

# Depression prevalence and its associated factors among sub-urban residents in Kuala Nerus

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## ABSTRACT

**Introduction:** Depression is a prevalent mental health disorder and a growing public health concern. Understanding its burden, this study aimed to determine the prevalence of depression and identify its associated factors among suburban adult residents of Kuala Nerus, Malaysia.

**Materials and Methods:** A community-based cross-sectional study was conducted among 689 adults aged 18 and above who had resided in a suburban area for at least one month and were proficient in Bahasa Malaysia. Data were collected through a house-to-house survey using a pre-tested, validated questionnaire administered via Google Form. Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), and multiple logistic regression analysis was performed to identify associated factors.

**Results:** The prevalence of depression among respondents was 26.4% (95% CI: 23.1, 29.7). Multiple logistic regression analysis identified several significant factors associated with depression. Older age (adjusted OR: 0.972, 95% CI: 0.948, 0.996;  $p=0.020$ ), being married (adjusted OR: 0.377, 95% CI: 0.188, 0.754;  $p=0.006$ ), engaging in physical activity (adjusted OR: 0.669, 95% CI: 0.459, 0.976;  $p=0.037$ ), and higher total knowledge scores (adjusted OR: 0.883, 95% CI: 0.825, 0.945;  $p < 0.001$ ) were less likely to have depression. Conversely, being female (adjusted OR: 1.614, 95% CI: 1.076, 2.421;  $p=0.021$ ) and having a history of depression (adjusted OR: 2.977, 95% CI: 1.122, 7.899;  $p=0.028$ ) were more likely to have depression.

**Conclusion:** The study highlights the substantial burden of depression in suburban communities and underscores the need for targeted mental health interventions. Efforts to improve mental health literacy and promote protective factors, particularly among vulnerable groups such as younger individuals and females, are essential. Further research is warranted to develop effective prevention and treatment strategies.

## KEYWORDS:

Prevalence, depression, cross-sectional, PHQ-9

## INTRODUCTION

Depression is a widespread mental health disorder affecting approximately 280 million people globally.<sup>1</sup> It manifests as

persistent sadness, a loss of interest in daily activities, and various physical and emotional symptoms. Without proper treatment, depression can lead to significant impairment, including social isolation, disability, and an increased risk of mortality.<sup>1</sup> The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) provides clear criteria for diagnosing depression, emphasizing the need for early detection and effective intervention.<sup>2</sup>

In Malaysia, depression poses a critical public health challenge, further complicated by societal stigma and underreporting.<sup>3</sup> Despite existing mental health initiatives, the prevalence of depression is on the rise, particularly among socioeconomically disadvantaged groups. The COVID-19 pandemic has exacerbated this issue, leading to a notable increase in depression rates nationwide.<sup>4</sup> Although Terengganu is not among the states with the highest prevalence, the risk of depression remains considerable in suburban areas where public awareness and access to mental health services may be limited.<sup>3</sup>

Stigma and a lack of understanding about mental health issues often prevent individuals from seeking appropriate care, contributing to the rising suicide rates in Malaysia.<sup>5</sup> For years, the stigmatization of mental illness has made depression a taboo subject among Malaysians.<sup>6</sup>

This study aims to assess the prevalence of depression and its associated factors among adults in Kuala Nerus, Terengganu. By analysing sociodemographic characteristics, clinical profiles, community knowledge, attitudes, and behaviours toward depression, this research seeks to identify key risk factors and inform targeted interventions. The findings will contribute to a deeper understanding of depression in this region, address existing knowledge gaps, and support the development of more effective public health strategies. Ultimately, the study aims to reduce the burden of depression and enhance the mental health and well-being of the community.

## MATERIALS AND METHODS

The community-based cross-sectional survey was conducted among adults in a suburban area, Kampung Felde Belara, in Kuala Nerus with ethics approval from the Universiti Sultan Zainal Abidin Human Research Ethics Committee (UHREC) under Reference no: UniSZA.800-1/1/2 Jld. 2(20). The survey

This article was accepted: 24 January 2025

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targeted participants aged 18 years and older, who had resided in the study area for at least one month and were proficient in reading Bahasa Malaysia. Individuals experiencing communication difficulties were excluded from the study.

Data collection was conducted using a structured questionnaire via Google Forms. The questionnaire comprised five sections, assessing socio-demographic characteristics, clinical profiles, knowledge, attitudes, and depression status. Part I contained 9 questions on socio-demographic data, and Part II included 4 questions on clinical profiles. Parts III and IV, assessing knowledge and attitudes respectively, were adapted primarily from previous studies by Jha and Mandal, 2021<sup>7</sup> and Mulango et al., 2018.<sup>8</sup> Part V, evaluating depression status, consisted of 9 items from the validated Patient Health Questionnaire (PHQ-9) in the Malay language, with a sensitivity of 87% and specificity of 82%.<sup>9</sup>

Initially, the questionnaire's Part III on knowledge encompassed 15 items, while Part IV addressing attitude contained 23 items. A panel of public health specialists validated the questionnaire to ensure its relevance to the studied community. Originally developed in English, the questionnaire was translated into Malay and then back-translated into English by bilingual experts following standard guidelines. Face validity was assessed with 10 individuals to evaluate the clarity and comprehension of the questionnaire. A validation study was subsequently conducted among 147 respondents in Kampung Bukit Tunggul. Based on the results, only 11 items were retained for the knowledge section, and 24 items were retained for the attitude domain. Items with factor loadings of 0.30 or higher were deemed acceptable. Consequently, the finalized questionnaire comprised a total of 57 items in total.

In the knowledge section, responses were scored with two marks for correct answers, one mark for "not sure," and zero marks for incorrect answers, yielding total scores ranging from 0 to 22. In the attitude section, a five-point Likert scale was used, ranging from "strongly disagree" to "strongly agree," with scores assigned from 1 to 5. For negatively worded statements, reverse scoring was applied. The total attitude scores ranged from 24 to 120.

Part V used a Likert scale format to assess depression status, with responses scored from 0 to 3 based on an increasing order of frequency: 0 (not at all), 2-7 days (several days), 8-14 days (more than half the days), and more than 14 days (nearly every day). Negative statements were reverse scored. Then, the total scores ranged from 0 to 27, and classified into normal mental status (0-4 marks) and having depression (5-27).<sup>9</sup>

Data collection was conducted through a house-to-house survey using a pre-tested, validated questionnaire in Google Form. To enhance inclusivity and representativeness, data were collected from all eligible and available adults in Felda Belara using two different approaches, without employing any probability sampling method. Participants with internet access and digital literacy were provided with the

questionnaire link via WhatsApp for self-administration. Meanwhile, for elderly respondents and those without internet access, trained data collectors facilitated the survey using their tablets, ensuring that responses were accurately recorded. To minimize the bias, all data collectors—third-year medical students from Universiti Sultan Zainal Abidin (UniSZA)—underwent comprehensive training before the survey. The training focused on standardized data collection procedures, neutral guidance techniques, and ethical considerations to ensure consistency across all data collection efforts.

Prior to the survey, all participants were informed about the study's objectives, the confidentiality of their responses, and the voluntary nature of their participation. The required sample size was determined using the two-proportions formula, incorporating key parameters from a prior validation study. Sample size calculations were performed using Power and Sample Size (PS) software<sup>10</sup>, with a statistical power of 80% and a margin of error of 5%. Based on these considerations, a minimum of 672 participants was required for the study.

Data cleaning, exploration and analysis were conducted using SPSS version 25. Descriptive statistics were used to present categorical data with frequencies (percentages) and numerical data with means (standard deviations). The prevalence of depressed individuals was reported with percentage and its 95% confidence intervals (CI). Initially, a simple logistic regression was utilized to identify potentially significant variables. Subsequently, multiple logistic regression, employing the forward likelihood ratio method, was employed to determine the associated factors with depression among the respondents. Checks for multicollinearity and interactions among independent variables were performed. The fit of the final model was evaluated using various indexes, including the Hosmer-Lemeshow goodness-of-fit test, overall correctly classified percentage, and the area under the receiver operating characteristic (ROC) curve. The final results were presented through crude and adjusted odds ratios along with their respective 95% CI, and corresponding P value. The significance level ( $\alpha$ ) was set at less than 0.250 for univariable analysis and less than 0.05 for multivariable analysis.

## RESULTS

A total of 689 participants who met the inclusion criteria were included in this study. Table I presents the socio-demographic characteristics of the study population. Regarding the clinical profile of the participants, the majority did not have any comorbidities (67.3%) and they did not need to take any pill everyday (79.2%). Moreover, almost all of the participants did not have a history of depression (96.8%), and the majority of them did not have a family history of depression (93.2%).

### *Exploratory factor analysis and internal consistency*

Table II presents the construct validity and reliability analyses of the questionnaire assessing knowledge and attitudes toward depression among adult respondents. The

Table I: Socio demographic characteristics of the respondents in Kampung Felda Belara (n =689)

Variables	Frequency (%)	Mean (SD)
Age (in years)		34.60 (15.94)
Gender		
Male	253 (36.7)	
Female	436 (63.3)	
Race		
Non-Malay	64 (9.3)	
Malay	625 (90.7)	
Marital status		
Single	378 (54.9)	
Married	311 (45.1)	
Education level		
Primary	46 (6.7)	
Secondary	217 (31.5)	
Tertiary	426 (61.8)	
Occupational status		
Unemployed	390 (56.6)	
Employed	299 (43.4)	
Monthly income		
B40 (< RM4070)	413 (59.9)	
M40 (RM4070-RM8109)	212 (30.8)	
T20 (> RM8109)	64 (9.3)	
Living status		
Alone	31 (4.5)	
With family	658 (95.5)	
Physical activity		
No	273 (39.6)	
Yes	416 (60.4)	

reliability analysis indicated that Cronbach's alpha values for the knowledge and attitude sections were 0.685 and 0.750, respectively, demonstrating good internal consistency. The overall Cronbach's alpha for these two domains was 0.759, confirming that the questionnaire is both valid and reliable.

*Prevalence of depression among adults in Kampung Felda Belara*  
Based on the PHQ 9 questionnaire, out of 689 respondents, 182 people (26.4% with 95% CI: 23.1, 29.7) was found to have depression. Table III displays the descriptive statistics of answers to PHQ 9 questionnaire among the study's participants.

*To assess the knowledge about depression among adult respondents*

The majority of respondents (90.6%) recognized depression as a component of mental health. Nevertheless, almost all of the respondents (95.4%) remained uncertain about the prevalence of undetected depression among many individuals. Around two-thirds (63.6%) were aware of the likelihood of middle-aged and elderly individuals developing depression. Moreover, the majority acknowledged key aspects of depression, including its potential to lead to breakdowns (87.1%) and its impact on concentration (61.1%). Additionally, a substantial number (90.4%) understood the association between depression and suicide or suicide attempts.

Most of the respondents (76.3%) were aware that depression is not confined to a specific age group. They were also aware of the triggering factors such as psychological stress or major life events (89.8%) and emphasized the importance of seeking treatment upon suspecting depression (95.6%).

Majority of the respondents claimed that depression can be cured (81.7%) and individuals with depression are dangerous to themselves and others (86.9%). The total knowledge scores among participants had a mean value of 18.55 (SD = 2.70).

*To assess the attitude towards depression among adult respondents*

Regarding attitude towards depression, more than half of the respondents (70.8%) disagreed that mental health facilities in a society will downgrade the prestige, and majority of them (92.0%) feel that society needs to adopt a more tolerant stance towards depressed people. Additionally, they (82.3%) believed in the effectiveness of integrating depressed individuals into society, while half (51.7%) were open to marrying someone who had recovered from depression.

The majority disagreed with the perception of depressed individuals as societal burdens (83.2%) or as incapable of shouldering responsibilities (65.9%). Instead, the majority of them supported the idea that nobody should ignore depressed individuals from society (88.5%) and disagreed that depressed individuals do not deserve sympathy (92.0%).

A large percentage perceived equal job opportunity for depressed individuals (75.5%) and agreed that almost everyone can get depression (74.6%), advocating for their fair treatment akin to those with other illnesses (69.6%). However, opinions varied among the respondents regarding the ease of identifying depressed individuals: 36.2% agreed, 33.7% disagreed, and 30.2% remained neutral.

Notably, 39.8% disagreed that lack of discipline causes depression, whereas 45.0% agreed that lack of determination

**Table II: Construct validity and reliability analyses of questionnaire on knowledge, and attitude towards depression among respondents in Kampung Bukit Tunggul (n =147)**

Items	Factor loading		Reliability
	Factor 1 (Knowledge)	Factor 2 (Attitude)	Cronbach's alpha
<b>Knowledge</b>			<b>0.685</b>
Q1: Depression is a component of mental health.	0.692		
Q2: Many people have depression but do not realise it.	0.498		
Q3: *Middle-aged and elderly individuals are unlikely to develop depression.	0.506		
Q4: Individuals with depression can break down at any time.	0.668		
Q5: *Individuals with depression have a good concentration.	0.417		
Q6: Depression can lead to suicide and suicide attempts.	0.563		
Q7: *Depression affects people of a particular age group.	0.597		
Q8: Depression may occur when an individual is under psychological stress	0.339		
Q9: Treatments should be sought if one suspects the presence of depressions.	0.533		
Q10: *Depression cannot be cured.	0.52		
Q11: Individuals with depression are dangerous to themselves and others.	0.589		
<b>Attitude</b>			<b>0.750</b>
Q12: *In my opinion, mental health facilities in a society downgrade the prestige.		0.348	
Q13: I feel that society needs to adopt a far more tolerant attitude towards depressed people.		0.633	
Q14: I think treating depressed people as a part of society is effective		0.601	
Q15: *I do not want to marry depressed people even after they are fully recovered.		0.547	
Q16: *I believe depressed people are a burden to the society.		0.623	
Q17: *I feel that depressed people should not assign any responsibilities.		0.579	
Q18: I believe that nobody should ignore depressed individuals from society.		0.753	
Q19: *I believe depressed individuals do not deserve sympathy from society.		0.577	
Q20: I think that depressed individuals have an equal right to get a job.		0.694	
Q21: In my opinion, almost everyone can get depression.		0.641	
Q22: I believe that depressed individuals should be treated just like people with other diseases.		0.589	
Q23: I believe depressed individuals are easy to be recognised because they are different.		0.529	
Q24: I believe lack of discipline can cause depression.		0.743	
Q25: I believe lack of determination can cause depression.		0.568	
Q26: *In my perspective, spending on treating depressed people is a waste of money.		0.743	
Q27: *I think that mental hospitals are out-dated means of treating depression.		0.704	
Q28: I believed that mental health facilities should be community-based		0.504	
Q29: I think that individuals with symptoms of depression should be hospitalised immediately		0.586	
Q30: *I feel that depressed people living in the neighbourhood are frightening.		0.587	
Q31: *I do not want to live next door to someone who has been depressed.		0.585	
Q32: In my opinion, society should not be afraid of depressed people receiving mental health service in our neighbourhood		0.628	
Q33: I think depressed people are less dangerous than most people suppose.		0.469	
Q34: I believe depressed people can be trusted as babysitters after recovery.		0.509	
Q35: Healthy lifestyle can help maintain mental health.		0.395	

\*Negative statement

could be a contributing factor. A vast majority (88.7%) rejected the idea that investing in the treatment of depressed individuals is a waste of resources, and 69.7% did not consider mental hospitals as outdated means of treating depression. Moreover, most of them (68.0%) advocated for community-based mental health facilities while 90.9% believed that individuals exhibiting depressive symptoms should receive immediate hospitalization. Interestingly, 44.2% disagreed that having depressed individuals in the neighbourhood is frightening, and 61.8% expressed

willingness to live next to someone who has experienced depression. A substantial portion of respondents (77.2%) agreed that society should not be afraid of depressed individuals accessing mental health services in their communities and 64.3% believed that depressed individuals are less dangerous than commonly perceived. Additionally, 43.4% believed that individuals recovered from depression could be trusted as babysitters. Lastly, most respondents (90.2%) concurred that maintaining a healthy lifestyle contributes to preserving mental health.

**Table III: Descriptive statistics of PHQ-9 responses assessing depression among adults in Kampung Felda Belara (n=689)**

No	Items	Never (0)	Sometimes (2-7)	Often (8-14)	Always (>14)
		n (%)	n (%)	n (%)	n (%)
1.	Lack of interest or fun in doing things	469 (68.1)	193 (28.0)	7 (1.0)	20 (2.9)
2.	Feeling sad, moody or hopeless	512 (74.3)	146 (21.2)	15 (2.2)	16 (2.3)
3.	Problems going to bed or during sleep or oversleeping	405 (58.8)	227 (32.9)	26 (3.8)	31 (4.5)
4.	Feeling tired or less energized	283 (41.1)	358 (52.0)	21 (3.0)	27 (3.9)
5.	Lack of appetite or overeating	486 (70.5)	167 (24.2)	24 (3.5)	12 (1.7)
6.	Having negative feelings about yourself- or feeling like you are a failure or have disappointed yourself or your family	481 (69.8)	167 (24.2)	11 (1.6)	20 (2.9)
7.	Difficulty in focusing on something like reading newspapers or watching television	520 (75.5)	138 (20.0)	11 (1.6)	20 (2.9)
8.	Moving or speaking too slowly until others noticed. Or vice versa - being too restless or anxious to cause you to move more than usual	594 (86.2)	76 (11.0)	12 (1.7)	7 (1.0)
9.	Thinking that it's better if you're dead or want to hurt yourself in some way	632 (91.7)	37 (5.4)	4 (0.6)	16 (2.3)

**Table IV: Associated factors of depression status among sub-urban residents in Kampung Felda Belara (n =689)**

Variables	Simple Logistic Regression		Multiple Logistic Regression <sup>a</sup>	
	Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p-value
Age (years)	0.945 (0.930, 0.960)	<0.001	0.972 (0.948, 0.996)	0.020
Gender				
Male	1.00		1.00	
Female	1.586 (1.100, 2.286)	0.014	1.614 (1.076, 2.421)	0.021
Ethnicity				
Non-Malay	1.00			
Malay	0.909 (0.512, 1.613)	0.745		
Marital status				
Single	1.00		1.00	
Married	0.208 (0.139, 0.312)	<0.001	0.377 (0.188, 0.754)	0.006
Highest completed education				
Primary	1.00			
Secondary	3.856 (1.144, 12.993)	0.029		
Tertiary	6.506 (1.983, 21.348)	0.002		
Occupation				
Unemployed	1.00			
Employed	0.407 (0.282, 0.587)	<0.001		
Monthly income				
B40	1.00			
M40	0.965 (0.665, 1.400)	0.849		
T20	0.544 (0.275, 1.079)	0.082		
Living status				
Alone	1.00			
With family	1.914 (0.724, 5.060)	0.191		
Physical activity				
No	1.00		1.00	
Yes	0.577 (0.410, 0.813)	0.002	0.669 (0.459, 0.976)	0.037
Having Comorbidities				
No	1.00			
Yes	1.054 (0.736, 1.511)	0.773		
Medications				
0	1.00			
1-2	0.620 (0.372, 1.034)	0.067		
≥3	0.761 (0.338, 1.712)	0.509		
History of Depression				
No	1.00		1.00	
Yes	2.895 (1.233, 6.797)	0.015	2.977 (1.122, 7.899)	0.028
History of family depression				
No	0.00			
Yes	1.480 (0.789, 2.775)	0.222		
Total knowledge scores	0.919 (0.865, 0.975)	0.005	0.883 (0.825, 0.945)	<0.001
Total attitude scores	0.984 (0.968, 0.999)	0.045		

<sup>a</sup>Forward likelihood ratio was applied; No collinearity and interaction existed between variables. The model reasonably fits well. The model fitness was checked by Hosmer-Lemeshaw test (p=0.547), overall, correctly classified percentage (75.4%) and the area under ROC curve (75.2%; 95% CI: 71.1, 79.3; p<0.001).

*Factors associated with depression among sub-urban residents in Kampung Felda Belara*

Through univariate analysis employing simple logistic regression, several potential associated factors of the depression status of respondents were identified: age, being female, being married, educational milestones such as secondary school attainment and tertiary education, being employed, those having monthly income of T20, cohabitation with family, engagement in physical activity, intake of 1-2 medications, those with previous history of depression, family history of depression, total knowledge scores and total attitude scores.

After controlling the confounding factors employing multiple logistic regression, several factors were identified to link with the respondents' depression status. The results of the final model implied that the factors of being female and those having a previous history of depression were associated with a higher likelihood of experiencing depression among the respondents. On the other hand, older individuals, married participants, those engaged in physical activities and those with higher total knowledge scores were less likely to have depression (Table IV).

**DISCUSSION**

The current study highlights a concerning prevalence of depression among adults in this study based on the PHQ-9 questionnaire. Moreover, the study identified age, gender, marital status, physical activity, history of depression, and total knowledge scores as the significant associated factors of the respondents' depression status.

*Prevalence of depression*

The results of the current study revealed that the prevalence of depression among sub-urban adults in Kuala Nerus was found to be 26.4% (95% CI: 23.1–29.7). Comparatively, previous studies in Malaysia have reported varying prevalence rates depending on study populations, instruments, and cut-off points. For instance, Ong, 2022<sup>11</sup> found a higher prevalence (38.5%) among the general Malaysian community using DASS-21, while Yeoh et al. (2017)<sup>12</sup> reported 36.0% among adults in Selangor, Penang, and Terengganu using Beck's Depression Inventory. However, a much lower prevalence of depression was observed in the adult population in rural and urban areas (3.7%),<sup>13</sup> rural communities (15.8%)<sup>14</sup> and adolescents (19%),<sup>15</sup> possibly due to variations in study populations and measurement tools. Meanwhile, Abdul Manaf et al. (2016)<sup>16</sup> found a prevalence of 27.8% among elderly Malays, aligning closely with the current study findings.

Despite these variations, the persistently high prevalence of depression across multiple studies underscores the need for urgent mental health interventions in Malaysia. The findings from Kuala Nerus further reinforce the importance of targeted mental health strategies in sub-urban populations, where depression appears to be a significant public health concern.

*Predictors of depression*

This study identified several significant predictors of depression. This current study revealed that female gender and a previous history of depression were positively associated with experiencing depression. Conversely, older age, being married, engaging in regular physical activity, and higher total knowledge scores were found to be protective factors against depression.

The role of knowledge in influencing depression was evident in this study. Participants with lower knowledge scores about depression exhibited a higher prevalence of the condition, aligning with prior research that highlights poor mental health literacy as a key contributor to stigma and discrimination against individuals living with depression.<sup>17</sup> This underscores the importance of educational interventions in mitigating depression risks within communities.

Interestingly, despite the critical role of knowledge, no significant association was found between attitudes and depression prevalence among adults in Kuala Nerus ( $p=0.045$ ). However, the overall attitude distribution revealed a high prevalence of positive attitudes toward depression, with 97.0% of participants exhibiting favourable views compared to only 3.0% with negative attitudes. This is a striking contrast to findings from Southern Ethiopia, where only 39.9% of participants held positive attitudes towards individuals with depression.<sup>18</sup> The higher level of positive attitudes in Kuala Nerus suggests reduced stigma and greater acceptance of mental health issues within the community.

Age also emerged as a significant predictor, with younger participants displaying a higher prevalence of depression compared to their older counterparts ( $p<0.001$ ). Participants with depression had a mean age of 25.59 years, while those without depression had a mean age of 35.17 years. These findings are consistent with data from both national<sup>4,19</sup> and international<sup>20</sup> sources, which report higher rates of depression among younger adults. The social isolation often faced by younger adults may contribute to this trend, highlighting the need for social support networks as a protective factor against depression.<sup>21</sup>

Gender differences in depression were also notable, with women more likely to experience depression than men. This aligns with global patterns where women consistently show higher depression rates than men. For instance, a study in Al Ain found lifetime depression rates of 9.5% in females compared to 2.5% in males.<sup>22</sup> The observed gender disparity may be attributed to various factors, including the stress associated with household responsibilities, especially among homemakers in Kuala Nerus. National studies, such as NMHS 2019<sup>3</sup> and NMHS 2023 reports,<sup>4</sup> also revealed similar findings, further highlighting the vulnerability of women to depression.

Marital status was another significant determinant, with single individuals more likely to experience depression than married ones ( $p=0.001$ ). The protective effect of marriage may stem from the social support and companionship it provides, reducing feelings of loneliness and psychological distress.<sup>23</sup> This is consistent with previous research showing

that marital stability contributes to lower depression rates, while serious marital problems can increase the risk.<sup>24</sup>

Physical activity was inversely associated with depression, with those engaging in regular exercise showing lower prevalence rates ( $p < 0.001$ ). This supports existing literature on the mental health benefits of physical activity, which include neuro-modulation and the release of mood-enhancing hormones.<sup>25</sup> Regular exercise also helps manage stress and fosters social connections, both of which are vital in preventing depression.<sup>26</sup>

Comorbidities, even though it was not a significant predictor, were also linked to depression, with individuals suffering from other health conditions exhibiting higher depression rates ( $p = 0.772$ ). This relationship highlights the bidirectional nature of mental and physical health, where one often exacerbates the other.<sup>27</sup> Effective management of both mental and physical health conditions is crucial for improving overall quality of life.

Finally, while a previous history of depression was a significant predictor ( $p = 0.015$ ), family history was not ( $p = 0.222$ ). This finding contrasts with some studies that suggest a strong genetic component to depression, indicating that environmental factors may play a more critical role in this population.<sup>28</sup> These results emphasize the multifactorial nature of depression, where both genetic predispositions and external triggers contribute to the onset of the disorder.

#### LIMITATIONS

This study acknowledged some limitations. While we examined attitudes toward depression, no significant association with depression prevalence was found. This suggests that additional factors may play a more prominent role, and further research is needed to explore the complex interplay between knowledge, attitudes, stigma, and depression.

Additionally, in this study, we could not collect data on environmental or occupational stressors, which may contribute to depression, particularly in suburban settings. Including these factors in future studies could provide a more comprehensive understanding of the determinants of depression in this population.

Lastly, our findings indicated a higher prevalence of depression among females, consistent with global trends. However, this study did not specifically investigate gender-related stressors such as domestic responsibilities, cultural expectations, or employment disparities in Malaysia. Future research should explore these aspects to better understand their potential impact on mental health outcomes.

#### CONCLUSION

This community-based exploratory cross-sectional survey involved 689 adults in Kuala Nerus. The study identified the female and having a history of depression were predictors of depression, whereas older age, marital status, doing physical activity, and higher knowledge scores were less likely to have

depression. These insights inform the development of targeted strategies for depression management. Public health interventions should focus on enhancing awareness of depression risk factors and improving knowledge within the community. Continued research is crucial to refine prevention and treatment approaches, particularly for younger individuals and females.

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