



# Predictors of musculoskeletal discomfort: A cross-cultural comparison between Malaysian and Australian office workers



Ismail Maakip <sup>a, b, \*</sup>, Tessa Keegel <sup>a, c</sup>, Jodi Oakman <sup>a</sup>

<sup>a</sup> Centre for Ergonomics and Human Factors, School of Psychology and Public Health, La Trobe University, Victoria 3086, Australia

<sup>b</sup> Faculty of Psychology and Education, Universiti Malaysia Sabah, 88400, Kota Kinabalu, Sabah, Malaysia

<sup>c</sup> Monash Centre for Occupational and Environmental Health, School of Public Health and Preventive Medicine, Monash University, Victoria 3800, Australia

## ARTICLE INFO

### Article history:

Received 19 July 2015

Received in revised form

26 October 2016

Accepted 4 November 2016

### Keywords:

Musculoskeletal discomfort

Cross-cultural

Risk factors

Office workers

Malaysia

Australia

## ABSTRACT

Prevalence and predictors associated with musculoskeletal disorders (MSDs) vary considerably between countries. It is plausible that socio-cultural contexts may contribute to these differences. We conducted a cross-sectional survey with 1184 Malaysian and Australian office workers with the aim to examine predictors associated with MSD discomfort. The 6-month period prevalence of self-reported MSD discomfort for Malaysian office workers was 92.8% and 71.2% among Australian workers. In Malaysia, a model regressing level of musculoskeletal discomfort against possible risk factors was significant overall ( $F [6, 370] = 17.35$ ;  $p < 0.001$ ) and explained 22% ( $r = 0.46$ ) of its variance. MSD discomfort was significantly associated with predictors that included gender ( $\beta = 14$ ), physical ( $\beta = 0.38$ ) and psychosocial hazards ( $\beta = -0.10$ ), and work-life balance ( $\beta = -0.13$ ). In Australia, the regression model is also significant ( $F [6, 539] = 16.47$ ;  $p < 0.001$ ) with the model explaining 15.5% ( $r = 0.39$ ) of the variance in MSD discomfort. Predictors such as gender ( $\beta = 0.14$ ), physical ( $\beta = 24$ ) and psychosocial hazards ( $\beta = -0.17$ ), were associated with MSD discomfort in Australian office workers. Predictors associated with MSD discomfort were similar, but their relative importance differed. Work-life balance was significantly associated with increased MSD discomfort for the Malaysian population only. Design and implementation of MSD risk management needs to take into account the work practices and culture of the target population.

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## 1. Introduction

Musculoskeletal disorders (MSDs) are considered to be a major occupational health problem contributing significantly to absenteeism, disability and compensation claims (Bongers et al., 2006; Klussman et al., 2008). The aetiology of MSDs is multifactorial, contributing factors include physical and psychosocial, and personal characteristics (Côté et al., 2008; Eatough et al., 2012; Oakman et al., 2014). The majority of studies related to MSDs have been conducted in developed countries such as Australia, and it is conceivable that contributing factors linked with MSD development might operate differently in developing countries like Malaysia, as a result of sociocultural differences (Bongers et al.,

2006; Volinn, 1997; Punnett and Wegman, 2004). Coggon and colleagues argue that the epidemiology of MSDs cannot be explained by commonly identified hazards and risk factors, but regional differences between countries may provide further insights (Coggon, 2005; Coggon et al., 2013; Farioli et al., 2014). Coggon (2005) and Madan et al. (2008) propose that MSD risk and prevalence are individual characteristics, partially mediated through societal and cultural circumstances. Furthermore, Farioli et al. (2014) and Vargas-Prada et al. (2013) reported the experience of back pain was culturally determined, with psychological and culturally-influenced factors such as health beliefs and expectations contributing significantly to the development and persistence of low back pain. In this paper, the potential contribution of cultural influences on self-reported MSD discomfort is compared between two similar occupational groups in Malaysia and Australia.

MSDs impact individuals differently. Pain behaviours and experiences are moulded and shaped by the soci-cultural context of the society in which individuals live and work (Montes-Sandoval,

\* Corresponding author. Centre for Ergonomics and Human Factors, School of Psychology and Public Health, La Trobe University, Victoria 3086, Australia.

E-mail addresses: [imaakip@students.latrobe.edu.au](mailto:imaakip@students.latrobe.edu.au) (I. Maakip), [T.Keegel@latrobe.edu.au](mailto:T.Keegel@latrobe.edu.au) (T. Keegel), [J.Oakman@latrobe.edu.au](mailto:J.Oakman@latrobe.edu.au) (J. Oakman).

2000). Erez (2010) reported the significant contribution of culture on job design across different cultural settings, arguing that people from different cultures craft their job based on codes or values relevant to their own culture, which influences one's social behaviour – including preferences, actions, and attitudes that affect a worker's approach to the way they perceive and perform work. Furthermore, Erez also suggests that different cultural values might determine whether a certain form of job design is considered more favourable and meaningful in one culture compared to another.

Hofstede, a cultural theorist, suggests a theoretical framework describing various cultural dimensions which operate within workplaces (2001), proposing that organisations are culturally-bounded, with four dimensions accounting for differences between workplace culture in different countries. These cultural dimensions represent distinct ways in which workers of different nationalities cope with workplace inequality, uncertainty, and with relationships between individuals and groups at work. Hofstede nominates 'Power Distance' as one of these cultural dimensions. Power distance refers to the degree of existing and acceptable inequality amongst employees with and without power, for example, the manager and the worker. Another dimension proposed by Hofstede 'Individualism' refers to the strength of connections people have to members of their community. Hofstede's cultural dimensions provide a useful framework to consider differences between Malaysian and Australian workplace cultures. Malaysia is a collective society concerned with maintaining harmonious relationships (has low levels of individualism), and a high level of power distance in which hierarchy in organisations is seen as reflecting inherent inequalities where employees have high levels of respect for elders and people in senior positions (Abdullah, 1992). In comparison, Australia has low power distance and high individualism (Abdullah and Lim, 2001) where employees are expected to be self-reliant and display initiative. Within Australian organisations, communication between managers and employers is informal, direct and participative where both expect to be consulted and information exchange is considered an integral part of the job.

Although culture has been identified as an important factor in the development of MSDs (Coggon, 2005; Coggon et al., 2013; Farioli et al., 2014), few studies have compared the relevance of hazard and risk factors in countries with distinct cultural differences. Madan et al. (2008) explored the impact of cultural factors on musculoskeletal complaints amongst two occupational groups and found prevalence rates of 15% for Indian manual workers and 37% for UK office workers. Madan found the significant difference in prevalence rates, "could not be explained by difference in established physical risk factors or mental health" [p. 1185], proposing that social beliefs about illness and causation were responsible for larger variation between the two countries. Carugno et al. (2012) also found that cultural differences between Brazilian and Italian nurses explained somatization tendency, with psychosocial and cultural characteristics acting as mediators of individual responses to triggering exposures related to MSDs.

To provide further insight into this under developed area MSD discomfort prevalence and risk was examined in a cross-cultural study of musculoskeletal discomfort in Malaysia and Australia amongst public sector office workers. Malaysia and Australia have unique cultures, and comparisons between the two countries can provide insight in to how culture might influence factors that influence self-reported MSD discomfort. To investigate this, the following research questions were posed:

- Is the prevalence rate of self-reported MSD discomfort different between Malaysian and Australian employees?
- Are there differences in predictors associated with self-reported MSD discomfort in each country?

The findings might assist with the development of more targeted strategies to prevent the development of MSDs.

## 2. Methods

### 2.1. Study population

The study population consisted of 1184 public sector office workers in Malaysia and Australia, with 417 Malaysian (response rate: 65.5%) and 767 Australian (response rate: 54.2%) respondents. The majority of participants in both samples were females, with 333 (79.8%) in Malaysia and 559 (72.9%) in Australia.

### 2.2. Study design and data collection

A cross-sectional survey was conducted in two stages; firstly, data were collected in Malaysia where employees were provided with time (between 20 and 30 min) and a room during their normal working hours to complete the survey. Further details regarding data collection are reported elsewhere (Maakip et al., 2015). In Australia; an invitation to participate in a survey was emailed to all employees within an agency of the public sector. Three reminders were sent to employees. The survey collected data on demographics, physical and psychosocial hazards, and MSD discomfort. Each participating organisation in Australia and Malaysia approved the conduct of the study, ethics approval was granted by La Trobe University Human Ethics Committee No. FHEC12/092.

### 2.3. Questionnaire

Questionnaires for both countries were the same, although the Malaysian version had been through an in-depth translation process (Maakip et al., 2015). Demographic information collected included age, gender, and total working hours per week (See Table 1).

**Table 1**  
Characteristics of participating respondents by country.

Characteristics	Malaysia		Australia		Total	
	N	%	n	%	n	%
Gender						
Male	84	20.2	208	27.1	292	24.7
Female	333	79.8	559	72.9	892	75.3
Age (years)						
20-39	340	81.5	187	24.4	527	44.5
40-54	51	12.2	424	55.3	475	40.1
>55	26	6.3	156	20.3	182	15.4
	M = 34.2		M = 45.9		M = 41.8	
	SD = 8.90		SD = 10.37		SD = 11.36	
Work hours per week						
20-39 h	15	3.6	461	60.1	476	40.2
40-54 h	340	81.5	285	37.1	625	52.8
>55 h	62	14.9	7	0.9	69	5.8
Missing	–	–	14	1.9	14	1.2
	M = 45.0		M = 36.7		M = 40.1	
	SD = 7.89		SD = 8.62		SD = 10.71	
Job satisfaction	M = 3.56		M = 3.57		M = 3.57	
	SD = 0.72		SD = 0.91		SD = 0.85	
Work-life balance	M = 3.69		M = 3.55		M = 3.60	
	SD = 0.73		SD = 0.90		SD = 2.89	
Physical hazards	M = 2.55		M = 2.15		M = 2.29	
	SD = 0.55		SD = 0.48		SD = 0.54	
Psychosocial hazards	M = 3.28		M = 3.20		M = 3.23	
	SD = 0.52		SD = 0.67		SD = 0.62	

Note: M = Mean; SD = Standard deviation.

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