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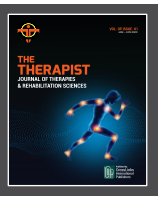

Original Article

Correlation of Burnout Syndrome with Musculoskeletal Disorders and Its Prevalence Among Medical Students

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ABSTRACT

Burnout is common exhaustion in students especially among medical students due to their increased study hours, increased demands according to the education sector and less tolerance. **Objective:** To determine the prevalence and correlation of burnout syndrome and musculoskeletal problems among university students in Lahore. **Methods:** The analytical cross-sectional study was conducted by including 181 medical students by using, a convenience sampling technique according to the predefined selection criteria. The Copenhagen Burnout Inventory (CBI) and Nordic Questionnaire were used for assessing the outcomes of the patient. The data were analyzed by using SPSS in which frequency, percentage, and Correlation analysis were used to determine the relationship that exists between burnout syndrome and musculoskeletal pain. **Results:** The study showed that Musculoskeletal pain and burnout syndrome exist a strong correlation among students of universities with a p-value <0.05. **Conclusions:** The study concluded that burnout syndrome had a statistically significant relationship with students' study years and musculoskeletal problems that ultimately affect their normal activities of daily life.

INTRODUCTION

Burnout is described as the "Occupational Phenomenon" with the triad of emotional exhaustion, depersonalization along with decreased personal achievement that develops psychological and physical symptoms [1, 2]. The medical profession is a very competitive field that develops Physical and work-related burnout among students and disturbs mental and emotional health, increasing the risk of burnout, depression, anxiety, emotional intolerance, and cynicism [3-5]. This is mostly due to their increased study hours, increased demands according to the education

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sector and less tolerance regarding their mistakes with less time for relaxation and self-care[6]. Medical students faced a lot of academic burnout and pressure described by Schaufeli that it is exhaustion and cynicism along with low professional efficacy and self-esteem. According to studies, it is most common among students of universities with a prevalence of 7 to 75.2%[7, 8]. Burnout affects their performance up to 21 to 43% and 14.9 to 57.7% was at risk of developing burnout syndrome [6]. Burnout is more prevalent among males as compared to women, especially among doctors and medical students with a 40% that increases emotional exhaustion, depersonalization, musculoskeletal pain, mental disease and suicidal rate[9], decreases their self-esteem, attitude and performance that leads to increase their dishonesty, misusage of drugs and smoking and suicide rate due to exam and failure pressure [2]. Musculoskeletal disorders are the most common side effect of burnout syndrome among medical students especially among fourth and final-year students having 33.4% having neck pain, 15.1% low back pain, 12.8% shoulder pain, 9.1% knee pain while burnout rate is more prevalent in second and third-year student with 67.% and 67.3% respectively[10, 11]. These are due to their sedentary lifestyle, less physical activities, extremer exposure to stressful routines and long hours of standing and sitting with and without back supports in classes and hospital wards, long duration of reading and awkward posture[10, 12]. Chen *et al.*, reported personal and work-related burnout increased the incidence of sharp injuries and musculoskeletal pain among medical professionals by 15.86% and had a mean of 41.22 in personal burnout and 39.33 in work-related burnout [13]. This yields either a positive effect by enhancing their self-confidence or a negative effect by developing extreme burnout. Such conditions lead to developing burnout and neck and upper body pain[14]. Ogunlana *et al.*, reported medical students are 89.7% prevalent to musculoskeletal disorders due to their prolonged sitting hours 71.1%, repetitive maneuvers 53.8% with neck and low back pain 66.2% and 64.4% respectively due to their burnout and tough routine[15]. The purpose of the study was to determine the prevalence and correlation between burnout syndrome and musculoskeletal problems among the medical students' University of Lahore. As due to higher pressure regarding their studies and performance in the field lead to developing syndrome and disorders which need to be enlightened in Pakistani Universities.

METHODS

An analytical cross-sectional study was conducted after the approval of the synopsis from the research ethical committee of the University of Lahore. The study had included 181 medical students from February 2022 to July 2022 by taking proper consent from participants. According to the inclusion, criteria of the study 181 students were enrolled in the study by using, a convenience sampling technique. The inclusion criteria of the study were 18-29 years of medical students both male and female were included who were studying at different Medical Universities (University of Lahore, Allama Iqbal Medical College, KEMU, Riphah University and Superior University). Participants were excluded from the study who were studied in some non-medical universities, and suffering from any recent injuries, muscular injuries, or accidents. In addition, facing any mental issues including depression, anxiety, and family issue. The data were collected through a predesigned questionnaire including Demographic data (age, gender, year of education, and medical department name and smoking history). the scales used for the analysis of burnout syndrome and Musculoskeletal disorders were Copenhagen Burnout Inventory (CBI) a most reliable and valid tool for assessing burnout level having Cronbach's alpha of 0.936 with 0.906 for assessing personal burnout and 0.765 for work-related burnout [16]. Nordic Questionnaire was used for assessing the musculoskeletal problems as having excellent reliability with Cronbach's alpha of 0.945 with construct validity of 100% with a sensitivity of 66 to 92%[17, 18]. The statistical analysis was done by the SPSS version 23.0. The frequency and percentage of the demographic data were found to determine the prevalence of Burnout Syndrome and Musculoskeletal disorders among medical students. The Correlation was applied to determine the relation between Burnout Syndrome and Musculoskeletal disorders.

RESULTS

Table 1 showed the descriptive statistics of the demographic data of the participants 77 (42.5%) participants of 18-24 age, 99(54.7%) were of 25-28 age and 5 (2.8%) were of above 28 years. However, among all the participants 102 (56.4%) were male and 79 (43.6%) were females. The result shows that among all the participants 38 (21%) were Physical therapists, 33 (18.2%) were MBBS doctors, 30 (16.6%) were UIPT, 29 (16%) were Pharma D, 27 (14.9%) were MLT, 15 (8.3%) were Biomedical engineers and 9 (5%) were biotechnology students. The result shows that among all the participants 37 (20.4%) were 1st year, 7(3.9%) were 2nd year, 39 (21.5%) were 3rd year, 26 (14.4%) were 4th year, 71(39.2%) were final year students and 1 (0.6 %) were professionals. The result shows that among all the participants 57 (31.5%) were having neck pain, 56(30.9%) were shoulder, 19 (10.5%) were wrist or hand pain, 31 (17.1%) were lower back and 18 (9.9%) were having hip or thighs pain.

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Table 1: Baseline Characteristics of Participants

Variables		Frequency (%)
Age	18-24	77 (42.5%)
	25-28	99 (54.7%)
	Above 28	5 (2.8%)
Gender	Male	102 (56.4%)
	Female	79 (43.6%)
Study Department	Physical Therapist	38 (21%)
	MBBS	33 (18.2%)
	UIPT	30 (16.6%)
	Pharma D	29 (16%)
	MLT	27 (14.9%)
	Biomedical Engineering	15 (8.3%)
	Biotechnology	9 (5%)
Study Year	1st year	37 (20.4%)
	2nd year	7 (3.9%)
	3rd year	39 (21.5%)
	4th year	26 (14.4%)
	Final year	71 (39.2%)
	Graduation year	1 (0.6%)
Pain in regions	Neck	57 (31.5%)
	Shoulder	56 (30.9%)
	Wrist/ Hand	19 (10.5%)
	Lower Back	31 (17.1%)
	Hip/ Thighs	18 (9.9%)

Table 2 described the frequency of burnout syndrome according to Personal, Work related and Client related burnout. The results showed that in the personal burnout category, 86 (74.5%) had Moderate, 71 (39.2%) had High and 24 (13.3%) had the severe intensity of burnout. Similarly, in the Work-related burnout category, 87 (48.1%) had Moderate, 63 (34.8%) had High and 31 (17.1%) had severe intensity of burnout. Additionally, in Client related burnout category, 85 (47%) had Moderate, 65 (35.9%) had High and 31 (17.1%) had severe intensity of burnout participants.

Table 2: Prevalence of Copenhagen Burnout Inventory (CBI)

Variables			Frequency (%)
CBI	Personal burnout	50-74 Moderate	86 (74.5%)
		75-99 High	71 (39.2%)
		100 Severe	24 (13.3%)
	Work-related burnout	50-74 Moderate	87 (48.1%)
		75-99 High	63 (34.8%)
		100 Severe	31 (17.1%)
	Client related burnout	50-74 Moderate	85 (47%)
		75-99 High	65 (35.9%)
		100 Severe	31 (17.1%)

Table 3 described the scoring of Musculoskeletal pain on the Nordic Questionnaire in the last 7 days and last 12 months. The results showed that in the last 7 days 21 (11.6%) had neck pain, 49 (27.1%) had shoulder pain, 52 (28.7%) had upper back pain, 49 (27.1%) had lower back pain, 6 (3.3%) had hip pain and 4 (2.2%) had knee pain. Similarly, the result of the last 12 months' analysis showed that among all participants, 15 (8.3%) had neck pain, 45 (24.9%) had shoulder pain,43 (23.8%) had upper back pain, 53 (29.3%) had lower back pain, 10 (5.5%) had hip pain and 15 (8.3%) had knee pain.

Table 3: Prevalence of Nordic Questionnaire scale

Variables	Frequency (%)					
	Neck	Shoulder	Upper Back	Lower Back	Hip	knee
Musculoskeletal pain in the last 7 Days	21 (11.6%)	49 (27.1%)	52 (28.7%)	49 (27.1%)	6 (3.3%)	4 (2.2%)
Musculoskeletal pain in the last 12 months	15 (8.3%)	45 (24.9%)	43 (23.8%)	53 (29.3%)	10 (5.5%)	15 (8.3%)

The correlation of burnout syndrome with the musculoskeletal disorder was described in Table 4. The results showed that during the last 7 days, students had neck pain of which 9 at moderate, 10 were high and 2 had severe levels. Similarly, 20 had moderate, 17 had high and 12 had severe pain in the shoulder. Furthermore, 26 had moderate pain, 17 had high and 9 had severe upper back pain. 22 had moderate, 18 had high and 9 had severe pain in the lower back pain while 2 had moderate, 3 had high and 1 had severe hip pain. Additionally, 1 had moderate and 3 had high knee pain with a Pearson value of 0.227 and p-value =0.05. The results confirmed that burnout among medical students had a statistically significant correlation with musculoskeletal disorders. Table 4 further described the relationship of burnout syndrome with musculoskeletal pain within the last 12 months that affect their daily activities of life. The results showed that within the last 12 months, students had neck pain of which 6 at moderate, 6 were high and 3 had severe levels. Similarly, 21 had moderate, 19 had high and 5 had severe pain in the shoulder while 16 had moderate pain, 20 were high and 7 had severe upper back pain. 24 had moderate, 18 had high and 11 had severe pain in lower back pain, while 3 had moderate, 2 had high and 10, had severe hip pain. Additionally, 10 had moderate, 3 had high and 2 had severe knee pain with a Pearson value of 0.106 and p-value =0.041. The results confirmed that burnout among medical students had a statistically significant correlation with musculoskeletal disorders that ultimately affect their normal activities of daily life. Table 4 further described the relationship between burnout syndrome with the study year of university students. The results showed that among 1st-year students, 19 had moderate, 13 were high and 5 had severe levels. Similarly, among 2nd-year students, 2 had moderate and 5 had a high level of burnout syndrome while among 3rd-year students, 18 had moderate, 13 were high and 8 had severe levels of burnout. Furthermore, among 4th-year students, 11 had moderate, 10 were high and 5 had severe levels and among Final year students, 30 had moderate, 27 were high and 14 had severe levels. Among Graduated students, only 1 had been reported with a severe level of burnout syndrome with a Pearson value of 0.288 and p-value =0.003. The results confirmed that burnout among medical students had a statistically significant correlation with study years that ultimately affect their

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normal activities of daily life.

Table 4: Correlation of Burnout Syndrome with Musculoskeletal Pain and Study Year

Nordic Scale		CBI			p-value
		Moderate	High	Severe	
Pain in Days	Neck pain	9	10	2	0.05
	Shoulder pain	20	17	12	
	Upper back pain	26	17	9	
	Lower back pain	22	18	9	
	Hip pain	2	3	1	
	Knee pain	1	3	0	
Pain in Months	Neck pain	6	6	3	0.041
	Shoulder pain	21	19	5	
	Upper back pain	16	20	7	
	Lower back pain	24	18	11	
	Hip pain	3	2	10	
	Knee pain	10	3	2	
Study year	1st year	19	13	5	0.003
	2nd year	2	5	0	
	3rd year	18	13	8	
	4th year	11	10	5	
	Final year	30	27	14	
	Graduation year	-	-	1	

DISCUSSION

This study was conducted to determine the prevalence and correlation of burnout syndrome and musculoskeletal problems among university students of Lahore. The results of the current study showed that medical students are highly prevalent in burnout syndrome and this led to the development of musculoskeletal pain in students from 1st year to the final year students as there is a significantly strong correlation exist between musculoskeletal pain and burnout syndrome p-value <0.05. Previous studies described that burnout syndrome leads to the development of emotional disturbance. The cross-sectional study conducted by Asghar *et al.*, concluded that Pakistani medical students had anger issues, having no time, no hobbies and prayer time that develops burnout syndrome mostly among the private university[6]. Burnout syndrome is highly prevalent in the development of many musculoskeletal disorders especially muscular pain in different segments of the body including neck, shoulder, upper, and lower back pain with a higher correlation among burnout with p-value <0.005. Aljadani *et al.*, also reported that Musculoskeletal disorders are 64.8% common among medical students, especially those suffering from burnout [19]. The basic reason for the development of burnout syndrome was the sedentary lifestyle and education pressure. Azzi *et al.*, described that change in the education system leads to the produce severe burnout issues at mental and health level and negatively affect the physical status of students with lower QoL scoring [20]. Valero-Chilleron *et al.*, described that medical students had an academic and tough routine that cause negative effects on the health of the nurses that lead to the development of burnout syndrome mostly among the students in the fourth or final year as depersonalization increased with the academic year [21]. Similarly, a study conducted by Gil-Calderon *et al.*, concluded that Burnout syndrome has a higher scoring among students in the fourth and final year while family support helps to reduce burnout among medical students[22]. This study supported current study results as higher scoring in the fourth and final year but the current study did not focus on the supporting effect of the family and the way family help in reducing burnout among students. This can be concurrent with the current study result as this can help lower burnout. Similarly Chan *et al.*, reported that most medical students especially physiotherapists and nursing students had more prevalence of neck pain at 26.5% and 26.1% and they have more recurrence of anxiety and low back pain due to their tough routine[23].

CONCLUSIONS

Burnout syndrome is most prevalent among medical students due to their hectic routine, tough study and ward rotation schedule study and peer pressure that increase the rate of development of musculoskeletal problems. Furthermore, there is a strong significant correlation between Burnout syndrome with students' study year and musculoskeletal problems.

Authors Contribution

Conceptualization: MT
Methodology: HZA, RM
Formal analysis: SS
Writing-review and editing: AR, AK, TG, QR

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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REFERENCES

[1] Pokhrel NB, Khadayat R, Tulachan P. Depression, anxiety, and burnout among medical students and residents of a medical school in Nepal: a cross-sectional study. BMC Psychiatry. 2020 Dec; 20(1): 1-8. doi: 10.1186/s12888-020-02645-6.

[2] Farrell SM, Kar A, Valsraj K, Mukherjee S, Kunheri B, Molodynski A, *et al*. Wellbeing and burnout in medical students in India; a large scale survey. International Review of Psychiatry. 2019 Nov; 31(7-8): 555-62. doi: 10.1080/09540261.2019.1688047.

[3] McKerrow I, Carney PA, Caretta-Weyer H, Furnari M,

DOI: https://doi.org/10.54393/tt.v4i1.118

Miller Juve A. Trends in medical students' stress, physical, and emotional health throughout training. Medical Education Online. 2020 Jan; 25(1): 1709278. doi: 10.1080/10872981.2019.1709278.

[4] Heinen I, Bullinger M, Kocalevent RD. Perceived stress in first year medical students-associations with personal resources and emotional distress. BMC Medical Education. 2017 Dec; 17(1): 1-4. doi: 10.1186/s12909-016-0841-8.

[5] Boni RA, Paiva CE, De Oliveira MA, Lucchetti G, Fregnani JH, Paiva BS. Burnout among medical students during the first years of undergraduate school: Prevalence and associated factors. PloS One. 2018 Mar; 13(3): e0191746. doi: 10.1371/journal.pone.0191746.

[6] Asghar AA, Faiq A, Shafique S, Siddiqui F, Asghar N, Malik S, Kamal SD, Hanif A, Qasmani MF, Ali SU, Munim S. Prevalence and predictors of the burnout syndrome in medical students of Karachi, Pakistan. Cureus. 2019 Jun; 11(6): e879. doi: 10.7759/cureus.4879.

[7] Erschens R, Keifenheim KE, Herrmann-Werner A, Loda T, Schwille-Kiuntke J, Bugaj TJ, *et al*. Professional burnout among medical students: systematic literature review and meta-analysis. Medical Teacher. 2019 Feb; 41(2): 172-83. doi: 10.1080/0142159X.2018.1457213.

[8] Khosravi M. Burnout among Iranian medical students: Prevalence and its relationship to personality dimensions and physical activity. European Journal of Translational Myology. 2021 Mar; 31(1): 9411. doi: 10.4081/ejtm.2021.9411.

[9] Brubaker JR and Beverly EA. Burnout, perceived stress, sleep quality, and smartphone use: a survey of osteopathic medical students. Journal of Osteopathic Medicine. 2020 Jan; 120(1): 6-17. doi: 10.7556/jaoa.2020.004.

[10] Ilic I, Milicic V, Grujicic S, Macuzic IZ, Kocic S, Ilic MD. Prevalence and correlates of low back pain among undergraduate medical students in Serbia, a cross-sectional study. PeerJ. 2021 Mar; 9: e11055. doi: 10.7717/peerj.11055.

[11] Wami SD, Mekonnen TH, Yirdaw G, Abere G. Musculoskeletal problems and associated risk factors among health science students in Ethiopia: A cross-sectional study. Journal of Public Health. 2021 Aug; 29: 943-9. doi: 10.1007/s10389-020-01201-6.

[12] Weleslassie GG, Meles HG, Haile TG, Hagos GK. Burden of neck pain among medical students in Ethiopia. BMC Musculoskeletal Disorders. 2020 Dec; 21(1): 1-9. doi: 10.1186/s12891-019-3018-x.

[13] Chen YH, Tsai CF, Yeh CJ, Jong GP. Is burnout a mediating factor between sharps injury and work-related factors or musculoskeletal pain? World Journal of Clinical Cases. 2021 Sep; 9(25): 7391. doi: 10.12998/wjcc.v9.i25.7391.

[14] Ilić Živojinović J, Backović D, Belojević G, Valčić O, Soldatović I, Janković J. Predictors of burnout among Belgrade veterinary students: A cross-sectional study. PLoS One. 2020 Mar; 15(3): e0230685. doi: 10.1371/journal.pone.0230685.

[15] Ogunlana MO, Govender P, Oyewole OO. Prevalence and patterns of musculoskeletal pain among undergraduate students of occupational therapy and physiotherapy in a South African university. Hong Kong Physiotherapy Journal. 2021 Jun; 41(01): 35-43. doi: 10.1142/S1013702521500037.

[16] Piperac P, Todorovic J, Terzic-Supic Z, Maksimovic A, Karic S, Pilipovic F, *et al*. The validity and reliability of the Copenhagen Burnout Inventory for examination of burnout among preschool teachers in Serbia. International Journal of Environmental Research and Public Health. 2021 Jun; 18(13): 6805. doi: 10.3390/ijerph18136805.

[17] Chairani A. Validity and reliability test of the Nordic Musculoskeletal questionnaire with formal and informal sector workers. The 7th International Conference on Public Health 2020. 2020 Nov: 100-106. doi: 10.26911/the7thicph-FP.05.06.

[18] Alqahtani NH, Abdulaziz AA, Hendi OM, Mahfouz ME. Prevalence of burnout syndrome among students of health care colleges and its correlation to musculoskeletal disorders in Saudi Arabia. International Journal of Preventive Medicine. 2020 Mar; 11: 38. doi: 10.4103/ijpvm.IJPVM_295_19.

[19] Aljadani AH, Alsolami A, Almehmadi S, Alhuwaydi A, Fathuldeen A. Epidemiology of burnout and its association with academic performance among medical students at hail university, Saudi Arabia. Sultan Qaboos University Medical Journal. 2021 May; 21(2): e231. doi: 10.18295/squmj.2021.21.02.011.

[20] Azzi DV, Melo J, Neto AD, Castelo PM, Andrade EF, Pereira LJ. Quality of life, physical activity and burnout syndrome during online learning period in Brazilian university students during the COVID-19 pandemic: A cluster analysis. Psychology, Health & Medicine. 2022 Feb; 27(2): 466-80. doi: 10.1080/13548506.2021.1944656.

[21] Valero-Chillerón MJ, González-Chordá VM, López-Peña N, Cervera-Gasch Á, Suárez-Alcázar MP, Mena-Tudela D. Burnout syndrome in nursing students: An observational study. Nurse Education Today. 2019 May; 76: 38-43. doi: 10.1016/j.nedt.2019.01.014.

[22] Gil-Calderón J, Alonso-Molero J, Dierssen-Sotos T, Gómez-Acebo I, Llorca J. Burnout syndrome in Spanish medical students. BMC Medical Education. 2021 Dec; 21(1): 1-7. doi: 10.1186/s12909-021-02661-4.

[23] Chan LL, Wong AY, Wang MH, Cheung K, Samartzis D. The prevalence of neck pain and associated risk factors among undergraduate students: A large-scale cross-sectional study. International Journal of Industrial Ergonomics. 2020 Mar; 76: 102934. doi: 10.1016/j.ergon.2020.102934.