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Effects of Body Mass Index on Work Related Musculoskeletal Discomfort within University Teachers

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Abstract

Musculoskeletal conditions are the main cause of disability worldwide. They account for one-third of all consultations with primary care providers. MSK conditions which frequently cause pain have a considerable negative influence on society. The type of teaching that a person did and the affected MSK area determined the prevalence of MSK conditions. MSK disorders are one of the most dominant factors causing disability in employees. Around 11 to 64% of adults are taking some sort of pain-relieving medication for discomforting disorders. Obesity rates are high among employed adults and have shown a consistent increase over the past few decades. Therefore, the purpose of the study was to investigate the relationship between the body mass index and work related musculoskeletal discomfort of university teachers. A cross-sectional descriptive study was carried out at government and private universities of Islamabad and Rawalpindi over 6 months. 321 individuals were included in this study after meeting strict eligibility requirements and using a purposive sample strategy. The Orebro musculoskeletal Pain Questionnaire and a self-structured questionnaire were then used to collect data (OMPSQ). According to our findings, 277 out of 321 teachers reported having MSK pain. The most common locations for complaints of MSK pain was the lower back (39.4 %). However, it was shown that musculoskeletal discomfort is significantly more common in university teachers than in the general population. BMI plays a substantial role in musculoskeletal discomfort. Women who are overweight are more likely to suffer from MSK pain.

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Introduction

Musculoskeletal conditions are the main cause of disability worldwide [1]. Musculoskeletal problems, such as knee pain and back pain, account for one-third of all consultations with primary care providers [2]. Due to their prevalence, the degree of their effects on the person experiencing them, and their socioeconomic impact, MSK conditions which frequently cause pain have a considerable negative influence on society. This may result in a decline in people's quality of life, a rise in occupational absenteeism, and worsening general economic situations [3]. Musculoskeletal pain is defined as any discomfort that is thought to be related to the musculoskeletal system [4]. Tissue damage or physical trauma may or may not be the reason [5]. Musculoskeletal diseases are one of the most frequently seen reasons of disability and occupational incompetence. Backache and knee pain, both musculoskeletal diseases, are the most often reported symptoms in primary healthcare. As individuals live longer, it's anticipated that the prevalence of these disorders would substantially grow [7].

Musculoskeletal problems had a prevalence of 20-95%. The type of teaching that a person did and the affected MSK area determined the prevalence of MSK conditions. The bulk of back pain instances were observed among educators of pupils with physical disabilities [9]. In the most straightforward terms, a person's BMI is determined by dividing their weight in kilogrammes (kg) by their height in square metres (m.). Out of the top 10 ailments that account for the most YLD globally, 5 are diseases that are specified by the presence of pain. Around 11 to 64% of adults are taking some sort of pain-relieving medication for discomforting disorders, examples of which include MSK trauma replacement operationally. In adults with jobs, obesity is running rampant. It has been increasing for many previous decades. MSK disorders are one of the most dominant factors causing disability in employees [10]. The verification of the link between weight and pain in the MSK system was the purpose of the study. Obesity rates are high among employed adults and have shown a consistent increase over the past few decades. Musculoskeletal disorders related to work are a major cause of disability in working individuals [8]. The objective of this study was to verify the associations between body mass index, work related musculoskeletal discomfort and related symptoms in various areas of the body in employees having MSK problems. In Pakistan, there is infrequent data regarding musculoskeletal pain. A study conducted in Karachi proclaimed that out of a total of 360 students, 74.4% affirmed having musculoskeletal pain during the previous year and 38.9%, during the past week [11].

In our chosen population, teachers, or in the context of Pakistan, the impact of body mass index on work related musculoskeletal discomfort has not been previously investigated. However, other research on the prevalence of musculoskeletal pain in other nations has been conducted. The sample sizes used in earlier studies were similarly incredibly small [12].

Objectives of the study

The purpose of the study was to investigate the relationship between the body mass index and work related musculoskeletal discomfort of university teachers.

Materials and methods

A cross-sectional descriptive study was carried out at government and private universities of Islamabad and Rawalpindi over 6 months. 321 individuals were included in this study after meeting strict eligibility requirements and using a purposive sample strategy. In this study, all BMI categories of teachers from both sexes who reported musculoskeletal discomfort and who work for public and private universities were considered. The participants ranged in age from 25 to 40. Pregnancy, neurological illnesses, traumatic musculoskeletal conditions, congenital abnormalities, treatment for metastatic disease, and people who were now employed as clinical practitioners were among the exclusion criteria. After being properly briefed on the study's procedures, all candidates signed consent forms prior to data collection. The Riphah ethics review committee also gave their permission. The Orebro musculoskeletal Pain Questionnaire and a self-structured questionnaire were then used to collect data (OMPSQ). The self-structured questionnaire asks about socioeconomic status and other factors, such as name, age, gender, marital status, number of children, BMI calculation through weight and height measurements using a weighing machine, occupation, and characteristics of teaching, such as total daily working hours, number of classes, teaching experience, average number of students, and whether or not they have musculoskeletal pain. It also asks about the type of shoes they wear. The Orebro Musculoskeletal Pain Questionnaire (OMPSQ) was another tool employed. After undergoing various clinical and confirmation testing, this questionnaire has a reliability of 0.89 and a validity of 0.71[1].

The statistical analysis package for social sciences (SPSS) software version-21 was used to enter and analyze all the data. The same population's category variables were compared using the chi-square test.

Results

The study included 321 individuals, and there was a 100% response rate. **Table 1** shows the data of self-structured questionnaire. **Table 2** shows the association of categorical variables. **Table 3** shows the association of BMI and Orebro Musculoskeletal pain questionnaire.

Table 1: Self-structured questionnaire data.

Variable		Frequency (%)
Musculoskeletal pain	Yes	277 (86.3%)
	No	44 (13.7%)
Total		321 (100 %)

Variable	Mean ± S.D	Frequency (%)
Age of participants	33.78 ± 4.716	
Gender	Male	115 (41.5%)
	Female	162 (58.5%)
BMI interpretation	Underweight, < 18.5	7 (2.5%)
	Normal weight, 18.5 - 24.9	33 (11.9%)
	Overweight, 25 - 29.9	178 (64.3%)
	Obese, 30 or greater	59 (21.3%)
Type of University	Government	168 (60.6%)
	Private	109 (39.4%)

Credit Hours per Semester	1 – 3	28 (10.1%)
	4 – 6	71 (25.6%)
	7 – 9	164 (59.2%)
	More than 9	14 (5.1%)
Number of Teaching Years	1 – 9	156 (56.3%)
	10 – 19	-39.00%
	20 – 30	-4.70%
Type of Footwear	Flat	229 (82.7%)
	Heel	48 (17.3%)
Area of pain	Neck	50 (18.1%)
	Shoulder	25 (9.0%)
	Arm	9 (3.2%)
	Upper back	27 (9.7%)
	Lower back	109 (39.4%)
	Leg	40 (14.4%)
	Other	17 (6.1%)
Scoring Interpretation Of Orebro Musculoskeletal Pain Questionnaire(OMPQ)	< 105 = Low risk of disability	208 (75.1%)
	105 - 130 = Moderate Risk of Disability	47 (17%)
	> 130 = High Risk of Disability	22 (7.9%)

Table 2: Chi-square scoring showing association of categorical variables.

Gender	**Male**	**97**	**10**	**8**	**0.005**
	Female	**111**	**37**	**14**	
Type of University	Government	117	36	15	0.027
	Private	91	11	7	
Credit Hours per Semester	01-Mar	23	4	1	0.416
	04-Jun	54	12	5	
	07-Sep	124	26	14	
	More than 9	7	5	2	
Number of Teaching Years	01-Sep	129	18	9	0.016
	Oct-19	69	27	12	
	20 - 30	10	2	1	
Type of Footwear	Flat	180	31	18	0.003
	Heel	28	16	4	
Area of Pain	Neck	42	5	3	0.201
	Shoulder	21	2	2	
	Arm	8	1	0	
	Upper back	21	5	1	
	Lower back	70	25	14	

Table 3: Chi-square scoring showing association of BMI and Orebro Musculoskeletal pain questionnaire.

		Scoring interpretation of Orebro musculoskeletal pain questionnaire			**P value**
		< 105 = low risk of disability	**105 -130 = moderate risk of disability**	**> 130 = high risk of disability**	
Body mass index (BMI) Interpretation	Underweight, < 18.5	6	1	0	0.012
	Normal weight, 18.5 - 24.9	30	3	0	
	Overweight, 25 -29.9	132	35	11	
	Obese, 30 or greater	40	8	11	

Discussion

With no injuries or mishaps, Ezimagu UK et al. (2016) performed X-Ray scans of the lumbo-sacral spine in about 114 people. 56.1% of the participants were female, while 43.9% were male. Low back discomfort was a prior complaint for 74.6% of the individuals. 43.5% of LBP patients were male, whereas 56.5% of them were female. Patients with LBP had an average BMI of 27.50.6kgm2. Our findings have been supported by this study [13].

Because they also demonstrated a positive association between BMI and musculoskeletal discomfort. In the current investigation, a statistically significant correlation between MSK discomfort and gender was found. Similar associations were found in our results [14]. 200 out of the 450 participants in a study by Waqas M et al. (2017) who studied college professors reported experiencing back pain (44.4%).

Around 36% of instructors reported experiencing midback discomfort, and 54% reported having lower back pain. Leg and buttock pain affected only 10% of the individuals. The majority of the participating instructors in our survey reported having back pain, according to the study's findings. This produced a result that was comparable to ours. The lower back region was the one where pain was most frequently mentioned. This supports the conclusions of our investigation [15].

In 2017, Myers N. did research on male college-age students. Their standard deviation was 1.6 and they were 20.3 years old on average. BMI has a bad relationship with feeling well and happy, getting more sleep at night, and getting stressed out when faced with unpleasant stimuli or perilous circumstances. With a standard deviation of 3.8, the BMI average was 25.7. In our investigation, there was no evidence of a connection between BMI and sleep disturbance [16].

According to a study by Abdel-Salam DM (2019) on 254 Saudi Arabian female secondary school students, the majority of the participants (68.5%) wore flats. Around 87% of them were employed by governmental organizations. 42% of them took more than four lessons each day [17]. According to our findings, government instructors experienced increased MSK pain.

When it came to musculoskeletal pain, Alghwiri A et al. (2018) discovered significant differences between the two genders and the type of educational institution. In comparison to their male counterparts, women generally tended to be more honest when talking about their sorrow. According to our findings, women who worked as instructors at public institutions

and had elevated BMIs were more likely to have musculoskeletal discomfort. According to Alghwiri's research, if a woman works as a teacher in a government institution, she is more likely to experience MSK pain. Back pain is also more likely to affect women than men. These results are consistent with those of numerous researches, including our own [18].

Ebied EM (2015) conducted a study in which 200 teachers took part. 44 percent of them were men and 56 percent of them were women. The prevalence of lower back pain was 41%, that of neck discomfort was 20%, and the most infrequently reported locations were the arms, legs, wrist, and elbow. This study, which validates ours, also discovered a significant association between obesity and musculoskeletal discomfort. According to the study's findings, a rising BMI is a substantial risk factor for back discomfort. Teachers who frequently have musculoskeletal pain miss work, which has a detrimental effect on the overall educational system [19].

Conclusion and recommendation

It was found that musculoskeletal discomfort affects university teachers significantly more often than the general population. BMI has a significant impact on musculoskeletal pain. Women who are overweight are more likely to get MSK pain.

Appendix: Nil.

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