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The prevalence of back pain among male teachers in Makkah region, Saudi Arabia: An analytic cross-sectional study

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ABSTRACT

Background: In primary care settings, back pain is the most prevalent complaint. Schoolteachers are at a higher risk of musculoskeletal issues. Several studies in Saudi Arabia have been looking into work-related musculoskeletal disorders, but the actual frequency and risks are unknown. Thus, this study's goal was to establish the incidence of back pain and its determinants among male schoolteachers in the Makkah, Saudi Arabia. ***Methodology:*** In this cross-sectional study, male schools in Makkah were divided into seven categories using cluster sampling, and a validated back pain questionnaire was used. ***Results:*** A total of 380 participants responded, with a mean age of 44.23 and ±7.70 SD. A positive history of past back issues was found in 48.2 % of the participants. The majority of the participants reported working for 11 to 24 years, working fewer than 30 hours per week, standing for more than 30 minutes, sitting for less than 15 minutes, less than a 20-minute break, and sleeping for less than 6 hours. Except for sleep duration, none had a significant association with the back pain likelihood ratio. Having a master's degree, not having depression or sleep issues, number of classes, and job satisfaction were revealed a significant association. ***Conclusion:*** Overall, compared to prevalence rates recorded in other countries, this study demonstrates a high prevalence of back disability among male teachers in Makkah, Saudi Arabia. Practical preventives are recommended, and increased knowledge of occupational hazards. Teachers need to get health education to prevent back disability.

Keywords: Prevalence, Back pain, Male teachers, Saudi Arabia

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1. INTRODUCTION

One of the most likely causes for patients seeking emergency care is back discomfort. Both adult and juvenile populations have a wide range of possible etiologies (Casiano et al., 2022). Several studies on back pain have been conducted, most of which have come from various industrial countries (Badawood et al., 2017; Al-Arfaj et al., 2003; Sultan et al., 2021). Various interventions have been developed to aid in the clinical management of LBP, primarily related to work, by preventing injuries and allowing workers to return to work sooner (Badawood et al., 2017). Moreover, when it came to teachers, researchers looked into three major occupational health issues: voice difficulties, musculoskeletal problems, and contact dermatitis (Aldukhayel et al., 2021; Chong & Chan, 2010). They may be at a higher risk of musculoskeletal problems, ranging from 39% to 95% (Aldukhayel et al., 2021; Erick & Smith, 2011), because they may be required to stand for long periods or sit in an incorrect posture for hours marking papers or writing (Aldukhayel et al., 2021; Erick & Smith, 2011). As a result, school teachers experience a low standard of living, regular sick leaves, impaired functioning, missed workdays, retiring early, disability, and health costs resulting from musculoskeletal pain, ultimately influencing the system of education (Aldukhayel et al., 2021; Abdulmonem et al., 2014; Temesgen et al., 2019).

Several investigations address work-related musculoskeletal disorders in Saudi Arabia. However, the exact frequency and associated risks are still ambiguous and need further research. From this point of view, we planned to estimate the current prevalence of back pain and its detriments among male schoolteachers in the Makkah region, Saudi Arabia.

2. METHODOLOGY

We conducted this cross-sectional descriptive and observational study among male schoolteachers in the Makkah region, Saudi Arabia, during March 2022. The study included male teachers. First, schools were gathered from the ministry of education on the Makkah region's website to arrive at the sample size. Then it's divided into seven categories according to Makkah regions: north, south, east, central, Bahrah, and Al-jamome, using a cluster sampling method. Next, they were organized alphabetically and randomly selected using the (Random.org) website. We used epi info software VER 2.1, considering 95% CI and P-value as 5% to calculate simple size. The estimated sample size for the present study was 280. All teachers meeting the criteria are allowed to participate in this study. The questionnaire consisted of demographics data and an Oswestry index survey validated in the Arabic language from a previous Saudi survey to assess participants' back pain frequencies. We utilized the Oswestry index survey validated in the Arabic language consists of 10 items assessing back pain occurrence and its detriments (Algarni et al., 2014). Total score categories will be [5-14] mild disability, [15-24] moderate disability, [25-34] severe disability, and [35-50] completely disabled. SPSS statistics version 23 was utilized to analyze the data. We used the Chi-square test to measure and compare the mean, standard deviation, and significance. Statistical significance was described as a P-value of less than 0.05. This study was ethically approved by the bioethical committee of Umm Al-Qura University with IRB number: HAPO-02-K-012-2022-02-984.

3. RESULTS

This survey targets male teachers in the Makkah regions of Saudi Arabia. Their demography was listed in (Table 1). A total of 380 teachers have completed a survey with a mean age of 44.23 (SD, 7.70). Teachers aged 40-49 years old were predominant, followed by the 22-39-year-old age group (45%, 27.1%, respectively). Most of the respondents were Saudis (N=368) 96.8% and married (N=358) 94.2%. Most teachers had bachelor's degrees, followed by master's degrees (81.6%, 12.4%, respectively). Furthermore, most teachers had a monthly income of 10-20 thousand (N=326) 85.8%. Most of the participants exercise moderately (N=203) 53.4%. Regarding smoking status among teachers, most teachers do not smoke (N=291) 76.6, while smokers account for (N=89) 23.4%.

Table 1 Teachers' demography

Variable	Category	N	(%)
Age groups	22-39	103	27.1
	40-49	171	45.0
	50-59	97	25.5
	More than 60	9	2.4
Nationality	Saudi	368	96.8
	Non-Saudi	12	3.2
Educational level	Baccalaureus	310	81.6

	Master	47	12.4
	Diploma	9	2.4
	Others	14	3.7
Marital status	Single	12	3.2
	Married	358	94.2
	Divorced	10	2.6
Income level	Less than 10 thousand	27	7.1
	10-20 thousand	326	85.8
	More than 20 thousand	27	7.1
Routine sports	Yes	63	16.6
	No	114	30.0
	Sometimes	203	53.4
Smoking status	Yes	89	23.4
	No	291	76.6
Age Mean (Standard deviation)			44.23 (7.70)
Associated past medical and surgical histories			
Previous back problems	Yes	183	48.2
	No	197	51.8
Previous back trauma	Yes	61	16.1
	No	319	83.9
Previous back surgery	Yes	10	2.6
	No	370	97.4
Chronic diseases	Asthma	16	4.2
	Diabetes	54	14.2
	Hypertension	31	8.2
	Cardiac	2	.5
	Other	277	72.9
Depression	Yes	94	24.7
	No	286	75.3
Sleep problems	Yes	153	40.3
	No	227	59.7

About (N==183) 48.2% of teachers had a positive history of previous back issues. Compared to previous trauma and surgical history, about (N=61) 16.1% had positive back trauma history, and only (N=10) 2.6% had previous back surgery (Table 2). In addition, approximately (N=54) of participants had diabetes, (N=31) had hypertension, (N=16) had asthma, and (N=2) had previous cardiac problems (Table 2). Furthermore, about (N=94) 24.7% had previous depression history, while about (N=153) 40.3% had sleep

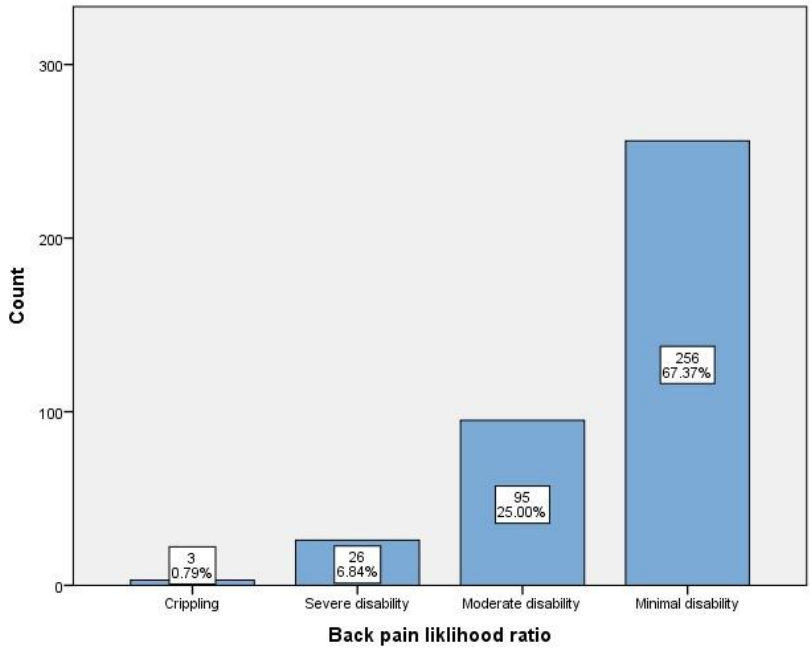
issues (Table 2). Regarding the prevalence and likelihood ratio of back pain and disability, most teachers had a minimal back disability, followed by moderate back disability (67.37%, 25.00%, respectively) (Figure 1).

Table 2 lists the related occupational factors among teachers. Most of the teachers (N=226) had an occupational duration of 11-24 years, followed by 25 years or more (N=113). Whereas, most participants had fewer than 30 hours of working per week (N=264) 69.5%. Regarding the break, sitting, and standing duration at working hours; most teachers had an average of fewer than 20 minutes of break duration, less than 15 minutes of sitting duration, and about more than 30 minutes of standing during classes (N=208, 312, 222, respectively) (Table 2). Furthermore, unmentioned other reasons for sitting during lessons were predominantly represented 54.2%, followed by homework correction as sitting region represents 27.4%. Most teachers had an average sleep duration of fewer than 6 hours per day (N=195) 51.3%, followed by 6-10 hours per day (N=181) 47.6% (Table 2). Most teachers prefer to use a typical school chair (N=211), while about 33.4% prefer a desk chair. Moreover, about 51.6% had an office disk compared with teachers without an office desk 48.4%.

Most had no extracurricular activities (N=203) 53.4%. Furthermore, most teachers feel satisfied with their occupation (N=274) 72.1%, while about 27.9% of teachers don't feel satisfied. About 88.9% of teachers don't experience school-related verbal or physical abuse. However, about 11.1% of the teacher had an occupational-related experience of verbal and/or physical abuse (Table 2).

Table 2 The related factors of back pain among teachers

Variable	Category	N	(%)
Occupational duration	Less than 10 years	41	10.8%
	11-24 years	226	59.5%
	25 years or more	113	29.7%
Occupational hours per week	Less than 30 hours	264	69.5%
	More than 30 hours	116	30.5%
Break duration	Less than 20 minutes	208	54.7%
	Less than hour	120	31.6%
	More than hour	52	13.7%
Sitting duration	Less than 15 minutes	312	82.1%
	15-30 minutes	49	12.9%
	More than 30 minutes	19	5.0%
Standing duration	Less than 15 minutes	42	11.1%
	15-30 minutes	116	30.5%
	More than 30 minutes	222	58.4%
Sleep duration	Less than 6 hours	195	51.3%
	6-10 hours	181	47.6%
	More than 10 hours	4	1.1%
Reasons for sitting	Examinations correction	70	18.4%
	Homework's correction	104	27.4%
	Other	206	54.2%
Chair types	Desk chair	127	33.4%
	School chair	211	55.5%
	Other special chair	42	11.1%
Offices disk	Yes	184	48.4%
	No	196	51.6%
Extracurricular activities	Yes	177	46.6%
	No	203	53.4%
Job satisfaction	Yes	274	72.1%
	No	106	27.9%
Occupational verbal or physical abuse	Yes	42	11.1%
	No	338	88.9%



The correlation between teachers' demography and the likelihood ratio of back pain was described in (Table 3). Teachers' educational level was correspondingly significantly with the likelihood ratio of back pain, especially teachers with master's degrees, corresponding with minimal back disability (P-value, 0.003). However, teachers' age groups, nationality, marital status, income level, routine sports and exercise, and smoking status shows no significant correlation with back pain likelihood ratio (P-value, 0.601, 0.788, 0.178, 0.144, 0.176, 0.050, respectively). On the other hand, (Table 3) also shows the correlation between past history and back pain likelihood ratio among teachers. Teachers with a previous positive history of back problems correspond significantly with minimal back disability (N=88) (P-value, 0.000). Comparatively, teachers without a past history of back problems showed a significant association with minimal back disability (N=168) (P-value, 0.000). Furthermore, previous teachers with depression were significantly correlated with minimal back disability (N=52), followed by moderate back disability (N=29) (P-value, 0.009). However, most teachers with no history of depression were also correlated significantly with minimal back disability (P-value, 0.009). Additionally, (N=71) of teachers with sleep problems were significant with a minimal back disability, followed by moderate back disability (N=61) (P-value, 0.000). However, teachers with no sleep problems were also significantly associated with minimal back disability (P-value, 0.000) (Table 3).

Table 3 The association between [teachers' demography and previous past history] and back pain likelihood ratio

Variable	Category	Back pain likelihood ratio (N)				P-value
		Minimal disability	Moderate disability	Severe disability	Crippling	
Age groups	22-39	70	25	7	1	0.601
	40-49	120	39	11	1	
	50-59	63	27	6	1	
	More than 60	3	4	2	0	
Nationality	Saudi	247	92	26	3	0.788
	Non-Saudi	9	3	0	0	
Educational level	Baccalaureus	6	3	2	1	0.003*
	Master	245	90	21	2	
	Diploma	5	2	3	0	
	Others	17	7	2	1	
Marital status	Single	218	84	23	1	0.178
	Married	21	4	1	1	

	Divorced	199	85	23	3	
Income level	Less than 10 thousands	34	10	3	0	0.144
	10-20 thousands	9	0	0	0	
	More than 20 thousands	14	0	0	0	
Routine sports	Yes	44	11	7	1	0.176
	No	74	29	11	0	
	Sometimes	138	55	8	2	
Smoking status	Yes	64	14	10	1	0.050
	No	192	81	16	2	
Previous back problems	Yes	88	69	23	3	0.000*
	No	168	26	3	0	
Previous back trauma	Yes	6	3	1	0	0.937
	No	250	92	25	3	
Previous back surgery	Yes	34	19	7	1	0.139
	No	222	76	19	2	
Chronic diseases	Asthma	9	7	0	0	0.635
	Diabetes	31	16	6	1	
	Hypertension	20	8	3	0	
	Cardiac	1	1	0	0	
	Other	195	63	17	2	
Depression	Yes	52	29	11	2	0.009*
	No	204	66	15	1	
Sleep problems	Yes	71	61	19	2	0.000*
	No	185	34	7	1	

The association between teachers' related occupational factors and back pain likelihood ratio were shown in (Table 4). Most teachers with less than 30 hours of occupational hours per week significantly corresponded with minimal back disability (P-value, 0.001). In contrast, teachers with 6-10 hours' sleep duration per day were significantly correlated with minimal back disability (P-value, 0.040). Furthermore, teachers with extracurricular and without extracurricular activities were significantly associated with minimal back disability (P-value, 0.014) moreover, most teachers' occupational satisfaction significantly corresponded with minimal back disability (P-value, 0.007). On the other hand, teachers' related occupational duration, break duration, sitting duration between classes, standing duration between classes, sittings' reasons between classes, chair types, having office disk, and related occupational verbal or physical abuse during work shows no significant association with back pain disability likelihood ratio (P-value, 0.542, 0.534, 0.691, 0.485, 0.066, 0.081, 0.539, 0.167, respectively) (Table 4).

Table 4 The correlation between teachers' occupational factors and back pain likelihood ratio

Variable	Category	Back pain likelihood ratio (N)				P-value
		Minimal disability	Moderate disability	Severe disability	Crippling	
Occupational duration	Less than 10 years	31	10	0	0	0.542
	11-24 years	154	54	16	2	
	25 years or more	71	31	10	1	
Occupational hours per week	Less than 30 hours	191	59	14	0	0.001*
	More than 30 hours	65	36	12	3	
Break duration	Less than 20 minutes	135	56	14	3	0.534
	Less than hour	81	30	9	0	

	More than hour	40	9	3	0	
Sitting duration	Less than 15 minutes	214	76	19	3	0.691
	15-30 minutes	30	13	6	0	
	More than 30 minutes	12	6	1	0	
Standing duration	Less than 15 minutes	28	8	5	1	0.485
	15-30 minutes	82	28	6	0	
	More than 30 minutes	146	59	15	2	
Sleep duration	Less than 6 hours	116	60	16	3	0.040*
	6-10 hours	137	34	10	0	
	More than 10 hours	3	1	0	0	
Reasons for sitting	Examinations correction	53	12	3	2	0.066
	Homework's correction	64	33	6	1	
	Other	139	50	17	0	
Chair types	Desk chair	87	33	6	1	0.081
	School chair	149	47	14	1	
	Other special chair	20	15	6	1	
Offices disk	Yes	122	45	16	1	0.539
	No	134	50	10	2	
Extracurricular activities	Yes	105	57	13	2	0.014*
	No	151	38	13	1	
Job satisfaction	Yes	196	64	13	1	0.007*
	No	60	31	13	2	
Occupational verbal or physical abuse	Yes	23	13	5	1	0.167
	No	233	82	21	2	

4. DISCUSSION

We investigated the back disability among schoolteachers in the Makkah region, Saudi Arabia. Of those teachers who had back pain, two-thirds (67.37%) reported experiencing minimal back disability, while a quarter (25%) reported moderate back disability. This finding agrees with the previous studies conducted on schoolteachers in Saudi Arabia (Alsaeed et al., 2021) and South Africa (Erick & Smith, 2014). This may indicate that most teachers possibly experienced their back pain at a tolerable level. On the contrary, a study in the Philippines revealed that most teachers experienced pain at a barely tolerable level (Atlas et al., 2007). One of the probable reasons causing a difference in the level of disability could be the service provided for the teachers at their schools or social differences between Saudi and the country of the study mentioned, how the job was arranged, and the protective considerations.

Our research demonstrated that teachers with master's degrees were significantly associated with back disability, in line with a study done in South Africa (Erick & Smith, 2014). The current study also showed an association between teachers with no previous history of back problems and minimal back disability. This finding is incongruent with prior studies done in Ethiopia, Texas, and South Africa, where they showed that teachers with a history of back problems were more likely to develop back disability than those who had no history (Beyen et al., 2013; Shipp et al., 2007; Erick & Smith, 2014). In addition, teachers who reported no medical history of depression were found to have more back disability than those who had depression. Again, this is inconsistent with previous studies (Nurul et al., 2010; Erick & Smith, 2011). This could be explained, as those without depression are more eager to do more in teaching their students, while those depressed teachers are more inclined to not work hard in the teaching process.

Our study revealed that back disability was more in teachers without sleep problems. This finding contradicts previous findings that sleeping disturbances are positively associated with back pain (Kebede et al., 2019). As disciplined teachers, they usually have a restricted schedule and routine, so they often have no problems with sleep patterns, making them more energized, so they work hard and make themselves more susceptible to musculoskeletal disorders. The current study also showed an association between

teachers with fewer classes per week and back disability. However, the majority of previous studies were against our findings (Alsaeed et al., 2021; Erick & Smith, 2014; Santana et al., 2012; Atlas et al., 2007). This inconsistency could be attributed to the differences in duration of the class, setting of teachers, low awareness of occupational hazards, and the socio-cultural differences between Saudi Arabia and other countries. In addition, teachers who were sleeping less than 10 hours were associated with back disability. This finding agrees with a previous study in Saudi Arabia (Alsaeed et al., 2021).

Some studies stated that low job satisfaction was associated with an increased risk for the occurrence of back pain (Van Poppel et al., 1998). The finding from the present study is inconsistent with the findings of several other studies regarding the effect of job satisfaction on back pain (Bandpei et al., 2014; Beyen et al., 2013). These studies demonstrated a strong association between low job satisfaction and back pain. In the current study, those teachers with high job satisfaction were more likely to develop back disability than those with a low level of job satisfaction. The possible explanation for this discrepancy in our study could be that a higher level of satisfaction may encourage teachers to do more in teaching and increase work time. Finally, there was an association between extracurricular activities and back disability.

Strength and limitations

Despite the numerous advantages of a cross-sectional study, it exhibits a few limitations linked to design. First was the use of a questionnaire as an instrument for data collection. This could allow participants not to answer the questions precisely. Moreover, at the data analysis point, the snapshot nature could only confirm an association between cause and effect. Finally, back disability depends merely upon the subjective self-reported, not relied upon an objective clinically validated diagnosis.

5. CONCLUSION

This study reveals a high prevalence of back disability among school teachers in Makkah, Saudi Arabia, similar to the prevalence rates recorded in other countries. The back disability was associated with having a master's degree, being without depression or sleep problems, the number of classes, sleep duration, and job satisfaction. We recommend effective preventive measures and increase awareness about occupational hazards. Health education is required for teachers to help them prevent or reduce Back disability.

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Ethical approval

The study was approved by the Ethics and Research Review Committee of Umm Al-Qura University, Faculty of Medicine (Approval number: HAPO-02-K-012-2022-02-984).

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are present in the paper.

REFERENCES AND NOTES

1. Abdulmonem A, Hanan A, Elaf A, Haneen T, Jenan A. The prevalence of musculoskeletal pain & its associated factors among female Saudi school teachers. Pak J Med Sci 2014; 30(6):1191.
2. Al-Arfaj AS, Al-Saleh SS, Alballa SR, Al-Dalaan AN, Bahabri SA, Al-Sekeit MA, Mousa MA. How common is back pain in Al-Qaseemregion. Saudi Med J 2003; 24(2):170-3.
3. Aldukhayel A, Almeathem FK, Aldughayyim AA, Almeshal RA, Almeshal EA, Alsaud JS, Albaltan RI. Musculoskeletal Pain among School Teachers in Qassim, Saudi Arabia:

Prevalence, Pattern, and Its Risk Factors. Cureus 2021; 13(8): e17510.
4. Algarni AS, Ghorbel S, Jones JG, Guermazi M. Validation of an Arabic version of the Oswestry index in Saudi Arabia. Ann Phys Rehabil Med 2014; 57(9-10):653-63.
5. Alsaeed A, Alresaini I, Alsaeed A, Alawaji Z, Alammar A, Alajlan A. Prevalence of low back pain among Saudi teachers, Qassim, Saudi Arabia. Int J Med Dev Ctries 2021; 1626–33.
6. Atlas AP, Bondoc RG, Garrovillas RA, Lo RD, Recinto J, Yu KJ, PTRP M. Prevalence of low back pain among public high school teachers in the City of Manila. Philipp J Allied Health Sci 2007; 2(1):34-40.
7. Badawood MA, Obaid H, Mohammed ME, Alrogi AJ. Impact of Low Back Pain on the work performance of male high school Saudi Teachers in Taif City. J Health Inform Dev Ctries 2017; 11(2).
8. Bandpei MA, Ehsani F, Behtash H, Ghanipour M. Occupational low back pain in primary and high school teachers: prevalence and associated factors. J Manipulative Physiol Ther 2014; 37(9):702-8.
9. Beyen TK, Mengestu MY, Zele YT. Low back pain and associated factors among teachers in Gondar Town, North Gondar, Amhara Region, Ethiopia. Occup Med Health Aff 2013; 1(5):1-8.
10. Casiano VE, Sarwan G, Dydyk AM, Varacallo M. Back Pain. In: StatPearls [Internet]. Treasure Island (FL): Stat Pearls Publishing 2022.
11. Chong EY, Chan AH. Subjective health complaints of teachers from primary and secondary schools in Hong Kong. Int J Occup Saf Ergon 2010; 16(1):23-39.
12. Erick PN, Smith DR. A systematic review of musculoskeletal disorders among school teachers. BMC Musculoskelet Disord 2011; 12(1):1-1.
13. Erick PN, Smith DR. Low back pain among school teachers in Botswana, prevalence and risk factors. BMC Musculoskelet Disord 2014;15(1):1-3.
14. Kebede A, Abebe SM, Woldie H, Yenit MK. Low Back Pain and Associated Factors among Primary School Teachers in Mekele City, North Ethiopia: A Cross-Sectional Study. OccupTher Int 2019; 2019.
15. Nurul I, Haslinda A, Saidi M, Shamsul B, Zailina H. Prevalence of Low back Pain and its Risk factors among School teachers. Am. J Appl Sci 2010; 7(5):634-9.
16. Santana ÂM, De Marchi D, Junior LC, Girondoli YM, Chiappeta A. Burnout syndrome, working conditions, and health: a reality among public high school teachers in Brazil. Work 2012; 41(Supplement 1):3709-17.
17. Shipp EM, Cooper SP, Del Junco DJ, Delclos GL, Burau KD, Tortolero SR. Severe back pain among farm worker high school students from Starr County, Texas: baseline results. Ann Epidemiol 2007; 17(2):132-41.
18. Sultan I, Algouzi RM, Alasmari MA, Abdullah RA. The prevalence and factors associated with musculoskeletal pain among medical students at Ibn Sina National College, Jeddah, Saudi Arabia. Medical Science 2021; 25(118):3489-3496
19. Temesgen MH, Belay GJ, Gelaw AY, Janakiraman B, Animut Y. Burden of shoulder and/neck pain among school teachers in Ethiopia. BMC Musculoskelet Disord 2019; 20(1):1-9.
20. Van Poppel MN, Koes BW, Deville WL, Smid T, Bouter LM. Risk factors for back pain incidence in industry: a prospective study. Pain 1998; 77(1):81-6.