ORIGINAL ARTICLE

Prevalence and Factors Associated with Loneliness Among Urban-Dwelling Older Persons in Kuala Lumpur

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Keywords:
Loneliness, older persons, screening, social support, urban.

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Received: 23rd Oct 2025; Accepted: 23rd February 2026

Doi: https://doi.org/10.31436/imjm.v25i03.3136

ABSTRACT

The World Health Organization (WHO) declared loneliness as a global public issue. Each individual faces this psychological state in some stages of their lives as people from all age categories, including older persons may experience it. In this study, we aimed to determine the prevalence and factors associated with loneliness among older persons in Kuala Lumpur. **MATERIALS AND METHODS:** This cross-sectional study was conducted at government health clinics located in two districts located in Kuala Lumpur, Malaysia between October 2024 and March 2025. 423 older persons were recruited. The De Jong Gierveld Loneliness Scale (DJGLS-6), Duke Social Support Index (DSSI-11), Lubben Social Network Scale (LSNS-6), Geriatric Depression Scale (GDS-14) and self-rated health (SRH) questionnaires were used for data collection. Ordinal logistic regression was used to identify significant factors. **RESULTS:** The mean age of participants was 67.80 (±5.75) years. Analysis of the collected data indicated a 47.0% prevalence of loneliness among participants. Ordinal logistic regression found that female [adjusted odds ratio (AOR)=1.50; 95% confidence interval (CI): 1.04–2.19], age (AOR= 1.03; 95% CI: 1.00–1.07) and functional social support (AOR=0.92; 95% CI:0.89 – 0.96) were significantly associated with loneliness. **CONCLUSION:** Based on these findings, social and community programmes can be tailored to reach older persons at greater risk of experiencing loneliness. Identification of these individuals can be informed by their sociodemographic, health, and interpersonal characteristics highlighted in this study.

INTRODUCTION

Loneliness is defined as a distressing subjective experience that occurs when a person perceives that their social relationships do not meet the level they desire in terms of number or quality or both.[1,2] This experience reflects a perceived mismatch between their social expectations and the actual lived social connections. Recognising the prevalence and health burden of loneliness, the World Health Organization (WHO) declared it as a global public health concern.[3] Persons who experience loneliness face an increased likelihood of developing chronic health issues such hypertension and cardiovascular disease as well as mental health issues such as depression and cognitive decline.[4-7] Individuals of all age groups may encounter loneliness and these associated health implications.[3] Nonetheless, relative to younger cohorts, older persons are more significantly impacted by this psychological state.[8] Priority has therefore been given to managing the issue of loneliness among older persons, particularly in high-income countries with large ageing populations, such as the United Kingdom and the United States, as part of efforts to improve their health and well-being.[9] Based on a global systematic review and meta-analysis covering 113 countries, loneliness shows a clear age gradient, with older persons most affected.[10] In Europe, the prevalence is 2.9–7.5% among young adults, 2.7–9.6% among middle -aged adults and the highest at 5.2–21.3% among older persons. However, in low- and middle-income countries outside of Europe, whilst the prevalence among adolescents is 9.2% in South-East Asia to 14.4% in the

Eastern Mediterranean, data on other older age groups are scarce.

Malaysia is witnessing a demographic shift towards an ageing population.[11] Currently, 7.2% of Malaysians are aged 65 years and above, classifying the country as an ageing nation.[11] An increase in the ageing population will lead to a rise in chronic illnesses, loneliness, and other social challenges among older persons.[3] Nonetheless, most studies on this issue have been performed in suburban and rural areas in Malaysia whilst there is a scarcity of data highlighting it specifically in urban environments.[12-15] For instance, studies by Mahmud and Teh were conducted in community settings with samples drawn from non-urban or mixed localities with prevalence of loneliness reported at 35.7% and 53.4% respectively.[14,15] Similarly, studies by Hussein and Azam were conducted in rural agricultural settings of Malaysia with no involvement of urban population.[12,13] Several unique challenges to social connectedness are faced by urban-dwelling older persons such as high living expenses, erosion of family support, income inequalities, and accessibility issues in high-rise housing.[16] At the same time, older persons across the country also frequently visit government health clinics for several reasons such as routine check-ups, management of chronic conditions, or acute health concerns.[17] This provides an ideal opportunity for regular screening for loneliness thus ensuring that individuals at risk can be identified. Examining loneliness in a primary care setting also generates evidence that can inform future screening and intervention strategies targeted to these reachable urban primary healthcare service users. Thus, in this study, we aim to determine the prevalence and factors associated with loneliness among urban-dwelling older persons attending government health clinics in Kuala Lumpur, Malaysia.

MATERIALS & METHODS

Study Design and Setting

This study was conducted using a cross-sectional design at government health clinics in two urban districts of Kuala Lumpur, Malaysia between October 2024 and March 2025. A cluster sampling approach was employed whereby two district health offices (DHOs) were randomly selected from the four DHOs in Kuala Lumpur, namely Cheras, Kepong, Lembah Pantai, and Titiwangsa. The selected clusters were Lembah Pantai DHO and Titiwangsa DHO. All primary health clinics under these DHOs were included as data collection sites. Data were therefore collected at Kuala Lumpur, Setapak, and Dato' Keramat Health Clinics under Titiwangsa DHO, and Tanglin, Muhibbah, and Petaling Bahagia Health Clinics under Lembah Pantai DHO.

Participants' Eligibility Criteria

Individuals aged ≥60 years attending the selected government health clinics were screened for eligibility. The inclusion criteria required participants to be Malaysian citizens with the ability to comprehend Malay or English language. Adults who are not physically and/ or mentally capable of independent face-to-face communication, due to conditions such as stroke or dementia, were excluded. Although older persons with dementia or stroke-related communication impairment may experience loneliness, meaningful participation in a face-to-face interview requires sufficient ability to comprehend questions and articulate subjective emotional states. Inclusion of these participants without adapted instruments could therefore introduce bias towards lower prevalence of loneliness rather than capturing the underlying burden. For this reason, these groups were excluded to preserve the validity of self-reported outcomes.

Sampling Strategy and Data Collection

A systematic random sampling method was used to select participants from designated health clinics. Recruitment of participants was facilitated by nurses or assistant medical officers stationed at the triage counter. At the beginning of each data collection session, the starting point was selected by generating a random number using an online random number generator. The eligible older person matching this randomly generated position at the triage counter was approached as the first participant. Subsequently, every other patient triaged (n2 sampling interval) and met the inclusion criteria was approached for face-to-face data collection. Relevant

information was then gathered via pre-designed online questionnaire forms and entered accordingly into REDCap application using interviewers' electronic devices.

Sample Size Calculation

Sample size was calculated using OpenEpi Version 3.01. Determination of the required sample size was based on prevalence of loneliness and odds ratios of factors associated with loneliness among older persons reported in the literature. Calculation based on the prevalence utilised the formula $n = [Z^2 \times p(1-p) / d^2$ in which *n* is the sample size required, *Z* is the 95% confidence (1.96), *p* is the expected prevalence and *d* is the margin of error (0.05). Taking into 80% power and findings from a recent Malaysian study which reported a prevalence of 35.7% among older persons, this yielded a required sample size of 353.[14] Additionally, an odds ratio of 1.95 for age group as a predictor of loneliness as reported in a study by Grover corresponded to a required sample size of 316 participants.[18] Between the two calculated sample sizes, the larger number (353) was selected to support reliable estimation in subsequent analyses.

Study Variables

Loneliness was measured using the translated 6-item De Jong Gierveld Loneliness Scale (DJGLS-6).[19] This instrument evaluates social and emotional components of loneliness through its two subscales comprising 3 questions for each component.[20] This version of the DJGLS has been translated and validated in Bahasa Malaysia for its use among older persons.[19] The total score, after adjustment for negatively phrased items ranges from 0 (least lonely) to 6 (most lonely).[19] Scores of 0-1 indicate respondents are not experiencing loneliness whereas scores of 2-6 are indicative of some degree of loneliness.[21]

The independent variables collected were:

1. Sociodemographic characteristics. These include participants' age, sex, ethnicity, marital status, education level, living arrangement, mode of transportation, number of children, and monthly household income.
2. Physical and mental health status. Participants were asked if they had been diagnosed with chronic diseases such as hypertension, diabetes, cancer, and others.[22] Screening for depression was also performed using the Malay version of the 14-item Geriatric Depression Scale (M-GDS-14).[23] M-GDS-14 scores of 0 to 5 are deemed as normal and scores of 6 and above denote depression.[23] Furthermore, participants were asked to self-report on their overall health status using a single question.[24]
3. Two measures of social support were collected namely structural and functional social support. Locally validated Lubben Social Network Scale (LSNS-6) was utilised to assess objectively how much social support participants were receiving.[25,26] This instrument consists of six items, split equally into two subscales, with three questions in each subscale pertaining to social support from family and friends.[26] Higher total scores indicate a broader and stronger social network. A total score of 12 or less indicates inadequate structural social support among older persons.[25] Additionally, functional social support was also evaluated in this study using the 11-item Duke Social Support Index (DSSI).[27] In contrast to the LSNS-6 which quantifies objective structural support, the DSSI-11 evaluates the subjective perception of help availability and the satisfaction derived from social ties. Higher scores on the DSSI signify stronger functional social support.[27] The classification of functional social support comprises three categories, namely low-to-fair (11–26), high (27–29), and very high (30–33).[27] Both structural and functional social support were measured in this study as they represent related but distinct aspects of social relationships. This is because loneliness is shaped by perceived unmet needs rather than network size alone thus making assessment of both dimensions theoretically important. [28]

Statistical analysis

All statistical analyses were performed using Statistical Package for Social Sciences (SPSS IBM Corp., Chicago,

IL; Version 25.0). Missingness was evaluated for all variables. Two observations were found to have missing information on monthly household income and LSNS-6 scores. Given the minimal missingness, listwise deletion was used to exclude these observations thus leaving 423 cases for final analysis. Descriptive statistics were used to present participants' sociodemographic details, physical and mental health status, and levels of social support. Univariable analysis was conducted using simple ordinal logistic regression. Variables with a $p < 0.25$ in the univariable stage were included in the multiple ordinal logistic regression model. When both continuous and categorical forms of a variable were available, the continuous form was selected for inclusion in the final model to minimise loss of information from categorisation. The final model was assessed for key assumptions and multicollinearity was considered absent when the variance inflation factor (VIF) was <5.0 and the tolerance value was >0.2. Model fitness of the final model was evaluated using Brant's test (test of parallel lines) for proportional odds assumptions.

RESULTS

Sociodemographic characteristics of the participants are shown in Table I. The participants' average age was 67.8 (SD: ±5.75) years. Of all the participants, 249 (59%) were female, 273 (65%) were between the ages of 60 and 69, 196 (46%) were Malays, 289 (68%) were married and 174 (41%) lived only with a spouse. Nearly one-quarter 102 (24%) made less than RM1000, while 152 (36%) made between RM1000 and RM1999. A number of these participants reported having three or more chronic medical conditions [60 (14%)], and 135 (31.9%) had just one. Depressive symptoms were identified in a small proportion of them [16 (4%)] whilst most of the participants self-reported that they are in a good state of health [205 (49%)]. When comparing sex of participants, 127 (51%) females reported feeling lonely, higher compared to 72 (41.4%) males. As people get older, loneliness became more common whereby participants aged 80 years old and older reported higher proportion of loneliness [9 (64.3%)] compared to those aged 60 to 69 [122 (44.7%)]. Furthermore, there was higher proportion of participants with loneliness among those with low functional social support [93 (58.5%) than in those with very high functional social support 50 (29.2%).

Table I. Sociodemographic Characteristics of Participants and Proportions of Loneliness

Characteristics	n (%), Mean (SD)	Experiencing Loneliness*	
		No, n (%)	Yes, n (%)
Sex			
Male	174 (41.1)	102 (58.6)	72 (41.4)
Female	249 (58.9)	122 (49.0)	127 (51.0)
Age (years)			
- 69	273 (64.5)	151 (55.3)	122 (44.7)
70 – 79	136 (32.2)	68 (50.0)	68 (50.0)
≥ 80	14 (3.3)	5 (35.7)	9 (64.3)
Ethnicity			
Malay	196 (46.3)	112 (57.1)	84 (42.9)
Chinese	133 (31.2)	65 (49.2)	67 (50.8)
Indian	89 (21.3)	43 (47.8)	47 (52.2)
Others	5 (1.2)	4 (80.0)	1 (20.0)
Marital status			
Married	289 (68.3)	163 (56.4)	126 (43.6)
Never Married	39 (9.2)	19 (48.7)	20 (51.3)
Widowed	34 (8.0)	14 (41.2)	20 (58.8)
Divorced	61 (14.4)	28 (45.9)	33 (54.1)
Household Monthly Income			
0 – 999	102 (24.1)	56 (54.9)	46 (45.1)
1000 - 1999	152 (35.9)	77 (50.7)	75 (49.3)
2000 – 2999	82 (19.4)	45 (54.9)	37 (45.1)
3000 – 3999	50 (11.8)	27 (54.0)	23 (46.0)
≥ 4000	37 (8.7)	19 (51.4)	18 (48.6)
No. of Chronic Medical Conditions			
0	103 (24.3)	51 (49.5)	52 (50.5)
1	135 (31.9)	68 (50.4)	67 (49.6)
2	125 (29.6)	70 (56.0)	55 (44.0)
≥ 3	60 (14.2)	35 (58.3)	25 (41.7)
Living Arrangement			
Living with spouse and children	109 (25.8)	63 (57.8)	46 (42.2)
Living with spouse only	174 (41.1)	96 (55.2)	78 (44.8)
Living with children only	73 (17.3)	35 (47.9)	38 (52.1)
Living with other people	23 (5.4)	12 (52.2)	11 (47.8)
Living alone	44 (10.4)	18 (40.9)	26 (59.1)
Mode of Transportation			
Public transportation	64 (15.1)	29 (45.3)	35 (54.7)
Own transport	190 (44.9)	103 (54.2)	87 (45.8)
Brought by other people	157 (37.1)	87 (55.4)	70 (44.6)
Walking	12 (2.8)	5 (41.7)	7 (58.3)
Number of Children			
0	60 (14.2)	29 (48.3)	31 (51.7)
1	30 (7.1)	15 (50.0)	15 (50.0)
2	124 (29.3)	65 (52.4)	59 (47.6)
3	81 (19.1)	45 (55.6)	36 (44.4)
4	55 (13.0)	31 (56.4)	24 (43.6)
≥ 5	73 (17.3)	39 (53.4)	34 (46.6)
Level of Education			
No formal education	72 (17.0)	36 (50.0)	36 (50.0)
Primary	74 (17.5)	37 (50.0)	37 (50.0)
Secondary	138 (32.6)	72 (52.2)	66 (47.8)
Tertiary	139 (32.9)	79 (56.8)	60 (43.2)
Structural Social Support			
Adequate	307 (72.6)	153 (49.8)	154 (50.2)
Inadequate	116 (27.4)	71 (61.2)	45 (38.8)
Functional Social Support			
Low to Fair	159 (37.6)	66 (41.5)	93 (58.5)
High	93 (22.0)	37 (39.8)	56 (60.2)
Very High	171 (40.4)	121 (70.8)	50 (29.2)
Depression			
No	407 (96.2)	217 (53.3)	190 (46.7)
Yes	16 (3.8)	7 (43.8)	9 (56.3)
Self-rated Health			
Very good	16 (3.8)	8 (43.8)	8 (50.0)
Good	205 (48.5)	120 (58.5)	85 (41.5)
Moderate	166 (39.2)	80 (48.2)	86 (51.8)
Not good	27 (6.4)	10 (37.0)	17 (63.0)
Very bad	9 (2.1)	6 (66.7)	3 (33.3)

*Proportions of loneliness among participants were presented in row percentages

Table II shows the overall prevalence of loneliness among study participants. From the 423 respondents, 199 [47% (95% CI: 42.3–51.8)] of them reported experiencing some degree of loneliness, while 224 individuals [53% (95% CI: 48.2–57.7)] reported no loneliness. The proportions of respondents in both categories were closely comparable. Loneliness was reported by nearly half of the participants, while just over half indicated no loneliness.

Table II. Prevalence of loneliness among older persons

Loneliness status	N	Prevalence (%)	95% Confidence Interval
No Loneliness	224	53	48.2 – 57.7
Presence of Loneliness	199	47	42.3 – 51.8

Several variables were associated with loneliness among older persons through ordinal logistic regression analysis (Table III). Female sex, age, living alone, marital status and lower functional social support were significantly associated with greater odds of loneliness in the univariable (unadjusted) model. In the multivariable (adjusted) model, three factors remained significant after controlling for confounders. Women were more likely to experience loneliness than men [adjusted odds ratio (AOR)=1.50; 95% confidence interval (CI): 1.04–2.19, p=0.032].

Furthermore, age also emerged as a significant predictor of loneliness among older persons whereby each additional year of age was associated with a 3.4% increase in the odds of reporting a higher level of loneliness (AOR=1.034, 95% CI: 1.00–1.07, p=0.038). In contrast, functional social support demonstrated a strong protective effect. For each one-unit increase in the functional social support score, the odds of reporting higher loneliness decreased by 8% (AOR = 0.92, 95% CI: 0.89–0.96, p < 0.001).

DISCUSSION

In Malaysia, loneliness among older persons has been reported in several studies and national surveys. The present study provides additional evidence with a prevalence of 47%. This figure is comparable to the findings of a previous large scale Malaysian study

Table III. Univariable and Multivariable Ordinal Logistic Regression

Characteristics	COR	95% CI	p-value	AOR	95% CI	p-value
Sex						
Male [a]	1	-	-	1	-	-
Female	1.700	1.203 - 2.402	0.003**	1.505	1.035 - 2.189	0.032**
Age (years)				-	-	-
– 69 [a]	1	-	-			
70 – 79	1.300	0.898 - 1.883	0.164*			
≥ 80	2.891	1.150 – 7.271	0.024**			
Age (Continuous scale in years) [+]	1.039	1.009 - 1.070	0.011**	1.034	1.001 – 1.069	0.038**
Ethnicity						
Malay [a]	1	-	-	1	-	-
Chinese	1.209	0.818 - 1.786	0.343	1.057	0.693 - 1.612	0.797
Indian	1.363	0.873 - 2.130	0.170*	1.503	0.949 - 2.382	0.079
Others	0.347	0.059 – 2.032	0.229*	0.246	0.038 – 1.578	0.135
Marital status						
Married [a]	1	-	-	1	-	-
Never Married	1.291	0.727 - 2.292	0.384	1.539	0.496 - 4.775	0.441
Divorced	1.920	1.000 - 3.687	0.050*	2.057	0.735 - 5.759	0.158
Widowed	1.630	0.978 - 2.715	0.061*	1.686	0.677 - 4.198	0.259
Monthly Income (MYR)				-	-	-
0 – 999	1	-	-			
1000 – 1999	0.737	0.340 - 1.594	0.438			
2000 – 2999	0.773	0.382 - 1.566	0.475			
3000 – 3999	0.870	0.451 - 1.678	0.678			
≥ 4000 [a]	0.852	0.429 - 1.691	0.646			
Monthly Income (Continuous scale in MYR)	1.000	1.000 - 1.000	0.731	-	-	-
No. of Chronic Medical Conditions						
0 [a]	1	-	-	1	-	-
1	1.033	0.660 - 1.617	0.887	0.963	0.605 - 1.533	0.875
2	0.750	0.470 - 1.196	0.226*	0.693	0.423 - 1.136	0.142
≥ 3	0.806	0.461 - 1.411	0.451	0.849	0.472 - 1.526	0.584
Living Arrangement						
Living with spouse and children [a]	1	-	-	1	-	-
Living with spouse only	1.233	0.804 - 1.891	0.338	1.241	0.798 - 1.930	0.338
Living with children only	1.665	0.974 - 2.849	0.063*	0.863	0.346 - 2.153	0.752
Living with other people	1.354	0.589 - 3.115	0.476	0.855	0.240 - 3.054	0.799
Living alone	1.964	1.038 - 3.716	0.038**	1.052	0.358 - 3.088	0.924
Mode of Transportation				-	-	-
Public transportation [a]	1	-	-			
Own transport	0.811	0.487 - 1.350	0.420			
Brought by other people	1.582	0.520 - 4.813	0.419			
Walking	0.814	0.483 - 1.372	0.439			
Number of Children				-	-	-
≥ 5 [a]	1	-	-			
4	0.835	0.451 - 1.546	0.572			
3	0.856	0.482 - 1.519	0.589			
2	1.073	0.635 - 1.814	0.788			
1	1.354	0.647 - 2.832	0.430			
0	1.403	0.780 - 2.523	0.273			
Level of Education				-	-	-
Tertiary [a]	1	-	-			
Secondary	1.079	0.711 - 1.638	0.719			
Primary	1.257	0.754 - 2.098	0.381			
No formal education	1.223	0.742 - 2.015	0.430			
Structural Social Support				-	-	-
High [a]	1	-	-			
Low	0.732	0.498 - 1.076	0.109*			
Structural Social Support (Continuous scale) [+]	1.031	0.980 - 1.084	0.233*	1.048	0.994 - 1.105	0.076
Functional Social Support				-	-	-
Very High [a]	1	-	-			
High	2.812	1.784 - 4.434	<0.001**			
Low to Fair	3.315	2.221 - 4.948	<0.001**			
Functional Social Support (Continuous scale) [+]	0.926	0.892 - 0.961	<0.001**	0.921	0.885 - 0.956	<0.001**
Depression				-	-	-
No [a]	1	-	-			
Yes	0.908	0.402 - 2.050	0.831			
Depression (Continuous scale)	1.037	0.948 - 1.134	0.446	-	-	-
Self-rated Health				-	-	-
Very good [a]	1	-	-			
Good	0.593	0.246 - 1.429	0.255			
Moderate	0.807	0.333 - 1.959	0.643			
Not good	1.566	0.513 - 4.779	0.420			
Very bad	0.462	0.101 - 2.113	0.302			

COR: Crude odds ratio, AOR: Adjusted odds ratio, CI: Confidence Interval
** p-value < 0.05, * p-value < 0.25 (for Univariable Model)a reference group, + continuous form of variable chosen (for Multivariable Model)
Brant's test of parallel lines was insignificant (p-value = 1.000)

(n=1,791) which analysed data from the 2004 Malaysian Population and Family Survey.[15] It reported that 53.4% of older respondents experienced loneliness with 32.5% sometimes feeling lonely and 20.9% always feeling lonely.[15] More recently, a larger dataset from the 2014 Malaysian Population and Family Survey (n = 3,710) was analysed and it was found that 35.7% of older persons perceived themselves as lonely.[14] Variations in the methods used may contribute to differences in prevalence across surveys. These include measures of loneliness utilised and sample characteristics of participants recruited at the time of data collection. However, the current estimate of 47% emphasises loneliness among older persons has not declined in recent times. Loneliness persists among older Malaysians despite shifts in demographics and urban living. More than 70% of Malaysians now live in cities, making Malaysia one of the most urbanised countries in Southeast Asia.[29] Although living in a city provides better access to infrastructure and healthcare, it may change the way people interact with each other and weaken family and community support systems.[16]

Additionally, this study found that loneliness was significantly associated with age of older persons. The greater odds of loneliness due to increase in age are closely related to declining health and functional limitations.[30] Older individuals experience higher levels of loneliness because functional limitations are more common at their age compared to relatively younger persons.[30] However, the evidence in Malaysia remains mixed. While a study reported that age of older persons was significantly associated with loneliness, two other separate studies found no such association between age and loneliness.[14,15,31] A key reason for these differences may be attributable to the varying age distributions of participants across studies as some had fewer respondents of more advanced age thus limiting the ability to detect significant associations. The results of the present study also showed that older women were more likely than their male counterparts to experience loneliness. Multiple studies in Malaysia and other countries support this finding.[15,30,32] Several factors may be attributed to women's increased likelihood of experiencing loneliness. For instance, the relatively longer life expectancy of Malaysian women places them at greater risk of entering widowhood with a decline in companionship and support.[8,11] Furthermore, women may communicate their emotional needs in an open manner, which may lead to the detection of loneliness.[33] These combined demographic and sociocultural factors may therefore account for the identification of female sex as a significant determinant of loneliness.

In this study, structural social support which reflects the number of social contacts or the size of one's network was not significant in both the univariable and multivariable models. Interpersonal factors comprising emotional closeness and dependable support have greater influence on loneliness as older persons with lower levels of functional support were observed to be more likely to experience loneliness. This association can be explained by the protective role that supportive relationships play in providing emotional support to older persons thereby reducing feelings of isolation. In this present study, functional social support was measured using the DSSI-11 questionnaire which primarily assesses the perceived quality and adequacy of supportive relationships.[27] The items include emotional aspects such as being understood and listened to, able to share problems, feeling useful to others, and satisfaction with one's relationships. It encompasses not only ties with family and friends but also with broader social connections such as community or organisational contacts. The findings of this study align with the evidence that the emotional dimension of functional social support is essential in protecting against loneliness. This explains why participants with weaker emotional closeness and less adequate supportive ties (lower DSSI scores) were more likely to report higher feelings of loneliness. These findings highlight the need for strong functional social support within families while also strengthening friendships and community networks to prevent loneliness in older age.

The results of this study offer greater comprehension on the problem of loneliness among Malaysian older persons. Loneliness among older persons has been brought into focus through its prevalence, thus offering

insights into the gravity of this issue. Furthermore, screening for loneliness for at-risk older persons can be integrated into government health clinics. Brief tools such as the DJGLS-6 can be administered at triage by clinic staff, recorded, and used to trigger targeted follow-up. This aligns with Ministry of Health mental health integration priorities by translating a positive screening of loneliness into action.[34] Pertinent government and non-governmental organisation (NGO) stakeholders can improve the current Senior Citizens Club and Senior Citizens Activity Centre (PAWE) social networking programs and community support services for referral to these initiatives. However, participation metrics of these programmes alone may not be adequate indicators of older persons' social well-being. A structured buddy system or befriending component with a consistent volunteer matched to the same older person over time may encourage reciprocity and mutual recognition rather than passive presence. This may help reduce loneliness as it restores a sense of being needed and can fill the social void that activity alone does not reach.

This study has several noteworthy strengths. A cluster random sampling approach was used to ensure a good representation of senior citizens who visit Kuala Lumpur's government primary health clinics. Additionally, participants at the various clinics were randomly selected, which helped lessen selection bias. Nevertheless, this study has some limitations. This study is a cross-sectional study thus it is unable to examine the temporal relationship between loneliness and independent variables because they were both investigated simultaneously. Despite their ability to determine associations, cross-sectional studies are unable to definitively investigate cause-and-effect relationships. Additionally, because the data for this study were derived from in-person interviews, there might be issues with social desirability bias in the questionnaire replies. In terms of variables selection, this study focused on depressive symptoms without assessing anxiety, which is another psychological condition commonly associated with loneliness in later life.[4] Depression was prioritised given its strong and consistently documented link with loneliness, as well as its routine assessment in primary care settings.[35] However, the absence of anxiety measures may have led to an incomplete characterisation of the psychological correlates of loneliness and future studies should consider incorporating it for broader assessments of mental health.

CONCLUSION

In conclusion, loneliness remains a prevalent concern among older persons with nearly half of the study population affected. Female sex, increasing age, and lower levels of functional social support were significant determinants of loneliness. These findings emphasise the importance of recognising how demographic and social factors influence the experience of loneliness in later life. Strengthening functional support from family and friends is particularly crucial as it provides day-to-day emotional and social assistance. Targeted strategies addressing these determinants are needed to reduce loneliness and improve the overall well-being of older persons. While strategies addressing these determinants are needed, future research should adopt longitudinal designs to examine how loneliness changes over time, particularly around key life events. Such studies may help distinguish persistent from transient loneliness and better capture its longer-term implications for health and well-being in later life.

INSTITUTIONAL REVIEW BOARD (ETHICS COMMITTEE)

This study was registered with the National Medical Research Registry (NMRR), Malaysia and its ethical approval was granted by the Medical Research and Ethics Committee (MREC), Ministry of Health, Malaysia (NMRR ID-24-00839-KZJ). Written informed consent was obtained from all participants prior to data collection

ACKNOWLEDGEMENTS

We gratefully acknowledge the cooperation and assistance provided by the staff of Ministry of Health, Malaysia in facilitating our data collection. We would like to thank the Director General of Health Malaysia for his permission to publish this article. Our sincere appreciation is also extended to the participants who contributed their time and effort to this study.

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