Distribution of Epidemiological Characteristics of Low Back Pain Patients Attending to Baghdad Teaching Hospital

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توزيع الخصائص الوبائية لمرضى آلام أسفل الظهر المراجعين لمستشفى بغداد التعليمي

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Abstract

Background: Low back pain (LBP) is a very common health problem worldwide especially in the low and middle-income countries. The LBP may be acute or chronic in nature caused by several medical conditions. The majority of acute low back pain is mechanical in nature due to sprains and strains. Chronic LBP, on the other hand, is most commonly attributed to sciatica, which a radiculopathy condition caused by compression, inflammation and/or injury to the spinal nerve roots. **Aims of study**: To study epidemiological features of low back pain. **Patients and Methods**: A cross-sectional study of 440 individuals diagnosed with Low back pain (LBP) from the rheumatology department at Baghdad Teaching Hospital-Medical City in Baghdad province were involved in the current cross-sectional investigation. The sample consisted of 180 men and 260 women, with an average age of 45.7±14.8 years. The research was carried out from 12/ October/2023 to 12 /March/2024. **Results**: This cross-sectional study comprised 440 patients with LPB, with a mean age and a standard deviation (SD) 45.7±14.8, individuals aged 50–59 had the highest proportion of LBP, with a rate of 23%. Conversely, the age group with the lowest frequency at 7.5% was people aged ≥70 years, 59.1% of the participants were female, while 40.9% were men, 4 3.2% were overweight, and disease subtype consist from acute 25.5% ,subacute 5.5% , chronic 69.1%, The results of this investigation expressed significant association between age group and sex (p=0.003) , BMI have significant association with sex (p=0.0001) , education level and marital status have significant association with sex (p= 0.0001) , number of children has significant association with sex (p=0.009) , occupation and smoking have significant association with sex (p=0.0001) **Conclusions**: LPB has a higher frequency among the female population, highest proportion chronic disease, highly significant between sex and BMI.

Keywords: Low back pain, Epidemiology, Cross Sectional Study, Disability.

المستخلص

المقدمة: آلام أسفل الظهر هي مشكلة صحية شائعة جدًا في جميع أنحاء العالم وخاصة في البلدان المنخفضة والمتوسطة الدخل. قد يكون الم اسفل الظهر حادًا أو مزمنًا بطبيعته بسبب العديد من الحالات الطبية. غالبية آلام أسفل الظهر الحادة ميكانيكية بطبيعتها بسبب الالتواء والإجهاد. من ناحية أخرى، يُعزى الم اسفل الظهر المزمن في الغالب إلى عرق النسا، وهو حالة اعتلال الجذور الناتجة عن الضغط و/أو الالتهاب و/أو إصابة جذور الأعصاب الشوكية . **الهدف**: دراسة السمات الوبائية لآلام أسفل الظهر. **طريقة العمل**: أجريت دراسة مقطعية لـ 440 فرداً تم تشخيص إصابتهم بآلام أسفل الظهر (LBP) من قسم الروماتيزم في مستشفى بغداد التعليمي – المدينة الطبية في محافظة بغداد. تكونت العينة من 180 رجلاً و260 امرأة، بمتوسط عمر 45.7±14.8 سنة. نفذ البحث للفترة من 12/اكتوبر/2023 الى 12/مارس/2024 . **النتائج**: شملت هذه الدراسة المقطعية 440 مريضًا مصابًا بـ LPB، بمتوسط عمر وانحراف معياري (14.8 ± 45.7 (SD، وكان الأفراد الذين تتراوح أعمارهم بين 50–59 عامًا لديهم أعلى نسبة من LBP، بمعدل ٪23. على العكس من ذلك، كانت الفئة العمرية ذات أقل تكرار بنسبة ٪7.5 هي الأشخاص الذين تتراوح أعمارهم بين ≤70 عامًا، وكان ٪59.1 من المشاركين من الإناث، بينما كان ٪40.9 رجالًا، وكان ٪43.2 يعانون من زيادة الوزن، ويتألف النوع الفرعي للمرض من الحاد ٪25.5 وتحت الحاد ٪5.5. ، مزمن 69.1%، أوضحت النتائج وجود ارتباط كبير بين الفئة العمرية والجنس (p=0.003)، مؤشر كتلة الجسم له ارتباط كبير بالجنس (p=0.0001)، مستوى التعليم والحالة الاجتماعية يرتبط ارتباطا كبيرا بالجنس (p=0.0001)، العدد من الأطفال لديهم ارتباط كبير بالجنس (P = 0.009)، والمهنة والتدخين لديهم ارتباط كبير بالجنس (P = 0.0001). الاستنتاجات: آلام أسفل الظهر له تكرار أعلى بين السكان الإناث، وأعلى نسبة للأمراض المزمنة، وعلاقه كبيرة بين الجنس ومؤشر كتلة الجسم.

الكلمات المفتاحية: آلام أسفل الظهر، علم الأوبئة، دراسة مقطعية، الإعاقة.

Introduction

Low Back pain(LBP), especially in the lower and middle-income categories, affects a disproportionately high number of individuals around the world. Depending on the underlying medical condition, low back pain may be either acute or chronic. Mechanical injuries, such as sprains and strains, account for the bulk of abrupt low back pain. However, sciatica, a radiculopathy illness brought on by pressure, inflammation, or injury to the spinal nerve roots—is the most usual cause when it comes to persistent low back pain (Hassan, *et al.*, 2020).

LBP is commonly classified as non-specific (i.e., up to 90% of cases when the physio-pathological causes cannot be confirmed) or specific, the latter occurrences mainly due to hernias, osteoporosis, fractures, spondyloarthropathy, infections, or malignancy. LBP may alternatively be characterized as acute (i.e., lasting <6 weeks), sub-acute (i.e., lasting between 6 weeks and 3 months), or chronic (i.e., lasting for more than 3 months) (Mattiuzzi, *et al.*, 2020). The relevantly economic and social impact of low back pain is same to that of other common sever condition, such as immunological diseases, cardiovascular diseases, cancer, and mental health-related diseases (Yan, *et al.*, 2021). Therefore, the aim of this research is to study the epidemiological features of low back pain.

Patients and Methods

The total of 440 convenient samples diagnosed with Low back pain within the cross-sectional study who attended rheumatology clinics of Baghdad Teaching Hospital / Medical City. The collected data were socio-

demographic, clinical and epidemiological variables. The sites' exclusion criteria included patients Less than 18 years old, malignancy and other autoimmune diseases. Statistical analysis the collected data were coded, entered, presented, and analyzed by computer using the available data base software program statistical package of IBM SPSS-29 (IBM Statistical Packages for Social Sciences- version 29, Chicago, IL, USA). Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values). The significance of difference of different percentages (qualitative data) were tested using Pearson Chi-square test (Chi2-test) with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05.

Results

Table (1) Shows some of the demographic and epidemiological characteristics of the study sample with a mean and a standard deviation(SD) of age of 45.7±14.8, individuals aged 50–59 had the highest proportion of LBP, with a rate of 23%. Conversely, the age group with the lowest frequency at 7.5% was people aged ≥70 years, 59.1% of the participants were female, while 40.9% were men, 43.2% were overweight, and disease subtype consist from acute 25.5%, subacute 5.5%, chronic 69.1%.

Table 1: Socio-demographic and epidemiological characteristics

Socio-demographic and epidemiological characteristics		No	%
Age (years)	<30years	67	15.2
	30-39	90	20.5
	40-49	100	22.7
	50-59	101	23.0
	60-69	49	11.1
	>70years	33	7.5
	Mean ±SD (Range)	45.7±14.8 (18-88)	
Sex	Male	180	40.9
	Female	260	59.1
BMI (Kg/ m2)	Normal (18.5-24.9)	116	26.4
	Overweight (25-69.9)	190	43.2
	Obese (30-34.9)	99	22.5
	Obese II (35-39.9)	30	6.8
	Obese III >40)	5	1.1
	Mean ±SD (Range)	27.94±4.79 (18.1-51.4)	
Duration of disease (years)	<1yr	181	41.1
	1---4	178	40.5
	5---9	46	10.5
	10-14	22	5.0
	15-19	10	2.3
	≥20yr	3	0.7
Disease subtype	Acute	112	25.5
	Subacute	24	5.5
	Chronic	304	69.1

A significant correlation between age group and sex (p=0.003) was observed, BMI had significant correlation with sex (p = 0.0001), education level and marital status also had significantly correlation with sex (p = 0.0001), number of children had significant association with sex (p=0.009), occupation and smoking had significantly correlation with sex (p=0.0001. These results were illustrated in Table (2).

Table 2: Association between demographic characteristics and sex

Demographic variables		Sex				P. value
		Males(n=180)		Females(n=260)		
		No	%	No	%	
Age groups	<30	46	25.6%	37	14.2%	0.003*
	30-39	28	15.6%	46	17.7%	
	40-49	35	19.4%	65	25.0%	
	50-59	32	17.8%	69	26.5%	
	60-69	19	10.6%	30	11.5%	
	≥70	20	11.1%	13	5.0%	
	Mean ± SD	45.7 ±14.8				
BMI	Normal weight	63	35.0%	53	20.4%	0.0001*
	Over weight	85	47.2%	105	40.4%	
	Obese **I**	25	13.9%	74	28.5%	
	Obese **II**	6	3.3%	24	9.2%	
	Obese **III**	1	0.6%	4	1.5%	
residency	Urban	142	78.9%	192	73.8%	0.224
	Rural	38	21.1%	68	26.2%	
education level	Illiterate	11	6.1%	47	18.1%	0.0001*
	Primary	58	32.2%	96	36.9%	
	Intermediate	27	15.0%	41	15.8%	
	Secondary	24	13.3%	22	8.5%	
	Collage	60	33.3%	52	20.0%	
	higher educator	0	0.0%	2	0.8%	
marital status	Married	147	81.7%	238	91.5%	0.0001*
	Unmarried	33	18.3%	17	6.5%	
	Divorced	0	0.0%	5	1.9%	

Demographic variables		Sex				P. value
		Males(n=180)		Females(n=260)		
		No	%	No	%	
Number of children	0	41	22.8%	28	10.8%	0.009*
	1	10	5.6%	14	5.4%	
	2	21	11.7%	25	9.6%	
	3	28	15.6%	43	16.5%	
	4	20	11.1%	27	10.4%	
	≥ 5	60	33.3%	123	47.3%	
menopause	Pre	0	0.0%	186	71.5%	
	Post	0	0.0%	74	28.5%	
occupation	Employed	82	45.6%	46	17.7%	0.0001*
	Unemployed	98	54.4%	214	82.3%	
smoking	non smoker	79	43.9%	260	100.0%	0.0001*
	ex-smoker	6	3.3%	0	0.0%	
	occasional smoker	6	3.3%	0	0.0%	
	current smoker	89	49.4%	0	0.0%	

Table (3) displays the results of statistical tests analyzing the association between socio-demographic characteristics (age, sex, education, BMI, etc.) and disease subtype, the results of the same Table indicated a statistically significant association between age and disease subtype of LBP (p value=0.0001). Current marital status (married) was significantly related to disease subtype of LBP (p value =0.0001), and menopause was significantly related with disease subtype of LBP (p value =0.027).

Table 3: Associations between epidemiological characteristic and disease subtype

Epidemiological characteristic		Disease subtype						P value
	Acute		Subacute		Chronic			
	No	%	No	%	No	%		
Age at onset of disease (years)	<30years	32	28.6	8	33.3	44	14.5	0.010*
	30-39	25	22.3	2	8.3	72	23.7	
	40-49	24	21.4	9	37.5	68	22.4	
	50-59	21	18.8	3	12.5	63	20.7	
	60-69	8	7.1	1	4.2	44	14.5	
	≥70years	2	1.8	1	4.2	13	4.3	
Age at first visit (years)	<30years	32	28.6	8	33.3	42	13.8	0.006*
	30-39	25	22.3	2	8.3	72	23.7	
	40-49	24	21.4	9	37.5	69	22.7	
	50-59	21	18.8	3	12.5	63	20.7	
	60-69	8	7.1	1	4.2	42	13.8	
	≥70years	2	1.8	1	4.2	16	5.3	
Age at diagnosis (years)	<30years	36	32.1	9	37.5	52	17.1	0.002*
	30-39	21	18.8	1	4.2	62	20.4	
	40-49	24	21.4	9	37.5	66	21.7	
	50-59	21	18.8	3	12.5	64	21.1	
	60-69	8	7.1	1	4.2	44	14.5	
	≥70years	2	1.8	1	4.2	16	5.3	
Interval between onset of disease and diagnosis (years)	<1month	79	70.5	4	16.7	48	15.8	0.0001*
	1-3m	33	29.5	20	83.3	99	32.6	
	4-11m	-	-	-	-	47	15.5	
	1-3year	-	-	-	-	95	31.3	
	4-6y	-	-	-	-	9	3.0	
	7-9y	-	-	-	-	2	0.7	
	≥10years	-	-	-	-	4	1.3	

Epidemiological characteristic		Disease subtype						P value
	Acute		Subacute		Chronic			
	No	%	No	%	No	%		
History of previous attack	Yes	29	25.9	4	16.7	304	100	0.0001*
	No	83	74.1	20	83.3	-	-	
Number of attacks	1	28	96.6	-	-	228	75.5	0.08
	2-3	-	-	-	-	38	12.5	
	≥4	1	3.4	-	-	38	12.5	
Lived with disability	Yes	29	25.9	4	16.7	304	100	0.0001*
	No	83	74.1	20	83.3	-	-	
Years lived with disability	No disability	83	74.1	20	83.3	-	-	0.0001*
	<1year	29	25.9	4	16.7	265	87.2	
	1---3	-	-	-	-	25	5.7	
	4---6	-	-	-	-	6	1.4	
	7---9	-	-	-	-	2	0.7	
	≥10years	-	-	-	-	6	1.4	
*Significant difference between percentages using Pearson Chi-square test (χ2-test) at 0.05 level.								

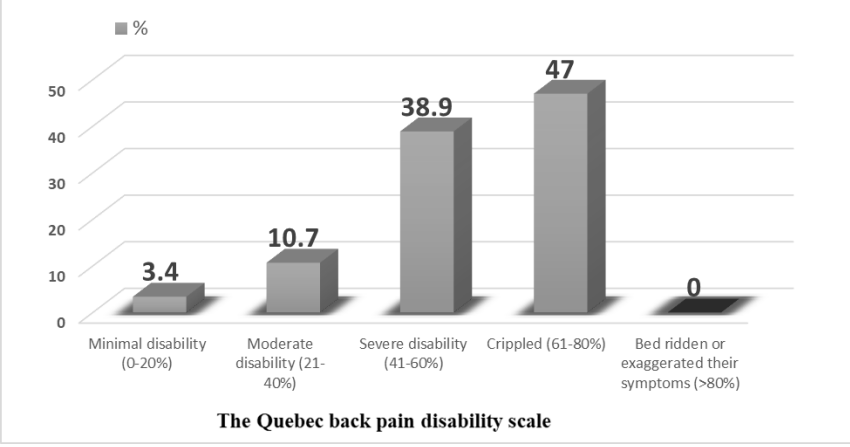

Figure (1), Sample distribution of Quebec Back Pan disability scale

Figure (1) showed the sample distribution of Quebec Back Pain disability scale scores, the majority of participants had crippled 47%, severe (38.9%) disability, moderate (10.7%) or with only a small percentage (3.4%) having minimal disability and a mean ±SD (range) of 57.5±15.6

Discussion

All 440 patients in this study were diagnosed with Low Back Pain according to the 2010 ACR/EULAR criteria for Low Back Psain .The mean and SD of the age was (45.7 ± 14.8).Based on other studies in different countries, these results were in consistent with other study in Iraq were the mean and SD (51.4 ± 13.28) (Hassan, *et al.*, 2020), and in Saudia Arabia were the mean and SD (40.0 ± 13.5) (Alamam, *et al.,* 2019) , where in Taiwan (Lee, *et al*., 2017) illustrated that the mean age and SD was 40.7 ± 11.4 years, furthermore, study carried in Germany showed that the mean age and SD (53.31 ± 7.49) (Riecke *et al.*, 2016) , while study in Spain showed that the mean and SD of age (45.6 ± 9.9) (Gavira Pavón *et al.*, 2016), and study carried in Colombo showed that the mean age and SD (50.17± 11.20)(Gamage & Ranasinghe, 2020),The present study disagrees with several studies that previously carried out, as in Saudi Arabia (26.9 ± 7.69) (Albasseet, *et al.*, 2023a) , and in Turkey by (Bayar, *et al.*, 2003) (76.03 ± 5:89) , in Penang, Malaysia (Ibrahim, *et al*., 2020) (72 ± 50.7) years), in Taiwan (59.0±14.8) (Lu, *et al.*, 2013).

Older patients may be more likely to present with low back pain pathologies associated with age-related co-morbidities (e.g., cancer, osteoporosis, fractures), and may be less likely to present with non-specific low back pain than the middle-aged patient population (Federico, *et al.*, 2022)

Among the other aspects of this research, it shows that female-to-male ratio of (1.4-1) within a percentage of 59.1% females; and 40.9 % were men. Furthermore, these findings were in consistent with previous study, in Iraq (Nayyef, *et al.*, 2022) observed that the male was 40.6% and female was 59.4%, in Taiwan (Lu, *et al.*, 2013) illustrated that the male was 35.5% and the female was 64.5%; and in other study in Iraq illustrated that the male (30.9%) and the female (69.1%) (Al-Bakri, *et al.*, 2024) . and in Iran conformed by male (66.8%) and female (33.2%) (Maghbouli, *et al.*, 2020).

The present study disagrees with another study, such as in Iran (Ibrahim, *et al.*, 2020)Male (2.8%) and female (97.2%)

This finding is conformed with another studies recording a greatest prevalence of Low Back P,ain, in women. Women, as compared with men, are more effected with the pain. tolerance, expression, and reporting of pain, have been attributed to biological, psychological, and sociocultural factors. (Makris, *et al.*, 2011).

In this study, the mean of BMI was (27.91±4.69). The findings were in Iraq indicated a mean (25.87 ± 3.65) (Professor *et al*., 2020), And another study in Iraq mean and SD of BMI (29.2 ± 4.1) (Sakr, *et al.*, 2016) . And in Saudi Arabia study that indicated a mean and SD of BMI of (24.94 ± 4.5) (Albasseet, *et al.*, 2023b) ,and in Thailand mean and SD of BMI (23.82±3.97) (Pajeemas, *et al.*, 2018) and in Indonesia that indicated a mean and SD of BMI (25,26 ± 3,8) (Novy, *et al.*, 2023).

In another study in Canada conformed the results of this study and showed that the mean and SD of BMI (29.3 ± 6.8) (Poder & Carrier, 2020) .

The duration of Low Back Pain for less than one year in this study was (41.1). This finding was conformed with of another study including a study

conducted in Poland by (Misterska, *et al.*, 2011))45.9(,and disagreed with the study in Colombo, Sri Lanka (Gamage & Ranasinghe, 2020) the duration of Low Back Pain less than one year (52.0). and by comparison with all group below 10 years in Canadian (48.17) (Zerriouh, *et al.*, 2024), in Portugal (22.7) (Cruz, *et al.*, 2013).

The disease subtype of Low Back Pain comprised from acute, subacute and chronic, in the current study acute (25.5%), subacute (5.5%), chronic (69.1%).

The finding of this research conformed with those of other study in Nigeria including in (20 %) of the patients recorded as acute LBP, (6.9%) as subacute while 73.1% recorded as chronic LBP (Eyichukwu & Ogugua, 2012) . other study in Nigeria showed that acute, subacute, and chronic LBP were 28.7%, 9.9%, and 61.4%, respectively.(Edomwonyi & Ogbue, 2017) .and in South Nigeria showed that the subacute was (7.8%) (Emorinken, *et al.,* 2023)

The disease subtype acute was (25.5) is disagreed with the study in Nigeria (12.2) (Emorinken, *et al.*, 2023) , and subacute is (5.5) disagreed with study in Amsterdam (17.4)(Pellekooren, *et al.*, 2022), and in Nigeria (7.8) (Emorinken, *et al.*, 2023)

Chronic disease in this study (69.1) disagree with study in Amsterdam (82.6) and in Nigeria (79.9) (Emorinken, *et al.*, 2023) ,and in Canda (28.4) (Benyamina Douma, *et al.*, 2019). Furthermore, the present investigation showed that the LBP was associated with sociodemographic factors, such as sex, age, education level, smoking, and occupation. This research also showed significant association between the frequency of LBP and socio-demographic factors, which is in accordance with previous studies.

This study showed significant association between age group and sex (p= 0.003) and this conformed by study in Qatar (Bener, *et al.*, 2014) .

Regarding association between sex and educational level, this study found High significant (p value=0.0001) and this conformed by study in Qatar too (Bener, *et al.*, 2014).

Occupation and marital status and smoking have significant associated with sex (p value =0.0001) and this conformed by the same study in Qatar (Bener, *et al.*, 2014), and in this study express significantly correlation between sex and BMI (p value = 0.0001) this conformed by study in Span, significant association between sex and BMI (Calais-Ferreira, *et al.*, 2023).

Regarding to this study significantly correlation between smoking and sex (p value =0.0001) and this conformed by study in Span, found significant association between sex and smoking (Calais-Ferreira, *et al.*, 2023) .

The most common symptom mentioned was increased pain with lifting and bending which affected 91.4% of individuals. stiffness in the morning upon rising that improves with exercise (55.5%), and back pain that comes and goes (60.7%). Less frequent symptoms were limitation of movement (45.7%), numbness or tingling, weakness in the legs or feet (42.3%), pain that radiates away from the back into the buttocks, leg, or hip (41.4%), weight loss that was (4.3%).

The mean and SD for Quebec disability score in this study was (57.5±15.6) and this is confirmed by many studies, e.g. in the Poland (Misterska, *et al.*, 2011a) was 50.2 ± 18.9, and in another studies disagreed such that in Turkey mean and SD (37.132 ±17.513) (Bicer, *et al.*, 2005), and In Marburg, Germany the mean and SD (43.58 ±18.08) (Riecke, *et al.*, 2016), and in Italy was (32.15 ±13.2) (Speksnijder, *et al.*, 2016).

In t,he present study a strong association was found between demographic characteristics and disease subtype. This finding is consistent with a study conducted in Iran (Sadeghi-Yarandi, *et al.*, 2021).

Also a significant relationship between age, BMI, job, work experience, working hours per day, type of work shift, education level, type of occupational task, previous LBP, history of underlying diseases, and type of LBP in the subjects. Prior research has shown that these criteria are significant contributing variables to the chronicity of Low Back Pain. Research has shown that those who are older, have a higher body mass index (BMI) are more susceptible to Chronic Low Back Pain (CLBP).

Conclusion

LPB has a higher frequency among the female population, highest proportion chronic disease, highly significant between sex and BMI

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