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Prevalence and Impacts of Musculoskeletal Pain among the Elderly Living in The East Coast Region of Peninsular Malaysia

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Abstract

Background: Musculoskeletal pain commonly affects the elderly, but the extent of this problem within the Malaysian community remains unknown. This study aimed to investigate the prevalence and impact of musculoskeletal pain among the elderly living in the community.
Methods: Elderly individuals aged 60 years and above with musculoskeletal pain and intact cognition were recruited for this study. Musculoskeletal pain was scored using the Nordic Musculoskeletal Questionnaire, and functional ability was assessed via the Lawton Instrumental Activities of Daily Living scale. Mental wellbeing was evaluated using the Short Warwick–Edinburgh Mental Wellbeing scale, and risk of falling was determined via the Short Falls Efficacy Scale – International.
Results: A total of 216 community-dwelling elderly individuals participated in this research. Knee pain was the most common pain type experienced by the participants in the past 12 months (58.8%) and 7 days (28.8%). This type of pain was also the most common reason cited by the elderly for their difficulty in working. Age, gender, and body mass index were not significant predictors of musculoskeletal pain in the elderly ($p > 0.05$).
Conclusions: Musculoskeletal pain significantly impacts the functional ability and fear of falling of elderly individuals in the east-coast region of Malaysia. Mental wellbeing scores indicated a decreasing trend, but no significant difference was noted.

Keywords: community, elderly, impact, musculoskeletal pain, prevalence

INTRODUCTION

The elderly population is expected to triple and account for over 20% of the world's population by the year 2050.[1] The number of elderly individuals in Malaysia has slowly but steadily increased since the 1970s.[2] While the longevity of the elderly has increased because of improved healthcare, age-related diseases continue to persist in this population. Experts estimate that Malaysia may be considered an aging nation by 2030 if 15% of the total population is made up of elderly individuals.[3] The physiological processes of elderly individuals include reduced body functions and structural changes, which can cause pain.[4] Musculoskeletal pain affects the physical functions of the elderly, causing them to lose their independence and require assistance to perform basic activities or self-care. The back and joints are the most common sites of chronic musculoskeletal pain associated with injury, a high risk of falling, sleeping disorders, depression, and reduced health-related quality of life.[5,6]

Therefore, healthcare professionals must develop improved pain management and intervention options to provide effective treatment to the elderly. Musculoskeletal disorders contribute to long-term disability and cause extreme pain among the elderly worldwide.[5,7] Decreased functions may exacerbate social isolation and contribute to depression and suffering.[5] Musculoskeletal pain due to osteoarthritis, rheumatoid arthritis, gouty arthritis, cancer, and osteoporosis can lead to impaired mobility, self-care deficits, and increased risk of falls.[8] The present study is important because the number of elderly individuals in Malaysia has gradually increased over the years and many of them experience musculoskeletal pain. Pain is among the factors that can cause disability and adverse effects on health, such as reduced physical activity, mobility limitations, frailty, depression, cognitive impairment, high risk of falls, and sleep disturbances. The combination of musculoskeletal pain with other pain conditions is commonly experienced by the elderly, and the number of pain sites is a contributing factor to the level of disability experienced.[5] Hence, musculoskeletal pain negatively affects the elderly by interfering with the latter's daily activities. The present study was conducted to examine the associated factors and consequences of musculoskeletal pain among elderly individuals. Specifically, we aimed to determine the

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prevalence of musculoskeletal pain in the elderly, identify the association between sociodemographic factors and musculoskeletal pain, and examine the relationship between musculoskeletal pain and its effect on the elderly living in the community. We hypothesized that higher musculoskeletal pain would result in greater functional limitations, negatively affect mental wellbeing, and increase the risk of falling among the elderly.

METHODS

A cross-sectional study was conducted between February 2020 and July 2020 with approval from the Kulliyyah of the Nursing Research Committee (IIUM/313/G/14/3/1) and the IIUM Research Ethics Committee (IIUM/504/14/11/2/IREC2020-KON). Consent was obtained from the participants prior to their enrolment in this study, and all participants were assured that their identity would be kept confidential and that their responses would be reported anonymously. We applied convenience sampling to select eligible participants living in the community of the east-coast region of Peninsular Malaysia. The participants were approached through several visits made to various community centers early in February. After the Malaysian government announced its movement control order in early March, the participants were identified through social media and the WhatsApp groups of family members. A Google form was created and distributed to all participants. The participants were included if they were Malaysian, aged 60 years and above, and experienced musculoskeletal pain in at least location specified in this study. The participants were excluded if they had severe hearing and sight impairments, had neurological diseases or cognitive impairments, were terminally ill, or had a recent self-reported history of stroke or cognitive impairment.

The sample size was calculated using the Open Source Epidemiologic Statistics sample size calculator.[9] The required sample size was calculated to be 380 out of a total of 28,803 potential participants, assuming that musculoskeletal pain occurs in up to 50% of the elderly with a confidence interval and margin of error of 5%. However, given the movement control order implemented by the government, only 216 participants, 93 of whom were recruited before the order, consented to this study and were considered in the analysis.

Participants who consented to participate in this study were asked to complete a set of self-administered questionnaires, assisted by their family members if they experienced difficulty in reading. The questionnaire was written in Bahasa Malaysia and consisted of five components, namely, (i) demographic and medical information, (ii) musculoskeletal pain, (iii) functional limitation, (iv) mental wellbeing, and (v) risk of falling.

In part one, background information, including age (years), gender, ethnicity, weight, height, hometown, educational level, current and previous occupation, marital status, and living companions were collected. In part two, participants were asked whether they experienced musculoskeletal pain over the past week and past year in nine body areas, including the neck, shoulders, elbows, wrists or hands, upper back, lower back, hips or thighs, knees, and ankles or feet. The affected musculoskeletal area was assessed using the Nordic Musculoskeletal Questionnaire with dichotomous (i.e., Yes or No) questions.[10] The condition of three main body areas, namely, the neck, shoulders, and lower back, was evaluated via questions related to the participant's hospitalization history, duration of pain, working difficulty, and treatments applied to pain-affected areas. Part three of the questionnaire consisted of eight dichotomous (i.e., Yes or No) questions seeking to determine the participant's ability to use a telephone, go shopping, prepare food, perform housekeeping activities, wash laundry, take some form of transportation, self-administer medications, and handle finances by using the Lawton Instrumental Activities of Daily Living Scale.[11,12] Part four of the questionnaire probed the mental wellbeing of the participant using the Short Warwick–Edinburgh Mental Wellbeing Scale.[13,14] Part five assessed the risk of falling by using the Short Falls Efficacy Scale – International (FES-I).[15,16]

Data were analyzed using SPSS version 22. Continuous data were assessed for normality by using histogram plots, and skewness and kurtosis were calculated to ensure normal ranges. Independent *t*-test and one-way ANOVA were used to compare categorical and continuous variables, between gender and musculoskeletal pain score; and body mass index (BMI) with the musculoskeletal pain score. The relationship between age and musculoskeletal pain score (dependent variable) was assessed using Pearson's product-moment correlation coefficient (Pearson's *r*). The relationships between functional limitation, mental wellbeing, and risk of falling (dependent) and musculoskeletal pain score were also assessed using Pearson's correlation coefficient. A *p* <0.05 was considered significant in all analyses.

RESULTS

Table 1 shows the descriptive statistic of the 216 elderly participants in this study. The participants ranged in age from 60 years to 86 years (average, 65.6 ± 5.9 years). A total of 142 participants were female (65.7%), and 74 were male (34.3%). Most of the participants were of Malay descent (n = 208/216, 96.7%), and 68.1% (n = 147) were married. The mean BMI of the participants was 25.8 ± 4.8 kg/m^2. The self-reported musculoskeletal pain scores generally indicated mild pain, with a mean of 2.77 ± 1.95. Table 2 lists the most common sites of pain experienced by the participants in the past 12 months. Pain in the last

year was most often experienced in the knee (n = 127/216, 58.8%), lower back (n = 1 10/216, 50.9%), and shoulder (n = 104/216, 48.2%). Knee pain was also the most common type of pain experienced in the last 7 days (28.8%) and the most common cause of difficulty in working (14.9%) among the elderly.

Table 3 shows the factors associated with musculoskeletal pain among the elderly. Demographic factors were not significantly related with musculoskeletal pain in elderly individuals. The correlation between age and musculoskeletal pain score was weakly positive (r = 0.057, *p* = 0.407). The mean musculoskeletal pain scores between males and females did not show a statistically significant difference (*p* = 0.618, 95% CI −0.414, 0.694). One-way ANOVA indicated that mean musculoskeletal pain scores and BMI are not significantly related (*p* = 0.371, F=0.995 [2, 203]).

TABLE 1. Respondents' sociodemographic data (N=216)

Variables	Mean (SD)	Frequency (N)	Percentage (%)
Age	65.64 (5.9)		
Gender			
Male		74	34.3
Female		142	65.7
Race			
Malay		208	96.7
Chinese		3	1.4
Indian		1	0.5
Others		3	1.4
Marital Status			
Single		5	2.3
Married		147	68.1
Divorced		5	2.3
Widow/ widower/ widowed		59	27.3
Body Mass Index (BMI)	25.8 (4.8)		
Underweight		7	3.4
Normal		89	42.8
Overweight/ Obese		112	53.8
Musculoskeletal Pain Score	2.77 (1.95)		
No pain (Score 0)		26	12.3
Mild pain (Score 1–3)		111	52.4
Moderate pain (Score 4–6)		69	32.5
Severe pain (Score 7–10)		6	2.8

Table 4 reveals that musculoskeletal pain scores are strongly related to functional limitations and risk of falling among elderly individuals. Moreover, musculoskeletal pain showed a negative correlation with mental wellbeing.

TABLE 2. Prevalence of musculoskeletal pain in the last 12 months and last 7 days and difficulty working in the last 12 months

Areas of musculoskeletal pain affected	Prevalence in last 12 months N (%)	Prevalence in last 7 days N (%)	Difficulty working in last 12 months N (%)
Neck	66 (30.6)	20 (9.3)	10 (4.6)
Shoulder	104 (48.2)	29 (13.5)	25 (11.6)
Elbow	27 (12.5)	9 (4.2)	3 (1.4)
Wrist	71 (32.8)	20 (9.3)	15 (6.9)
Upper back	99 (45.8)	37 (17.1)	21 (9.7)
Lower back	110 (50.9)	45 (20.8)	24 (11.1)
Hips	79 (36.6)	30 (14.0)	14 (6.5)
Knees	127 (58.8)	62 (28.8)	32 (14.9)
Ankles	85 (39.4)	36 (16.7)	24 (11.1)

TABLE 3. Factors associated with musculoskeletal pain among the elderly

Variables	N	Musculoskeletal Pain Score	
		Mean (SD)	*p*
Age	216	65.64 (5.91)	0.407[a] (r=0.057)
Gender			0.618[b]
Male	74	2.86 (1.77)	
Female	142	2.72 (2.04)	
BMI		25.8 (4.8)	0.371[c]
Underweight	7	2.00 (1.16)	
Normal	86	2.66 (1.90)	
Overweight/ Obese	111	2.92 (2.02)	

[a]Pearson correlation
[b]Independent t-test
[c]One-Way ANOVA test

TABLE 4. Musculoskeletal pain and its impacts among the elderly

Variables	Musculoskeletal Pain Score	
	r-value[a]	*p*
Lawton IADL Total Score (1-8)	-0.195	0.004*
SWEMWBS Total Score (7-35)	-0.128	0.064
FES-I Total Score (7-28)	0.232	0.001*

[a]Pearson correlation
*Significant at 0.05 level

DISCUSSION

Our results indicate that approximately half of the elderly who participated in this study were either overweight or obese; these conditions are known to influence many diseases. Compared with other musculoskeletal areas, the knee is reported to be the most prevalent location of pain.[17,18] Besides the knee, the lower back, ankle, and upper back are the most common sites of pain affecting the daily activities of the elderly.[1,19]

Our findings are consistent with previous studies indicating that age does not affect the severity of musculoskeletal pain.[18,20,21] The older people do not have severe musculoskeletal pain because they are physically active, have no underlying disease, and seek early care. However, an earlier study showed that more elderly individuals aged over 75 years experience joint pain, joint stiffness, and swelling compared with those aged between 55 and 64 years.[22]

Gender was not a significant predictor of musculoskeletal in the elderly. This finding indicates that the gender gap does not affect the elderly population with musculoskeletal pain but may affect the development of musculoskeletal disorders. For example, osteoporosis is more common among older women than among older men.[8,23] However, a few authors have shown that females are more likely to experience upper extremity and back symptoms, but not lower extremity symptoms, than males.[24–26]

Our findings indicated no significant difference in mean musculoskeletal pain scores among the BMI groups, which means weight does not affect the magnitude of musculoskeletal pain. However, high mean body fat percentages and increasing BMIs have been observed to have important implications in foot pain.[27–29]

Musculoskeletal pain scores were significantly associated with functional ability. Thus, increased musculoskeletal pain scores could indicate decreased functional ability in the elderly. Elderly individuals with moderate pain showed a significantly higher risk of functional limitations compared with those without pain, and those with more severe pain revealed higher risk compared with other groups.[21,30,31] Meanwhile, persons with mild pain were not associated with functional disability. Elderly individuals who experience musculoskeletal pain often limit their movement to minimize experiencing severe pain, which impairs their ability to perform activities of daily living.

The present study demonstrated that musculoskeletal pain does not significantly affect the mental wellbeing of the elderly. However, generalized pain and back pain have been reported to be significant factors contributing to depression and reducing the health and quality of life among the elderly in South Africa and Uganda.[18] The elderly must accept that their health conditions may deteriorate over time because of aging, although further progression can be prevented.

The elderly reported a higher risk of falling and, therefore, greater concern in performing daily activities, as musculoskeletal pain scores increased. A significant association between chronic musculoskeletal pain and history of falls has been observed in the elderly.[20] Specifically, individuals with chronic musculoskeletal pain were more likely to report avoiding activities because of a fear of falling than those without chronic musculoskeletal pain. FES-I scores also revealed that elderly individuals with foot problems have significantly greater concerns about falling than those without these problems.[27]

A strength of this study is that the respondents were drawn from a representative sample population. This study also provides supporting evidence of the significant impact of musculoskeletal pain among the elderly, particularly in terms of their daily life activities. However, this study also presents several limitations that must be considered when interpreting the results. First, the sample size between genders and races was not equal. We did not achieve a response rate of 70% because of the movement control order of the government. Thus, comparisons of the elderly in terms of gender and age may not be significant or accurate. BMIs and musculoskeletal pain scores were self-reported and, thus, may include some bias. Finally, because all Malaysians were ordered to stay at home, the negative effects of such confinement may exert additional impacts on the mental wellbeing of the elderly.

CONCLUSIONS

In conclusion, musculoskeletal pain significantly impacts the functions and increases the risk of falling of elderly individuals living in the community of the east-coast region of Peninsular Malaysia. Mental wellbeing scores indicated a decreasing trend, but no significant differences were noted. Musculoskeletal pain management and prevention strategies should be developed to promote good musculoskeletal care. Minor modifications to their musculoskeletal condition could help the elderly avoid the negative impacts of musculoskeletal pain, including impaired functions, poor mental wellbeing, and increased risk of falling.

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