

**THE MODIFIABLE RISK FACTORS OF LOWER BACK PAIN AMONG UNIVERSITY STUDENTS IN WESTERN AREA OF KSA.**

<sup>1</sup>Afnan A. Al-Fridy, <sup>2</sup>Mohammed M. Al-Harbi, <sup>3</sup>Abdullah A. Abu-Alnasr, <sup>4</sup>Faten M. Shaqrun, <sup>5</sup>\*Yousef A. Turkistani and <sup>6</sup>Prof. Dr. Osama A. Amin

Prof. of Orthopedics & Spinal Surgery Orthopedic Department. College of Medicine, Taibah University.

\*Corresponding Author: Dr. Yousef A. Turkistani

Prof. of Orthopedics & Spinal Surgery Orthopedic Department. College of Medicine, Taibah University.

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**ABSTRACT**

**Objective:** The aim of this study to study the prevalence of low back pain and prevalence of potential risk factor of low back pain among students in western area of KSA, 2016. **Subjects and Methods:** a cross-sectional study of 500 participants. The questionnaires were distributed electronically. The used questionnaire was formulated to include age, demographic aspects, clinical symptoms, risk factors, past medical and surgical history and social history. The questionnaire includes 40 questions, discussing various aspects in the student's life. **Results:** There were 273 (61.8%) female and 169 (38.2%) male respondents. no significant differences in the duration pain due to the variable sex ( $P > 0.05$ ). (75.4%) of participants reported low back pain duration Less than 4 weeks, 21.6% refer the low back pain to their sitting for a long times. 52.7% do not practice sports or exercise. 78.3% were non-smokers, 51.4% subjected to passive smoking. 28.3% are usually studying on the desk, 51% use the backpack to lift their books and school tools, 8.4% have already exposure to bodily injuries in the back. **Conclusion:** High prevalence of acute low back pain among the students in western area of KSA, 2016, this pain is not a devastating impact on the various aspects of their life. Fairly high prevalence of potential risk factor of low back pain among those students.

**KEYWORDS:** Fairly high prevalence of potential risk factor of low back pain among those students.

**1. INTRODUCTION**

Low back pain (LBP) is a social and economic health problem that affects population of all ages globally. It is a significant burden on industrialized countries. Approximately 60-80% of the general population will suffer from LBP at some point in their lifetime and 20-30% are suffering from LBP at any given time. LBP is no longer the disease of the old. Surprisingly, 39.8% of the adolescent population mainly student is also found to suffer from LBP. In the US, LBP has been reported as the major factor responsible for limiting people activities and it is a common patient complaint in clinics. Functional disability associated with LBP might not be the main concern in a younger population. However, experiencing it earlier in life may lead to recurrent and chronic LBP in adulthood. There is abundance of information regarding prevalence of LBP among students, many of whom are health professional students. A review on LBP risk factors among these students concluded that there was diversity in risk factors examined and the results were inconsistent. Identified LBP risk factors included, gender, age, posture, smoking, psychosocial factors, general health status, duration of computer usage, physical activity levels and history of prior LBP experience. Presently, modifying the risk factors associated with LBP is advocated as the most

important prevention strategy in school children and adolescents. The prevention strategy of LBP can only be successful if its contributory and associated risk factors are identified and better understood. This study is aimed to determine the incidence of LBP and identify the associated risk factors among students which can be modified and prevented.

**2. OBJECTIVES**

- To study the prevalence of low back pain among students in western area of KSA, 2016.
- To study prevalence of potential risk factor of LBP among students in western area of KSA, 2016.

**3. MATERIAL AND METHODS**

The study protocol was approved by the ethics committee for human research, Taibah University. All eligible students provided signed written informed consent before their participation in the study. A cross sectional analytic study was performed to assess modifiable risk factors of lower back pain. A pre-designed structured Arabic language questionnaire was used in this cross-sectional survey. The used questionnaire was formulated to include age, demographic aspects, clinical symptoms, risk factors,

past medical and surgical history and social history. The questionnaire includes 40 questions, discussing various aspects in the student's life. The questionnaires were distributed electronically on a large scale to get the effective sampling. The final study sample size was 500 medical students. The survey included Saudi university students in western area. Any students outside western area were excluded. Ethical consideration was considered to avoid physical or emotional harm in the study questionnaire. The confidentiality and privacy of the collected data were ensured through the use of anonymous.

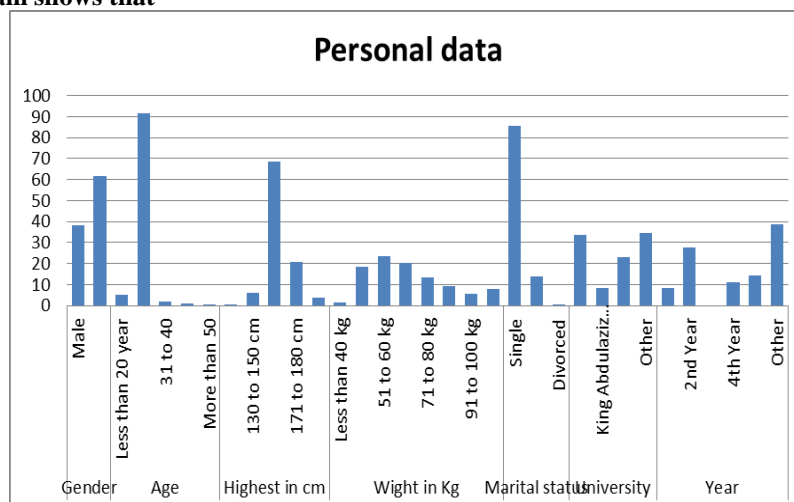
#### 4. Population & Sample of the Study

The population study consisted of all students in Saudi universities in the western region of Saudi Arabia, it was taking a random sample size of 500 student (male and female), applied to them the questionnaire electronically, it founded (86) student of sample had exclusion criteria, which were represented in The student outside the western region of Saudi Arabia, as well as student didn't previously suffered from lower back pain, thus the final study sample consisting of (442) students (male and female), the following table shows the characteristics according to personal profile:

**Table (1): The participants personal data.**

<i>Personal Data</i>		<i>Frequency</i>	<i>Percent</i>
Gender	Male	169	38.2
	Female	273	61.8
Age	Less than 20 year	23	5.2
	20 to 30	405	91.6
	31 to 40	9	2.0
	41 to 50	4	.9
	More than 50	1	.2
Highest in cm	Less than 130 cm	1	.2
	130 to 150 cm	28	6.3
	151 to 170 cm	303	68.6
	171 to 180 cm	93	21.0
	More than 180 cm	17	3.8
Wight in Kg	Less than 40 kg	7	1.6
	40 to 50 kg	82	18.6
	51 to 60 kg	104	23.5
	61 to 70 kg	89	20.1
	71 to 80 kg	59	13.3
	81 to 90 kg	41	9.3
	91 to 100 kg	24	5.4
	More than 100 kg	36	8.1
Marital status	Single	378	85.5
	Married	62	14.0
	Divorced	2	.5
University	Tibah University	149	33.7
	King Abdulaziz University	37	8.4
	Yanbu industrial college	103	23.3
	Other	153	34.6
Year	1st Year	37	8.4
	2nd Year	121	27.5
	3rd Year	0	0.0
	4th Year	50	11.3
	5th Year	63	14.3
	Other	171	38.7
Total		442	100.0

The following diagram shows that



Graph (1): The participant's personal data.

## 5. RESULTS

### 5.1. Pain analysis

Table (2): Distribution of sample according to sex and duration of lower back pain.

	Male # (%)	Female # (%)	Total # (%)	P-value
Less than 4 weeks	126 (28.5%)	207 (46.8%)	333 (75.4%)	0.524
From 4 - 12 weeks	12 (2.7%)	34 (7.7%)	46 (10.4%)	
More than 12 weeks	31 (7%)	32 (7%)	63 (14.3%)	
Total	169 (38.2%)	273 (61.8%)	442 (100.0)	

Mann-Whitney U Test. \*P < 0.05 \*\*P < 0.01.

The previous table shows the distribution of sample according to sex and duration of lower back pain. It also shows the test result of the differences in the duration of pain depending on gender variable, as the test result indicated the absence of significant differences in the duration pain due to the variable sex ( $P > 0.05$ ).

The following table shows the number of days which people of sample absent from work or school because of lower back pain:

Table (3): The number of days which people of sample absent from work or school because of lower back pain.

	Frequency	Percent
Less than 6 days	107	24.2
From 6 - 12 days	9	2.0
More than 12 days	2	.5
Never absent	324	73.3
Total	442	100.0

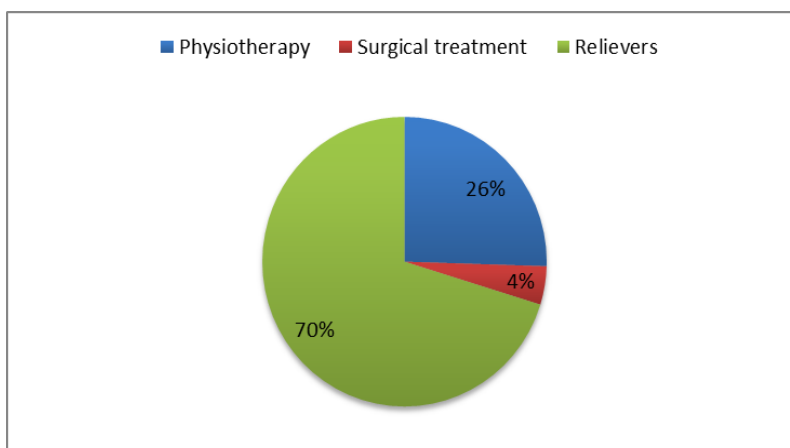
The table show that 73.3% of the sample didn't absent to their work or school because of lower back pain, while 24.2% of the sample were absent from work-school for a range from (1-6) days and 2% of them were absent from work-school for a range from (6-12) days, and 0.5% of them were absent from work or school for more than 12 days due to lower back pain.

When asked about if they visit a doctor because of lower back pain, 21.3% of them answered that they have visit the doctor complained of lower back pain, while 78.7% replied that they did not visit a doctor. As it can be seen from the following table.

Table (4): Distribution of sample according to visit to the doctor because of lower back pain.

	Frequency	Percent
Yes	94	21.3
No	348	78.7
Total	442	100.0

For the therapy using for the sample who visited a doctor, it found 70% of them used relievers treatment and 25.5% were treated by physiotherapy and 4.3% were operated with surgical treatment. The next graph shows that.



**Graph (2): The type of therapy used with those who visited a doctor.**

The following table explains the impact of pain on (the study, standing and sitting, walking, sleeping, as well as social life).

**Table (5): The impact of pain on (the study, standing and sitting, walking, sleeping, as well as social life).**

	<i>Mild # (%)</i>	<i>Moderate # (%)</i>	<i>Sever # (%)</i>	<i>Not at all # (%)</i>
Does the pain affect on your studying ?	169 (38.2%)	73 (16.5%)	17 (3.8%)	183 (41.4%)
Does the pain affect on your standing ?	201 (45.5%)	93 (21.0%)	33 (7.5%)	115 (26.0%)
Does the pain affect on your sitting ?	176 (39.8%)	120 (27.1%)	46 (10.4%)	100 (22.6%)
Does the pain affect on your walking?	150 (33.9%)	71 (16.1%)	20 (4.5%)	201 (45.5%)
Does the pain affect on your sleeping?	149 (33.7%)	93 (21.0%)	53 (12.0%)	147 (33.3%)
Does the pain affect on your social life?	93 (21.0%)	45 (10.2%)	21 (4.8%)	283 (64.0%)

From the above table, we can see that 41.4% of the sample, pain did not effect on their studies, 38.2% of the sample said that, the pain effect on their studies, but in a simple, while 16.5% of the sample said that the impact of pain on their studies are average, and only 3.8% of the sample, the impact of pain on their studies severely.

The impact of pain on standing for the sample, it founded that 45.5% of the sample, the pain effect on standing in a simple, 21% impact of pain on their standing in the average, 7.5% impact of pain on standing severely, while 26% of the sample the pain did not affect the standing never.

The impact of pain on sitting for the sample, it founded that 39.8% of the sample, the pain effect on sitting in a simple, 27.1% impact of pain on their sitting in the average, 10.4% impact of pain on sitting severely, while 22.6% of the sample the pain did not affect the sitting never.

The impact of pain on walking for the sample, it founded that 45.5% of the sample, the pain did not effect on walking never, while 33.9% of the sample the pain effect

on walking in a simple, 16.1% impact of pain on their walking in the average, 4.5% impact of pain on walking severely.

The impact of pain on sleeping for the sample, it founded that 33.3% of the sample, the pain did not effect on sleeping never, while 33.7% of the sample the pain effect on sleeping in a simple, 21% impact of pain on their sleeping in the average, 12% impact of pain on sleeping severely.

Finally, the impact of pain on social life for the sample, it founded that 64% of the sample, the pain did not effect on social life never, while 21% of the sample the pain effect on social life in a simple, 10.2% impact of pain on their social life in the average, 4.8% impact of pain on social life severely.

The participants were asked about back pain reasons, they gave many answers and the percentage of these answers is shown in the next table:

**Table (6): The reasons that exacerbate lower back pain.**

<i>Reasons</i>	<i>Number of answers</i>	<i>Percent</i>
Long standing	217	20.6
Long sitting	228	21.6
Bending	212	20.1

After sports	69	6.5
Lifting heavy weight	254	24.1
Walking	75	7.1

It is clear from the previous table that the most important back pain reasons, lifting heavy things, then comes the reason that sitting for a long times causes back pain, the next percentage was for the reason of standing up for a long time, the next was for bowing, the least percentage was for the reason practicing sports.

According to the ways the participants follow to decrease back pain, the next table shows their answers and the percentages:

**Table (7): The means used to reduce lower back pain**

	<i>Number of answers</i>	<i>Percent</i>
Do Nothing	72	13.3
Rest	332	61.1
By analgesic pills	91	16.8
By analgesic ointment	29	5.3
Other	19	3.5

It is clear from the previous table that the highest percentage was for relaxing, then taking the analgesic pills.

table below shows that 47.3% of the sample practice sports or exercise, while 52.7% do not practice in sports or exercise.

## 5.2. Risk factors analysis

### 5.2.1. Sports and exercise

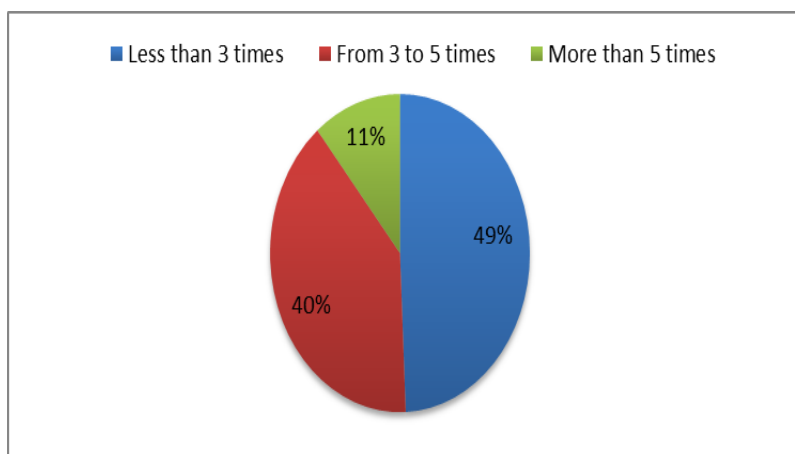
The following table shows the distribution of sample according to sport exercising, where we note from the

**Table (8): Distribution of sample according to sport exercising.**

<i>Do you practice sports or exercise?</i>	<i>Frequency</i>	<i>Percent</i>
Yes	209	47.3
No	233	52.7
Total	442	100.0

In a question to sport practice for a number of times practice per week; 49.3% of them that they are practice sports or exercise less than 3 times a week, 39.7% of the sample said that they practice sports or exercise of (3-5)

times per week and 11% of them answered that they practice sports or exercise more than 5 times a week. The following graphic illustrates this.



**Graph (3): Number of times playing sports per week.**

According to asking them about the types of sports they practice, the highest percentage was for practicing running, then playing football, the next percentage was

for practicing body building sports, then swimming, after that volleyball and the last percentage was for basketball. As it is shown in the next table.

**Table (9): Distribution of sample according to the type of sport that they practice.**

Type Sport	Number of answers	Percent
Football	61	18.9
Basketball	7	2.2
Volleyball	16	5.0
Running	87	27.0
Bodybuilding	49	15.2
Swimming	43	13.4
Other	59	18.3

**5.2.2. Smoking**

The following table shows the distribution of the sample in terms of smoking or not, where we note from the table

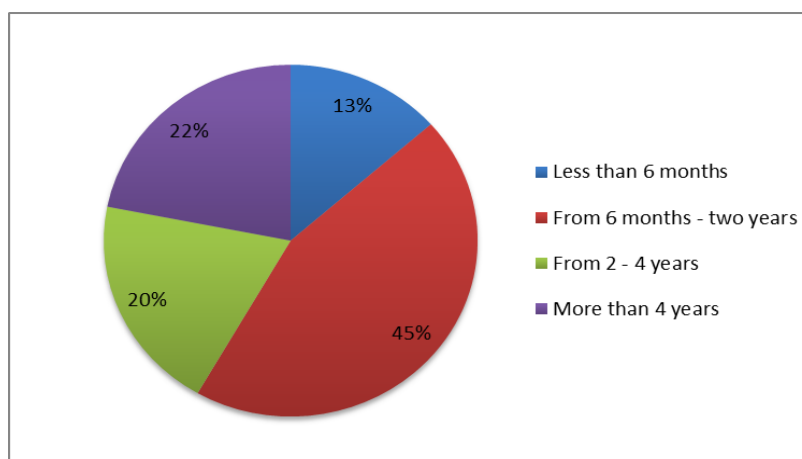
that the majority of sample were non-smokers with percentage 78.3% of the total size of the sample, while the remaining smokers.

**Table (10): Distribution of the sample in terms of smoking.**

	Frequency	Percent
Yes	96	21.7
No	346	78.3
Total	442	100.0

When smokers were asked about the period of time spent in smoking, 44.8% of them answered that they smoke since the period ranging from 6 months to two years, while 19.8% of them answered they smoke since a

period of time ranging from two years to (4) years and 21.9% of them spent time smoking for more than 4 years and 13.5% say they have spent time smoking for less than 6 months. The next graph shows that.

**Graph (4): Distribution of sample-smoking members by the length of time they spent in smoking.**

Also we talk about (secondhand smoke) by asking sample whether there was any family members or friends smoke in the same room, 51.4% of the sample said that they were as a secondhand smokers by having a family

member or friend to smoke in the same room while 48.6% of the sample said that there is no smoking of family members or friends are smoking in the same room.

**Table (11): Distribution of the sample according to their exposure to secondhand smoke.**

	Frequency	Percent
Yes	227	51.4
No	215	48.6
Total	442	100.0

**5.2.3. Study habits**

The following table shows the distribution of the sample according to the number of weekly hours of studying, 38% of the sample said that they are studying for a period of 5-10 hours per week and 32.4% of them said

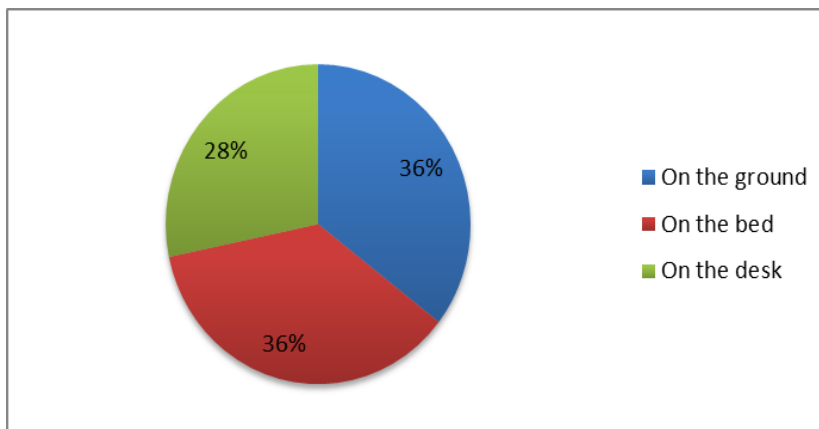
that they are studying for a period less than 5 hours per week and 17.6% of the sample said that they are studying for a period of time between (11-15) hours per week and 12% of the sample said that they are studying for a period of time in excess of 15 hours per week.

**Table (12): distribution of the sample according to the number of weekly hours of studying.**

	Frequency	Percent
Less than 5 hours	143	32.4
From 5 to 10 hours	168	38.0
From 11 to 15 hours	78	17.6
More than 15 hours	53	12.0
Total	442	100.0

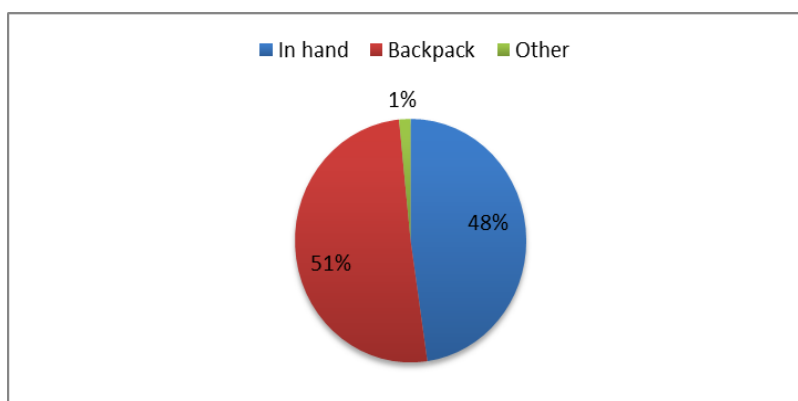
On asked about the place of studying usually, 36.2% of them answered that they usually studying on the bed, while 35.5% answered that they usually studying on the

ground and 28.3% is usually studying on the desk. The next graph shows that.

**Graph (5): Distribution of the sample according to the place of studying usually**

According to the participants answers on the question what is the way they use to lift their books, 51% use the backpack to lift their books and school tools, while 48%

of them lift them by their hands and 1% use other ways to lift their books and school tools. As it is shown in the next Chart.

**Graph (6): Distribution of the sample according to way they use to lift their books**

#### 5.2.4. Health habits relating to the back and backbone

The following table shows the distribution of the sample in terms of the number of hours they spend in the car a day, where we note from the table that 64.3% of the

sample spend less than two hours in the car every day, while 30.8% spend a period ranging from two to four hours in the car every day, and 5% of the sample said they spend for more than four hours in the car every day.

**Table (13): Distribution of the sample in terms of the number of hours they spend in the car a day.**

	Frequency	Percent
Less than 2 hours	284	64.3
From 2 to 4 hours	136	30.8
More than 4 hours	22	5.0
Total	442	100.0



The following table shows the distribution of the sample in terms of their exposure to any physical injuries in the back; where we note that 91.6% of them have not been

exposed to any physical injuries in the back, while only 8.4% have already exposure to bodily injuries in the back.

**Table (14): Distribution of the sample in terms of their exposure to any physical injuries in the back**

	Frequency	Percent
Yes	37	8.4
No	405	91.6
Total	442	100.0

The following table shows the distribution of sample in terms of whether they have any surgery in the back area or backbone, where we note that 98.6% of them did not

do any surgery in the back area or backbone, while 1.4% have surgical operations in the back area or backbone.

**Table (15): Distribution of sample in terms of whether they have any surgery in the back area or backbone.**

	Frequency	Percent
Yes	6	1.4
No	436	98.6
Total	442	100.0

When asked people of sample about whether there is any family member suffers from pain in the lumbar region, 66.3% of them answered the existence of a family

member suffers from lower back pain, while 33.7% of sample did not have any of the family members is suffering from lower back pain.

**Table (16): Distribution of the sample about whether there is any family member suffers from pain in the lumbar region.**

	Frequency	Percent
Yes	293	66.3
No	149	33.7
Total	442	100.0

## 6. DISCUSSION

Back pain is a highly prevalent health problem worldwide. Its incidence and prevalence are so high that it should be studied as an epidemic and social disorder (Schmidt & Kohlmann, 2004). Therefore this study aimed to study the prevalence of low back pain and prevalence of potential risk factor of LBP among students in western area of KSA, 2016.

Low back pain can be categorised into chronic and acute according to the duration of the pain occurrence. Acute pain always starts suddenly and usually lasts only for few days to weeks while chronic pain always persists for several weeks, months or even years. In this study 75.4% of participants Reported LBP duration Less than 4 weeks, Hence, we conclude that most of the participants were having acute low back pain, this results conform with results of Voon et al., study (Voon et al., 2013). While Alshagga et al., reported that just 46.1% had LBP during past 12 months in a Malaysian Medical College (Alshagga et al., 2015). Pengel et al concluded that people with acute low back pain usually associated with mild to moderate disability level and it will improve rapidly within weeks (Pengel et al, 2003).

In the present study no significant differences in the duration pain due to the variable sex ( $P > 0.05$ ) this in line with Triki et al., they found that the prevalence rates of LBP do not differ significantly between males and females ( $p > 0.05$ ) (Triki et al, 2015). Just 21.3% of our

participants have visit the doctor complained of LBP and the majority of them 70% used relievers treatment, this may be due to most of the students were having acute low back pain, so it will improve rapidly within weeks (Pengel et al, 2003).

In our study the pain did not effect on the studies of 41.4% of the students, did not effect on social life never of 64% of the students and 73.3% didn't absent to their work or school because of lower back pain, This does not conform with an article by Strunin et al., in in Florida they found out that the social lives with family and work is highly disrupted due to LBP (Strunin et al, 2004).

In working adults, prolonged sitting has been identified as a risk factor for LBP (Lis et al. 2007). The reported consequences of prolonged sitting are increased spinal compression load (Callaghan & McGill 2001) and increased activity of paraspinal muscles (Harrison et al. 1999). As a result, LBP can occur due to tissue micro-damage and paraspinal muscle dysfunction (Solomonow et al. 2003). 21.6% of our participants refer the LBP to their sitting for a long times.

Jones and Macfarlane reported that a moderate level of physical activity was associated with general conditioning effect that may reduce the risk of LBP (Jones & Macfarlane, 2005), but in our study 52.7% do not practice sports or exercise, This reason may be one of causes lead that this group had LBP, while Voon et al.,



found that 8.1% of their participants in Malaysia do not practice sports or exercise (Voon *et al.*, 2013), may be the big difference in ratios between our study and Voon *et al.*, because our study Only include students who had LBP indeed. However 6.5% in our study Suffer from LBP after sports, perhaps the reason of LBP here is the practice of self-Sports without the supervision of coach.

Running Sports was the most sports practice by participants in this study, This is in line with the results of study for Skoffer and Foldspang focused on identifying the types of physical activity associated with increased occurrence of LBP in schoolchildren, that noted that LBP was increased by the number of hours jogging, playing handball and doing gymnastics (Skoffer & Foldspang, 2008).

majority of our participants were non-smokers with percentage 78.3% , while 51.4% subjected to passive smoking, this results supports the results of Wirth *et al.*, study which found that passive smoking seemed to increase the risk of spinal pain for both genders (Wirth *et al.*, 2013). However the role of smoking in the development of spinal pain needs further investigation.

In our study most of students don't study for long time weekly, this may be due to LBP. 28.3% is usually studying on the desk; this could be a reason of LBP due to unhealthy studying position. 51% use the backpack to lift their books and school tools; this could be a reason of LBP due to increasing the pressure on the back.

With regard to Health habits relating to the back and backbone, Most of participants spend less than two hours in the car every day. 8.4% have already exposure to bodily injuries in the back.

Pope said that Injuries leading to low back pain can occur by direct trauma, overexertion or repetitive trauma (Pope, 1989). 98.6% of participants did not do any surgery in the back area or backbone. Most of participants have a family member suffers from lower back pain. This is a point need to be studied if the LBP can be inherited.

## 7. CONCLUSION

High prevalence of acute low back pain among the students in western area of KSA, 2016, This pain is not a devastating impact on the various aspects of student life. More than half do not practice sports or exercise, majority of students were non-smokers, but more than half subjected to passive smoking, majority of students study at unhealthy studying position and the backpack to lift their books and school tools, all that potential risk factor of LBP. These factors may be responsible for the suffering of these students of LBP.

### 7. Strength of this study

#### 7.1 Strength of this study included

- The study addressed an important issue.

- Researchers can be assisted with results of our study later.
- All participants were university students thus they represent an effective and influential segment of society.

### 7.2 Limitations of this study

- The Questionnaire required the participants to remember many things such as duration, intensity and possible causes of the LBP. Therefore, the accuracy of the recalled information cannot be guaranteed as some of them may be not sure or unable to recall regarding their LBP.
- This collected sample might not be representative enough to generalize the findings of the study to the entire population in western area of KSA.

### 7.3 Recommendations

- Moreover studies with larger samples with larger areas at the same issue.
- Perform educating to educate the student about the risk factor of LBP.
- Undergraduates should practice frequent breaks from sitting and regular stretches to minimize occurrences of LBP related to prolonged sitting.
- They should also be encouraged to adopt and maintain physical fitness
- Physical activity can be integrated into daily routine whenever possible, such as walking to the university instead of travelling in a vehicle and taking stairs instead of lifts.

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