Prevalence of Neck, Shoulder, and Lower Back Pain and the Associated Factors Among Jazan Residents, Saudi Arabia: A cross-sectional study

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Abstract

Background: Musculoskeletal pain (MSP) is a frequent and prevalent condition. This study aims to determine the prevalence of neck, shoulder, and low-back pain among Jazan residents and investigate the associated factors for MSP.

Method: A cross-sectional, self-administered questionnaire-based study was conducted among Jazan residents in the Jazan region. A total of 1,238 persons were selected by convenient type sampling. Descriptive statistics, a Chi-squared test, and logistic regression were performed to examine MSP's prevalence, association, and predictors.

Results: The overall lifetime prevalence of neck, shoulder, or low-back pain among both genders was 958 (77.4%). Neck pain was reported by 574 (46.4%) in the 12 months prior to the study and by 841 (67.9%) over the lifetime prior to the survey. Regarding shoulder pain, it was reported by 637 (51.5%) in the 12 months prior to the study and 799 (64.5%) over the lifetime prior to the study. Regarding low-back pain, it was reported by 684 (55.3%) in the 12 months prior to the study and 981 (79.2%) over the lifetime prior to the study. Female gender has reported a higher prevalence of pain than males. Factors associated with the risk of MSP include consumption of coffee (p-value 0.022), duration of time spent on electronic devices with neck pain (p-value 0.039) and depression on low-back pain (p-value 0.031). Sports activity, was shown to have a protective effect.

Conclusion: The prevalence of NSLBP pains was high, as nearly half of the participants experienced each. In this study, the most prominent risk factors for NSLBP are coffee consumption, Psychosomatic symptoms, and various physical activities like swimming.

Keywords: Prevalence, musculoskeletal pain, low-back pain, neck pain, shoulder pain

Introduction

Musculoskeletal disorders (MSDs) include various inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves, and blood vessels. MSDs include regional pain syndromes unrelated to known pathology (Punnett & Wegman, 2004).

The prevalence of neck, shoulder, and low-back pain (NSLBP) among adolescents has increased in the last three decades. One of the contributing factors to this increase is the use of computers and mobile phones for a prolonged period (Al Rawaf et al., 2019). Moderate to severe neck and shoulder pain was more common among college students using electronic devices, with higher rates of neck pain (Elsiddig et al., 2022). Various sectors of society have reported the prevalence of musculoskeletal pain (MSP) in the neck, shoulder, and lower back. MSP is very common among Norwegians, affecting 75%–80% of the population. The prevalence of work-related MSP involving the neck, shoulder, and upper back region was between 35% and 45% among midwives, nurses, and doctors (Algarni et al., 2017).

Ageing is a risk factor that increases the prevalence of MSDs. In addition, the female gender is one of the most important risk factors for having MSP. Thus, it is reasonable that females are usually more affected than males (Dighriri et al., 2019; Hendi et al., 2021; Kinge et al., 2015). In addition, high body mass index (BMI) was positively associated with musculoskeletal symptoms, especially lower extremity symptoms. In contrast to employees with normal weight, a study showed obese employees had a higher risk of developing symptoms as well as less recovery from symptoms (Viester et al., 2013). Moreover, cigarette smoking (CS) harms the musculoskeletal system. Besides the reduction of muscle mass and strength that CS significantly influences, it is also associated with a higher risk of muscle pain (Abate, 2013).

Additionally, musculoskeletal symptoms are common among office workers (Janwantanakul et al., 2008). Prolonged office sitting dramatically intensifies MSDs, especially low-back pain (Elsiddig et al., 2022). Self-reported MSDs associated with NSLBP were found to be constantly related to static body posture, prolonged sitting, and the lack of back support (Farhanah Binti Tengku Johari, n.d.). In contrast to previous risk factors, physical activity is associated with a lower risk of MSDs.

A former study in America showed that those who participated in sports activities were less likely to be affected by MSP of the upper body (Hasan et al., 2018). Another study included 2,265 workers and showed that a physically active lifestyle was associated with fewer MSDs (Morken et al., 2007). Another study found that upper extremity pain was lower in students who engaged in physical activities(Katz et al., 2000). However, the risk factors for neck pain include excessive physical activity (Khired, 2022).

On the other hand, MSP can be acute or chronic. Acute MSP can be severe and is predominantly due to local causes like fractures, sprains, dislocations, and infections. In contrast, chronic musculoskeletal pain is likely associated with cancer and arthritis (Hasan et al., 2018). However, chronic MSP is the most common cause of severe and long-term physical disability (Mather et al., 2019). Sleep disturbance is also common among people with musculoskeletal pain (Aili et al., 2015). Psychological disorders have been shown to lead to MSDs, such as anxiety, high distress levels, and depression. Psychological risk factors might have the same impact on MSDs as physical risk factors (Tantawy et al., 2017). NSLBP is a common leading cause of disability worldwide (Chan et al., 2020; Kamper et al., 2016; Mitchell et al., 2005). Unfortunately, the burden is notably increasing (Hasan et al., 2018). The disabilities cause great impact on people's ability to carry out daily activities, such as eating, driving, dressing, personal hygiene, and others (Shariat et al., 2018).

The prevalence of MSDs is increasing (March et al., 2014). Moreover, they generate significant government costs (Ben Ayed et al., 2019). Physical inactivity is a serious risk factor for MSDs (Tucker & Gilliland, 2007). Furthermore, 58.3% of the Jazan population is not adhering to the physical activity recommendations (Wafi et al., 2022). Moreover, extreme weather has been identified as a barrier to participation in physical activity. Studies focusing entirely on populations in notoriously hot and humid states may exhibit a decline in activity during summer (Tucker & Gilliland, 2007). According to Weather Spark, Jazan has a long and hot season lasting 5.3 months. Also, it is muggy most of the year. Furthermore, a study estimates that 19.9% of the Jazan population is over 30 BMI (Althumiri et al., 2021).

To the best of our knowledge, no previous studies have investigated the prevalence of NSLBP among Jazan residents nor detected the associated factors. From this perspective, this study aims to fill the knowledge gap by assessing the prevalence of NSLBP among Jazan residents and detecting the associated factors.

Methods and Materials

Study design

This descriptive cross-sectional study was conducted in the Jazan region, southwest of Saudi Arabia, with about two million people, and records many patients with musculoskeletal diseases.

Study Tool and Data Collection

This study used a simple Arabic language-validated questionnaire distributed conveniently among Jazan residents. The questionnaire was adopted and validated by previous studies (Algarni et al., 2017; Alshagga et al., 2013; Dighriri et al., 2019; Hassaan et al., 2022; Kuorinka et al., 1987; Smith et al., 2005). It had two parts and the first included questions on sociodemographic characteristics, like gender, age, salary, job status, exercise, caffeine consumption,

smoking status, height and weight to calculate the BMI, any history of depression or psychosomatic symptoms. The WHO and CDC definitions were used to assess participants' status for physical activity and BMI calculation. The second section of the questionnaire was a standardized analysis of the questionnaire for musculoskeletal pain to assess MSD. Specific questions were asked about musculoskeletal pain in the neck, shoulder, and low-back areas. Moreover, to assess the questionnaire's clearance, quality, and consistency, a pilot study was conducted among 40 participants from the general population, and the reliability test (Cronbach`s Alpha) was 0.85. Then, the data was collected through a self-administered online questionnaire using social media platforms.

Sample Size Calculation

This study`s sample size was calculated using the Raosoft website calculator (Raosoft Inc., Seattle, WA, USA) (http://www.raosoft.com/samplesize.html). The sample size was estimated at the 95% confidence interval level with a margin of error of 3%. The required minimum sample was (1,014), and the final sample size was taken as (1,115) with a 10% non-response rate to increase the significant power of this study.

Participants Inclusion and Exclusion Criteria

We included all adult Jazan residents with ages 18 years old or older who read the Arabic language and agreed to participate. The excluded criteria included non-Jazan residents under 18 years old who do not read Arabic and refuse to participate. Data were collected between January 2023 and April 2023.

Statistical Analysis

Statistical analysis was conducted using the Statistical Package and Services Solutions (SPSS version 26). Data were analyzed using descriptive and comparative statistics. Frequencies and percentages were used for the categorical variables, and continuous variables such as age and BMI were analyzed using mean and standard deviation (SD). Tests of significance (e.g, T-tests and Chi-Square) were used to compare variables. Logistic regression was performed to assess predictors of MSP in at least one body site at a time. A p-value < 0.05 was considered statistically significant.

Ethical Approval

This study was approved by the Standing Committee for Scientific Research (HAPO-10-z-001) at Jazan University with Reference no. REC-44/06/462, dated 2 January 2022. All participants were informed that the study aimed to maintain complete privacy and confidentiality. They were also informed that they had the right to quit if they wanted to discontinue participation at any time. Further, the questionnaire contained no identifier questions or personal information; only the study's investigators had access to the shared document.

Results

Table 1 presents the socio-demographic characteristics of the sample and the prevalence of musculoskeletal pain (MSP) in the Jazan population. The sample consisted of 1,238 participants, with 668 (54%) males and 570 (46%) females. The overall prevalence of MSP in the sample was 77.4%, with a higher prevalence in females than males. The BMI of the sample ranged from underweight to obese, with 145 (11.7%) participants classified as underweight, 484 (39.1%) as normal weight, 353 (28.5%) as overweight, and 256 (20.7%) as obese.

The prevalence of musculoskeletal symptoms in the last year according to demographic characteristics is shown in Table 2. Regarding the gender difference, the overall prevalence of neck, shoulder, and lower back pain was significantly associated with females compared to males (p-value<0.001). Females reported a higher prevalence of pain than males in the lower back (F=62.6% M=49%), shoulder (F=60.7% M=43.6%), and neck (F=55.4% M=38.6%). The prevalence of shoulder pain was significantly correlated with increased age (p-value <0.001). The increased age is associated with increased risk of developing shoulder pain. The difference in the mode of living and monthly income was not associated with increasing the prevalence of MSP. The participants were categorized according to their BMI from underweight to obese, and there was no association between their BMI and having MSP.

In addition, Table 3 demonstrates the prevalence of neck, shoulder and low-back pain among our participants (N = 1238). The lifetime prevalence of neck, shoulder and low-back pain among men was found to be 49%, 57.8% and 73.4%, respectively. It was 75.4%, 72.5% and 86.1% respectively among females. The 12-month prevalence of neck, shoulder and low-back pain among men was 38.6%, 43.6% and 49%, respectively. In addition, it was 55.4%, 60.7% and 62.6% respectively among females.

Furthermore, Table 4 demonstrates the prevalence of neck, shoulder and low-back pain among our participants (N = 1238). The lifetime prevalence of neck, shoulder and low-back pain among men was found to be 49%, 57.8% and 73.4%, respectively. It was 75.4%, 72.5% and 86.1% respectively among females. The 12-month prevalence of neck, shoulder and low-back pain among men was 38.6%, 43.6% and 49%, respectively. In addition, it was 55.4%, 60.7% and 62.6% respectively among females.

Lastly, Table 5 shows that potential risk factors for MSP in at least one body site were examined separately using univariate analysis. Older age was less likely to suffer MSP (OR = 1.031; 95% CI: 1.011–1.051) (p=0.002). Males were less likely to suffer MSP (OR = 0.52; 95% CI: 0.235–0.562) (p=0.000), Coffee consumption more than once a day or less than 3 times in a week were significant predictors to have MSP (OR = 3.143; 95% CI: 1.569–6.295) (p=0.001) and (OR = 3.312; 95% CI: 1.805–6.078) (p=0.000) respectively. Regarding sports practice, football players and tennis players were less likely to have MSP

(OR = 0.385; 95% CI: 0.249–0.597) (p=0.000) and (OR = 0.372; 95% CI: 0.194–0.715) (p=0.003) respectively. Those who did not practice a high-intensity physical activity any day last week or only one day was a predictor to have MSP (OR = 4.012; 95% CI: 2.103–7.653) (p=0.000) and (OR = 2.230; 95% CI: 1.042–4.774) (p=0.039) respectively. Spending 10 to 30 minutes or 30 minutes a day practicing a high-intensity physical activity made the individual less likely to have MSP (OR = 0.542; 95% CI: 0.316–0.932) (p=0.027) and (OR = 0.502; 95% CI: 0.292–0.849) (p=0.01) respectively.

Table 1: Sociodemographic characteristics and prevalence of Musculoskeletal pain in Jizan Population

Characteristics		All participants		MSP*		*p* value#
				Participants with Yes response		
		N	%	N	%	
Gender	Male	668	(54.0)	477	(71.4)	<0.001
	Female	570	(46.0)	481	(84.4)	
Age Groups (Years)	18-24 years	600	(48.5)	449	(74.8)	0.092
	25-44 years	439	(35.5)	347	(79.0)	
	45 and above	199	(16.1)	162	(81.4)	
Mode of living	Urban	602	(48.6)	460	(76.4)	0.427
	Rural	636	(51.4)	498	(78.3)	
Monthly Income (SR)	Less than 2000 SR	536	(43.3)	405	(75.6)	0.099
	2000 - 5000 SR	161	(13.0)	119	(73.9)	
	5000 - 10000 SR	192	(15.5)	160	(83.3)	
	More than 10000 SR	349	(28.2)	274	(78.5)	
BMI categories	Underweight	145	(11.7)	114	(78.6)	0.773
	Normal	484	(39.1)	367	(75.8)	
	Overweight	353	(28.5)	277	(78.5)	
	Obese	256	(20.7)	200	(78.1)	
Overall		**1238**	**(100)**	**958**	**(77.4)**	

*Any pain or discomfort in 3 body regions over the past 12 months, namely the neck, shoulder and lower back.
P value is based on the Chi-square test.

Table 2: Prevalence of 12-month musculoskeletal symptoms according to demographic characteristics

		Low back			Neck			Shoulder		
		N	%	p-value	N	%	p-value	N	%	p-value
Gender	Male	327	(49.0)	<0.001	258	(38.6)	<0.001	291	(43.6)	<0.001
	Female	357	(62.6)		316	(55.4)		346	(60.7)	
Age Groups (Years)	18-24 years	334	(55.7)	0.647	273	(45.5)	0.399	275	(45.8)	<0.001
	25-44 years	246	(56.0)		200	(45.6)		243	(55.4)	
	45 and above	104	(52.3)		101	(50.8)		119	(59.8)	
Mode of living	Urban	322	(53.5)	0.225	271	(45.0)	0.355	312	(51.8)	0.798
	Rural	362	(56.9)		303	(47.6)		325	(51.1)	
Monthly Income	Less than 2000 SR	299	(55.8)	0.133	249	(46.5)	0.478	266	(49.6)	0.293
	2000 - 5000 SR	85	(52.8)		66	(41.0)		77	(47.8)	
	5000 - 10000 SR	119	(62.0)		90	(46.9)		100	(52.1)	
	More than 10000 SR	181	(51.9)		169	(48.4)		194	(55.6)	
BMI categories	Underweight	87	(60.0)	0.551	63	(43.4)	0.747	74	(51.0)	0.450
	Normal	263	(54.3)		220	(45.5)		236	(48.8)	
	Overweight	189	(53.5)		167	(47.3)		190	(53.8)	
	Obese	145	(56.6)		124	(48.4)		137	(53.5)	

Table 3: Prevalence of musculoskeletal symptoms according to Associated Factors

		Low back			Neck			Shoulder		
		N	%	p-value	N	%	p-value	N	%	p-value
Smoking	Yes	119	81%	0.328	100	68%	0.435	91	61.9%	0.675
	No	831	78.8%		723	68.5%		688	65.2%	
	X smoker	41	87.2		28	59.6%		31	65.9%	
Coffee consumption	I don't drink coffee	143	72.2%	0.022	116	58.6%	0.0001	114	57.5%	0.012
	Once a day	289	77.5%		247	66.2%		234	62.7%	
	More than once a day	174	84.1%		164	79.2%		154	74.4%	
	Less than 3 times in a week	269	81.5%		227	68.8%		220	66.7%	
	More than 3 times in a week	116	82.3%		97	68.8%		88	62.2%	
Duration of electronic devices use	Less than 1 hour	38	84.4%	0.385	28	62.2%	0.039	33	73.3%	0.083
	1-2	55	73.3%		47	62.7%		45	60%	
	2-4	157	79.7%		120	60.9%		133	67.5%	
	4-8	321	77.5%		283	68.4%		264	63.7%	
	More than 8	420	81.1%		373	72%		335	64.6%	
Previous diagnosis of depression	Yes	81	87.1%	0.031	68	73.1%	0.097	65	69.8%	0.068
	No	683	77.4%		569	64.5%		550	62.3%	
Psychosomatic symptoms	Yes	440	91.1%	0.0001	404	83.6%	0.0001	394	81.5%	0.0001
	No	437	69.7%		353	56.3%		330	52.6%	
Football	Yes	178	67.7%	0.0001	153	58.2%	0.0001	140	53%	0.0001
	No	813	82.5%		698	70.8%		670	67.9%	
Volleyball	Yes	73	69.5%	0.009	66	62.9%	0.225	58	55.2%	0.044
	No	918	80.2%		785	68.6%		752	65.7%	
Lifting weight	Yes	113	70.6%	0.004	98	61.3%	0.045	89	55.6%	0.067
	No	878	80.6%		753	69.1%		721	66.2%	
Basketball	Yes	27	67.5%	0.060	22	55%	0.070	23	57.5%	0.131
	No	964	79.7%		829	68.6%		787	65%	
Tennis	Yes	38	57.6%	0.0001	31	47%	0.0001	33	50%	0.001
	No	953	80.6%		820	69.3%		777	65.6%	
Swimming	Yes	132	72.5%	0.014	100	54.9%	0.0001	105	57.7%	0.046
	No	859	80.5%		751	70.4%		705	66%	
Walking / Running	Yes	601	77.6	0.059	518	66.9%	0.242	512	66.1%	0.009
	No	390	82.1%		333	70.1%		298	62.2%	
Horse riding	Yes	25	62.5%	0.007	14	35	0.0001	18	45%	0.012
	No	966	79.9%		837	69.2%		792	65.5%	

Table 4: Prevalence of MSPs among the study participants according to Gender

MSP	Period	Male				Female				p-value	All Participants			
		N	%	95% C.I.		N	%	95% C.I.			N	%	95% C.I.	
				Lower	Upper			Lower	Upper				Lower	Upper
Back pain	Lifetime prevalence	490	73.40%	69.90%	76.60%	491	86.10%	83.10%	88.80%	<0.001	981	79.20%	76.90%	81.40%
	12-month prevalence	327	49.00%	45.20%	52.70%	357	62.60%	58.60%	66.50%	<0.001	684	55.30%	52.50%	58.00%
Neck pain	Lifetime prevalence	411	61.50%	57.80%	65.20%	430	75.40%	71.80%	78.80%	<0.001	841	67.90%	65.30%	70.50%
	12-month prevalence	258	38.60%	35.00%	42.40%	316	55.40%	51.30%	59.50%	<0.001	574	46.40%	43.60%	49.10%
Shoulder trouble	Lifetime prevalence	386	57.80%	54.00%	61.50%	413	72.50%	68.70%	76.00%	<0.001	799	64.50%	61.80%	67.20%
	12-month prevalence	291	43.60%	39.80%	47.30%	346	60.70%	56.60%	64.60%	<0.001	637	51.50%	48.70%	54.20%

Table 5: Logistic regression for predictors of MSP in at least one body site at any time

	p-value	OR	95% CI	
			Lower	Upper
Age	0.002	1.031	1.011	1.051
Sex (Reference: Female)	0.000	0.363	0.235	0.562
Coffee consumption More than once a day Less than 3 times in a week (Reference: don't drink coffee)	 0.001 0.000	 3.143 3.312	 1.569 1.805	 6.295 6.078
The nature of your work demands Standing up for long hours (Reference: don't work)	 0.001	 7.677	 2.33	 25.297
Playing sports -Playing football -Playing tennis (Reference: don't play)	 0.000 0.003	 0.385 0.372	 0.249 0.194	 0.597 0.715
Practice a high-intensity physical activity -Didn't practice -Practice one day (Reference: practice a high-intensity physical activity all week)	 0.000 0.039	 4.012 2.230	 2.103 1.042	 7.653 4.774
Time of a high-intensity physical activity per day - 10 to 30 minutes in a day - 30 minutes to hour in a day (Reference: didn't spend any time a day)	 0.027 0.01	 0.542 0.502	 0.316 0.292	 0.932 0.849

Discussion

This study aimed to assess the prevalence of NSLBP among adult Jazan residents and their association with several risk factors. The prevalence of this study revealed that the lifetime prevalence of low-back pain was 79.2%. While 67.9% of the participants reported neck pain, shoulder pain was the least reported by participants (64.5%). Other studies supported these findings and showed that low-back pain was the most prevalent type of MSP reported, followed by neck pain, and shoulder pain was the least reported (Dighriri et al., 2019; Hassaan et al., 2022; Kashif et al., 2017; Shariat et al., 2018).

On the other hand, a study done among medical students at Taif University showed a higher prevalence of neck pain (36.7%), followed by low-back pain (33.3%) and shoulder pain (22.3%) (Hendi et al., 2021). This difference in results could be attributed to the difference in the targeted population between the samples. The prevalence of NSLBP in our study was higher, possibly due to the selection of the target population, which involved a sample of the total adult residents in the Jazan region. In contrast, other studies focused mainly on medical students since age was one of the most significant factors associated with pain reported in our study.

The present study found an association between gender and the prevalence of NSLBP low-back, which is higher in females (P <0.001). This finding is consistent with several previous studies conducted in different geographical locations. For example, a local study in Taif by (Hendi et al., 2021) found a similar association between gender and the prevalence of NSLBP. Another study conducted in India by (Bansal et al., 2020) found a significant association between female gender and low-back pain. Similarly, a study conducted in Jazan (Khired, 2022) found an association between the female gender and neck pain, while a study conducted in Malaysia (Shariat et al., 2018) found a significant association between the female gender and NSLBP.

The findings from the present study and previous studies suggested that gender may be an important risk factor for the development of NSLBP. This finding may be due to several factors, including differences in physical activity, muscle strength, body composition, and hormonal profiles between males and females.

BMI is a known risk factor for musculoskeletal pain. However, our study did not find a significant association between BMI and the prevalence of NSLBP. This finding was consistent with previous local studies conducted in Taif and Jazan (Hassaan et al., 2022; Hendi et al., 2021), which found no significant association between BMI and musculoskeletal pain. It is worth noting that previous international studies have reported conflicting results. For example, a study conducted in Turkey found an association between BMI and low back pain (Altinel et al., 2008). Overall, the findings from our study and previous studies suggest that the relationship between BMI and musculoskeletal pain is complex, and the difference in results may depend on the population selected by the different study and the lifestyle.

In addition, the current study found an association between age and shoulder pain (P=0.001), consistent with a previous international study conducted in Malaysia (Shariat et al., 2018). This finding may be explained by the fact that as individuals age, their shoulder joints and muscles may undergo degenerative changes, making them more susceptible to pain and injury. However, our study did not find a significant association between age and neck or low-back pain prevalence. This finding contrasts a study conducted in India, which reported a significant association between age and low back pain (Bansal et al., 2020). There could be several reasons why our study found different results than the study conducted in India. One possible reason is differences in the study population. For example, the participants in our study and the India study may have had different characteristics, such as genetics, occupation, and lifestyle factors or underlying health conditions, which could have influenced the relationship between age and low-back pain. The conflicting results from different studies may also be attributed to differences in occupational and lifestyle factors, which may contribute to the development of shoulder pain in older individuals. Therefore, it is important to consider these factors when investigating the association between age and musculoskeletal pain.

Moreover, this study has revealed no statistically significant association between smoking and an increased prevalence of MSP, which is consistent with the findings of other studies (Algarni et al., 2017; Dighriri et al., 2019). In contrast to smoking, our results have shown an association between coffee consumption and the prevalence of MSP. The percentage of people who do not drink coffee and experience MSP was 72.2%, whereas those who drink more than three cups of coffee per week and experience MSP was 82.3%. This finding contradicts the results of the studies (Algarni et al., 2017; Dighriri et al., 2019).

Regarding the duration of electronic device use and MSP, our study found no statistically significant association between LBP and shoulder pain; however, there was a positive association with neck pain. This finding contradicts the results of the studies (Algarni et al., 2017; Dighriri et al., 2019), which found no statistically significant association between electronic device use and all types of MSP.

The present study also found that depression impacts LBP, yet it did not influence neck and shoulder pain, which contradicts the findings of (Dighriri et al., 2019), who found an association between depression and all types of MSP . In addition, our study's findings contradict those of (Algarni et al., 2017), who found no statistically significant association between depression and all types of MSP. Furthermore, regarding psychosomatic symptoms, our study found a significant impact on MSP, consistent with the findings of (Dighriri et al., 2019).

Additionally, this study found that football, tennis, swimming, and horse-riding have an association against all types of MSP, which agrees with the findings of (Dajpratham et al., 2010; Shariat et al., 2018). Nevertheless, lifting weights was significant for LBP and neck pain, but not shoulder pain. However, this finding contradicts the results of (Algarni et al., 2017; Dighriri et al., 2019). Surprisingly, walking and running were statistically insignificant regarding LBP and neck pain.

Finally, the present study examined the potential risk factors for Musculoskeletal Pain (MSP) across various demographic and lifestyle variables. The study found that older age was associated with a lower likelihood of suffering from MSP. This result is consistent with previous research highlighting the protective effect of age against MSP (de Raaij, 2021). Additionally, the study observed that males were less likely to suffer from MSP, which concurs with existing literature on gender differences in MSP prevalence and susceptibility. Interestingly, the study identified a significant association between coffee consumption and MSP. Individuals who consumed coffee more than once a day or less than three times a week were more likely to experience MSP. This finding may warrant further investigation, as the relationship between caffeine intake and musculoskeletal health has not been extensively explored in prior studies.

Further, the study delved into the role of physical activity in MSP. It revealed that football and tennis players were less likely to experience MSP, aligning with previous research emphasizing the benefits of sports participation in reducing the risk of musculoskeletal issues (Guddal et al., 2017). Individuals who did not engage in high-intensity physical activity or did so only infrequently were more likely to suffer from MSP. Lastly, the study examined the duration of high-intensity physical activity. Spending 10 to 30 minutes or 30 minutes daily in such activity was associated with a reduced likelihood of MSP. This finding supports that regular, moderate-duration physical activity can protect against MSP.

Conclusion

The prevalence of NSLBP pain was high, as nearly half of the participants experienced each. In our study, the most prominent risk factors for NSLBP are coffee consumption, psychosomatic symptoms, and physical activity like swimming.

Thus, this study recommends establishing health education programs to reduce the risk factors, such as coffee consumption, and encourage people to participate in physical activity to minimize MSP.

Limitation

Limitations of this study include potential response bias due to self-reported data and online survey distribution, limiting generalizability. The study did not investigate other potential risk factors for musculoskeletal pain, and the design was cross-sectional, limiting our ability to establish causality. Future research should consider using a more diverse and representative sample to address these limitations and include more comprehensive measures of risk factors for musculoskeletal pain. Longitudinal studies should be conducted to establish causality. Additionally, future studies should consider using objective measures of musculoskeletal pain and risk factors, such as physical examinations and biomarkers. These recommendations will provide a more comprehensive understanding of musculoskeletal pain and inform the development of targeted interventions to prevent and manage musculoskeletal pain.

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Conflict of interests:

The authors declare that there is no conflict of interest regarding the publication of this article.

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