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Prevalence of Functional Outcomes in Low Back Pain

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Abstract: ***Low back pain affects almost all of the individuals once in their life and almost forty percent are affected by it. It can be acute or chronic with acute pain remaining for less than six weeks and chronic pain longer than twelve weeks..The objective of this study is to measure the functional status of patients of nonspecific low back pain. This study will be helpful for the patients in this regard that they can do their ADLs in easy way and without harming them in various activities. This is the cross sectional survey in which 215 patients was taken by using non probability convenience sampling. Data was collected by using the oswestry disability questionnaire in which there were ten sections and each section consists of maximum score of five and total score was fifty. The result of this study shows mean age and standard deviation of 44.1 ±9.7. Also the results show the positive correlation between age and disability level in which disability in females increases with age. In this survey also the frequencies and percentages of ten variables are also calculated and average disability score of both genders have also calculated which is approximately 20. Form the results of this study it can be concluded that with the age the disability level increases. In our survey we have find that in men pain intensity is most affected and their sexual life is least affected and in women have the most problem in their standing and least affected was their travelling.***

Keywords: Low back pain, Oswestry disability questionnaire, Activities of daily living (ADLs), Disability level, Functional outcomes and back pain

1. Introduction

1.1 Overview

Non specific back pain can be described in the same way, "Pain without recognized pathology". Pain localized below twelfth rib and above inferior gluteal folds with or without leg pain. Mostly the patients with LBP are with non specific reason but only ten percent cases are specific [(1)]. Having a very high prevalence rate, fifth most common problem to visit physician and second most common symptomatic reason to go to physician makes LBP a very common problem [(2, 3, 4)]. Mostly, acute LBP is self-recovering. Persistent back pain after acute period is seen in one third of patients and activity limitation in one in five. [(5,6)]. Appropriate diagnostic and intervention usage lacks consensus even after having various management procedures available [(7,8)] .Although there is a distinct difference in cost and specialties of treatment of LBP between U.S and U.K still but outcomes are similar.[(9, 10)] Historically, uncorroborated treatment methods have been used for LBP management, which most of the time showed slight benefits [(11,12)]. Mechanical causes of low back pain are disc degeneration in which nucleus pulposus is lost and height of the disc is reduced, shear forces at end plates is raised and small fractures can lead. Due to herniation in the disc bacteria which are anaerobic enter the disc and causes low toxic disease. [(13)] Risk factors of low back pain can be reduced through education, mechanics of the body should be teached and termination of smoking plan should be used. [(14)] Continuous smoking in youth leads to low back pain. [(15)] Spare time, prolonged sitting and standing are not related to low back pain. [(16)] If initial analgesics does not respond then skeletal muscle relaxants are used to handle LBP. During clinical practice cognitive behavioral therapy and routine physiotherapy exercises for managing LBP have more efficacy than only physical therapy exercises. [(17)] Evidence bases studies suggests that various forms of manual therapies along with exercises as well as usual medical care should be used.[(18)] Patient becomes disable due to back pain and it becomes difficult to perform the activities of daily life . Functional status is the daily activities of patients and we have studied the potential limitations of patients in ADLs because of LBP.

Instead of having greater resources for spinal pathologies the problems regarding non-specific low back pain are rising to a great extent in West. Paradoxically, health care instead of providing solution to the problems has played a role otherwise. Having a distinct difference in medicare for the low back pain in US and UK none of the systems delivered evidence based practice. Despite of availabilities to deal with LBP in US not a significant no of patients go for specialized care but its slight opposite in UK. Mentioning these disparities in health care of these two countries there are no difference in outcomes. Concluding, people are not satisfied with either of the system. [(19)]

Eighty percent of the people suffer from low back pain around sixty years of age and twenty percent did not take a serious notice of it. Women have more back pain around fourty years of their age and men have the same problem at fifty years. Mostly the back pain is for short duration. Studies also show the recurrence of back pain and every year fourteen percent of aged populations suffer from back pain for one month which do not affect the sleep and activities of

daily life of patients. One percent of community is indefinitely incapacitate due to back pain and for a moment one to two percent cripple from daily job. Studies exhibit that around five percent of each one of the youngster report back pain that inhibit their tasks and twenty seven percent have back pain now and then. [20]

The five lumbar vertebrae are the most massive in the vertebral column. The vertebral bodies are kidney shaped and are solidly constructed to participate in weight bearing of the superincum-bent vertebral column. The posterior arches are strongly developed with large spinous processes projecting directly posterior from the vertebral bodies. The transverse processes are quite large and those at L3 are usually the broadest. The lumbar lordosis has an anterior convexity with L3, usually the most anterior segment. L4 and L5 have limited motion because of the strong attachments of the iliolumbar ligaments to the osseous pelvis; therefore, L3 becomes the first lumbar segment that is freely movable. [21] The articular pillar has a superior zygapophysial joint that faces posterior and medially and an inferior zygapophysial joint that faces laterally and anteriorly. The superior facet is somewhat concave and the inferior facet somewhat convex. [22] The facing of the lumbar zygapophysial joint is variable and asymmetry is quite common. Because of the shape of the zyga-pophysial joints, only a small amount of axial rotation movement is present. When the plane of the zygapophysial joints is more sagittal, there appears to be increased stability of the lumbar spine. The more coronal facing the lumbar zygapophysial joints are the more mobility and potential hyper mobility appear to be present. The presence of asymmetry, with one zygapophysial joint being sagittal and the other being coronal, appears to increase the risk of disc degeneration and herniation, with a tendency toward herniation on the side of the coronal facing facet. [23]

Asymmetric zygapophysial joints also appear to infl uence the motion characteristics of the segment and are fre-quently found in patients with recurrent and refractory dys-functional problems in the lumbar spine. Between the superior and inferior zygapophysial joints lies a structure called the pars interarticularis. Disruption through the pars without separation is called spondylolysis. With separation at this level, the body, pedicle, and superior articular pillar slide anteriorly while the spinous process, laminae, and inferior articular pillar are held posteriorly, resulting in spondylolisthesis.The lower lumbar region is frequently the site of develop-mental variations. In addition to asymmetric development of the zygapophysial joints, other variations in the posterior arch occur resulting in unilateral and bilateral changes in size and shape of the transverse process, culminating in a transitional lumbosacral vertebra that may have lumbar or sacral characteristics, (previously referred to as lumbarization and sacralization). Failure of closure of the posterior arch is not infrequently seen and occasionally, the spinous process of L5 is missing. Absence of these structures must result in alteration of the usual ligamentous and muscular attachments in the region.

Flexion and extension takes places in sagittal plane, side bending occurs at coronal plane and rotation through transverse plane. Range of flexion and extension at higher levels of lumbar spine is twelve degree which increases one to two degree each segment with extreme movement of twenty to twenty five degree between fifth lumber and first sacral vertebrae. Extension motion is opposite to those of flexion. Posterior rolling and gliding of vertebrae as well as posterior and inferior motion of zygapophysial joints occur in extension.

Almost thirteen degree of axial rotation takes place on each side. Most segmental rotation that is five degree takes place at L5 and S1 vertebrae. Side bending is intricate and varying motion requiring side motion side bending and rotation at interbody joints and various motions at zygapophysial joints. [25]

Back injuries account for almost one third of all lesions and nearly one million declare in United States every year. Round about one fifty million days of work are affected every year which affects seventeen percent of total American employees. The occurrence rate of these injuries differs and it relies on the mode of work done. Back injury ratios are less in the departments which have less demanding activity. [26]

1.2 Objectives

1. To determine the functional status of patients with nonspecific low back pain.
2. To find the correlation between age and disability level.

1.3 Rationale

1. With this study the functional status of patients with nonspecific low back pain can be measured.
2. This study will be helpful for the patients in this regard that they can do their ADLs in easy way and without harming them in various activities.
3. It will save their time and limit their visits to outdoor so it will be cost beneficial too.
4. Their life style will become healthy and comfortable.
5. Level of disability of patients with low back pain can be measured.

1.4 Operational Definitions

1.4.1 Low Back Pain

The low back pain specifies pain experienced by patients of both sexes in lower part of lumbar spine also it may be radiating and localized in nature, with or without motor and sensory signs and symptoms.

1.4.2 Oswestry Scale

The standardized scale used for evaluation and reevaluation of low back pain and its modification can be used also by the permission of its founder.

1.4.3 Patient questionnaires

Are the forms that are used to take subjective, objective and personal history of all the patients who have participated in this study.

1.5 Materials and Methods

1.5.1 Study Design
It is a Cross sectional survey and it is used because only the prevalence of a certain parameter is being estimated in the general population.

1.5.2 Setting
- Rasheed Hospital DHA Lahore
- National Hospital DHA Lahore
- Canada Orthopedic and Rehabilitation Center Lahore/
- KKT PAKISTAN

1.5.3 Study Population
Male and Female patients coming with the complaint of non specific low back pain.

1.5.4 Duration of Study
The study took 6 months from November 2013 to February 2014 after approval from advance research committee

1.5.5 Sample size
215 patients were selected for the survey by using taking the point prevalence of 17% of low back pain by using the formula n= $(1.96)^2$ P (1-P)/ $(.05)^2$

1.5.6 Eligibility

Inclusion Criteria
All the patients with non specific low back pain that is without any known cause.

Exclusion Criteria
All the patients other than non specific low back pain such as degenerative disc disease ,spinal stenosis, spondylolisthesis, deformities of the spine i.e. kyphosis ,lordosis and scoliosis, etc were not included in the study.

1.5.7 Data collection
We have used Oswestry Disability Questionnaire because it is used to record the functional activities of patients. Non probability convenience sampling was used in this survey.

1.5.8 Ethical consideration
The ethical committee and Department of Rasheed Hospital and National Hospital and KKT/CORC approved to conduct the study in College .Only those students were included in the study who signed the written consent. All the personal information of participants were kept hidden

1.5.9 Statistical Procedure
We have used SPSS 20 and Microsoft excel to analyze the data because it is easy to use .It can effectively manage your data. Secondly it offers a great range of methods, graphs and charts.

2. Results

Gender of the patient

	Frequency	Percent	Cumulative Percent
Male	110	51.2	51.2
Female	105	48.8	100
Total	215	100	

Intensity of pain

	Frequency	Percent	Cumulative Percent
no pain	9	4.2	4.2
mild pain	53	24.7	28.8
moderate pain	78	36.3	65.1
fairly severe pain	41	19.1	84.2
very severe pain	34	15.8	100
Total	215	100	

Personal Care

	Frequency	Percent	Valid Percent	Cumulative Percent
Normal personal care	16	7.4	7.4	7.4
Personal care with pain	48	22.3	22.3	29.8
Slow personal care with pain	76	35.3	35.3	65.1
Personal care with little help	66	30.7	30.7	95.8
Personal care with help	9	4.2	4.2	100
Total	215	100	100	

Lifting Capacity

	Frequency	Percent	Valid Percent	Cumulative Percent
Normal lifting capacity	9	4.2	4.2	4.2
Lifting with extra pain	59	27.4	27.4	31.6
No heavy lifting off the floor due to pain	81	37.7	37.7	69.3
Light to medium weight lifting capacity	33	15.3	15.3	84.7
Very light weight lifting capacity	33	15.3	15.3	100
Total	215	100	100	

Walking Capacity

	Frequency	Percent	Valid Percent	Cumulative Percent
Normal walking	15	7	7	7
Walking not more than 2 km	32	14.9	14.9	21.9
Walking not more than 1 km	96	44.7	44.7	66.5
Walking not more than 500 meters	53	24.7	24.7	91.2
Walk with stick or crutches	19	8.8	8.8	100
Total	215	100	100	

Sitting Capacity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Normal sitting	13	6	6	6
	Only sit on favourite chair	36	16.7	16.7	22.8
	Sitting not more than one hour	89	41.4	41.4	64.2
	Sitting not more than 30 minutes	69	32.1	32.1	96.3
	Sitting not more than 10 minutes	8	3.7	3.7	100
	Total	215	100	100	

Standing

		Frequency	Percent	Valid Percent	Cumulative Percent
	normal standing	6	2.8	2.8	2.8
	standing with pain	38	17.7	17.7	20.5
	standing less than 1 hour due to pain	95	44.2	44.2	64.7
	standing less than 3 minutes due to pain	50	23.3	23.3	87.9
	standing less than 10 minutes due to pain	26	12.1	12.1	100
Valid	Total	215	100	100	

Sleeping Habits

		Frequency	Percent	Valid Percent	Cumulative Percent
	normal sleeping	14	6.5	6.5	6.5
	sleep occasionally disturbed	63	29.3	29.3	35.8
	sleep less than 6 hours	75	34.9	34.9	70.7
	sleep less than 4 hours	34	15.8	15.8	86.5
	sleep less than 2 hours	29	13.5	13.5	100
Valid	Total	215	100	100	

Sex Life

		Frequency	Percent	Valid Percent	Cumulative Percent
	normal sex life	36	16.7	16.7	16.7
	normal sex life with extra pain	51	23.7	23.7	40.5
	sex life nearly normal but very painful	70	32.6	32.6	73
	severe pain during sex	45	20.9	20.9	94
	no sexual life at all	13	6	6	100
Valid	Total	215	100	100	

Social Activities

		Frequency	Percent	Valid Percent	Cumulative Percent
	normal social life	15	7	7	7
	normal social life with increase pain	60	27.9	27.9	34.9
	no effect on social life	69	32.1	32.1	67
	restricted social life	71	33	33	100
Valid	Total	215	100	100	

Travelling

		Frequency	Percent	Valid Percent	Cumulative Percent
	normal travelling	11	5.1	5.1	5.1
	travel with extra pain	81	37.7	37.7	42.8
	can manage more than 2 hours travelling	72	33.5	33.5	76.3
	cant travel more than 1 hour	33	15.3	15.3	91.6
	cant travel more than 30 minutes	18	8.4	8.4	100
Valid	Total	215	100	100	

Disability Level	
Minimal	16
Moderate	104
Severe	77
Crippled	18
Bed-bound	0
Total	215

Correlation of Disability with Age and Average Disabilty Level

Table 5.13: (a) & (b)

Correlation of Disability with Age	
Male	0.4990519
Female	0.5185075
Total	**0.4720638**

Average Disability Score by Gender	
Male	20.490909
Female	20.219048
Total	**20.35814**

The results shows positive correlation between age and disability level that with increasing age the disability level in females is increased than males. The average disability score of males and females was 20.35.

3. Conclusion

Mean age and standard deviation calculated for 215 patients that participated in the survey was 44.1±9.7. A total of 110 male and 105 females participated in survey. Most of the patients were moderate disable that is 48.4%, 35.8 % were severe disabled, 8.4 % were crippled, and minimal disability was seen in 7.4 % and there was no patient that was bed bound. Regarding pain intensity most of the patients that are 36.3% of patients have moderate pain followed by 24.7 % of patients with mild pain with no patient having worst pain. When patients were inquired about personal care 35.3% of patients have slow personal care with pain followed by 30.7 % of patients who can perform their personal care but with little help. 37.3% of patient can't lift heavy weights off the floor and 27.4% of patient can lift weights but with extra pain. Patients who can't walk more than 1 km were 44.7 %. 24.7% of patients can't walk more than 500 meters. 8.8% of patient can manage their live with crutches and stick. Patients who can't sit more than one hour were 41.4% and who can't manage sitting more than 30 minutes were 32.1 %. When asked about their standing activity 44.2 % of patient has less than one hour sitting and 2.8% patients can

stand normally. Patients who have disturbed sleep that is less than 6 hours were 34.9% followed by 34.9% whose sleeps were occasionally disturbed. Sexual life was nearly normal but very painful in 32.6% patients and 23.7% of patients have normal sex life but with extra pain and also the results show that male have very less problem in sexual life. Patients which have restricted social life were 33% and 32.1 % have no effect on their social life.33.5% of patients can manage their travelling which is more than two hours but 37.7 % can travel but with extra pain. The results also shows positive correlation between age and disability level that with increasing age the disability level in females is increased than males. The average disability score of males and females was 20.35.

4. Discussion

This study shows the functional status of people with low back pain and we highlight the activities of daily life by Oswestry Disability Scale. Purpose of study was to identify that which activity of people was affected most in local population with back pain and also to identify that how back pain can change the functional status of people in local population. Most of the population with back pain was male with ratio 256:212. Most of the patients show moderate disability level when rated on Oswestry Disability Scale. Standing activity was affected in most of the patients that were female. Sex life was least affected in patient with back pain in males. Most of the patients were from the age between 41 and 50 year. Results of this survey shows similar results and finding studies in literature and supporting that patient with back pain suffer a lot with their activities of daily life. In present population standing, walking, personal care and social activity of patients affected most. When treating patient with low back pain, standing activity should be addressed to make the patient functional. Study includes a wide range of functional activities and individual activity should be included in further studies. Further studies are needed to find best treatment in present patients that produce maximum outcome in to improve the standing of the patients. Further studies also needed to confirm that which activity is affected most with more specific and other populations and areas.

5. Recommendations

From the above study we have concluded the positive correlation between age and disability level and it shows that with increasing age in females their disability is increased. Also in males pain intensity is most affected and their sexual life is least and in females standing is the biggest problem and they can manage their travelling with ease. This survey was conducted in major rehabilitation centers of Lahore so it is recommended that the survey should be conducted in large areas of Pakistan so that these results can be applicable to a large community. Further studies are needed to find best treatment in present patients that produce maximum outcome in to improve the standing of the patients. Further studies also needed to confirm that which activity is affected most with more specific and other populations and areas.

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