

## Low Back Pain in Population of Arar City, Northern Saudi Arabia: an Epidemiological Study

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### ABSTRACT

**Background:** Low back pain (LBP) is a nonspecific condition of acute or chronic pain in or near the lumbosacral spines. It can be caused by inflammatory, degenerative, neoplastic, gynecologic, traumatic, metabolic, or other disorders. The **aim** of the study was to determine the prevalence and risk factors of low back pain. To show also its symptoms and treatment trials among general population of Arar, Kingdom of Saudi Arabia. **Methods:** A cross-sectional community based study was carried out on population of Arar city, Northern Saudi Arabia, during the period from 1 January to 30 July 2017. Systematic random sampling technique was followed. Data was collected by personal interview, using pre designed questionnaire which include questions designed to fulfill the study objectives. **Results:** Among 501 studied individual. The prevalence of low back pain was 23.8%, 57% of them were females (P=0.02) and 30% had family history of low back pain. However 91% of cases doesn't need vigorous effort in their work. Of the cases 90% doesn't seek medical care for treatment. Disk problems were found in 6.7% of cases, soft tissue problems in 9.3% and in 84% of cases the cause was not diagnosed. About quarter (25.2%) get medical treatment but only 16.8% improved. While 19.3% get physiotherapy and most of them (18.2%) improved. No ases get surgical treatment. **Conclusion and Recommendations:** There was a high prevalence of LBP among Arar population (23.8%). Many risk factors were identified that would necessitate multidisciplinary involvement. Disk problems were found in 6.7% of cases, soft tissue problems in 9.3% and in 80% of cases the cause was not diagnosed. We recommend that educational programs on prevention and coping strategies for musculoskeletal disorders are mandatory to reduce the rate of work-related musculoskeletal disorders.

**Keywords:** Saudi Arabia, low back pain, prevalence, Arar, Epidemiological Study

### INTRODUCTION

Low back pain is a world wide health problem. It is a common form of musculoskeletal disorders <sup>[1]</sup>. It was defined as pain or muscle tension below the costal margin and above the inferior gluteal fold, with or without leg pain. In Saudi Arabia after 6 month of study, it was found that above 50% of affected population suffer from neuropathic pain. Studies in USA found that above 60% of general population suffer from low back pain at some point in their life time <sup>[2]</sup>. Studies showed different prevalence rates. Point prevalence ranged from 12% to 33%. First prevalence ranged from 22% to 65% and life time prevalence from 11% to 84% <sup>[3,4]</sup>.

All these studies can't be compared due to the different questions involved in each study. And each study was carried on different population. Low back pain was not limited on old people only, but it was a common problem in adolescents as about 39% of them suffered from this problem and 12-80% of them were student <sup>[5]</sup>. Brittan study has reported that the number of people affected by low back pain increased from 36,4% to 44% in 10

years, and It's starts to appear at the age of 30 and reach to it's highest range at the age 45-60 years <sup>[6]</sup>. Although it was found that low back pain affects men and women in the same range, UK reported that the affected women are slightly higher than men <sup>[7]</sup>. Low back pain problem induce affects on the economic state of the country. It was reported in united states that the costs of these condition exceed 100 billion dollars per year <sup>[8]</sup>. It also affects people's employment because they suffer from social, physical and mental disturbance, this disturbance appears in the form of loss of physical function, deteriorated general health, irritability, anxiety and depression <sup>[9,10]</sup>.

In USA, back pain is the most common cause of activity limitation in people younger than 45 years, and in United Kingdom back pain is considered the common cause of absence from work as it represents 12.5% of all sick days <sup>[11]</sup>. Till present time the main cause of low back pain couldn't be found. But few studies showed that there is a relation between low back pain in individuals and their life style, physical activity and smoking <sup>[13]</sup>. There is a relation between

amount of daily smoking and chronic low back pain in young adults. This relation was explained as smoking reduced bone mineral density and that lead to osteoporosis and appear of micro fracture in vertebrae which lead to degenerative change in vertebral column <sup>[13]</sup>. Coffee, tea and soft drink contain caffeine. And that result in the increase of urinary calcium which cause detrimental effect on bone on long time. Body weight as it is common in obesity individual, genetic factor is also a limiting factor <sup>[14]</sup>.

It was found that, adult who suffer from back pain their family had a history of musculoskeletal disorder . Although back pain is not a matter of age, yet, a study found that percentage of affected people increased with age, social state as it's more prevalent in married individual than un married, as 23% of them were married. Sitting position as sitting for long time or in wrong position lead to back pain. Therefore medical student are most predisposed to back pain due to sitting for long time for studying and are exposed to stress<sup>[15]</sup>. Sergeants are the most affected people by low back pain by all carrier because of their nature of work as they stand for long time in a position that affect the back in a damageable way during surgeries <sup>[16]</sup>. Due to the lack of information and knowledge about the main cause, we couldn't suggest radical treatment but sport. Regular physical activity, take off smoking, reduce caffeine, sitting in right way may decrease low back pain <sup>[17]</sup>.

## OBJECTIVES

The aim of the study was to determine the prevalence and risk factors of low back pain. To show also its symptoms and treatment trials among general population of Arar, Kingdom of Saudi Arabia.

## PARTICIPANTS AND METHODS

**Study design and setting:** A cross-sectional community based study was carried out on population of Arar city, Northern Saudi Arabia, KSA.

**Study period and target population:** This study was conducted during the period from 1 January to 30 July 2017.

**Sampling:** The sample size calculated using the sample size equation:  $n = z^2 p(1-p) / e^2$ , considering target population more than 1000, and study power 95%. The minimum required sample is 384. Systematic random sampling technique was

followed. After identifying the first house randomly in the selected area, every 9th house will be visited to include all the elderly subjects residing in those selected houses till the required sample is covered. Data was collected from 501 individuals aged between 18 to 65 years old.

### Data collection

Data was collected by personal interview with using pre designed questionnaire which include questions designed to fulfill the study objectives.

Socio-demographic characteristics including age, sex, educational level, marital status and occupational status.

- Questions about low back pain, of that pain, if continuous or not, increases with food intake or not and other signs and symptoms of reflux.
- The questionnaire included also questions about risk factors like smoking, type of work, position during work , performing regular exercise, obesity, diabetes mellitus, family history of low back pain, exposure to accident or trauma
- Seeking medical care for treatment of low back pain, diagnosis, treatment (Surgical, Physiotherapy or medical).

### Statistical Analysis

All the data were analyzed using statistical package for social sciences (SPSS Inc.) version 16. Descriptive statistics for the prevalence and quantitative variables were used. Risk factors were determined using X<sup>2</sup> test. P-value of less than 0.05 was considered statistically significant.

### Ethical considerations:

Permission to conduct the study was obtained from the Research and Ethics Committee at the College of Medicine, Northern Border University, Arar, Saudi Arabia. Data collectors explained the aims and significance of the suggested study to the participants to get their consent. Confidentiality was considered along with the study.

## RESULTS

Table (1) illustrates the Socio-demographic data, some risk factors and prevalence of low back pain in the studied population, Arar, 2017. From 501 of studied population 267 (53.3%) were males and 234 (46.7%) were female. Most of the studied population was from 20 – 45 years as they represent 82.6%. About the marital status, half of them were single. Although 70% of cases reach university stage of education, just 45% of them get in work. Just 17% of them do physical effort in

there work but most of them (60.3%) had work depend on both mental and physical efforts . Only 11% of cases perform regular exercise. D.M affects only 4% of them.

The prevalence of low back pain among the studied population was 23.8%.

**Table (1): Socio demographic data, some risk factors and prevalence of low back pain in the studied population, Arar, 2017**

<b>Sex</b>	<b>Frequency (n=501)</b>	<b>Percent</b>
Female	234	46.7
Male	267	53.3
<b>Age group (in years)</b>		
<20	47	9.4
20-40	414	82.6
40-65	40	8.0
<b>Marital status</b>		
Divorced/widow	20	4.0
Single	251	50.1
Married	230	45.9
<b>Educational level</b>		
Illiterate	4	.8
Primary	14	2.8
Secondary	128	25.5
University or more	355	70.9
<b>Working status</b>		
Working	228	45.5
Not working	273	54.5
<b>Low back pain</b>		
No	382	77.3
Yes	119	23.8
<b>Type of work</b>		
Depends on physical effort	89	17.8
Depends on mental effort	110	30.0
Depends on both	302	60.3
<b>Perform regular exercise</b>		
No	444	88.6
Yes	57	11.4
<b>Obesity</b>		
No	355	70.9
Yes	146	29.1
<b>Diabetes mellitus</b>		
No	480	95.8
Yes	21	4.2

Table (2) shows the relation between low back pain and socio-demographic characteristics of the studied population. Among 501 participants, we found that 119 cases had low back pain. More than half (57%) of them were females (P=0.02). Most of participants (82.6%) aged between 20 to 40 years and 84% of them had low back pain (P=0.05). About half of the surveyed (46%) were married, and half of married participants had low back pain. Regarding the educational level, 64,7% of cases

reach university stage. There was no significant relation between work and low back pain as 52% of cases were working (P>0.05). Type of work can play a role in low back pain, people whose work depend on physical and mental effort were more affected than other types of work (P=0.02). Answers of questions indicated that 95% of cases didn't perform muscular exercise. The probability that there was a relation between diabetes mellitus and back pain was very low as only 3% of cases were diabetics (P>0.05).

**Table (2): The relationship between Low back pain and socio-demographic characteristics of the studied population, Arar, 2017**

	Sex	Low back pain		Total (n=501)	P value
		Yes (n=119)	No (n=382)		
	Female	68	166	234	0.026
		57.1%	43.2%	46.7%	
	Male	51	216	267	
		42.9%	56.5%	53.3%	
<b>Age group</b>	<20	15	32	47	0.051
		12.6%	8.4%	9.4%	
	20-40	100	314	414	
		84.0%	82.2%	82.6%	
	40-65	4	36	40	
		3.4%	9.4%	8.0%	
<b>Marital status</b>	Divorced/widow	4	16	20	0.518
		3.4%	4.2%	4.0%	
	Single	55	196	251	
		46.2%	51.3%	50.1%	
	Married	60	170	230	
50.4%		44.5%	45.9%		
<b>Educational level</b>	Illiterate	1	3	4	0.348
		.8%	.8%	.8%	
	Primary	5	9	14	
		4.2%	2.4%	2.8%	
	Secondary	36	92	128	
		30.3%	24.1%	25.5%	
University	77	278	355		
	64.7%	72.8%	70.9%		
<b>Working status</b>	Not working	56	172	228	0.388
		47.1%	45.0%	45.5%	
	Working	63	210	273	
		52.9%	55.0%	54.5%	
<b>Type of work</b>	Both mental and physical	64	238	302	0.022
		53.8%	62.3%	60.3%	
	Physical	31	58	89	
		26.1%	15.2%	17.8%	
	Mental	24	86	110	
		20.2%	22.5%	22.0%	
<b>Performing muscular exercise</b>	No	113	331	444	0.007
		95.0%	86.6%	88.6%	
	Yes	6	51	57	
		5.0%	13.4%	11.4%	
<b>Obesity (BMI &gt;30 Kg/m<sup>2</sup>)</b>	No	82	273	355	0.334
		68.9%	71.5%	70.9%	
	Yes	37	109	146	
		31.1%	28.5%	29.1%	
<b>Diabetes mellitus</b>	No	115	365	480	0.415
		96.6%	95.5%	95.8%	
	Yes	4	17	21	
		3.4%	4.5%	4.2%	

Table (3) shows low back pain related characteristics and treatment in the studied cases. It is clear that, 70% of cases complain from musculoskeletal pain in other sites. Family history of low back pain was found in 30% of cases. Moreover, 16% exposed to accident or trauma and 33% drive car for long time daily. Most ( 91%) of cases doesn't need vigorous effort in there work. Setting for long time during work was found in above 50% of cases.

Most of affected cases (90%) doesn't seek medical care for treatment. As regards diagnosis, disk problems were found in 6.7% of cases, 9.3% had muscular and soft tissue problems and in 80% of cases the cause was not diagnosed. About quarter (25.2%) get medical treatment but only 16.8% improved. While 19.3% get physiotherapy and most of them (18.2%) improved. No cases get surgical treatment.

**Table (3): low back pain related characteristics and treatment in the studied cases, Arar, 2017**

<b>Musculoskeletal pain in other sites</b>	<b>Frequency (n=119)</b>	<b>Percen</b>
No	35	29.4
Yes	84	70.6
<b>Family history of low back pain</b>		
No	83	69.7
Yes	36	30.3
<b>Exposure to accident or trauma</b>		
No	100	84.1
Yes	19	16.0
<b>Driving cars for long time daily</b>		
No	86	72.3
Yes	33	27.7
<b>Does your work needs vigorous effort</b>		
No	91	76.5
Yes	28	23.5
<b>Low back pain related to pregnancy and delivery (in women)</b>		
No	88	73.0
Yes	31	26.1
<b>Position during work</b>		
Walking and continues movement	38	31.9
Prolonged setting	54	45.4
Prolonged standing	27	22.7
<b>Seeking medical care for treatment of low back pain</b>		
No	92	77.3
Yes	27	22.7
<b>Diagnosis</b>		
Disk problems	8	6.7
Muscular and soft tissue problems	11	9.3
Not diagnosed yet	100	84.0
<b>Treatment</b>		
Surgical	0	0.0
Medical treatment	30	25.2
Improved on medical treatment	20	16.8
No improvement on medical treatment	10	8.4
Physiotherapy	23	19.3
Improved on physiotherapy	22	18.5

## DISCUSSION

Low back pain (LBP) is a nonspecific condition of acute or chronic pain in or near the lumbosacral spines. It can be caused by inflammatory, degenerative, neoplastic, gynecologic, traumatic, metabolic, or other disorders<sup>[17]</sup>. LBP is a universal health problem. It is a common experience in the life of almost every human being. As well as a it is a growing cause of direct and indirect costs for the social systems in many industrialized countries<sup>[18]</sup>.

This community based survey was done to estimate the prevalence of low back pain among the general population of Arar, Saudi Arabia. A total of 501 individuals (267 men and 234 women) were surveyed. About third of the participants (23.8%) was positive to low back pain. Higher figures were reported from Britain in 2 community surveys 10 years apart (36.4% rising to 49.1%)<sup>[16]</sup>. The present study has shown that back pain was common among studied population with higher prevalence in females than in males (57.1%-42.9%) respectively. The higher prevalence among females has been also reported by some, while others showed no predilection to females<sup>[4,19]</sup>.

In the current study, there was no relation between overweight and low back pain, as 68.9% of the participants had normal BMI and but had low back pain ( $P < 0.05$ ). Unlike in other studies; overweight has been thought to be associated with low back pain, however, epidemiological studies showed both positive and negative relationship with back pain<sup>[13,20]</sup>. Moreover, 69.7% of the participants suffering from low back pain reported no family history of low back pain, while the association between back pain and family history of back problems has also been seen in most previous studies<sup>[2,17]</sup>.

The current study also reported no relation between low back pain and type of job as 76.5% of the participants suffering from low back pain had work need no vigorous efforts. Only 31.9% had their work depending on continuous movement and walking and only 22.7% had a work demanding prolonged standing. While in other studies; low back pain was more common among individuals with physically demanding jobs and a dose-response relationship has been shown between both short and long-term LBP and increasing workload<sup>[20]</sup>. Physical workload, such as manual material handling, bending and twisting, as well as whole-body vibration, constitutes an increased risk for LBP<sup>[19]</sup>. It is possible, that women when exposed to the same workload as

men, describe their work as more physically demanding, especially when they have LBP.

In the present study, most of patients (77.3) didn't seek a medical care to overcome low back pain. So the cause of low back pain didn't detected yet in 84% of them. Non-specific low back pain is defined as symptoms without a clear specific cause that is, low back pain of unknown origin. Another studies<sup>[22]</sup> found that about 90% of all patients with low back pain will have non-specific low back pain and the diagnosis based on exclusion of specific pathology.

Low back pain is most commonly treated in primary healthcare settings. The diagnostic and therapeutic management of patients with LBP has long been characterized by considerable variation within and between countries, among general practitioners, medical specialists, and other healthcare professionals<sup>[21]</sup>.

Our study reported no surgical treatment, however there was improvement in physiotherapy and medical treatment (18.5- 16.8) respectively. However, in Korean study, there were effects of drug therapy & exercise and the physical therapy & exercise on low back pain. The effects of physical therapy & exercise on pain were the greatest<sup>[23]</sup>. In a study in North Carolina study, Of our sample, 29.7% had seen a physical therapist. Exercise was the most frequent treatment received in 75% of sample<sup>[24]</sup>.

## CONCLUSION AND RECOMMENDATIONS

There was a high prevalence of LBP among Arar population (23.8%). Many risk factors were identified that would necessitate multidisciplinary involvement to reduce LBP incidence. Disk problems were found in 6.7% of cases, soft tissue problems in 9.3% and in 80% of cases the cause is not diagnosed. We recommend that educational programs on prevention and coping strategies for musculoskeletal disorders be made mandatory for Arar general population in order to reduce the rate of work-related musculoskeletal disorders.

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