Correlation of Pain Intensity and Level of Disability with the Socio-demographic Characteristics in Patients with Chronic Mechanical Low Back Pain

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Abstract: Background: Mechanical low back pains are pains occurred due to an anatomic or functional abnormality in the spine that is not associated with inflammatory or neoplastic disease. Socio-demographic characteristics for chronic low back pain are important cause of disability. Disability can be defined as a restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. Subsequently, this interferes with quality of life and work performance with subsequent burden on a family and community. This study aims to describe the socio-demographic characteristics of patients with chronic mechanical low back pain and asses its relationship with pain intensity and level of disability. Patients with chronic mechanical low back pain who met inclusion criteria participated in this cross-sectional study. All demographic data were taken, and the patients have been classified according to their academic level, their social class according to national readership survey, assess pain severity according to visual analogue scale, and functional disability according to Quebec back pain disability scale. A significant association were found between the level of disability in chronic back pain and each of age, gender, BMI, educational level, residency place, job and type of work and associated comorbid illnesses. Chronic LBP intensity was associated with female gender, primary school education, manual workers and housewives, higher BMI, and disease duration of more than five years.

Keywords: Chronic Mechanical Low Back Pain, Socio-demographic Data, Pain Intensity, Disability Level

1. Introduction

1.1. Chronic Mechanical Low Back Pain

1.1.1. Definition and Epidemiology

Low back pain (LBP) is defined as "pain between the costal margins and inferior gluteal folds and is usually accompanied by painful limitation of movement. It is often influenced by posture and physical activities in most cases" [1].

Mechanical low back Pain (MLBP) is low back pain occurred because of a functional or anatomic abnormality in the spine that is not associated with inflammatory or neoplastic disease [2]. MLBP commonly increases with physical activity and upright posture and tends to be relieved by rest. MLBP accounts more than 95% of LBP, and degenerative change in the lumbar spine is the most common cause of MLBP [2]. Back pain can be classified according to the duration into a. Acute back pain: less than 6 weeks. b. Sub-acute back pain: between 6 and 12 weeks. c. Chronic back pain: more than 12 weeks [3].

The clinical course is benign for most of the patients, with 95% of those afflicted recovering within a few months of onset. However, some of them will develop chronic low back pain [1]. Chronic MLBP is a one of leading cause of morbidity and incapacity, being second only to headache in the scale of pain disorders [4].

Chronic MLBP is prevalent in many countries and is associated with loss of quality of life and considerable financial costs [5]. In the United States, for example, chronic mechanical LBP is the fifth most common reason for all

physician visits [6, 7]. Patients with chronic MLBP experience a massive disruption in their physical, social, mental, and occupational function, or increase in the level of pain [8].

Occupation-related factors considered the most significant risks associated with chronic mechanical LBP [9]. For instance, chronic mechanical LBP is the most common musculoskeletal problem in the workplace, and it is the main cause of work- related disability [10]. Certainly, this problem is associated with major costs in terms of worker disability and absenteeism [10]. Chronic mechanical LBP, for example, causes approximately 40% of sick absences from workplaces making it the second most common reason of work place absenteeism after the common cold [11].

Chronic MLBP is widespread in many developed countries with prevalence rates of 39% being reported in the general population in these societies [12]. WHO statistics indicate the increased prevalence rate of low back pain among the various social class [13].

1.1.2. Risk Factors of Mechanical Low Back Pain

Mechanical LBP is not a specific disease but rather a complaint that may be caused by many underlying problems of variable levels of seriousness [14]. MLBP can be classified as occupational, individual, or psychosocial factors [15]. Recently bio-mechanical models and genetic factors have contributed to understand the progress of back disorders that present as back pain [15].

Risk factors for developing chronic MLBP could be modifiable and non-modifiable. The non- modifiable factors include age, gender, prior history of LBP and major scoliosis, while the modifiable factors include obesity, sedentary lifestyle, smoking, parity, and drug dependence. Other modifiable factors are related to the occupation including poor posturing, twisting, bending, prolonged sitting, stooping, and lifting of heavy loads, sedentary work, job dissatisfaction, and psychological factors such as somatization disorder, depression, and anxiety [16]. Researchers have concentrated on both medical and non-medical factors for chronic MLBP such as socio-demographic factors because of its multifactorial nature [17].

1.1.3. Clinical Features

Mechanical LBP is usually nonspecific pain for ≥ 3 month that aggravated by activity and partially improved by rest associated with morning stiffness less than 30 minutes not associated with constitutional symptoms with or without radiation to lower limbs [18, 19]. The radiating back pain into the lower extremities suggest pseudo-claudication (neurogenic claudication) secondary to sciatica or spinal stenosis. The nature of pain is often shooting and sharp in nature, sometimes associated with sensory and/or motor deficits [20]. The pain is arises from the spines, intervertebral disks, or surrounding soft tissues which is caused by functional or an anatomic abnormality rather than inflammatory or neoplastic disease [21]. The most common cause of mechanical LBP is degenerative change in the lumbar spine [22]. Other common problems include spinal stenosis and disk herniation [23].

Typical physical findings are nonspecific, including paravertebral muscle spasms, muscular trigger points tenderness, tight hamstring muscles, restricted range of motion of the spine, aggravation of symptoms on flexion or extension and straight leg raising tests [24, 25]. In addition to a limited neurological examination focused on sensory, motor function and reflexes in the lower half of the body [26].

1.2. Disability in Chronic Mechanical Low Back Pain

Disability refers to "a restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being. Disability is a core issue in CLBP affecting physical performance and consequently work productivity" [27]. CLBP is leading cause of disability interferes with work performance and quality of life [28]. It is particularly important being responsible for completely disturbing patients' daily activities with subsequent burden on a family and community bases [29].

The impact of CLBP is strongly related to a patient's functional status such as sitting, standing, walking, getting dressed and cleaning. Physical and functional disabilities are concern in health care. Therefore, its assessment is widely accepted [30].

CLBP may cause more disability and negative impact on quality of life, especially in people who are suffering from physical diseases and concurrent mental illnesses [31]. The most common symptoms of LBP are pain and disability. Moreover, it has been suggested recently that many patients with CLBP have widespread pain [32, 33]. In general, disability from low back pain is highest in working age groups [34, 35].

1.3. Correlation of Socio-demographic Character with Chronic Low Back Pain Disability

Studies have found that the prevalence and intensity of back pain is associated with aging, female gender, as well as occupational and psychosocial factors [36]. In developed countries, modifiable determinants of back pain include obesity, smoking, lack of physical activities and depression. The studies have demonstrated that men older than 40 years with back pain have more negative impact on quality of life [36]. They provide evidence of inverse association between back pain and socioeconomic factors such as older age, education and higher income [36].

1.4. Aim of the Study

The aim of this study is to describe the socio-demographic characteristics of patients with chronic MLBP and examine its relationship with pain intensity and disability status.

2. Patients and Methods

2.1. Study Design and Setting

A cross sectional study was conducted at Rheumatology Unit of Baghdad Teaching Hospital / Medical City from November

2018 to April 2019, after approval of the study protocol by Committee of the Iraqi Board of Medical Specializations.

2.2. Patients Selection

Three hundred patients with chronic MLBP who attended the Rheumatology Unit in Baghdad Teaching Hospital and met inclusion criteria were recruited and asked to participate in the study after obtaining their informed consent.

2.2.1. Inclusion Criteria

Patients older than 18 years who had symptoms of chronic mechanical low back pain for more than 3 months duration were included. the patients diagnosed as MLBP which was proven by history, physical examination, and imaging modalities (X-ray and/or MRI).

2.2.2. Exclusion Criteria

Patients with one or more of the following criteria were excluded from the study:
a) Congenital disease of lumbar spine
b) Evidence of malignancy
c) Infectious and inflammatory disease
d) Patients with pregnancy
e) Suspicion of cauda-equina syndrome, or LBP surgical emergencies
f) Recent major trauma and fracture, patients who were severely ill and chair bounded, or unable to comprehend questions were excluded.

2.3. Data Collection

Data were collected using a data collection sheet containing a questionnaire (Appendix I).

The questionnaire prepared in three sections:

2.3.1. Section A

Focused on socio-demographic information including age, gender, marital status (single, married, divorced, widow), residency (rural, urban), educational level (illiterate, read and write, primary, secondary, college, higher education), smoking status (smoker, non-smoker, passive, ex-smoker), history of chronic illnesses (hypertension HT, diabetes mellitus DM, Ischemic heart disease IHD, etc.), employment status (employed, not employed), Type of work (manual, non- manual, house wife), and social class according to National Readership Survey (NRS) to (A, B, C1, C2, D, E) (Appendix II).

Anthropometric measurements included:
1. Height which was measured in centimetres to the nearest five millimetres in standing position, shoes removed with head supported against the wall.
2. Weight which was measured by kilogram (kg), the subject in heavy clothes and shoes were removed. Body mass index (BMI) was calculated by dividing weight in kilograms on height in squared meters (m²). Subjects were divided according to BMI into four categories [37]:
a. Underweight < 18.5 kg/ m².
b. Normal weight 18.5–24.9 kg/ m².
c. Overweight 25.0–29.9 kg/ m².
d. Obese ≥ 30.0 kg/m².

2.3.2. Section B

Answer to questions on LBP history such as duration for ≥3 months, use of physiotherapy, exercise, use of alternative medicine (acupuncture, herbal medicine, cupping), back surgery, different doctor visit, frequency of medication use, number of visit\one year, number of work leave/last year (work absence due to chronic MLBP was denoted as days of work loss and defined as the number of days of restricted routine activity or absence at workplace because of chronic MLBP occurring within the last year).

2.3.3. Section C

Focuses on back pain disability by measuring pain intensity using visual analogue scale (VAS), and disability which was assessed using Quebec back pain disability scale (QBPDS) (Appendix III).

Modified Arabic version were used in this study (Appendix IV).

The pain VAS is "a measure for pain intensity which has been widely used in diverse adult populations" [38]. The pain VAS is self-completed by the respondents. The respondents were asked to place a line perpendicular to the VAS line at the point that represents their pain intensity. The score is determined by measuring the distance millimetre (mm) on the 10-centimeters line scores from 0–100 using a ruler. A higher score indicates greater pain intensity: no pain (0–4 mm), mild pain (5–44 mm), moderate pain (45–74 mm), and severe pain (75– 100 mm) [38].

The QBPDS is used to measures the level of functional disability. QBPDS were published by Kopec et al in 1995 and 1996. Patients were asked to answer the QBPDS according to the difficulty they found to perform the activities currently. Items represent basic daily activities that patients with back pain might perceive hard to perform. The items involved 20 questions which were classified into 6 domains of activities affected by back pain:
a) Bed/rest (items 1–3)
b) Sitting/standing (items 4–6)
c) Ambulation (items 7–9)
d) Movement (items 10–12)
e) Bending/stooping (items 13–16)
f) Handling of large/heavy objects (items 17–20).

For each item, a 6 point Likert scale (0–5) to indicate the level of difficulty is used, where 0=(not difficult at all), 1=(minimally difficult), 2=(somewhat difficult), 3=(fairly difficult), 4=(very difficult) and 5=(unable to do).

Perceived disability reported as
a) Mild 0-9
b) Moderate 10-30
c) Severe 31-75
d) Very severe (extreme) 76-100 [39].

2.4. Limitations of the Study

The other associated factors of disability like depression,

anxiety, and fear avoidance not assessed in this study.

2.5. Statistical Analysis

The analysis of data was carried out using SPSS version 23. Number and percentage were used to express the categorical and mean±SD data. Anova, independent student test, chi-square test and Pearson correlation were used to confirm significance. Statistically significant reading is considered whenever the P-value was <0.05.

3. Results

A sample of 300 patients with chronic MLBP were included. The mean age of the studied sample was 49±11 years with age range of 18-70 years. More than 65% of the studied sample were female and 83.3% were married. The remainders belonged to other marital status (single, divorced, widow).

As to educational status, the highest percentage (31.3%) had primary education followed by secondary education (25%), college degree (16.3%), read and write (10%) and (17%) were illiterate.

Concerning BMI and smoking status, the results revealed that the mean BMI in the studied group was 30 kg/m². Nearly 20.7% of the patients were current smokers, 47.7% were non-smokers, and 26.3% were ex-smokers, while the remainder were passive smoker.

Higher percentage of the patients (58.7%) were not suffering from co-morbid illness (HT, DM, IHD,... ect). It is also important to mention that the majority of the patients (86.3%) lived in the urban area and the remainder were from rural area.

Regarding social classes, 63.7% of the patients were belonging to social class E (unemployed/receiving benefits) and the remainder distributed in lower percentages to other social classes (A, B, C1, C2 and D).

As to the employment, 77.7% of the participants were not employed and 10.3% were manual workers. Almost 37% were non-manual workers, while 52.7% were housewives (Table 1).

***Table 1.** Socio-demographic characteristics of studied sample.*

		Mean	SD
Age/year		49	11
BMI (kg/m²)		30	6
Socio-demographic characteristics		No.	%
Gender	Male	104	34.7%
	Female	196	65.3%
Marital status	Single	22	7.3%
	Married	250	83.3%
	Divorced	5	1.7%
	Widow	23	7.7%
Education status	Illiterate	51	17.0%
	Read and write	30	10.0%
	Primary	94	31.3%
	Secondary	75	25.0%
	College	49	16.3%
	Higher education	1	0.3%
Smoking status	Yes	62	20.7
	No	143	47.7
	Passive	16	5.3
	Ex-smoker	79	26.3
Residency	Rural	41	13.7%
	Urban	259	86.3%
Comorbidity	Yes	124	41.3%
	No	176	58.7%
Religion	Muslim	299	99.7%
	Others	1	0.3%
Social class	A	8	2.7%
	B	14	4.7%
	C1	26	8.7%
	C2	16	5.3%
	D	45	15.0%
	E	191	63.7%
Job	Employed	67	22.3%
	Not employed	233	77.7%
Type of work	Manual	31	10.3%
	Non-manual	111	37.0%
	House wife	158	52.7%

BMI: body mass index, SD: standard deviation

The findings of the current study revealed that 20% of those patients had > 5 years back pain duration, 59.3% had back pain for 1-5 years, 9.7% had 6 m-1 year back pain, and 11% of those with <6 months back pain duration.

Regarding the level of disability according to Quebec back pain disability scale (QBPDS), 16% of the patients had a mild level of disability, 62% had a moderate level of disability, 19.3% with a severe level of disability, and 2.7% very severe level of disability.

Regarding the modality of therapy that the patients had in the last one year, the results showed that just 16.7% of them had physiotherapy, only 6.3% practicing exercise regularly, 9.1% used alternative medicine (acupuncture, herbal medicine, cupping) and 2.7% underwent surgery (Table 2).

Table 2. Descriptive characteristics of clinical and therapy status.

		No. of patients	%
Duration of back pain	< 6 months	33	11.0%
	6 months-1 year	29	9.7%
	1 -5 years	178	59.3%
	> 5 years	60	20.0%
Functional level	Mild	48	16.0%
	Moderate	186	62.0%
	Sever	58	19.3%
	very sever	8	2.7%
Frequency of medication use	On need	198	66.0%
	Daily	36	12.0%
	Non	66	22.0%
Use of physiotherapy	Yes	50	16.7%
Exercise	Yes	19	6.3%
Use of alternative medicine	Yes	27	9.1%
Surgery	Yes	8	2.7%

With regards to patient's behaviours concerning physician consultation, the results demonstrated that 39.3% of the patients consulted different doctors in their private clinics. Nearly 44% sought medical help at the outpatient clinics of governmental hospitals. The results also revealed that 22% of the patients did not use any medication for their back pain, 12% used daily medication, and 66% of the patients used medication on need.

The majority of the patients (90.3%) consulted their physicians ≤ 3 times yearly, 8% for >3 times annually, and only 1.7% of them did not consult any doctor before attending the hospital. The majority of the patients (93.3%) did not got work leave for the last year, 5% got work leave one time during the last year, 1.3% got two work leaves during the last year, and only 0.3% had three work leaves during the last year. The average duration of work leave was 5 days (Table 3).

Table 3. Descriptive characteristics of patients behaviours concerning physicians consultation, using of medication and work leave per last year.

		No.	%
Different doctor	Yes	118	39.3%
	No	50	16.7%
	Outpatient	132	44.0%
	Non	5	1.7%
No. of visit\one year	=<3	271	90.3%
	>3	24	8.0%
Number of work leave/last year	Non	280	93.3%
	1/year	15	5.0%
	2/year	4	1.3%
	3/year	1	0.3%

According to mean value of visual analogue scale (VAS) females patients reported higher significant mean VAS than males patients (P=0.01). Manual workers and housewives also reported significant higher level of mean VAS than non-manual workers (P<0.05 for all). Patients with primary school reported higher mean VAS than other educational level. Non-significant difference of VAS was reported in relation to marital status, smoking, residency, social class, co-morbidities and job of the patients in term of employed or non-employed (P>0.05 for all) (Table 4).

(Table 5) showed that the mean of VAS was increased with increasing the duration of the disease to level of 6.1 with patients who were complaining from back pain for more than five years in comparison to those with back pain less than 5 years, but the difference did not reach the significant level (P=0.06). Other tested variables (patients on physiotherapy, and who did not practice exercise regularly, those who used alternative medicine and who underwent surgery) showed non-significant differences with VAS (P-value >0.05).

Data in this study revealed that there was non-significant correlation between age and VAS of the patients (P-value ≥0.05) as seen in (Table 6).

(Table 7) showed that mean VAS was higher in patient group with BMI >30 and there was significant correlation between VAS and BMI (P-value=0.01).

Table 4. *Mean value of VAS according to socio-demographic characteristics.*

		Mean of Vas score	SD	P-value
Gender	Male	5.47	1.5	0.01
	Female	5.89	1.4	
Marital status	Single	5.0	1.1	0.09
	Married	5.82	1.5	
	Divorced	5.40	1.5	
	Widow	5.78	1.4	
Education status	Illiterate	5.86	1.4	0.05
	Read and write	5.67	1.3	
	Primary	6.1	1.4	
	Secondary	5.52	1.6	
	College	5.35	1.3	
	Higher education	6.0	0.0	
Smoking status	Yes	5.94	1.4	0.3
	No	5.5	1.5	
	Passive	5.88	1.8	
	Ex-smoker	5.7	1.3	
Comorbidity	Yes	5.89	1.52	0.1
	No	5.65	1.45	
Residency	Rural	6.1	1.4	0.1
	Urban	5.69	1.4	
Social class	A	5.3	1.3	0.07
	B	6.1	1.4	
	C1	5.8	1.4	
	C2	6.1	1.4	
	D	5.35	1.3	
	E	6.1	1.4	
Job	Employed	5.52	1.5	0.1
	Not employed	5.81	1.4	
Type of work	Manual	6.13	1.2	0.001
	Non-manual	5.2	1.5	
	House wife	6.06	1.3	

P-value: Probability value, SD: standard deviation, VAS: visual analogue scale

Table 5. *Mean value of VAS according to clinical and medical therapy status.*

		Mean of Vas score	SD	P-value
Duration of back pain	< 6 months	5.3	1.6	0.06
	6 months-1 year	5.3	1.5	
	1 -5 years	5.7	1.4	
	> 5 years	6.1	1.5	
Use of physiotherapy	Yes	5.8	1.5	0.6
	No	5.7	1.4	
Exercise	Yes	5.2	1.1	0.07
	No	5.8	1.5	
Use of alternative medicine	Yes	5.9	1.8	0.5
	No	5.7	1.4	
Surgery	Yes	5.9	1.3	0.7
	No	5.7	1.4	

P-value: probability value, VAS: visual analogue scale, SD: standard deviation

Table 6. *Correlation between VAS and age.*

Age group	No.	Mean VAS	SD	P-value
20-40	61	5.59	1.29	0.5
40-60	180	5.82	1.46	
>60	59	5.68	1.73	

P-value: probability value VAS: visual analogue scale. SD: standard deviation

Table 7. *Correlation between VAS and BMI.*

BMI	No.	Mean VAS	SD	P-value
18-25	38	5.53	1.52	
25-30	138	5.54	1.38	0.01
>30	124	6.05	1.54	

BMI: body mass index. P-value: probability VAS: visual analogue scale. SD: standard deviation

The finding of this study showed there was a significant association (P-value≤0.05) between the level of disability and each of age, gender, BMI, education, residency, job, type of work, and history of co- morbid illnesses (Table 8).

The study revealed that age was associated with higher level of disability, and patient with age group ≥60 reported more sever level of disability (40.7%) than younger age groups. The severe status of disability was reported more in female patients (22.4%) than male patients (13.5%). Similarly, the very severe status of disability reported more with female patients (4.1%) than male patients with no reported patient.

Patients with BMI ≥30 kg/m² had very severe level of disability (5.6%), in comparison to (2.6%) in patients with BMI less than 30 kg/cm².

Patients with lower educational level reported more severe disability (illiterate 35.3%, read and write 16.7%, primary school 25.5%) than higher educational level (secondary school 10.7%, collage 6.1%) respectively.

Severe disability was reported more in a rural area (29.3%) than urban area (17.8%), and also patients in rural area was reported a very severe level of disability (9.8%) in comparison to urban area (1.5%).

Table 8. *Association between functional level status and socio-demographic characteristics.*

		Total no.	Functional level								p-value
			Mild		Moderate		Severe		Very severe		
			No.	%	No.	%	No.	%	No.	%	
Age groups/ Years	18-40	61	11	18.0%	40	65.6%	9	14.8%	1	1.6%	
	40-60	180	29	16.1%	122	67.8%	25	13.9%	4	2.2%	0.001
	≥60	59	8	13.6%	24	40.7%	24	40.7%	3	5.1%	
BMI	18-25	38	10	26.3%	21	55.3%	6	15.8%	1	2.6%	
	25-30	138	20	14.5%	87	63.0%	31	22.5%	0	0.0%	0.05
	>30	124	18	14.5%	78	62.9%	21	16.9%	7	5.6%	
Gender	Male	104	27	26.0%	63	60.6%	14	13.5%	0	0.0%	0.01
	Female	196	21	10.7%	123	62.8%	44	22.4%	8	4.1%	
Marital status	Single	22	4	18.2%	17	77.3%	1	4.5%	0	0.0%	
	Married	250	42	16.8%	153	61.2%	48	19.2%	7	2.8%	0.3
	Divorced	5	0	0.0%	4	80.0%	1	20.0%	0	0.0%	
	Widow	23	2	8.7%	12	52.2%	8	34.8%	1	4.3%	
Education status	Illiterate	51	3	5.9%	28	54.9%	18	35.3%	2	3.9%	
	Read and write	30	3	10.0%	21	70.0%	5	16.7%	1	3.3%	
	Primary	94	13	13.8%	53	56.4%	24	25.5%	4	4.3%	0.002
	Secondary	75	14	18.7%	52	69.3%	8	10.7%	1	1.3%	
	College	49	14	28.6%	32	65.3%	3	6.1%	0	0.0%	
	Higher education	1	1	100.0%	0	0.0%	0	0.0%	0	0.0%	
Smoking status	Yes	62	11	17.7%	37	59.7%	12	19.4%	2	3.2%	
	No	143	28	19.6%	92	64.3%	19	13.3%	4	2.8%	0.3
	Passive	16	6	37.5%	4	25.0%	6	37.5%	0	0.0%	
	Ex-smoker	79	3	3.8%	53	67.1%	21	26.6%	2	2.5%	
Comorbidity	Yes	124	14	11.3%	71	57.3%	32	25.8%	7	5.6%	0.02
	No	176	34	19.3%	115	65.3%	26	14.8%	1	0.6%	
Residency	Rural	41	6	14.6%	19	46.3%	12	29.3%	4	9.8%	0.004
	Urban	259	42	16.2%	167	64.5%	46	17.8%	4	1.5%	
Social class	A	8	3	37.5%	4	50.0%	1	12.5%	0	0.0%	
	B	14	3	21.4%	8	57.1%	2	14.3%	1	7.1%	
	C1	26	8	30.8%	15	57.7%	2	7.7%	1	3.8%	0.06
	C2	16	3	18.8%	11	68.8%	2	12.5%	0	0.0%	
	D	45	12	26.7%	28	62.2%	4	8.9%	1	2.2%	
	E	191	19	9.9%	120	62.8%	47	24.6%	5	2.6%	
Job	Employed	67	19	28.4%	36	53.7%	9	13.4%	3	4.5%	0.008
	Not employed	233	29	12.4%	150	64.4%	49	21.0%	5	2.1%	
Type of work	Manual	31	6	19.4%	17	54.8%	6	19.4%	2	6.5%	
	Non-manual	111	28	25.2%	70	63.1%	12	10.8%	1	0.9%	0.001
	House wife	158	14	8.9%	99	62.7%	40	25.3%	5	3.2%	

BMI: body mass index, significant P-value <0.05

Moderate disability (64.4%) and severe disability (21%) was reported in non-employed patients more than employed patients (53.7%), (13.4%) respectively. While very severe disability reported more in employed than non-employed (4.5% vas 2.1). In a similar fashion, housewives and manual worker reported more severe disability (25.3%), (19.4%) than non- manual worker (10.8%).

Regarding associated co- morbidities other than low back pain with level of disability, the result showed that there was significant association with (P-value=0.02), severe and very severe level of disability (25.8%), (5.6%) reported in patients with associated comorbidity in comparison to patients with no history of comorbidity (14.8%), (0.6%) respectively.

The association did not reach the significant level with other parameters (marital status, smoking and social class). In spite of some difference were reported with marital status, where the percentage of married patients with all levels of disability was higher than others subcategory of marital status but the association did not reach the significant level (P-value=0.3). Patients with social class D and E show higher level of disability in comparison to other social classes but the difference also did not reach the significant level (p=0.06).

4. Discussion

The aim of this study is to find the relationship between socio- demographic characteristics and chronic mechanical low back pain disability. Low backache is a vague terminology commonly understood as pain in back or in the region of spine. In a WHO study back pain was the top most in the list of anatomical site-wise pain. Unfortunately, it is often neglected at individual as well at community level; mainly because of its non-fatal and benign nature [40]. But this problem has a huge impact on quality of life of the individuals [41]. Throughout the world, low back pain is the leading cause of activity limitation and work absence, enforcing a high economic burden on individuals, families, communities, industries, and governments [42].

LBP ranked highest in terms of Years Lost due to Disability (YLD), and sixth in terms of overall burden The Disability Adjusted Life Years (DALYs) according to a systematic review of all 291 conditions studied in the Global Burden of Disease in 2010 [43].

4.1. Relationship of Intensity of Back Pain with Socio-demographic Characteristics

In this study the mean age of the studied sample was 49±11 SD, near similar mean age reported in study of Tavafian SS et al with mean age of the participants was 51.62 year [44].

Regarding intensity of back pain measured by visual analogue scale (VAS) with socio-demographic characteristic there was direct correlation with BMI. Participants with more intense LBP were more likely to be overweight or obese (P-value=0.01). This is similar to studies done by Weiner DK et al [45] and Ng SK et al [46] which showed that high intensity pain group having a higher BMI.

This study also revealed that females reported higher significant mean VAS score than males patients (1.4 SD 5.89 vs. 1.5 SD 5.47) with (P-value=0.01). Similar finding in study done by Gouveia N et al shows women self-reported high level of pain intensity [47]. However, result of study done by Kim GM et al show that the VAS score was higher in male patients compared with female patients [48].

Regarding residency (rural, urban) non-significant correlation was found between intensity of back pain (VAS) and residency, this is in contrasts with result done by Williams JS et al which shows that people living in rural areas were more likely to experience back pain and at higher intensity [36]. This seems to be because of strenuous outdoor household activities (e.g. carrying water or food), undertaken by people living in such areas.

This study also shows no correlation between age and VAS (P-value=0.5). This is similar to result of study done by Wettstein M et al which showed that association of age with pain intensity was weak and not significant (P>0.05) [49]. In contrast to a study done by Weiner DK et al [45] showed that adults aged 70–79 years reported more back pain intensity.

This study showed non-significant correlation of intensity of chronic back with smoking (P-value 0.3), this contrasted with a study by Williams JS et al which showed that being a current smoker was statistically significant in association with higher back pain intensity [36]. This may be explained by the fact that higher number of patients in this study were females and non-smoker.

Non-significant differences in VAS were reported in relation to job of the patients in term of being employed or non-employed (p>0.05 for all). Similar results were reported in a study done by Doualla M et al in sub-Saharan in Africa [50].

The findings of this study showed no correlation was founded between pain intensity (VAS) and associated co-morbidities (P-value=0.1), in contrast to study done by Williams JS et al which showed that having multiple chronic conditions, were statistically significantly associated with higher back pain intensity [36].

4.2. Relationship Between Disability and Socio-demographic Characteristics

The current study revealed that age was associated with higher level of disability (P-value=0.001) and patient with age group ≥60 reported more sever level of disability (40.7%) than younger age groups. This result was similar to those of Williams JS et al [36], Kortor NJ et al [51], Mohamed RA et al [52] and Mahrous OA et al [53], where degree of disability increased with increasing age.

This study showed that the severity status of disability was reported more in female patients (22.4%) than male patients (13.5%). This result was similar to studies done by Williams JS et al [36] and Weiner DK et al [45] whose results showed more females in the high disability group than males. Shiri et al stated that the risk for LBP is higher among women due to the stress of hormonal changes, gynaecological problems,

and child birth [54]. However, another study done by Mohamed RA et al showed more disability among males. This may be related to the culture of the rural areas where the study sample was taken and the fact that males were the main provider of their families with increased responsibilities and so more susceptible to work stressors [52].

Regarding educational level This study shows significant correlation of educational level with chronic back pain disability with (P-value 0.002), and Patients with lower educational level reported more severe disability than higher educational level, this is Similar to result of Williams JS et al [36], Doualla M et al [50] and Hurwitz EL et al [55] which showed a higher level of disability in Non-high school graduates. However, a study done by Kortor NJ et al [51] showed that Patients with tertiary level of education were more affected than those with primary and secondary level of education. This differs from findings reported by previous authors that observed higher prevalence ratio of disability among the less educated patients.

This study showed that Severe and very severe level of disability was reported more in a rural area than urban area (P-value=0.004). This is in contrast to a study by Mohamed RA et al which found more disability in patients from urban areas [52]. This may be explained by the fact that more strenuous and heavy working job carried by people from rural area.

Regarding the association of BMI with chronic back pain disability, this study showed significant correlation between BMI and degree of disability in chronic back pain (P-value=0.05). Patients with BMI ≥ 30 had very severe level of disability in comparison to patients with BMI less than 30. Similar results from a study by Hurwitz EL et al showed that participant with weight above the 50th percentile, were relatively more likely to have chronic back disability [55].

This study revealed a non- significant correlation between smoking and disability level (P-value=0.3). This is in contrast to a study done by Fujii T et al which showed that smoking was associated with chronic disabling LBP [56].

The present study revealed that significant correlation was found between the degree of disability and type of work and that housewives and manual workers reported more severe disability than non- manual workers (P-value=0.001) as they are more susceptible to mechanical load and abnormal posture like bending and lifting heavy objects. This is in contrast to the study of Williams JS et al where people with low physical activities had more disability compared to those with higher physical activities, and those who were working had less disabilities compared to those who never worked [36].

Also this study showed that significant correlation is found between employment and chronic back pain disability (P-value=0.008). Moderate disability and severe disability were reported in unemployed patients more than employed patients. Similar result were reported by Hurwitz EL et al study showed unemployed were relatively more likely to have chronic back disability [55]. we believed that this is due to psychosocial stresses of being unemployed; However, this was in contrast to Kortor NJ et al study which showed there was no significant relationship between employment status and level of disability [51].

This study showed statistically significant correlation of chronic low back pain disability and non-back pain comorbidity (HT, DM, IHD, CVD) with (P-value=0.02), and comorbid conditions associated with higher level of disability in chronic LBP. Similar results by Weiner DK et al showed comorbid conditions associated with greater severity of LBP [45], and Fujii Tet al showed chronic diseases were associated with disability due to lower back disorders [56].

Although in spite of some differences reported with marital status, where the percentage of married patients with all levels of disability was higher than others subcategories. The association did not reach the significant level (P-value=0.3). Similar result reported by Mohamed RA et al [52], and Mahrous OA et al [53], who showed significant correlation among marital status and degree of disability and that disability increased between married patients. This may be due to increased psychosocial stressors of marriage, and may be attributed to the fact that daily activities of married persons require repeated bending, lifting and pulling movement of the spine which may aggravate low back pain. This was in contrast to the findings of study done by Doualla M et al [50], and Hurwitz EL et al [55], which indicated that the disability was significantly higher in the widowed and never married when compared to the married.

The finding of this study revealed that Patients with social class D and E show higher level of disability in comparison to other social classes but the difference also did not reach the significant level (p- value=0.06). Study by Hagen KB et al found low socio-economic status was significantly associated with the incidence of non-inflammatory back pain disability. The incidence was increased 10.5-fold for unskilled male workers, and 7.2-fold for unskilled female workers as compared with the highest social class [57].

5. Conclusions

According to the finding in this study disability in chronic MLBP influenced by different socio-demographic factors. Significant associations were found between the level of disability and each of age, gender, BMI, education, residency, job and type of work. Chronic LBP intensity was associated with female gender, primary school education, manual workers and housewives, higher BMI, and disease duration of more than five years.

Disability in patients with chronic MLBP is a common health problem in our environment. Accordingly, more awareness should be raised about the magnitude of the problem and about the risk factors for LBP. In addition, LBP prevention programs among patients should focus on improved working environment, physical exercise and decreased risk factors of LBP. Adoption of healthy lifestyle, Weight restriction programs should be initiated in governmental and non-governmental institutes. National wide sized studies on disability of low back pain among adults must be supported.

Appendix

Appendix I: Data Collecting Questioner

Section A: Socio-demographic data

- Name:	- Age:	- Gender:		
- Marital status:				
Married	Unmarried	Divorced	Widow	
- Occupation:				
Employed	Unemployed			
- Residency:				
Urban	Rural			
- Type of work:				
Manual	Non manual	Housewife		
- Educational level:				
Illiterate	Read and write	Primary school	Secondary school	College and Higher education
- Social class:				
A	B	C	D	E
- Smoking:				
Current smoker	Non- smoker	X-smoker	Passive smoker	
- BMI:				
- Chronic illness:				

Section B:
- Back pain duration:
- Frequency of medication use:

No	Daily	on need	Frequent course.
- Use of physiotherapy:			
Physical	Yes	No	
Exercise	Yes	No	
- Use of alternative medicine:			
Yes	No		
- Multiple doctor visit:			
Yes	No		
- Number of visits in one year:			
- Number of work leave/last year:			
- Back Surgery:			
Yes	No		

Section C
- VAS score:
- Functional level:

Appendix II: Classification of Social Grade

Social Grade	Social Status	Chief income earner's profession
A	Upper Middle Class	Higher managerial, administrative or professional, doctors and lawyers
B	Middle Class	Intermediate managerial, administrative or professional. Managers and teachers
C1	Lower Middle Class	Non – manual workers. Office workers
C2	Skilled Working Class	Skilled manual workers. Plumbers and Electricians.
D	Working Class	Semi-skilled and unskilled manual workers. Shop assistants, farm and building site labourers
E	Unemployed/ receiving benefits	Casual workers (not in regular employment) Pensioners and others who depend on the state for their income

Social grade. Downloaded in 15th April 2019. Available from:
http://www.nrs.co.uk/nrs-print/lifestyle-and-classification-data/social-grade

Appendix III: The Quebec Back Pain Disability Scale

People with back problems may find it difficult to perform some of their daily activities. For each activity there is a scale of 0 to 5. Today, do you find it difficult to perform the following activities because of your back?

	0	1	2	3	4	5
Get out of bed						
Sleep through the night						
Turnover in bed						
Ride in a car						
Stand up for 20- 30 minutes						
Sit in a chair for several hours						
Climb one flight of stairs						
Walk a few blocks (300-400 m)						
Walk several kilometres						
Reach up to high shelves						
Throw a ball						
Run one block (about 100 m)						
Take food out of the refrigerator						
Make your bed						
Put on socks (pantyhose)						
Bend over to clean the bathtub						
Move a chair						
Pull or push heavy doors						
Carry two bags of groceries						
Left and carry a heavy suitcase						

Kopec, JA, Esdaile, JM, Abrahamowicz, M., Abenhaim, L, et al (1995). The Quebec Back Pain Disability Scale. Spine, 20 (3): 341-352. Davidson, M. & Keating, J. L. (2002). A comparison of five low back disability questionnaires: Reliability and responsiveness. Physical Therapy, 82 (1): 8- 24.

Appendix IV: Arabic Version of Quebec Back Pain Disability Scale

هذا الاستبيان يخص الطريقة التي يؤثر بها الالام في الظهر على حياتك اليومية. الناس الذين عندهم مشاكل في الظهر يعانون صعوبة اداء اعمالهم كل يوم. اردنا ان نعرف مدى صعوبة اداء هذه الاعمال المذكورة ادناه بسبب الم ظهرك. لكل عمل مذكور درجة من 0-5 عليك ان تختار اجابة واحدة (وضعك الصحي اليوم).

5	4	3	2	1	0	

1- تخرج من الفراش

2- النوم اثناء الليل

3- التقلب في الفراش

4- قيادة السيارة

5- الوقوف لمدة (20-30) دقيقة

6- الجلوس على كرسي لعدة ساعات

7- الصعود على سلم خطوة واحدة

8- المشي مسافة قصيرة (300-400) متر

9- المشي مسافة طويلة

10- الوصول الى رفوف عالية

11- رمي الكرة

12- الركض لمسافة قصيرة (100) متر

13- اخراج الطعام من الثلاجة

14- ترتيب الفراش

15- ارتداء الجوارب

16- الانحناء لتنظيف الحمام

17- تحريك الكرسي

18- سحب ودفع ابواب ثقيلة

19- حمل كيسين بكلتا اليدين

20- حمل حقيبة ثقيلة

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