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Health promotion and active aging among seniors in Malaysia

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Abstract

Purpose – This paper explores the relationship between health promotion and active aging among seniors in Malaysia. The specific objectives were to (1) identify the contributing factors for seniors undergoing full medical check-up and (2) to explore the association between selected active aging factors and health promotion behavior and beliefs.

Design/methodology/approach – The study used data from 662 seniors from three different states in Peninsular Malaysia. Logistic regression was used to identify significant determinants of full medical check-up, and chi-square statistics were used to explore the association of active aging and selected health promotion behavior and beliefs. Healthy aging was characterized by being employed or traveling outdoors for leisure.

Findings – Household income was found to be a significant barrier to seniors undergoing a full medical check-up. Overall, active seniors were more likely to have positive self-rated health, positive health responsibility and health promotion beliefs but were less likely to undergo a full medical check-up.

Practical implications – Given that cost of a medical check-up could be a barrier for seniors, authorities could consider subsidizing medical check-ups to promote early detection of disease. There is also a need for continuous effort to educate seniors on health risk factors and the importance of taking fuller responsibility for their own health.

Originality/value – This study examined the relationship between active aging and health promotion together, as both components are essential in enhancing the mental and physical well-being of seniors.

Keywords Active aging, Health beliefs, Health promotion, Health responsibility, Medical check-up, Outdoor travel

Paper type Research paper

Introduction

The senior population (aged 60 years old and over) is estimated to increase from 12% of the total global population in 2015 to 22% in 2050. Furthermore, 80% of seniors reside in developing countries [1]. By 2030, seniors will comprise 16% of the total Malaysian population [2].

As highlighted by the Malaysian Healthy Aging Society (MHAS), maintaining the health of seniors poses challenges to the nation's public health [3]. Health expenditure costs and the problem of limited health resources may be reduced by planning early interventions and emphasizing health promotion nationally [4].

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Healthcare in Malaysia is operated on a dual-tier system comprising a private healthcare sector and a public healthcare sector. Private healthcare costs that are met by the patients can be prohibitive for vulnerable groups such as seniors and low-income earners. Public healthcare costs are heavily subsidized and as a result, the public system is cheaper, but services are often overcrowded and utilized mostly by seniors and those with low financial resources [5]. In Malaysia, there are no specific legal provisions for healthcare for seniors [6]. However, the introduction of the National Policy for Older Persons (NPOPs) and the Plan of Action for Older Person has proved beneficial [7].

The Malaysian government has actively supported a health promotion agenda through programs such as "MySihat" and "Sihat Cergas" (Healthy and Fit) [8]. Although these programs are not specifically for seniors, they highlight the government's emphasis on its health promotion agenda. This study explores the health promotion behavior and beliefs of the Malaysian seniors and their relationships with active aging.

Active aging refers to the continuous process of participation in various activities, including social, economic, cultural, spiritual and civil affairs, to attain a better quality of life as people age [9]. Health promotion behaviors enable persons to maximize their health potential through individual, community and organizational change [10]. At the individual level, this includes carrying out actions that have perceived health benefits such as seeking health knowledge and information as well as believing that one can control or change one's behavior to achieve a positive health outcome [10].

Another study found that if seniors (those above 65 years old) improved one healthy lifestyle behavior, it could reduce the risk of disability among seniors by 9% to 12% [11].

Undergoing a full medical check-up is one of the visible and objective indicators of health promotion behavior. A regular full medical check-up helps to detect potential disease and health problems at an early stage. Furthermore, as the population ages, noncommunicable diseases (NCDs) are found to be the growing cause of all deaths [12]. It is reported that in countries where 20% of its population are over 60 years old, NCDs account for 80% of all deaths. Notwithstanding the importance of regular full medical check-ups, some may shy away from them for various reasons, such as the fear of receiving negative diagnoses, lack of time, the cost of the procedure and fear of the procedure itself. As a result, it is essential to investigate the prevalence of medical check-ups among seniors.

Many existing studies have explored the two components, health promotion and active aging, separately. Generally, existing studies have looked at the outcomes of active aging or health promotion on the overall well-being of seniors [13–19] and explored the determinants that influence seniors' decisions to pursue health promotion behavior [13, 17, 19]. Another group of studies has focused on active aging activities such as physical activities and shown the positive effects of active travel, physical activities and recreational activity in promoting public health [20–26].

While age is an important predictor in average health risk, there is huge diversity within the older population itself. For example, some 80-year-olds may have the mental and functional ability on par with a 30-year-old individual, while others require extensive medical interventions and care for even the most basic daily living activities.

As health promotion and active aging are two central components in enhancing quality of life and allowing seniors to retain a sense of control in their life, understanding the relationship between these two factors can help inform health policy and programs for seniors in Malaysia. This study, therefore, explores the relationship between health promotion and active aging indicators by investigating the prevalence of medical check-ups among seniors, identifying the factors that affect the likelihood of seniors undergoing a medical check-up and exploring the relationship between other health promotion indicators.

Methodology

Data

Data were collected from three selected Malaysian states, Penang, Perak and Malacca due to the rising rates of their aging populations [27]. On using the minimum sample calculation formula [28], with a total seniors' population of 705,200 in the three selected states, a minimum sample of 400 respondents was required. However, to obtain more robust impact evaluations, a large sample size of 1000 was targeted [29]. Questionnaires were distributed proportionately to the senior population in these states as follows: Perak (52%), Penang (32.60%) and Malacca (15.40%). Therefore, with a targeted sample size of 1000, the target sample size for Perak, Penang and Malacca was 520, 326 and 154, respectively. Of the 662 senior respondents who participated in this study, 300 were from Penang, 207 from Perak and 155 from Malacca. The overall response rate was 66.13%, with a 100% response rate in Malacca, 92.30% in Penang and 39.80% in Perak. The sample was also stratified according to age group and ethnicity.

Individuals aged 60 years old and above who were independently mobile or could move around assisted by other people were eligible to participate in this study. Movement from one place to another could be either by personal vehicle, public transportation or active transportation, such as walking or cycling. Wheelchair-bound seniors were eligible to participate but bed-bound seniors were not.

Each respondent was given two surveys to complete. One survey collected information on seniors' traveling habits while the other survey collected information on their health. Both surveys were in a structured questionnaire format and were distributed to respondents in public places such as parks, shopping malls, streets and also the respondents' own homes. Respondents could choose to complete the questionnaire or to be interviewed face to face by the interviewers. Local dialects were used where necessary to clarify any questions that arose during the survey. Each interviewer was provided with a tablet to enter the information collected using the Survey Gizmo portal.

Ethical clearance

The data were obtained from two surveys. Ethical clearance for the survey on seniors' traveling was obtained from Universiti Sains Malaysia (USM) Research Ethics Committee (Human) (USM/JEPeM/17020093), while ethical clearance for the survey on seniors' health was obtained from Universiti Tunku Abdul Rahman (UTAR) (U/SERC/89/2018).

Analytical framework of health promotion and active aging

The analytical framework for this paper was motivated by the concepts of healthy aging and health promotion [30]. To achieve this, individuals had to optimize their opportunities for health to maintain functional ability and to continue to participate in society [9, 10].

In this study, active ageing is represented by outdoor trips and employment status which indicate on-going social and economic participation. Health promotion encompasses activities in the belief that these activities can enhance one's health [10]. Health promotion model focuses on three main areas: individual characteristics and experiences, behavior specific cognition affect and behavioral outcome. In this respect, the scope of health promotion in this study is limited to perceived health status (individual psychological characteristics), taking personal responsibility towards one's own health, and positive health promotion beliefs (behavior-specific variables), and the action of undertaking a full medical check-up (behavioral outcome). In the health promotion model [10], taking personal responsibility towards health represents the perceived benefits of health behavior, while positive health promotion beliefs follows from the concept of perceived self-efficacy. Both form part of the behavior-specific variables in the health promotion model.

The analysis was divided into two parts: the logistic analysis on the objective health promotion indicator (full medical check-up) and the bivariate analyses on active aging and the

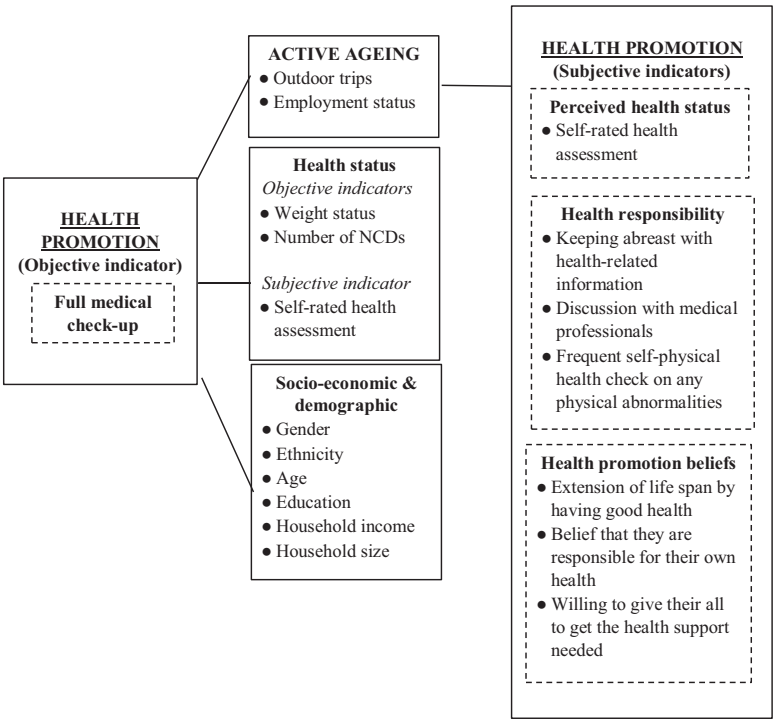

Figure 1.
Analytical framework for health promotion and active aging

subjective health promotion indicators (perceived health status, health responsibility and health promotion beliefs).

Method of analysis

(1) Logistic regression model

Logistic regression modeling was used to determine the factors that could significantly explain the likelihood of a senior having undergone a full medical check-up. A senior's decision to undergo a medical check-up was a binary decision whereby the respondent went for a medical check-up or otherwise. In general, the logit model can be written as follows:

$$\log \frac{P}{1-P} = \alpha + \beta_i X_i + \varepsilon \quad (1)$$

where P denotes the probability of going for a medical check-up. P takes the value of 1 if the respondent went for a medical check-up in the past 12 months and 0 value if the respondent did not do so.β_i denotes the coefficient of the explanatory variables, while X_i refers to the explanatory variables. ε is the stochastic error term for the regression.

The explanatory variables could be broadly divided into three categories: socioeconomic and demographic factors, respondent's health status and active aging factors. The socioeconomic and demographic factors included age, gender, ethnicity, education attainment, household income, household size and availability of transport. Age was divided into three groups: the "young-old" (60–64 years old), "middle-old" (65–74 years old) and "old-old" (75 years old and above). As Malaysia is a multi-ethnic country, ethnicity was

divided into three main ethnic groups, namely Malay, Chinese and Indian. Household income was divided into four groups, denoting those with no household income, household income less than RM1,000 (below the minimum wage), household income between RM1,000–RM4,000 and household income above RM4,000.

Three indicators of health status were used: self-rated health, weight status and whether the respondent had any NCD. Respondents were asked to rate their current health status using a ten-point Likert scale with ten denoting very good health status. Those who gave themselves a rating of seven and above considered themselves to be in good health. Weight status distinguished between those who were overweight-obese and otherwise. A respondent was considered overweight-obese if his or her BMI was above 25. NCDs included hypertension, diabetes and high cholesterol. Respondents were categorized as having no NCD at all, one type of NCD, two types of NCD, or three types of NCD.

Active aging factors were represented by the respondent's employment status and whether a respondent made an outdoor trip for nonwork-related purposes such as shopping, recreation and personal errands during the week when the survey was carried out. Working would indicate that the respondent was still actively participating in society, while outdoor trips implied that the respondent still had some form of social life and engagement. Active aging described respondents who carried out one of these activities.

(2) Bivariate analysis

Bivariate analysis was used to examine the relationship between active aging factors and the subjective health promotion indicators, namely positive health assessment status, positive health responsibility and positive health promotion beliefs. The percentage breakdown within each category of active aging factors for these indicators was tabulated. Chi-square statistics were used to determine if a significant relationship existed between active aging and subjective health promotion indicators.

Positive health responsibility encompasses frequent actions of keeping abreast with health-related information through media, seminars, discussion with medical professionals and frequent self-physical health check on any physical abnormalities [31]. A five-point Likert scale was used to assess the frequency of actions to the above situations, with five denoting "very frequent". Those who had an average score of four and above were considered to have positive health responsibility.

Positive health promotion beliefs indicate that the seniors believe that their life span can be enhanced by having good health, that they are responsible for their health, and with their enthusiasm and willingness to give their all to get the health support needed, they can improve their health status. A five-point Likert scale was used to assess respondents' agreement to the above statements, with five denoting "strongly agree". Those who had an average score of four and above were considered to have positive health beliefs.

Cronbach's alpha was used to test the reliability and internal consistency of the items for health responsibility and health promotion beliefs. The alphas for health responsibility and health promotion beliefs were 0.81 and 0.75. As the values were greater than 0.7, the measurements were deemed acceptable.

Results

Prevalence of medical check-ups and survey respondent characteristics

Table 1 summarises the characteristics of the survey respondents. Columns (1), (2) and (3) are column percentages, while column (4) shows the percentage of those who have undertaken full medical check-up in the said category. Of the 662 respondents, 49.70% had undergone a medical check-up in the past 12 months, while 50.30% had not. These proportions were nearly equal.

Variables	Description	Did full medical check-up (%) (1)	Did not do full medical check-up (%) (2)	Total sample (%) (3)	Percentage of doing full medical check-up** (%) (4)
Number of observations		329	333	662	
Binary variables (1 = yes, 0 = no)					
Female	Respondent is female	51.37	47.89	49.62	51.52
Male	Respondent is male	48.63	52.11	50.38	48.05
Malay*	Respondent is Malay	58.66	47.29	52.95	55.14
Chinese	Respondent is Chinese	33.74	40.06	36.91	45.49
Indian	Respondent is Indian/ other ethnicity	7.60	12.65	10.14	37.31
Young-old*	Respondent is between 60–64 years old	38.30	34.83	36.56	52.07
Middle-old	Respondent is between 65–74 years old	45.90	41.44	45.90	52.25
Old-old	Respondent is 75 years old and above	15.81	23.72	19.79	39.69
Primary*	Respondent has no education or primary education only	48.33	61.75	55.07	43.68
Secondary	Respondent has secondary education	42.55	29.52	36.01	58.82
Tertiary	Respondent has tertiary education	9.12	8.73	8.93	50.85
HH INC1*	Respondent does not have any household income	4.56	8.43	6.51	34.88
HH INC2	Respondent's household income is less than RM1,000 a month	24.01	30.12	27.08	44.13
HH INC3	Respondent's household income is between RM1,000 and RM4,000 a month	50.15	46.08	48.11	51.89
HH INC4	Respondent's household income is above RM4,000 a month	21.28	15.36	18.31	57.85
Transport	Respondent has means of transport	73.25	66.67	69.94	52.05
Self-rate health	Respondent rates his/her own health as good	59.88	50.45	55.14	53.97
Overweight-obese	Respondent is overweight or obese	36.78	31.83	34.29	53.30
NDC0	Respondent does not have any NCD	43.16	31.83	37.46	57.26
NCD1	Respondent has only 1 type of NCD	3.34	19.82	11.63	14.29
NCD2	Respondent has 2 types of NCD	1.52	28.52	15.11	5.00
NCD3*	Respondent has 3 types of NCD	51.98	19.82	35.80	72.19

(*continued*)

Table 1.
Summary of descriptive statistics

Variables	Description	Did full medical check-up (%) (1)	Did not do full medical check-up (%) (2)	Total sample (%) (3)	Percentage of doing full medical check-up** (%) (4)
Outdoor trip	Respondent has made shopping/personal/leisure outdoor trip (nonwork or business-related trip during the week of the survey	31.00	28.22	29.61	52.04
Working	Respondent is working	26.44	28.01	27.23	48.33
Continuous variable					
HHsize	Household size in persons	3.64 (1.81)	3.80 (1.80)	3.72 (1.81)	–

Note(s): Value in the parenthesis denotes standard deviation. * denotes reference category. ** shows the percentage of those in the said category that have undergone full medical check-up

Table 1.

In terms of gender, slightly more women than men had undergone a medical check-up. In terms of ethnicity, the Malays were more likely to have undergone a medical check-up than the Chinese or Indians. Seniors who were over 75 years old were the least likely to have undergone a medical check-up, as only 39.69% of them had done so, amounting to 15.81% of all respondents. There was a higher percentage of having undergone a medical check-up among those with secondary education (58.82%) than those with primary level or no education (43.68%). The percentage of having undergone a medical check-up also appeared to increase with income: 34.88% for the lowest income to 57.85% for the highest income group.

In terms of health status, respondents with no NCD and those with three types of NCD were more likely to have undergone medical check-up than those with only one or two types of NCD. Furthermore, respondents who rated their health as good were more likely to have undergone a medical check-up and made up 60.00% of those who had done so. Respondents who were working were less likely to have undergone medical check-ups as they made up 26.44% of those who had undergone a medical check-up. Similarly, those who made outdoor trips were found to be less likely to have undergone a medical check-up.

Logit analysis of the likelihood of undergoing a medical check-up

The estimated logit results are presented in Table 2. It was found that a Malay senior was 1.55 times more likely to undergo a medical check-up than a Chinese senior. There was no significant difference between the Chinese and Indian seniors.

Household income and size were significant predictors of seniors undergoing a medical check-up. The higher the household income, the higher the odds of a senior having undergone a medical check-up. A larger household size appeared to reduce the odds of undergoing a medical check-up.

Being overweight-obese made the respondent more aware of his or her own health. Respondents who were overweight-obese were found to be 1.47 times more likely to have undergone a medical check-up than respondents who were not. The findings also showed that for those who had NCDs, the fewer number of NCDs that a respondent had, the lower the odds of the respondent having undergone a medical check-up. For example, there was a decrease of 96.00 and 99.00%, respectively, in the odds of a respondent who had one type and two types of NCDs to have undergone a medical check-up compared to a respondent who had three types of NCDs. There was a decrease of 59% in the odds of those who had no NCD to have undergone medical check-ups compared to those who had three types of NCDs.

Variables	Log of odds (1)	Odds ratio (2)	Std. Error (3)	*z*-statistics (4)	95% confidence interval	
Socio-economic and demographic factors						
Gender	−0.27	0.76	0.20	−1.32	0.51	1.14
Malay	0.44*	1.55	0.23	1.94	0.99	2.44
Indian	−0.35	0.70	0.34	−1.02	0.36	1.38
Secondary	0.14	1.14	0.24	0.54	0.72	1.83
Tertiary	−0.38	0.68	0.37	−1.04	0.33	1.42
Middle-old	−0.07	0.93	0.22	−0.29	0.61	1.44
Old-old	−0.24	0.79	0.29	−0.83	0.44	1.40
HHINC2	0.85**	2.34	0.42	2.06	1.04	5.31
HHINC3	1.25***	3.50	0.41	3.08	1.57	7.78
HHINC4	1.58***	4.84	0.45	3.54	2.01	11.64
HHsize	−0.20***	0.82	0.06	−3.46	0.73	0.92
Transport	0.18	1.19	0.26	0.69	0.72	1.97
Health Status factors						
Positive self-rated health status	−0.14	0.87	0.02	−0.69	0.58	1.29
Overweight−obese	0.38*	1.47	0.21	1.79	0.97	2.22
NCD0	−0.90***	0.41	0.22	−4.11	0.26	0.62
NCD1	−3.17***	0.04	0.39	−8.23	0.02	0.09
NCD2	−4.31***	0.01	0.58	−8.60	0.01	0.04
Active aging factors						
Outdoor trip	0.17	1.18	0.22	0.77	0.77	1.82
Working	−0.46***	0.63	0.23	−2.01	0.40	0.99
Constant	0.94	2.57	0.56	1.70	−0.15	2.03

Note(s): *, **, *** denotes significance at 10, 5 and 1% level, respectively. The reference group is male, Chinese, primary education or no education, young-old (60–64 years old), did not have any household income (HHINC1), and had three types of non-communicable diseases (NCD3)

Table 2. Logit estimates on the likelihood of undertaking full medical check-up among seniors in Malaysia

Seniors who led an active life were less likely to undergo a medical check-up. The odds that a respondent who was working had undergone a medical check-up were 0.37 times lower than a respondent who was not working.

Overall, income, household size, health status and working were significant predictors of the likelihood of performing a medical check-up.

Relationship between active aging and subjective health promotion indicators

Table 3 shows the bivariate analysis of the active aging indicators and the subjective health promotion indicators. In terms of self-rated health assessment, seniors who were working and

	Positive self-rated health assessment		Positive health responsibility		Positive health beliefs	
	%	χ^2 stats	%	χ^2 stats	%	χ^2 stats
No outdoor trips	51.29	9.42***	18.03	1.04	65.24	8.17***
Outdoor trips	64.29		21.43		76.53	
Working	64.44	8.79***	25.00	5.98**	65.00	1.43
Not working	51.56		16.63		69.85	

Note(s): (1) % refers to percentages within the category that have a positive self-rated health assessment, health responsibility, or health beliefs; (2) **, *** denotes significance at 5 and 1% level, respectively

Table 3. The association between active ageing and health promotion

made outdoor trips, a higher percentage among them rated their health positively compared to those who did not do so. While 51.29% of respondents who did not make any outdoor trip felt positive about their health, 64.29% of those who made outdoor trips in a given week rated their health positively. Similarly, 64.44% of those who were working compared to 51.56% of those not working rated their health positively. Chi-square statistics also indicated that there was a significant relationship between working and making outdoor trips with positive self-rated health.

Less than a quarter of the seniors showed positive health responsibility. A higher percentage of seniors who made outdoor trips and were working tended to have positive health responsibility, but a significant relationship existed only between working and positive health responsibility. Of those who were working, 25% had positive health responsibility compared to only 16.63% of those who were not working.

A higher percentage of those who made outdoor trips had positive health beliefs (76.53%) compared to those who did not (65.24%). A significant relationship was observed between having positive health beliefs and making outdoor trips but not between having positive health beliefs and working.

Discussion

The logistic regression analysis revealed that the likelihood of undertaking a medical check-up increased with income but decreased with household size and an active lifestyle. Furthermore, seniors who had three NCDs were more likely to undertake medical check-up than those with just one or two NCDs. On the other hand, the bivariate analysis on the association between active ageing and subjective health promotion indicators showed that active seniors were more likely to have positive perceived health status and health responsibility.

The significant positive role of household income on the likelihood of the seniors undergoing a medical check-up is not surprising, given that private medical check-ups can be costly, especially in private clinics, hospitals or health screening centres. Medical check-ups in public hospitals and clinics are rarely conducted, unless prescribed by the medical doctor.

Those seniors with strong social support, indicated by living with a family, hada positive attitude toward aging, and this resulted in a positive impact on their health [32, 33]. The social support provided by families also helped reduce psychological stress and increased the seniors' self-esteem [34]. Hence, senior respondents who lived in larger households were less likely to have undergone a medical check-up perhaps because they were less likely to feel lonely and anxious about their health, as they felt certain about being taken care of by family members should they fall ill.

Overweight-obese seniors and those who had three NCDs were conscious about taking responsibility for their health by undergoing a medical check-up either at their own initiative or at a doctor's recommendation. Despite their underlying health issues, these respondents see medoptimistic and were willing to participate in health-promoting behaviors such as undergoing a medical check-up to keep abreast of their health condition [17, 35].

The seniors who were working appeared to be still engaged with productive activities, while those who made leisure outdoor trips were likely to have good social support. The seniors who were still participating actively in service or in society tended to define themselves as ageing successfully and actively. The seniors who were mentally and physically active tended to have an overall positive assessment of their well-being [36, 37]. As a result, the seniors who were working or made outdoor trips may not have seen the need to undergo a medical check-up. These active seniors may have been too preoccupied with their own schedules to find time to undergo a medical check-up. The likelihood of their having undergone a medical check-up was lower than for those who were not working or did not make outdoor trips.

The higher likelihood of Malays having undergone health check-up compared to Chinese appears to contradict life expectancy statistics for these two groups. This assumes that better health responsibility such as frequent medical check-ups can extend life expectancy. In 2016, of the three major ethnic groups, the Chinese had the highest life expectancy with 75.0 years for men and 79.9 years for women. In contrast, the Bumiputera (majority Malay) had a life expectancy of 71.3 years for men and 76 years for women [38].

Ironically, in the bivariate analysis of subjective health promotion indicators, while the majority of the seniors had positive health beliefs, less than a quarter of the seniors had positive health responsibility. This seems to suggest that while the seniors believed in their capability to improve their health and that they were responsible for their health, the belief did not translate into proactive actions. The results between active aging and positive self-rated health assessment were consistent with existing findings, namely that seniors who were still engaging actively in social or economic activities were generally less inclined to be depressed and tended to feel that they had greater control of their health [36–39].

The current study has some limitations. The extent of outdoor trips may not reflect the actual frequency and types of outdoor trips as this study only recorded outdoor trips made on the week preceding the survey. Furthermore, this study did not consider other confounding factors when exploring the relationship between active aging and health promotion. The analysis of the association between these variables should be considered preliminary, and a more rigorous analysis could be explored in future research. Finally, the low response rate in Perak state limited the generalizability of findings for that state.

Conclusion and recommendations

This study explored the relationship between active aging and health promotion behavior and beliefs among seniors in Malaysia. As Malaysia is approaching aging nation status, developing policies that target preventive healthcare and healthy aging may reduce the government's healthcare expenditure burden.

Routine health checks are not frequently practiced amongst seniors despite being an effective means of early detection of disease or health problems. Our findings showed that seniors who had a higher income were more likely to have regular health checks, suggesting that those with no income or on a low income would be deterred. The recently launched PeKA B40, which includes free health screening, is therefore a step in the right direction.

Additionally, our research suggested that seniors were less likely to undertake medical check-ups if they were still able to travel for either work or leisure purposes. Leading an active lifestyle made the seniors feel more positive about their health and wellbeing resulting in less time spent on health checks.

Because seniors tend to be relaxed about taking positive health responsibility despite understanding that their behavior and actions could help enhance their well-being, policies that focus on creating and reinforcing awareness of the importance of preventive healthcare and taking greater health responsibility among seniors is required. Traveling public health education exhibitions or training could be intensified to educate seniors on self-care, various health risk factors and steps toward leading a healthy lifestyle. Additionally, a tax rebate on medical check-up expenditures could be introduced for companies that provide annual medical check-ups for their senior workers.

Outdoor travel was found to be important for the overall well-being of seniors. As such, an age-friendly transport policy would help seniors to travel independently thereby encouraging higher social participation among seniors.

Overall, it is clear that keeping seniors active has a positive effect on their health. Therefore, continuous efforts to encourage seniors' participation in all aspects of society are recommended.

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