

The Effect of Implementing an Educational Program about Proper Body Mechanics on Low Back Pain and Activities of Daily Living among Patients with Disc Prolapse

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Abstract: Disk prolapse is the most common cause of intolerable lower back pain and the potential for serious adverse neurological consequences. This study **aimed** to determine the effect of implementing an educational program about proper body mechanics on low back pain and activities of daily living among patients with disc prolapse.

Subjects and methods: A quasi-experimental research design was conducted to meet the aim of the study .The study was conducted in neurology department of Shebin El koom University and Teaching hospitals at Menoufia governorate, Egypt. A purposive sample of 120 adult patients with a diagnosis of lumber disc prolapse were randomly assigned into control and study group of 60 patient each. Study group received a structured educational program and planned clinical supervision about applying good body mechanics when performing activities of daily living in addition to routine hospital care. Control group received only routine hospital care. The data gathering instruments were Bio sociodemographic and knowledge assessment form, visual analogue pain scale and Oswestry low back pain disability questionnaire. The **main findings** of the study were that, there was statistically significant improvement in knowledge, Oswestry low back pain disability scores and visual analogue pain scale in study group more than their control ($P < 0.001$).The study **concluded** that educational program about utilization proper body mechanics for patients with disc prolapse have shown beneficial improvement of knowledge and activities of daily living and reduction of low back pain. The study **recommended** that utilization of proper body mechanics should form an important component and should be included routinely in the management of patients with disc prolapse.

Keywords: Disk prolapse, Educational program, Body mechanics, Low back pain.

I. Introduction

Prolapsed or herniated disc is the most common cause of intolerable low back pain. It is a rupture of fibrocartilagenous material that surrounds the intervertebral disc. This rupture involves the release of the disc's center portion containing a gelatinous substance called the nucleus pulposus. The most common site for a ruptured disc is the lower back (Hochberg et al., 2004 [1]; Asell et.al, 2006 [2]).There are variety of causes and factors that can cause prolapsed disc especially irregular lifestyle including lack of exercises and natural biochemical changes that can occur with age because disc is gradually dry out that may affect disc strength. It is proved that, age and associated degeneration results in loss of elasticity of the discs and supporting structure so it leads to slipped disc condition .Moreover bad posture and incorrect body mechanics and hard physical labor can place additional stress on the spine. Also improper or heavy lifting, twisting or turning, excessive strain, daily wear and tear and sudden forceful trauma can cause slipped disc. (Sahin, Albayrak, Durmus and Ugurlu, 2011 [3]; Shahram, 2005 [4]).

Prolapsed disc symptoms may vary from individual to individual. These symptoms include, local pain in the affected area of the back or radiating pain that may shoot down the back of the leg passing through buttocks, loss of bladder and/or bowel control, elevation of pain levels during sneezing or coughing or bending or sitting for long periods, and tingling or numbness down the back of the leg or in buttocks (Scott, 2009 [5]). Epidemiological studies have indicated that the diagnoses of disc prolapse and related low back pain is increasing. A recent study shows that lower back pain and osteoarthritis are now ranked second only to cancer as the leading cause of disease burden (Peter, 2013 [6]).The incidence of low back pain over the course of a person's life is approximately 60% to 90%. The prevalence rate of low back pain is approximately 1 in 45 or 2.21% or 6 million people in USA (Medical Disability Advisor, 2013). In Egypt, the prevalence is 1,679,060 out of 76, 117, 4212 estimated population used (Right Diagnosis from health grades, 2013). In recent years, the percentage of patients undergoing surgery due to prolapsed disc increased significantly, particularly in the USA (Asell et.al, .2006 [2]).

Treatment options for slipped disc vary, based on the seriousness of the condition and the age of the patient. There are two options either medical treatment or surgical treatment. Medical treatment measures include bed rest and limited activity for several days, gradual increase in activity is suggested over a period of time. Complete bed rest is not recommended as the chances for patients with back pain recover more quickly with normal activities such as lifting, bending with minimal strain. Anti-inflammatory medications are recommended. In addition, medicines that relax the surrounding muscles tightness and spasms are also advised for some patients. Steroids are sometimes prescribed for a short duration. Treatment with cold or hot packs in the early stages of injury is common. Therapeutic exercises and massage are also effective (Klippel, 2008 [7]).

Healing of a herniated disc can be aided by changing lifestyle. Applying proper body mechanics to keep spine safe during routine activities is the most important lifestyle changes for patient with prolapsed disc. This includes the use of proper positions and movements while lifting and carrying, standing and walking, and performing work duties. (Angel Rajakumari G, Soli T. K. and Malathy D (2015) [8]). Education plays a major role in life to ensure a Healthy life. Education can minimize the burden of disease allowing him to lead a peaceful life (Deyo and Bass, 2001 [9]). Teaching patients how to move safely with the least strain on the healing back is essential nursing role in caring for patients with disc prolapse and low back pain. This important role begins with assessment of clinical manifestations and ways the client has been managing those manifestations particularly pain. Also the nurse encourages the patient with low back pain to describe location, severity, duration, characteristics, radiation of pain and associated weakness in the legs. The treatment sessions help patients learn to move and do routine activities without putting extra strain on the back.

1.1 Significance of the study:

Disc Prolapse is rapidly emerging as a Global health problem among population and a major cause of medical expenses, absenteeism and disability. It threatens to assume a pandemic level by 2030. The prevalence rate of low back pain in a number of studies ranged from 22% to 65% in one year and the lifetime prevalence ranged from 11% to 84%. The most common age of presentation was 31-40 years (33.33%) and the incidence of lumbar disc prolapse above L4 was 13.3%.7 (Spangfor,2002 [10]; Helio, Knekt and Aromma, 2004 [11]; Weber 2005 [12]).

This indicates that there is need for more researching in this area for reducing back pain and disability by teaching patients correct body mechanics during performing all activities to reduce strain over the spin and increasing the recovery rate. Promoting exercise and emphasizing body mechanics are challenging opportunities for nurses. Nurses are committed to assist and support the patients to make lifestyle changes that improve the patient's health and well – being. So that the current study aimed to determine the effect of implementing an educational program about proper body mechanics on low back pain and activities of daily living among patients with disc prolapse

1.2. Aim of the study:

This study aimed to determine the effect of implementing an educational program about proper body mechanics on low back pain and activities of daily living among patients with disc prolapse

1.3. Research hypothesis:

The study group will have greater improvement in knowledge and activities of daily living total mean scores and reduction of low back pain than their control after participation in educational program about proper body mechanics in patient with disc prolapse.

II. Subjects and method

2.1. Research design:

To achieve the aim of this study, a quasi-experimental research design was utilized.

2.2. Setting:

This study was conducted at neurology department of Shebine El koom University and teaching hospital at Menofia governorate, Egypt.

2.3. Sample:

A purposive sample of 120 adult patients with a diagnosis of disc prolapse was selected based on power of 80 %. The required sample size was determined using Epi info software. The subjects were randomly assigned into study and control group 60 patients for each. Study group (I) received a structured educational program and planned clinical supervision about applying good body mechanics when performing activities of daily living in addition to routine hospital care. Control group (II) received only routine hospital care. All patients who had **the inclusion criteria were selected.** Being aged 21 – 60 years old with a diagnosis of disc prolapse and able to cooperate and communicate to participate in the study were considered as inclusion criteria.

Patients with complications from disk prolapse and undergoing surgical procedure were excluded from this study.

2.4. Tools of the study:

Based on the review of the related literature, three tools will be utilized by the researcher as the following:

Tool (I): Bio sociodemographic and knowledge assessment form: It was developed by the researcher after reviewing the related literature and consisted of three parts:

Part I: sociodemographic data including patient's age, sex, level of education, occupation, marital status...etc.

Part II: Medical data including past and present medical history, family history, previous hospitalization, weight and height and BMI.

Part III: Questions to assess patient's knowledge about the disease process as definition, causes, signs and symptoms, treatment and utilizing proper body mechanics while performing activities of daily living that consists of eleven questions.

Scoring system: The answer was classified as completely correct, incompletely correct, and incorrect answer. Each item in the sheet was given a score of two marks for complete correct answer, one mark for incomplete correct answer and zero mark for incorrect answer. Then all scores will be summed up and illustrated into three categories: a score range from 75% to 100% (from 16.5 to 22) illustrated that patients have good knowledge; while a score from 50% to less than 75% (from 11 to 16.5) illustrated satisfactory and a score less than 50% (less than 11) illustrated that patients have poor knowledge.

Tool II: Visual analogue pain scale:

It was developed by Bain et al., 2005 [13] and used by the researcher to assess the subject's level of pain intensity. The measurement was from zero to 10, in which zero mean no pain while 10 illustrate worst pain. The subject verbally select a value that is most in line with the intensity of pain that they have experienced in the last 24 hours. The scoring system consists of score from 1 to 3 denoted mild pain, a score from 4 to 6 denoted moderate pain and score from 7 to 10 indicated worst pain.

Tool III: Oswestry low back pain disability questionnaire:

It was developed by Fairbank and Pynsent, 2000 [14] and modified by the researcher to assess the impact of patient's low back pain on the activities of daily living. It includes 10 sections to describe the pain and its impact on the activities of daily living such as pain intensity, personal care, walking, lifting, sitting, standing, sleeping, sex life, social life and traveling.

Scoring system: Each section will be scored from zero to five with higher values indicating more severe impact on activities of daily living then all points in all sections were summed up and plug it into the following formula in order to calculate level of disability. Level of disability = Total point / 50 X 100 = % ranging as from 0% to 20% (minimal disability): The patient can cope with most living activities. Usually no treatment is indicated apart from advice on lifting, sitting and exercise. From 21% to 40% (moderate disability): The patient experiences more pain and difficulty with sitting, lifting and standing. Travel and social life are more difficult and they may be disabled from work. Personal care, sexual activity and sleeping are not grossly affected. From 41% to 60% (sever disability): Pain remains the main problems in this group and activities of daily living are severely affected. From 61% to 80% (crippled): Back pain impinges on all aspects of the patient's life. From 81% to 100%: These patients are either bed bounds or exaggerating their symptoms.

2.5. Data collection methods (procedures)

- Ethical Consideration: Permission to conduct the study was obtained from the hospital authorities of Menofia University Hospital which is affiliated to Menofia University and teaching hospital at Menofia governorate. Prior to the initial interview, the researchers introduced themselves to patients who met the inclusion criteria; each potential patient was fully informed with the purpose and nature of the study, and then an informed consent was obtained from participants who accept to participate in the study. The researchers emphasized that participation in the study is entirely voluntary and withdrawal from the study would not affect the care provided; anonymity and confidentiality were assured through coding the data.
- All the tools were translated to Arabic and tested for clarity and relevance by a panel of 3 experts in medical – surgical nursing and validity was ensured. Moreover, every question in each study tool was tested for reliability. This was performed by asking twice so as to compare the consistency of answers produced for the same question by the same respondent. Accordingly, the necessary adjustments were carried out.
- Pilot Study: A pilot study was carried out on 10 % of patients representing the study sample to test the feasibility and clarity of the used tools; modifications were done based on the results. The sample included in the pilot study was excluded from the final study sample.
- A purposive sample of 120 adult patients with a diagnosis of disc prolapse was participated in the study. The study sample was randomly assigned alternatively into two equal groups 60 patient for each (study and

control). The Study group (I): Received educational program about applying proper body mechanics when performing activities of daily living in addition to routine hospital care. Control group (II): Received only routine hospital care. The researcher deal with the control group first to prevent result contamination.

- The study was conducted in four phases namely: assessment, planning, implementation and evaluation.
- **Assessment phase:** Base line assessment of patient's sociodemographic, medical data and knowledge about disc prolapse was performed using tool (I). Also subjects of all groups were assessed for level of low back pain and activities of daily living using tool (II) and (III).
- **Planning phase:** The researcher went through extensive literature review to design an educational program about proper body mechanics for patients with disc prolapse based on needs identified in assessment phase. Goals, priority of care and expected outcomes were formulated and taking first in consideration. Experts in nursing and medical fields in general and neurological management were sought to ensure content comprehensiveness, clarity, relevancy and applicability. Also an illustrative colored booklet was prepared to be distributed to each patients of the study group as a guide for all of pertinent data related to intervention.
- **Implementation phase:** In this phase the educational program was provided for study group patients only and their relatives in neurology department. The educational program has been implemented for patients in terms of theoretical and practical part during their hospitalization hours. An oral instruction as a method of teaching supported with booklet was used to introduce the theoretical part, while demonstration and redemonstration was used for the practical part. There were a total of 4 sessions each one for 45 minutes. Each educational session had a maximum 6 patients and 6 accompanying persons. Educational sessions were held for a week. At the start of the program each patient obtained a copy of a simplified booklet that included information about disease and proper body mechanics with some illustration pictures. **In the first 2 sessions** the investigator started to establish rapport with patient, then verbal instructions about disease process, preventive measures, and measures to enhance coping and medication used was provided to patient and available family members. These instructions were supplemented by pictures and videos about proper body mechanics as an illustrative guide for more clarification to patient. **In the second 2 sessions** the interventions included demonstration and return demonstration about the techniques of applying proper body mechanics such as standing, sitting, walking, pick up an object, reaching to higher object and lying down while performing all activities of daily living. The patients were checked for acquisition of knowledge and practice. Patients were allowed to redemonstrate the skill several times until the researcher made sure it was successfully mastered through observational checklist. Each patient of study group was contacted at least 2 times / week for about 2 months during patient hospital stay, and after discharge through telephone or direct contact in outpatient clinics during follow up to reinforce provided knowledge and skills and to respond to their questions if any. The control group were exposed only to routine hospital care
- **Evaluation phase:** Each patient of the study and control group was evaluated two times: The first evaluation is in the assessment phase using tools I, II and III. The second evaluation was done 2 month post implementation of the program of body mechanics by pointing out the same tool. All subjects of both groups were assessed for their knowledge about disc prolapse and applying body mechanics, level of low back pain intensity and disability.

2.6 Statistical analysis:

Data were collected, tabulated, statistically analyzed using an IBM personal computer with Statistical Package of Social Science (SPSS) version 20 where the following statistics were applied.

1. Descriptive statistics: in which quantitative data were presented in the form of mean (\bar{X}), standard deviation (SD), range, and qualitative data were presented in the form numbers and percentages.

2. Analytical statistics: used to find out the possible association between studied factors and the targeted disease. The used tests of significance included:

***Chi-square test (χ^2):** was used to study association between two qualitative variables.

***Student t-test:** is a test of significance used for comparison between two groups having quantitative variables. P value of >0.05 non-significant, P value of <0.05 significant, P value of <0.001 highly significant.

III. Results

The study came up with the following results:

3.1- Subjects' Characteristics:

Table (1) presents subjects' characteristics of the studied groups. The study results revealed that the majority of study and control group were males (88.3% and 85.0% respectively), their mean age were (42.4 \pm 9.82) and (41.5 \pm 8.24). The majority (85.0% and 90%) were married and coming from rural regions (56.7% and 70.0% respectively). In relation to educational level, the highest frequency (43.3% and 36.7% respectively) had secondary education followed by (30.0% and 33.3% respectively) who were illiterate. As regards

occupation, higher percentages (55.0% and 51.7%) were working in heavy duty work; followed by (33.3% and 31.7%) were governmental employee.

3.2- Medical data of the studied groups:

Table (2) presents medical data of the studied group. About half of study and control groups (46.7% and 51.7% respectively) admitted hospital because of lifting heavy objects. The majority of study and control group (75%, 78.3% respectively) didn't have chronic disease and were smoking (71.7% and 68.3% respectively) for study and control group. Their mean height were (170.37 + 6.87) for study group and (169.37 ± 6.80); and their weight mean were (81.5±5.44 and 80.9±6.95 respectively) for study and control group.

3.3- knowledge assessment of studied sample:

Table (3) presents knowledge assessment about disc prolapse and body mechanics at pre and post teaching among studied group. The majority of study and control group presented poor knowledge at pre-teaching (93.3% and 91.7% respectively). While at post teaching the majority of the study group presented good knowledge (61.7%) and control group presented poor knowledge (56.7%). There were statistically significant difference between study and control group between mean of total knowledge score at post teaching (t-test=5.29, P=0.001)

3.4- Back pain and its influence on activities of daily living of studied sample:

Table (4) presents total pain score pre and post teaching among studied group. It was showed that the majority of study and control group had severe pain at pre- teaching (63.3% and 73.3% respectively). There was no statistically significant difference between mean pain score among study and control group at pre- teaching as t-test=0.598 with p>0.05. While at post teaching more than half of the study group had moderate pain (56.7%) while about half of the control group had severe pain (48.3%). There was highly statistically significant difference between mean pain score among study and control group at post- teaching (t-test=5.30 with p<0.001). Table (5) presents Total Oswestry score at pre and post teaching among studied group. It was showed that the majority of study and control group had moderate disability (71.7% and 63.3% respectively) , there was no statistically significant difference among study and control group regarding to Oswestry Low Back Pain Disability Questionnaire at pre- teaching ($\chi^2=1.44$ with p>0.05). While at post- teaching the study group had (45% minimal disability, 50% moderate disability and 5% sever disability) and control group had (11.7% mild disability, 71.7% moderate disability and 16.7% severe disability). There was highly statistically significant difference among study and control group regarding to Oswestry Low Back Pain Disability Questionnaire at post- teaching ($\chi^2=17.8$ with p=0.001)

Table (6) presents a marked decrease in the mean score for all variables of Oswestry Low Back Pain Disability Questionnaire (OLBPD) for study group in post- teaching compared to their control. A high significant difference between study and control group regarding to total score of Oswestry Low Back Pain Disability Questionnaire (t-test=5.32 at p<0.001).

Table (1): Distribution of patients of both groups (study and control) in relation to socio demographic characteristics of studied group (N=120):

Socio demographic Characteristics	Study (N=60)		Control (N=60)		χ ² p value
	No.	%	No.	%	
Age / years ($\bar{X} \pm SD$)	42.4±9.82		41.5±8.24		0.543* 0.588(NS)
Gender :					
- Male	53	88.3	51	85.0	0.288
- Female	7	11.7	9	15.0	0.591(NS)
Residence:					
- Urban	26	43.3	18	30.0	2.29
- rural	34	56.7	42	70.0	0.130(NS)
Level of education:					
- Illiterate	18	30.0	20	33.3	1.68
- Read and write	4	6.7	2	3.3	0.793(NS)
- Primary education	5	8.3	7	11.7	
- Secondary education	26	43.3	22	36.7	
- Higher education	7	11.7	9	15.0	
Marital state:					
- Single	2	3.3	3	5.0	1.90
- Married	51	85.0	54	90.0	0.592(NS)
	5	8.3	2	3.3	

- Widow	2	3.3	1	1.7	
- Divorced					
Occupation :					
- Heavy work	33	55.0	31	51.7	2.15
- Employee	20	33.3	19	31.7	0.541(NS)
- Not work	0	0.00	2	3.3	
- House wife	7	11.7	8	13.3	

*t-test significance P value<0.05 (NS): non -significant

Table (2): Number and percentage distribution of patients of both groups (study and control) based on Medical data of studied group (N=120):

Medical data	study (N=60)		Control (N=60)		χ ² p value
	No.	%	No.	%	
Cause of back pain:					
- Falling	5	8.3	4	6.7	0.781
- Car accident	1	1.7	2	3.3	0.854(NS)
- Heavy lifting	28	46.7	31	51.7	
- Incorrect movement	26	43.3	23	38.3	
Smoking:					
- Yes	43	71.7	41	68.3	0.195
- No	17	28.3	19	31.7	0.690(NS)
Other diseases:					
- Yes	15	25.0	13	21.7	0.186
- No	45	75.0	47	78.3	0.666(NS)
Weight ($\bar{X} \pm SD$)	81.5±5.44		80.9±6.95		0.482* 0.630(NS)
Height ($\bar{X} \pm SD$)	170.37 ± 6.87		169.37 ± 6.80		0.801* 0.425

*t-test significance P value<0.05 NS: non-significant

Table (3): Knowledge assessment pre and post teaching among both studied groups (N=120):

Knowledge assessment	Study (N=60)		Control (N=60)		χ ² p value
	No.	%	No.	%	
Pre					
- Poor	56	93.3	55	91.7	0.120*
- Satisfactory	4	6.7	5	8.3	0.729(NS)
- Good	-	-	-	-	
Post					
- Poor	0	0.0	34	56.7	65.4
- Satisfactory	23	38.3	24	40.0	0.001(HS)
- Good	37	61.7	2	3.3	

*Fisher exact test significance P value<0.05 NS: non-significant HS: highly significant

Table (4): Pain scores pre and post teaching among both studied groups (N=120):

Total pain score	Study (N=60)		Control (N=60)		χ ² p value
	No.	%	No.	%	
Pre					
- Mild	0	0.0	1	1.7	2.76
- Moderate	22	36.7	15	25.0	0.251(NS)
- Sever	38	63.3	44	73.3	
Pain pre ($\bar{X} \pm SD$)	7.35±1.40		7.50 ± 1.34		0.598* 0.551
Post					
- Mild	14	23.3	5	8.3	12.3
- Moderate	34	56.7	26	43.3	0.002(S)
- Sever	12	20.0	29	48.3	

Pain post ($\bar{X} \pm SD$)	4.36±1.56	5.86±1.53	5.30* 0.000(HS)
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*t-test Significance P value<0.05 NS: non-significant S: significant

Table (5): Total Oswestry scores pre and post teaching among both studied groups (N=120):

Total Oswestry score	Case (N=60)		Control (N=60)		p value
	No.	%	No.	%	
Pre					
- Minimal disability	3	5	6	10	1.44
- Moderate disability	43	71.7	38	63.3	0.486(NS)
- Sever disability	14	23.3	16	26.7	
Total Oswestry pre ($\bar{X} \pm SD$)	38.95±8.54		39.41±10.37		0.269* 0.788(NS)
Post					
- Minimal disability	27	45	7	11.7	17.8
- Moderate disability	30	50	43	71.7	0.001(HS)
- Sever disability	3	5	10	16.7	
Total Oswestry post ($\bar{X} \pm SD$)	28.06±8.87		37.36±10.30		5.32* 0.000(HS)

*t-test Significance P value<0.05 NS: non-significant S: significant

Table (6): Total mean scores of Oswestry Low Back Pain Disability Questionnaire post teaching among both studied groups (N=120):

Oswestry variables	Study (N=60) ($\bar{X} \pm SD$)	Control (N=60) ($\bar{X} \pm SD$)	t-test	p value
Pain intensity	2.92±1.18	3.87±1.17	4.42	0.000(HS)
Personal care	2.93±1.52	4.02±1.43	4.00	0.000(HS)
Walking	2.45±0.87	3.30±1.03	4.88	0.000(HS)
Lifting	3.33±1.27	4.23±1.24	3.92	0.000(HS)
Sitting	2.35±0.87	3.15±0.98	4.68	0.000(HS)
Standing	2.90±1.05	3.65±1.19	3.65	0.000(HS)
Sleeping	2.35±1.00	3.07±0.99	3.93	0.000(HS)
Sex life	3.25±1.58	4.00±1.24	2.88	0.005(S)
Travelling	2.37±0.64	3.86±1.11	9.06	0.000(HS)
Social life	3.15±1.36	4.20±1.10	4.64	0.000(HS)
Total Oswestry	28.06±8.87	37.36±10.30	5.32	0.000(HS)

Significance P value<0.05 S: significant HS: highly significant

IV. Discussion

Disk prolapse is the most common cause of intolerable low back pain and the potential for serious adverse neurological consequences. This study aimed to determine the effect of implementing an educational program about proper body mechanics on low back pain and activities of daily living among patients with disc prolapse. The result of this study verifying the hypotheses and showed that there was significant improvement of knowledge and activities of daily living total mean scores and reduction of low back pain among patients with disc prolapse post implementing educational program about using proper body mechanics.

Regarding sociodemographic characteristic and medical data of studied groups.

The current study findings showed that the majority of study and control group were males. This could reflect that male population has low back pain because of the nature of their work requiring hard physical labor. This finding is consistent with Ibrahim (2006) [15] who found that the prevalence of low back pain affects a large proportion of the male population. The present study also, revealed that the mean age of all groups was (42.4 ±9.82) and (41.5 ±8.24). This could be explained that this age represent working-age population. This finding was in line with Kamel, et al. (2003) [16] study of workers of Egyptian Electric and Plastic Company that the highest prevalence of low back pain was among age groups of 40 to 50 years. While, Harwood (2013) [17] reported that low back pain can be experienced by people in all age groups. Moreover McGregor et al. (2010) [18] explained that after the age of thirty the intervertebral disks tend to lose their moisture content and become thinner as people get older and become prone to injury. Concerning educational level and occupation, the current study denoted that about half of the study groups have secondary level of education and doing a heavy work that involve lifting heavy objects, twisting and pending positions that increase the risk of low back

pain. This was supported by Schelerud (2006) [19] and Manusov (2012) [20] they were concluded that there is a clear relationship between back disorders and physical load imposed by manual material handling, frequent bending and twisting, physically heavy work. In relation to residence more than half of the study groups were from rural area, this finding is consistent with Wein (2000) [21], Lahelma, Laaksonen, Lallukka and Martikainen (2012) [22] and Abd Elwahhab (2015) [23]. They observed that low back pain is most common in subjects from rural area that may be due to their work requirements which need more bending, twisting back and lifting heavy objects. The study finding denoted also that about half of the study groups reported that lifting heavy objects was considered the main cause of low back pain followed by incorrect movement. This finding is supported by Evans, Lissner (2000) [24] and Seif Elnaser (2008) [25]. They reported that most factors aggravating low back pain were lifting heavy object that increases strain on the muscles of lower back. *Regarding smoking* the study finding showed that about two third of study groups were smokers. This finding was in consistent with Kwon et al. (2006) [26] and Morrison (2010) [27]. They reported that smoking increase the risk of disc prolapse because it decreases oxygen supply to the disc and causes more rapid degeneration that contribute to increased level of back pain.

Regarding knowledge about disc prolapse and body mechanics among study groups:

The present study showed that knowledge scores among study group were significantly higher than control group post-educational program. These findings were in agreement with Ibrahim and Elsaay, 2015 [28] they reported that the mean knowledge scores of the nurses immediately and 3 months after the intervention were higher than their pre training scores, and this difference was statistically significant. On the same line Dammer, Koehler (2002) [29] and Prasad (2010) [30] stated that there was significant improvement of knowledge about prevention of intervertebral disc prolapse among moderate workers after implementation of structured teaching program than pre intervention.

Considering back pain and its influence on activities of daily living of studied groups:

The current study revealed that pain intensity among the study group were significantly decreased than control group post-education (after 2 month) post utilizing body mechanics. On the same line study by Angel Rajakumari et al.(2015) [8] revealed that the spinal exercises and body mechanics was effective and had significant reduction of low back pain among post-menopausal women compared to pretest level of low back pain. These findings may be explained by that utilization of proper body mechanics when performing activities of daily living prevent faulty movement and straining of the spin which promote healing of the herniated disc, prevent complications and reduction of low back pain intensity. Another logical explanation of this results is related to significant improvement in knowledge about disc prolapse and body mechanics among study group post education .These findings were in agreement with Dammer , Koehler (2002) [29] and Prasad (2010) [30] and Angel Rajakumari et.al. (1995) [31]. Education program consisting of information about body mechanics and healthy lifestyle can reduce the risk of injury to the back and disability particularly in high risk wards such as amputee, orthopedic, neurology and rheumatology patient population. On the contrary Karahan and Bayraktar (2004) [32] concluded that some of the nurses did not use body mechanics correctly and the majorities have low back pain. From this study we can concluded that there is a need for educating the patients regarding proper standing, sitting, walking, lying down and lifting techniques while performing all activities of daily living and this will help the persons to adopt correct body mechanics in working place and at home.

V. Conclusions

The overall findings in the present pioneer study revealed that educational program about using proper body mechanics was effective and had brought about significant improvement of knowledge and activities of daily living and reduction of low back pain among patients with disc prolapse.

VI. Recommendations for practice and research

1. Supervised health teaching program should be carried out for all patients with disc prolapse in neurosurgery outpatient's clinics about importance of using proper body mechanics for pain reduction and activities of daily living improvement.
2. The presence of nurse educator to improve patients' knowledge about disc prolapse, causes and how to perform proper body mechanics for reducing back pain and prevent complications is essential for these patients.
3. A simplified and comprehensive booklet should be available for all patients with disc prolapse. This booklet should include a clear, brief and simple explanation about using proper body mechanics when performing activities of daily living for pain reduction.
4. Replication of the study using a larger probability sample from different geographical areas to help for generalization of the results.

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