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# Prevalence of Depression among the Geriatric Population in Northern region of Malaysia

Ang Xin Wei[1,*], Lam Cheng Yin[1], Roshini Ragunathan[1], Saraswathi Simansalam[2], Sireesha Paruchuri[2] & Ganesh Pandian Balsubramanian[2,*]

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**Abstract: Background:** Older adults are particularly vulnerable for poor mental health and neurological conditions like depression due to the additional stressors such as capacity loss and declined functional ability. Depression is not a normal part of aging, but it affects 15% of people over 65 years at some point during their later lives. **Objectives:** To investigate the prevalence of depression among geriatric which at age of 60 and above from the Northern region of Malaysia. **Methodology:** A cross-sectional study was conducted among geriatric population which at age of 60 and above from Northern Malaysia region to screen depression. The Geriatric Depression Scale 15 was used. The data collected was analysed for Pearson's Chi-square test and odd's ratio by SPSS Statistics and Pearson's Chi-square test was used to determine the association between sociodemographic data and geriatric depression. **Results:** There was majority of the geriatrics in the Northern region of Malaysia faced depression. Geriatric depression was found to have significantly associated with the level of education and sleep duration. **Conclusion:** Estimated prevalence of depression among the geriatric population was alarmingly high which needs prompt and earlier detection for implementing appropriate treatment strategies.

**Keywords:** Geriatric Depression, GDS-15, Healthy Ageing, Older Adults, Malaysia.

## INTRODUCTION

Globally, depression affects about 280 million people and the World Health Organization (WHO) has cited it as the "single largest contributor to global disability". The prevalence of geriatric depression is increasing in parallel to the numbers of global aging population. WHO forecasted that the prevalence of geriatric depression of 60 years or older worldwide has raised from 12% in 2015 to at least 22% in 2050 an almost 2-fold increase [1]. Depression among the geriatric population was reported common, especially in the countries which lack in elderly care services [2]. Older adults are particularly vulnerable for poor mental health and neurological conditions like depression due to the additional stressors such as loss in capacities and functional disability, prevalence of which was estimated to be quite high [3,4]. In fact, depression is not a normal part of aging but it affects 15% of people over age of 65 at some point during their later lives, and deserves a serious attention from all the stakeholders caring for them, particularly, the healthcare providers

Unfortunately, the recognition of geriatric depression can be difficult due to variety of reasons, and most importantly due to communication difficulties among elderly. Verbal communication plays a crucial role in diagnosing depression, as compared to other medical conditions which could be detected be diagnosed by running a series of diagnostic lab tests.

Geriatric depression is a persistent mental and emotional disorder which occurs in older adults that can interfere with normal functioning and often accompanied by subjective experiences of memory loss and cognitive impairment. It is associated with increased risks of morbidity and mortality, causing an increase in the use of health services, negligence in self- care and affecting their attitude or poor adherence to treatment. The relationship between depression and mortality has been frequently studied and studies reported that higher risk of mortality, ranging from 25% to 43% among individuals with high levels of depressive symptoms [5]. Therefore, an early detection of depressive symptoms in older adults is necessary for improving treatment and quality of life.

The Geriatric Depression Scale 15 (GDS-15), valid, reliable and culturally appropriate tool is widely utilized to help in the early detection of symptoms and diagnosis of geriatric depression. The original version of GDS consists of 30 items (GDS-30), while a short version of the GDS contains 15 items (GDS-15), seeking information on lowered affect, decreased activity levels, irritability, withdrawal, distressing thoughts, and negative judgments about the past, present and future. The construct GDS-15 utilizes self-rating scale, making it more suitable with just simple answers of "yes" or "no" from the participants [6].

The main aim of this study is to estimate the prevalence of depression among geriatric population of the Northern Region of Malaysia using GDS-15. We also explored the significant risk factors associated with depression among our population.

## METHODS

A cross-sectional study was conducted among the community dwelling geriatric population aged 60 years and above, using a convenient sampling strategy. The study was carried out from March 2023 to May 2023 in the Northern region of Malaysia, which include i.e. Perlis, Kedah, Pulau Pinang and Perak for a sample size of 384, calculated using Raosoft® sample size calculator with 5% margin of error, 95% confidence level and 50% of response distribution for a total population of 956,700 geriatric individuals residing in this region. The potential participants were contacted face-to-face and asked to provide

1 Faculty of Pharmacy, AIMST University, Bedong, Malaysia.
* Corresponding author email: ganeshhhh1@gmail.com
2 Clinical Pharmacy & Pharmacy Practice Unit, Faculty of Pharmacy, AIMST University, Bedong, Malaysia

their consent before they were enrolled in this study after ensuring that their inclusion criteria were met. The inclusion criteria were age of 60 years and above, and able to answer simple questions. Participants who have not provided their consent and suffering from severe cognitive impairment were excluded from this study.

The adapted research tool used in this study to collect the participants' sociodemographic details, 15 items of GDS-15 and 3 items on the acceptability of the questionnaire. The GDS-15 developed in 1982 by Jerome Yesavage.6 A trained research assistant helped to verbally translate the English words in the questionnaire to either Mandarin or Malay when deemed necessary. Additionally, explanation on the purpose of the study and an assurance of their data confidentially were also provided before obtaining their consent for participating in this study. Positive responses in 10 items and negative responses in the remaining five items were assigned scores of one. The total scores of 5 and above serves as the cut-off for categorizing the participants into the 'risk of depression' while the score of 0-4 points suggests 'no risk of depression'. Further, scores of 5 to 9 points were categorized into 'mild depression' while scores of 10 and above was categorized as "moderate to severe depression". Cronbach alpha of pilot study was found to be 0.92.

The final data was analysed by using Statistical Packages for Social Sciences (SPSS) version 25.0. Descriptive statistics was used to summarize the sociodemographic data and GDS-15 score by calculated the frequency and percentage. The Pearson Chi-square test with $p<0.05$ and odds ratio with 95% Confidence interval (CI) were used to determine the significant association between the sociodemographic data and presence of depression risk.

## RESULTS

A total of 386 valid responses were included in the data analysis. Of this, 192 (49.7%) were aged 60-69, 117 (30.3%) aged 70-79 and remaining 77 (19.9%) were 80 years old and above (Table 1). An almost equal participation for the male and female which were 190 (49.2%) and 196 (50.8%) respectively. Most respondents were from Perak state 101 (26.2%) followed by 98 (25.4%) from Pulau Pinang, 97 (25.1%) from Kedah and the least from Perlis with 90 (23.3%) respondents. Nearly half of the respondents were Chinese, 179 (46.4%) while Malay and Indian were 107 (27.7%) and 100 (25.9%), respectively. There were more married respondents, 262 (67.9%) as compared with single/widowed/divorced, 124 (32.1%). The respondents with no formal education were 64 (16.6%) and with primary school education had made up 120 (31.1%) while secondary school or higher consist of 202 (52.3%). Most of the respondents were not living alone, 297 (76.9%) and the remaining 89 (23.1%) were living alone. A total of 210 (54.4%) were working and 176 (45.6%) claimed not working. Almost a third of the total participants, 116 (30.1%) reported having slept for 7 hours and more, while almost two-third of them, 270 (69.9%) only slept for less than 7 hours. A majority of the respondents reported an absence of disease history, 275 (71.2%), and the remaining 111 (28.8%) reported the presence of medical history, which included hypertension, hyperlipidaemia and diabetes.

**Table 1:** Sociodemographic characteristics of the studied sample (n=386).

| Characteristics | n (%) |
|---|---|
| **Age (years)** | |
| 60-69 | 192 (49.7) |
| 70-79 | 117 (30.3) |
| 80 and above | 77 (19.9) |
| **Gender** | |
| Female | 190 (49.2) |
| Male | 196 (50.8) |
| **State** | |
| Perak | 101 (26.2) |
| Pulau Pinang | 98 (25.4) |
| Kedah | 97 (25.1) |
| Perlis | 90 (23.3) |
| **Ethnicity** | |
| Malay | 107 (27.7) |
| Chinese | 179 (46.4) |
| Indian | 100 (25.9) |
| **Marital status** | |
| Married | 262 (67.9) |
| Single/Widowed/Divorced | 124 (32.1) |
| **Level of education** | |
| No formal education + Primary school | 184 (47.7) |
| Secondary school or higher | 202 (52.3) |
| **Living arrangements** | |
| Alone | 89 (23.1) |
| Not alone | 297 (76.9) |
| **Previous employment status** | |
| Working | 210 (54.4) |
| Not working | 176 (45.6) |
| **Sleep duration** | |
| 7 hours and more | 116 (30.1) |
| Less than 7 hours | 270 (69.9) |
| **Medical history** | |
| No medical history | 275 (71.2) |
| With medical history | 111 (28.8) |

We found that slightly more than a third of study participants, 152 (39.4%) had no risk of depression and almost a half of them, 188 (48.7%) had mild depression while the remaining, 46 (11.9%) had moderate to severe depression. Participants from two different states i.e. Perak and Perlis significantly differed in their risk of having depression (Table 2). Only three sociodemographic characteristics among our participants i.e. marital status, level of education and the sleep duration were found to have significant associations whereas all other characteristics was not found to significantly impact the risk of having depression. In a multivariate logistic analysis conducted, only education level of the participants was found to have significantly associated with the geriatric depression.

**Table (2):** Association between sociodemographic data and the geriatric depression risk.

| Variable | Depression Symptoms | | p-value | OR (95% CI) |
|---|---|---|---|---|
| | No (n=47) | Yes (n=339) | | |
| **Age** | | | | |
| 60-69 | 28 (7.3%) | 164 (42.5%) | 0.185 | 1 |
| 70-79 | 14 (3.6%) | 103 (26.7%) | | 0.80 (0.40-1.58) |
| 80 and above | 5 (1.3%) | 72 (18.7%) | | 0.41 (0.15-1.10) |
| **Gender** | | | | |
| Female | 27 (7%) | 163 (42.2%) | 0.23 | 1.46 (0.79-2.7) |
| Male | 20 (5.2%) | 176 (45.6%) | | 1 |
| **State** | | | | |
| Perak | 13 (3.4%) | 84 (21.8%) | 0.753 | 1.01 (0.44-2.31) |
| Pulau Pinang | 13 (3.4%) | 88 (22.8%) | | 0.97 (0.42-2.20) |
| Kedah | 8 (2.1%) | 82 (21.2%) | | 0.64 (0.25-1.62) |
| Perlis | 13 (3.4%) | 85 (22.0%) | | 1 |

| Variable | Depression Symptoms | | p-value | OR (95% CI) |
|---|---|---|---|---|
| | No (n=47) | Yes (n=339) | | |
| **Ethnicity** | | | | |
| Malay | 27 (7.0%) | 152 (39.4%) | 0.227 | 1.76 (0.79-3.90) |
| Chinese | 11 (2.8%) | 89 (23.1%) | | 1.22 (0.48-3.09) |
| Indian | 9 (2.3%) | 89 (23.1%) | | 1 |
| **Marital status** | | | | |
| Married | 35 (9.1%) | 227 (58.8%) | 0.302 | 1.44 (0.72-2.88) |
| Single/Widowed/Divorced | 12 (3.1%) | 112 (29.0%) | | 1 |
| **Level of education** | | | | |
| No formal education + Primary school | 11 (2.8%) | 173 (44.8%) | 0.001* | 0.293 (0.14-0.60) |
| Secondary school or higher | 36 (9.3%) | 166 (43%) | | 1 |
| **Living arrangements** | | | | |
| Alone | 6 (1.6%) | 83 (21.5%) | 0.07 | 0.45 (0.19-1.1) |
| Not alone | 41 (10.6%) | 256 (66.3%) | | 1 |
| **Previous employment status** | | | | |
| Working | 30 (7.8%) | 180 (46.6%) | 0.17 | 1 |
| Not working | 17 (4.4%) | 159 (41.2%) | | 0.64 (0.34-1.21) |
| **Co-morbidities** | | | | |
| Absence | 34 (8.8%) | 241 (71.2%) | 0.86 | 1.06 (0.54-2.10) |
| Presence | 13 (3.4%) | 98 (25.4%) | | 1 |
| **Sleep duration** | | | | |
| 7 hours and more | 7 (1.8%) | 109 (28.2%) | 0.02* | 0.37 (0.16-0.85) |
| Less than 7 hours | 40 (10.4%) | 230 (59.6%) | | 1 |

**p <0.05 using chi square test*

About a three-quarter of the respondents, 293 (75.9%), felt that this GDS-15 was not difficult and most of the respondents, 269 (69.7%), also felt this GDS was not stressful with More than a half of the participants, 219 (56.7%), conveyed a high level of acceptability.

## DISCUSSION

Geriatric depression was reported to negatively impact the quality of life, disability and increase the risk of mortality. As the current trend of the geriatric population continues to increase, the prevalence of geriatric depression also increases. Earlier studies before COVID-19 pandemic reported the prevalence of geriatric depression ranging from 5.8% to 34.8% [7-9]. In a recent study, Maraqa et al reported prevalence of 41.1% depression among primary care patients in Palestine [2]. In a meta-analysis of 42 studies conducted globally, Zenebe at al reported an average prevalence of 31.7% among 57,486 elderly populations [10], corroborates to the prevalence of 34.4% among Indian population reported by Pilania et al [11]. Alarmingly, we found a very high prevalence of depression among the community-dwelling older adults, 87.8% in our study which is comparable to the prevalence of 59.1% among the older adults from daycare centre in Malaysia reported by Leong et al [12]. The COVID-19 pandemic was implied with a long-term psychiatric morbidity and an increase in the prevalence of depression, attributing it to many factors including increased stress level, decreased physical activity and social isolation. Briggs et al reported the prevalence more than doubled during the pandemic, especially among those who aged above 70 years old and/or living alone [13]. Moreover, changes in modern lifestyle have been implied with increasing prevalence of depression [14].

We found that the risk of depression among married participants was insignificant in comparison with the geriatric individuals living alone, emphasizing the role of family support on depression among community-dwelling older adults. Our study results are in contrary to many systematic reviews highlighted that overall social support including having a spouse or partner or social network, living with family and having more contact along with emotional and instrumental support, and satisfaction with social support were associated with less depressive symptoms among the community-dwelling older adults in Asia [7]. Cultures that emphasize collectivism, as compared to individualism, have lower rates of which could be attributed to a friendly and helpful neighbourhood in Malaysian community settings, particularly in the rural areas of Northern region that is willing to extend their help and support to those who are living alone.

Surprisingly, we found that primary or no education level among the participants was significantly associated with lower risk of depression, OR = 0.293 (0.14-0.60) as compared to those who had secondary education. This is contrary to the findings of other study reporting that higher education level was associated with a lower risk of depression [2]. However, in a study conducted in a Northern region Malaysia, the finding corroborates with our finding regarding the association of depression with secondary school education [9].

Yu et al reported a significant correlation of sleep disturbance and depression, mutually affecting each other [15]. Though we did not explore sleep disturbance and depression in such a great detail in our study, we found a higher risk of depression associated with those who had slept for less than 7 hours daily, compared to their counterparts who had slept for 7 hours or more.

## STUDY LIMITATION

There are certain strengths and limitation of this study. The strength of this study was the use of GDS-15 geriatric depression screening tool which been validated which had high acceptability among the study participants. The limitations of this study are the information collected on the medical history maybe some of the disease can suffer from recall bias. Besides, the GDS-15 scale used in this study was meant only for screening purpose not as replacement of diagnosis. Moreover, the prevalence of depression screened was based on self-reported data thus it may be subject to response bias. The multi component aspects of social support and sleep disorders were not explored in a greater detail.

## CONCLUSION

The estimated prevalence of depression among geriatric population in the Northern region was found to be alarmingly

high, calls for appropriate initiatives such as awareness program for the geriatric population and their caretakers, social support groups in addition to early interventional programs. The significant association between depression and sleep duration emphasizes the importance of a good sleep hygiene among this population. A high acceptability of GDS-15 screening tool is very instrumental for early identification of depression and should be used whenever appropriate by the healthcare providers in order to combat the high prevalence of geriatric depression among Northern Malaysia population by initiating the necessary intervention once the diagnosis is confirmed.

## Disclosure Statements

- **Ethics Approval:** This study was conducted in accordance with the Declarations of Helsinki's standards of ethics. This study was approved to be conducted by the Human Ethics Committee (AUHEC/FOP/1/09/03/2023) at AIMST University. All the study participants were included in this study after signing the informed consent to state their willingness to participate in this study.
- **Consent of Publication:** All the authors agree to publish this article.
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