

Barriers to participation in physical activity and exercise among middle-aged and elderly individuals

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INTRODUCTION Although the benefits of physical activity and exercise are widely acknowledged, many middle-aged and elderly individuals remain sedentary. This cross-sectional study aimed to identify the external and internal barriers to physical activity and exercise participation among middle-aged and elderly individuals, as well as identify any differences in these barriers between the two groups.

METHODS Recruited individuals were categorised into either the middle-aged (age 45–59 years, n = 60) or elderly (age ≥ 60 years, n = 60) group. Data on demographics, anthropometry, as well as external and internal barriers to participation in physical activity and exercise were collected.

RESULTS Analysis showed no significant differences in the total scores of all internal barriers between the two groups ($p > 0.05$). The total scores for most external barriers between the two groups also showed no significant differences ($p > 0.05$); only 'cost' ($p = 0.045$) and 'exercise interferes with social/family activities' ($p = 0.011$) showed significant differences. The most common external barriers among the middle-aged and elderly respondents were 'not enough time' (46.7% vs. 48.4%), 'no one to exercise with' (40.0% vs. 28.3%) and 'lack of facilities' (33.4% vs. 35.0%). The most common internal barriers for middle-aged respondents were 'too tired' (48.3%), 'already active enough' (38.3%), 'do not know how to do it' (36.7%) and 'too lazy' (36.7%), while those for elderly respondents were 'too tired' (51.7%), 'lack of motivation' (38.4%) and 'already active enough' (38.4%).

CONCLUSION Middle-aged and elderly respondents presented with similar external and internal barriers to physical activity and exercise participation. These factors should be taken into account when healthcare policies are being designed and when interventions such as the provision of facilities to promote physical activity and exercise among older people are being considered.

Keywords: barrier, elderly, exercise, middle-aged, physical activity

INTRODUCTION

Regular participation in physical activity and exercise has been shown to be beneficial for various physiological systems, and in improving the quality of life of adults.⁽¹⁻³⁾ It is recommended that the adult population performs an average of 30 mins of moderate-intensity activities on most days of the week in order to maintain health and prevent chronic illnesses.⁽⁴⁾ For senior citizens, it is recommended that individuals perform moderate physical activity at an average of 3–6 metabolic equivalents of task (METs; which is equivalent to brisk walking at a speed of 3–4 miles/hr).⁽⁵⁾ Despite such recommendations, many adults, especially middle-aged and elderly individuals, prefer to remain sedentary. Research conducted by the Center for Disease Control and Prevention, United States, in 1996 revealed that more than 60% of the adult population did not participate in physical activity and 25% was sedentary.⁽⁶⁾ Similarly, a study from Hong Kong reported that one-fifth of the registered deaths among people aged ≥ 35 years in the country were associated with low levels of physical activity.⁽⁷⁾

Many studies have indicated that an awareness of the importance of physical activity could be attributed to external and internal barriers.⁽⁸⁻¹¹⁾ External barriers refer to factors

beyond an individual's control, whereas internal barriers are factors determined by an individual's personal decision.⁽¹²⁾ The Health Belief Model (HBM) seems to be the most commonly used tool to identify these barriers, and to explain and predict health behaviours in relation to health promotion.⁽¹³⁾ It focuses on how an individual's perception of risks and benefits can influence the likelihood of behaviour change for the protection of his or her health.⁽¹⁴⁾ In the present study, we used HBM to understand and predict how respondents would behave with regard to participation in physical activity and exercise. The lack of involvement in physical activity has been linked to several domains including health status (e.g. chronic health problem and pain),⁽¹⁵⁾ environmental factors (e.g. accessibility to exercise facilities^(3,16,17) and neighbourhood safety⁽¹⁸⁾), psychological issues (e.g. self-commitment^(9,19)), negative perception of exercise outcome^(3,20) and demographic background (e.g. education level⁽¹⁹⁾ and age group⁽²¹⁾). Conn et al⁽²²⁾ indicated that age-related behavioural changes may influence exercise self-efficacy and expectation for exercise. They also found that elderly individuals tended to have lower self-efficacy because they believed that their physical ability had deteriorated with age.⁽²²⁾

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Currently, Malaysia faces the challenge of an increasingly ageing population. The percentage of elderly Malaysians has been projected to increase from 6.3% in 2000 to 12.0% (or 4.9 million individuals) by 2030.⁽²³⁾ It is therefore crucial that healthcare practitioners in Malaysia understand the challenges and issues pertinent to an ageing population, in order to make possible the formulation of appropriate exercise strategies for elderly individuals and the facilitation of the effective management of these strategies. The purpose of the present study was to identify the external and internal barriers to participation in physical activity and exercise among middle-aged (age 45–59 years) and elderly (age \geq 60 years) individuals in Malaysia, as well as identify any differences in the barriers between the two groups.

METHODS

This was a cross-sectional study conducted between November 2010 and April 2011. This study recruited a convenience sample from a selected village in Kuang, Selangor, Malaysia. The village was chosen as it had basic facilities such as a community health clinic, a post office, a community hall and schools. Furthermore, exchanges with the village head revealed that there were nearly 300 elderly individuals residing in the village. The study protocol was approved by the Research Ethic Committee of the Faculty of Health Sciences, Universiti Teknologi MARA (UiTM), Malaysia.

The criteria for inclusion in the study were an age of \geq 45 years, no cognitive impairment (based on the Mini Mental State Examination⁽²⁴⁾), independence in activities of daily living and residence in the selected village. The exclusion criteria adopted were unstable medical condition at the time of study and lack of interest. All respondents gave their consent and completed the study questionnaire that covered demographic information, health status, and involvement in physical activity and exercises. Anthropometric measurements such as weight and height were taken using a portable stadiometer (Seca 708 1314004; Vokel & Halke GmbH & Co, Hamburg, Germany). The Barriers in Physical Activity and Exercise Participation (BPEP) questionnaire was used to identify the major external and internal barriers among respondents.⁽²⁵⁾ The original questionnaire, consisting of 45 questions, was developed based on HBM because its scale was shown to have good internal consistency, with a reported Cronbach's alpha coefficient of > 0.60 .⁽²⁶⁾ Item responses in the BPEP questionnaire were structured and evaluated in a Likert scale format, i.e. scales used to interpret responses to statements were given scores ranging from 5 (strongly agree) to 1 (strongly disagree). Lower scores indicated negative belief, while higher scores indicated positive belief.

The original English version of the BPEP questionnaire was translated into Bahasa Malaysia according to international guidelines.⁽²⁵⁾ The final Bahasa Malaysia version of the questionnaire consisted of 22 items on the various barrier

Table I. Demographic and anthropometric characteristics of the study population (n = 120).

Variable	No. of respondents (%)	
	Middle-aged (n = 60)	Elderly (n = 60)
Age* (yrs)	51.70 \pm 4.15	67.82 \pm 6.62
Gender		
Male	19 (31.7)	23 (38.3)
Female	41 (68.3)	37 (61.7)
Marital status		
Married	56 (93.3)	37 (61.7)
Divorced or separated	1 (1.7)	1 (1.7)
Widowed	3 (5.0)	22 (36.7)
Education level		
None	6 (10.0)	9 (15.0)
Primary	17 (28.3)	30 (50.0)
Secondary	29 (48.3)	16 (26.7)
Tertiary	8 (13.3)	5 (8.3)
Occupation		
Unemployed	1 (1.7)	9 (15.0)
Housewife	36 (60.0)	26 (43.3)
Non-technical	12 (20.0)	4 (6.7)
Technical	3 (5.0)	5 (8.3)
Retired	1 (1.7)	13 (21.7)
Other	7 (11.7)	3 (5.0)
Participation in exercise		
Yes	28 (46.7)	19 (31.7)
No	32 (53.3)	41 (68.3)
Anthropometric measurements*		
Body weight (kg)	65.93 \pm 15.79	63.13 \pm 11.71
Height (m)	1.60 \pm 0.10	1.62 \pm 0.07
Body mass index (kg/m ²)	25.39 \pm 5.18	23.87 \pm 3.68

*Data is presented as mean \pm standard deviation.

domains. The reliability of the Bahasa Malaysia version of the questionnaire was demonstrated using internal consistency and test-retest analyses, in which 79 healthy adults (aged 45–65 years) not involved in the actual study were asked to complete the questionnaire twice within an interval of two weeks. Each question was analysed separately. The Bahasa Malaysia BPEP questionnaire was found to have excellent internal consistency (Cronbach's alpha = 0.92) and good test-retest correlations (range 0.74–0.95). There were no significant differences in the total scores of the various barriers between the first and second tests.

Data was analysed using the Statistical Package for the Social Sciences for Windows version 16.0 (SPSS Inc, Chicago, IL, USA). Analysis consisted of descriptive statistics to express the results in terms of frequency, percentage and mean \pm standard deviation. Independent *t*-test was used to measure the differences in the means of each item, and the total scores for the external and internal barriers. The significance level was set at 0.05. The assumption of equality of variance and normality was determined using Levene's and Shapiro-Wilk tests, respectively.

RESULTS

A total of 120 respondents (60 middle-aged, 60 elderly) participated in the study. Table I shows the demographic and

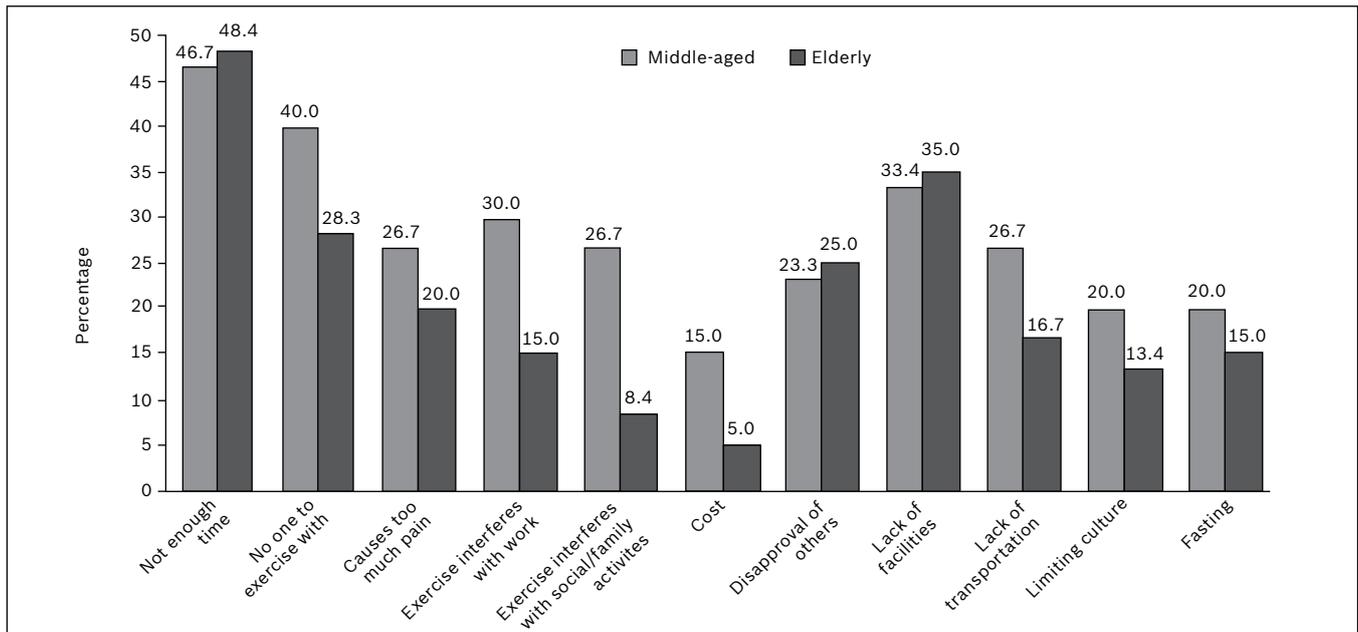


Fig. 1 Graph shows the external barriers to participation in physical activity among middle-aged (n = 60) and elderly (n = 60) respondents.

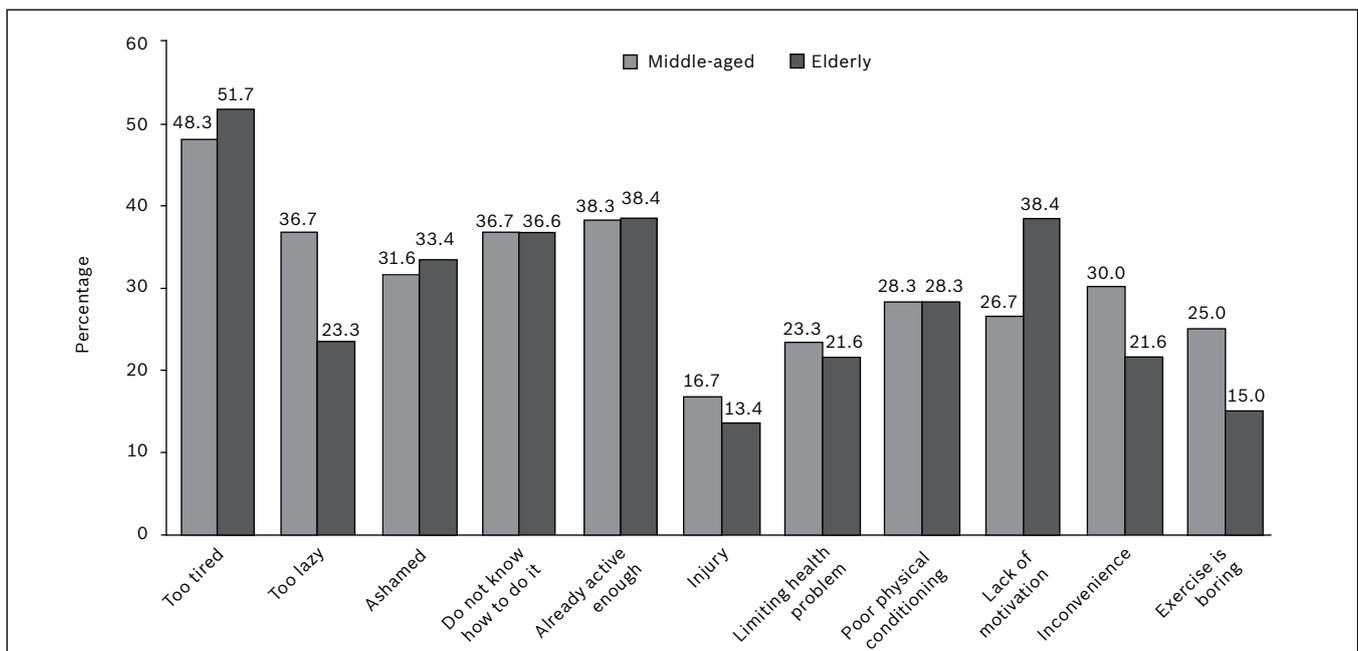


Fig. 2 Graph shows internal barriers to participation in physical activity among middle-aged (n = 60) and elderly (n = 60) respondents.

anthropometric characteristics of the respondents. The mean age of the middle-aged respondents was 51.70 ± 4.15 years, while that of the elderly respondents was 67.82 ± 6.62 years. The majority of both the middle-aged and elderly respondents were women (68.3% and 61.7%, respectively). All respondents were Malay. This was not unexpected since the majority of the residents in the Kuang district was of Malay ethnicity. A majority of the middle-aged (93.3%) and elderly (61.7%) respondents were married. Most middle-aged (48.3%) respondents had a secondary school education, while a majority of the elderly respondents (50.0%) had a primary school education. Most middle-aged (60.0%) and elderly (43.3%) respondents were housewives – a finding reflecting the fact that the majority of respondents in both groups were

women. With regard to participation in exercise, only 46.7% of the middle-aged respondents and 31.7% of the elderly respondents participated in regular exercise at the time of study. The mean body mass index of middle-aged respondents was 25.39 ± 5.18 kg/m², while that of the elderly respondents was 23.87 ± 3.68 kg/m².

Fig. 1 shows the breakdown of responses regarding external barriers to participation in physical activity and exercise among the middle-aged and elderly respondents. Combining the ‘agree’ and ‘strongly agree’ response categories, the three most common external barriers to participation in physical activity and exercise among middle-aged respondents were found to be ‘not enough time’ (46.7%), ‘no one to exercise with’ (40.0%) and ‘lack of facilities’ (33.4%). Meanwhile,

Table II. Comparison of the means of external and internal barriers between middle-aged and elderly respondents (n = 120).

Barrier	Mean \pm SD		p-value
	Middle-aged respondents (n = 60)	Elderly respondents (n = 60)	
External			
Not enough time	3.12 \pm 1.24	3.32 \pm 1.23	0.376
No one to exercise with	3.03 \pm 1.12	2.80 \pm 1.18	0.268
Causes too much pain	2.90 \pm 1.10	2.57 \pm 1.14	0.106
Exercise interferes with work	2.77 \pm 1.02	2.47 \pm 0.99	0.103
Exercise interferes with social/family activities	2.70 \pm 1.01	2.25 \pm 0.90	0.011*
Cost	2.60 \pm 1.03	2.25 \pm 0.86	0.045*
Disapproval of others	2.43 \pm 1.27	2.17 \pm 1.11	0.222
Lack of facilities	2.92 \pm 1.08	2.93 \pm 1.06	0.932
Lack of transportation	2.67 \pm 1.12	2.55 \pm 1.02	0.550
Limiting culture	2.72 \pm 1.03	2.52 \pm 1.0	0.282
Fasting	2.68 \pm 0.91	2.50 \pm 0.81	0.247
Sum of scores	30.53 \pm 6.89	28.32 \pm 5.90	0.061
Internal			
Too tired	3.12 \pm 3.12	3.27 \pm 1.22	0.507
Too lazy	2.92 \pm 2.92	2.83 \pm 1.20	0.720
Ashamed	2.82 \pm 2.82	2.92 \pm 1.11	0.613
Do not know how to do it	2.92 \pm 2.92	2.95 \pm 1.16	0.873
Already active enough	2.95 \pm 2.95	3.05 \pm 1.27	0.667
Injury	2.52 \pm 2.52	2.28 \pm 0.99	0.228
Limiting health problem	2.67 \pm 2.67	2.53 \pm 1.20	0.537
Poor physical conditioning	2.63 \pm 2.63	2.60 \pm 1.28	0.879
Lack of motivation	2.80 \pm 2.80	3.00 \pm 1.18	0.323
Inconvenience	2.85 \pm 2.85	2.77 \pm 0.89	0.622
Exercise is boring	2.70 \pm 2.70	2.52 \pm 0.95	0.325
Sum of scores	30.88 \pm 7.58	30.72 \pm 6.63	0.898

*p < 0.05. SD: standard deviation

'not enough time' (48.4%), 'lack of facilities' (35.0%), and 'no one to exercise with' (28.3%) were also found to be the three most common barriers to participation in physical activity and exercise among elderly respondents. The breakdown of the responses regarding internal barriers to participation in physical activity and exercise are shown in Fig. 2. The most common internal barriers among middle-aged respondents were 'too tired' (48.3%), 'already active enough' (38.3%), 'do not know how to do it' (36.7%) and 'too lazy' (36.7%). The most common internal barriers among elderly respondents were 'too tired' (51.7%), 'lack of motivation' (38.4%) and 'already active enough' (38.4%).

Table II shows the results of the independent *t*-test comparing the means of the external and internal barriers between middle-aged and elderly respondents. There was no significant difference between the middle-aged and elderly respondents for most of the external, and all the internal, barriers tested. However, significant differences were found between the middle-aged and elderly respondents for the following external barriers: 'cost' ($p = 0.045$) and 'exercise interferes with social/family activities' ($p = 0.011$).

DISCUSSION

To gain a better understanding of the issues associated with the physical inactivity and low levels of exercise generally observed in the adult population, this study aimed to identify the external and internal barriers to participation in physical activity and exercise among the middle-aged and elderly individuals in

a community. We also sought to establish whether differences existed between the two groups with respect to these barriers. The results of our study show that there were no significant differences in the total scores of the external and internal barriers between the two age groups. However, significant differences between the middle-aged and elderly respondents were found for the following individual external barrier items: 'cost' ($p = 0.045$) and 'exercise interferes with social/family activities' ($p = 0.011$). In 2006, a survey conducted by Schuler et al on the barriers and motivations to exercise among older African-American and European-American women highlighted significant differences between these two populations with respect to the perception that exercise is too expensive.⁽¹⁸⁾ However, as the number of participants from the two ethnic groups was small in the survey (1 African-American, 5 European-Americans), the difference found was not statistically significant.

It is interesting to note that the middle-aged respondents in our study had higher means for both external and internal barriers (30.53 and 30.88, respectively) when compared to the elderly respondents. This could be because the middle-aged respondents believed that their routines already provided them with the required exercise. Routine activities cited included charity work and social interaction such as 'Marhaban', which is a religious activity that involves house-to-house carolling for the purpose of reciting prayers and praises.⁽²⁷⁾ These activities were still widely practised in the village chosen for our study.

In our study, 'not having enough time' was found to be a major external barrier for participation in physical activity and exercise in both age groups. This may be explained in part by the general opinion harboured by the participants that exercise is time-consuming. This finding was also observed in Pham et al's study,⁽¹⁹⁾ which found that the three most crucial barriers among Chinese women aged 30–59 years were insufficient time, inadequate skill and resource, and lack of support from family or friends. In another recent study, Schutzer and Graves similarly reported lack of time as an important barrier in 17 inactive older adults aged 50–75 years, who rated exercise as the lowest priority in their life.⁽²⁸⁾ These findings are indicative of the generally low importance given to exercise by elderly populations; some responses even suggested that they view exercise to be a waste of time. Thus, there may be a need for healthcare providers to organise campaigns and educational programmes that promote exercise in individuals from this age group, so that participation in exercise and long-term adherence are encouraged. Tips on how to achieve effective time management would also help this group of individuals reduce overlaps with sedentary activities and promote participation in exercise.

According to a review by Schutzer and Graves,⁽²⁸⁾ older adults who were inactive were found to be living a considerable distance away from recreational centres, sidewalks, parks or other fitness facilities that could motivate engagement in exercise such as walking. Lack of facilities was also found to be an important barrier to participation in physical activity and exercise in our study. As our survey was conducted in a small village from an underdeveloped area, fitness facilities were not available around the study location. Governments play an important role in providing subsidies or funds for the development of healthcare facilities (e.g. wellness centres and walking tracks) that will afford greater opportunities for lifestyle modification.

Both groups of respondents in our study indicated that having 'no one to exercise with' was one of the barriers to active participation in exercise and physical activity. Generally, the elderly prefer to spend their time at home (e.g. playing with grandchildren) rather than participate in physical activity and exercise with friends of the same age. Both middle-aged and elderly individuals, especially women, usually prefer to perform routine activities such as gardening and household chores. Previous reviews have shown that adult populations have poor awareness of the beneficial effects of exercise in disease prevention due to a lack of knowledge and low education levels.⁽²⁹⁾ Given the higher levels of inactivity observed among our respondents and the fact that physical inactivity could lead to serious health problems, proper guidance should be provided to encourage these individuals to set their own exercise goals. Enjoyable and convenient exercise programmes should also be designed to appeal to more inactive people and encourage them to adhere to recommended exercise regimes.

Where internal barriers were concerned, we found tiredness to be an important impediment to exercise participation in both groups. This finding is consistent with that of studies by Sallinen et al and Cooper et al.^(30,31) Sallinen et al's study, which evaluated the barriers to physical exercise in elderly individuals who were obese, found that severely obese older adults (mean age 77.3 years) perceived 'feeling tired' as a common barrier, leading to a higher risk of physical inactivity. Reichert et al also reported that the feeling of being too tired was associated with physical inactivity among adults aged 20 years and above.⁽²¹⁾

According to Chao et al,⁽³²⁾ self-motivation determines participation in structured physical activity. They pointed out that the motivation to exercise may be altered over time, in association with the individual's commitment. A study on younger women by Andajani-Sutjahjo et al⁽³³⁾ found that the most common barriers to physical activity in this group were also associated with a lack of motivation, followed by time constraints and cost. Similarly, lack of motivation was determined to be the most important barrier to physical activity among young undergraduates from a Turkish university in a study by Daskapan et al.⁽³⁴⁾ In the present study, we found similar results, with lack of motivation as one of the main barriers indicated by the elderly respondents to have contributed to inactivity.

One major critique of the present study is the fact that the middle-aged and elderly respondents in our study may not be entirely comparable, as the two groups have differing levels of physical activity and health statuses due to age-related physiological changes. The elderly respondents may have progressive physiological changes and chronic diseases that are common for their age. Also, as the present study only included respondents of Malay ethnicity, further research using stratified sampling on larger sample sizes with respondents from various cultural backgrounds is warranted so that findings can be generalised to the local ageing population in Malaysia. Future research should also focus on whether the provision of interventions such as rehabilitation training, infrastructure and community services are beneficial to the middle-aged and elderly members of the community.

In conclusion, the present study adds to the existing literature on the barriers to participation in physical activity and exercise among middle-aged and elderly individuals in the community. We found that the middle-aged and elderly respondents in our study both presented with similar external and internal barriers to physical activity and exercise participation. Such information is vital for the formulation of guidelines that aim to help middle-aged and elderly individuals overcome barriers to participation in physical activity and exercise, as well as for the creation of structured strategies to improve adherence to exercise. It is suggested that both the government sector and non-governmental organisations participate in promoting healthy lifestyles among middle-aged and elderly individuals,

so as to improve awareness and promote preventive self-care and risk-reduction.

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