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Prevalence and associated risk factors of Loneliness among older adults at Mathira West Sub-County, Kenya

[1]Agnes Nyamu, [2]Lucy Njiru, [3]Samuel Ojuade

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Abstract: **Loneliness is a phenomenon commonly associated with old age because of the changes that occur with this population in their social relationships both qualitatively and quantitatively. This phenomenon is widely perceived as one of the major problems of later life. Therefore, the main objective of this study is to investigate the prevalence and associated risk factors of loneliness among older adults at Mathira West, Sub-County, Kenya. The sample size of 299 older adults in this study was calculated using Yamane's formula, the confidence level of 95%, the margin error of 5%, and the 1169 population. Quantitative data was collected from old adults aged 55-60 years, in which frequency of male respondents was higher (174, 58.2%) as opposed to female older adults (125, 41.8%). Results from this study showed the prevalence of moderate loneliness at 27.4% and severe or clinical loneliness at 14.4%. Similarly, findings from PLUM ordinal regression indicated that older adults aged 66-70 years (p=0.000), and aged 71-75 years (p=0.000), were at risk of clinical loneliness. Further, male respondents (p=0.000), single parents (p=0.000), separated or divorced (p=0.000), perceived financially poor (p=0.041), were found to be significantly at risk of clinical loneliness. Moreover, findings from the ordinal regression revealed that respondents who live alone (p=0.000), respondents who use mobile phone frequently (p=0.000), were found to be at risk of clinical loneliness. Conclusively, the results from this study were stimulating, and it has raised several topics for further research that will require intervention research because the 27.4% prevalence of loneliness among the older adults cannot be ignored.**

Keywords: **Prevalence, Risk factors, loneliness, older adults, Kenya.**

1. INTRODUCTION

loneliness and social isolation are major problems for older adults and are associated with adverse mental and physical health consequences. A wide range of health consequences associated with loneliness such as depression, cardiovascular disease, quality of life, cognitive function and mortality have been identified (Ernst & Cacioppo, 2019). Also, according to Granic et al, (2018), the proportion of old adults in developing and developed countries will reach to 80% and 40%, respectively. This rising among this population has become a major economic, social and heath concerns for health care providers, family members and societies in the world today (Bandari et al, 2019). Sequel to changes in phase of life cycle among older adults such as retirement or age-related losses such as death of a partner or friends, as well as deteriorating health and limited mobility (Kemperman et al, 2019). At the old age, most older adults mainly prefer to remain in their own house and live independently, hence; majority of them usually experience feelings of loneliness and social isolation.

A meta-analysis of 70 studies involving 3.5 million individuals found that loneliness increased mortality by 26% in older adults. Loneliness is found to be associated with a 45% increased risk of death (Hott-Lunstad et al., 2015). Social isolation and loneliness are serious and affect a significant proportion of the older adult population. For instance, in the United States of America, 26% of community-dwelling older adults are considered to be socially isolated and 43% of older adults report feeling lonely (NASEM, 2020). A similar study in US indicated the prevalence of loneliness among older adults in primary care at 20% (Mullen, et al., 2019). Additional review of prevalence rates of loneliness, anxiety, and depression among older

people living in long-term care settings such as residential aged care facilities, nusing homes and assisted living facilities found the prevalence rates of loneliness between 56% to 95.5% (Elias, 2018).

Findings from a study among 2,251 European community-dwelling older adults showed that emotional and social loneliness were reported by 29.2% and 26.7% of the participants respectively and 13.6% of the participants experienced both emotional and social loneliness simultaneously (Fierloos, et al., 2021). Similarly, a prevalence study and predictors of general psychiatric disorders and loneliness during COVID-19 among older adults in United kingdom showed that 35.86% of the respondents reported loneliness (Li & Wang, 2020). Also, a research on predictors of loneliness and different types of social isolation among rural-living older adults in the United kingdom revealed a prevalence of loneliness at 13%, isolation from the family at 49% and isolation from the community at 9% respectively among this population (de Koning, et al, 2017).

isolation are major problems for older adults and are associated with adverse mental and physical health consequences. A wide range of health consequences associated with loneliness such as depression, cardiovascular disease, quality of life, cognitive function and mortality have been identified (Ernst & Cacioppo, 2019). Suffice to say that the COVID-19 pandemic is increasing the number of older adults who are socially isolated and lonely because of stay-at-home orders and banned visits for aged nursing home residents in many countries in the world (National Academics of Sciences Engineering and Medicine –NASEM, 2020).

African older adults are not exempted from the perennial phenomenon of loneliness. A cross sectional study among selected older adults in South Africa indicated that prevalence of self-reported feelings of loneliness and reduced interest in most things was at 43.8% (Hao, et al., 2017). Another study on peer-to-peer support model to improve quality of life among highly vulnerable, low-income older adults in Cape-Town, South Africa found that 39.6% of the participants were severely lonely (Geffen et al, 2019). A similar cross-sectional study on prevalence of loneliness and association with depressive and anxiety among retirees in Northcentral Nigeria by Igbokwe et al found the prevalence of loneliness at 21.8%. This statistics is lesser compared to existing data on loneliness in East African countries. For instance, in a qualitative data to examine the social, economic and demographic risk factors of loneliness among 605 older persons in Uganda, the study found that 7 in 10 older adults felt lonely which traslates into 70% prevalence of loneliness (Nzabona et al, 2015). There seems to be limited studies on loneliness and psychosocial supports among older adults in East Africa countries especially in Kenya.

Consequently, several factors has been identified to put older adults at risk of social isolation and loneliness. For examples, Cohen-Mansfield et al in a review of quantitative results informed by qualitative insights found certain variables to be significantly put older adults at risk of loneliness such as female gender, non-married status, poor income, lower educational level, living alone, low quality of social relationships, poor self-reported health, and poor functional status. Further psychological factors associated with loneliness according to Cohen-Mansfield et al include poor mental health, low self-efficacy beliefs, negative life events, and cognitive deficits. Additionally, Dahlberg et al, in a longitudinal study found widowhood, depression, mobility problems put older adults at risk of loneliness. Besides the above factors identified as risk factors, de Koning et al added greater financial difficulty gave lower odds of isolation from one's family, and higher levels of community engagement gave lower odds of isolation from the community to the risk factors.

2. METHODS

This study is a cross-sectional research design to investigate the prevalence and associated risk factors of loneliness among the older adults in Mathira West Sub-county, Kenya. This study sampled 299 older adults using Yamane's formula to calculate the sample size, considering the confidence level of 95%, the margin error of 5%, and the 1169 population. Data was collected from 299 older adults aged 55-60 years using quantitative approach, male N = 174 (58.2%), and female N = 125 (41.8%). The UCLA Loneliness Scale was used to collect data on loneliness among the respondents. UCLA loneliness scale is designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. The respondents were asked to rate each item as either O ("I often feel this way"), S ("I sometimes feel this way"), R ("I rarely feel this way"), N ("I never feel this way"). Ten of the items were positively worded items, hence the items were reverse scored before the analyses for uniformity of direction. Once the items were reverse scored, all items were summed to tabulate loneliness scores for each respondent, with higher scores indicating greater loneliness. The range of potential scores was 20 to 80. The cut-offs for loneliness severity were total scores of less than 28 was classified to be no/low loneliness, total scores between 29 to 43 was classified to be moderate loneliness, and total score of greater than or equal to 44 was classified to be clinical or severe loneliness (Lee, et al., 2021). Certain ethical issues were considered such as ethical clearance from Institute of Youth Studies, Tangaza University College, Kenya and research permit from the National Commission for Science,

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Technology and Innovation (NACOSTI) to enable collection of data from the older adults living in Mathira West Sub-county, Kenya. The prospective respondents were informed about the procedure of the study, confidentiality, benefits, personal risks and freedom to participate or withdraw before embarking on data collection; thus, data was collected from only the respondents that consented to participate in the study.

3. RESULTS

The Prevalence of Loneliness among the Older Adults

Table 1: Prevalence of Loneliness among the older adults in the study

Scale	Variables	Frequency	Percent
0-28	No/Low Loneliness	174	58.2%
29-43	Moderate Loneliness	82	27.4%
44-80	Clinical Loneliness/ high loneliness	43	14.4%

Table 4.4 indicates the frequency of loneliness scale showing its prevalence among the older adults in this study. As shown on the Table, significant number of the respondents presented with no or low form of loneliness (174, 58.2%). However, the frequency of moderate loneliness in this study was higher (82, 27.4%) as opposed to the respondents presenting with clinical loneliness (43, 14.4%). Therefore, the prevalence of clinical or high loneliness in this study was at 14.4%. Clinical loneliness implies that the severity of the loneliness among this population needs psychological attention. The figure below represents the results from this study;

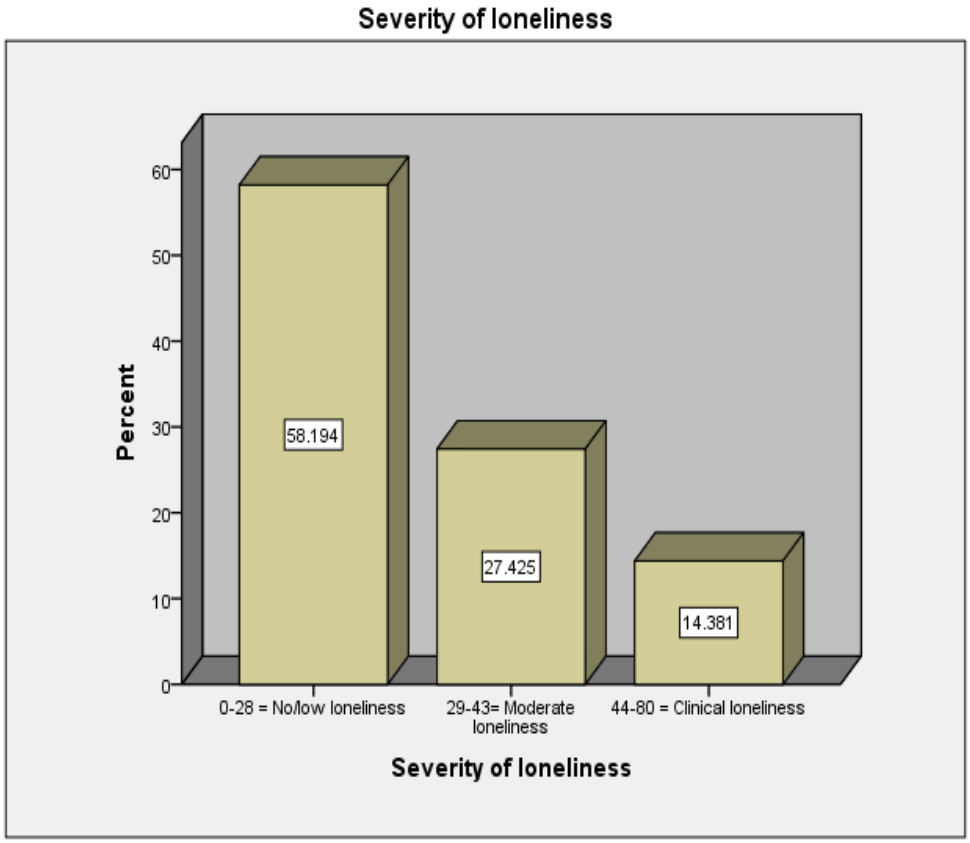

Figure 1: Severity of loneliness

Figure 1 represents the severity of loneliness. The graph implies that the prevalence of clinical loneliness in this study was at 14.4%.

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Table 2: Distribution of severity of loneliness and socio-demographic characteristics

Variables	Total	Severity of loneliness			Chi-square Test		
		No/low	Moderate	Clinical	Value	df	Sig.
Respondent's age							
55-60 years	85 (28.4)	59 (19.7)	0 (0.0)	26 (8.7)	154.905	4	.000
61-65 years	55 (18.4)	0 (0.0)	28 (12.7)	17 (5.7)			
66-70 years	48 (16.1)	37 (12.4)	11 (3.7)	0 (0.0)			
71-75 years	56 (18.7)	33(11.0)	23 (7.7)	0 (0.0)			
76-80 years	55 (18.4)	45 (15.1)	10 (3.3)	0 (0.0)			
Respondent's gender							
Male	174(58.2)	80 (26.8)	59(19.7)	35(11.7)	26.568	1	.000
Female	125(41.8)	94(31.4)	23 (7.7)	8 (2.7)			
Respondent's level of education							
No formal education	87 (29.1)	60 (20.1)	22 (7.4)	5 (1.7)	72.171	6	.000
Primary	44 (14.7)	16 (5.4)	28 (9.4)	0 (0.0)			
High school	30 (10.0)	15 (5.0)	10 (3.3)	5 (1.7)			
Diploma/certificate	50 (16.7)	35 (11.7)	0 (0.0)	15 (5.0)			
Bachelor degree	73 (24.4)	36 (12.0)	22 (7.4)	15 (5.0)			
Master's degree	13 (4.3)	11 (3.7)	0 (0.0)	2 (0.7)			
PhD	2 (0.7)	1 (0.3)	0 (0.0)	1 (0.3)			
Respondent's Religion affiliation							
Catholics	75 (25.1)	59 (19.7)	16 (5.4)	0 (0.0)	60.942	3	.000
Pentecostal	105(35.1)	36 (12.0)	43 (14.4)	26 (8.7)			
Protestant/Evangelical	97 (32.4)	68 (22.7)	12 (4.0)	17 (5.7)			
Muslim	22 (7.4)	11 (3.7)	11 (3.7)	0 (0.0)			
Respondent's marital status							
Married	68 (22.7)	67 (22.4)	1 (0.3)	0 (0.0)	66.706	3	.000
Single parents	114(38.1)	57 (19.1)	38 (12.7)	19 (6.4)			
Separated/Divorced	44 (14.7)	15 (5.0)	22 (7.4)	7 (2.3)			
Widow/Widower	73 (24.4)	35 (11.7)	21 (7.0)	17 (5.7)			
Employment status							
Retired	103(34.4)	57 (19.1)	42 (14.0)	4 (1.3)	98.908	3	.000
Still in work force	90 (30.1)	35 (11.7)	16 (5.4)	39 (13.0)			
Self-employed	29 (9.7)	23 (7.7)	6 (2.0)	0 (0.0)			
Trading/business	77 (25.8)	59 (19.7)	18 (6.0)	0 (0.0)			
Respondent's financial status							
Poor	74 (24.7)	48 (16.1)	11 (3.7)	15 (5.0)	29.363	2	.000
Average	202(67.6)	103(34.4)	71 (23.7)	28 (9.4)			
Affluence	23 (7.7)	23 (7.7)	0 (0.0)	0 (0.0)			
Respondent's living condition							
I live alone	174(58.2)	70 (23.4)	61 (20.4)	43 (14.4)	79.732	2	.000
I live with spouse	59 (19.7)	59 (19.7)	0 (0.0)	0 (0.0)			
I live with family	66 (22.1)	45 (15.1)	21 (7.0)	0 (0.0)			
Respondent's use of phone							
Frequently	137(45.8)	66 (22.1)	45 (15.1)	26 (8.7)	10.787	1	.005
Very rarely	162(54.2)	108(36.1)	37 (12.4)	17 (5.7)			

Table 2 shows the distribution of severity of loneliness across the sociodemographic characteristics in this study. Age distribution for instance, the frequency of clinical loneliness was higher among respondents aged 55-60 years at 8.7% compared to aged 61-65 years at 5.7%. With reference to moderate loneliness, the frequency was higher among the respondents aged 61-65 years at 12.7% as opposed to other age categories. The statistical test to examine the level of relationship in distribution implies that there was a significant difference in the distribution of age categories and severity of loneliness (p=0.000). This is interpreted to mean that there was a significant relationship between the respondent's age and degree of loneliness.

Furthermore, the Table similarly implies in terms of gender distribution, the frequency of clinical loneliness was higher among male respondents at 11.7% compared to female counterpart at 2.7%. Likewise, the frequency of moderate loneliness was also higher among male respondents (19.7%) compared to female respondents (7.7%). However, in terms of no/low loneliness, the frequency was higher among female respondents at 31.4% as against male older adults at 26.8%. Chi-square test shows that there was a significant difference in the distribution of gender and the respondent's scores on severity of loneliness. This implies that female respondents were less lonely, and that male respondents feel lonelier clinically compared to female counterparts.

In terms of levels of education, data showed that higher frequency of clinical loneliness was noted to be among the respondents whose levels of education was bachelor's degree and Master's degree at 5.0% respectively compared to other categories. Also, frequency of moderate loneliness was higher among primary school leavers at 9.4%. Meanwhile, the chi-square statistical test showed that the difference in the distribution of respondent's level of education and severity of loneliness was significant. It implies that level of education is significantly associated with severity of loneliness.

As regards religion affiliation of the respondents, data shows that frequency of clinical loneliness was noted to be slightly higher among the respondents who are members of Pentecostal at 8.7% as opposed to the Protestant/Evangelical (5.7%). On the contrary, frequency of moderate loneliness was higher among the Pentecostal (14.4%) compared to respondents whose affiliation was among the Catholics (5.4%). Chi-Square test shows that there was a significant difference in the distribution of respondents' religion affiliation and severity of loneliness (p=0.000). This means that significant relationship exists between severity of loneliness and severity of loneliness among the respondents.

Distribution of marital status and severity of loneliness showed that the frequency of clinical loneliness was slightly higher among single parents at 6.4% compared to the widows/widowers at 5.7%. Likewise, in terms of moderate loneliness, the frequency was slightly higher among the single parents at 12.7% as opposed to the separated/divorced at 7.4%. Statistical test using chi-square test indicated that the difference in the distribution of marital status and severity of loneliness (p=0.000). The implication of this finding indicated that the marital status, especially being a single parent, widows/widowers or separated/divorced status are associated with severity of loneliness.

The employment status of the respondents implies that clinical loneliness was higher among the older adults who are still in work force (13%) as opposed to other categories. In the same way, the respondents who have retired exhibit more of moderate loneliness at 14% as opposed to other. There was a significant difference in the distribution of employment status and that of severity of loneliness (p=0.000). this shows that there is a significant association between employment status of the respondents and the severity of loneliness. Similarly, concerning the financial status of the respondent, data shows that the frequency of clinical loneliness was observed to be higher among respondents whose financial status was claimed to be average at 9.4% compared to other categorical variables. Also, moderate loneliness was noted to be higher among self-acclaimed average financial status at 23.7% as opposed to other categories. Meanwhile, Chi-square test indicated that there was a significant difference in the distribution of financial status and severity of loneliness among the respondents (p=0.000). This implies that financial status was significantly associated with levels of loneliness in this study.

Furthermore, in relation to living condition of the respondents, frequency of clinical loneliness was observed to be higher among the respondents who live alone (14.4%), compared to other categories. Likewise, moderate loneliness was higher among the respondents who live alone at 20.4% as opposed to other variables. Chi-square test indicated that the difference in the distribution was significant (p=0.000). The implication of this was that the living condition of the respondents especially respondents who live alone are significantly associated with severity of loneliness.

Regarding the use of mobile phone to communicate, data collected indicated that the frequency of clinical loneliness was higher among the respondent who uses phone frequently at 8.7% as opposed to the one who very rarely uses phone to

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communicate (5.7%). In the same way, moderate loneliness was higher among the respondents who use phone frequently (15.1%) as opposed to those who rarely use phone to communicate (12.4%). Chi-square test shows that the difference in the distribution of severity of loneliness and the use of phone (p=0.005). The implication of this finding was that frequency of phone use is significantly associated with feeling of loneliness.

Risk factors of loneliness among the participants

Also, this study sought to investigate the risk factors of loneliness among the participants. The Tables below presents the statistical modelling, regression analysis which is a set of statistical processes for estimating the predicting relationships between set of independent variables and dependent variable.

Table 3: Multicollinearity Coefficients Test

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error	Beta	T	Sig.	Lower Bound	Upper Bound	Tolerance	VIF
(Constant)	3.194	.236		13.560	.000	2.730	3.658		
Participant's age groups	-.122	.031	-.248	-3.899	.000	-.184	-.060	.432	2.315
Participant's gender	-.489	.072	-.330	-6.756	.000	-.631	-.346	.734	1.362
Level of education	.052	.022	.123	2.382	.018	.009	.095	.661	1.514
Religion affiliation	.028	.046	.034	.602	.547	-.063	.119	.536	1.867
Marital status	.329	.036	.490	9.043	.000	.257	.400	.597	1.675
Employment status	-.002	.034	-.004	-.067	.947	-.070	.065	.571	1.752
Financial status	-.485	.075	-.361	-6.502	.000	-.632	-.339	.568	1.761
Living condition	-.180	.052	-.201	-3.461	.001	-.282	-.077	.517	1.935
How often do you use phone to communicate	-.275	.070	-.187	-3.916	.000	-.413	-.137	.765	1.307

a. Dependent Variable: Severity of loneliness

Table 3 presents the multicolinearity coefficients test. Multicollinearity diagnostic coefficients was used to determine the level of inter-correlations or inter-associations among the independent variables, which is a prerequisite test to regression. This is to rule out the disturbance in the data, which can render the statistical inference unreliable. Consequently, multicolinearity can be spotted with the help of tolerance and its reciprocal, which is known as variance inflation factor (VIF). The interpretation of the VIF portrays the interpretation of the coefficient of multiple determination. Therefore, if the value of tolerance is less than 0.2 or 0.1 and simultaneously, if the value of VIF is 10 and above, then the multicolinearity is problematic and capable of render the results of regression inept for inference. As indicated on Table 4.7, the value of VIF for all the independent variable models are less than 10 and consequently the value of tolerance greater than 0.1. This seems to suggest that there is no significant disturbing collinearity in the data that can affect the generality of the statistical inference of the risk factors of clinical loneliness among the respondents using ordinal regression as indicated in the next Table.

Table 4: PLUM - Ordinal regression testing risk factors of clinical loneliness among older adults

		Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[Moderate loneliness]	15.596	90.333	.030	1	.863	-161.454	192.646
	[Clinical loneliness]	21.130	90.348	.055	1	.815	-155.949	198.210
Location	[Age= 55-60 years]	-7.227	3.913	3.411	1	.065	-14.897	.443
	[Age= 61-65 years]	-2.905	3.854	.568	1	.451	-10.459	4.648
	[Age= 66-70 years]	-15.054	3.522	18.268	1	.000	-21.957	-8.151
	[Age= 71-75 years]	17.172	3.359	26.141	1	.000	10.590	23.755

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[Age= 76-80 years]	0[a]	.	.	0	.	.	.
[Gender= Male]	9.141	1.215	56.598	1	.000	6.760	11.523
[Gender= Female]	0[a]	.	.	0	.	.	.
[Edu: No formal edu]	.029	89.758	.000	1	1.000	-175.893	175.952
[Edu: Primary]	5.080	89.769	.003	1	.955	-170.865	181.025
[Edu: High school]	1.973	89.737	.000	1	.982	-173.908	177.853
[Edu: Diploma/cert.]	2.746	89.746	.001	1	.976	-173.153	178.645
[Edu: Bachelor degree]	4.053	89.770	.002	1	.964	-171.892	179.999
[Edu: Master's degree]	2.299	89.759	.001	1	.980	-173.625	178.223
[Edu: PhD]	0[a]	.	.	0	.	.	.
[Rel: Catholics]	-2.133	2.885	.547	1	.460	-7.787	3.520
[Rel: Pentecostal]	-16.936	3.733	20.584	1	.000	-24.252	-9.619
[Rel:Protestant/Evang.]	-8.866	4.160	4.543	1	.033	-17.019	-.713
[Rel: Muslim]	0[a]	.	.	0	.	.	.
[Marital: Married]	-40.285	7.564	28.364	1	.072	-55.111	-25.460
[Marital: Single parent]	-8.737	2.409	13.153	1	.000	-13.459	-4.015
[Marital: separated/div]	-15.033	3.673	16.748	1	.000	-22.232	-7.833
[Marital: widow/er]	0[a]	.	.	0	.	.	.
[Employ: Retired]	.388	1.722	.051	1	.822	-2.988	3.763
[Employ: workforce]	8.438	1.634	26.678	1	.000	5.236	11.639
[Employ: self-employ]	-15.361	3.240	22.477	1	.000	-21.711	-9.011
[Employ: Trading/busi]	0[a]	.	.	0	.	.	.
[Financial: Poor]	17.711	8.667	4.176	1	.041	.725	34.698
[Financial: Average]	-.188	7.232	.001	1	.979	-14.363	13.986
[Financial: Affluence]	0[a]	.	.	0	.	.	.
[Living: I live alone]	24.504	4.452	30.293	1	.000	15.778	33.230
[Living: live wt spous]	39.917	8.925	20.002	1	.000	22.424	57.410
[Living: live wt famil]	0[a]	.	.	0	.	.	.
[Phone: frequently]	9.544	2.140	19.891	1	.000	5.350	13.738
[Phone: very rarely]	0[a]	.	.	0	.	.	.

Link function: Logit.

a. This parameter is set to zero because it is redundant.

Table 4 presents the PLUM ordinal regression to test the risk factors of clinical regression among the respondents in this study. Ordinal regression models also known as PLUM (Polytomous Universal Model) is a type of regression analysis used for predicting an ordinal variable, i.e. a variable whose value exists on an arbitrary scale where only the relative ordering between different values is significant. As indicated on the Table, the PLUM test showed that respondents aged 66-70 years (p=0.000; 95% CI: -21.957 – 8.151) and aged 71-75 years (p=0.000; 95% CI: 10.590 -23.755) were found to be at risk of clinical loneliness. This is interpreted to mean that older adults aged 66-75 years are vulnerable to clinical loneliness.

Likewise, results from ordinal regression indicated that being male was found to be at risk of clinical loneliness (p=0.000; 95% CI: 6.760 – 11.523). This implies that male older adults are more likely to experience clinical loneliness compared to female older adults. Also, regression analyses indicated that among the respondent's religion affiliation, older adults from Pentecostal denomination (p=000; 95% CI: -24.252 - -9.619) and older adults from Protestant/Evangelical denominations are more at risk of exhibiting clinical loneliness compared to other religion affiliations. Furthermore, among the marital status categorical variables, the ordinal regression analysis revealed that older adults that are single parents are at risk of developing clinical loneliness (p=0.000; 95% CI: -13.459 - -4.015), similarly, older adults who were separated or divorced were at risk of clinical loneliness (p = 0.000; 95% CI: -22.232 - -7.833). These findings indicated that single parents, separated or divorced older adults are likely to be clinically lonely.

Consequently, results from the Polytomous Universal Model (PLUM) showed the role of employment status on clinical loneliness among the older adults. The respondents who were still in work force (p=0.000; 95% CI: 5.236-11.639), and the respondents who were self-employed (p=0.000; 95% CI: -21.711 - -9.011) were found to be at risk of developing clinical loneliness. In the same way, data indicated that respondents who were self-acclaimed financially poor were at risk of exhibiting clinical loneliness (p=0.041; 95% CI: -14.363 – 13.986). The implications of these results indicated that older adults who are still in work force, self-employed and poor are likely to exhibit clinical loneliness.

Moreover, findings from the ordinal regression revealed that respondents who live alone are at risk of clinical loneliness (p=0.000; 95% CI: 15.778 – 33.230), also, the finding indicated that older adults who live with spouse are at risk of loneliness clinically (p =0.000; 95% CI: 22.424 -57.410). The consequence of these findings showed that living alone as well as living with spouse could be the precursor of clinical loneliness. Besides, in terms of use of mobile phone to communicate, data from this study showed that the respondents who use mobile phone frequently were at risk of clinical loneliness (p=0.000; 95% CI: 5.350 -13.738). This can be interpreted that

The frequent the older adults use mobile phone to communicate, the implication of clinical loneliness.

4. DISCUSSION

The study found the frequency of moderate loneliness at 27.4%, and clinical loneliness at 14.4%. Results from this study were almost similar to several other studies. For example, a study in US among older adults found the prevalence of loneliness at 20% (Mullen, et al., 2019), and similar study found the 35% prevalence of loneliness among the same population ((Elias, 2018; Gardiner et al., 2020). Number of studies among European older adults 60 years and older found the prevalence of loneliness loneliness in Ukraine at 34%, Russia at 24.4%, Hungary at 21.1% and Poland at 20.1% (Yang & Victor, 2011) and among Norwegian older adults at 30.2%. (Nicolaisen & Thorsen, 2019). However, prevalence of loneliness from other studies in Africa seems to be higher compared to the results from this study. For example, a study among the same population found the prevalence of loneliness at 39.6% (Geffen et al, 2019), and in Nigeria, the study found the prevalence of loneliness at 21.8% (Igbokwe et al, 2020). Whereas, prevalence of loneliness in Uganda was estimated to be at 70% (Nzabona et al,2015).

Additionally, this current study examined factors that put the older adults at risk of loneliness. Findings from this study showed that respondents aged 66-70 years (p=0.000; 95% CI: -21.957 – 8.151) and aged 71-75 years (p=0.000; 95% CI: 10.590 -23.755) were found to be at risk of clinical loneliness. These results concur with a study among mid-adults, and late-adults, where it was reported that younger age (mid-adults) were found to be at risk of loneliness compared to the late adults (Taylor, 2019). Similarly, previous study by Yang and Victor(2008) found risk factors associated with loneliness among older adults to include those aged 65 years and older.

Likewise, results from ordinal regression in this present study found that being male was found to be at risk of clinical loneliness (p=0.000; 95%CI: 6.760 – 11.523). This implies that male older adults are more likely to experience clinical loneliness compared to female older adults. This finding dissimilar to recent studies on gender difference in loneliness among older adults. For example, in a study in India, women were reported to exhibit more of loneliness compared to men older adults. The study indicated that women who were household-head had 60% higher likelihood of reporting loneliness than men who were household head. Women who were either separated/divorced/widowed/never married had higher (AOR: 1.26; $p < 0.05$) likelihood of reporting loneliness than that of separated/divorced/widowed/never-married men. Additionally, retired women had (AOR: 1.22; $p < 0.05$) higher likelihood of reporting loneliness in comparison to retired men. Lastly, women who had lesser social participation had higher odds for reporting loneliness than men who were lesser socially active (AOR: 1.69; $p < 0.05$) (Srivastava, Ramanathan, Dhillon, Maurya , & Singh , 2021).

Also, regression analyses indicated that among the respondent's religion affiliation, older adults from Pentecostal denomination (p=000; 95% CI: -24.252 - -9.619) and older adults from Protestant/Evangelical denominations are more at risk of exhibiting clinical loneliness compared to other religion affiliations. On the contrary, several studies show that regular attendance at religious service is associated with lower levels of social isolation and loneliness, unlike revealing it as a risk factor in this study. Sunshine, Terrence, and Christopher (2013) reported contrarily to the finding from this study that religious attendance and affiliation with religious organization is associated with higher levels of social integration and social support, and that social integration and social support are associated with lower levels of loneliness. However, additional needed investigation is recommended so as to explain when older adults are unable to attend religious gathering due to old age, whether this condition is able to put those population at risk of loneliness (Sunshine, Terrence, & Christopher, 2013).

Furthermore, among the marital status categorical variables, the ordinal regression analysis revealed that single parents (p=0.000; 95% CI: -13.459 - -4.015), separated or divorced were at risk of clinical loneliness (p = 0.000; 95% CI: -22.232 - -7.833). These findings correspond with several other studies, in which single parents, the separated/divorced/widowed/ never married had higher (AOR: 1.26; $p < 0.05$) likelihood of reporting loneliness (Srivastava, Ramanathan, Dhillon, Maurya , & Singh , 2021). Results from a regression analysis in South Africa revealed that married or cohabiting individuals were significantly less likely to experience loneliness than unmarried or non-cohabiting ones (Phaswana-Mafuya & Peltzer, 2017). Similarly, a systematic review of longitudinal risk factors of loneliness among older adults showed that not being married or partnered and partner loss were reported to be consistently at risk of loneliness among the older adults (Dahlberg, McKee, Frank, & Naseer, 2022).

Furthermore, respondents who were still in work force (p=0.000; 95% CI: 5.236-11.639), and the respondents who were self-employed (p=0.000; 95% CI: -21.711 - -9.011) were found to be at risk of developing clinical loneliness. These seem to be in conflict with other studies among older adults. For instance, a study among elderly in USA suggested that retired older adults were found to be more at risk of loneliness as opposed to older adults still at work force or who were self-employed (Gerst-Emerson & Jayawardhana, 2016). In fact, a study among older adults during Covid-19 pandemic found self-employment as a protective factor rather than being a risk factor of loneliness (Hanesaka & Hirano, 2022).

Moreover, results from this present study showed that respondents who were self-acclaimed financially poor were at risk of exhibiting clinical loneliness (p=0.041; 95% CI: -14.363 – 13.986). Results of this current research align with a previous study in lonely elderly in US, where it was found that elderly with depressed finances were at greater risk of loneliness (Emerson & Jayawardhana , 2016). Also, this finding also corresponds with a research that found negative financial shock increases loneliness in older adults as well as chronic health conditions, functional limitations, religious service attendance, and relationship strain (Berger, 2020). Similarly, a Finish study found that low household incomes were related to social isolation and loneliness in older adults (Tanskanen & Anttila, 2016).

Moreover, findings from the ordinal regression in this current study revealed that respondents who live alone are at risk of clinical loneliness (p=0.000; 95% CI: 15.778 – 33.230), also, the finding indicated that older adults who live with spouse are at risk of loneliness clinically (p =0.000; 95% CI: 22.424 -57.410). The consequence of these findings showed that living alone as well as living with spouse could be the precursor of clinical loneliness. In line with this finding, a meta-analysis showed that quality of social network, living arrangement, living alone, living at elderly nursing homes, and living with spouse in dysfunctional relationship contribute gravely to loneliness in older adults (Pinquart & Sörensen, 2019).

Data from this study showed that the respondents who use mobile phone frequently were at risk of clinical loneliness (p=0.000; 95% CI: 5.350 -13.738). In other words, the frequent the older adults use mobile phone to communicate, the implication of clinical loneliness. This submission in this study concur with other studies such as a study by Petersen, Thielke, Austin, and Kaye (2016), in which median daily number of calls, daily phone use was associated with levels of loneliness and mostly that loneliness was significantly related to outgoing calls than incoming calls. Other study similarly reported the same findings that overall quality use of phone contact, and social isolation was significantly associated with loneliness (Navabi, Ghaffari, & Jannat-Alipoor, 2016).

5. CONCLUSION

This study reports the prevalence of moderate loneliness at 27.4% and the prevalence of clinical loneliness at 14.4% among older adults. Findings from the ordinal regression in this current study revealed factors that put the older adults at risk of loneliness. This study therefore concludes that loneliness should be a major concern for mental health service providers and relevant stakeholders. Additionally, intervention research among this population is hereby recommended.

Statements and Declarations

The authors hereby declare that there are no direct or indirect interests related to this work submitted for publication. No interest either before the beginning of this survey, during the qualitative data collection or known interest in the next 3 years that might be reasonably be perceived as influencing the submitted work.

Competing Interests and Funding

It is hereby declared that there were no financial relationships with any organization connected with this study. The study was solely sponsored by the principal researcher.

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