Are ergonomic risk factors, perceived social support, and stress associated with work-related musculoskeletal disorders among dental students? A cross-sectional study (#110293)

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Are ergonomic risk factors, perceived social support, and stress associated with work-related musculoskeletal disorders among dental students? A cross-sectional study

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Background: Work-related musculoskeletal disorders (WMSDs) has been reported among dental students and have been repeatedly linked to gender, namely females. Yet there is lack of studies that have investigated the underlying factors between gender and WMSDs. The primary aim of this study was to examine the interactive influence of gender, ergonomic risk factors namely academic level and assigned training hours per week on WMSDs among undergraduate dental students. Additionally, the association of both perceived stress and social support with WMSDs is explored**. Methods:** A self-reported questionnaire was distributed among a convenience sample of 409 undergraduate dental students at a dental school in Western Saudi Arabia. The questionnaire comprised socio-demographic characteristics, WMSDs using validated questionnaire, the perceived stress scale, and the perceived social support scale. Descriptive, bivariate and logistic regression analyses were performed. **Results:** The median/interquartile range age of the participants was 21 (2) years, and 59% were males. Of the participants, 71% (95% CI: 64.3–76.7) self-reported WMSDs in at least one area of body over the past 12 months, with the most reported WMSDs being in the lower back, followed by the neck, wrists/hands, and shoulders at 48%, 45%, 31% and 30%, respectively. In fully adjusted logistic regression, being a female and the synergy between gender (female), academic levels and assigned training hours per week were significantly associated with self-reported WMSDs (adjusted odd ratio (AOR): 0.05, 95% Confidence interval (CI) [0.02-0.17], p <.001; AOR: 1.33, 95% CI [1.07-1.65], p =.011). **Conclusion:** In this study sample, psychosocial factors were not

associated with WMSDs. However, the results suggest that female student were more likely to self-report WMSDs than counterparts. Notably, the interaction between gender, academic level and number of hours training assigned per week contributed significantly and positively in self-reported WMSDs specifically among female students. Intervention may consider female students at higher academic levels with training demands.

Are ergonomic risk factors, perceived social support, and stress associated with work-related musculoskeletal disorders among dental students? A cross-sectional Study

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Abstract

Background: Work-related musculoskeletal disorders (WMSDs) has been reported among dental students and have been repeatedly linked to gender, namely females. Yet there is lack of studies that have investigated the underlying factors between gender and WMSDs. **Objectives:** The primary aim of this study was to examine the interactive influence of gender, ergonomic risk factors namely academic level and assigned training hours per week on WMSDs among undergraduate dental students. Additionally, the association of both perceived stress and social support with WMSDs is explored**. Methodology:** A self-reported questionnaire was distributed among a convenience sample of 409 undergraduate dental students at a dental school in Western Saudi Arabia. The questionnaire comprised socio-demographic characteristics, WMSDs using validated questionnaire, the perceived stress scale, and the perceived social support scale. Descriptive, bivariate and logistic regression analyses were performed. **Results:** The median/interquartile range age of the participants was 21 (2) years, and 59% were males. Of the participants, 71% (95% CI: 64.3–76.7) self-reported WMSDs in at least one area of body over the past 12 months, with the most reported WMSDs being in the lower back, followed by the neck, wrists/hands, and shoulders at 48%, 45%, 31% and 30%, respectively. In fully adjusted logistic regression, being a female and the synergy between gender (female), academic levels and assigned training hours per week were significantly associated with self-reported WMSDs (adjusted odd ratio (AOR): 0.05, 95% Confidence interval (CI) [0.02-0.17], p <.001; AOR: 1.33, 95% CI [1.07-1.65], p =.011). **Conclusion:** In this study sample, psychosocial factors were not associated with WMSDs. However, the results suggest that female student were more likely to self-report WMSDs than counterparts. Notably, the interaction between gender, acadmic level and number of hours training assigned per week contributed significantly and positively in self-reported WMSDs specifically among female students. Intervention may considere female students at higher academic levels with training demands.

Keywords: Ergonomics, musculoskeletal pain, occupational dentistry, psychosocial support, Saudi Arabia

Introduction

Work-related musculoskeletal disorders (WMSDs) comprise a diverse range of inflammatory and degenerative conditions. According to the World Health Organization (WHO) these disorder affect muscles, ligaments, tendons, joints, nerves, and bones but are not directly resulting from an acute or instantaneous event (e.g., slips or falls). Thus, these disorders are defined as discomfort, disability impairment, or persistent pain in the locomotor system and they usually come under the umbrella term WMSDs when the work environment promotes their development or aggravation [1–3]. Among dental students, musculoskeletal disorders have become a prominent concern globally and are referred to as work-related musculoskeletal disorders (WMSDs)[4]. This is due to performing the repetitive hand–wrist motions required for complex dental procedures that demand meticulous precision, leading to prolonged physical strain, injuries, muscle tension and poor posture [5,6]. In addition, dental students often work in constrained spaces, adopting unusual positions that can contribute to poor ergonomics and placing immense strain on their musculoskeletal system [1,7]. Untreated WMSDs can evolve into more severe degenerative and inflammatory conditions that negatively impact daily activities, leading to poor quality of life, occupational impairment, absences from work and changing or discontinuing a profession [8,9].

A systematic review reported the prevalence of musculoskeletal disorders and pain among dentists, dental hygienists and dental students at varying rates between 10.8% and 97.9% in western countries [4]. Thus, the physical demands of clinical work have been firmly linked to a strong association with WMSDs among dental health professionals [9,10]. In addition, a number of risk factors were associated with WMSDs including age [11–13], gender,i.e., females were more likely to report WMSDs, [14–16], patient procedure treatment time [11] which may subject students to ergonomic risk factors such as painful postural and repetitive hand or arms movements [17]. However, while gender differences in WMSDs might be partly due to biological differences [18], yet, the underlying factors between gender and WMSDs factors namely academic level and hours of training assigned per week has not been investigated.

Furthermore, evidence from systematic reviews showed that dental students experience shear stress, which was attributed to the demand of the training and had an impact on the students' well-being [19,20]. Among Australian Dental residents, the association between musculoskeletal problems and increased levels of stress was reported. According to Fava et al. [21] and Lupien et al. [22], the prolonged exposure to stressful experiences predisposes individuals to

accelerate aging and chronic diseases due to accumulated tear-and-wear that impacts the allostatic load [23]. Notably within the context of dental students, stress induces physiological responses that could lead to muscle tension and the risk of WMSDs [2425]. Thus, the role of social support as an essential buffer to stressful life events is postulated as the amount of assistance one gets through interaction with people [26]. The role of social support in relation to WMSDs was reported in the context of nursing professionals [27]. Nevertheless, limited evidence suggests that psychosocial factors may also play a role in the prevalence of WMSDs [10,28,29]. Likewise, the role of stress and social support in WMSDs in dental students is scarce [18].

While global statistics highlight the universal challenges faced by dental professionals, it is important to consider Saudi Arabia's particular context. Research in Saudi Arabia has reported a substantial prevalence of symptoms related to WMSDs among dental professionals, ranging from 54% to 78% [30–33]. Saudi Arabia offers a unique context for understanding the prevalence of WMSDs among dental students. Over the years, oral health has been of growing importance, and dental schools have proliferated as a natural consequence.

Increasing emphasis on dental services and a rapidly evolving healthcare landscape have also resulted in more students pursuing dental education in Saudi Arabia [34]. This observation, coupled with the inherent challenges of the profession, makes WMSDs an important concern among dental students in Saudi Arabia. Taking part in dental education and completing clinical training have a tangible impact on a student's physical well-being. The limited research available within the Saudi context reveals that WMSDs are not an isolated problem [30–33]. Consequently, the Saudi dental education system, while striving for excellence, should also address its students' well-being. Addressing the prevalence of WMSDs among dental students in Saudi Arabia necessitates a comprehensive approach. This involves a thorough understanding of the factors contributing to the high prevalence of WMSDs, namely psychosocial factors and the synergy effect of gender, academic levels of student and hours of training per week. Accordingly, this may guide the formulation of an ergonomic intervention program that might be incorporated into the school.

The primary aim of this study was to examine the interactive influence of gender, ergonomic risk factors namely academic level and assigned training hours per week on WMSDs among undergraduate dental students. Additionally, the association of both perceived stress and social support with WMSDs is explored.

Materials and Methods

Study design, sampling, setting and ethical approval

This analytical cross-sectional study recruited a universal convenience sample of all students (203 males and 206 females) at all levels of the Bachelor of Dental Surgery Program at a Dental College in Western Saudi Arabia. In Saudi dental programs, which span six years, students receive laboratory exposure from their first year in courses such as dental anatomy, anatomy, pathology, and microbiology. Clinical experience begins in the fourth year, with students meeting rigorous clinical and laboratory requirements. By the later stages of the program (fifth and sixth year), students are actively involved in patient care. The Research Ethics Committee at the College of Dentistry, Taibah University reviewed and approved the study protocol (TUCDREC/20160204/Alblehshi). The study followed the ethical principles of the World Medical Association Declaration of Helsinki[35]. An information sheet was given to the students that explained aspects of the study, including its aims, relevance and used methods. The participation of the students was voluntary. Students could withdraw from the study at any time without giving a reason, and without having any impact on their academic achievement. The confidentiality of the information was ensured, and informed consent was obtained from all students before their participation in the study.

Study questionnaire data collection and participants' recruitment procedures

The data were obtained using a pretested self-administered, paper-and-pencil closed-ended and anonymous questionnaire in English language. The first part of the questionnaire included questions related to respondents' sociodemographic characteristics (e.g., age, gender, academic level at the dental school, whether one had a re-sit exam, whether one deferred a semester, hours of training in the lab and dental clinic and the use of the left or right hand). The body mass index was self-reported in weight and height (kg/m^2) [36]. The second part asked questions with an explainable picture, to help students understand the appointed areas, of musculoskeletal disorders using the English Nordic Musculoskeletal Questionnaire (NMQ) [37]. The NMQ collected data on self-reported pain in the last 12 months from nine regions of the body i.e. the neck, shoulders, elbows, wrists/hands, upper back, lower back, hips/thighs, knees, and ankles/feet. The validity and reliability and cross-culture validity of the NMQ have been reported previously [38–40].

Finally, the third part asked about social support and stress using validated questionnaires. Namely the Multidimensional Scale of Perceived Social Support (MSPSS) and the Perceived Stress Scale-10 (PSS-10) [41,42]. The MSPSS comprised three domains: significant other (four items); family support (four items) and friend support (four items). These original domains' items were evaluated on a 7-point Likert scale (1 = very strongly disagree, 2 = mildly disagree, 3 = disagree, 4 = neutral, 5 = mildly agree, 6 = strongly agree, 7 = very strongly agree), with a higher score indicating higher perceived social support. The total score was 84 (range 1-48), with a Cronbach's α of 0.84 [41]. The PSS-10 consists of 10 self-reported items that assess situations in an individual's life and are considered stressful. The time frame for this assessment was 'in the last month' and was on a five-point Likert scale (0 = never, 1 = almost never, 2 = sometimes, 3 = fairly often and 4 = very often). The scores ranged from 0 to 40 and were calculated by reversing the scores of four positive items (items 4, 5, 7 and 8). Higher scores represent higher stress levels.

The questionnaires were distributed by hand through a class leader who represented the students of every academic year. The leaders invited the students to participate, and those who agreed were handed the study information sheet and the informed consent form to sign before filling out the questionnaire. However, because participation in this study was voluntary, students could hand back an incomplete questionnaire or refuse to participate from the beginning. Inclusion into the study was limited to being a registered undergraduate dental student at a dentistry college in one of the universities in Western Saudi Arabia, and willing and agreeing to sign the consent form of the study. Interns at the dental school, pregnant female students and those with musculoskeletal injuries or previous surgery were excluded. In this study, test-retest reliability testing was not conducted due to students' busy schedule during the time of questionnaire distribution. The statement Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) was followed [43].

Statistical analysis

The Statistical Package for Social Sciences version 21 (SPSS Inc. Chicago, IL, USA) was used for the data analysis. Descriptive analysis was conducted to report the sample characteristics. Since the continuous variables (e.g., age) didnot adhere to normal distribution (Shapiro–Wilk =<0.05) median with an interquartile range (median [IQR]) was reported. The prevalence of complaints per anatomical region in the last 12 month were reported as frequencies and

156 percentages. The bivariate analysis was performed to explore variables associated with the dependent outcome self
157 reported occurrence of WMSDs in the last 12 months (Yes/No) at least one symptom in one of the nine anatomical
158 regions. First, the Mann–Whitney U test was performed to compare the medians of continuous variables. However,
159 when there were ties in medians i.e., the medians values were identical, the mean rank was verified to guide
160 interpretations of the findings (e.g. age Table1). Second, the Chi square test compared the proportions of categorical
161 variables with the dependent variable. Third, variables that were significantly associated with the dependent variable
162 in the bivariate analysis ($p \leq 0.05$) were entered into a multivariable logistic regression to evaluate their association
163 with the dependent variable after adjustment with other variables. However, both the perceived stress and perceived
164 social support as the exposures of interest were forced into regression model irrespective of the p-value at the bivariate
165 analysis. As there was multicollinearity between age and academic levels, age was not entered into model, academic
166 levels was entered due to its importance in this study and used as proxy for age. The individual as well as the
167 interaction analysis between gender, academic levels and training hours assigned per week for students was performed
168 to test the main and interactive effects of these varaibles on the dependent variable**.** The continous varaible 'hours of
169 training assigned per week' was mean-centered [44] . Finally, the results of the logistic regression were reported as odds
170 ratios (OR) with 95% confidence interval (95%CI) and p-value ≤ .05 was statistically significant.

171

172 ## Results

173 ***Sample characteristics and distribution with WMSDs***

174 Four hundred and nine students were invited to participate in our study. Of these, 196 declined to participate. The
175 remaining students agreed to participate and proceeded to data collection, culminating in a final sample of two hundred
176 and thirteen participants, resulting in a response rate of 52%. Male participants were more than females (59% vs.
177 41%). Other characteristics are presented in Table 1. The bivariate findings presented in Table 1 illustrate that female
178 students, older students, seniority within the dental program, i.e. at both clinical and laboratory levels (years 4 and 5
179 and 6), number of training hours assigned per week were associated significantly with self-reported WMSDs ($p \leq 0.05$).
180 However, both increases in perceived stress and social support were non-significantly associated with WMSDs.

181

182

Table 1: Total sample characteristics and bivariate analysis for WMSDs with the socio-demographic and psychosocial factors among dental students (n = 213)

Categorical Variable	**Total sample n (%)**	**WMSDs Yes (n [%])**		***P-value*[a]**
Gender				
Male	125 (58.7)	70 (56.0)		**<0.001**
Female	88 (41.3)	81 (92.0)		
Academic level				
Preclinic (Lab only) (years 2,3)	122 (57.3)	68 (55.7)		**<0.001**
Clinic (Lab and clinic) (years 4,5,6)	91 (42.7)	83 (91.2)		
Hand				
Right hand	194 (91.1)	138 (71.1)		0.804
Left hand	19 (8.9)	13 (68.4)		
Re-sit exam				
Yes	27 (12.7)	134 (72.0)		0.332
No	186 (87.3)	17 (63)		
Defer a semester				
Yes	199 (93.4)	142 (71.4)		0.573[#]
No	14 (6.6)	9 (64.3)		
Continuous variables	**Total sample (Median/IQR)**	**WMSDs**		*P-value*[b]
		Yes	**No**	
Age (Median/IQR)	21 (2)	21(2)	21 (2)	**0.002**
BMI	22.27 (5.29)	22.20 (8.82)	23.18 (3.68)	0.275
Training hours assigned weekly	6 (14)	18 (14)	6 (2)	**<0.001**
Perceived stress	22 (7)	22.50 (8)	21.50 (8)	0.075
Perceived social support	61 (17)	61.0 (13)	62.0 (22)	0.494

[a]Chi-square test; Fisher's exact test; [b] Mann Whiteny test; values in bold signify p ≤0.05

187 ***Distribution of WMSDs***

188 The overall WMSDs self-reported of at least one symptom in in one of the nine anatomical regions in the last 12
189 months by the students were 71% (95% CI 64.3–76.7). The most distributed WMSDs (Figure 1) were reported in the
190 lower back and followed by the neck, wrists/hands, and shoulders (48%, 45%, and 31.0%, 30.0%) respectively).

191 **Figure 1:**

192 Table 2 shows the results of the binary logistic regression model analysis including the variables, gender, academic
193 level number of training hours assigned per week, perceived stress, perceived social support and the three-way
194 interaction of gender x academic level x number of training hours assigned per week. In the adjusted model gender
195 and the three-way interaction emerged as statistically significantly variables associated with self-reported occurrence
196 of WMSDs in the last 12 months in one of the nine anatomical regions. Male student had significantly lower odds of
197 self-reporting WMSDs compared to female students (AOR: 0.05, 95% CI [0.02-0.17], p <.001). In addition, the
198 interaction of being female with increases of academic level and increases in assigned training hours weekly was
199 positively associated with WMSDs (AOR: 1.33, 95% CI [1.07-1.65], p =.011). The model explained between 30%
200 (Cox and Snell R Square) and 43% (Nagelkerke R Square) of the variance in the WMSDs.

201 **Table 2:** Binary logistic regression modeling of variables associated with WMSDs among dental students (n=213)

Variables	**B**	**AOR (95% CI)**[a]	***p-value***
Gender			**<.001**
Male	-2.959	Ref.	
female		0.05 (0.02-0.17)	
Academic level			.820
Preclinic (Lab only, years 2,3)	0.499	Ref.	
Clinic (Lab and clinic, years 4,5,6)		1.65 (0.02-120.60)	
Training hours assigned weekly (THAW)	-.219	0.80 (0.59-1.09)	.156
Perceived social support	.016	1.02 (0.99-1.05)	.274
Perceived stress	.006	1.01 (0.93-1.09)	.865
Gender x Academic level x THAW	.282	1.33 (1.07-1.65)	**.011**

202 [a]AOR (95% CI) =adjusted odd ratio with 95% Confidence interval; values in bold signify significant *p<.05*

203

204

Discussion

To the best of our knowledge, this study is the first to examine the interactive influence of gender, ergonomic risk factors namely academic level and assigned training hours per week and the association of psychosocial factors, on WMSDs among dental students in Saudi Arabia. Exploration into such aspects was advocated on numerous occasions to further understand WMSDs in a multidimensional manner[18].

The current investigation demonstrated that female students, seniority within the dental program, i.e., being at both lab and clinic levels, number of training hours assigned per week were significantly associated with self-reported WMSDs in bivaraite analysis. Following logistic regression, however, only the association of WMSDs with gender and the interaction of gender, academic levels and training hours assigned weekly remained significant. This is in line with findings from the systematic review by Almeida and co-workers [18]. One possible explanation could be that females are more conscious and alert about their health than males, making them more inclined and detailed to report changes in their health and well-being. Other explanations are related to inherent differences in muscle tone and energy needs between the genders, making females less resistant to musculoskeletal tension [18]. Notablly, the emergence of the interaction of gender, academic levels and training hours assigned per week as significant compound risk of WMSDs instead of idividual varaibles (academic levels and training hours assigned per week), may highligt that female students reporting WMSDs is conditioned by the impact of increased training hours per week and at higher academic levels. Weekly assigned training hours in relation to WMSDs among dentists were scarcely reported in the current dental literature [45]. The association of WMSDs with clinical practice has been reported previously [1,14,33] and was also linked to the clinical demands in term of precision of dental procedures and time spent for the arms being unsupported and the cervical spine being rotated and flexed [46,47].

However, the persistance of nonsignificant associations, in logistic regression, were observed between WMSDs and psychosocial factors in this studied sample as previously reported in a comparable population [48]. Despite the plausibility of such a relation, a recent systematic review pointed to the relatively stronger role of other factors such as female gender, poor posture habits, inadequate ergonomics knowledge, sedentary lifestyle, high physical activity levels, poor quality of life, and smoking [18]. In contrast, a pooled analyses of lower back pain studies found that

supervisor support and job satisfaction were significantly associated with all studied outcomes for lower back pain [49]. Furthermore, recovery from lower back pain symptoms was associated with improvement in certain psychological predictors [50]. Such conflicting results point to the necessity for utilization of additional and more specific tools for evaluating psychosocial factors among undergraduate students and their influence on WMSDs.

Limitations

This study included the cross-sectional design, which precluded potential discussions about causality relationships. The self reporting was also associated with possible recall bias and social desirability. In addition, self-selection into the study may have motivated students' responses. Moreover, the convenience sample, the obtained data from one dental school and the response rate was less than minimum rate (60%), meaning that the study findings cannot be extrapolated to the general undergraduate student population [51,52]. Furthermore, the lack of data on on other factors, such as leisure-time physical activities, may potentially confound the associations between stress, social support, and WMSDs. Future research should address this gap to provide a more comprehensive understanding of these relationships. Finally, the primary outcome was the occurrence of at least one WMSD symptom, rather than a specific type of pain (e.g., neck pain). This approach may have obscured the relationship between certain varaibles and specific body parts. However, the study's strengths stem from investigating the interaction of gender with ergonmic factors that influence WMSDs among female students, as well as the exploring psychosocial factors among dental students using well-established, validated scales in relation to WMSDs.

Conclusion

Within the limits of this study, psychosocial factors were not associated with WMSDs. Nevertheless, the results suggest that being female, along with the combined effects of being female, increased seniority in academic levels and higher assigned training hours per week, contributed to WMSDs among undergraduate dental students.

Author Contributions: Conceptualization, SK, HM ; methodology, SK, HM, HB, HF.; software, SK and HM.; validation, HB, MB,DA,SJ,DF,AA, WA, HF; formal analysis, SK, HM, AA.; investigation, HB, MB,DA,SJ, DF, AA, WA, HF; resources, SK, HM, HB, MB,DA,SJ, DF, AA, WA, HF; data curation, SK.; writing—original draft preparation, X.X.; writing—review and editing SK, HM, HB, MB,DA ,SJ,DF,AA, WA, HF ; visualization, SK,HM.;

supervision, SK and HF.; project administration, SK and HM. All authors have read and agreed to the published version of the manuscript."

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Institutional Review Board Statement:

The study was approved by the Research Ethical Committee of College of Dentistry, Taibah University (TUCDREC/20160204/Alblehshi), Al-Madinah Al-Munawwarah, Saudi Arabia. The study was conducted in accordance with the guidelines of the declaration of Helsinki.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study

Data Availability Statement: Data are available from the corresponding author upon reasonable request

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Conflicts of Interest: The authors declare no conflicts of interest

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Table 1(on next page)

Table 1: Total sample characteristics and bivariate analysis for WMSDs with the socio-demographic and psychosocial factors among dental students (n = 213)

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Categorical Variable	**Total sample n (%)**	**WMSDs Yes (n [%])**		***P-value[a]***
Gender				
Male	125 (58.7)	70 (56.0)		**<0.001**
Female	88 (41.3)	81 (92.0)		
Academic level				
Preclinic (Lab only) (years 2,3)	122 (57.3)	68 (55.7)		**<0.001**
Clinic (Lab and clinic) (years 4,5,6)	91 (42.7)	83 (91.2)		
Hand				
Right hand	194 (91.1)	138 (71.1)		0.804
Left hand	19 (8.9)	13 (68.4)		
Re-sit exam				
Yes	27 (12.7)	134 (72.0)		0.332
No	186 (87.3)	17 (63)		
Defer a semester				
Yes	199 (93.4)	142 (71.4)		0.573[#]
No	14 (6.6)	9 (64.3)		
Continuous variables	**Total sample (Median/IQR)**	**WMSDs**		***P-value[b]***
		Yes	**No**	
Age (Median/IQR)	21 (2)	21(2)	21 (2)	**0.002**
BMI	22.27 (5.29)	22.20 (8.82)	23.18 (3.68)	0.275
Training hours assigned weekly	6 (14)	18 (14)	6 (2)	**<0.001**
Perceived stress	22 (7)	22.50 (8)	21.50 (8)	0.075
Perceived social support	61 (17)	61.0 (13)	62.0 (22)	0.494

[a]Chi-square test; Fisher's exact test; [b] Mann Whiteny test; values in bold signify p ≤0.05

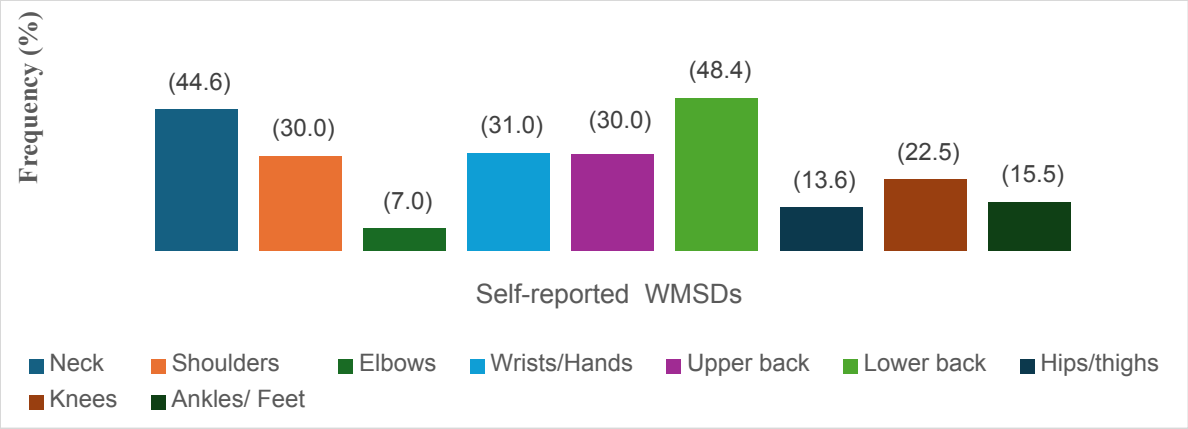

Figure 1: Frequency and percentage (F [%]) of WMSDs in the last 12 months among dental students (n=213)

10 **Table 2:** Binary logistic regression modeling of variables associated with WMSDs among dental students (n=213)

Variables	B	AOR (95% CI)[a]	*p-value*
Gender			**<.001**
Male	-2.959	Ref.	
female		0.05 (0.02-0.17)	
Academic level			.820
Preclinic (Lab only, years 2,3)	0.499	Ref.	
Clinic (Lab and clinic, years 4,5,6)		1.65 (0.02-120.60)	
Training hours assigned weekly (THAW)	-.219	0.80 (0.59-1.09)	.156
Perceived social support	.016	1.02 (0.99-1.05)	.274
Perceived stress	.006	1.01 (0.93-1.09)	.865
Gender x Academic level x THAW	.282	1.33 (1.07-1.65)	**.011**

11 [a]AOR (95% CI) =adjusted odd ratio with 95% Confidence interval; values in bold signify significant $p<.05$

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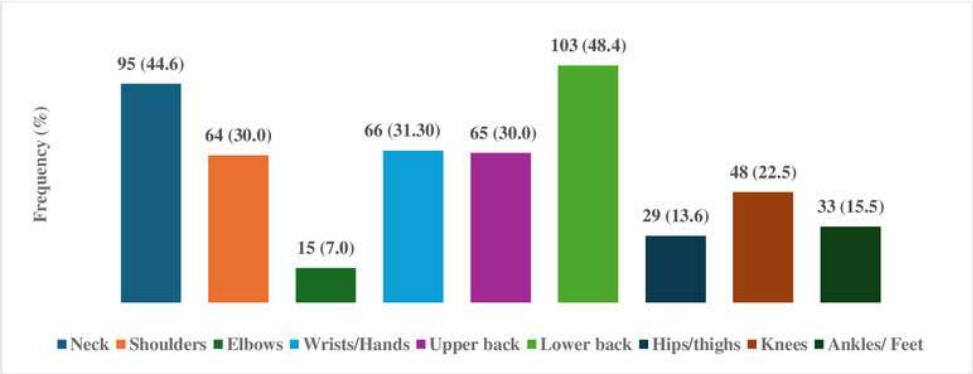

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