

## The Prevalence and Correlates of Back Pain in Adults: A Cross Sectional Study from Asir Region

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### Abstract

**Background:** Low back pain is a global health problem and it is a common form of musculoskeletal diseases. Low back pain interferes with the quality of life of the individuals, and it is a leading cause of medical consultation. Smoking, life style and physical activity had association with LBP.

**Aim of the Study:** To measure prevalence of back pain among adult population in Asir Region.

To assess back pain's correlation with age, gender, smoking and physical activity.

To assess influence of times per day and years of smoking on back pain.

**Methods:** The study is descriptive cross sectional study, it was performed during the period from April 2018 to May 2018 on adult educated population in Asir Region. A structured self-administered questionnaire was developed to investigate sociodemographics variables, smoking history, medical history and back pain history.

**Results:** The study included 400 participants, 260 (65%) of them were males and 140 (35%) were females. There were 52.3% of participants reported having back pain, and 97 (24.3%) reported having continuous back pain. Several factors influenced the prevalence of back pain; it was found that being male was associated with suffering back pain ( $p$ -value=0.03). Whereas performing sport activity was associated with having no back pain ( $p$ -value=0.02). Age had no significant correlation with back pain. The study included 217 (54.3%) current smoker and 43 (10.7%) ex-smoker. There were 89 (22.3%) smoking 1-3 times per day and 107 (26.8%) smoking since 4-6 years, also in this study we find a strong relation between smoking and back pain ( $p$ -value=0.001).

Both of times of smoking per day and years of smoking positively associated with back pain ( $r=+0.3$ ,  $p$ -value=0.004;  $r=+0.4$ ,  $p$ -value=0.03 respectively). Persistence of back pain positively associated with years of smoking ( $r=+0.2$ ,  $p$ -value=0.02).

**Conclusion:** There was moderate prevalence of back pain among our participants. The prevalence of back pain was found to be associated with gender, smoking state and physical

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activity. It was more prevalent in males and smokers, whereas performing sport activity was associated with having no back pain. The prevalence of back pain was found to be associated with times and years of smoking and the chronic back pain was positively associated with years of smoking.

**Key Words:** Lower back pain – Gender – Smoking – Saudi Arabia – Adults.

### Introduction

**LOW** Back Pain (LBP) is a global health problem and it is a common form of musculoskeletal diseases [1]. It is a muscle tension or pain above the inferior gluteal and below the costal margin, either with or without leg pain [2]. LBP interferes with the quality of life and it is a leading cause of medical consultation [3]. LBP is very common condition, where half of adult individuals experience LBP which can last for more than 24 hours during the year [4]. The prevalence of LBP in USA was found to be more than 60% among general population [5]. In Canada LBP was estimated to be prevalent in 84% of adults [6] and the average prevalence in Finland, Denmark and UK was 75%, 70% and 59% respectively [7-9]. In Saudi Arabia, the prevalence was 23.8% among population in Arar City with more prevalence among females, also this study concluded that age had no significant influence on the prevalence of back pain [12]. Physical activity was one of several factors investigated to reduce back pain [10].

Smoking is a great global public health threats that has been encountered as WHO mentioned [11]. In 2015, it was estimated that there were over one billion individuals were tobacco smokers [12] and 80% of all smokers in the world are living in less developed countries [11]. Saudi Arabia was in the 8<sup>th</sup> rank in the world regarding tobacco use as reported by WHO [13]. A study performed in KSA

in 2013 showed that the overall prevalence of current smoking was 12.2% and it was more prevalent in males than females [14]. Smoking causes death for many smokers [15], it also results in many disease involving; chronic obstructive pulmonary disease, lung and heart diseases, cancer and stroke [16]. It was reported that smoking, life style had association with LBP, the influence of smoking on the vertebral column was explained as smoking results in reduction of bone mineral density leading to osteoporosis and hence micro fractures appear in the vertebral column which in turn leads to degenerative changes [17].

This study reported that the prevalence of LBP was increased in smokers than former smokers and non-smokers [8].

A study concluded greater exposure to nicotine increases the amount of pain perception [18]. In the present study we aimed to measure prevalence of back pain and its correlations with age, gender, and physical activity and smoking. And assess influence of times per day and years of smoking on back pain.

## Subjects and Methods

### Subjects and study design:

This study is descriptive cross sectional study, it was conducted on adult educated population in Asir Region during the period from April 2018 to May 2018. The inclusion criteria were educated population who were at least middle school graduated to be able to read and understand questionnaire paper, and those who were over the age of 20 years [29]. And settled in Asir Region. Exclusion criteria were uneducated population, under the age of 20 years, and who were visitors to Asir Region. Data of 404 participants were collected, 4 of them were excluded as the data weren't complete and 400 individuals were included. Ethical approval was taken from Ethical Committee. Confidentiality and privacy will be guaranteed for all participants.

### Questionnaire:

A structured self-administered questionnaire was developed and includes the following sections: Sociodemographic variables questions include; age, gender, marital status, nationality, occupation and education level. The second part included smoking history and the third part included medical history and back pain history. The questionnaire was distributed in malls, traditional markets and gardens.

### Statistical analysis:

Statistical Package for Social Sciences (SPSS) software Version 21 was used for data entry and analysis. Categorical variables were expressed as percentages, the *t*-test was used for continuous variables and Chi-square test was used to test the associations which is shown in aims of this study. Tables and possible graphs were used to show the results.

## Results

The present study included 400 participants, 260 (65%) of them were males and 140 (35%) were females. There were 112 (28%) individuals in the age range of 20-29 years old, 75 (18.7%) in the age range of 30-39, 158 (39.5%) and 55 (13.8%) in the age range of 40-49 years and 50 years and more respectively. The large majority 346 (86.5%) were Saudi individuals, whereas 54 (13.5%) were non-Saudi. Half of participants were married and 188 (47%) were singles, while 8 (2%) and 4 (1%) were divorced and widowers respectively. Regarding education level, individuals with university education were the dominant group 262 (65.5%), followed by those with high school 100 (25%) and then those having preparatory education 38 (9.5%). There were 279 (69.7%) reported that they had work and 121 (30.3%) reported that they weren't working, (Table 1) summarizes the demographics of participants.

Table (1): Demographics of participants.

Demographics	N (%)
<i>Age:</i>	
20-29	112 (28)
30-39	75 (18.7)
40-49	158 (39.5)
50	55 (13.8)
<i>Gender:</i>	
Male	260 (65)
Female	140 (35)
<i>Nationality:</i>	
Saudi	346 (86.5)
Non-Saudi	54 (13.5)
<i>Marital status:</i>	
Single	188 (47)
Married	200 (50)
Divorced	8 (2)
Widower	4 (1)
<i>Education level:</i>	
Preparatory	38 (9.5)
High school	100 (25)
University	262 (65.5)
<i>Occupation:</i>	
Yes	279 (69.7)
No	121 (30.3)

Regarding smoking status, there were 217 (54.3%) were smokers, 43 (10.7%) were ex-smokers and 140 (35%) weren't smokers. Of those who smoke, 158 (39.5%) reported smoking cigarettes, 26 (6.5%) reported shisha, 4 (1), 20 (5%) and 9 (2.3%) reported pipe, cigar and electric cigarettes respectively. There were 49 (12.3%) reported smoking more than 6 times per day and 70 (17.5%) reported smoking since 6 years, the status and history of smoking are shown in (Table 2).

Table (2): Status and history of smoking.

Smoking status	N (%)
<i>Are you current smoker?</i>	
Yes	217 (54.3)
No	140 (35)
Ex-smoker	43 (10.7)
<i>What do you smoke?</i>	
Cigarettes	158 (39.5)
Shisha	26 (6.5)
Pipe	4 (1)
Cigar	20 (5)
Electric cigarettes	9 (2.3)
<i>How many times you smoke per day?</i>	
1-3 times	89 (22.3)
4-6 times	79 (19.7)
More than 6 times	49 (12.3)
<i>Since when you smoke?</i>	
1-3 years	40 (10)
4-6 years	107 (26.8)
More than 6 years	70 (17.5)

The medical history of participants is shown in (Table 3), there were 312 (78%) of our participants reported medical problems, 209 (52.3%) of them reported suffering back pain and the most reported cause of back pain was unknown reason 80 (20%). The prevalence of back pain and its causes are shown in Figs. (1,2) respectively. Most of patients with back pain 97 (24.3%) reported having continues pain, while 54 (13.5%) and 58 (14.5%) reported having back pain more than and less than 3 months respectively. Regarding performing exercise, 141 (35.3%) only reported performing exercise and the most performed was walking 101 (25.3%).

The correlations between having back pain and different factors were investigated (Table 4), it was found that being male and current smoker were associated with suffering back pain ( $p$ -value=0.03, 0.001 respectively), whereas performing sport activity was associated with having no back pain ( $p$ -value=0.02). Age had no significant correlation with back pain.

Table (3): Clinical history of participants.

Clinical history	N (%)
<i>Having medical problems?</i>	
Yes	312 (78)
No	88 (22)
<i>How long did you experience back pain?</i>	
Continuously	97 (24.3)
More than 3 months	54 (13.5)
Less than 3 months	58 (14.5)
<i>Do you do any sports activity?</i>	
Yes	141 (35.3)
No	259 (64.7)
<i>What kind of sports activity do you practice?</i>	
Walking	101 (25.3)
Aerobics	19 (4.7)
Running	21 (5.3)

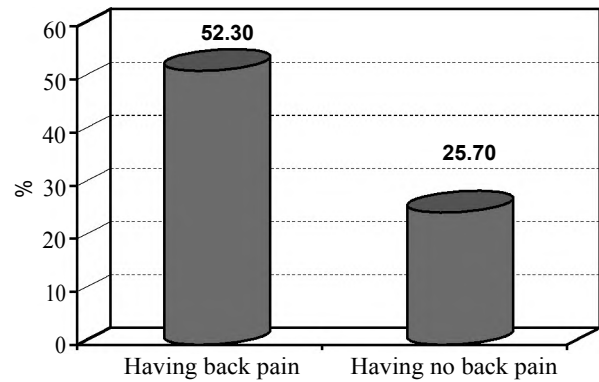


Fig. (1): Prevalence of back pain.

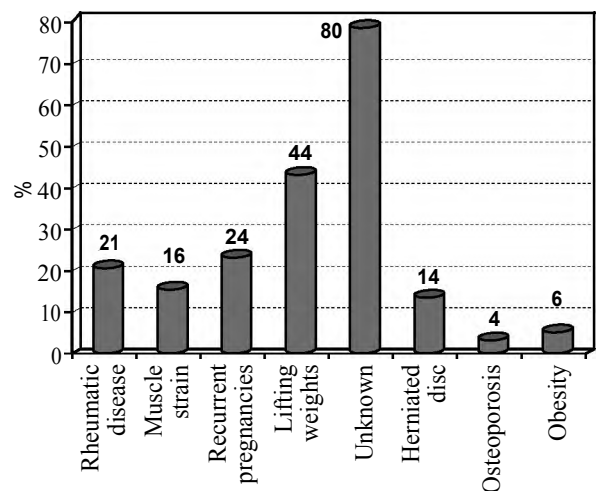


Fig. (2): Causes of back pain as reported by participants.

There was a positive significant correlation between back pain and each of smoking per day ( $r=+0.3$ ,  $p$ -value=0.004) and years of smoking ( $r=+0.4$ ,  $p$ -value=0.03), also there was a positive correlation between period of experience of back pain and years of smoking ( $r=+0.2$ ,  $p$ -value=0.02).

Table (4): Correlations between different factors with having back pain.

Variables	Back pain N (%)		p-value
	Yes (209)	No (191)	
<i>Age:</i>			
20-29	50 (12.5%)	62 (15.5%)	0.09
30-39	35 (8.7%)	40 (10%)	
40-49	89 (22.3%)	69 (17.3%)	
50	35 (8.7%)	20 (5%)	
<i>Gender:</i>			
Male	200 (50%)	60 (15%)	0.03
Female	9 (2.3%)	131 (32.7%)	
<i>Are you current smoker?</i>			
Yes	173 (43.3%)	44 (11%)	0.001
No	6 (1.5%)	134 (33.5%)	
Ex-smoker	30 (7.5%)	13 (3.2%)	
<i>Do you do any sports activity?</i>			
Yes	20 (5%)	121 (30.3%)	0.02
No	189 (47.2%)	70 (17.5%)	

## Discussion

The present study included 400 participants, 65% of them were males and 35% were females, participants of age of 40-49 years old were more dominant (39.5%) among all participants. There were 54.3% smokers and 10.7% ex-smokers. The most common type of smoking was cigarette (39.5%) followed by shisha (6.5%). Of smokers, there were 89 individuals reported smoking 1-3 times per day and least number 49 reported smoking more than 6 times per day. Most of smokers (107 individuals) reported smoking since 4-6 years. In a previous study in Saudi Arabia [14] it was found that the overall prevalence of current smoking was 12.2%, and daily shisha smoking was the most common and it was reported by 4.3% followed by 1.4% of cigarette, cigar and shisha daily smokers. In the current study, there were 78% had medical problems, 35.3% only reported performing exercise and the most common type of exercise was walking (25.3%). There were 52.3% of participants reported having back pain, continues back pain was the most dominant among participants (24.3%) and the most reported cause for back pain was unknown (20%). The prevalence of low back pain was lower in Arar City in KSA as it was among 23.8% of population (23.8%) [2]. However, the prevalence in this study was lower than that reported from Canada (84%) [6], Finland (75%) [7], Denmark (70%) [8] and UK (59%) [9]. The present study showed that there were several factors influenced the prevalence of back pain including gender, smoking status and performing sports activity,

however age had no significant impact on back pain ( $p$ -value=0.09). Males and smoker individuals tended to suffer back pain ( $p$ -value=0.03, 0.001 respectively), whereas those who performed sports tended to suffer no back pain ( $p$ -value=0.02). In contrast to our results, it was reported from UK that females were suffering slightly more than males [19] and this was supported by a study from Saudi Arabia as the back pain was significantly more prevalent in females than in males ( $p$ -value=0.02) [2]. In Indian study [20] it was demonstrated that the prevalence of low back pain was significantly higher in women than in men. Also, a study from Iran [21] showed that LBP was more prevalent in women than in men. However, our findings can be explained as the males were more dominant than females. Other studies [22,23] showed no tendency in prevalence in females. The same Saudi study [12] was in agreement with ours, as age had no significant influence on the prevalence of back pain ( $p$ -value=0.051). However, previous studies [24,25] found positive association between LBP and age. It was stated in a previous study [10] that physical activity was one of several factors investigated to reduce back pain and this was confirmed in our findings as those who were performing exercise were less prone to suffer back pain. The link between back pain and smoking has been reported and a dose response relationship was shown [26]. Other studies [8,27,28] reported that smoking is consistently associated with LBP.

A study from Iran showed that smoking was consistently associated with LBP [21]. In our study, back pain was positively associated significantly with times of smoking per day ( $r=+0.3$ ,  $p$ -value=0.004) and years of smoking ( $r=+0.4$ ,  $p$ -value=0.03). Also, period of experiencing back pain was positively associated with years of smoking ( $r=+0.2$ ,  $p=0.02$ ). In American study [10] it was found that daily smokers had higher prevalence of back pain than lighter ones. This can be explained by the hypothesis that nicotine alters the threshold and perception for pain resulting in increase in the self reported pain [18] hence it can be concluded that greater exposure to nicotine increases the amount of pain perception. A study from India [20] showed that there was no association between smoking and low back pain.

## Conclusion:

There was moderate prevalence of back pain among our participants. The prevalence of back pain was affected by gender, smoking status and physical activity. It was more prevalent in males and smokers, whereas performing sport activity

was associated with having no back pain the prevalence of back pain was found to be associated with times and years of smoking and the chronic back pain was positively associated with years of smoking.

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## مدى إنتشار ألم الظهر والعوامل المتعلقة به فى منطقة عسير

أهداف البحث: قياس مدى إنتشار ألم الظهر بين الأشخاص البالغين فى منطقة عسير. دراسة علاقة ألم الظهر بالعمر والجنس والتدخين والنشاط البدنى. دراسة تأثير مرات التدخين فى اليوم ومدة التدخين بالسنوات على ألم الظهر.

منهجية البحث: أجريت دراسة مقطعية بمنطقة عسير، وشملت الدراسة ٤٠٠ شخص من سكان منطقة عسير الذين تزيد أعمارهم عن ٢٠ سنة. وأستخدم الباحث إستبانة لجمع البيانات، تضمنت المتغيرات الإجتماعية الديموغرافية، وتاريخ التدخين والتاريخ المرضى بشكل عام وتاريخ ألم الظهر بشكل خاص. وتم توزيعها بطريقة عشوائية فى الحدائق والأماكن العامة.

نتائج البحث: شملت الدراسة ٤٠٠ مشارك، ٢٦٠ منهم (٦٥٪) من الذكور، و١٤٠ (٣٥٪) من الإناث. أفاد ٥٢.٣٪ من المشاركين بأنهم يعانون من ألم الظهر، بينما أبلغ ٩٧ (٢٤.٣٪) أنهم يعانون من ألم الظهر بشكل مستمر. عدة عوامل أثرت على إنتشار ألم الظهر، أظهرت الدراسة أن نسبة الشكوى من ألم الظهر عند الذكور أكثر منها عند الإناث ( $p=0.03$ ).

فى حين إرتبط أداء النشاط الرياضى بعدم وجود ألم فى الظهر ( $p=0.02$ ). لم يكن للعمر أى إرتباط مع ألم الظهر. أيضا وفقا لهذه الدراسة إرتبط بشدة ألم الظهر بالتدخين ( $p=0.001$ )، وشملت الدراسة ٢١٧ (٥٤.٣٪) مدخن حالى و٤٣ (١٠.٧٪) مدخن سابق. كان هناك ٨٩ (٢٢.٣٪) يدخنون ١-٣ مرات فى اليوم، وحيث أن ١٠٧ (٢٦.٨٪) يدخنون منذ ٤-٦ سنوات.

فى حين الدراسة، كان ألم الظهر مرتبط بشكل إيجابى بوضوح مع مرات التدخين فى اليوم الواحد ( $p\text{-value}=0.004, r=+0.3$ ) وسنوات التدخين ( $p\text{-value}=0.03, r=+0.4$ ).

الإستنتاجات: كان هناك إنتشار متوسط لآلام الظهر بين المشاركين لدينا. أظهرت الدراسة أن إنتشار ألم الظهر يرتبط بنوع الجنس وحالة التدخين والنشاط البدنى، حيث أن ألم الظهر كان أكثر إنتشارا بين الذكور والمدخنين، فى حين إرتبط أداء النشاط الرياضى مع عدم وجود ألم الظهر. أظهرت الدراسة أيضا أن إنتشار ألم الظهر كان مرتبطا بمرات التدخين فى اليوم وسنوات التدخين.