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RESEARCH ARTICLE

MUSCULOSKELETAL PAIN AMONG SAUDI MEDICAL STUDENTS IN MAKKAH.

Razaz Felimban, Shahad Alanasri, Naif Hawsawi and Khaled Albazli.
 Umm Alqura University, College of Medicine, Makkah, Saudi Arabia.

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Abstract

Objective: To determine the prevalence and associated risk factors for musculoskeletal pain among medical students in Saudi Arabia.

Method: A cross-sectional analysis for one Saudi medical school in 2015-2016 academic year. The main outcomes were measured by The Nordic Musculoskeletal Questionnaire (NMQ) which was used to screen for pain in different anatomic joints during the past week and past year. Another questionnaire was developed to assess for contributing factors for the pain.

Result: 849 medical students were analyzed with a response rate (73.31 %). There were 57.85% of the students suffering of musculoskeletal pain in the past week, and 43.47% in past year. There is a higher prevalence among female medical students with p value <0.01. Previous trauma, family history of trauma, high computer hours use, being in clinical years, and high BMI were the main factors contributing to MSP in this study.

Conclusion: The study demonstrates a very high prevalence of musculoskeletal pain medical students which may affect the lifestyle and academic performance in medical schools.

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Background:-

Musculoskeletal pain (MSP) which includes commonly low back pain, shoulders pain and neck pain is a common health problem that affect both male and female. World-wide estimates of lifetime prevalence of low back pain (LBP) vary from 50 to 84 % and 20-30% at any given time [1]. Musculoskeletal pain affects people's mood leading to depression, anxiety, irritability, poor social interactions, and lower overall health status, and that can limit the individual productivity, induces stress and it is socially costing in terms of health care. Although the Musculoskeletal pain represented as a common occupational problem it may affects younger population like school and university students who have not yet entered their working life. Moreover, previous studies have demonstrated a higher prevalence of MSP among medical and dental students compared to other university students. Several studies investigated the prevalence and factors associated with MSP among medical students. However, there are no previous studies have been conducted among medical students in Saudi Arabia. The authors aim in this study to measure the prevalence of this health problem among medical students in Umm Al-Qura University, College of Medicine (UQU Med) in Saudi Arabia, compare it with other investigated risk factors in literatures, and look for other possible factors that may contribute to MSP.

Corresponding Author:- Razaz Felimban.

Address:- Umm Alqura University, College of Medicine, Makkah, Saudi Arabia.

Method:-**Data Collection:-**

An observational quantitative cross-sectional study was conducted among medical students at UQUMed. A self-administered questionnaire was personally distributed to 520 medical students in each year. Questionnaires were distributed and collected over the second semester of the academic year 2016. The questionnaire included participants' demographic information (gender, academic year, height, and weight), social life characteristics (including time spent studying, using computer, watching television, exercise, coffee drinking, and smoking), co-existing medical illnesses, history of trauma, family history of MSP. The participants also were invited to Nordic questionnaire of musculoskeletal pain considering lower back, shoulders, hand, neck, knee, upper back elbow, hip and feet. In total, 849 out of 1160 medical students participated in the study (response rate: 73.31 %).

Data analysis:-

Data were obtained from the questionnaire forms and then entered into an SPSS spreadsheet (SPSS 21). Percentages, mean and standard deviation (SD) were used as descriptive statistics. Chi-square test was used to observe the association between the categorical and outcome variables. A p value of <0.05 was considered as statistically significant.

Result:-

Out of 1160 medical students at UQU, 849 medical students responded and returned the filled-up questionnaire forms with a response rate of 73.31%. Of these participants, 489 (57.6%) were female. The mean height and weight for this study were 163.63 cm (SD 11.63) and 64.74 kg (SD 16.68) respectively. History of previous trauma was positive in 28.64% of the participants and 35.93% had a positive family history of MSK pain. The majority spend between two to three hours in each of studying, using computer, and watching television every day. Table 1 shows the distribution of demographic and lifestyle variables of participants.

More than half of the respondents (n=596, 58%) were students in clinical years. The self-reported Nordic musculoskeletal pain level demonstrated prevalent of pain of low back among 291 (50.1%) medical students, followed by upper back pain in 249 (43%), and neck pain in 242 (40.8%) medical students Table 2. In the past year, the prevalence of MSK pain was significantly higher among the clinical year students compared to preclinical years (P .001). However, there is no statistically significant difference in MSK pain in past week among clinical and preclinical year students.

The gender of medical students is statistically significantly associated with history of MSK pain in past week and past year. Female medical students have higher MSK pain history than male medical students (P<.01). Moreover, those with history of prior trauma to neck, shoulder, or back has higher reported MSK pain than students with no prior history of trauma (P<.01). The medical students, who were studying in low tables, were suffering with MSK pain in the past week and past year, which is statistically significant Table3.

Discussion:-

The study displayed a high prevalence of MSK pain in different anatomic regions among medical students at Umm Al-Qura University. Similar to previously published researches, women population has a higher prevalence of MSK pain compared to men [1-3]. The most prevalent painful sites were lower back, upper back, and neck respectively. Similar to previous studies, lower back pain (LBP) was the most prevalent site where almost half of the students complained of lower back pain in the past week.

A cross-sectional study in an Indian medical college revealed a LBP prevalence of 48% in medical students which is very close to the 43% rate reported for medical students of the University of Colorado in the U.S. and a 53% rate reported for medical students at Paracelsus Medical University in Austria. Similar to previous studies, lower back pain (LBP) was the most prevalent site where almost half of the students complained of lower back pain in the past week [5].

Several studies show that there are other different factors which can affect the musculoskeletal pain among medical and dental students like age, gender, smoking, alcohol consumption, average weight and height and body mass index (BMI) [6]. A retrospective analysis of MSP among Chinese medical students shows more female than male in the MSP reporting group (55% vs. 45%). Similarly, this study show a higher significant prevalence of MSP among

female medical students compared with male medical students with p value >0.01 . There were 33.7% male medical students suffering from MSP in the past week compared to 66.3% female medical students in the past week. Also, MSP among the female group in the past year was higher with a p value >0.01 .

Previous history of trauma was significantly associated with a higher reports of MSP in the past week and year with P value 0.001, and >0.001 respectively. The MSP is also reported significantly with those with family history of MSP. This proves the multifactorial cofactors that may contribute to MSP which includes both acquired and inherited factors [1].

High Body Mass Index (BMI) was found to be a major factor of MSP. The risk of MSP is about two folds higher when BMI >24 [7]. Also, higher BMI is associated with a higher incidence of osteoarthritis which may affect and limit mobility in the future. In this study, higher BMI was also associated with a higher prevalence of MSP among medical students.

Limitation:-

This study is limited by the fact that it represents only one medical school in Saudi Arabia among 28 medical schools. Also, the ergonomic factors in medical school were not measured to look for possible other factors contributing to MSP. For these reasons, the results cannot be generalized to all medical schools in Saudi Arabia.

Table 1:- The distribution of demographic and lifestyle variables of participants

	Male n=360 (42.4%)	Female n=489 (57.6%)
Academic Year		
• Second	62 (17.2%)	111 (22.7%)
• Third	64 (17.8%)	16 (3.3%)
• Forth	91 (25.3%)	183 (37.4%)
• Fifth	54 (15.0%)	66 (13.5%)
• Sixth	89 (24.7%)	113 (23.1%)
History of trauma in the neck, shoulder, back, lower or upper limb		
• Yes	84 (23.3%)	105 (21.5%)
• No	276 (76.7%)	384 (78.5%)
Family history of MSP		
• Yes	116 (32.2%)	188 (38.4%)
• No	301 (61.6%)	545 (64.2%)
Exercise		
• Regularly	85 (35.6%)	87 (37.5%)
• Not regular	141 (59%)	141 (60.8%)
• No at all	13 (5.4%)	4 (1.7%)
Smoking		
• Yes	87 (24.2%)	69 (14.1%)
• No	273 (75.8%)	420 (85.9%)
Height	171.81 cm (9.02)	157.60 cm (9.44)
Weight	75.29 Kg (17.36)	56.97 Kg (10.92)
Hours of computer use/day	3.5hr (SD 2.4)	3.6hr (2.4hr)
Hours of study /day	3.05hr (2.03)	3.4hr (2.1hr)
Hours of TV watching/day	2.01hr (1.42)	2.3hr(1.98hr)

Conclusion:-

The study demonstrates a very high prevalence of musculoskeletal pain medical students which may affect the lifestyle and academic performance in medical schools. More interventions are needed to alleviate MSK pain among medical students and further improve the study environment. Exercises, appropriate study environment, and weight reduction can optimize the academic performance and wellbeing of medical students.

Table 2:- Prevalence of MSP during past week and past 12 months

Body site		Prevalence during past week		Prevalence during past Year	
		(n)	%	(n)	%
Neck pain	No	351	59.2	279	65.0
	Yes	242	40.8	150	35.0
Shoulders pain	No	424	73.7	315	80.8
	Yes	138	24.0	75	19.2
Elbows pain	No	525	90.5	328	90.4
	Yes	53	9.1	35	9.6
Wrists/hands pain	No	498	85.9	320	86.3
	Yes	75	12.9	50	13.5
Upper back pain	No	330	57.0	227	54.6
	Yes	249	43.0	189	45.4
low back pain	No	290	49.9	233	54.4
	Yes	291	50.1	194	45.3
One or both hips/ thighs pain	No	495	87.5	314	84.9
	Yes	71	12.5	56	15.1
one or both kness pain	No	418	71.9	267	69.4
	Yes	163	28.1	118	30.6
one or both ankles/feet pain	No	459	79.5	292	77.7
	Yes	118	20.5	84	22.3

Table3:- Prevalence of MSP in past week and year

		MSP in past week			MSP in past year		
		Yes	No	P	Yes	No	P
Gender	Male	118 (33.7%)	134 (52.5%)	P<.01	68 (27%)	184 (73%)	P<.01
	Female	232 (66.3%)	121 (47.5%)		195 (55.2%)	158 (44.8%)	
Academic year	Preclinical	61 (52.1%)	56 (47.9%)	.176	34 (29.1%)	83 (70.9%)	.001
	Clinical	289 (59.2%)	199(40.8%)		229 (46.9%)	259 (53.1%)	
History of trauma	Yes	107 (69.5%)	47 (30.5%)	.001	88 (57.1%)	66 (42.9%)	P<.01
	No	243 (53.9%)	208 (46.1%)		175 (38.8%)	276 (57.1%)	
Family history of MSP	Yes	148 (64.6%)	81 (35.4%)	.009	113 (49.3%)	116 (50.7%)	.023
	No	202 (53.7%)	174 (46.3%)		150 (39.9%)	226 (60.1%)	
Exercise	Regularly	74 (43.5%)	62 (40.3%)	.325	53 (39%)	83 (61%)	.033
	Not regularly	92 (54.1%)	84 (5.2%)		52 (29.5%)	124 (70.5%)	
	Not at all	4 (2.4%)	8 (5.2%)		2 (16.7%)	10 (83.3%)	
Level of study table	High	83 (54.4%)	102 (45.6%)	P <.01	57 (30.8%)	128 (69.2%)	P <.01
	Low	103 (66.5%)	52 (33.5%)		86 (55.5%)	69 (44.5%)	
		Mean (SD)			Mean (SD)		
Height		1.63m (SD 9.6)	1.66 m (SD 11.21)	P <.01	1.61m (SD 9)	1.64m (SD 12.54)	P<.01
Weight		63.66kg (SD 14.7)	69 kg (SD 19.27)	.002	62 kg (SD 13.6)	65.56 kg (17.8)	.005
BMI		23.76 (SD 4.1)	24.44 (SD 5.1)	P <.01	23.8 (3.6)	24.40 (SD 9.5)	P <.01

Hours of computer use/day		3.6 hr (SD 2.4)	3.11 hr (SD 1.9)	P <.01	3.3 hr (SD2.07)	3.75 hr (2.54)	.667
Hours of study/day		3 hr (SD 1.8)	3.4 hr (2.77)	.549	2.70 (SD1.44)	3.52 hr(SD 2.29)	. P<.01
Hours of watching TV/day		2.12 hr(1.2)	1.8 hr (SD 1.6)	P<.01	2.37 (SD 1.29)	2.11 hr (SD 2.03)	P<.01

Conflicts of interest:

The authors have no competing interests to declare.

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