Original Article

Assessment of Knowledge and Daily Living Activities for Patients Post Lumbar Laminectomy.

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Abstract:

Background: Low back pain is a common disorder usually involves muscles, nerves and bones of the back that mainly caused by lumbar disc herniation. It is considered one of the major health system problems that has financial, physical, and occupational impact on patient and community. It frequently resulted in physical disability that may require surgery, commonly lumbar laminectomy. **Aim of this study** to assess knowledge and daily living activities for patients post lumbar laminectomy. **Research design**: A descriptive cross-sectional design. **Subjects:** A convenient sample consisted of 130 patients with lumbar laminectomy admitted to neurosurgical outpatient clinic of Damanhour Medical National Institute. **Tools:** three tools were used: tool I: Patient assessment structured interview questionnaire; tool ΙΙ: Knowledge assessment structured interview questionnaire and tool III: Barthel Index scale of activities of daily living. **Results**: the present study revealed that less than half of the studied patients were in the age group of 40 < 50 years, more than half of the studied patients were male and 76.9% complain of low back pain. There was positive statistically significant relation between patient's knowledge and gender and there was positive statistically significant relation between levels of dependance of activity of daily living and patient chief complain. **Conclusion:** majority of patients had poor level of knowledge and need assistance in daily living activities post lumbar laminectomy. **Recommendations:** Illustrated booklets, handouts, and audiovisual materials involving instructions regarding their needs and activities of daily living should provide to every patient in the neurosurgery department an outpatient clinic and replicating of the study using a larger sample size to ensure generalizability of results.

Key words: daily living activities, lumbar laminectomy, patient knowledge.

Introduction:

Low back pain is a common disorder mainly caused by lumbar disc herniation. It affects about 80% of people within their lifetime. [1] It is the leading cause of disability worldwide and causing decrease productivity and loss of function which interfere with daily living activities. Lumbar disc herniation (LDH) is a major health problem that causes intolerable low back pain (LBP). [2]

One of the most prevalent spinal disorders in the world is lumbar disc herniation. It is recognized as one of the major health-care system problems. It has physical occupational and financial and impact on patient family and the community. It frequently resulted in physical disability needing surgery, commonly lumbar laminectomy surgery. [3]

Herniated disc can be caused by many causes and factors, including natural aging biochemical changes, degenerative stenosis, and lack of exercise. Incorrect body mechanics, physical labor, inappropriate or excessive lifting, twists or turns, severe strain, everyday wear and tear, and unanticipated strong trauma are other common risk factors. [4] In lumbar disc

herniation, cracks of the fibrocartilaginous substance surrounding the disc between vertebra occur. The crack causes the release of a gelatinous substance known as the nucleus pulpous that causes compression on nerves, which may directly cause severe pain mainly in the lower back. [4,5]

Lumbar disc herniation has varied symptoms, includes low back pain, tingling, numbness in the legs or feet and loss of lower extremities motor function. Muscle spasms of the back and sciatica pain refers to pain that travels along the path of the sciatic nerve this pain starts near the back or buttock and moves down the leg to the calf or into the feet. Diminished reflexes and weakness of muscle at lower extremities may occur. Consequently, patient activity of daily living (ADLs) will be affected. [6]

Activities of daily living includes the ability to carry out necessary self-care duties each day in order to fulfill one's needs. They consist of dressing/grooming, personal hygiene/bathing, feeding, toileting (bladder and bowel elimination), transferring, mobility and stairs climbing which are the fundamental component of independence. [7]

Activities of daily living among adult patients with lumbar disc herniation are a barrier between their needs and abilities to implement them independently. There is a direct relation between patients' condition and their decreased ability to perform physical activity, such as difficulty in bathing, toileting, and a reduction in work ability. Difficulty in performing these basic daily activities independently is understood as a functional limitation, or disability in these activities because preforming physical activity can cause symptoms spread (pain or additional symptoms extending to the leg). Proper early diagnosis for patient condition is important for early successful management. [8]

Management of patients with LDH aims to relief symptoms and prevention of neurologic deterioration. Conservative treatment options are the initial line of treatment which involves pharmacological therapy as muscle relaxant and non-Steroidal anti-inflammatory drugs (NSAIDs), physical therapy including manual therapy and stretching exercises and epidural Steroid Injections as Corticosteroid. If previous conservative measures have been ineffective or in the case of severe neurological disorders such as weakness in the lower extremities or loss of bowel or bladder control, surgical treatment such as lumbar laminectomy becomes an important option for treatment. [9]

Lumbar laminectomy is one of the most common spine surgeries to treat LDH worldwide and is done as a part of a decompression operation. Where the posterior arch of a vertebra, is removed. It is done to relieve pressure on nerve roots that exit from spinal cord. [10] The main indication for lumbar laminectomy is the presence of spinal canal stenosis. Weather the management in conservative or surgical nursing care is an important aspect of successful treatment and it starts with assessment. [11]

Nursing assessment of patient's knowledge and daily living activities is the first step in plan of care of patient with lumber laminectomy. Providing patient with adequate knowledge about disease process and treatment modalities through educational programs contributes to an accurate understanding of the disease, this promotes adherence to a healthy behavior, lifestyle modification and regular follow up program. [12]

Nurses play an important role in teaching patients about proper self-care activities, wound care, preventive measures of complications, Additionally, nurses help the patient get ready for the rehabilitation phase, which includes instructions for proper positions post operation, postoperative exercises the patient would perform to keep the spine in its neutral posture, discharge instructions and follow up. Nurse assists the patients to adjust with their disease, as well as restoration of function within the family, community, and work. Hence comprehensive assessment is avital step in preforming plan of care. [13]

Significance of the study:

The rates of lumbar laminectomies are increasingly growing related to the high prevalence of low back pain that is a very common health problem worldwide. [10] Despite the surgery, there is a risk of post-surgery disc recurrence, disability affecting performance at work and at home. General well-being of patients post lumbar laminectomy help them to maintain their normal daily living without risk of disc recurrence. [14]

The prevalence rate of lumbar laminectomy remains unclear in Egypt due to a lack of available national census about lumbar disc herniation surgery. According to unpublished statistical records of neurosurgery out- patient clinic at

Damanhour National Medical Institution which illustrated that around 192,218,245 patients were admitted to neurosurgery out- patient clinic for follow up post lumbar laminectomy at the year of 2021,2022 and 2023 respectively. [15]

Lack of knowledge and self-care training in patients, is the major reason for frequent referring to healthcare centers and prolonged recovery due to LBP. [16] Recently, more attention is focused on patient-centered outcomes. Postoperative patient education and decreased physical activity have been generally ignored after spinal surgery, despite the significant effect on overall patients' wellbeing and recovery after surgery. [17] Hence, nursing assessment of patient's knowledge and daily living activities is the first step in plan of care of patient with lumber laminectomy to decrease post laminectomy complication and improve recovery.

Aim of the study:
This study aimed to assess knowledge and daily living activities for patients post lumbar laminectomy.

Research Question:
1- What was the level of knowledge for patient post lumbar laminectomy?
2- What was the level of daily living activities for patient post lumbar laminectomy?

II. Materials and Methods

Research design:
A descriptive (cross sectional) research design was applied to conduct the study.

Setting:
The study was carried out at neurosurgical outpatient clinic of Damanhour general hospital. The hospital is joined with General Organization for Teaching Hospitals and Institutes that provides free public health services. It serves El-Beheira governorate. Outpatient neurosurgical clinic works 5 days per week from Saturday to Thursday and starts from 8 AM to 2 PM. The clinic is composed of one room that contains one bed used for patient's examination and wound dressing and waiting area.

Subjects:
A convenient sample consisted of 130 patients with lumbar laminectomy admitted to the above-mentioned setting was included in the study.

Epi info 7 was used to estimate the sample size using the following parameters:
• Population size is 192 patients per year (According to the above-mentioned settings records in 2021).
 • Expected frequency: 50%
• Acceptable error: 5%
• Confidence coefficient: 95%
• Minimum sample size: 128 patients.

The Subjects were selected based on the following criteria:

Inclusion criteria: -
 - Adult patients, aged from 18 to less than 60 years old.
- Able to communicate verbally.

Exclusion criteria of the patients: -
- Physical or mental handicapped.
- Had osteoporosis and had another uncontrolled medical condition that affect ADL as rheumatoid arthritis and osteoarthritis.
- Had spinal cord injury.
- Had morbid obesity. [body mass index (BMI) ≥ 40 kg/m^2]

Tools for data collection
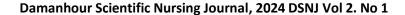
Three tools were used to conduct the present study.

Tool one: -"Patient assessment structured interview questionnaire":

This tool was developed by the researcher after reviewing the relevant literature [8,12,18]. It was consisted of two parts:

Part I: Demographic characteristics of the patients: -

It was applied to evaluate patient demographic data. It contained items regarding, age, gender, marital status, level of education, residence area, occupation.

Part II: Patients' clinical data: -

This part contained information related to, current health status as (chief complains), past medical and surgical history as (conservative measures, chronic disease, previous surgical vertebral operations), family history as (family history of Lumbar disease and lumbar surgery), type of disc operation, medication history and body mass index.

Tool two: "Knowledge assessment structured interview questionnaire": -

This tool was developed by Hablass et al (2021) [19] and was adapted by the researcher. It was applied to test the knowledge of the patient about lumbar laminectomy. It included of 45 questions which were divided into eight sections, namely: (1) surgical operation (10-questions); (2) complications that occur after operation and factors affecting their occurrence (5-questions); (3) correct posture after operation (5-questions); (4) self-care for wound care and site of the operation (3-questions); (5) pain management and medication at home (7-questions); (6) nutritional instruction (3-questions); (7) preventive measures of complications (3-questins); and finally, (8) lifestyle and discharge instruction (9- questions).

Scoring System:

Each correct answer took score one; and incorrect answer took zero; the total scores were 45 grades. The total score for all questions was calculated and transferred to percentage into three levels according to the following:

 • "Less than 50%" was classified as "poor knowledge".

• "50% - less than 75%" was classified as "fair knowledge".

• "75% to 100%" was classified as "good knowledge ".

Tool three: Barthel Index scale of Activities of Daily Living:

 The tool was developed by Mahoney FI and Barthel D (1965) [20], modified by Mohamed and Abo El-Fadl (2021) [21] and was adapted and used to determine patient's ability to carry out daily living activities independently. It was self-report interview questionnaire. The scale consisted of 10 items "bowels control, bladder control, grooming, feeding, using toilet, transferring (from bed to chair and vas versa), mobility, dressing, stairs climbing and bathing".

Scoring system:

Responses to each item were the following: independent was given score of 2, need assistance was given score of 1, and completely dependent was given score of 0. The independence level was measured using a range of 0 to 20, with higher scores denoting a higher degree of independence. It was classified as follows:

- 0-6 was classified as "completely dependent".
- 7-13 was classified as "needs assistance ".
- 14-20 was classified as "independent".

Methods

1. Permission to conduct the study was taken from the Dean of the Faculty of Nursing at Damanhour University to the responsible authorities in the study setting. The goal of this study was clearly explained to the relevant authorities in the previously mentioned setting.

2. Tool (I) was developed, Tool (II) and Tool (III) was adapted, tool (I) and tool (II) was translated into Arabic.

3. The three study tools were submitted to a jury of five experts in the field of Medical Surgical Nursing Department in Faculty of Nursing, Damanhur University and neurosurgery medicine in Damanhour Medical National Institute to test content validity, completeness, and clarity of items. Comments and suggestions from jury were considered, and the tools were modified consequently.

4. A pilot study had been performed on (10%) of total sample (n=13) in order to ensure the clearness of questions, feasibility, applicability of the tool and to recognize potential problems that could be occurred throughout data collection. Pilot study had been excluded from the study sample; Considering the results of the pilot study, the necessary modifications were done.

5. Reliability of developed tools was applied with using Cronbach alpha statistical test. The reliability coefficient value was **0.855** of tool two and coefficient value for tool three was **0.879** in which both are acceptable.

6. Every patient post lumbar laminectomy was interviewed once privately, in about 30 to 45 minutes on the day 15th day post-operative in neurosurgical outpatient clinic during the follow up visits at the waiting room in morning shift before meeting the physician to assess their knowledge and daily living activities using tool (I, II and III).

7. All patient questions were answered after completing the interview.

8. Data collection lasted five months, from April 2023 to August 2023.

Ethical Considerations

-   Approval from the Research Ethics Committee of Faculty of Nursing, Damanhour University has been obtained before conducting the study at 17 /11/2022, with code 66.e.

-   An informed consent was obtained from each patient after explaining the goal of the study.

-   Patients Privacy was maintained; each patient has the right to not participate or withdraw from the study without any draw backs.

-   Confidentiality and anonymity were assured.

Statistical analysis

Data were fed to the computer and analyzed using IBM SPSS software package version 23.0. Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean, standard deviation. Significance of the obtained results was judged at the 5% level.

The used tests were:

1 - Chi-square test

For categorical variables, to compare between different groups.

2 - Fisher's Exact or Monte Carlo correction

Correction for chi-square when more than 20% of the cells have expected count less than 20% of the cells have expected count less than 5.

Results

Table (1) Frequency distribution of studied patients according to their demographic characteristic.

Concerning age, it was observed that less than half of studied patients (47.7%) were with in age group of 40 < 50 years, while about one quarter of patients (26.1%) were within the age group of 50 < 60 years and (20.8%) of them were in the age group of 30 < 40 years old. Regarding to gender, the present study found that that, more than half of the studied patients (55.4%) were male. As for marital status, the result of the study showed that, about three quarters of the studied patients (72.3%) were married, 10.8% of patients were widowed and 9.2% were single. According to the educational level, it was evident that secondary educated/deplom patients formed almost two thirds of the studied patients (66.2%). while 12.3% were illiterate and 11.5% had university educated. Concerning area of residence, it was observed that more than two thirds (69.2%) of the studied patients came from rural areas. Regarding the occupation, it was observed that more than one third (37%) of patients were manual workers, while around one third 29.2% were housewife and 21.5% of them were office worker.

Table (1): Frequency distribution of the studied patients according to their demographic characteristics.

Demographic data	Studied patients (n=130)	
	No.	**%**
Age		
18 < 30 years old	7	5.3
30 < 40 years old	27	20.8
40 < 50 years old	62	47.7
50 < 60 years old	34	26.1
Gender		
Male	72	55.4

Female	58	44.6
Marital status		
Single	12	9.2
Married	94	72.3
Widowed	14	10.8
Divorced	10	7.7
Level of education		
Illiterate	16	12.3
Read and write	1	0.8
Primary education/deplom	12	9.2
Secondary education	86	66.2
University Education	15	11.5
Place of residence		
Rural	90	69.2
Urban	40	30.8
Occupation		
Office work	28	21.5
Manual work	48	٣٧
Not working	9	6.9
Housewife	38	29.2
Retired	7	5.4

Table (2): Frequency distribution of the patients according to their clinical data:

   In relation to present history; for patient chief complain; it was obvious that (76.9%) of them had LBP only, 52.3% had LBP with pain in the lower extremities, 51.5% had LBP with muscle weakness in the legs, feet, or toes, 36.2% had LBP with numbness and tingling in the lower extremities. **Regarding to present health history; it was observed that,** more than half (51.5%) of the studied patients didn't undergone any treatment regimen as conservative measures before surgery. On the other hand, 34.6% received analgesic, about one quarter (26.2%) received /practiced physiotherapy. More than one third (3٧,7%) of the studied patients specialized neurosurgeon who is prescribed conservative measures. Concerning body mass index; the result showed that, more than half 53.8% of them were overweight, more than one third 36.2% were obese, and only (10%) of them had normal weight.

Table (2): Frequency distribution of the studied patients according to their clinical data:

Patients' Clinical data	Studied patients (n=130)	
	No.	%
A) Present health history:		
The patient chief complaint is#		
Lower back pain (LBP) only	100	76.9
(LBP) with pain in the lower extremities	68	52.3
(LBP) with numbness and tingling in the lower extremities	47	36.2
(LBP) with loss of bowel or bladder control	1	0.8
(LBP) with muscle weakness in the legs, feet, or toes	67	51.5
(LBP) with pain in the lower extremities, numbness and tingling in the lower extremities, loss of bowel or bladder control and muscle weakness in the legs, feet, or toes.	2	1.5
B) Past medical history:		
What are the conservative measures did you do before the surgery? #		

Physiotherapy	34	26.2
Hot compresses	2	1.5
Analgesics	45	34.6
Steroid injections	0	0.0
Radiofrequency	0	0.0
No a treatment regimen	67	51.5

Who is prescribed the conservative measures? #		
Specialized neurosurgeon	49	37.7
General doctor	5	3.8
Pharmacist	0	0.0
Family/ Friends	1	0.8
From social media	0	0.0
Don't know	8	6.2
No a treatment regimen	67	51.5

C) What is Body mass index?		
Underweight	0	0.0
Normal weight	13	10.0
Overweight	70	53.8
Obese	47	36.2

#: more than one answer

Table (3): Frequency distribution of the studied patients according to total percent score of knowledge level post lumbar laminectomy.

This table revealed that the majority of the studied patients (86.2%) had **poor** knowledge level, while 13.8% of them had **fair** knowledge level.

Table (3): Frequency distribution of the studied patients according to total percent score of knowledge level post lumbar laminectomy.

Patients' Knowledge levels	No.	%
• Poor knowledge (<50%)	112	86.2
• Fair knowledge (50 – 75%)	18	13.8
• Good knowledge (≥75%)	0	0.0

Table (4): Frequency distribution of the studied patients according to total percent score of levels of dependency of activity of daily living.

This table showed that most (93.1%) of the studied patients' needs assistance, while (6.1%) were independent, and (0.8%) were completely dependent.

Table (4): Frequency distribution of the studied patients according to total percent score of levels of dependency of activity of daily living.

Levels of dependency of activity of daily living	No.	%
• Completely dependent (0 – 6)	1	0.8
• Needs assistance (7 – 13)	121	93.1
• Independent (14 – 20)	8	6.1

Table (5) The table showed that there was statistically significant relation between patient's knowledge and **gender** (p=0.020*). Where the largest number of patients had poor knowledge, where more than half of male (59.8%) had poor knowledge.

Table (5): The relation between the studied patients' total score of knowledge level and their demographic characteristics.

Demographic data	Knowledge levels						χ^2	MCp
	Poor (n=112)		Fair (n=18)		Good (n=0)			
	No.	%	No.	%	No.	%		
Age								
18 < 30 years old	6	5.4%	1	5.6%	-	-		
30 < 40 years old	23	20.5%	4	22.2%	-	-	0.417	1.000
40 < 50 years old	54	48.2%	8	44.4%	-	-		
50 < 60 years old	29	25.9%	5	27.8%	-	-		
Gender								
Male	67	59.8%	5	27.8%	-	-	6.444*	0.020*
Female	45	40.2%	13	72.2%	-	-		
Marital status								
Single	11	9.8%	1	5.6%	-	-		
Married	83	74.1%	11	61.1%	-	-	5.226	0.106
Widowed	9	8.0%	5	27.8%	-	-		
Divorced	9	8.0%	1	5.6%	-	-		

Level of education								
Illiterate	16	14.3%	0	0.0%	-	-		
Read and write	1	.9%	0	0.0%	-	-		
Primary education	8	7.1%	4	22.2%	-	-	6.535	0.143
Secondary education	74	66.1%	12	66.7%	-	-		
University Education	13	11.6%	2	11.1%	-	-		
Place of residence								
Rural	78	69.6%	12	66.7%	-	-	0.064	0.800
Urban	34	30.4%	6	33.3%	-	-		
Occupation								
Office work	25	22.3%	3	16.7%	-	-		
Manual work	35	31.3%	3	16.7%	-	-		
Not working	9	8.0%	0	0.0%	-	-	5.449	0.20
Housewife	38	33.9%	10	55.6%	-	-		
Retired	5	4.5%	2	11.1%	-	-		

χ^2: **Chi square test**   MC: **Monte Carlo**

*: Statistically significant at p ≤ 0.05

Table (6): The relation between levels of dependency of activity of daily living and clinical data.

Regarding to patient chief complain; there was statistically significant relation between levels of dependency of activity of daily living and patient chief complain where (LBP) with pain in the lower extremities had (p=0.001*) and (LBP) with muscle weakness in the legs, feet, or toes had (p=0.003*).

Concerning past medical history, there was statistically significant relation between levels of dependency of activity of daily living and past medical history where analgesic as conservative measures before surgery had (p=0.030*)

There was statistically significant relation between levels of dependency of activity of daily living and past medical history where specialized neurosurgeon who prescribed the conservative measures had (p=0.005*) and no treatment regimen had (p=0.030*).

Table (6): The relation between levels of dependency of activity of daily living and patients' clinical data.

Patients' Clinical data	Level of dependency of activity of daily living						χ^2	^{MC}p
	Completely dependent (n=1)		Needs assistance (n=121)		Independent (n=8)			
	No.	%	No.	%	No.	%		
Present health history:								
The patient chief complaint is#								
Lower back pain (LBP) only	1	100.%	91	75.2%	8	100.%	2.671	0.382
(LBP) with pain in the lower extremities	0	0.0%	68	56.2%	0	0.0%	11.073*	0.001*
(LBP) with numbness and tingling in the lower extremities	0	0.0%	42	34.7%	5	62.5%	2.982	0.181
(LBP) with loss of bowel or bladder control	0	0.0%	1	0.8%	0	0.0%	4.211	1.000
(LBP) with muscle weakness in the legs, feet, or toes	1	100.%	58	47.9%	8	100.%	9.579*	0.003*
(LBP) with pain in the lower extremities, numbness and tingling in the lower extremities, loss of bowel or bladder control and muscle weakness in the legs, feet, or toes.	0	0.0%	2	1.7%	0	0.0%	2.984	1.000
Past medical history:								
What are the conservative measures did you do before the surgery?#								
Physiotherapy	0	0.0%	30	24.8%	4	50.0%	2.881	0.332
Hot compresses	0	0.0%	2	1.7%	0	0.0%	2.984	1.000
Analgesics	1	100.%	65	53.7%	1	12.5%	5.883*	0.030*
Steroid injections	0	0.0%	0	0.0%	0	0.0%	-	-

Radiofrequency	0	0.0%	0	0.0%	0	0.0%	-	-
No a treatment regimen	0	0.0%	42	34.7%	3	37.5%	0.632	1.000
Who is prescribed the conservative measures?#								
Specialized neurosurgeon	0	0.0%	42	34.7%	7	87.5%	8.964*	0.005*
General doctor	0	0.0%	5	4.1%	0	0.0%	1.640	1.000
Pharmacist	0	0.0	0	0.0	0	0.0	-	-
Family/Friends	0	0.0%	1	0.8%	0	0.0%	4.211	1.000
From social media	0	0.0	0	0.0	0	0.0	-	-
Don't know	0	0.0%	8	6.6%	0	0.0%	1.201	1.000
No a treatment regimen	1	100.%	65	53.7%	1	12.5%	5.883*	0.030*
Body mass index (BMI)								
Underweight	0	0.0%	0	0.0%	0	0.0%		
Normal weight	0	0.0%	11	9.1%	2	25.0%		
Overweight	0	0.0%	68	56.2%	2	25.0%	6.353	0.117
Obese	1	100.%	42	34.7%	4	50.0%		
Morbid obese	0	0.0%	0	0.0%	0	0.0%		

χ^2: **Chi square test**   MC: **Monte Carlo**

Discussion

Low back pain (LBP) is common increasingly prevalent and a leading cause of disability and loss of productivity worldwide. [2] Low back pain may follow injury or trauma to the back as muscle or ligament sprain, strain and muscle spasm. Low back pain may also be caused by degenerative conditions of lumbar spine and disc herniation. [1,22] Symptoms of LBP range from muscle ache to shooting or stabbing pain in low back or lower extremities, restricted flexibility and/or range of motion, or inability to stand straight which consequently affect ADL. [23] The rates of lumbar spine surgical procedures to treat LBP have been risen over the past two decades. [24] Decompression by lumbar laminectomy is one of the most common procedures for management of degenerative stenosis of the lumbar spine, that was resistant to conservative management. Surgery is indicated when there is acute event and rapidly progressive neurological impairment occur to help patient to return to normal ADL. [25]

Concerning to demographic characteristics of the studied patients, it showed that nearly half of the studied patients were in the age group of 40 < 50 years, this might be related to nature of this age where productivity were at its maximum level with more work time and more responsibility. Traditionally, it is the most common age for disc degenerative changes is between the 4th and 6th decades of life due to the effect of daily activity that push the nucleus against the annulus. [26]

However, the annulus tends to crack and tear with age and degenerative changes. With weakness in the annulus, the nucleus may begin to herniate(squeeze) through the damaged annulus. The pressure bulges the annulus outward in the beginning. This result was in the line with **Ebrahim et al., (2020)** [27] who mentioned that more than half of the studied patients were in age 40-50 years in their study about surgical treatment of lumbar spinal canal stenosis by laminectomy and posterolateral fusion.

Concerning gender, the finding of the current study indicated that more than half of patients were males. This can be related to higher activity level of males and because of the physically demanding nature of their work compared to females. This outcome was in line with **Boran et al., (2023)** [28] who stated that the majority of their patients were male in their study about " Discharge Learning Needs of Spinal Surgery Patients".

On the other hand, it is contradicted with a study conducted by **Abd-Ella et al., (2021)** [29] in their study about effect of discharge plan on satisfaction of patients with lumbar disc herniation surgery, who stated that more than half of patients were female this could be due to that stressor of daily life as household and outside work. Also, females had weaker muscle strength than males. [30] This discrepancy could be attributed to differences in the study population,

geographic location as majority of studied patients coming from rural area where working load in agriculture is more in male and about one third of the studied patients were housewife.

As regard to marital status, the results of the study showed that, about three quarters of patients were married. It could be related the fact that most of the study participant age groups were in the marital age according to the Egyptian culture. The married people have many duties and responsibilities that enhance their physical and psychological stress. This result was in the line with **Abd-El Mohsen et al., (2019)** [31] who also found a majority of patients were married in their study of effect of nursing rehabilitation guide on outcomes of patients undergoing lumbar discectomy who also found a majority of patients in their study were married.

According to the educational level, it was evident that secondary educated/deplom patients formed almost two thirds of patients. It can be explained that most patients are from rural areas where agriculture or farming is the main aspect of work; this could what makes them ignore completing their education and satisfied with secondary education/deplom to start farming early. This was acceptable with **Abd Elzaher et al., (2023)** [32] who reported that their study illustrated the majority of the patients had secondary education in their study about coping strategies among adult patients with lumber disc herniation.

Concerning area of residence, it was observed that more than two thirds of patients came from rural areas where agriculture or farming is the main aspect of work with manual effort in El-Behira governate. Also, this can be attributed to the setting, specifically free governmental hospitals which typically serve a large number of patients because it is the only hospital in the governate that have specialty of neurosurgery department. This was congruent with **Huang et al., (2021)** [33] in his study about impact of surgeon and hospital factors on surgical decision-making for grade 1 degenerative lumbar spondylolisthesis who reported that, the incidence of lumbar disc prolapse was more common in people from rural area.

Regarding the occupation, it was evident that more than one third of patients were manual workers. This finding could be rationalized that workers with manual labor were higher risk to prolapsed lumbar disc because of the demands of the jobs including prolonged standing with poor body mechanics which increase the risk for disc prolapse. This was agreed with **Abd Elwahab et al., (2019)** [34] who illustrated that less than half of patients were manual work. In their study about effect of rehabilitative nursing program on functional status among patients with discectomy.

In relation to clinical data of the studied patients, the current study revealed that low back pain, pain in lower extremities and muscle weakness in the legs, feet, or toes were the most common complaints of the studied patients. This could be attributed to that these complaints are the classical symptoms post lumbar laminectomy. This outcome has a similarity to **Sajadi et al., (2022)** [35] in study entitled long-term outcomes of laminectomy in lumbar spinal stenosis who stated that neurogenic claudication is highest prevalent clinical symptom post lumbar laminectomy that contain combination of tingling, cramps, pain, numbness, or weakness in the lower back, calves, glutes, and/or thighs and is increased by walking and prolonged standing that was presented to the majority of patients.

In relation to past medical history, it had been determined that more than half of patients didn't receive any treatment regimen or conservative measures before surgery. This may be related to conservative measures place significant financial burden on the patient's families. Also, the available resources of conservative treatment put patient in physical restriction and that affect his work. On the other hand, the patient had no time to receive any conservative measures as the patient said had no time due to lot of responsibilities.

These findings are supported by **Gelalis, et al., (2010)** [36] in the study about "prospective analysis of surgical outcomes in patients undergoing decompressive laminectomy and posterior instrumentation for degenerative lumbar spinal stenosis" who stated that over than half of the patients in the study weren't receiving any type of conservative measures. Additionally, **Garczyk, et al., (2013)** [37] in the study of patient satisfaction with nursing after surgery due to cervical or lumbar discopathy, they mentioned that around one third of patient with lumbar surgery didn't receive any physiotherapy prior to operation.

Concerning body mass index; the findings indicated that over than half of the patients in the study were overweight or obese. This could be associated with the increased load on the spine caused by being overweight which increase pressure on the back can result in herniation of the lumbar disc. This result agrees with **Abd-Ella et al, (2021)** [29] who revealed that more than two thirds of patients were overweight. In the study of effect of discharge plan on

satisfaction of patients with lumbar disc herniation surgery, which conducted in the neurosurgical ward at El-Demerdash hospital and outpatient clinic at Ain Shams University Hospital.

In relation to patients' overall knowledge post lumbar laminectomy, the present study found that the majority of patients had poor knowledge level. These results might be referred to that the majority of patients lived in rural areas in which there is shortage of public health resources needed for health education about the disease. Moreover, their priority is farming not prevention of illness or seeking help at the first manifestation of pain. It could be related to the low level of education that appears on their cognitive interest and level of importance of health education of them. Additionally, this might be related to the lack of knowledge given to the patients from nurses and shortage of communication channels among nurse and patient because of nurse work overload, shortage of staff and increase turnover of patients in the setting which is the only governmental health care services that provide lumbar laminectomy surgery in El Behira. Also, may be related to mass media that ignore this type of disease prevention /conservative treatment.

The present finding fits with the study of **Hablass et al, (2021)** [19] in their study of effect of applying an educational program for patients with lumbar laminectomy on their knowledge and self-care activities, who assured in their study that less than three quarters of control and study patients had insufficient knowledge before educational program. Also, **Abd- Ella et al, (2021)** [21] who stated that who found that majority of patients had unsatisfactory level of knowledge regarding lumbar disc herniation surgery prior to application of program.

In relation to patients' total levels of dependency of activity of daily living, the current study found that most of studied patients needs assistance. These results could be related to that more than half of patients had LBP, had LBP with pain in the lower extremities, had LBP with muscle weakness in the legs, feet, or toes, had LBP with numbness and tingling in the lower extremities that had an effect on the patient ability to carry out every day activities post lumbar laminectomy independently.

On other hand it may be related to fear of recurrence of disc prolapse postoperatively, so patients need assistance from others to avoid pressure on back. This finding was in harmony with **Weheida et al, (2022)** [18] who indicated that three quarters of the study group needed assistance in performing daily living activities prior to the program application. compared to post-application of the program.

Concerning the relationship between studied patients' total score of knowledge levels and demographic characteristics: the majority of studied patients had poor knowledge in age, gender, marital status, level of education, place of residence and occupation. While about tenth had fair knowledge and zero percent had good knowledge. this study showed that there was a statistically significant positive relation between patients' knowledge level and gender where the majority of patients had poor knowledge, where more than half of male had poor knowledge. This can be related men in rural areas are usually more busy in working with farming and don't have time to educate themselves about care conditions and not complaining that there were problems unless increase severity and deterioration of symptoms. This is consistent with **Hablass et al. (2021),** [19] who reported that, there were positive statistically significant difference between patients between knowledge and gender.

Regarding to the relation levels of dependency of activity of daily living and patient clinical data: there was statistically significant relation between levels of dependency of activities of daily living and patient chief complain where (LBP) with pain in the lower extremities and (LBP) with weakness of muscles in the legs, feet, or toes. This may be due to effect of pain which affect performance and cause limited of activity of daily living. This result was in harmony with **Abd-Elzaher et al. (2023)** [32] who stated that there was statistically significant relation between levels of dependency of activity of daily living and level of pain.

Concerning past medical history, that there was statistically significant relation between levels of dependency of activities of daily living and using analgesic as conservative measures before surgery and specialized neurosurgeon who prescribed the conservative measures. This may be due to correct prescription of using analgesic pre lumbar laminectomy by specialized neurosurgeon that decrease inflammation which have a positive effect post operation and alleviate pain which help patient to preform activity of daily living faster than who did not receive conservative treatment pre lumbar laminectomy.

Conclusion

According to the study findings, it can be concluded that majority of studied patients had poor level of knowledge and need assistance in daily living   activities post lumbar laminectomy.

Recommendations

The present study findings suggest the following recommendations:

Recommendations for patients:

- Development and application of educational sessions for patients before discharge to improve their knowledge about the prevention of recurrence of lumbar disc herniation.

Recommendations for nurses:

- Nurses should include patient in discharge plan and follow up post lumbar laminectomy.

Recommendations for future studies:

- Evaluate effect of nursing intervention on clinical outcome for patient with lumbar laminectomy.

Recommendations for community:

- Mass media education about proper body mechanics, regular exercise, weight control and how to occurrence and recurrence of lumbar disc herniation.

Recommendations for health organization:

- Develop periodical training and supervision program for nurses regarding nursing care of patient with lumbar laminectomy.

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