Prevalence of Depression and Its Factors Among Elderly Population in Barangay Cabangahan, Consolacion, Cebu

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Background: Depression is a widespread mental disorder that affects 3.8% of the global population, with a total prevalence rate of 5.7% in the age group of 60 and older. Symptoms include feelings of guilt, hopelessness, and thoughts of dying or suicide. The Philippines has a high mental health issue among its older adults, with 7.5 million accounting for 7.5% of the population. The country ranks third in the Western Pacific Region, with 6 million Filipinos suffering from depression and anxiety.

Objective: This study aimed to determine the prevalence of depression and its associated factors among the elderly group ages 60 and older in Barangay Cabangahan, Consolacion, Cebu.

Method: This study used a cross-sectional research design. Respondents were randomly selected through convenient sampling through house-to-house visitation and face-to-face interviews. Assessment tools were distributed assessing the demographic profile, Family APGAR, and Patient Health Questionnaire 9 (PHQ-9). The depression scale was adapted to determine the prevalence of depression among the elderly. Descriptive statistics were used to analyze the data, which displayed the frequency distribution and percentage of the respondents' demographic profile, family function, and prevalence of depression. The Pearson correlation coefficient was used to determine the association of the demographic profile and family function with the prevalence of depression.

Results: The demographic profile of the elderly group is mostly women, comprising 93 (80.87%) of the population; 53 (46.09%) belong to the young-old age group (aged 60–65), and 65 (56.53%) are married. The majority are elementary school graduates, 72 (62.61%); their source of financial support is their children, 42 (35.5%), and employment is 35 (30.43%). Most live together with their immediate family, 106 (92.17%). This study identified 60 (52.17%) of the 115 respondents as having a highly functional family. Only 35.65% (41) of the respondents had mild depression, while 54 (46.09%) reported no or minimal depression. Among the demographic profiles, living alone, having more than one comorbidity, and taking more than one medication may lead to depression among the elderly, with r-values of .191,213 and.222, respectively. The study indicates a significant relationship between family function and the prevalence of depression in the elderly, with a p-value of 0.022 and a weak negative correlation with an r-value of -.214.

Summary/ Conclusion: The elderly population is predominantly women, with most being married and living with their immediate family. Highly functional families are evident, while the prevalence of depression is low, with only 35.65% experiencing mild symptoms. The study suggests improving the quality of life for the elderly through intervention programs, health education, and strong, cohesive community networks. Additional assessment instruments, such as the Geriatric Depression Scale, are recommended, as well as increasing the study's sample size and geographic setting.

Key words: Depression, elderly, family APGAR, Patient Health Questionnaire-9 (PHQ-9)

Introduction

Depression is a feeling ranging from overreaction to despair. It is being considered a silent epidemic, contributing significantly to disability and mortality. It can slow bodily functions and lead to suicide due to a lack of treatment.[1] It affects 3.8% of the population globally, with a total % prevalence rate of 5.7% among those aged 60 years and older. Symptoms of depression include feelings of excessive guilt or low self-worth, hopelessness about the future, thoughts of dying or suicide, disrupted sleep, changes in appetite or weight, and feeling tired or low in energy. A depressive episode can be concluded if symptoms

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are present and experienced most of the day, nearly every day for at least two weeks.[2] The global burden of diseases revealed that mental disorders remain among the top ten global burden causes, with no global reduction since 1990, from 170.8 million in 1990 to 279.6 million in 2019. [3] They are considered the most common mental disorders across both sexes and years; however, their burden was greater for females than males.[4] The Philippines has a high mental health issue among its older adults, with 7.5 million accounting for 7.5% of the population. The country ranks third in the Western Pacific Region for mental health issues, with 6 million Filipinos suffering from depression and anxiety. 17%-20% of adult Filipinos suffer from mental disorders, with a high suicide rate among older adults due to their inability to adapt to rapid social and economic changes.[5] The older adult population growth rate in the Central Visayas region has increased from 7.8% in 2010 to 8.2% in 2015.[6] The increased number of beneficiaries of the region's Social Pension for Indigent Senior Citizens program (i.e., a sixfold increase from 2011 to 2015 and fourfold from 2015 to 2018) confirms the increasing older adult population growth rate of the Central Visayas region of the Philippines.[7]

Several studies were conducted to determine the associated factors of depression among the elderly group. One of the studies stated that depression is linked to economic status, low life satisfaction, unhealthy self-perception, stroke, arthritis, hearing impairment, insomnia, dependency, and falls. Conversely, no association was determined with age, sex, marital status, education, or other factors. Older women are more likely to experience depression due to bio-psychosocial factors such as a higher serotonin concentration and a dysregulated hypothalamic-pituitary-adrenal axis.[8] Further studies found that factors affecting depression in elderly people include career stress, distance from family, and poor family APGAR.[9,10]

Mental disorders, particularly dementia and depression, are a significant public health threat globally, affecting over 20% of the population of adults aged 60 and above. It can affect the quality of life and impact the access to health and social services among senior citizens.[7] Untreated symptoms can worsen quality of life, lead to misdiagnosis of dementia, and cause physical, cognitive, functional, and social impairment. To prevent depression, holistic care, family support, social engagement, and healthcare service improvements are recommended.[11,12] Determining the prevalence of depression among the elderly can serve as an early warning and advice to health professionals, health policymakers, and other pertinent stakeholders to take effective control measures and provide periodic care for the elderly population.[11] Hence, this study is conducted to determine the prevalence of depression among the elderly and its associated factors to be able to develop a mental health intervention program addressing the concerns of the elderly group ages 60 and older in Barangay Cabangahan, Consolacion, Cebu.

This study aimed to determine the prevalence of depression among the elderly aged 60 and older in Barangay Cabangahan, Consolacion, Cebu Province. Specifically, it aimed to identify demographic profiles such as age, gender, marital status, highest educational attainment, sources of financial support, living arrangements with children, comorbidities, and number of medications. This study utilized Family APGAR to assess family function and the PHQ-9-Depression Scale tool

to determine the prevalence of depression among the elderly aged 60 and older. Finally, the study aimed to establish a significant correlation between the prevalence of depression and its associated factors, such as the demographic profile and family function, within the elderly population aged 60 and older.

METHODS

Study Design

This study employed an analytical cross-sectional study to determine the prevalence of depression and its associated factors among the elderly population in Barangay Cabangahan, Consolacion, Cebu. A courtesy call was made to the Barangay Captain of the Barangay Cabangahan to seek approval and assistance in data gathering. A house-to-house survey with the guidance of the barangay health worker (BHW) or Purok president was conducted. Patients were selected randomly through convenient sampling—those available during the survey, willing to participate, and geographically accessible. Family APGAR was used to determine the family function, and the Patient Health Questionnaire-9 Patient Depression Questionnaire was used as an assessment tool to determine the family function and the prevalence of depression. The demographic profile, family functions, and prevalence of depression were presented in tables showing the frequency distribution and percentage. The correlation between the associated factors and the prevalence of depression was analyzed through the Pearson correlation coefficient.

Study Setting

The study was conducted in Barangay Cabangahan, Consolacion, Cebu Province. The 2021 census showed a total population of 3,053, equivalent to 2.06% of the Municipality of Consolacion's total population. The senior citizen comprises 4.35% (108) of the total population.[13] It has Kausawagan Community Health Clinic, which caters to out-patient cases and has free mental health check-ups approximately 13.5 km from Cebu proper, which is geographically accessible. Data collection began after approval of the study and consent was secured from the Barangay Captain. Convenient sampling through house-to-house visitation and face-to-face interviews during senior citizen meetings was conducted to meet the desired sample size. The BHW accompanied the researcher, and data collection was complete by the second week of December 2023.

Subjects

The study population is elderly, aged 60 years and older, randomly selected through convenient sampling. Those who are accessible, willing to participate, have signed the informed consent, and are coherent with no other limitations in understanding and responding to the survey questionnaire were included in this study. House-to-house visitation, face-to-face interviews, and distribution of the assessment tools were conducted. Before distributing the research instruments, the researcher explained the purpose of the study and why they were included in it.

The assurance of confidentiality of their responses was explained, and participation in the study was solely voluntary, and no monetary compensation was given. Before signing the informed consent form, the researcher explained it in a comprehensible dialect, and time was given to the participants to reread it on their own before signing the consent form.

Sample size is calculated based on the prevalence using the theculator.net online sample size calculator tool (www.calculator. net/samplesize-calculator.html). The president of the senior citizen organization in the aforementioned barangay provided the number of senior citizens. The confidence interval was set at 95% with a 5% margin of error. The inclusion criteria were all elderly aged 60 years and older who are coherent, able to communicate, and permanent residents of Barangay Cabangahan, Consolacion, Cebu Province. On the other hand, exclusion criteria were those elderly who have life-threatening diseases and have difficulty communicating, such as patients with dementia, deafness, or aphasia, and those who refused to participate in the study.

Figure 1 shows the process flow of inclusion and exclusion in determining the study's respondents. The total population of senior citizens in Barangay Cabangahan, Consolacion, Cebu, is 204. The sample size was computed, and the desired number of respondents with a 95% level of confidence is one hundred thirty-four (134) respondents. However, due to the time constraints of the study and following the exclusion criteria, only one hundred fifteen (115) were eligible and included in this study.
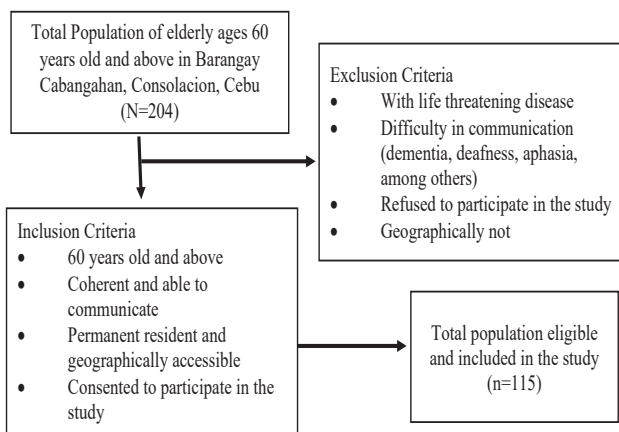

Figure 1. Process of inclusion and exclusion in determining the respondents of the study.

Variables and Data Collection

A transmittal letter was sent to the barangay captain following the approval of the research proposal. The letter requested permission to conduct the study and seek assistance from the barangay health worker, purok president, or any other relevant person to accompany the researcher on the house-to-house visitation. The English questionnaire was translated into the Visayan dialect and distributed to the elderly population of the adapted community in Barangay Nangka Consolacion, Cebu. The PHQ-9 assessment tool was adapted to determine the prevalence of depression. The possible total score is twenty-seven (27); since it is a 3-point nominal scale, the range of scores is from 0- no to 3-nearly every day. A score of <5 points indicates the absence of depressive disorder. Scoring interpretation is as follows: 0–4 (None-Minimal), 5-9 Mild, 10-14 Moderate, 15-19 Moderately Severe and 20-27 Severe.

In addition, to determine the family function of the respondents, the Family APGAR was adapted, showing the level of satisfaction with family relationships. It is a 5-item measure of perceived family support in the domains of adaptation, partnership, growth, affection, and resolve. Point values were assigned as follows: 0 = Hardly ever, 1 =some of the time, and 2 =almost always. The scores of the items were added; the total score for the scale ranged between 0 and 10 points. Higher scores indicate greater satisfaction or family functionality. Scores were summed up and interpreted as follows: 0-3 (severely dysfunctional), 4-7 (moderately dysfunctional), and 8-10 highly functional).

A pilot study assessed possible areas of difficulty and improvement in administering the translated Visayan dialect questionnaire. A transmittal letter was given to Barangay Nangka, Consolacion, Cebu's barangay captain, asking permission to conduct the study. It was selected since the population profile and the community setting are similar to the characteristics of Barangay Cabangahan, Consolacion Cebu respondents. Translated Visayan questionnaires were distributed. Cronbach analysis was done to determine the content validity of the translated tool. The Cronbach alpha value of the PHQ-9 assessment tool is 0.71, which is interpreted as acceptable, while for the Family APGAR, the Cronbach value is 0.83, which is interpreted as good.

Data Analysis

All the data gathered was encoded using Microsoft Excel and analyzed using IBM SPSS 29. Descriptive statistics such as frequency distribution and percentages were employed to show the study's results on the socio-demographic profile, family function, and prevalence of depression among the elderly. Results were illustrated in tabulated form. In determining the association between the prevalence of depression, family function, and socio-demographic profile, the Pearson correlation coefficient was employed in this study. It measures the strength of the linear association between two variables, denoted by r. A positive association was illustrated with a value of r greater than 0, a negative association if the value is less than 0, and no association with a 0 value. The recall bias cannot be totally ruled out because of the subjective nature of the assessment tools.

Ethical Consideration

A study protocol was submitted to the Ethics Review Committee of Mendero Medical Center for review and approval prior to the conduct of the study. Precautionary measures were meticulously considered and checked to ensure that all information was treated as confidential. Each respondent was identified with coded numbers, and data gathered were collated and recorded in Microsoft Excel. The file is protected with a password.

Characteristics of the Respondents

A total of 115 respondents consented to participate in this study. Table 1 shows the socio-demographic characteristics of all the elderly population ages 60 and older. Among the 115 elderly groups, 93 (80.87%) were women. Most senior citizens were young (aged 60–65), 53 (46.09%), and 13.04% belonged to the old-old category (aged 76 and above). The marital status report showed 65 (56.52%) are married, 38 are widowed (33.04%), and the remaining were single and separated with the same population of 6 (5.22%). The majority of the elderly

Table 1. Demographic profile among elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu.

Demographic Profile	Category	Frequency	Percentage (%)
Age	60-65 years old	53	46.09
	66-70 years old	15	13.04
	71-75 years old	32	27.83
	76-80 years old	1	0.87
	above 80 years old	14	12.17
Gender	Female	93	80.87
	Male	22	19.13
Marital Status	Single	6	5.22
	Married	65	56.52
	Separated	6	5.22
	Widow/er	38	33.04
Educational Attainment	Elementary Level	11	9.57
	Elementary Graduate	72	62.61
	High School Graduate	28	24.35
	College Level	4	3.48
Sources of Financial Support	Employed	35	30.43
	SSS pension	16	13.91
	GSIS pension	2	1.74
	Children	41	35.65
	Relatives	3	2.61
	Community	2	1.74
	Senior Citizen Pension	16	13.91
Living Arrangements	Living Alone	6	5.22
	Living with immediate family	106	92.17
	Living with non-immediate family	3	2.61
Comorbidities	None	31	26.96
	1	43	37.39
	2	24	20.87
	>2	17	14.78
Number of Medications	None	54	47.37
	1-2	51	44.74
	3-4	7	6.14
	5-6	2	1.75

group are elementary graduates 72 (62.61%), sources of financial support are their children 41 (35.65%), employment 35 (30.43%), and senior citizens and SSS pensions 16 (13.91%), others get their financial support from GSIS, relatives and the community. The majority of the elderly are living together with their immediate family 106 (92.17%). Reports on comorbidity showed that 43 (37.39%) have one comorbidity, 24 (20.87%) have two comorbidities, 31 (26.96%) claim to have no comorbidities, and the remaining 17 (14.78%) have more than two comorbidities. Among those with comorbidities, 51 (44.74%) have 1-2 medications, while 54 (47.37%) bad no maintenance medications.

A. Family Function Utilizing the Family APGAR Assessment Tool

The family function of the elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu, was assessed utilizing the Family APGAR. The report showed that 60 (52.17%) of the respondents have highly functional families, and they are satisfied with the support they receive from their families. Moderately dysfunctional families were reported among the 48 (41.74%), while 7 (6.0%) disclosed having a severely dysfunctional family.

Table 2. Family functions assessed through APGAR scoring among elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu

APGAR scoring	Frequency	Percentage
0–3 (severely Dysfunctional)	7	6.09%
4–7(Moderately Dysfunctional)	48	41.74%
8–10 (Highly Functional)	60	52.17%

B. Prevalence of Depression

The prevalence of depression utilizing the PHQ-9 depression scale among the elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu showed 53 (46.09%) respondents have scores between 0-4 interpreted as none to minimal depression, while 41 (35.65%) has a total score between 5-9 interpreted as mild depression. Only 2 (1.74%) were reported to have severe depression, 4 (3.48%) moderately severe depression, and 15 (13.04%) had moderate depression.

Table 3. Prevalence of depression utilizing PHQ-9 depression scale among elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu

PHQ-9 Score	Frequency	Percentage
0–4 (None-Minimal)	53	46.09%
5-9 Mild	41	35.65%
10-14 Moderate	15	13.04%
15-19 Moderately Severe	4	3.48%
20-27 Severe	2	1.74%

C. Depression and its associated factors

Table 4 presents the association of socio-demographic profile, family function, and prevalence of depression among the elderly population ages 60 and older, analyzed through the Pearson r correlation coefficient. Confounding variables were not identified in this study since it only aims to determine if a relationship between the associated factors and prevalence of depression exists, unlike in regression, which aims to describe the nature of the relationship between the variables.[21] Significant relationships exist between living arrangements with children and the prevalence of depression. A negative correlation with the r-value -.191 may imply that living alone may lead to the prevalence of depression among the elderly. Moreover, the higher number of comorbidities and the number of medications may also lead to the prevalence of depression among the elderly with r-values of .213 and .222, respectively. It can be gleaned from Table 5 the significance of the relationship that exists between family function and the prevalence of depression with the p-value 0.022 < 0.05. Moreover, it projects a weak negative correlation (r-value -.214), which may imply that the lower score of APGAR leading to severely dysfunctional families may result in severe depression among the elderly group ages 60 and older. The results showed no significant relationship or association between age, gender, marital status, educational attainment, and sources of financial support with the prevalence of depression among the elderly group of Barangay Cabangahan, Consolacion, Cebu.

Discussion

The demographic profile of the elderly group is mostly women, comprising 93 (80.87%) of the population; 53 (46.09%) belong to the young-old age group (aged 60-65), and 65 (56.53%) are married. The majority are elementary graduates, 72 (62.61%); their source of financial support is their children, 42 (35.5%); employment is 35 (30.43%); and they live together with their immediate family, 106 (92.17%). Among the 115 respondents, 43 (37.39%) have one comorbidity, and regarding their maintenance medications, 51 (44.74%) have 1-2 medications, while 54 (47.37%) claimed to have no maintenance medications. Most of the respondents, 60 (52.17%), have a highly functional family, and the prevalence of mild depression is only 35.65% (41). More than half (46.09%) of the elderly group showed none to minimal depression. No significant relationship between the prevalence of depression and age, gender, marital status, educational attainment, and sources of financial support was seen in this study. Living arrangements, comorbidities, and the number of maintenance medications showed a significant relationship with the prevalence of depression among the elderly group, with p-values of 0.041, 0.022, and 0.017, respectively. This may imply that living alone with an r-value of -.191, having more than one comorbidity, and having several medications with R-values of.213 and.222, respectively, may lead to a prevalence of depression among the elderly. Moreover, the study indicates a significant relationship between family function and the prevalence of depression, with a weak negative correlation, suggesting that dysfunctional families may lead to severe depression in elderly individuals. The study results

Table 4. Association of socio-demographic profile, family function and prevalence of depression among elderly population ages 60 and older of Barangay Cabangahan, Consolacion, Cebu

Demographic Profile	APGAR p-value	r-value	Prevalence of Depression p-value	r-value
Age	.163	-.131	.239	.111
Gender	.740	.031	.165	.130
Marital Status	.997	.000	.773	.027
Highest educational attainment	.725	.033	.785	-.026
Sources of financial supports	.240	-.111	.206	.119
Living arrangements with children	.835	-.020	.041	-.191(*)
Comorbidities	.815	-.022	.022	.213(*)
Number of medications	.611	-.048	.017	.222(*)

* Correlation is significant at the 0.05 level (2-tailed).

Table 5. Relationship Between Family Function and Prevalence of Depression, n=115.

Variables	p-value	r-value	Decision
Family Function	0.022	-.214*	Reject Ho
Prevalence of Depression			

* Correlation is significant at the 0.05 level (2-tailed).

can serve as a guide in the patient-doctor-relationship curriculum. Albeit the result showed a minimal prevalence of severe-moderate depression, there is still a need further to evaluate the mental status of this elderly population since depression is commonly untreated and left undiagnosed. To engage the elderly group in social activities, as some may be living alone, connecting them to the community may help relieve their loneliness when left alone in the house.

Determining the associated factors of depression is essential, as this gives healthcare providers and policymakers an idea of the appropriate approach and intervention in addressing concerns and combating the problem of depression. Several studies were conducted to determine the associated factors of depression. A study by Handajani et al. (2022) showed that there is no linkage between age, sex, marital status, and education with the prevalence of depression, which is similar to the results of the study. A study conducted by Liu et al. (2023) stated that comorbid conditions, such as cerebrovascular disease or dementia, often complicate the diagnosis of depression in older patients. Moreover, a study by Guerrero-Muñoz (2021) showed that poor family APGAR, or family dysfunction, is associated with the prevalence of depression. Comparable to this study, the results also showed a relationship and association between the prevalence of depression and family dysfunction, the presence of comorbidities, and the number of maintenance medications. In the discussion of the study by Soberano et al. (2021), it was stated that living alone is linked to higher rates of depression, early mortality, and social isolation due to a lack of emotional support. However, in their study, depression was not associated with living alone, which was attributed to the strong, cohesive relationships in the community. The study was conducted in a rural area where the community showed help to each other, trust, and a close-knit relationship. In contrast, the result of this study showed a significant relationship or association between living arrangements; it concluded that living alone may lead to depression. Maybe the community does not have a strong cohesive relationship, unlike in the study conducted by Soberano et al. (2021).

The study utilized the PHQ-9 questionnaire to determine the prevalence of depression. Potential bias can be attributed to the nature of the assessment tool, which is subjective. Hence, the diagnosis of depressive disorder will be further evaluated by a clinician.[12] This study showed only estimates of the prevalence of depression; further study can be done by including the live experiences of the elderly group, wherein based on the assessment tool, it showed moderately severe to severe depression. Other assessment tools, such as the Geriatrics Depression Scale, could also be utilized, as this can be useful in differentiating depressed elderly groups from non-depressed ones.[12] Yadav et al. (2020) employed a mixed-effect logistic regression model to ascertain the true association between depressive symptoms (DS) and its associated factors. The study analyzed two association models: the association of DS and chronic diseases and the association of DS with socio-demographic and lifestyle factors. The study reported unadjusted and adjusted odd ratios (ORs) with 95% confidence intervals.[17] This study, in contrast, solely relied on Pearson correlation to determine the correlation of the variables, revealing both direct and indirect relationships or associations between the socio-demographic profile and the prevalence of depression, as measured by the PHQ-9 depression scale score. This study did not predict the influence of socio-demographic profile and family function on the prevalence of depression among the elderly group. The confounding variables, relative risk, and absolute risks were not determined in this study. A similar study conducted by Sahu et al. (2022), which aimed to determine the correlation between depression and quality of life among the elderly in community and old age homes in India, employed the Pearson correlation coefficient; variables were not treated statistically with regression, confounders were also not mentioned in this study.[19] To eliminate bias and determine the influence of the associated factors on the prevalence of depression among the elderly group, this study recommends conducting a multivariate regression analysis to validate the relative and absolute risk of being alone, having comorbidities, and taking more than one medication as contributory factors in the prevalence of depression among the elderly group of Barangay, Cabangahan, Consolacion, Cebu.

There are several limitations to this study, including the inability to infer causal relationships between the socio-demographic profile, family function, and the prevalence of depression among the elderly group. Since the respondents are elderly, the PHQ-9 depression scale is subjective or self-reported, which may lead to misreporting or recall bias. This study did not measure the respondents' cognitive function, potentially influencing their depression scale score. Researchers can conduct further studies to assess cognitive function and its correlation to depression.[20] A multivariate regression analysis to validate the relative and absolute risk of being alone, having comorbidities, and taking more than one medication as contributory factors in the prevalence of depression among the elderly group of Barangay, Cabangahan, Consolacion, Cebu is also one of the limitations of this study.

Conclusion and Recommendations

The elderly population is predominantly women, with 93 (80.87%) being young, aged 60-65. They are married 65 (56.53%), elementary graduates 72 (62.61%, and primarily live with their immediate family 106 (92.17%). Most respondents have one comorbidity, 43 (37.39%), and have 1-2 medications, 51 (44.74%). Most respondents, 60 (52.17%), have a highly functional family. The prevalence of depression is low, with only 35.65% (41) experiencing mild depression. Living arrangements, comorbidities, and maintenance medications significantly impact the prevalence of depression since the p< 0.5. Dysfunctional families may lead to severe depression in elderly individuals, which showed a negative correlation value of r.-214. No significant relationship was found between depression prevalence and age, gender, marital status, or financial support since the p>0.05. The results of the study can provide information that will improve the quality of life for the elderly through developing intervention programs enhancing primary care services, formulating and utilizing depression screening assessments, health education, healthy lifestyle promotion, spirituality, stress management, and the creation of activities that encourage social interaction and preserve social networks. Additional assessment instruments, like the Geriatrics Depression Scale, may also be employed, as it can help distinguish between senior individuals who are depressed and those who are not. Extending the study's scope by incorporating additional barangays and augmenting the sample size could reveal a noteworthy correlation with diverse demographic characteristics.

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