

# Unmet Healthcare Needs Among Elderly Malaysians

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**Purpose:** Older people often have chronic diseases which require a continuity of care over the long term. Countries undergoing population aging need to ensure that older people are receiving the care they need. This study assesses the prevalence of, reasons for, and factors associated with unmet healthcare needs among older people individuals in Malaysia.

**Patients and Methods:** This cross-sectional study used data collected during 2018–2020 from 1204 older adults aged 60 and older selected from Selangor state, Malaysia. A comprehensive face-to-face interview based on the Bahasa Malaysia version of the Japan Gerontological Evaluation Study (JAGES-BM) questionnaire was administered to gain information on unmet healthcare needs, socioeconomic factors, health-related factors, and measures of function (activities of daily living, depression, visual impairment, hearing impairment, memory impairment, and walking impairment). Multivariate logistic regression was used to analyze factors associated with their unmet healthcare needs.

**Results:** Overall, the percentage of older people respondents with unmet healthcare needs is 6.6%. The most reported reasons for forgoing or delaying healthcare were lack of knowledge about healthcare and financial barriers to care. The inability to travel alone (adjusted odds ratio [aOR] 2.51), being overweight (aOR 1.88), and having self-reported depression (aOR 2.23) were each associated with a higher likelihood of having unmet healthcare needs in their daily life.

**Conclusion:** The prevalence of unmet healthcare needs among older people in this part of Malaysia is lower than that reported in some other countries. However, it is possible to further reduce unmet healthcare needs by improving people's knowledge and attitudes about appropriate healthcare utilization, strengthening financial protection measures and providing support to people at high risk of having unmet healthcare needs.

**Keywords:** healthcare needs, old age, Malaysia

## Introduction

Unmet healthcare needs are one of the major concerns in this era. The European Core Health Indicators uses unmet healthcare needs as an indicator to measure the equality of access to healthcare services.<sup>1,2</sup> Given the issue, the World Health Organization (WHO) has made efforts to tackle health inequalities and provide universal health coverage.<sup>3</sup> The definition of universal health coverage means that all people have access to the health services they need, when and where they need them, without financial hardship. It includes the full range of essential health services, from health promotion to prevention, treatment, rehabilitation, and palliative care. On the other hand, unmet healthcare needs encompass a range of conditions, from “unexpressed demand” to “expressed demand that is sub-optimally met.” This range of conditions may include patients who are ineligible for the treatment they need and those who have been treated, but with poor-quality

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treatment.<sup>4</sup> Around 3% of the European Union population aged above 16 years reported unmet medical needs in 2019.<sup>2</sup> In comparison, a Korean study reported 17.4% unmet healthcare needs among their older people.<sup>5</sup>

The reason for unmet healthcare needs can be divided into either population- or service-driven factors. The population-driven category relates to the individuals in the population who are reluctant to seek help or are unaware of the healthcare services provided. Meanwhile, the service-driven category is due to the services that did not reach the target population or disconnected services.<sup>4</sup> There is a need to understand further the factors behind the unmet healthcare needs. For instance, in population-driven factors, the public cannot enter nor have access to the healthcare system. Low health literacy and awareness about the magnitude of severity of health problems among the population could be the distinct factors contributing to unmet needs.

This is because of the lack of a “population push” policy that will help the public obtain the health services they need. Studies in European countries showed common reasons for unmet needs: expensive treatment costs, long waiting periods, time and job constraints, and availability of and accessibility to care.<sup>5,6</sup> Therefore, “population push” and “service pull” are needed to tackle unmet needs,<sup>4</sup> which can be performed through comprehensive policies and an efficient healthcare system, respectively.<sup>4</sup> Multiple indicators have been used to measure unmet needs, such as the standardized mortality ratio between the hospitals,<sup>4</sup> vaccine coverage, and expenditure on healthcare.<sup>1</sup> Unmet needs have also been measured through patient reports, using either surveys or formal studies.<sup>4,6</sup>

In Malaysia, healthcare services are provided by either the government or the private sector. Various sources contribute to the healthcare expenditure: in 2017, 43% was from the Ministry of Health, equivalent to around USD 6.1 million, followed by 38% from private household out-of-pocket (OOP) expenses; 7% from private insurance (7%); and 4% from other federal agencies.<sup>7</sup> On the other hand, the OOP expenditure of Thailand was 10.9% and of Singapore was 32% for the same year.<sup>8</sup> Although a large proportion of the health expenditure was from the government sector, an increasing trend in the percentage of OOP expenditure has been reported over the past 20 years.<sup>9</sup> The ability to pay for treatment is one possible reason for unmet healthcare needs, especially among low-income families and the financially dependent older people.<sup>9</sup> This

is a worrying issue as most Malaysian older people pensioners are aged over 60 years, and their subsequent finances depend only on their saving funds or government pensions and their children’s income.<sup>10</sup> The World Bank predicted that 39.2% of the older people population in Malaysia did not have any financial coverage.<sup>10</sup>

In view of the increasing OOP expenditure, and as the country progressing towards aging nation, with limited number of research on the unmet healthcare needs of older people individuals in Malaysia, therefore there is the needs to understand this problem and tackle it early. Hence, this study aimed to assess the prevalence of unmet healthcare needs and to determine the reasons for and factors associated with unmet healthcare needs among older people individuals in Malaysia.

## Materials and Methods

### Study Population

The Malaysian Healthy Aging study was conducted to examine the determinants of health status and universal health coverage among older adults in Selangor, Malaysia, from December 1, 2018 to April 30, 2020. This was a cross-sectional study and was approved by the Research Ethics Committee of the National University of Malaysia (FF-2018-532). Selangor was selected because it is the most populous state in the country, and it represents a diversity of people and living conditions. In 2019, Selangor recorded a population of 6.53 million people.<sup>11</sup> Selangor has nine districts and 177 sub-districts. Two districts were chosen: Hulu Langat, with more than one million, and Kuala Selangor, with a population of 0.2 million. Hulu Langat represents the urban population, whereas Kuala Selangor reflects rural Malaysia. The district selection was purposive as that population comprises all major ethnic groups such as Malay, Chinese and Indian.

### Sampling

This study used multistage cluster sampling, with probability proportionate to the size of the older population (60 years and older) in these two districts. The primary sampling unit was the district, whereas the secondary sampling unit was the sub-district. Six sub-districts from Hulu Langat (which has seven sub-districts) and the nine sub-districts of Kuala Selangor were selected. At the third stage of sampling, ten towns/villages were selected randomly from each sub-district. The household ledgers for the village were obtained with authorization from the

village head, and they served as the sampling frames. A random sampling of older residents was taken from the selected neighborhood. When more than one eligible older adult was present, the sample selected was based on a Kish grid table. The sample size was calculated using the  $n = Z^2[P(1-P)/e^2]$  equation in,<sup>12</sup> where  $Z$  is the level of confidence,  $p$  is the prevalence of “good health” among older persons, and  $e$  is the margin of error. Using  $Z = 1.96$ ,  $p = 0.3$  (the estimate obtained from a previous study on older persons in Japan),<sup>13</sup> and  $e = 0.05$ , the initial calculation of the sample size was 322. This initial sample size was then multiplied by the design effect of 1.5, and the two groups of estimates (urban and rural) desired the survey results, giving a final figure of 966. Finally, 966 was divided by 0.80 to adjust for an anticipated 20% non-response rate. The final calculated total sample size was 1207.

The selected households that had an older person were identified through random sampling. Subsequently, the researchers, together with the head village, arranged an appointment with the potential respondents for the interview. The appointment was made at the respondents' house at their convenient time. A thorough explanation of the study and information sheets were given to each respondent before the interview by trained research assistants. Once the respondents understood and gave consent, interviews were conducted in a quiet environment, face-to-face, by the research assistants. The questionnaire was filled up by the research assistant after obtaining an answer from the respondent. The interview session lasted for about 40 to 50 minutes.

The inclusion criteria of the respondents were as follows: they had to be at least 60 years of age, be able to speak Malay or English, and be a Malaysian resident. The exclusion criteria were subjects who could not understand the language and subjects with cognitive impairment. Scores less than seven in the Abbreviated Mental Test (AMT) in the screening questions indicate severe cognitive function impairment.<sup>14</sup> Moreover, the institutionalized older people in nursing homes or old folks' homes were excluded. Finally, 1204 respondents were recruited, with a 99.8% response rate. Three persons were excluded because they scored less than seven in the AMT.

## Measures

The study used the Bahasa Malaysia version of the Japan Gerontological Evaluation Study (BM-JAGES) questionnaire.<sup>15</sup> The questionnaire comprised

multidimensional variables that include sociodemographic and socioeconomic characteristics, health-related characteristics, and aging factors. The dependent variable used in this study was unmet healthcare needs, which was derived from a question of hesitancy to visit health facilities in the past 12 months. The question on unmet healthcare needs was similar to that in the Korean study.<sup>5</sup> Subsequently, the respondents were asked whether they still sought treatment at health facilities in the past 12 months. This was to determine the type of hesitancy, whether it resulted in foregone care (ie the needed care was never received) or delayed care (ie the needed care was received at a later time).

The variables used in this study were demographic characteristics (age, sex, ethnicity, and locality), socioeconomic factors (marital status, family composition, ability to travel alone, education, employment status, household income, and self-perceived financial status), health-related factors (self-perceived health status, current smoker, body mass index (BMI), hypertension, diabetes mellitus, heart disease, and stroke), and measures of function (activities of daily living, depression, visual impairment, hearing impairment, memory impairment, and walking impairment). The variables are described in [Table 1](#).

## Statistical Analyses

The prevalence of unmet healthcare needs was determined. The differences between groups of categorical variables were analyzed using the Pearson chi-squared test. A logistic regression analysis was performed to analyze the association between unmet healthcare needs and independent factors. For all statistical analyses,  $p < 0.05$  was considered statistically significant. Statistical analyses were performed using IBM SPSS version 21.0.<sup>16</sup>

## Results

Overall, only 6.6% ( $n = 80$ ) of the respondents had unmet healthcare needs. There were 94 reasons why some respondents answered more than one option. These reasons were classified into three main categories: accessibility (economic hardship 25.3%; inaccessible transportation 10.5%); availability (scheduling conflict 17.9%; service not available 12.6%); and acceptability (attitudes toward healthcare 6.3%; knowledge about healthcare 27.4%; [Table 2](#)).

The bivariate analysis showed that women, rural residents, single/widowed/divorced persons, people who were

**Table 1** Description of Variables Used in This Study

Variables	Description
Unmet healthcare needs	Did you ever hesitate to visit health facilities even when you were ill/sick in the past 12 months? "Yes" or "no."
Reasons for unmet healthcare needs	If the response to unmet healthcare needs is "yes," why? (1) It's too expensive for me. (2) The fares to/from the clinical department are too high for me. (3) I do not know which department to visit for the medical care I need. (4) Health facilities are too far from my home. (5) I do not think I need medical care. (6) I do not have time to see a doctor. (7) I do not have health insurance. (8) Other reasons. Reasons for unmet healthcare needs were then classified into three categories based on the study conducted in Canada: (1) accessibility (economic hardship and inaccessible transportation); (2) availability of services (service not available and scheduling conflict); and (3) acceptability of available services (attitudes toward and knowledge about healthcare).
Marital status	This variable was categorized into two groups: (1) married, whether living together or separately; and (2) never married, widowed, or divorced.
Family composition	This variable referred to whether the participant lives alone or lives with their friend or family.
Education level	Based on the Malaysian education system, the education level was categorized into three groups: (1) attended primary school, including participants without formal education; (2) attended secondary school, including vocational school; and (3) attended a college or university education.
Employment status	This variable was categorized into employed and unemployed. Those who had retired were included in the unemployed group.
Household income	The 2019 income structure of the Department of Statistics of Malaysia was used for the household income classification. In this study, household income was classified into three categories: B40 is the base group or bottom 40% of individuals who earn less than RM 4850 as monthly household income, whereas M40 is the middle-class group or the middle 40% of individuals who earn between RM 4851 and RM 10,959. T20 is the upper-class group or the top 20% of individuals who earn more than RM 10,959.
Self-perceived financial status	Which of the following best describes your current financial situation in light of general economic conditions? "Difficult," "average," or "comfortable."
Self-perceived health status	How is your current health status? The four options of answers (excellent, good, fair, and poor) were then further categorized into two groups: (1) good to excellent and (2) poor to fair.
Ability to travel alone	Can you go out alone by train, bus, or taxi? "Yes" or "no."
BMI	Weight and height were measured twice to calculate body mass index (BMI). The Malaysian BMI classification was used as a reference. In this study, the BMI was classified into two categories: (1) not overweight for underweight and normal and (2) overweight for overweight and obese.
Depression	Depression was assessed using the Geriatric Depression Scale (GDS-15) that has been incorporated into the BM-JAGES questionnaire. A score of less than 5 points indicated no depression.
Hypertension	Have you ever been diagnosed with hypertension by a medical doctor, nurse, or health officer? "Yes" or "no."
Diabetes, heart disease, stroke	Participants were given a list of diseases, and they had to circle the number of diseases they had, which were diagnosed by a doctor.
Activities of daily living (ADL)	Six ADLs were assessed, which included bathing, dressing, toileting, transferring, feeding, and continence. These ADLs were categorized into dependent and independent. Any activities that require assistance were categorized as dependent. For feeding, partial or total help or parenteral feeding was categorized as dependent. For continence, partial or total incontinence of the bowel or bladder was categorized as dependent.
Visual, hearing, memory, and walking impairment	Do you have any difficulty in seeing? Do you have any difficulty in hearing? Do you have any difficulty in remembering or concentrating? Do you have any difficulty in walking, climbing steps, or carrying items? The four options of answers (no difficulty; yes, some difficulty; yes, a lot of difficulties; and cannot do at all) were then categorized into two groups: yes or no.

**Table 2** Reasons for Unmet Healthcare Needs

Reasons	60–74 Years, N (%)	≥ 75 Years, N (%)	Total N (%)
<b>Accessibility</b>			
Economic hardship	21 (22.1)	3 (3.2)	24 (25.3)
Inaccessible transportation	8 (8.4)	2 (2.1)	10 (10.5)
<b>Availability</b>			
Scheduling conflict	15 (15.8)	2 (2.1)	17 (17.9)
Service not available	10 (10.5)	2 (2.1)	12 (12.6)
<b>Acceptability</b>			
Attitudes toward healthcare	5 (5.3)	1 (1.1)	6 (6.3)
Knowledge about healthcare	22 (23.2)	3 (3.2)	25 (27.4)
<b>Total</b>	<b>81 (85.3)</b>	<b>13 (13.7)</b>	<b>94 (100%)</b>

unable to travel alone using transportation, and those with a poor/fair self-perceived financial status were more likely to experience unmet healthcare needs. Among the health-related factors, overweight/obesity, history of stroke, and poor/fair self-perceived health status were associated with unmet healthcare needs. Finally, without hearing and memory impairment, walking impairments, being ADL-dependent, and having self-reported symptoms of depression were also associated with higher risk of having unmet healthcare needs (Table 3).

Furthermore, the significant variables from the simple logistic regression with  $p < 0.05$  were candidates for the multivariable model. Hence, from the analysis, three factors—unable to travel alone, overweight, and depression—were associated with unmet healthcare needs in the forward stepwise model (Table 4). The model correctly classified 93.4% of the respondents. No interaction and collinearity were present.

## Discussion

This study provides information on the prevalence, reasons for and factors associated with unmet healthcare needs among older persons in Selangor, Malaysia. We found that the overall prevalence of unmet healthcare needs among older adults is 6.6% in our study. In comparison, a study conducted in Korea found a 17.4% prevalence of unmet healthcare needs among the older people,<sup>5</sup> and a study in Thailand found rates of 2.52% and 0.41% unmet healthcare needs for outpatient and inpatient care, respectively;<sup>17</sup> both are countries with national health insurance. However, both of these studies were conducted

at the national level, with a large sample size and a longer study duration of several years.

In this study, the main reason for unmet healthcare needs is knowledge and attitude towards medical care. However, among Thai older people, knowledge about healthcare was found to be the last reason that leads to unmet healthcare needs: only 0.61% of older outpatients, and none of the older inpatients, aged over 65 years, gave this reason.<sup>17</sup> In addition, our study found that financial barriers were among the main reasons for unmet healthcare needs. This finding is consistent with a study of patients aged 18–87 years among Canadian migrants without health insurance; 80.6% of the respondents stated that the reason for unmet healthcare needs was related to financial barriers.<sup>18</sup> Interestingly, the study in Korea also found that financial barriers were the main reason for unmet healthcare needs, despite the population having national health insurance coverage.<sup>5</sup>

This study found that overweight and obese elderly more likely to have unmet healthcare needs than the non-obese elderly. Obesity in old age can result from either morbid obesity or an increase in visceral adipose tissue in previously underweight or normal-weight adults.<sup>19</sup> However, in a study of the general population in Viet Nam, BMI was not found to be associated with unmet healthcare needs.<sup>20</sup> Further research is needed to better understand the association between BMI and unmet healthcare needs. However, one possible explanation is that overweight older people face a complex interaction of body systems due to aging process and several comorbidities,<sup>21</sup> such as hypertension, diabetes, and arthritis.<sup>22</sup> Some studies have shown that overweight and obesity could lead to cognitive impairment<sup>22,23</sup> and functional disability, including mobility disability.<sup>24,25</sup> As a result, these conditions could lead to more complex healthcare needs which are difficult to meet, and also lead to difficulty in traveling alone, hence resulting in unmet healthcare needs. Regardless, cautious interpretation of BMI in the elderly is necessary because lean body mass, fat mass, or fluid retention are not determinants of BMI,<sup>22,26</sup> and aging is associated with progressive loss of muscle strength, mass, and increased fat mass.<sup>19,27</sup>

In this study, it was found that the odds of unmet needs among older people increased if they are unable to travel alone using transportation. Similar results were observed in a study of older Koreans living in rural areas, which showed that almost half the total respondents experienced unmet needs because of inconvenient transportation.<sup>28</sup> A study among older people in Thailand found that the percentage of unmet healthcare

**Table 3** Prevalence of Unmet Healthcare Needs Stratified by Patient Characteristics

Characteristic	Total, N (%)	Unmet, N (%)	Met, N (%)	p-value <sup>a</sup>
<b>Participants</b>	1204	80 (6.6)	1124 (93.4)	N/a
<b>Age (years)</b>				
60–74	996 (82.8)	68 (6.8)	928 (93.2)	0.557
≥75	208 (17.2)	12 (5.8)	196 (94.2)	
<b>Sex</b>				
Male	691 (57.4)	35 (5.1)	456 (94.9)	<b>0.011</b>
Female	513 (42.6)	45 (8.8)	456 (91.2)	
<b>Ethnicity</b>				
Malay	1002 (83.2)	64 (6.4)	938 (93.6)	0.425
Non-Malay	202 (16.8)	16 (7.9)	186 (92.1)	
<b>Location</b>				
Rural	602 (50.0)	50 (8.3)	552 (91.7)	<b>0.021</b>
Urban	602 (50.0)	30 (5.0)	572 (95.0)	
<b>Education</b>				
Primary or less	650 (54.0)	48 (7.4)	602 (92.6)	0.536
Secondary	416 (34.6)	24 (5.8)	392 (94.2)	
Tertiary	138 (11.4)	8 (5.8)	127 (94.2)	
<b>Employment status</b>				
Jobless/retired	1035 (86.0)	64 (6.2)	971 (93.8)	0.112
Employed	169 (14.0)	16 (9.5)	153 (90.5)	
<b>Household income</b>				
B40	1094 (90.9)	74 (6.8)	1020 (93.2)	0.222
M40	98 (8.1)	4 (4.1)	94 (95.9)	
T20	12 (1.0)	2 (16.7)	10 (83.3)	
<b>Self-perceived financial status</b>				
Difficult	228 (18.9)	24 (10.5)	204 (89.5)	<b>0.028</b>
Average	796 (66.1)	44 (5.5)	752 (94.5)	
Comfortable	180 (15.0)	12 (6.7)	168 (93.3)	
<b>Marital status</b>				
Married	802 (66.6)	45 (5.6)	757 (94.4)	<b>0.042</b>
Single/widowed/divorced	402 (33.4)	35 (8.7)	367 (91.3)	
<b>Family composition</b>				
Stay alone	64 (5.3)	6 (9.4)	58 (90.6)	0.310
Stay with family/friend	1140 (94.7)	74 (6.5)	1066 (93.5)	
<b>Current smoker</b>				
Yes	215 (17.9)	14 (6.5)	201 (93.5)	0.931
No	989 (82.1)	66 (6.7)	923 (93.3)	
<b>BMI (kg/m<sup>2</sup>)</b>				
Not overweight	716 (59.5)	35 (4.9)	681 (95.1)	<b>0.003</b>
Overweight	488 (40.5)	45 (9.2)	443 (90.8)	
<b>Hypertension</b>				
Yes	775 (64.4)	49 (6.3)	726 (93.7)	0.547
No	429 (35.6)	31 (7.2)	398 (92.8)	

(Continued)

**Table 3** (Continued).

Characteristic	Total, N (%)	Unmet, N (%)	Met, N (%)	p-value <sup>a</sup>
<b>Diabetes mellitus</b>				
Yes	434 (36.0)	33 (7.6)	401 (92.4)	0.316
No	770 (64.0)	47 (6.1)	723 (93.9)	
<b>Heart disease</b>				
Yes	139 (11.5)	5 (3.6)	134 (96.4)	0.125
No	1065 (88.5)	75 (7.0)	990 (93.0)	
<b>Stroke</b>				
Yes	48 (4.0)	7 (14.6)	41 (85.4)	<b>0.024</b>
No	1156 (96.0)	73 (6.3)	1083 (93.7)	
<b>Depression</b>				
Yes	152 (12.6)	20 (13.2)	132 (86.8)	<b>0.001</b>
No	1052 (87.4)	60 (5.7)	992 (94.3)	
<b>Self-perceived health status</b>				
Poor–fair	492 (40.9)	45 (9.1)	447 (90.9)	<b>0.004</b>
Good–excellent	712 (59.1)	35 (4.9)	677 (95.1)	
<b>Ability to travel alone</b>				
Yes	763 (63.4)	32 (4.2)	731 (95.8)	<b>&lt;0.001</b>
No	441 (36.6)	48 (10.9)	393 (89.1)	
<b>Visual impairment</b>				
Yes	833 (69.2)	61 (7.3)	772 (92.7)	0.157
No	371 (30.8)	19 (5.1)	352 (94.9)	
<b>Hearing impairment</b>				
Yes	324 (26.9)	31 (9.6)	293 (90.4)	<b>0.013</b>
No	880 (73.1)	41 (5.6)	831 (94.4)	
<b>Walking impairment</b>				
Yes	613 (50.9)	55 (9.0)	558 (91.0)	<b>0.001</b>
No	591 (49.1)	25 (4.2)	566 (95.8)	
<b>Memory impairment</b>				
Yes	460 (38.2)	40 (8.7)	420 (91.3)	<b>0.025</b>
No	744 (61.8)	40 (5.4)	704 (94.6)	
<b>ADL</b>				
Dependent	57 (95.3)	9 (15.8)	48 (84.2)	<b>0.005</b>
Independent	1147 (4.7)	71 (6.2)	1076 (93.8)	

**Notes:** <sup>a</sup>Chi-squared test. Bold figure = significant value with  $p < 0.05$ .

**Abbreviation:** N/a, not applicable.

needs increases when the person becomes dependent on others to bring them to health facilities.<sup>29</sup> The poor older people living in rural areas, and not with their children, had a more substantial likelihood of unmet healthcare needs. The inability of the elderly to travel alone therefore needs attention in collaboration with the community or nearby nongovernmental agencies to provide these older people with transportation assistance to reach nearby health facilities.

Our study also showed that older adults with depression are more likely to have unmet healthcare needs than those without depression, when other factors are taken into account. This study showed the same findings as a study conducted on older German adults.<sup>26</sup> Depression is an important issue among older people, especially for conditions such as cardiovascular disease.<sup>30</sup> Another study showed that patients with a higher severity of depression appeared to have a higher risk of unmet needs.<sup>31</sup> This finding is alarming

**Table 4** Factors Associated with Unmet Healthcare Needs

	Crude OR (95% CI)	p-value <sup>b</sup>	Adjusted OR <sup>1</sup> (95% CI)	p-value <sup>b</sup>
Ability to travel alone				
Yes	1.00		1.00	
No	2.79 (1.76–4.44)	<b>&lt;0.001</b>	2.51 (1.57–4.01)	<b>&lt;0.001</b>
BMI				
Not overweight	1.00		1.00	
Overweight	1.97 (1.25–3.12)	<b>0.004</b>	1.88 (1.18–2.99)	<b>0.008</b>
Depression				
No	1.00		1.00	
Yes	2.51 (1.46–4.29)	<b>0.001</b>	2.23 (1.29–3.87)	<b>0.004</b>

**Notes:** <sup>b</sup>Likelihood ratio test. Bold figure = significant value with  $p < 0.05$ .

because depression is highly prevalent among older people.<sup>32,33</sup> Depression is related to the acceptance factor of unmet healthcare needs; both are related to the attitudes toward and knowledge about healthcare. For instance, an older adult suffering from depressive symptoms might be unaware of their ability to return to former activities that they once enjoyed or to participate in social activities, reducing their motive to seek healthcare.<sup>34</sup> One study also shows that depression in older people is associated with inadequate health literacy.<sup>35</sup> This may prevent them from seeking necessary medical care, resulting in unmet healthcare needs and lower overall well-being.

The strength of this study is that it identified the prevalence of unmet healthcare needs and the possible reasons for it, and investigated various factors, namely, demographic characteristics, and socioeconomic, health-related, and aging factors, which may be associated with unmet healthcare needs among the older population in urban and rural parts of Malaysia. In addition, the study was able to get a good response from the respondents as the researchers were able to disseminate the information related to the study as early as possible with the assistance of the head villages. Furthermore, the researcher had made an appointment before conducting the face-to-face interview with the respondents. Thus, the respondents may feel comfortable as the interview was conducted at the respondents' place at their convenient time.

However, the study was based entirely on self-reported information collected through a structured interview. A more detailed understanding of the reasons for unmet healthcare needs among older people could be obtained through qualitative research using focus group discussions and in-depth interviews with older people. Future research should also assess unmet healthcare needs based on objective measures of need for healthcare, such as biological

markers of diabetes or hypertension, and also consider supply-side factors associated with unmet health care need such as service provision, healthcare costs and waiting times at nearby healthcare facilities. In addition, the cross-sectional nature of the analysis did not allow for causal inference. Longitudinal follow-up of the older people interviewed in this study could provide further evidence of causal factors of unmet healthcare needs.

## Conclusion

The prevalence of unmet healthcare needs among older people in Malaysia is 6.6% was lower than that reported in some other countries. The knowledge about health care and economic hardship being among the main reason for unmet health care needs. Subsequently, it was associated with inability to travel alone, being overweight and having self-reported depression. However, it is possible to further reduce unmet healthcare needs by improving people's knowledge and attitudes about appropriate healthcare utilization, strengthening financial protection measures and providing support to people at high risk of having unmet healthcare needs.

## Ethics Approval

All procedures in this study were conducted according to the guidelines of the Helsinki Declaration. Informed consent was obtained from the participants in writing before the interview. This research was approved by the Research Ethics Committee of the National University of Malaysia (FF-2018-532;14 September 2018).

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## Author Contributions

All authors made a significant contribution to the work reported whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare no conflicts of interest.

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