

ORIGINAL ARTICLE

Association between Musculoskeletal Pain and Psychological Symptoms among Community-Dwelling Older Adults: A Study of Primary Care Clinic Attendees in Malaysia

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ABSTRACT

Introduction: Acquiring knowledge about the association between musculoskeletal pain and psychological symptoms among Malaysia's multi-ethnic older population could facilitate the development of efficacious preventive and therapeutic strategies for this vulnerable group. Hence, this study aimed to examine the association between musculoskeletal pain, psychological symptoms, and pain interference among community-dwelling older adults in Malaysia. **Methods:** This cross-sectional study recruited 106 community-dwelling older adults attending a primary care clinic in Cheras, Malaysia. Brief Pain Inventory Short-Form (BPI-SF) and General Health Questionnaire-28 (GHQ-28) questionnaires were used to measure musculoskeletal pain characteristics and determine the presence of psychological symptoms, respectively. Logistic regression analyses examined the association between musculoskeletal pain characteristics, psychological symptoms, and pain interference. **Results:** Participants' mean (SD) age was 68.0 (6.3) years, and there was an almost equal gender distribution, with the majority being of the Chinese (64.2%) ethnic group. About 78.3% of older adults experienced musculoskeletal pain disorders, with knees (31.2%), lower back (22.1%), and shoulders (18.2%) being the most commonly affected. Around 53.7% reported pain in multiple body sites, and 47.2% stated that their pain disorders interfered with daily activities. Furthermore, 83.0% had depression symptoms based on the GHQ-28 assessment. The logistic regression analysis indicated that stairs use at home, regular exercise, and pain intensity were significantly associated with pain interference. **Conclusion:** Musculoskeletal pain is prevalent and is associated with psychological symptoms among older adults. Therefore, effective treatment strategies for musculoskeletal issues should be based on a biopsychosocial approach to alleviate the impact on daily activities in older adults.

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INTRODUCTION

Older population in Malaysia is increasing at an alarming rate (1). This trend is expected to continue, with Malaysia potentially becoming an ageing nation by 2030, when older people aged 60 years and over surpass 15.0% of the working population (1). Parallel to this demographic shift, there will be increased in the prevalence and incidence of musculoskeletal pain

disorders among older adults, resulting in impaired mobility, physical disability, and reduced quality of life (2-4). Apart from causing physical impairments and disabilities (5), musculoskeletal pain disorders have also been shown to negatively impact the psychological well-being of older adults (6,7). Cumulatively, these effects pose a significant challenge in the care of older adults, leading to increasing healthcare expenditure and societal burden (8,9).

Musculoskeletal pain was the seventh most common complaint in a primary care setting in Malaysia, comprising almost 6.0% of the reasons for the encounter, with the lower back and knee being the most commonly

affected body sites (10). A systematic review and meta-analysis of 22 studies found that multisite pain disorders among older adults are associated with an increased risk of self-reported falls, hypothesized to be due to mobility limitation, leading to more sedentary behaviour and loss of lower limb muscle strength (11). Moreover, chronic musculoskeletal pain has been shown to cause psychological disturbances, such as depression, social withdrawal, and changes in behaviour (6,7,12).

Although research conducted in other nations and populations has suggested significant associations between musculoskeletal pain and psychological symptoms (2,6,7,13), limited information is available within the context of older adults in Malaysia. For comparison, a recent cross-sectional study by Hasan et al. (2021) reported that musculoskeletal pain significantly impacts functional ability and fear of falling among older individuals in Malaysia (3). However, no significant effect was noted in mental well-being scores (3). Furthermore, most current literature has been conducted in hospitals or tertiary care settings (3,10). It is important to note that there may be differences in the findings of studies in the community compared to hospital settings, as patients referred from hospitals may present with more health issues (9,11,14).

Furthermore, it is acknowledged that prevailing management approaches predominantly address the physical aspects of musculoskeletal pain, potentially neglecting its psychological implications. This oversight serves as a significant aspect of “yellow flags” in treatment outcomes, given the intertwined nature of physical and psychological well-being, demanding a more comprehensive understanding. By emphasizing the importance of a biopsychosocial approach, there is a clear need for holistic management strategies that account for both the physical impairment and psychological dimensions. In light of these considerations, further exploration of the association between musculoskeletal pain disorders and psychological impact among older adults in Malaysia is warranted.

To sum up, musculoskeletal pain disorders is a prevalent issue among older adults in Malaysia, but limited information is available about its psychological impact. It is hypothesized that Malaysia’s diverse and multi-ethnic population adds further complexity to this issue, potentially offering different perspectives. Therefore, in this study, we aimed to examine the association between musculoskeletal pain and psychological symptoms in Malaysian older adults and identify potential risk factors of pain interference. By providing these valuable insights of this association, the study’s findings could help inform evidence-based recommendations, improving the quality of life, and reducing the societal burden of musculoskeletal-related pain in older adults.

MATERIALS AND METHODS

Study Design and Ethical Approval

This cross-sectional study received approval from the Secretariat for Research and Ethics of Universiti Kebangsaan Malaysia (UKM1.21.3/244/NN-2017-097) and the Medical Research Ethics Committee (MREC NMRR-16-2162-33030) in accordance with the Declaration of Helsinki (1975).

Study Settings and Target Population

This study was conducted among community-dwelling older adults who attended a primary care clinic in Cheras, Malaysia, from September to November 2017. Simple convenience sampling was employed to select eligible participants based on the inclusion and exclusion criteria. The target population comprised Malaysian adults aged 60 or above who could ambulate independently, resided in the community, and could comprehend written Malay or English. Individuals with terminal illnesses and cognitive impairments (measured with a score of less than 24 out of 30 on the Mini-Mental State Examination) were excluded (15).

Sample Size Calculation

The minimum sample size of 103 participants was calculated using Cochran’s formula with a 95% confidence level and 5% precision, relying on $p = 0.072$ and $q = 0.928$ (16).

Procedures

A researcher who was not involved in data collection and analysis conducted the participant screening process. All eligible participants received an information sheet and verbal instructions about the research project and signed a consent form. The data collection process was conducted by a researcher who was not involved in data analysis and utilized validated questionnaires. Demographic data were collected from all participants, including age, gender, socioeconomic status, mobility status, and living/home environment. Participants with known cognitive impairment were excluded from the study.

Self-reported questionnaires were utilized to gather information on musculoskeletal pain and psychological symptoms among older adults. The Brief Pain Inventory Short-Form (BPI-SF) and General Health Questionnaire-28 (GHQ-28) served this purpose. The BPI-SF assessed pain severity, location, and interference with daily functions (17). It is widely used in malignancy (18), osteoarthritis, and low back pain conditions (17,19). Pain severity was scored on a 0 to 10 scale, and the mean of seven items measured pain interference (17). The BPI-SF has demonstrated good validity and reliability, showing high internal consistency ranging from 0.80 to 0.93 for pain severity and 0.89 to 0.92 for

interference items (19). Similarly, test-retest reliability was high, with ICC values ranging from 0.83 to 0.93 (19).

Meanwhile, the GHQ-28 is a 28-item self-report measure designed to assess emotional stress. It is divided into four subscales: somatic symptoms (items 1 to 7); anxiety/insomnia (items 8 to 14); social dysfunction (items 15 to 21); and depressive symptoms (items 22 to 28) (20). Participants with total scores of 23 or below are classified as having an absence of distress, while those with scores of 24 and above may be categorized as having a presence of distress (20). For the subscales, participants with scores of six are considered to have a presence of the symptoms (20). The reliability and validity of the GHQ-28 have been evaluated in many clinical populations (20,21). Test-retest reliability has been reported to be high (0.78 to 0.90) (21). Inter-rater and intra-rater reliability are excellent (Cronbach's alpha of 0.90 to 0.95) and demonstrate high internal consistency (21).

Data Analysis

Data was analysed using SPSS version 25.0 (IBM, USA). Descriptive statistics was employed to characterize participants' sociodemographic features, details on musculoskeletal pain, and psychological symptoms. The descriptive findings were reported as frequencies with percentages. Logistic regression analyses was performed to assess the association between sociodemographic characteristics, identified musculoskeletal pain, and psychological symptoms; odds ratios (OR) and confidence intervals were provided to support the relevant findings. All statistical tests were conducted at a significance level of $p < 0.05$.

RESULTS

A total of 132 community-dwelling older adults who attended the Primary Care Clinic Cheras were screened for eligibility from September to November 2017. Out of these, 106 participants (54 males and 52 females) met the inclusion and exclusion criteria and were included in the cross-sectional study. The most common reasons for exclusion were refusal to participate ($n = 11$), the need for dependent ambulation ($n = 9$), and known cognitive impairment ($n = 6$).

Sociodemographic Characteristics

The sociodemographic characteristics of the 106 participants are presented in Table I. The study participants had a mean (SD) age of 68.0 (6.28) years, with an almost equal gender distribution: 50.9% males and 49.1% females. The majority of participants were Chinese (64.2%), followed by Malay (30.2%) and Indian (5.7%) ethnic groups. The demographic characteristics of the participants showed that the majority were married (81.1%), followed by being single (8.5%), and a smaller proportion were divorced or widowed. Most

Table I: Sociodemographic characteristics of the participants (n = 106)

Variables		N (%)
Sex	Male	54 (50.9%)
	Female	52 (49.1%)
Ethnicity	Malay	32 (30.2%)
	Chinese	68 (64.2%)
	Indian	6 (5.7%)
Marital status	Single	9 (8.5%)
	Married	86 (81.1%)
	Widow/widower	11 (10.4%)
Employment status	Unemployed	29 (27.4%)
	Employed	13 (12.3%)
	Retired	64 (60.4%)
Financial status	Aided	48 (45.3%)
	Unaided	58 (54.7%)
Education level	Primary	47 (44.4%)
	Secondary	53 (50.0%)
	Tertiary	6 (5.7%)
Living status	With spouse/family	89 (84.0%)
	Alone	17 (16.0%)
Use of mobility aids	No	93 (87.7%)
	Yes	13 (12.3%)
Physical activity	Active lifestyle	52 (49.1%)
	Sedentary	54 (50.9%)

were retired (60.4%), followed by not working anymore (27.4%), while a smaller percentage were employed or self-employed. Concerning financial status, 45.3% of participants received aid, and 54.7% were unaided. The educational level of the participants was primary (44.4%), secondary (50.0%), and tertiary (5.7%) education. Living arrangements showed that most participants lived with their spouse or family (84.0%), while 16.0% lived alone. The majority of participants walked without mobility aids (87.7%) and used stairs at home (68.9%). In terms of physical activity, 50.9% of participants reported a sedentary lifestyle, while 49.1% reported an active lifestyle.

Musculoskeletal Pain and Psychological Symptoms

Table II presents the findings of musculoskeletal pain and psychological symptoms within the cohort of 106 participants. Based on the Brief Pain Inventory Short-Form questionnaire, 78.3% of participants disclosed the presence of musculoskeletal pain with a mean (SD) pain score of 2.41 (2.35) on a scale of 0 to 10 and a mean (SD) pain duration of 45.67 (63.33) months. Notably, more than half of the participants (53.7%) reported pain in multiple sites, with the knees (31.2%), back (22.1%), and shoulders (18.2%) emerging as the most frequently affected areas (Figure 1). Moreover, a significant proportion (68.9%) noted that their musculoskeletal pain adversely affected their daily activities. The General

Table II: Musculoskeletal pain and psychological symptoms of the participants (n = 106)

Variables	N (%) or mean (SD)	
Brief Pain Inventory Short-Form		
Presence of pain	Yes	83 (78.3%)
	No	23 (21.7%)
Pain score (VAS)	mean (SD)	2.41 (2.4)
Pain duration (months)	mean (SD)	45.67 (63.3)
Number of pain site	1	26 (24.5%)
	2	41 (38.7%)
	≥ 3	16 (15.0%)
Pain interference	Yes	73 (68.9%)
	No	33 (31.1%)
General Health Questionnaire-28		
Overall	Depressed	88 (83.0%)
	Not depressed	18 (17.0%)
Somatic symptoms	Depressed	78 (73.6%)
	Not depressed	28 (26.4%)
Anxiety/insomnia	Depressed	80 (75.5%)
	Not depressed	26 (24.5%)
Social dysfunction	Depressed	31 (29.2%)
	Not depressed	75 (70.8%)
Severe depression	Depressed	99 (93.4%)
	Not depressed	7 (6.6%)

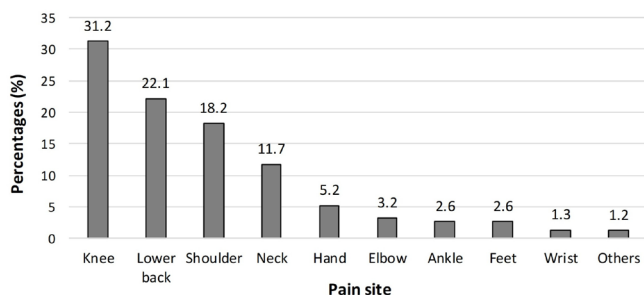


Figure 1: Common body pain sites reported among participants (n = 106).

Health Questionnaire-28 assessment results revealed that approximately 83.0% (n = 88) of respondents exhibited depressive symptoms, with anxiety and insomnia (75.5%) being the most prevalent, followed by somatic symptoms (73.6%) and social dysfunction (29.2%). The percentage of older adults reporting psychological depression (83.0%, n = 88) slightly surpassed those acknowledging musculoskeletal pain (78.3%, n = 83). It is noteworthy that all older adults who reported musculoskeletal pain also demonstrated psychological depression.

Associated Factors of Pain Interference with Daily Activities

A logistic regression analysis examined the association between various factors and pain interference among participants experiencing pain. The model included multiple independent variables such as age, gender, race, religion, marital status, working status, financial

status, living with family, use of walking aids, use of stairs at home, regular exercise, pain intensity, number of pain sites, pain duration, and psychological distress (Table III). The full model, which contained all associated factors, was found to be statistically significant (χ^2 (25, n = 106) = 55.05, p < 0.001), indicating that the model effectively distinguished between participants with and without pain interference. However, only three independent variables made a unique and statistically significant contribution to the model: stair use at home, regular exercise, and pain intensity. Participants who used stairs at home were over ten times more likely to report pain interference (OR = 10.02). Additionally, the odds ratio for pain intensity was 2.40, indicating that participants were twice as likely to report pain interference for every increase in pain intensity. On the other hand, the odds ratio for regular exercise was 0.08, indicating that participants who engaged in regular exercise were less likely to report pain interference.

Table III: Predictive logistic regression analysis of pain interference with daily activities based on selected variables

	Beta (B)	p-value	Odds ratio (OR)	95% CI	
				Lower	Upper
Age	-0.087	0.164	0.917	0.812	1.036
Gender	0.023	0.974	1.023	0.26	4.026
Race	1.579	0.114	4.849	0.685	34.3
Marital status	-2.17	0.193	0.114	0.004	2.985
Working status	-1.833	0.084	0.16	0.02	1.275
Financial status	-0.229	0.772	0.795	0.169	3.745
Staying with family	1.692	0.25	5.429	0.304	96.853
Uses of walking aids	2.238	0.198	9.37	0.31	283.059
Stair use at home	2.305	0.024*	10.02	1.352	74.255
Regular exercises	-2.548	0.015*	0.078	0.01	0.611
Pain intensity	0.874	0.002**	2.395	1.389	4.132
Number of pain site	-1.453	0.078	0.234	0.046	1.177
Pain duration	0.006	0.324	1.006	0.994	1.019
Psychological distress	0.181	0.858	1.199	0.164	8.789

DISCUSSION

We examined the association between musculoskeletal pain and psychological symptoms among community-dwelling older adults attending a primary care health clinic. Our study results showed that, musculoskeletal pain was prevalent and associated with psychological symptoms among older adults. Musculoskeletal pain was found to be highly prevalent among Malaysian community-dwelling older adults, as reported by 78.3% of participants. Over half of them reported pain in more than one area, particularly in the knee, back, and shoulders. This observation is consistent with previous studies among the Malaysian population (3,10), where weight-bearing joints involved in daily activities, such as the knee joints, may experience greater degradation compared to other joints, especially in

cultures where squatting and floor routines are common tasks (22). Moreover, almost half of the participants reported interference with their daily activities due to musculoskeletal pain, which aligns with previous reports (4,6,11).

Our study's findings also confirmed the presence of psychological symptoms among community-dwelling older adults with musculoskeletal pain disorders, including somatic symptoms, anxiety, insomnia, and depression. These findings are consistent with those of other studies, which have shown an association between depression and musculoskeletal pain (7,12,23,24). The adverse effects of musculoskeletal pain disorders on the psychological well-being of older adults are reported to be multifaceted (2,7). It is found that chronic pain frequently results in reduced physical function, impeding the performance of daily activities (2,7). The consequent loss of independence and heightened dependence on others can trigger feelings of frustration and helplessness (6), leading to a sense of diminished autonomy, especially among older adults (2,7).

Moreover, sustaining mental well-being is contingent on social engagement, and when pain disrupts these interactions, it can result in adverse psychological effects (14). Clearly, the widely accepted biopsychosocial model in pain studies suggests that pain is an intricate interplay of biological, psychological, and social factors (14) with an impact on the quality of life in older adults (7). In fact, increased psychological symptom burdens have been associated with a higher risk of frailty in older adults (12,24). This association can exacerbate pain disorders and contribute to a more sedentary lifestyle, thereby worsening both physical and psychological issues (12). Therefore, adopting interdisciplinary and biopsychosocial approaches, involving primary care physicians and other healthcare professionals such as physiotherapist and clinical psychologist are essential in the management of musculoskeletal pain in older adults. These approaches will allow early screening and effective holistic management of both musculoskeletal related and psychological symptoms in older adults, thereby minimizing further negative outcomes (9).

Our logistic regression analysis revealed significant associations between pain interference with daily activities and the use of stairs at home, pain intensity, and physical activity. Specifically, participants who frequently used stairs at home were over ten times more likely to report pain interference, underscoring the impact of the physical environment on the mobility and pain experienced by older adults. The use of stairs at home was theorized to be highly associated with pain interference in our study, likely due to the increased loading force on the knee joint during ascending and descending stairs compared to walking on level surfaces (25), especially in individuals with pre-existing conditions such as arthritis or joint pain and back pain

(26). However, it is worth noting that regular use of stairs as part of an exercise routine can have positive effects on physical function and psychological well-being (26,27). Therefore, adaptations during stair negotiation or modifications to the living environment may be necessary to promote safe and pain-free movements among older adults (26).

We also found that pain intensity significantly influences pain interference, aligning with findings from previous studies (3,6). Earlier research indicated that severe pain can significantly impact daily activities among older adults, making it challenging to perform even simple tasks such as walking, bathing, or preparing meals (4,6). Moreover, severe and chronic pain is strongly associated with decreased mobility, reduced quality of life, and an increased risk of depression and social isolation (7,11). Therefore, effective pain management strategies are crucial for addressing musculoskeletal related pain among older adults and reducing the interference of pain with daily activities.

There is adequate evidence indicating the positive impact of physical activity and regular exercise on musculoskeletal pain and psychological distress among older individuals (28,29). Similarly, our study findings suggested that regular exercise was less likely to hinder physical participation in older adults with musculoskeletal pain and related psychological symptoms. In contrast, older adults may limit their physical activity to minimize perceived pain disorders or due to fear avoidance beliefs without realizing it is a misconception (23,30). Moreover, older adults with multisite pain disorders may face an elevated risk of falls (5,11) and hence, may restrict their physical activity or exercises to decrease the likelihood of falling (30,31). Regular exercise not only helps reduce pain and improve physical function by strengthening muscles and enhancing joint mobility (28) but also has positive effects on psychological well-being by alleviating symptoms of anxiety and depression, improving mood, and enhancing overall quality of life (24,29). Therefore, promoting physical activity and regular exercise is essential to enhance the physical and psychological health of the older population.

This study contributes to the current understanding of the multidimensional nature of musculoskeletal pain among community-dwelling older adults in Malaysia. Specifically, it sheds light on psychological symptoms that necessitate the integration of the biopsychosocial model of care (6). However, it is important to consider the study's limitations, such as the relatively small sample size, which may reduce the generalizability of the findings (32). Additionally, the reliance on self-reported measures could be subject to recall and response bias (33). Hence, to enhance the generalizability of the findings, future research should use larger samples, consider employing objective measures of pain intensity

and physical activity, and examine the impact of social support and access to healthcare on pain interference.

CONCLUSION

Musculoskeletal pain disorders are prevalent among Malaysian community-dwelling older adults and have a negative effect on their psychological well-being. It has also been found that pain interference with daily activities is associated with, frequent use of stairs at home, higher pain intensity and less regular exercise. These findings emphasize the need for biopsychosocial approach and targeted interventions to reduce pain interference among older adults, focusing on adaptations during stair negotiation, managing pain intensity and promoting regular exercise and physical activity for optimal health and well-being in this population.

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