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PREVALENCE OF WORK-RELATED MUSCULOSKELETAL DISCOMFORT IN OFFICE EMPLOYEES DURING COVID-19 IN PUNJAB PAKISTAN

Muhammad Ali Naseem[1], Anum Tariq[1], Tehreem Zulfiqar[2], Usman Ilyas[3]*, Mudassir Jehanzeb[1]
[1]College of Earth and Environmental Sciences, University of the Punjab, Lahore, Pakistan
[2]Department of Pharmacology, Services Institute of Medical Sciences, Lahore, Pakistan
[3]Department of Civil Engineering, University of Management and Technology, Lahore, Pakistan

Article Info

*Corresponding Author
Email: usman.ilyas@umt.edu.pk

Abstract

COVID-19 has disturbed the lifestyle and economic activities of the entire world. This pandemic has led to an overall decrease in physical activity and economic operations. The economic shutdown has led to downsizing, while for others it has led to increased work hours. Lack of physical activity and increased working hours form major risk factors for musculoskeletal discomfort in office employees. Therefore, it is assumable that musculoskeletal discomfort in office employees has also increased. This study was conducted to determine the prevalence of work-related musculoskeletal discomfort in office employees during COVID-19. A "Cornell Musculoskeletal Discomfort Questionnaire (CMDQ)" based method was used for examining the incidence and intensity of pain and its symptoms, as well as the extent of discomfort in different body parts. Additionally, an association between risk factors and total discomfort rate was also analysed. A total of 233 office employees participated in the study. The discomfort percentage was 37.39%, 10.97%, 28.73%, and 11.82%, for the lower back, upper back, neck, and shoulders, respectively. Neck (87.21%), lower back (90.97%), upper back (60.15%), and shoulders (66.16%) were most commonly reported body parts where office employees frequently experienced discomfort once or more than once in a week. The neck, shoulders, lower back, and upper back were the body parts where employees frequently reported discomfort and pain. Regular yoga, aerobic exercises, ergonomics training, online employee safety awareness programs, and short stretch breaks are some of the efficient ways to manage these problems during COVID-19.

Keywords

Covid, Muscular Discomfort

1. Introduction

Musculoskeletal disorders (MSDs) have become a significant and most reported health issue in different professions across the globe. Sedentary office work has become a potential hazard for worker's musculoskeletal health [1]. One previous study has also revealed discomfort from lower back till neck to be the most recurrent issue reported by the workers for their previous work week [2]. Prolonged sitting has become a common workplace practice [3]. Office employees spend 70%–85% of their work hours in a sitting position and perform computer tasks [4, 5]. Sitting for a long duration is closely associated with MSDs [6]. Almost, 15% to 20% of adults suffer from back pain each year, and lower back pain (LBP) has a global pervasiveness of 23% [7, 8]. However, the aforementioned prevalence may vary when the individual lifestyle is changed [9]. On the other hand, COVID-19 has disturbed the lifestyle of the entire world [10]. The Governments had taken strict actions such as social distancing and lockdown to stop the spread of COVID-19. These measures are necessary; nevertheless, they had a negative effect on overall human health because of the decrease in physical activity and exercise [9]. Employees in different organizations had to render their services at their workplaces even during the COVID-19 pandemic and were constantly exposed to health and safety hazards [11]. Where many workers lost their jobs, the remaining essential employees were overworked, with an increase in their usual eight hours work time to twelve hours due to the economic disturbance [12, 13]. Likewise, musculoskeletal discomfort stems from the adoption of poor work postures, work overload, and a lack of physical activity [14–16], and since these are the risk factors for MSDs, it is admissible that musculoskeletal discomfort has increased during COVID-19 [9]. It has become necessary to determine the musculoskeletal discomfort levels during this period where sedentary behavior is much more prevalent than normal circumstances. Subsequently, this study was carried out with the main objective of determining musculoskeletal discomfort in office employees during COVID-19.

2. Method

2.1 Data collection

The "Cornell Musculoskeletal Discomfort Questionnaire (CMDQ)" was chosen to assess discomfort in eight body parts. The CMDQ consisted of a set of questions, involving a diagram targeting musculoskeletal discomfort in 18 different parts of the body that might have occurred over the previous work week [17]. This questionnaire assessed the frequency of discomfort in different parts of the body using a 5-point scale (never, 1-2 times last week, 3-4 times last week, once every day, and several times every day). These scores were weighted following the CMDQ scoring guidelines with weights of 0, 1.5, 3.5, 5, and 10, respectively, to determine an overall frequency score. The degree of discomfort and the degree to which discomfort interfered with work were evaluated using a 3-point scale. Responses were weighted to calculate a discomfort score (slightly=1, moderate=2, very=3) and an interference score (not at all=1, slightly=2, substantially=3). The frequency of discomfort,

severity rate, and interference in work values were multiplied to find the weighted score for different body parts, which ranged from 0 to 90. For all respondents, a total discomfort score was calculated by summing up the weighted scores for respective body parts. Participants were asked to mention which of their body parts suffered from pain, the level of severity, and the extent to which this discomfort interfered with work. Data collection was done during August 2020. Data was collected through Google survey forms that were sent to 300 office employees via emails and 233 individuals completed the survey. The study respondents belonged to the office staff of a bank. All the staff were doing computer tasks in a sedentary position using Microsoft Word, Power Point, and Excel at an office building.

2.2 Data analysis

Once the data was collected, the results of CMDQ were analysed using "Statistical Package for Social Sciences (SPSS) Version 26" and "Microsoft Excel 2007", where descriptive statistics were applied.

3. Results

The questionnaire was sent to 300 office employees via emails, out of which 233 individuals responded (77% response rate). The mean age of respondents was 29 years (SD=5.12), height 162 cm (SD=9.83), the average weight was 70 kg (SD=10.92), the working experience was four years (SD=2.16), and on average nine work hours per day (SD=1.14) as shown in Table 1.

Table 1: Demographic information

Variable parameters	Mean	Standard deviation (SD)	Minimum	Maximum
Age (years)	29	5.12	25	62
Height (cm)	162	9.83	137	177
Weight (kg)	70	10.92	54	95
Experience (years)	4	2.16	1	10
Working hours/day	9	1.14	8	12

According to CMDQ discomfort percentage, office employees reported most of the discomfort in the lower back, neck, shoulders, and upper back which was 37.39%, 28.73%, 11.82%, and 10.97%, respectively as shown in Table 2. The lower back, neck, shoulders, and upper back were the body parts with the highest prevalence of discomfort in office employees as shown in Figure 1.

Table 2: Percentage discomfort of different body parts in office employees

Body parts	Frequency of discomfort	Severity of discomfort	Interference in work	Discomfort score	% Discomfort
Neck	315	159	186	9315810	28.73
Shoulder	219	123	143	3851991	11.82
Upper back	226.5	119	132	3557862	10.97
Lower back	338.5	173	207	12122023	37.39
Wrist	123.5	80	97	958360	2.95
Hip	124	75	90	837000	2.58
Knee	94.5	63	74	440559	1.35
Feet	145	92	100	1334000	4.11

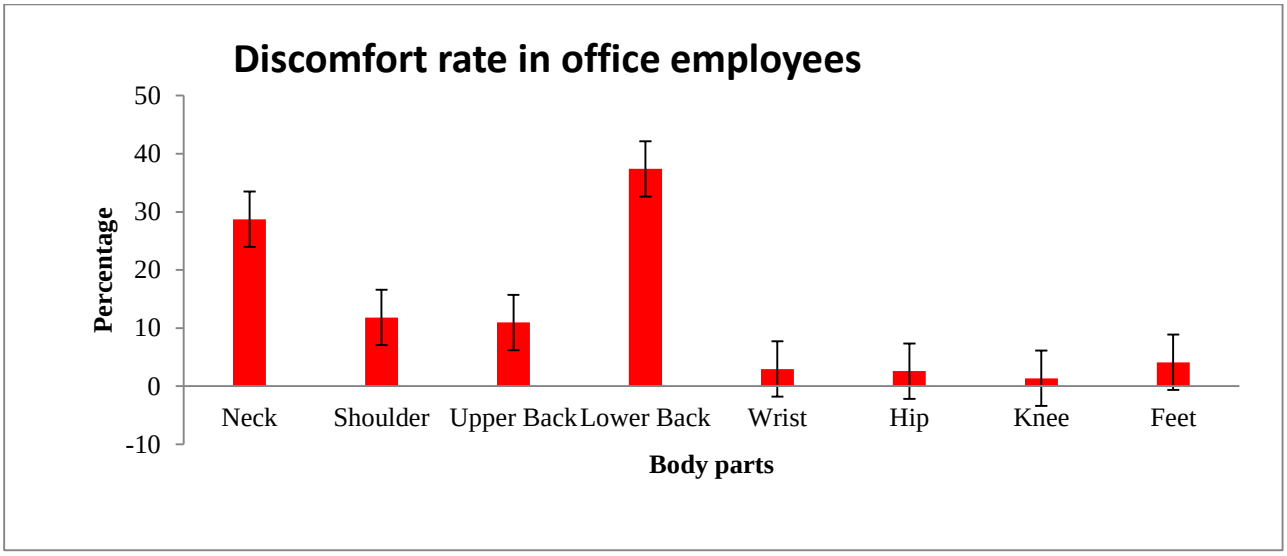

Figure 1: Total discomfort rate in office employees

Similarly, 87.21% of respondents had experienced neck discomfort, 90.97% reported lower back pain, 60.15% expressed pain in the upper back, and 66.16% experienced pain in the shoulders, once or more in the previous work week. No respondent reported discomfort in the wrist several times every day in the previous work week as shown in Table 3.

Table 3: Frequency of discomfort, severity rate, and work interference of musculoskeletal discomfort

Body parts	Frequency of discomfort in the last work week (%)					The severity of discomfort (%)			Work interference (%)			Mean Weighted Scores (SD)
	Never	1-2 times	3-4 times	Once every day	Several times every day	Slightly	Moderately	Very	Not at all	Slightly	Substantially	
Neck	12.78	57.14	12.03	14.28	3.75	58.64	24.81	3.75	39.09	43.60	4.51	6.50 (8.73)
Shoulder	33.83	45.86	11.27	6.76	2.25	41.35	23.30	1.50	27.81	35.33	3.00	4.70 (8.66)
Upper back	39.84	39.84	9.02	6.76	4.51	34.58	21.80	3.75	24.06	33.08	3.00	5.10 (9.54)
Lower back	9.02	60.15	15.78	8.27	6.76	59.39	24.06	7.15	34.58	48.12	8.27	8.42 (12.61)
Wrist	55.63	34.58	5.26	46.15	0	30.07	12.78	1.50	18.04	24.06	2.25	2.44 (482)
Hip	60.15	30.07	3.00	6.01	0.75	24.81	13.53	1.50	14.28	23.30	2.25	2.68 (6.05)
Knee	61.65	34.58	2.25	0.75	0.75	29.32	9.02	0	21.80	15.78	0.75	1.35 (2.73)
Foot	51.12	36.84	6.76	4.51	0.75	30.82	15.78	2.25	24.06	23.30	1.50	3.02 (7.01)

In respondents with neck pain, 48.12% reported that discomfort slightly or substantially interfered with workability. Likewise, as shown in Figure 2, respondents with lower back pain (56.39%), upper back pain (36.09%), and shoulders pain (38.34%) experienced slight or substantial interference with work, with neck and lower back pain having greater probability to hinder work in the office employees.

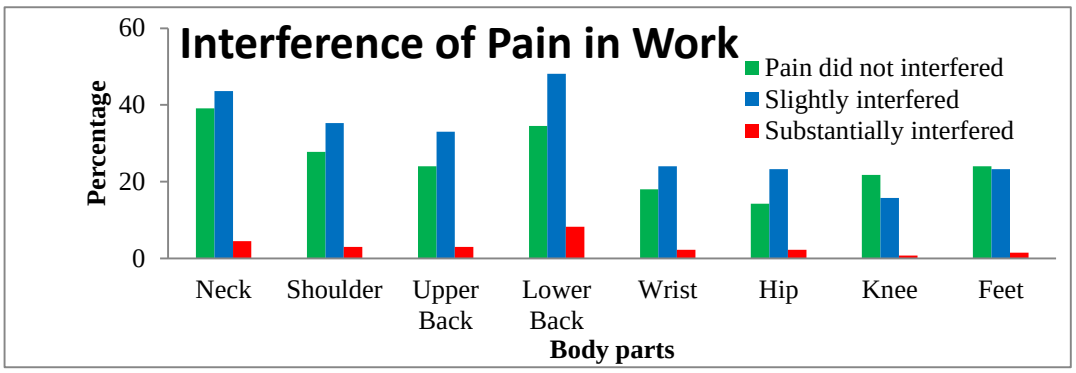

Figure 2: Interference of pain in work

Total weighted score for each body part was obtained by multiplying the weighted scores of frequency and severity of discomfort, and interference in work. Evaluation of these mean weighted scores showed the highest value for pain in the lower back (mean=8.42, standard deviation=12.61), neck (mean=6.50, standard deviation=8.73), shoulders (mean=4.70, standard deviation=8.66), and upperback (mean=5.10, standard deviation=9.54) as shown in Table 3.Overall, 41% of the office employees did not engage in any physical activity during this pandemic situation and their mean value of discomfort was significantly higher (mean=67.4), as compared to those who participated in physical activity (mean=10.9). Almost, 50% of the office employees were not aware of ergonomics training and their mean value of discomfort was 59. Similarly, 35% of the office employees were working for more than eight hours (mean=61.8). The mean total discomfort score was 34.24 (standard deviation=35) as shown in Table *4.*

Table 4: An association between risk factors and mean total discomfort rate

Risk factors	Mean	SD	Percent
	Duty hours		
<8 Hours	19.7	21.8	65.41
>8 Hours	61.8	37.62	34.59
	Exercise		
Yes	10.9	8.59	58.65
No	67.4	30.28	41.35
	Ergonomics training		
Yes	9.44	7.294	50.38
No	59.4	33.19	49.62

4. Discussion

The main objective of this study was to determine the incidence of workplace musculoskeletal discomfort in office employees during COVID-19. The results have revealed that musculoskeletal discomfort was highest in the neck, followed by shoulders, upper back, and lower back. Another study also reported the prevalence of musculoskeletal discomfort was also reported to be the highest in the neck, lower back, and shoulders [18]. Office employees experienced neck discomfort (87.21%), lower back (90.97%), upper back (60.15%), and shoulders (66.16%) one to two times or more during the last work week during this COVID-19 period. This prevalence was reported to be 66% in the neck, 61% in the lower back, 43% in the upper back, and 36% in the shoulders once to twice times or more per week before COVID-19 [2]. The results of our study have confirmed that the prevalence of musculoskeletal discomfort has increased from pre-COVID-19 to post-COVID-19. Different studies have demonstrated the same fact that musculoskeletal disorders are likely to increase in office employees during the Coronavirus pandemic [10]. The prevalence of pain was high because the working hours during this pandemic situation increased due to the workload [13]. Office employees' prolonged sitting duration has increased MSDs. During COVID-19, lower back pain increased due to an increase in the sitting duration [19]. An important aspect that helps in mitigating these negative effects involves the inclusion of ergonomics training [20]. As indicated by this study, several office employees (50%) were not aware of the significance of ergonomics, and lack of training further exacerbated the issue of MSDs. Lack of physical activity was one of the major reasons that the office employees felt discomfort and pain during this period, as they did not participate in any physical exercise because of the COVID-19 lockdown. In this pandemic situation, it was difficult to maintain a physically active lifestyle. Different studies concluded that a comparison between the pre-COVID-19 and post-COVID-19 period shows a decline in physical activity and an increase in the sitting time [21, 22]. The complaints about musculoskeletal disorders in the neck, shoulder, and lower back have begun to increase [23]. This study has helped in highlighting the fact that the musculoskeletal disorders of the neck, shoulders, upper back, and lower back with a ratio of 28.73%, 11.82%, 10.97, and 37.39%, respectively, have become more prevalent, as demonstrated by several other studies as well [24–26].

5. Conclusion

Work-related musculoskeletal disorders are already prevalent in office employees. COVID-19 has further aggravated the musculoskeletal discomfort due to the lack of physical activity and increased working hours. This study found that during COVID-19, musculoskeletal discomfort was high in the office employees. The lower back, neck, shoulders, and upper back were the most affected body parts. Therefore, ergonomics interventions are important and may help in overcoming musculoskeletal issues. Ergonomics training, short stretch breaks, online employee safety awareness programs, aerobic exercises, and regular online yoga

classes can provide a cost-effective alternative for alleviating musculoskeletal disorders.

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