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Study of Neck and Low Back Pains among Students

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ABSTRACT

Background: Neck pain (NP) is regarded as a chronic episodic condition characterized by persistent, recurrent, or fluctuating pain and disability. Low back pain (LBP) is social and economic health problem that affects population of all ages globally.

Objective: To evaluate the prevalence and associated risk factors of neck and low back pains among students at Faculty of Medicine, Zagazig University**.**

Patients and Methods: This was a cross sectional study that included 360 students at Faculty of Medicine, Zagazig University through the period from September 2018 to April 2019. Assessment of presence or absence of neck pain and back pain by Standardized Nordic Musculoskeletal questionnaire.

Results: 96 of the students were males (26.6%) and 264 were females (73.3%), their ages ranged from 18-25 years with a mean of 20.68 ± 1.92 years old, where 162 students of them ≤ 20 (45%) & 198 of them > 20 years old (55%). Prevalence of neck pain and/or low back pain among the studied group of students was 81.1%, while 18.9% of students were free from neck & low back pain. NP presented in 74.4% of students and LBP presented in 73.1% of all studied students. 66.4% of participants reported both NP & LBP. There was statistical significant association between reading hours (> 3 hours/ day) and NP & LBP.

Conclusion: High prevalence of NP and/or LBP 81.1% among medical students. Students complaining from NP and/or LBP had longer studying and reading time, presented mostly in clinical years in addition they had ergonomic problems and poor psychological studying environments.

Keywords: Prevalence, Risk factors, Neck and low back pains

INTRODUCTION

Neck pain (NP) is regarded as a chronic episodic condition characterized by persistent, recurrent, or fluctuating pain and disability. It causes considerable personal discomfort due to pain, disability, impaired quality of life, and may affect work [(1)]**.** Chronic LBP patients tend to have an increased risk of functional limitation and pain severity and a decrease in activity of daily living and work activity [(2)]**.** The most Global Burden of Disease Study has ranked LBP as the leading cause of years lived with disability, in both developed and developing countries, ahead of other conditions including major depressive disorder, diabetes, and neck pain [(3)].

Clinicians should use validated self-report questionnaires for patients with NP & LBP, to identify a patient's baseline status and to monitor changes relative to pain, function, disability, and psychosocial functioning [(4)]**.**

Low back pain (LBP) is social and economic health problem that affects population of all ages globally. Studies have reported that approximately 12-80% of younger population, mainly students experience LBP**.** 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 [(5)]**.**

The purposes of a medical school are to produce competent, professional doctors and promote health care of society. But during the period of medical training, students are exposed to stress, study problems, long training hours in hospital wards and clinics in addition to the increasing use of computers in teaching and learning [(6)].

There are many risk factors that may increase the prevalence of musculoskeletal pain (MSP) among medical students. Therefore, the relationship between pain and disability is not straight forward as these are subjective measures and may therefore be influenced by physiological, psychosocial, and environmental factors [(7)].

The study aimed to evaluate the prevalence and associated risk factors of neck and low back pains among students at Faculty of Medicine, Zagazig University.

PATIENTS AND METHODS

This study was carried out on 382 students at Faculty of Medicine, Zagazig University through the period from September 2018 to April 2019. Study method had been fully explained for the participants.

Inclusion criteria: Full-time academic students from all six grades in Faculty of Medicine, Zagazig University were invited into the study.

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All participants were subjected to the following:

I-Data records:

- Demographic data: age, sex, grade [pre-clinical; 1st, 2nd & 3rd grades, clinical; 4th, 5th & 6th grades].
- Weight, height, body mass index (BMI)
- Special habits & lifestyle factors: Smoking. Time of reading [less or more than 3 hours/day].
  - Physical fitness consider when students are regularly exercised in form of playing sports, walking and swimming. - Carrying heavy back bags. - Posture of spine (for low back pain) & head (for neck pain) described by **Aggarwal *et al.* [8].**
- Faculty associated factors: Ergonomic problems including non-comfortable furniture (chairs, tables, labs)
- Study associated factors: studying time including E-learning by using mobiles or laptops (less or more than 6 hours/day)

II-Assessment of presence or absence of neck pain and back pain by Standardized Nordic Musculoskeletal questionnaire (SNMQ) described by **Kuorinka *et al.* [9].**

Ethical and patients' approval: This study was approved by the Institutional Review Board (IRB) Committee of Faculty of Medicine, Zagazig University. Signed written consents were obtained from all participants.

Statistical analysis

Analyses were performed using SPSS version 12.0.1 (SPSS, Inc., Chicago, IL, USA). Descriptive data were presented as mean and standard deviation (SD) or median and range. Parametric data (normally distributed) were represented as mean and standard deviation, while non-parametric data were represented as median and range. For qualitative data, Chi-Square (X^2) and Fisher exact tests were used to test association between a factor and an outcome and used only for qualitative independent samples. For quantitative data, t-test was used to compare between two groups (parametric, unpaired). A P value ≤ 0.05 was considered statistically significant, and P value < 0.001 was considered highly significant.

RESULTS

Ninety six of the students were males (26.6%) and 264 were females (73.3%), their ages ranged from 18-25 years with a mean of 20.68 ± 1.92 years where 162 students of them ≤ 20 years old (45%) & 198 of them > 20 years old (55%). As regards BMI, mean of BMI was 25.70 ± 4.70 kg/m^2 where 14 students were underweight (3.8%), 156 of them had normal BMI (43.3%), 115 of them were overweight (31.9%) and 75 students were obese (20.8%). Most students were nonsmokers where about 344 (95.5%) of them were nonsmokers, while 16 of them (4.4%) were smokers. 154 (42.7%) of the students were in pre-clinical years and 206 (57.2%) students were in clinical years. Students studied ≤ 6 hours/day were 151 students (41.9%) and 209 of them (58.1%) studied > 6 hours/day, 157 students (43.6%) read ≤ 3 hours/day and 203 students (56.3%) read > 3 hours/day. The ergonomic problems presented in 185 students (51.3%), while 175 of them (48.6%) didn`t have any problems, poor psychological study environment presented in 222 students (61.6%) while 138 students (38.3%) had good environment **(Table 1).**

The prevalence of neck pain and/or low back pain among the studied group of students was 81.1% as 292 students complained from neck pain and/or low back pain, while 68 students (18.9%) were free from neck & low back pain. Neck pain presented in 268 students (74.4%) while low back pain was detected in 263 students (73.1%). 239 of participants reported both NP & LBP (66.4%) **(Table 2).**

Table (3) showed that the ages of studied group ranged from 18-25 years with a mean of 20.68 ± 1.92 years, 132 students were ≤ 20 years old (45.2%) & 160 of them were > 20 years old (54.8%). Regarding sex, 78 of the students were males (26.7%) and 214 were females (73.3%). The mean of BMI was 25.70 ± 4.70 kg/m^2, where 10 of them were underweight (3.4%), 132 student had normal BMI (45.2%), 95 of them were overweight (32.5%) and 55 students were obese (18.8%). Most students were nonsmokers, where about 278 (95.2%) were nonsmokers while 14 students of them (4.8%) were smokers. 144 students (49.3%) were in pre-clinical years and 148 (50.7%) of them in clinical years. Students studied ≤ 6 hours/day were 132 students (45.2%) while 160 students (54.8%) studied > 6 hours/day. 139 students (47.6%) read ≤ 3 hours/day and 153 of them (52.4%) read > 3 hours/day. The ergonomic problems presented in 151 students (51.7%) while 141 students (46.3%) didn`t have any problems, poor psychological study environment presented in 192 students (58.1%) while 100 students (41.9%) in good environment. Physical fitness presented in 93 students (31.8%) in form of gym, walking and playing sports per week, while 199 students (68.2%) of them didn`t play sports. Incorrect posture detected in 247 students (84.6%) while 45 of them (15.4%) sit in correct posture, 130 students (44.5%) didn`t have forward head posture while 162 of them (55.5%) having forward head posture and 125 students (42.8%) of them carried heavy back bags while 167 of them (57.2%) didn`t do that.

Table (4) showed that students complaining from NP and/or LBP significantly presented in clinical years ($p < 0.001$), had significantly longer studying > 6 hours/day, reading time > 3 hours/day ($p = 0.009$, 0.002 respectively). The ergonomic problems and psychological studying environment were significantly frequent in students suffering from NP and/or LBP ($p = 0.01$, $p < 0.001$ respectively).

Table (1): Descriptive characters of the studied students

Variable	students (n=360)	
	No	%
Age group (years)		
≤ 20	162	45
>20	198	55
BMI (kg/m^2)		
Underweight	14	3.8
Normal	156	43.3
Overweight	115	31.9
Obese	75	20.8
Sex		
Male	96	26.6
Female	264	73.3
Smoking		
No	344	95.5
Yes	16	4.4
Grade		
Pre-clinical	154	42.7
Clinical	206	57.2
Time of study		
≤6 h/d	151	41.9
>6 h/d	209	58.1
Time of reading		
≤3 h/d	157	43.6
>3 h/d	203	56.3
Ergonomic problems		
No	175	48.6
Yes	185	51.3
Psychological environment		
Poor	222	61.6
Good	138	38.3

Table (2): Frequency of Neck & low back pain among the studied students

Variable	Total students (n=360)	
	No	%
Neck and/or LBP	292	81.1
Neck pain	268	74.4
Back pain	263	73.1

Table (3): Descriptive data of students with neck pain & low back pain

Variable	(n=292)	
	N	%
Age group (years)		
≤ 20	132	45.2
>20	160	54.8
BMI (kg/m^2)		
Underweight	10	3.4
Normal	132	45.2
Overweight	95	32.5
Obese	55	18.8
Sex		
Male	78	26.7
Female	214	73.3
Smoking:		
No	278	95.2
Yes	14	4.8
Grade		
Preclinical	144	49.3
Clinical	148	50.7
Physical fitness		
No	199	68.2
yes	93	31.8
Time of study		
≤6 h/d	132	45.2
>6 h/d	160	54.8
Time of reading		
≤3 h/d	139	47.6
>3 h/d	153	52.4
Correct posture		
No	247	84.6
Yes	45	15.4
Forward head posture		
No	130	44.5
Yes	162	55.5
Ergonomic problems		
No	141	46.3
Yes	151	51.7
Heavy back bags		
No	125	42.8
Yes	167	57.2
Psychological environment		
Poor	192	58.1
good	100	41.9

Table (4): Association between demographic data & risk factors and neck & low back pain among the studied students

Variable	Total (360)	With pain (n=292)		Without pain (n=68)		P	OR (95%CI)
	No	No	%	No	%		
Age group (years)							
≤ 20	162	132	81.5	30	18.5	0.81	0.96
>20	198	160	80.8	38	19.2	NS	(0.54-1.68)
BMI (Kg/m^2)							
Underweight	14	10	71.4	4	28.6		
Normal	156	132	84.6	24	15.4	0.12	NS
Overweight	115	95	82.6	20	17.4	NS	
Obese	75	55	73.3	20	26.7		
Sex							
Male	96	78	81.3	18	18.7	0.96	1.01
Female	264	214	81.1	50	18.9	NS	(0.54-1.92)
Smoking							
No	344	278	80.8	66	19.2	0.50	1.66
Yes	16	14	87.5	2	12.5	NS	(0.35-10.86)
Grade							
Pre-clinical	154	144	93.5	10	6.5	**<0.001 ****	**0.64 (2.66-12.26)**
Clinical	206	148	71.8	58	28.2		
Time of study							
≤6 h/d	151	132	87.4	19	12.6	**0.009 ****	**2.13 (1.15-3.95)**
>6 h/d	209	160	76.6	49	23.4		
Time of reading							
≤3 h/d	157	139	88.5	18	11.5	**0.002 ****	**2.52 (1.36-4.73)**
>3 h/d	203	153	75.4	50	24.6		
Ergonomic problems:							
No	175	151	86.3	24	13.7	**0.01***	**1.96 (1.1-3.52)**
Yes	185	141	76.2	44	23.8		
Psychological environment:							
Poor	222	192	86.5	30	13.5	**<0.001 ****	**2.43 (1.38-4.31)**
Good	138	100	72.5	38	27.5		

χ^2: Chi square test NS: Non significant (P>0.05) *: Significant (P<0.05) **: Highly significant (P<0.01)

DISCUSSION

In this study, 96 of the students were males (26.6%) and 264 were females (73.3%), their ages ranged from 18-25 years with a mean of 20.68 ± 1.92 years, where 162 students of them were ≤ 20 (45%) & 198 of them were > 20 years old (55%). This comes in agreement with **Alshagga *et al.* [6]** who found that the mean age was 20.6 ± 2.2 years and the majority there were females (72.9%). Also **Algarni *et al.* [10]** found that mean age was 21.4 ± 1.3 years and there were 185 (39.64%) males and 284 (60.6%) females. **Dighriri *et al.* [11]** also found two hundred-twenty (50.0%) were males, with a mean age of 22.4 ± 1.6 and **Du *et al.* [12]** found mean age of study participants was 24.7 ± 4.3 years.

In this study regarding to the body mass index (BMI), the mean of BMI was 25.70 ± 4.70 kg, where 14 students were underweight (3.8%), 156 of them had normal BMI (43.3%), 115 of them were overweight (31.9%) and 75 students were obese (20.8%). This is in agreement with **Algarni *et al.* [10]** where mean BMI was 24.3 ± 5.7. **Du *et al.* [12]** found that mean of BMI was 22.9 ± 2.9. Also **Dighriri *et al.* [11]** found that thirty-nine (8.9%) of students had obesity grad-I (i.e. BMI = 25.0─29.9), 13 (3.0%) had obesity grade II (BMI = 35.0─39.9), and 7 (1.6%) had obesity grade III (BMI = 40 or more).

Sixteen students of the studied students (4.4%) were smokers and 344 of them (95.5%) were

nonsmokers. This comes in agreement with **Algarni *et al.*** [10] who found Thirty-six (7.7%) of the participants used tobacco, and only 7.3% were current smokers in study by **Dighriri *et al.*** [11].

In this study, 154 students (42.7%) were in pre-clinical years and 206 of them (57.2%) were in clinical years**. Dighriri *et al.*** [11] found that 40.2% of students were in the pre-clinical years and 59.8% were in clinical years. **Algarni *et al.*** [10] found that there were 247 (52.7%) in the preclinical years and 222 in the clinical years (47.3%), and **Alshagga *et al.*** [6] found that students in the preclinical years were 72%.

Our descriptive study, which was self-administered & online questionnaire-based study among medical students at Zagazig University revealed that the prevalence of neck pain and/or low back pain among the studied group of students was 81.1%, while 18.9% of students were free from neck & low back pain. NP presented in 74.4% of students, LBP presented in 73.1% of all studied students, while 66.4% of participants reported both NP & LBP. This comes in agreement with **Dighriri *et al.*** [11] who found that the prevalence of NP & LBP was 83 % of medical students at Jazan University, Saudi Arabia. A study done at University Hospitals in Central Saudi Arabia is also close to this study where 85.3% reported for medical students. The prevalence of neck pain was 56.5% and the prevalence of back pain was 67.0% [10]**.** The prevalence of NP and LBP was 54% in American Medical students & this is relatively high percent [12]**. Aggarwal *et al.*** [8] found that prevalence of LBP was 47.5% among undergraduate students of Medical College in Delhi.

In this study; 199 of studied students (68.2%) didn`t play sports while 93 students (31.8%) had physical fitness in form of gym, walking and playing sports regularly per week. This is in agreement with **Algarni *et al.*** [10] who found that the majority of the participants 79.3% exercised regularly. Most of them exercised by walking or running.

In these results, incorrect posture was detected in 247 students (84.6%), while 45 of them (15.4%) sit in correct posture. 130 students (44.5%) didn`t have forward head posture, while 162 of them (55.5%) had forward head posture. 125 students (42.8%) of them carried heavy back bags, while 167 of them (57.2%) didn`t do that. This is consistent with **Algarni *et al.*** [10] who found that there were 127 (27.1%) participants carried a backpack, 202 (43.1%) sometimes carried a backpack, and 140 (29.9%) who never carried a backpack.

In this study, there was statistical significant association between clinical years versus preclinical years and NP & LBP ($P < 0.001$). Our results are in agreement with the findings reported in the study of Malaysian Medical students by **Alshagga *et al.*** [6] and the study of Saudi Medical students by **Algarni *et al.*** [10] who found significant association between clinical years and MSP. The reason for this could be increasing levels of work, stress, anxiety, dissatisfaction, and book bag load with each year. Further, with each progressing year in the MBBS curriculum, clinical postings increase requiring longer periods of standing. Our results are in disagreement with **Dighriri *et al.*** [11] who found that there was no statistical significant association between clinical years and MSP.

In current study, there was statistical significant association between studying hours including e-learning (> 6 hours/ day) & NP & LBP ($P = 0.009$). This comes in agreement with **Chia *et al.*** [13] and **Du *et al.*** [12] who found that studying for more than 15 hours in a week were associated with the prevalence of NP & LBP. This may be due to the prolonged sitting, sitting within wrong postures and the poor ergonomics design of the chair.

In current study, there was statistical significant association between reading hours (> 3 hours/ day) and NP & LBP ($P = 0.002$**.** This might be due to the prolonged sitting, sitting within wrong postures and the poor ergonomics design of the chair, which comes in agreement with study by **Chia *et al.*** [13]**.**

CONCLUSION

This study demonstrated the high prevalence of NP &/or LBP (81.1%) among medical students at Faculty of Medicine, Zagazig University. Students complaining from NP and/or LBP had longer studying and reading time, presented mostly in clinical years. In addition, they had ergonomic problems and poor psychological studying environments.

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