcomes	-0.086	0.515	-0.064	0.625	0.229	0.078
Overall healthcare behavior Vs. Health Outcomes	-0.014	0.914	0.373*	0.003*	0.122	0.354

r: Pearson coefficient

***: Statistically significant at $p \leq 0.05$**

Discussion:

Demand for lumbar spine surgery has grown rapidly in recent years with an increased push toward ambulatory surgery. This has accelerated after the institution of the Affordable Care Act which emphasizes cost-effective practice. Ambulatory lumbar decompression surgery, including hemilaminectomy and laminectomy, has been associated with positive outcomes and a good safety profile and is supported by financial incentives (Qiyi et al., 2022).

Lumbar spine surgery is a common type of spinal surgery that has good effects in relieving spinal cord and nerve root compression (Yue et al., 2022). Lumbar Laminectomy is a surgical procedure, whereby a section of bone is removed from one or more vertebrae from L1 to L5 to relieve pressure on the affected nerve or spinal cord (Hatakka, Pernaa, Rantakokko, Laaksonen & Saltychev, 2021).

The incidence of lumbar spinal stenosis (LSS) ranges between 3.9% and 11% of the general population, and its prevalence is steadily growing in our aging society. Classically, the surgical treatment of lumbar stenosis has been represented by a wide posterior decompression of the spinal canal: until the last few years, the standard procedure has been a wide laminectomy with partial or complete removal of the articular processes. This procedure destroys the entire posterior bony arch and posterior ligamentous complex, and it detaches the paraspinal muscles bilaterally, thus damaging significantly the posterior stabilizing structures of the spine. Not surprisingly, the short-term neurological outcome after a laminectomy is generally good, because of the wide decompression achievable, but concerns regarding postoperative instability and subsequent low-back pain in the medium and long term have been raised (Pietrantonio et al., 2019).

Patients' education is a core component to enhance recovery after surgery which aims to empower patients to undertake positive health actions and support autonomous decision making. Also, providing patients with health-related information, teaching them skills aimed at reducing discomfort & complications and offering psychological support. There is evidence to suggest that patients who gain sufficient knowledge can improve their coping ability and subsequently engage in appropriate attitudes and behaviors (Burgess et al., 2019).

Regarding demographic data of the studied patients, the results revealed that more than half of the studied patients were males. This may be related to the nature of occupation in which nearly half of the study patients were laborers who were engaged in hard work that required heavy lifting

and twisting of the back. This result is congruent with (Ahmed, Abo El-Ata, Hendam & Mohamed, 2020) who said revealed that more than half of the studied patients were males. This may be related to the nature of occupation in which nearly half of the study patients were laborers who were engaged in hard work that required heavy lifting and twisting of the back. In addition, (Abd Elwahhab, Shehata & Abd Elghaffar, 2019), found that about half of the study group and control group worked manually (technical work).

As well, the present study shows that less than one-third of studied patients were at age 30 to less than 40 years old and the same proportion was from 40 to less than 50 years old. This result was agreed with (Aghajanloo, Esmaceli, Bathaei, Piriaei & Tavakoli, 2019). who found that two-thirds of study subjects were from the age range of 40 to 50 years old.

As regards marital status, the highest percentage of patients were married and this is supported by (Weheida, Khatab, Abdel Mowla & Mohamed, 2022) was said same result that the highest percentage of patients in both the control and study groups (84.0 % and 80.0% respectively), were married.

As regarding educational level, Less than half of the studied patients were in secondary school. It is supported by (Louw & Diener, 2015) who found that most of studied patients had different educational levels as high school, graduate degree, and postgraduate degrees. Also, it was supported by (Abd Elwahhab, Shehata & Abd Elghaffar, 2019) found in their study that more than one-third of the study group had secondary education. On the other hand, it was conflicted with (Garcia et al., 2015) who illustrated that near to three quarters had up to a primary education (could read and write).

Concerning surgical history among studied patients, the current study revealed that the majority the studied patients didn't undergo spine surgery, and less than a fourth of them underwent spine surgery before. This study agreed with (Rizk & Ali, 2021) who found in their study that only one quarter have previous back surgery, this may be due to the operation of lumbar discectomy may relapse due to the knowledge deficit of the patient regarding information about lifestyle modification and performing activity of daily living.

Pertaining to medical history, the results of this study illustrated that more than half of the studied patients suffered from other chronic diseases, predominantly hypertension. This result is congruent with (Ahmed, Abo El-Ata & Hendam, 2020) who said that more than half of the studied patients suffered from other chronic diseases, predominantly hypertension.

As regarding healthcare behavior, there was highly statistically relation and statistically significant improvement in self-care practices regarding pre, post and follow up phases. In this context (Ali & Hamed, 2019) stated that their study results revealed that the educational program was effective, and its results showed a significant improvement on patient's knowledge, practice, satisfaction, and outcomes regarding lumbar disk herniation.

Regarding the relation between age group and healthcare behavior, the findings revealed that the healthcare behavior, of younger age group patients, were more satisfactory than those of the older age group. On the view of the researcher, the explanation might be that the young patients are in the productive life, engaged in work and responsibilities, which force them to go back their work and continue their social roles.

As regarding outcomes, this study revealed that the majority of the studied patients reported satisfactory answers about health outcomes items in the post period, but most of them reported unsatisfactory answers at the pre-phase. These results are in line with (Tehranzadeh, 2015) who said that the expected outcomes during the period from 0-6 weeks showed that the patient gained knowledge about the anatomy of the spine, spinal biomechanics, correct postures, awareness about

the postoperative precautions, independent mobilization, as well as return to driving after 6 weeks and shown to be effective in improving knowledge and self-care activities. The study group had marked improvement in a satisfactory level of knowledge post-program implementation compared to the control group. Furthermore, the study group had marked improvement regarding independence of activities of daily living post-program implementation.

Regarding health outcome, there was significant statistical improvement in level of health outcome among studied patients post program implementation as compared to pre and follow up. From the researcher's point of view, this is may be related to the knowledge acquired from the provided educational program about lumbar laminectomy and self-care activities which supported by an illustrative colored booklet.

These results also supported by the fact that most of the studied patients was educated which help them to comprehend and acquire knowledge and self-care activities related to lumbar laminectomy. This result was consistent with (Hablass, Mahmoud & AboEl-Fadl, 2020) stated that most of the studied patients learned new and helpful facts post explaining the education booklet.

The current study revealed that there was a positive correlation between pain, healthcare, and health outcomes, there was a significant relation between healthcare behavior and health outcomes at the pre-, post, and follow-up, and also, there was a positive correlation between pain and healthcare and there isn't statistically significant relation between them. This is in agreement with (Weheida, Khatab, Abdel Mowla & Mohamed, 2022) who said a statistically significant correlation between the level of patients' knowledge and the level of pain. This finding may be related to the positive effect of educational programs on improving patients' knowledge which secondly affects the level of pain. As the researcher's results, educational program helped in increasing knowledge about the surgical procedure, reducing postoperative pain and facilitating faster return to preoperative functional levels.

As regards the Relation between overall Pain intensity, Periodic Follow-up, and Personal data, this study revealed that there were statistically significant differences between mean scores for overall Pain intensity, Periodic Follow-up, and patient's age at the follow-up phase of program implementation, there wasn't statistically relation between them at pre, post-program implementation and concerning the relation between mean scores of overall self-care behavior and personal data of patients. It was consistent with (Hablass, Mahmoud & AboEl-Fadl, 2020) said that there was no significant statistical relation between the pain severity of both groups and their age as well as occupation pre and post-program implementation.

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