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Prevalence of Work-Related Musculoskeletal Disorders (WMSD) Among Office Workers in University of Cyberjaya

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Abstract

Introduction: Musculoskeletal disorders (MSD) are injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs. Work-related musculoskeletal disorders (WMSD) are MSD in which the work and work environment contribute significantly to the MSD, or the MSD becomes worse or persists longer due to the work condition.

Objectives: This study aims to assess the prevalence of WMSDs and its associated risk factors, and relationship between WMSDs and socio demographic factors among office workers of University of Cyberjaya (UoC).

Materials and methods: A cross-sectional study was conducted among office workers from various departments in UoC who adhered to the inclusion and exclusion criteria. Data were collected by hardcopy and online questionnaires.

Results: Out of 126 respondents, the majority of them were female (61.9%), and Malay (69%). 88.9% of office workers in UoC have WMSDs. More than half of the respondents have neck pain (56.35%), followed by shoulder pain (46.83%), and lower back pain (46.03%). 71.42% of the respondents have ergonomic awareness and less than half of the respondents had previous injury (34.1%) contributing to WMSDs. Our study found that there is significant association between WMSDs and socio-demographic factors, which are gender and employment position ($P = 0.03$, $P = 0.03$ respectively). We also found that there is no significant association between work-related characteristics and WMSDs ($P > 0.05$).

Conclusion: Considering that, we hope that our findings could provide supporting data to policy makers and relevant university management in promoting ergonomic awareness and implementing adequate ergonomic designs for their workers' health to mitigate the risk of WMSDs.

Keywords: Work-related musculoskeletal disorders, musculoskeletal disorders, office workers

Introduction

Musculoskeletal disorders (MSD) are injuries or disorders of the muscles, nerves, tendons, joints, cartilage, and spinal discs. Work-related musculoskeletal disorders (WMSD) are MSD in which the work and work environment contribute significantly to the MSD, or the MSD becomes worse or persists longer due to the work condition.

The majority of WMSDs develop gradually over time. They may be episodic or chronic in nature, and

they may also be brought on by injuries sustained in a workplace accident. Furthermore, they might develop from minor to serious problems. Even though these conditions are rarely fatal, they significantly lower the quality of life for many working adults. WMSDs can occur in the workplace due to the physical demands of the work activities. These may involve work patterns with fixed and restricted body postures, constant repeated movements, concentrated force on small, localised areas of the body such as the hand and wrist, and a pace of work that does not permit enough recovery in between movements.

A significant worldwide cause of ill health and disability is work-related. WMSDs are the most common cause of absenteeism from work, early retirement, and disability payments in the European Union (Bevan et al. 2015). In Malaysia, WMSDs have an increasing trend as portrayed by the Social Security Organisation (SOCSO). In the annual 2014 report, there was a sharp rise in the number of cases: 15 cases in 2006 to 517 cases in 2013 (SOCSO, 2014). This amounted an increment of 34 times within the span of seven years. Proceeding that, according to the 2016 annual SOCSO report, the number of cases further increased to 1607 for that year (SOCSO, 2016).

Materials and Methods

This research was a cross-sectional study using 416 University of Cyberjaya (UoC) employees as the reference population. The sample population were both academic and non-academic office employees working in UoC. The inclusion criteria were at least one year of employment in UoC, ages between 21 – 70 years old and employees working in an office environment. The exclusion criteria were employees with pre-existing injuries that lead to MSDs, pregnant women, failure to complete the questionnaire, and inability to understand English. The number of sample size with finite population in this study was calculated and a minimum of 126 respondents was required to give significant results. Convenience sampling method was used.

Data was collected through a hardcopy and online questionnaire (Microsoft form) via email and WhatsApp. The questionnaire was adapted and modified from previous literature (Fatudimu et al., 2022), which consisted of four parts.

Part 1 (Consent): Participants were provided an informed consent form outlining the study's objectives and were given the right to not participate.

Part 2 (Socio-demographic information): This part included questions regarding the respondents' gender, race, age group, years of employment at UoC, employment position, faculty (if applicable), and dominant hand.

Part 3 (Work-related characteristics): This part included questions regarding the respondents' work characteristics such as frequency of breaks taken at work, hours spent at desk, frequency of moving away from desk, ergonomic awareness, and any musculoskeletal injuries with cause.

Part 4 (Distribution of WMSDs): This part included questions regarding the presence of work-related musculoskeletal disorders in the neck, shoulders, elbows, wrists/hands, upper back, lower back, hips/buttocks, knees, and ankles/feet in the last 12 months. If they have any of the said WMSD distribution, the respondents specified whether they were prevented from doing work in the last 12 months, whether they had any trouble in the last seven days, whether they have injured the said body part in the accident, the frequency of trouble they had due to the pain in the last 12 months, and whether they have seen a doctor for the WMSD.

All analyses were performed using the Jeffreys's Amazing Statistics Program (JASP) 14.1.0 software. Descriptive analysis was used for socio-demographic factors. Other variables were analysed using Chi-

squared and Fisher's exact tests. A significance level of 5%, i.e. p <0.05, was accepted for all statistical analyses.

Ethical approval for this research was obtained from the University of Cyberjaya Research Ethics Review Committee (CRERC). Data privacy and confidentiality was maintained, and the data collected was analysed by the researchers purely for the purpose of the study.

Results

The study obtained a total of 126 respondents from office workers of UoC.

In the study, the majority of respondents are female (61.9%), Malay (69.0%), and in the 31 – 40 years age group (42.9%). Most of them are academic staff (38.9%), however the highest faculty is the 'Others' category (55.6%). Moreover, 92.1% of respondents are right-handed.

Table 1: Socio-demographic information of respondents

Variable	Frequency (n)	Percentage (%)
1) Gender		
Female	78	61.9
Male	48	38.1
2) Race		
Malay	87	69.0
Chinese	5	4.0
Indian	23	18.3
Others	11	8.7
3) Age group		
21 – 30	33	26.2
31 – 40	54	42.9
41 – 50	17	13.5
51 – 60	16	12.7
61 – 70	6	4.8
4) Years of employment in UoC		
1 – 3	62	49.2
4 – 6	22	17.5
7 – 9	13	10.3
≥ 10	29	23.0
5) Employment position		
Academic	49	38.9
Admission	19	14.3
Management	25	19.8
IT	0	0.0
Facilities	1	0.8
Finance	2	1.6
Others	31	24.6
6) Faculty (if applicable)		

Medicine	24	19.0
Pharmacy	7	5.6
Allied Health Sciences	7	5.6
Psychology and Social Sciences	1	0.8
Safety and Health	3	2.4
Traditional and Complementary Medicine	3	2.4
Business and Technology	4	3.2
Nursing	3	2.4
Foundation, Languages and General Studies	2	1.6
Research and Graduate Studies	2	1.6
Others	70	55.6
7) Dominant hand		
Right hand	116	92.1
Left hand	10	7.9

Most of the respondents take breaks at work sometimes (65.1%), spend 5 – 7 hours at their desks (52.4%), and move away from their desks 6 – 11 times (47.6%). Apart from that, 90 respondents have ergonomic awareness (71.4%). Only 43 respondents (34.1%) had injury leading to musculoskeletal pain or discomfort and the cause of injury is mostly in the 'Others' category (55.8%).

Table 2: Work-related characteristics of respondents

Variable	Frequency (n)	Percentage (%)
1) Frequency of breaks		
Never	3	2.4
Rarely	20	15.9
Sometimes	82	65.1
Often	21	16.7
2) Hours spent at desk		
< 2	6	4.8
2 – 4	21	16.7
5 – 7	66	52.4
> 7	33	26.2
3) Move away from desk		
≤ 5 times	58	46.0
6 – 11 times	60	47.6
> 11 times	8	6.4
4) Ergonomic awareness		
Yes	90	71.4
No	36	28.6

5) Injury leading to musculoskeletal pain or discomfort		
Yes	43	34.1
No	83	65.9
6) Cause of injury		
Road traffic accident	3	7.0
Fall	16	37.2
Other	24	55.8

Based on the study, the highest distribution of WMSDs is the neck (56.35%), followed by shoulder (46.83%), and lower back (46.03%). The lowest distribution is the elbow (4.76%).
Among those experiencing neck pain in the last 12 months (71 respondents), 30.99% of the respondents have been prevented from doing their normal work due to the trouble in the same period. Besides, 46.48% of respondents have neck problems in the last seven days. Only nine respondents had accidents involving the neck. Most respondents (70.42%) experience neck pain for 1 – 7 days in the last 12 months. However, only 19 respondents (26.76%) have seen a doctor for the problem.

Table 3: WMSD in the neck

Variable	Frequency (n)	Percentage (%)
1) Trouble in the neck in the last 12 months		
Yes	71	56.35
No	55	43.65
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	22	30.99
No	49	69.01
3) Trouble in the neck in the last 7 days		
Yes	33	46.48
No	38	53.52
4) Any accidents involving the neck		
Yes	9	12.67
No	62	87.33
5) Total time having trouble in the neck in the last 12 months		
1 – 7 days	50	70.42
8 – 30 days	9	12.68
> 30 days	7	9.86
Every day	5	7.04
6) Seen a doctor because of the trouble in the last 12 months		
Yes	19	26.76
No	52	73.24

59 respondents (46.83%) experience shoulder pain in the last 12 months. Among them, 27.12% have been prevented from doing their normal work due to the trouble in the past 12 months and almost half of the respondents (47.46%) have shoulder problems in the last seven days. Only six respondents (10.17%) had accidents involving the shoulders. Most of the respondents (66.10%) experience shoulder trouble for 1 – 7 days in the last 12 months. Additionally, only 19 respondents (73.24%) have seen a doctor for the problem.

Table 4: WMSD in the shoulders

Variable	Frequency (n)	Percentage (%)
1) Trouble in the shoulders in the last 12 months		
Yes	59	46.83
No	67	53.17
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	16	27.12
No	43	72.88
3) Trouble in the shoulders in the last 7 days		
Yes	28	47.46
No	31	52.54
4) Any accidents involving the shoulders		
Yes	6	10.17
No	53	89.83
5) Total time having trouble in the shoulders in the last 12 months		
1 – 7 days	39	66.10
8 – 30 days	7	11.86
> 30 days	7	11.86
Every day	6	10.18
6) Seen a doctor because of the trouble in the last 12 months		
Yes	12	20.34
No	47	79.66

Only 6 respondents (4.76%) experience elbow pain in the last 12 months. In the past 12 months, half of the respondents (50.00%) have been prevented from doing their normal work due to the trouble and in the last seven days, only 2 respondents (33.33%) have elbow problems. Half of the respondents had accidents involving the elbows and half of them experience shoulder trouble for 1 – 7 days in the last 12 months. Additionally, five (83.33%) out of the six respondents have seen a doctor for the problem.

Table 5: WMSD in the elbows

Variable	Frequency (n)	Percentage (%)
1) Trouble in the elbows in the last 12 months		
Yes	6	4.76
No	120	95.24
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	3	50.00
No	3	50.00
3) Trouble in the elbows in the last 7 days		
Yes	2	33.33
No	4	66.67
4) Any accidents involving the elbows		
Yes	3	50.00
No	3	50.00
5) Total time having trouble in the elbows in the last 12 months		
1 – 7 days	3	50.00
8 – 30 days	2	33.33
> 30 days	1	16.67
Every day	0	0.00
6) Seen a doctor because of the trouble in the last 12 months		
Yes	5	83.33
No	1	16.67

36 respondents (28.57%) experience trouble in the wrists/hands in the last 12 months. Among them, 44.44% of the respondents have been prevented from doing their normal work because of the problem in the past 12 months. In the last seven days, 44.44% of the respondents also had trouble in the wrists/hands. Five respondents (13.89%) had accidents involving the wrists/hands. Most of the respondents (75.00%) experience wrists/hands trouble for 1 – 7 days in the last 12 months. Only four respondents (11.11%) have seen a doctor for the pain.

Table 6: WMSD in the wrists/hands

Variable	Frequency (n)	Percentage (%)
1) Trouble in the wrists/hands in the last 12 months		
Yes	36	28.57
No	90	71.43
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	16	44.44

No	20	55.56
3) Trouble in the wrists/hands in the last 7 days		
Yes	16	44.44
No	20	55.56
4) Any accidents involving the wrists/hands		
Yes	5	13.89
No	31	86.11
5) Total time having trouble in the wrists/hands in the last 12 months		
1 – 7 days	27	75.00
8 – 30 days	3	8.33
> 30 days	0	0.00
Every day	6	16.67
6) Seen a doctor because of the trouble in the last 12 months		
Yes	4	11.11
No	32	88.89

In the last 12 months, 34 respondents (26.98%) experience trouble in the upper back. Within the same period, 38.24% of the respondents have been prevented from doing their normal work because of the problem. 41.17% of the respondents had trouble in the upper back in the last seven days. Only three respondents (8.82%) had accidents which involved the upper back. Majority of the respondents (67.65%) experience trouble in the upper back for 1 – 7 days in the last 12 months. Only six respondents (17.65%) have seen a doctor for the WMSD.

Table 7: WMSD in the upper back

Variable	Frequency (n)	Percentage (%)
1) Trouble in the upper back in the last 12 months		
Yes	34	26.98
No	92	73.02
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	13	38.24
No	21	61.76
3) Trouble in the upper back in the last 7 days		
Yes	14	41.17
No	20	58.83
4) Any accidents involving the upper back		
Yes	3	8.82
No	31	91.18

5) Total time having trouble in the upper back in the last 12 months		
1 – 7 days	23	67.65
8 – 30 days	1	2.94
> 30 days	7	20.59
Every day	3	8.82
6) Seen a doctor because of the trouble in the last 12 months		
Yes	6	17.65
No	28	82.35

58 respondents (46.03%) experience trouble in the lower back in the last 12 months and 39.65% of the respondents have been prevented from doing their normal work because of the problem. Another 39.65% of the respondents had trouble in the lower back in the last seven days. Six respondents (10.35%) had accidents which involved the lower back. Majority of the respondents (70.69%) experience trouble in the lower back for 1 – 7 days in the last 12 months. 13 respondents (22.41%) have seen a doctor for the problem.

Table 8: WMSD in the lower back

Variable	Frequency (n)	Percentage (%)
1) Trouble in the lower back in the last 12 months		
Yes	58	46.03
No	68	53.97
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	23	39.65
No	35	60.35
3) Trouble in the lower back in the last 7 days		
Yes	23	39.65
No	35	60.35
4) Any accidents involving the lower back		
Yes	6	10.35
No	52	89.65
5) Total time having trouble in the lower back in the last 12 months		
1 – 7 days	41	70.69
8 – 30 days	10	17.24
> 30 days	3	5.17
Every day	4	6.90
6) Seen a doctor because of the trouble in the last 12 months		

Yes	13	22.41
No	45	77.59

Among the 21 respondents (16.67%) experiencing pain in the hips/thighs during the last 12 months, more than half of them (57.14%) have been prevented from doing their normal work due to the trouble. In addition to that, 42.86% of the respondents have problems in the hips/thighs in the last seven days. Only three respondents had accidents involving the said body part. Most respondents (66.67%%) experience trouble for 1 – 7 days in the last 12 months. However, only 8 respondents (38.09%) have seen a doctor for the problem.

Table 9: WMSD in the hips/thighs

Variable	Frequency (n)	Percentage (%)
1) Trouble in the hips/thighs in the last 12 months		
Yes	21	16.67
No	105	83.33
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	12	57.14
No	9	42.86
3) Trouble in the hips/thighs in the last 7 days		
Yes	9	42.86
No	12	57.14
4) Any accidents involving the hips/thighs		
Yes	3	14.29
No	18	85.71
5) Total time having trouble in the hips/thighs in the last 12 months		
1 – 7 days	14	66.67
8 – 30 days	2	9.52
> 30 days	2	9.52
Every day	3	14.29
6) Seen a doctor because of the trouble in the last 12 months		
Yes	8	38.09
No	13	61.91

31 respondents (24.60%) experience knee pain in the last 12 months. In the same period, almost half of the respondents (48.39%) have been prevented from doing their normal work due to the trouble and in the last seven days, 14 respondents (45.16%) have knee problems. Only seven respondents (22.58%) had accidents involving the knees. Most of the respondents experience trouble in the knees for 1 – 7 days in the last 12 months. Moreover, nine (29.03%) out of the 31 respondents have seen a doctor for the WMSDs.

Table 10: WMSD in the knees

Variable	Frequency (n)	Percentage (%)
1) Trouble in the knees in the last 12 months		
Yes	31	24.60
No	95	75.40
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	15	48.39
No	16	51.61
3) Trouble in the knees in the last 7 days		
Yes	14	45.16
No	17	54.84
4) Any accidents involving the knees		
Yes	7	22.58
No	24	77.42
5) Total time having trouble in the knees in the last 12 months		
1 – 7 days	19	61.29
8 – 30 days	6	19.35
> 30 days	1	3.23
Every day	5	16.13
6) Seen a doctor because of the trouble in the last 12 months		
Yes	9	29.03
No	22	70.97

26 respondents (20.64%) experience pain in the ankles/feet in the last 12 months. Half of them (50.00%) have been prevented from doing their normal work due to the trouble in the past 12 months and more than half of the respondents (65.39%) have problems in the ankles/feet in the last seven days. Only nine respondents (34.61%) had accidents involving the ankles/feet. Most of the respondents (46.15%) have the trouble for 1 – 7 days in the last 12 months. Moreover, only 8 respondents (30.77%) have seen a doctor for the problem.

Table 11: WMSD in the ankles/feet

Variable	Frequency (n)	Percentage (%)
1) Trouble in the ankles/feet in the last 12 months		
Yes	26	20.64
No	100	79.36
2) Prevented from doing normal work because of the trouble in the last 12 months		
Yes	13	50.00

No	13	50.00
3) Trouble in the ankles/feet in the last 7 days		
Yes	17	65.39
No	9	34.61
4) Any accidents involving the ankles/feet		
Yes	9	34.61
No	17	65.39
5) Total time having trouble in the ankles/feet in the last 12 months		
1 – 7 days	12	46.15
8 – 30 days	6	23.08
> 30 days	3	11.54
Every day	5	19.23
6) Seen a doctor because of the trouble in the last 12 months		
Yes	8	30.77
No	18	69.23

112 (88.9%) respondents have WMSDs. The highest percentage of WMSDs distribution is the neck region (56.35%), followed by shoulder (46.83%) and lower back (46.03%). The lowest WMSD distribution is the elbow (4.76%).

The study aims to investigate the association between risk factors and WMSDs. The risk factors in this study are identified as work-related characteristics of the respondents. By using JASP, we were able to use both chi-squared test and Fisher's exact test to identify any significant association ($P < 0.05$) between the two variables. However, results show that there is no significant association between work-related characteristics with prevalence of WMSDs ($P > 0.05$).

Table 12: Association between work-related characteristics and WMSDs

Work-related characteristics	Yes (%)	No (%)	P value (Fisher's test)
1) Frequency of breaks			
Never & rarely	86.96	13.04	0.72
Sometimes & often	89.32	10.68	
2) Hours spent at desk			
≤ 4 hours	88.89	11.11	1.00
≥ 5 hours	88.89	11.11	
3) Move away from desk			
≤ 5 times	91.38	8.62	0.57
≥ 6 times	86.76	13.24	
4) Ergonomic awareness			
Yes	87.78	12.22	0.76
No	91.67	8.33	

5) Injury			
Yes	93.35	4.65	0.14
No	85.54	14.46	

'Yes' and 'No' indicates the presence and absence of WMSDs respectively.

Another objective of the study aims to find the association between socio-demographic factors and prevalence of WMSDs. The results show that gender and employment position have significant associations (P = 0.03, P = 0.03) with prevalence of WMSDs.

Table 13: Association between socio-demographic factors and WMSDs

Socio-demographic factors	P value (Chi-squared test)
1) Gender	0.03
2) Race	0.86
3) Age	0.98
4) Years of employment	0.18
5) Employment position	0.03
6) Faculty	0.82
7) Dominant hand	0.91

Discussion

Work-related musculoskeletal disorders (WMSDs) are a significant public health concern, leading to financial, physical, and social challenges for affected individuals. The study found that the majority of respondents were female (61.9%), Malay (69.0%), and in the 31-40 years age group (42.9%). Most were academic staff (38.9%), with the highest representation in the 'Others' faculty category (55.6%). The prevalence of WMSDs among the respondents was high (88.9%), particularly affecting the neck (56.35%), shoulders (46.83%), and lower back (46.03%). The lowest reported WMSD site was the elbow (4.76%).

The prevalence of WMSDs in this study is consistent with findings from previous research. For instance, Fatudimu et al. (2022) reported an 86.6% prevalence among academic staff at the University of Ibadan. This is higher than the 74% prevalence found by Sandeva et al. (2021) among higher education employees and the 71.9% prevalence reported by Okezue et al. (2020) among staff at higher education institutes. These studies indicate that WMSDs are increasingly prevalent in academic settings, suggesting a growing trend that warrants attention.

The common sites of WMSDs identified in this study (neck, shoulders, lower back) are consistent with those reported in previous research. Fatudimu et al. (2022) found that the upper back, hip/buttocks, knees, and lower back were the most common sites of musculoskeletal injuries. Similarly, Sandeva et al. (2021) and Okezue et al. (2020) reported frequent complaints in the lower and upper back, neck, shoulders, and wrists. These findings suggest that certain body parts are universally vulnerable to WMSDs, likely due to similar risk factors across different settings.

Despite 71.4% of respondents in this study have ergonomic awareness, the high prevalence of WMSDs (86.6%) indicates that awareness alone is insufficient without proper ergonomic practices. This suggests a gap between knowledge and application, underscoring the need for effective ergonomic interventions.

Specifically, while awareness is crucial, its practical application in daily work routines is what ultimately reduces the incidence of WMSDs.

The neck was the most affected body part, with 56.35% of respondents reporting pain. This is concerning as neck pain can significantly hinder daily activities and work productivity. Notably, 30.99% of those experiencing neck pain were prevented from performing normal work activities. Furthermore, 46.48% reported neck problems in the last seven days, indicating persistent and recurrent issues. The fact that only 26.76% sought medical attention underscores the potential underreporting and undertreatment of neck pain.

Shoulder pain was reported by 46.83% of respondents. Similar to neck pain, shoulder pain can severely limit functional capacity. Among those affected, 27.12% were prevented from working normally, and 47.46% experienced shoulder issues in the past week. The data suggest that shoulder pain is a significant contributor to workplace discomfort, yet only a small percentage (10.17%) reported accidents involving the shoulders, indicating other causes such as poor ergonomics or repetitive strain.

Lower back pain was reported by 46.03% of respondents, with 39.65% prevented from doing normal work activities. This aligns with previous studies identifying the lower back as a common site for WMSDs. The high prevalence of lower back pain and its impact on work ability highlight the need for interventions targeting ergonomic improvements and promoting physical activity to mitigate prolonged sitting.

The high prevalence of WMSDs and their impact on work performance highlight the need for targeted ergonomic interventions. Institutions should conduct ergonomic assessments and redesign workstations to meet ergonomic standards. Regular training and awareness programs should be implemented to promote healthy practices. Policies encouraging regular breaks and movement during work hours could also help mitigate the incidence of WMSDs. Our findings indicate that ergonomic interventions should focus on providing appropriate furniture, promoting proper posture, and encouraging regular movement. Additionally, addressing psychosocial factors such as occupational stress and job satisfaction may further reduce the prevalence of WMSDs.

Limitation

This study has several limitations. The cross-sectional design limits the ability to establish causal relationships between ergonomic practices and WMSDs. The reliance on self-reported data may introduce bias, as respondents might underreport or overreport their symptoms. Additionally, the study was conducted within a specific demographic, which may limit the generalizability of the findings to other populations or settings. Moreover, most of the association were not significant ($p > 0.05$) due to the small sample size.

Ideally, our study would utilise chi-squared test only. However, since all associations were found to be insignificant, we utilised the Fisher’s exact test. In our study, the expected frequencies might be very low for some cells, making the chi-squared test approximation questionable. To overcome this, the Fisher's exact test is used as it computes the exact probability of obtaining the observed distribution of frequencies, which provides an accurate p-value even with small counts. The test considers all possible tables that have the same row and column totals as the observed table and calculates the exact probability of the observed table and each more extreme table under the null hypothesis of no association. The sum of these probabilities gives the p-value. Therefore, Fisher's exact test is preferred over the chi-squared test when any expected cell frequency is less than 5 because it provides an exact p-value, making it more reliable for small samples or sparse data.

Conclusion

In conclusion, this study highlights the significant burden of WMSDs among academic staff, with the neck, shoulders, and lower back being the most affected areas. The findings are consistent with previous research, emphasizing the critical need for ergonomic interventions and awareness programs in academic settings. By addressing ergonomic risk factors and promoting healthy work practices, institutions can improve the musculoskeletal health and overall well-being of their staff.

Recommendations

Based on the findings of this study, several recommendations can be made to address the high prevalence of WMSDs among academic staff. First, it is essential to implement ergonomic interventions in the workplace. This includes ensuring that all workstations are ergonomically designed with adjustable chairs, desks, and computer monitors to promote proper posture and reduce strain. Regular ergonomic assessments and adjustments should be conducted to identify and correct issues before they lead to discomfort or injury.

Promoting ergonomic awareness and training is also crucial. Awareness programs, including regular training sessions and workshops, should be introduced to educate staff on the importance of ergonomics, proper posture, and the use of ergonomic equipment. Providing hands-on training to teach staff how to adjust their workstations, use ergonomic tools, and adopt healthy work habits can further reinforce these practices.

Encouraging regular breaks and movement can significantly reduce the risk of musculoskeletal strain. Implementing policies that encourage staff to take regular breaks away from their desks and promoting physical activity during these breaks, such as stretching exercises or walking, can help mitigate muscle stiffness and strain. Additionally, addressing psychosocial factors is vital for preventing WMSDs. Providing resources and support for managing occupational stress, such as stress management workshops, access to counselling services, and promoting a healthy work-life balance, can improve overall job satisfaction and reduce the risk of WMSDs.

Implementing reporting and monitoring systems for musculoskeletal discomfort or injuries is another key recommendation. Establishing a system for reporting and monitoring WMSDs and encouraging staff to report any discomfort or injuries promptly can help identify and address issues early. Conducting follow-up assessments for reported injuries ensures proper treatment and recovery, preventing minor issues from becoming chronic problems. Providing access to medical care for WMSDs is also essential. Ensuring that staff have access to medical care, including information on available medical services and facilitating referrals to specialists if needed, can improve health outcomes. Encouraging regular medical check-ups can help detect and address musculoskeletal issues early.

Enhancing workplace ergonomics research through longitudinal studies and risk factor analysis can provide a better understanding of the long-term effects of ergonomic interventions on WMSDs and help tailor interventions to address the unique needs of various demographic groups within the academic staff population. Lastly, fostering a culture of health and safety within academic institutions is crucial. Ensuring leadership commitment to promoting health and safety, allocating resources for ergonomic improvements, and involving employees in the development and implementation of health and safety policies can increase buy-in and ensure that policies meet the needs of the workforce.

Future research should explore longitudinal designs to better understand the long-term effects of ergonomic interventions on WMSDs. Studies could investigate the specific ergonomic practices that are

most effective in reducing WMSDs. Moreover, research should examine the role of psychosocial factors, such as occupational stress and job satisfaction, in the development of WMSDs to provide a more comprehensive understanding of the issue.

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