IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 8, Issue 3 Ser. V. (May. - June .2019), PP 01-11
www.iosrjournals.org

Effect of Nursing Rehabilitation Guide on Outcomes of Patients Undergoing Lumbar Discectomy

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Abstract
Abstract: Background: *Lumbar discectomy surgery is one of daily spine surgery performed. Patients complain from poor postures and/or movements that have exposed the spine to an activity to which it is not accustomed.*
Aim: *The aim of this research was to study the effect of applying a nursing rehabilitation guide on outcomes of patients undergoing lumbar discectomy.*
Design: *A quasi – experimental research design.*
Setting: *orthopedic surgery department, and outpatient spine clinic at Assiut University Hospital.*
Subject: *Purposive sample of thirty adult patients undergoing lumbar discectomy.*
Study tools: *Three tools were utilized in this study included; structured interview questionnaire sheet include three parts; 1. Patient sociodemographic characteristics data tool, 2. Patient knowledge assessment tool, 3. Patient assessment sheet.*
Results: *Result of current study showed a highly statistically significant improvement in patient knowledge post education than pre education at P level <0.001**, also showed improvement in patient physical state post education than pre education at P level <0.001**.*
Conclusion: *The present study revealed that providing patients with a guide detailed with instructions for improving their knowledge was of great value and actually improves health state for those patients.*
Recommendations: *From the present study we recommend that; providing copies of the nursing rehabilitation guide in the orthopedic department and clinic to be readily available for all patients planned to undergo lumbar discectomy, the present study be replicated on larger study populations for generalization of the results.*
Key words*; Lumbar Discectomy, Patient outcomes, Rehabilitation*

Date of Submission: 13-05-2019 Date of acceptance: 30-05-2019

I. Introduction

The most common pain is a known as low back pain (LBP) that reported by affected individual, according to research articles LBP recognized approximately 8 in 10 people in their lifetime roughly. Later research demonstrates that the predominance of LBP is ceaselessly expanded **(Freburger, et al, 2009)** and (**Martin, et al, 2008**). Low back pain considers is the leading cause of activity limitation and work absence throughout the world. LBP can affect all people of any age, for different reasons. Lower back pain usually associated with and linked to the spine lumber bone, which includes the lumber discs or herniation between the vertebrae, lower back muscle, ligaments around the spine, nerves and spinal cord, internal organs included in abdomen and pelvic, and also the skin that surrounded the lumbar area. LBP predominance in industrialized countries is estimated at 60% to 70 % (the incidence among adult, one - year prevalence 15% to 45%, adult incidence 5% per year). The prevalence ratio of adult is higher than children and adolescents, prevalence increases and peaks between the ages of 35 years and 55 years **(Peggy, 2017)**

Lumbar herniation needs a lumbar discectomy surgery to eradicate a part of a prolapsed intervertebral disc. Also patient complains from poor postures and/or movements that have exposed the spine to an activity to which it is not accustomed. In a few cases changes can suggested inside the disc in case the disc size is adequate and the specialist press on the nerve root as the nerve root exits from the spinal canal to form the nerves of the leg Many symptoms the patient complain from it as pain, tingling, pins and needles, numbness, weakness and loss of reflex action in the leg which caused by compression of a nerve root **(Ryang, 2008).**

Lumbar discectomy performed to patients complaining of disc herniation and consider the one of the most common spine procedures can be performed for these patients. Prevalence of a symptomatic lumbar disc herniation is estimated to be between 1-2% and over 480,000 lumbar discectomies are performed annually in the United States **(Thomas and Ziya, 2015).** The prevalence estimated to be greater than 50%. The prevalence of

symptomatic lumbar disc herniation, however, has not been satisfactory characterized due to a lack of assent regarding what comprise a symptomatic herniation, as well as a lack of ability to quantifying a specific at-risk population **(Bono, et al, 2006).**

To reduce Patients affords and postoperative anxieties, thereby increasing and it's very important to give the patient written directions and educational instructions as basic elements of postoperative rehabilitation. Lumbar discectomy indications include; altered bowel and bladder function, progressive neurological deficits including motor weakness or sensory deficit in the lower extremities. If pain persists, surgery should also be considered. The ultimate indications for discectomy include the following conditions; neurological deficit that causing weakness of physical function of important muscles such as hip abductors, ankle dorsiflexors, ankle plantar flexors and progressive neurological deficit in spite of conservative treatment. The common indications for lumbar discectomy include continuous and persistent pain that can affects the quality of life **(Ashutosh and Ashish, 2014).**

Initial management; rest as indicated, physical therapy, and appropriate use of pain medication. In most cases, radicular symptoms will relieved within six weeks. Epidural steroid infusions can be requested in the event that symptoms continue. If pain persists more than six weeks the patients need surgical referral. Primary care practitioner performs assessment including of history taking and document the time of symptoms onset and any symptomatic progression. A neurologic evaluation to assess for the presence of sensory or motor deficits should be performed as early as possible. Perineal and a rectal examination are suggested for patients with a history of saddle anesthesia to decide sensory misfortune. (**Majlesi, et al., 2008).**

Short course of patient treatment can starts with a rest as indicated for the patient with acute lumbar radiculopathy. Pain management may include a prescription of moderate nonsteroidal anti-inflammatory. Patients with more essential pain treated by mild narcotic pain medication **(Andrew and Bradley, 2014).** Physical therapy for such patients may need referral and such procedures patient needs pain relief modalities, as whirlpool, ultrasound, heat pack therapy, ice, and massage electrical stimulation. Patients can be alluded to a spinal specialist with a history of more than six months of persistent symptomatology can without consideration for conservative management, because surgical results have been shown to deteriorate after 6–12 months of persistent symptomatology (**Andrew and Bradley, 2014).**

Postoperatively, the patient initiates a physical therapy rehabilitation program. Additionally, the patient performs daily home exercises that will be reviewed with his/her physical therapist on each visit. The patient is advised to and encouraged to continue with the exercise program for a period of time. While this rules relied heavily on home-based exercise, there is evidence to suggest that this is an effective approach in this affected individual. The patient should receive educational instruction related to the importance of exercise and also regarding to the importance of maintaining a neutral lumbar spine lordosis, and techniques are to be created to achieve this amid exercises of day by day living as when arising from bed within the morning. There are many treatment approaches include; stretching, range of motion, aerobic, and stabilization exercises (**Jeffrey, et al, 2010**)

Nurses have an essential role in promoting patient condition and maintaining patient safety, as well as encouraging frequent deep breathing, coughing, incentive spirometry and appropriate pain management. Nurses must recognize the patient concerns that warrant immediate evaluation to rule out a surgical complication. Nurses may also be involved with referrals to home health nursing, physical therapy, and occupational therapy as well as outpatient rehabilitative services. Finally, nurses must recognize the extent to which psychological and social factors affect patient recovery **(Maureen, 2018)**

Significance of the study: through a period of three months "from1/9/2018 to 31/12/2018; 22 cases were admitted to the orthopedic department for lumbar discectomy.

Operational definitions:

Rehabilitation: a set of measures that help people who involvement, or are likely to involvement, inability to realize and keep up ideal working in interaction with their environments".

Patient outcomes: these are the results which were measured pre and post-surgery; information level, physical state (e.g. pain level, gait, sleep), and psychological condition (e.g. anxiety, fatigue).

Lumbar discectomy: the surgical evacuation of portion or all of a vertebral plate that has herniated.

Aim of the study: this study was conducted in an attempt to determine the effect of applying a nursing rehabilitation guide on outcomes of patients undergoing lumbar discectomy through the following:

1. Assessment of patient knowledge pre and post rehabilitation
2. Assessment of patient health state pre and post rehabilitation
3. Provide the patient with the nursing rehabilitation guidelines

II. Subjects and method

2.1 .Research design: A pre / posttest study design

2.2. Setting: Orthopedic surgery department, and outpatient spine clinic at Assiut University Hospital.

2.3. Sample: A purposive sample of thirty adult patients undergoing lumbar discectomy male and female patients. The sample size was calculated using the epi info sample size calculation system "G power program 3.1.3 was used to calculate sample size, hypothized effect size 0.7. Power 80 %" sample size of 28 increases of 2 patients was done considering any drop out of patients or non-compliance with the follow up or the application of the guidelines and final estimation of the results was done on 30 compliant patients.
Exclusion criteria included; cancer patients, and patients with spinal cord injury.

2.4. Data collection tool:
Structured lumbar discectomy patient interview questionnaire sheet: It included three parts;

2.4.1. Part 1: patient's sociodemographic characteristics: Age, sex, occupation, educational level, marital status, place of residence, comorbid diseases and surgical history.

2.4.2. Part II: patient's knowledge assessment: To assess patient knowledge regarding to pain management, sleeping pattern disturbance management, walking adaptation, standing adaptation, sitting adaptation, activity of daily living and exercise **(Lewis, et al, 2016)**

2.4.3. Part III: Patient Assessment; it consisted of items for assessing patient's condition pre and post rehabilitation regarding the following: Pain, pulse, sensation, capillary refill, sleeping pattern, gait, numbness and emotional state **(Janice and Kerry, 2017), (Donna, et al, 2017)**

The nursing rehabilitation guide for patients undergoing lumbar discectomy; this guide was prepared in simple Arabic language and illustrated photos, moreover patients included within the study group were appeared a video show on the guide included exercises, and were given a copy to take home, the booklet included the following; simple explanation on lumbar discectomy and complications of the surgery (Infection, Dural Tear, Spinal cord/nerve root damage, Persistent Pain, and Recurrence). Rehabilitation exercises which were classified by time as follows: **Day of surgery;** breathing exercises, tightening of thigh and gluteal muscles. **Day one;** use of the brace to attain extra support, and the use of the log roll procedure to transfer in or out of bed. **Day Two onwards** include teaching patients about getting into bed, getting out of bed, going up-stairs and going downstairs. The booklet also included **general recommendations** on sleeping, pain medication, nutrition, bowel care, driving, travel, and car transfers, general safety advice for home, stockings, pain & swelling and return to work. And the **discharge instructions** on: wound care, signs of infection and follow up.

III. Tools Validity and Reliability

The tools was developed by the researcher and revised by a panel of experts: professors of medical surgical nursing, who examined the content of the tools for comprehensiveness accuracy, clarity and relevance.

IV. Pilot Study

The study tool pre-tested on 10 % of the patients who were included within the research to examine clarity and feasibility of the used tool, those patients were included in the main study as there was no modification needed in the study tool.

V. Ethical considerations

The study was affirmed by the faculty ethics committee; a composed endorsement was gotten from the enlisted patients to take part within the study after clarifying the nature and reason of the study. The researcher clarified that participation is voluntary and patient's cooperation status will not influence the care they will get

VI. Field work and procedure

Administrative approval: Official endorsement and administration permission were gotten from the head of orthopedic surgery department and outpatient spine clinic.

Procedure: Preparatory phase:

The researcher first conducted the assessment handle for the number of cases conceded in the orthopedic department who were planned for lumbar discectomy. An approval from faculty of nursing –ethical committee was gotten. A hospital permission from the head of orthopedic department and out-patient spine clinic assemble the crucial data was moreover taken after the aim and study nature were clarified. A literature review was done to prepare the study tool and patient guide from library and web sources. A pilot study was conducted during January 2019, on 10% of patients, in order in arrange to test clarity and applicability of the study tool; no changes wiped out the tool, so that patients of the pilot study were included in the main study.

Implementation phase:

Patients were interviewed individually for filling out the study tool on admission. Patients were met for three sessions; **one preoperatively** for training on the basic postoperative care (deep breathing and coughing exercises) and the other two sessions were conducted postoperatively. **The second post-operative session** included clarification on the exercises of everyday living as sitting, standing, toileting and wound care, walking upstairs, getting in and out of the car, carrying objects and driving. While **the third postoperative session** included show of the permitted exercises; ambulation progression as endured with the utilize of assistive device as required, nerve and supine hamstring extend, situated hamstring extend, prone knee flexion, pelvic tilt, hook lying walk, bridging, upper body expansion, inclined hip expansion, and two-sided scapular retraction. Each session extended from 30 to 45 minutes.

Evaluation phase:

Patients were met separately for appraisal within the out-patient spine clinic utilizing the pre-mentioned study tool 3 months after the operation

VII. Vii. Statistical Analysis

All statistical analyses were performed utilizing SPSS for windows version 23.0. Data were tried for normality of distribution earlier to any calculations. Continuous data were regularly distribute and were expressed in mean ±standard deviation (SD). Categorical data were expressed in number and percentage. The one way ANOVA test, qui-square test, free T- test, was utilized to compare between results all through the rehabilitation process, program stages and to compare pre rehabilitation with post rehabilitation, statistical significance was set at $p<0.05$.

VIII. Results

Table (1):-Distribution of socio demographic and medical data for the study patients (n=30)

Variable	(n=30)	%
Age		
Less than 30 yrs	11	36.7
30 - >40 yrs	10	33.3
40- >50 yrs	4	13.3
50 – 60 yrs	5	16.7
Gender		
Male	13	43.3
Female	17	56.7
Occupation		
Housewife/not work	18	60.0
Worker	11	36.7
Employee	1	3.3
Education		
Illiterate	11	36.7
Read and write	9	30.0
Secondary school	10	33.3
Marital Status		
Single	8	26.7
Married	22	73.3
Residence		
Urban	9	30.0
Rural	21	70.0
Smoking		
Yes	4	13.3
No	26	86.7
Co-morbid diseases		
No disease	25	83.3
Diabetes	1	3.3
Hypertension	2	6.7

Diabetes & Hypertension	2	6.7
Previous surgery		
Yes	12	40.0
No	18	60.0
Previous back surgery		
Yes	10	33.3
No	20	66.7

Regarding to demographic characteristics and medical data table (1) show that, most of patients included in the study were less than thirty years (36.7%), with respect to sex the majority of the patient was females (56.7%). Regarding to occupation more than half of the study sample was house wife / no work, and most of them with no co-morbid disease (83.3%). Regarding to previous surgery and previous back surgery more than half of the study sample had no previous surgery (60.0%, 66.7%) respectively.

Table (2):-Distribution of patient knowledge level pre and at follow up (n=30)

	Pre(n=30)		Post(n=30)		
Variable	**No.**	**%**	**No.**	**%**	**P. value**
Pain management					
Apply a plastic bag filled with ice every 1 to 2 hours for approximately 20 minutes.	7	23.3	30	100.0	<0.001**
Use ice bags after activity to decrease any discomfort	7	23.3	30	100.0	<0.001**
Use of analgesics as prescribed	25	83.3	30	100.0	0.020*
Perform exercises and return to normal activities gradually after surgery	7	23.3	30	100.0	<0.001**
Sleeping pattern disturbance management					
Sleep in a quite environment	24	80.0	30	100.0	0.010*
Lie only on a firm mattress and is not too hard	12	40.0	30	100.0	<0.001**
Avoid a bed with a wire base as these permit sagging but use a solid base	13	43.3	29	96.7	<0.001**
Shouldn't be use couches or recliner chairs	9	30.0	30	100.0	<0.001**
Lie on the back or side, but not on the abdomen	17	56.7	30	100.0	<0.001**
Use a pillow between knees to avoid twisting the lower back when sleep on the side	13	43.3	30	100.0	<0.001**
Use a pillow under the head when sleeping on back	20	66.7	30	100.0	0.001**
Keep spine aligned in a neutral position and avoid bending forward or to the side.	12	40.0	30	100.0	<0.001**
Walking adaptation					
Frequent short walks on ward from surgery day to third day	22	73.3	30	100.0	0.002**
Gradually increase distance from third day to seventh day	22	73.3	30	100.0	0.002**
Increase distance as tolerated – start on smooth surfaces from seventh day to fourth week	22	73.3	30	100.0	0.002**
Increase distance as tolerated – start on graded surfaces from fourth week to eights week	21	70.0	30	100.0	0.001**
Standing adaptation					
Do not bend from the waist to pick up things	20	66.7	30	100.0	0.001**
Start with feet kept about shoulder width apart with equal weight on each leg	19	63.3	30	100.0	<0.001**
The knees are slightly bent	13	43.3	30	100.0	<0.001**
Keep abdominal muscles contracted until the most comfortable (neutral) position of the back is felt	7	23.3	30	100.0	<0.001**
Pull the shoulders back over the hips and then relax	9	30.0	30	100.0	<0.001**
Breathe normally when standing	21	70.0	30	100.0	0.001**
Sitting adaptation					
Use a straight back chair and not to exceed a half hour	1	3.3	30	100.0	<0.001**
Avoid upright sitting position for first 2 weeks after surgery	1	3.3	30	100.0	<0.001**
Avoid sitting for too long at first	1	3.3	30	100.0	<0.001**
Do not sit in soft or overstuffed chairs	2	6.7	30	100.0	<0.001**
Support lower back with a towel	1	3.3	30	100.0	<0.001**
Keep feet flat on the floor and knees relaxed	2	6.7	30	100.0	<0.001**
Activity of daily living					
Avoid housework as vacuuming and sweeping	1	3.3	30	100.0	<0.001**
Avoid bending, stooping, pushing, lifting or straining	1	3.3	30	100.0	<0.001**
Not lifting anything heavier than 10 pounds.	1	3.3	30	100.0	<0.001**
Don't engage in strenuous activity for at least 10 weeks after surgery	0	0.0	30	100.0	<0.001**
Remain mobile and return to full activities as soon as possible after surgery	0	0.0	30	100.0	<0.001**
Do not lift anything over head	1	3.3	30	100.0	<0.001**
Exercise					
Exercises should be done about 5 to 6 times a day for 6 to 12 weeks	1	3.3	30	100.0	<0.001**
Use back care advice	0	0.0	30	100.0	<0.001**

Variable	Pre(n=30)		Post(n=30)		P. value
	No.	%	No.	%	
Use a brace to provide extra support for back after surgery	0	0.0	30	100.0	<0.001**
Perform walking exercise technique	2	6.7	30	100.0	<0.001**
Try to limit going up and down stairs to once or twice a day for one to two weeks	1	3.3	30	100.0	<0.001**
Avoid strenuous exercise or activities	1	3.3	30	100.0	<0.001**

- Chi-square * Significant difference at p. value<0.05, ** Significant difference at p. value<0.01

Table (2) revealed that, there was a highly statistically significant improvement in patient's knowledge during follow-up compared with pre education at P value <0.001** in all items (Pain management, sleeping pattern disturbance management, walking adaptation, sitting adaptation, standing adaptation, activity of daily living and exercise) respectively.

Table (3):-Comparison between total score of patient knowledge pre and at follow up (n=30)

	Score	Pre	Post	P.value
A. Pain management	4	1.53±1.11	4±0	<0.001**
B. Sleeping pattern disturbance management	8	4±2.44	7.97±0.18	<0.001**
C. Walking adaptation	4	2.9±1.79	4±0	0.001**
D. Standing adaptation	6	2.97±1.92	6±0	<0.001**
E. Sitting adaptation	6	0.27±1.14	6±0	<0.001**
E. Activity of daily living	6	0.13±0.73	6±0	<0.001**
F. Exercise	6	0.17±0.75	6±0	<0.001**
Total Knowledge	**40**	**11.97±6.53**	**39.97±0.18**	**<0.001****

- Independent T- test* Significant difference at p. value<0.05, ** Significant difference at p. value<0.01

This table reveals that that with respect to total patients knowledge pre and at follow up table (3) expressed that, a high statistically significant improvement was observed in patient knowledge at P value <0.001** in all items with M **±** SD (11.97 **±** 6.53, 39.97 ± 0.18) pre and post education respectively

Table (4):- Comparison between satisfactory and unsatisfactory level of overall Patient Knowledge pre and post application of the nursing rehabilitation guide (n=30)

Knowledge Items	Highest Possible score (%)	Pre		Post	
		achieved Points	Level of Knowledge	Achieved Points	Level of Knowledge
A. Pain management	4(100%)	1.53(38.33%)	Unsatisfactory	4(100%)	satisfactory
B. Sleeping pattern disturbance management	8(100%)	4(50%)	Unsatisfactory	7.97(99.58%)	satisfactory
C. Walking adaptation	4(100%)	2.9(72.5%)	satisfactory	4(100%)	satisfactory
D. Standing adaptation	6(100%)	2.97(49.44%)	Unsatisfactory	6(100%)	satisfactory
E. Sitting adaptation	6(100%)	0.27(4.44%)	Unsatisfactory	6(100%)	satisfactory
E. Activity of daily living	6(100%)	0.13(2.22%)	Unsatisfactory	6(100%)	satisfactory
F. Exercise	6(100%)	0.17(2.78%)	Unsatisfactory	6(100%)	satisfactory
Total Knowledge	40(100%)	11.97(29.92%)	Unsatisfactory	39.97(99.92%)	satisfactory

Table (4) shows that, patients had satisfactory level of knowledge post application of the nursing rehabilitation guide than pre application of the nursing rehabilitation guide for all items, (100%) and (99.58%) in sleeping pattern disturbance management only. The satisfactory and unsatisfactory level pre to post application of the nursing rehabilitation guide for total patient knowledge (11.97 {29.92%}, 39.97 {99.92%}) respectively

Table (5):-Relationship between patient knowledge pre and post application of the nursing rehabilitation guide (n=30)

	Pre(n=30)		Post(n=30)		P. value
	No.	%	No.	%	
Total Knowledge Level					
Unsatisfactory	29	97	0	0	<0.001**
Satisfactory	1	3	30	100	
Mean ± SD	**11.97±6.53**		**39.97±0.18**		**<0.001****

- Chi-square ** Significant difference at p. value<0.01 - independent T- test Significant difference at p. value<0.01**

Table (5) uncovered that, regarding to relationship between total patient knowledge pre to post application of the nursing rehabilitation guide highly statistically significant improvement at P value <0.001**, and Mean ± SD (11.97 ± 6.53, 39.97 ± 0.18) respectively pre to post education

Figure (1): Satisfactory and unsatisfactory level of total patients knowledge pre and post application of the nursing rehabilitation guide (n=30)

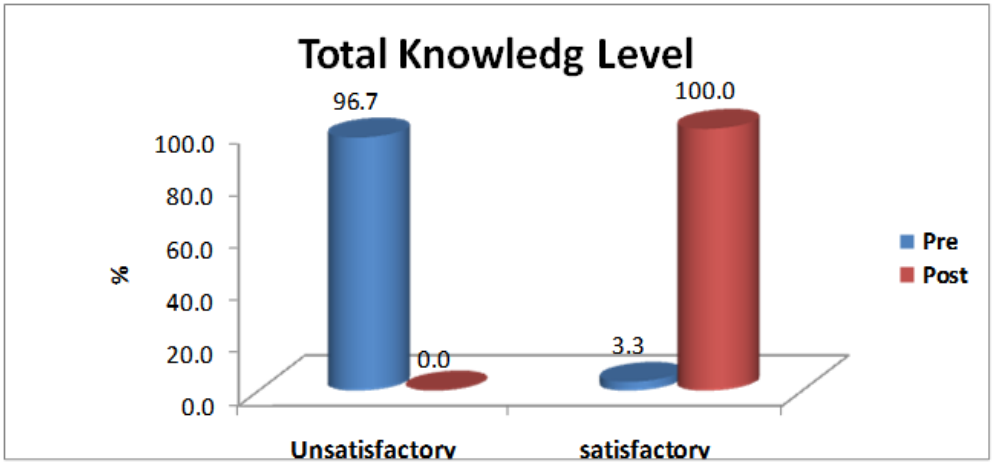


Figure (1) shows, patients had satisfactory level of knowledge (100%) post compared to (96.7%) pre application of the nursing rehabilitation guide.

Table (6):-Relationship between knowledge and demographic data pre and post application of the nursing rehabilitation guide

	Total Knowledge	
	Pre	**Post**
Variables	**Mean ± SD**	**Mean ± SD**
1. Age		
Less than 30	12.91±7.83	40±0
30 - >40	10.7±5.64	39.9±0.32
40- >50	15±1.63	40±0
50 – 60	10±7.87	40±0
P. value	**0.611**	**0.595**
2.Gender		
Male	12.62±5.08	39.92±0.28
Female	11.47±7.58	40±0
P. value	**0.642**	**0.260**
1. Occupation		
Housewife/not work	13.11±6.43	40±0
Worker	9.82±6.72	39.91±0.3
Employee	15.0±0.0	40.0±0.0
P. value	**0.389**	**0.436**
2. Education		
Illiterate	12.18±5.64	40±0
Read and write	12.89±7.11	40±0
Secondary school	10.9±7.42	39.9±0.32
P. value	**0.807**	**0.381**
3. Marital Status		
Single	12.38±6.97	40±0
Married	11.82±6.53	39.95±0.21
P. value	**0.841**	**0.556**
4. Residence		
Urban	12.11±8.13	40±0
Rural	11.9±5.95	39.95±0.22
P. value	**0.938**	**0.522**
5. Smoking		
Yes	8±6.98	39.75±0.5
No	12.58±6.38	40±0
P. value	**0.197**	**0.391**
6. Co-morbid diseases		
No disease	12.28±6.29	39.96±0.2

Hypertension	10±9.9	40±0
Diabetes & hypertension	7.5±10.61	40±0
P. value	**0.644**	**0.980**
7. Previous surgery		
Yes	9.67±7.33	40±0
No	13.5±5.64	39.94±0.24
P. value	0.117	0.424
8. Previous back surgery		
Yes	11.2±8.61	40±0
No	12.35±5.43	39.95±0.22
P. value	**0.657**	**0.489**

- Independent T- test, **one way ANOVAs**

Table (6) show that, regarding relationship between patient knowledge and demographic data, P value pre application of the nursing rehabilitation guide (0.611, 0.642, 0.389, 0.807, 0.841, 0.938, 0.197, 0.644 & 0.657) separately while post application of the nursing rehabilitation guide p value (0.595, 0.260, 0.436, 0.381, 0.556, 0.522, 0.391, 0.980 & 0.489) separately

Table (7):-Relationship between patient assessment pre and post application of the nursing rehabilitation guide (n=30)

	Pre		Post		P. value
	No.	%	No.	%	
1.Pain					
Mild	0	0.0	30	100.0	<0.001**
Moderate	11	36.7	0	0.0	
Sever	19	63.3	0	0.0	
2.Pulse					
Full	7	23.3	30	100.0	<0.001**
Weak	23	76.7	0	0.0	
3.Capillary refill					
a. >3 sec	2	6.7	30	100.0	<0.001**
<3 sec	28	93.3	0	0.0	
4.Sensation					
Good	14	46.7	30	100.0	<0.001**
Poor	16	53.3	0	0.0	
5.Sleeping pattern					
Normal	3	10.0	30	100.0	<0.001**
Insomnia	27	90.0	0	0.0	
6.Gait					
Steady	6	20.0	30	100.0	<0.001**
Unsteady	24	80.0	0	0.0	
7.Numbness					
Present	18	60.0	3	10.0	<0.001**
Un present	12	40.0	27	90.0	
8.Emotional state					
Anxiety	2	6.7	0	0.0	<0.001**
Fatigue	28	93.3	0	0.0	
Normal	0	0.0	30	100.0	

- Chi-square ** Significant difference at p. value<0.01

Table (7) shows a highly statistically significant enhancement with respect to patient assessment pre to post application of the nursing rehabilitation guide at P value <0.001** (Pain, pulse, capillary refill, sensation, sleeping pattern, gait, numbness and emotional state) respectively

IX. Discussion

Discectomy is the foremost commonly performed spinal surgery method. Customarily, patients were prompted to confine post-operative activity as this was accepted to diminish the hazard of plate reherniation and dynamic instability. In any case, this practice would frequently delay patients return to work. In contemporary practice various specialists do not restrain quiet post-operative movement due to the recognition that this practice is superfluous **Chris, et al., (2017).**

Part 1: Socio demographic and medical data

Socio-demographic characteristics like age, gender, occupation has imperative part in causation of lumbar circle herniation which may indeed influence their recuperation after the surgery. Regarding to age the current study revealed that, more than one third of the sample was less than 30 years old, this result in in

agreement with **Kamrul, et al, (2017);** they expressed that most of research sample aged between 14 – 16 years. the result negate with **Amer, et al, (2017),** based on research finding, it was more common in the age group between 40-60 year-old patients. Degenerative disc disease may be a uncommonly overwhelming disorder among adults, with detailed lifetime event as high as 40%. Lumbar discectomy is the first common surgical strategy performed around the world.

According to gender the current study refers to, the majority of the study was females, More over **Frederic, et al, (2018),** stated that the majority of their study was female. In another way this result contradicts the results by **Carol, et al, (2017**), who reported that; more than half of their study was male. This result disagree with **Amer, et al, (2017),** who stated that, the lumbar discectomy surgeries operated more commonly in male patients who constituted a percent of 64 of all lumbar discectomies considered in this study. Finding of the current study contradicts with **Muhammad (2016),** who reported that; the Out of 70 patients 74% were male and 26% were females in his study.

Part II: Patients knowledge pre and post education

Regarding to pain management the current study refer to statistically significant improvement of patients knowledge post education than pre patient education this result in consistence with **Carol, et al, (2017)** who stated that, the pain was improved for more than half of patients included in the study sample as well as 28% reported a little to moderate improvement in pain, 44% reported a lot of improvement in pain, and 17% reported complete improvement from pain. In multivariable investigation, patients detailed less pain enhancement in case, some time recently surgery, they anticipated more prominent pain advancement. This result also supported by **Nicholson**, **et al, (2017**), who stated that, all patients who were given a knowledge they were satisfied with the knowledge that they had. After each education, that the patients had retained a sufficient information

Based on the result of the current study, regarding to sleep pattern disturbance management, there was a statistically significant improvement in patient knowledge post education than pre education, this result in accordance with **Manish, et al, (2014),** who reported that the developed patient education improve the patient prognosis after the surgery and its management is associated with higher patient satisfaction and better short term outcomes, the basic framework for the development of the patient education booklet as here we are trying to find out domains and this step is not actively used in most studies available on patient education material.

The finding of the current study revealed that, there was an improvement in patient knowledge as regarding to walking, standing and activity of daily living post patient education, this result was supported by **Rushton, et al, (2016),** who reported that Knowledge about the clinical course is needed to improve understanding of recovery post-surgery as outcome is poor for some patients. Also knowledge will inform optimal timing and the nature of rehabilitation intervention. A discectomy is a surgical procedure performed to help in decreasing pain and improve patient mobility. The method includes cutting away plate and bone material that will be squeezing against the nerves coming from the spine.

Finding of the current study demonstrated that, the patient knowledge regarding to exercise statistically significant improved in post patient education than pre education as **David et al., (2006),** found a 50% contrast between groups (instruction, and exercise furthermore instruction), and a 30% subject attrition rate is anticipated. The possible attrition rate is attributed to length of the rehabilitative program, so the education had positive effect on patient knowledge and practice. Also **Esther et al., (2006),** supported the result of the current study there was some consensus as patient management focused on mobility and education to facilitate early discharge. However, patients were given a wide extend of exercises to proceed on discharge. Not all patients had access to treatment and should have education support and rehabilitation classes to assist early improvements in function

Moreover, in accordance with **Alison, et al, (2015),** rehabilitation programs post lumbar disc surgery. Key discoveries included: that multidisciplinary recovery driven by therapeutic advisors driven to speedier return to work than usual care. Statistical pooling was restricted but outlined a potential positive effect of exercise on pain and work; with very low/low quality evidence supporting high intensity exercise programs as more viable than low-intensity within the brief term.

Part III: Comparison between patients knowledge pre and post education

Regarding to relationship between patients knowledge pre and post education, the result of the current study uncovered that, there was a highly statistically significant differences in patients knowledge post education than pre education, this result was supported by **Chaudhary and Shankar, (2016),** who expressed that, organized quiet education could be a continuously creating and more accentuation is being set on this perspective by numerous corporate.. Even the asking for feedback questions from the patients for proceeded reestablishment of contracts with the private hospitals**.**

Part IV: Relationship between patient's knowledge pre and post education and knowledge to socio demographic characteristics pre and post education

Based on finding of the current study, there is significant relation between patient's knowledge pre to post education, this result in agreement with **Chou and Lin, (2011)** who reported that the exploratory group appeared a significant advancement within the level of satisfaction they felt for understanding of patient management. Education increases a patient's capacity for self-care and comes about in moved forward wellbeing and the anticipation of disease. Patient education is considered an important identity and principle in healthcare services, a criterion for securing patient, achieving health promotion, and a combination of educational activities planned. Persistent instruction must be done frequently and persistently at different interconnected levels to get the specified result. Additionally, understanding instruction programs are energetic and curiously forms to progress, keep up, and improve persistent care.

Moreover, **Shahnaz, et al, (2016),** expressed that a significant difference was found between pre-test and post-test scores for the quality of nursing care. There was a statistically significant difference between the control and exploratory groups within the balanced mean scores of the quality of nursing care at post-test. Thus, this hypothesis is confirmed. In other words, patient education increased the quality of nursing care for patients hospitalized in the surgical department in the post-test phase. The impact estimate of this education in upgrading the quality of nursing care within the post-test. A statistical power of 96% shows that the statistical precision of this test is high; moreover, the sample size was adequate for testing this hypothesis. A significant difference was also seen between pretest and post-test inpatient satisfaction scores. The results of the current study, indicates a statistically significant difference between pre and post education regarding to patient knowledge

X. Conclusion

The present study revealed that providing patients with a guide detailed with instructions for improving lumbar discectomy patients' knowledge was of great value and actually improved health state for those patients.

XI. Recommendation

From the present study we recommend that; providing copies of the nursing rehabilitation guide in the orthopedic department and clinic to be readily available for all patients planned to undergo lumbar discectomy, the present study be replicated on larger study populations for generalization of the results**.**

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