

ORIGINAL ARTICLE

THE ASSOCIATION BETWEEN PSYCHOSOCIAL FACTORS AND MUSCULOSKELETAL DISCOMFORT AMONG ADMINISTRATIVE STAFF

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ABSTRACT

Administration entails a high level of computerization and many other tasks with multiple risk factors (including psychosocial), affecting workers health and well-being. This study aims to determine the association between psychosocial factors and musculoskeletal discomfort among administrative staff. About 144 participants were involved in this study. Socio-demographic, musculoskeletal health and psychosocial data were collected from a composite questionnaire; Nordic Musculoskeletal Questionnaire (NMQ) and the Copenhagen Psychosocial Questionnaire (COPSOQ). The result showed that the highest prevalence of musculoskeletal discomfort for shoulders followed by neck and upper back for both male and female. The significant psychosocial factors were insecurity at work followed by influence at work. The highlighted result was a significant association between social support and job satisfaction with associated musculoskeletal pain region. In conclusion, proper organizational management and culture should be implemented to reduce the risk of psychosocial factor and musculoskeletal pain.

Keywords: *Musculoskeletal discomfort, Psychosocial factors, Administrative staff, Association, Computer*

INTRODUCTION

Administrative work is vital for most of the organisation as it promotes the smooth flow and high efficiency of that organisation. University administration job task is dependent on the size of college or university (*Postsecondary Education Administrators*, n.d.). The typical task of an educational administrator including maintaining student and course records, schedule programs and services relating student affairs, help college presidents develop academic policies, participate in making faculty appointments and tenure decisions, and manage budgets. In previous research, it is claimed that in the admin department, paperwork directly linked to computer task. The repetitive nature of computer-based task is related with a high prevalence of self-reported MSDs, especially in the neck, upper and lower back (Piranveyseh et al., 2016). In a study conducted in India, the musculoskeletal pain and discomfort were reported to be 76% on computer professionals (Mehta & Parijat, 2012). Similarly, the DOSH statistics throughout September 2018 recorded a total of 188 cases which held the third-largest counted cases for musculoskeletal pain and discomfort. In a research conducted by World Health Organization (WHO) stated that the computer professionals that have WRMSDs are associated with multifactorial etiology, along with physical work demands, psychosocial risk factors, individual differences that crucially contributing to the cause of the disorder (Mehta & Parijat, 2012). Psychosocial factors were components that will impact employees in the sense of psychological responses to work and work conditions (Gilbert, 2018). It includes the

manner of work such as deadlines, workload, work methods and the context in the workplace including relationships and interactions with managers and supervisors, colleagues and co-workers, and clients or customers.

The workload demand is getting higher causing an indirect or direct pain in the musculoskeletal region among admin workers. Several causative risk factors can lead to the formation of musculoskeletal discomfort and the well-known cause is the ergonomic risk factor which relates to the work environment including individual and psychosocial (Statham, 2018). Psychosocial factors place demands on workers that are greater than the worker's ability to cope with them, they experience stress. Stress creates a variety of behavioural responses within a person. Behavioural responses to psychosocial factors are responses taken by a person that they are unaware of, or that they perceive may help them cope with the stresses placed upon them. Unfortunately, in many cases, these responses can increase their risk of developing MSDs because it causes them to increase their physical and psychological exposure to some MSD risk factors. Hence, this study focuses on the association between the psychosocial factor and musculoskeletal discomfort.

This study involved a sample size from administrative workers population in UMP. The psychosocial factors that being faced were asked based on job satisfaction, quantitative demand, social support, insecurity at work, and influence at work. Besides, for the identification of most affected musculoskeletal region was analysed on the neck, shoulders, upper back, elbows, wrist

hands, low back, hips or thighs, knees and ankles or feet. The result of this study will benefit for employees to be aware of the musculoskeletal disorder factors and what are the musculoskeletal body parts involves in the disorder. They also can increase awareness to other employees as well after knowing the facts and theory of this research. For instance, if any occurrence of musculoskeletal discomfort is discovered by the employees, they could report it to the organization. From here, the importance of the relationship between psychosocial factors and musculoskeletal discomfort can be delivered to the employees.

METHODS

Study population and design

A cross-sectional study design was employed using a sample size of 144 administrative officials. The study participants were selected using Krejcie and Morgan (1970) sample size determination table based on the study population. In this study, the population was approximately 173. The sample size should be 118. However, a total of 144 participants agreed to participate in this study. The inclusion criteria of the participants were those who utilise computer at least 3 hours per day and at least one-year experience in this job (Piranveyseh et al., 2016).

Questionnaires

The questionnaire included questions relating to demographic information such as age, gender, and marital status. Besides, workplace information such as participants' daily working hours and daily computer use (in hours) was added in the questionnaire. Copenhagen Psychosocial Questionnaire (COPSOQ) as initially proposed by Kristensen and Borg (2003) was used to access psychosocial risk factors (quantitative demand; influence at work, social support) that affects the admin officials with 5-point response scale (1 = always to 5 = never). Job satisfaction used Likert scale but the rating is from 1= very satisfied to 5 = not relevant. Insecurity at work is in a dichotomous scale, either yes or no. Nordic

Musculoskeletal Questionnaire (NMQ) was used to determine the prevalence of musculoskeletal discomfort among administrative staff (Lima & Coelho, 2018; Gilbert, 2018; Maakip et al., 2016; Mehta & Parijat, 2012; Piranveyseh et al., 2016).

Data Analysis

Descriptive statistics of the demographic information of the participants, the most significant psychosocial factor, prevalence of the musculoskeletal discomfort and that affect administrative staff were presented in the form of numbers, percentages, means and standard deviations. The analytical statistics were performed by using Spearman correlation. The normality of the data was tested using the Shapiro-Wilk test and it is found that the data is not normally distributed since the p-value is below 0.05; the data significantly deviate from a normal distribution. Since the data is not normally distributed, the Spearman correlation analysis method was used to determine the relationship between the psychosocial factors and musculoskeletal discomfort among administrative staff.

RESULTS AND DISCUSSION

Demographic Information of the Participants

The university had approximately 173 administrative staff and a total of 144 of them participated in the study. The sample comprised 29.2 % (n=42) males and 70.8% (n=102) females. The mean age was 32.10 (sd=7.03) and the majority of participants were in the 26-35 years old age group (56.3%). The male mean age was 33.8 (sd= 7.91) and the female mean age was 31.4 (sd=6.40). Most subjects are married (63.2%). Besides, nearly all the subjects worked between 1-10 hours per day and from the total participants, all women recorded working hours of 1-10 hours per day (100.0%). Most of the subjects has used computer between 6-10 hours per day (male=73.8%; female=90.2%). The mean hours of working in computer for male and female was 7.17 (sd=2.41) and 7.51 (sd=1.49) respectively. Table 1 shows the participants characteristic (N=114).

Table 1 Socio-demographic characteristics of the sample (frequency)

| | Male Gender | Female Gender |
|------------------|-------------------|--------------------|
| | (n=42) % | (n=102) % |
| Age group | (M=33.8; SD=7.91) | (M=31.4; SD= 6.50) |
| <16 years old | 0 | 0 |
| 16-25 years old | 11.9 | 16.7 |
| 26-35 years old | 50 | 58.8 |
| 36-45 years old | 31 | 23.5 |
| 46-65 years old | 7.1 | 1 |
| >65 years old | 0 | 0 |

| Marital status | | |
|---|-------------------|-------------------|
| Single | 31 | 23.5 |
| Married | 69 | 60.8 |
| How many hours do you work per day? | (M=5.98; SD=3.04) | (M=5.50; SD=0) |
| 1-10 hours | 97.6 | 100 |
| 11-20 hours | 0 | 0 |
| 21 hours and above | 2.4 | 0 |
| How many hours do you work per day using computer? | (M=7.17; SD=2.41) | (M=7.51; SD=1.49) |
| 1-5 hours | 21.4 | 9.8 |
| 6-10 hours | 73.8 | 90.2 |
| 11 hours and above | 4.8 | 0 |
| 1-5 hours | 21.4 | 9.8 |
| 6-10 hours | 73.8 | 90.2 |
| 11 hours and above | 4.8 | 0 |

Note: M=Mean; SD=Standard Deviation

The Prevalence of Musculoskeletal Discomfort

Table 2 shows the prevalence of all body parts. The shoulders had the highest prevalence for both genders (male=64.3%; female=70.6) in prior 12 months completing NMQ. Other body segments with high prevalence for both genders were the cervical spine (male=50%; female=57.8%) and upper back (male=42.9; female=53.9). One plausible contribution to the high prevalence rate in the current study might be explained by cultural factors where employees may feel more comfortable disclosing MSD discomfort or pain symptoms via an anonymous survey rather than directly to their supervisor. Hence, many hazards or risk of employees are exposed to be not being addressed as they have not been reported in the workplace. Organizational practices and work culture differences may also influence the reporting and experience of pain (Maakip et al., 2016). The highest complaints per body areas reported ‘in the last 7 days’, more male (35.7%) officials identified the shoulders as an anatomic area

where they felt discomfort, fatigue, or pain, followed by other body regions which were upper back (33.3%), cervical spine (31%) and lumbar spine (28.6%). More female officials identified as the highest prevalence at the shoulders (49%) followed by the wrist or hands (40.2%), lumbar spine (40.2%) and upper back (39.2%) as areas of complaint. With respect to a hindrance to perform normal activities, the anatomic area most identified by the participating subjects differs according to gender where women had pain at the shoulder area (33.3%) while male at cervical spine (31%). Mostly more women have attributed to the high prevalence at most of the musculoskeletal region than men. A study indicated that women had a higher perception of pain and presented a much narrower variety of pain adaptation strategies than men (Lima & Coelho, 2018). This is because, mostly Malaysian women are mainly responsible for non-paid work tasks; for instance, household duties and caring responsibilities, even when they are undertaking paid employment outside the home.

Table 2 Prevalence of musculoskeletal symptoms by gender across the sampled population

| | Have you at any time during the last 12 months had trouble (such as aches, pain, discomfort, numbness)? | | Have you at any time during the last 7 days had trouble (such as aches, pain, discomfort, numbness)? | | Have you at any time during the last 12 months been prevented from doing your daily activities (at home or away from home) because of the trouble? | |
|-------------|---|----------|--|----------|--|----------|
| | Female (%) | Male (%) | Female (%) | Male (%) | Female (%) | Male (%) |
| Neck | 57.8 | 50 | 33.3 | 31 | 24.5 | 31 |
| Shoulders | 70.6 | 64.3 | 49 | 35.7 | 33.3 | 21.4 |
| Elbows | 15.7 | 11.9 | 6.8 | 7.1 | 3.9 | 9.5 |
| Wrist/Hands | 51 | 40.5 | 40.2 | 23.8 | 23.5 | 26.2 |
| Upper Back | 53.9 | 42.9 | 39.2 | 33.3 | 31.4 | 28.6 |
| Lower Back | 45.1 | 38.1 | 40.2 | 28.6 | 31.4 | 19 |
| Hips/Thighs | 28.4 | 26.2 | 20.6 | 23.8 | 18.6 | 16.7 |
| Knees | 27.5 | 28.6 | 12.7 | 14.3 | 10.8 | 11.9 |
| Ankles/Feet | 28.4 | 28.6 | 13.7 | 14.3 | 10.8 | 14.3 |

The Significant Psychosocial Factor

Based on a given example as in (Decker, 2018), any average or mean value that is greater than three- the midpoint and neutral value of a Likert scale could put up as overall approval or disapproval based on a study's Likert scale. The five-point Likert scale that is used in this study shows a positive indicator (below than 3) which is the psychosocial risk factor affects the admin staff and negative indicator (greater than 3), the related psychosocial risk factor does affect the admin staff. However, for quantitative demand and influence at work, the negative indicator would be when the mean value lesser than 3. Table 3 shows that the most significant psychosocial factor that affects the administrative staff in this study is insecurity at work.

Table 3 Subscales of COPSOQ with respective mean and standard deviation

| COPSOQ Scales | Mean | Std. Deviation |
|---------------------|----------------------------|----------------|
| Quantitative demand | 3.01 | 0.85 |
| Influence at work | 2.75 | 0.93 |
| Social support | 2.57 | 0.93 |
| Job satisfaction | 2.11 | 0.82 |
| | Mean percentage (%) | |
| | Yes | No |
| Insecurity at work | 53.3 | 46.7 |

It shows that more than half of the participants (53.3%) agreed that they are insecure at the workplace relating to their job. Most of the respondent worried about being unemployed in the future. A recent study had proven the same that job insecurity subscale had the second-highest dissatisfaction (Lima & Coelho, 2018). Influence at work with a mean value of 2.75 (below than 3) shows that the factor does affect the admin staff when they are performing their task. Job satisfaction recorded the lowest mean value with a mean value of 2.11 (sd=0.82; below than 3), indicates that the factor does not affect the workers since most of the workers pointed for satisfied with their task. The findings as in (Baek et al., 2018) also proved that participants are not exposed to job satisfaction risk factor by having a high job satisfaction percentage.

The Association between Psychosocial Factors and Musculoskeletal Discomfort

Based on the result (Table 4), it shows that most of the psychosocial factors have a significant correlation with musculoskeletal discomfort. In this study, the overall correlation was found to be weak and this may due to the organizational practices in the office where hierarchically

structured work environment with large power differences, valued loyalty towards leaders, admin staff that do not demonstrates negative emotions and conversation between workers and employers is not encouraged among Malaysian office workers (Maakip et al., 2016). However, there was no association was found for quantitative demand. Quantitative demand was a contributing factor which focusing on heavy workload and intensity of the work has a relationship in the development of pain in spine (lower back and neck) (Anyfantis & Biska, 2018). The development of musculoskeletal discomfort mainly because of the work practices by the workplace. The same study explains more on quantitative demand where performing the same task over and over again (work task piles up) causes injury of the spine, upper and lower back.

Influence at work factor had very weak negative correlation with musculoskeletal discomfort at lower back ($r=-0.197$, $p=0.018$) and ankles ($r=-0.164$, $p=0.049$) and weak negative correlation at wrist area ($r=-0.205$, $p=0.014$). The negative correlation result shows that the existence of musculoskeletal discomfort among admin staff which means when then there is influence at work, the musculoskeletal discomfort is increased. The negative weak correlation in this study on influence at work may due to the way of the employer and workers perform their task whereby everyone have their distinct working style and does not get influenced at work. In contrary, adverse work style such as lack of breaks (how do you work) and social reactivity (work environment and influence when you work) was associated to pain and discomfort and predictive of future development of upper extremity disorders and functional limitations among office workers (Maakip et al., 2016). This was supported by a negative moderate correlation between influence at work and musculoskeletal discomfort among female. Similarly, a negative moderate correlation between influence at work and musculoskeletal discomfort among female was found in recent research. This may due to the inability of them to choose with whom they have to work and where work is carried out, as well as the type of tasks assigned to them (Lima & Coelho, 2018).

Social support risk factor was associated with quite a number of musculoskeletal regions where the correlation was all identified as positive where the strength was recognized as very weak for ankles ($r=0.198$, $p=0.017$), wrist ($r=0.184$, $p=0.028$) and neck ($r=0.167$, $p=0.045$) while weak for upper back ($r=0.216$, $p=0.009$) and knees ($r=0.205$, $p=0.014$). In this study, the positive correlation shows that when there is no or less social support was given; there will be an existence of musculoskeletal discomfort. Although there was an association between social support and musculoskeletal pain, still the strength was found to be weak in this study.

However, the factor still vital to be studied as it is significant in the development of MSDs because it may influence changes in posture, movement and forces exerted and impact on biomechanical load. In another research, it was discussed there was a significant strong relationship was observed between social support factor (co-worker support) and musculoskeletal pain or discomfort. Besides, a crucial point needed to be highlighted that work support that being the major predictor of MSDs should be encouraged as it reduces stress where indirectly decline the MSDs as well (Mehta & Parijat, 2012).

A negative very weak correlation was recognized for insecurity at work for only one region at the upper back ($r=-0.168$, $p=0.044$). The negative correlation shows that the musculoskeletal discomfort exists when job insecurity is increased among admin staff. It was discussed that job insecurity significantly associated with work-related health problems such as muscular pain and backache. High levels of job insecurity prompt low motivation and compliance with safety efforts, hence higher workplace injuries. Besides, the economic slowdown also was amplified by a psychosocial factor in the development of MSDs (Anyfantis & Biska, 2018). This can lead to the insecurity of work which can be related in losing a job and low salary income. In addition, a European study; the researchers found that job insecurity associated with specified ill-health which is muscular pain and backache due to the low level of employment protection (Green, 2015).

Job satisfaction was positively correlated as very weak for ankles ($r=0.037$, $p=0.03$) and wrist or hands ($r=0.174$, $p=0.037$) followed by a weak strength of association for elbow ($r=0.211$, $p=0.011$). Positive correlation in this study shows that when job satisfaction is reduced, the musculoskeletal discomfort is increased. A recent study shows an association between job satisfaction and MSDs focusing on the work environment where it worsens the situation and creates potential dangers such as insufficient workspace and slippery floors (Anyfantis & Biska, 2018; Baek et al., 2018; Decker, 2018; Green, 2015; Lee et al., 2011; Lima & Coelho, 2018; Maakip et al., 2015, 2016; *Postsecondary Education Administrators*, n.d.). In recent research, job satisfaction was associated (strong correlation) with all region of musculoskeletal pain. It has been added that the support of colleagues and supervisors (social support) plays a positive role in a positive work environment and job satisfaction (Baek et al., 2018). Another study conducted among office workers discussed that the psychosocial factors including satisfaction of job exert an influence on workers' health (musculoskeletal discomfort) and their work performance (Piranveyseh et al., 2016).

Many studies have proven that there has an association between the psychosocial factors and musculoskeletal pain despite the strength of the correlation. In this study, the correlation associated as negative was for influence at work and insecurity at work while social support and job satisfaction factors were positively associated with musculoskeletal pain. Since the factors that being portrayed have a p-value less than 0.05 or 0.01, hence there is sufficient evidence to conclude that, there is a significant relationship between psychosocial factors and musculoskeletal discomfort because the correlation coefficient is significantly different from zero.

CONCLUSION

In conclusion, the highest prevalence of musculoskeletal discomfort was found to be at shoulders for both genders in 12 months prior to completing NMQ and also 'in the last 7 days' segment. The shoulders region recorded the highest prevalence in female and upper back in male for having pain last 12 months preventing to conduct normal activities. The significant psychosocial factors that affected admin officials were insecurity at work and influence at work. The strength of association between psychosocial factors and musculoskeletal discomfort overall known to as weak despite the factors correlated negatively or positively to the musculoskeletal areas of pain. Social support and job satisfaction had a positive correlation with associated musculoskeletal regions. For future studies, the sample size can be increased to provide more accurate mean values and precise estimates. Besides, objective enhancement can be made whereby other causes of musculoskeletal discomfort can be taken into account such as psychological factor, stress between men and women among administrative officials. In order to obtain a precise result, the subjective measurement could be measured on psychosocial stress by using the Perceived Stress Scale (PSS).

ACKNOWLEDGEMENTS

This work is financially supported by Universiti Malaysia Pahang (UMP) Grant RDU190335.

COMPETING INTERESTS

There is no conflict of interest.

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