ORIGINAL RESEARCH ARTICLE

Prevalence Of Depression and Associated Factors Among Elderly Population in A Rural Area of Kozhikode District, North Kerala

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ABSTRACT

Background: Old age is often accompanied by frailty and diseases including neuropsychiatric disorders. Dementia and depression are the most common neuropsychiatric disorders among the elderly. Kerala has the maximum proportion of elderly in its population and successful identification of the elderly at risk is important for early intervention. The purpose of the study is to estimate the prevalence of depression and associated factors among the elderly population.

Methods: A cross-sectional study was conducted among 320 elderlies from July 2018 to July 2019.The prevalence of depression was estimated using GDS-15. Socio-demographic factors, self- perceived health status, morbidity profile, falls and related factors, religious practices, independence in activities of daily living, and other social factors associated with depression were assessed.

Results: 38.1% of the elderly were depressed. Majority had mild depression (23.4%) and 3.1% were severely depressed. Having no formal education, low socioeconomic status, not living with a spouse, no role in decision -making, average or poor self-perceived health status, past surgical history, and fear of falls were found to be independent predictors of depression.

Conclusion: The prevalence of depression was high among elderly. Screening for depression in the elderly should be incorporated in already available programs along with appropriate health care measures.

Key words: Depression, Elderly, Rural; Risk factors, GDS-15

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INTRODUCTION

Depression is the leading cause of ill health and disability worldwide with an increase of more than 18% between 2005 and 2015. More than 300 million people of all ages suffer from depression[1] and approximately 5 million older adults worldwide experience late-onset depression.[2] In India as per NMHS (2015-2016) 45 million people suffered from depression in 2015.The magnitude of the problem has led WHO to take up Depression as the World health day theme for 2017 with the slogan "Depression: let's talk".

Population ageing is rapid at the global level and is considered a dynamic demographic trend.[3] The elderly population is expected to surpass that of children below 10 by 2030 and adolescents and youth aged 10-24 years by 2050. India has seen a rise in life expectancy from 49.3 years in 1970 to 68.8 in 2018 giving it a world life expectancy ranking of 125[4]. Due to improved health facilities and an increase in life expectancy, the percentage of geriatric population in India also increased from 7.4% as per the 2001 population census to 8.6% as per population census 2011[3] and it has been projected that the percentage would rise to 12% in 2031 and 17% by the year 2051[5].

More than 20% of adults aged 60 and above suffer from a mental or neurological disorder and it accounts for 6.6% of all disabilities (DALYs) among this age group. Dementia and depression are found to be the most common neuropsychiatric disorders among elderly affecting 5% and 7% of world's elderly population. In India also rapid changes in the family system have made the geriatric population more prone to psychological problems, particularly depression and, community-based studies have shown a prevalence range of 3.9% to 47.0% [6] for depression.

In the state of Kerala also, health problems of the elderly are a matter of concern owing to the high life expectancy. Along with the rapid rise in the proportion of elderly, the prevalence of diseases pertaining to older adults including depression is also expected to rise in the state. Such mental health problems often go unidentified by healthcare professionals and older people themselves. In addition, the stigma surrounding these conditions makes people reluctant to seek help. The presence of significant depressive symptoms can act as a predictor for the incidence of major depression in older adults. So, the successful identification of elderly at risk is important for early intervention due to public health implications.

METHODOLOGY

There are 75 Panchayats in Kozhikode district. A Community based cross-sectional study was conducted among the elderly aged 60 years and above in Mavoor Panchayat, the field practice area of Community Medicine department of a tertiary care centre in Kozhikode. The study was done for a period of one year from July 2018-2019.Cluster sampling method was used. Clusters (wards) were selected using Probability Proportional to Size method out of the 18 wards in Mavoor Panchyat. Sample size was calculated using the prevalence of previous study.[1] Taking maximum design effect 2 and allowable error as 20% of p, the final sample size was calculated as 312 and 320 subjects (rounded off to nearest multiple of 10) were studied.

The number of clusters was arbitrarily taken as 10 and 32 subjects were studied from each cluster.

Subjects too ill to respond or with communication difficulties and subjects with cognitive impairment were excluded from the study.

Face-to-face interview was done using a pre-tested semi-structured questionnaire for the collection of data. Elderly Cognitive Assessment Questionnaire (ECAQ) was used to rule out cognitive impairment**.** ECAQ translated to Malayalam as per WHO translation process was used. Those who scored more than 5 were considered cognitively normal and were taken for study. The Geriatric Depression Scale short version (GDS-15), translated to Malayalam according to WHO translation process was used to assess depression. Subjects with a score more than 4 was considered to have depression. Socio-demographic, Self-perceived health status by asking the question "how do you generally describe your health?", Morbidity profile, Falls and related factors and other social factors associated with depression were asked for. Katz Index Of Independence In Activities Of Daily Living was used to detect the ability of the subject in doing activities of daily living. A score of 0 is fully dependent, a score of 1-5 is partially dependent and a score of 6 is fully independent

The study protocol was approved by the Institutional Research Committee. Certificate of ethical approval was obtained from the Institutional Ethics Committee of Government Medical College, Kozhikode. Permission was obtained from the medical officer, MCH Unit Cheroopa, Mavoor Panchayat for collecting data. Written informed consent was obtained from the participants for the study.

Statistical Analysis: Data analysis was done using SPSS software version 18. Prevalence of depression was found and the confidence interval of prevalence was calculated by Wald statistics using WinPepi software. Pearson Chi square test was done to find out the significance in the association of different factors and the level of significance was estimated with 95% confidence intervals and p value < 0.05. Multivariate analysis was done using logistic regression.

RESULTS

Of the 320 subjects studied, 49.4% were males and 50.6% were females. The mean age of the study pop-

ulation was 69.26 ±7.57 years. A majority (56.6%) belonged to the young old category. Sociodemographic details are shown in Table 1.

Table 1: Sociodemographic details

Socio demographic variable	Frequency (%)
Gender	
Males	158 (49.4)
Females	162 (50.6)
Age category	
60-69 (Young old)	184 (57.5)
70-79 (Old old)	103 (32.2)
≥80 (Oldest old)	33 (10.3)
Religion	
Hindus	171 (53.4)
Muslims	144 (45)
Christians	5 (1.6)
Education	
No formal education	54 (16.8)
Has formal education	266 (83.2)
Employment status	
Working	48 (15)
Not working	272 (85)
Type of family	
Nuclear	89 (28.7)
Joint	51 (16.5)
Three generation	170 (54.8)
Living arrangement	
Alone	10 (3.1)
With family	310 (96.9)
Marital Status	
Currently married	199 (62.2)
Unmarried, widowed, separated, divorced	121 (37.8)
Financial dependency	
Independent	52 (32.8)
Dependent	268 (67.2)
Social assistance	
Yes	270 (84.4)
No	50 (15.6)
Socio economic status	
Lower	17 (5.3)
Upper lower	128 (40)
Lower middle	110 (34.4)
Upper Middle	64 (20)
Upper	1 (0.3)

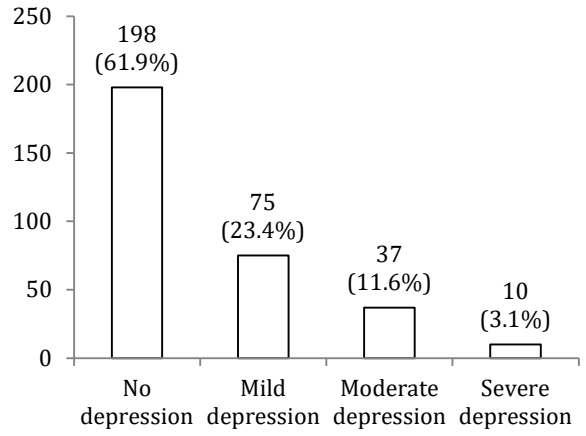

Figure 1: Severity of depression (N=320)

Most of them were living in their owned house (314, 98.1%). Among the study subjects, 18.4% were current users of any substance and substance abuse was more common in males (30.4%). Majority of the study subjects (64.4%) were involved in physical activities.

Health status was perceived as poor by 41.2%, good by 34.4% and average by 24.4%. Chronic illness was reported by 89.7% of the study subjects. Visual problems were the most common illness reported (67.8%) flowed by hypertension (53.4%) and musculoskeletal disorders (50.6%). Half of the study subjects (50.3%) have done surgery in the past. Falls were reported by 27.2 % of the study population and most of them were reported by females (38.9%).

Majority of the study subjects believed in GOD (316, 98.8%), 303(94.7%) followed some religious practices and 157(49.1%) subjects practiced 3 or more religious practices. Involvement in daytime activity was seen in 74.7% of the study participants. 76(23.8%) were involved in social activities of which the majority were males (29.1%). Most of the study participants (80.3%) had a role in decision-making in the family. 96(30%) have experienced an adverse event in the past and the most common adverse event was the death of a closely related person (48%).

Social assistance was availed by 84.4% with old age pension as the commonly acquired assistance (48.9%). Only 6.2% were functionally dependent on others for daily activities. Females were more dependent (8.6%) than males.

Prevalence of depression

The prevalence of depression in the study group was 38.1 % with a confidence interval (CI) of 31.6% - 46.1%. The mean score of depression was 7.67±2.65.

A GDS score of 0-4 was considered normal, 5-8 was considered mild depression, 9-11 was moderate depression and 12-15 was considered severe depression. Distribution of study subjects based on the severity of depression is given in Fig 1.

Factors associated with depression

Having a job, living in a nuclear family, being financially independent, living in owned house were found to be protective against depression and living alone, experiencing an adverse event in the past, having a chronic illness and, being functionally dependent were factors leading to depression (Table 2). Statistical significance was not obtained for the aforementioned factors.

Out of the 10 study subjects who did not have children 7(70%) were depressed with an OR 3.9565(1.0-15.6). Having 3 or more religious practices were found to be protective against depression (OR 0.49, 0.31-0.79).

Table 2: Factors associated with depression

Variable	Depression (n=122)(%)	No Depression (n=198) (%)	OR (95%CI)	P-value
Employment status				
Working	13(27.1)	35(72.9)	0.555	p=0.088
Not working	109(40.1)	163(59.9)	(0.281-1.098)	
Type of family				
Nuclear	28(31.5)	61(68.5)	0.75(0.44-1.264)	p = 0.28
Joint/Three generation	84(38)	137(62)		
Living arrangement				
Alone	10(100)	0	2.77(2.39-3.21)	**p=<0.001#**
With family	112(36.1)	198(61.9)		
Financial dependency				
Independent	14(26.9)	38(73.1)	0.55	p=0.07
Dependent	108(40.3)	160(59.7)	(0.28-1.06)	
Ownership of house				
Own	122(38.9)	192(61.1)	0.611	p=0.09 #
Rented	0	6(100)	(0.56-0.668)	
Substance abuse				
Yes	19(32.8)	39(67.2)	0.75(0.41-1.37)	p=0.352
No	103(39.3)	159(60.7)		
Adverse event				
Yes	40(41.7)	56(58.3)	1.24(0.76-2.02)	p=0.39
No	82(36.6)	142(63.4)		
Chronic illness				
Yes	113(39.4)	174(60.6)	1.732	p= 0.175
No	9(27.3)	24(72.7)	(0.777-3.861)	
ADL				
Dependent	10(50)	10(50)	1.68(0.68-4.16)	p=0.26
Independent	112(37.3)	188(62.7)		

#p value calculated using Fisher's exact test

Table 3: Multivariate analysis (Adjusted Odd's and 95% CI of various risk factors for depression)

Variable	Adjusted OR	95% CI	P value
Female gender	0.539	0.21-1.40	.205
70 years and above	0.502	0.24-1.06	0.069
No formal education	2.918	1.11-7.68	**.030**
Low Socioeconomic status	3.120	1.56-6.23	**.001**
Unmarried/widowed/separated/divorced	3.393	1.38-8.34	**.008**
Not doing any exercise	1.515	0.71-3.24	.283
Number of religious practices less than 3	1.647	0.79-3.42	.182
No day time activity	1.556	0.62-3.89	.344
No role in decision making in family	3.808	1.44-10.10	**.007**
Self-perceived health status average	3.30	1.33-8.19	**.010**
Self-perceived health status poor	10.225	4.32-24.21	**<.001**
Past surgical history	6.340	2.98-13.49	**<.001**
Fear of fall	2.56	1.16-5.68	**.020**

Fear of fall was reported by 100 of the study subjects and it was a significant risk factor for depression (OR 3.37, 2.06-5.507)

The variables which were significantly associated with depression in univariate analysis, and had enough observations were considered for multivariate analysis. The adjusted odds ratio and 95% CI are given in Table 3

Binary logistic regression revealed that after adjusting for all other factors, having no formal education, low socioeconomic status, not living with spouse, having no role in decision making, average or poor self-perceived health status, past surgical history, and fear of fall were found to be independent predictors of depression in elderly.

DISCUSSION

With a rise in the elderly population worldwide, the burden of age-related diseases is also expected to increase. Depression is one of the common infirmities associated with old age which often goes unnoticed. This in turn affects the quality of life of older adults tremendously.

Studies have shown a prevalence as high as 76%[7] to as low as 8.9 %[8] for depression among the elderly. This difference may be because of differences in the study setting, sample size, scales used and, methodology. Difference in the socio-demography of the study population is also a reason for the varying prevalence. Our study showed a prevalence of 38.1% for depression similar to the finding by Nakulan A et

al[1] (39.1%) with mild depression as the most common form of depression (23.4%), followed by moderate depression (11.6%) and severe depression (3.1%). The study conducted in rural areas of Bihar also revealed a prevalence of 24.4% for mild depression, 11.6% for moderate depression and 3.7% for severe depression.[9] Sharma K et al[10] and Yogesh Mohan et al[7] also concluded in their studies that majority had mild depression, followed by moderate and severe depression which was similar to our findings.

Female gender and increasing age were found as protective factors for depression in multivariate analysis but a significant association could not be established for gender and age The finding for gender conformed with the results obtained by Mandolikar et al[11]that showed a lower rate of depression for females. A study by Devi and Logesh[12] also revealed that the prevalence of depression was highest in the young old category. Regarding education status illiterates were found to be at increased risk for depression (72.2%) and it was an independent predictor in the study. Sengupta and Benjamin also observed that illiterates are at more risk for depression.[8]

Those who were not living with a spouse were at increased risk for depression (55.4%) both in univariate and multivariate analysis which was similar to the results obtained by Devi and Logesh[12] and Sharma A et al[13]. Depression was more prevalent among the subjects who were living alone (87.3%) and it was less among the subjects who were living with their spouses and children as per Saikia et al.[14]

Low socio-economic status emerged as an independent risk factor for depression (50.3%) in our study similar to what was concluded by Ahmed et al[15]. Sharma K et al also revealed that low socio-economic status was an independent risk factor for depression.[10]

Physical activity was found to be a protective factor against depression though it was not an independent predictor. This corroborates with the study by Ahmed et al in which those who were sedentary were more depressed.[15] A study by Behra et al among the elderly also showed that, not being engaged in any physical activity was a risk factor for depression.[16]

A significant association was seen between depression and the number of religious practices followed in the study. Those who follow 3 or more religious practices were less depressed (29.9%) than those who follow less than 3 practices (46.6%). In a systematic review and meta-analysis by Coelho-Júnior HJ et al to explore the association between religious and spiritual practices with the prevalence of mental health problems in older adults, people with high spirituality and religious affiliation had a lower prevalence of depressive symptoms and better mental health status.[17]

The elderly who was not having a role in decision-making was found to be more depressed in the current study (65.1%) and it was an independent risk factor. Community- based study by Behra et al also documented that, no involvement in family decision-making was independently associated with depression.[16]

Our study showed that involvement in daytime activities was a significant protective factor against depression. Saikia et al also found out that those who were involved in social and recreational activities were less depressed and the association was significant.[14]

Regarding self-perceived health status, poor or average self-perceived health status was an independent risk factor for depression in the present study. Those who perceive their health status as average had 4 times more risk for depression and those who perceived their health status as poor had 17 times more risk for depression. As study by Peleg S and Nudelman G also concluded that poor SRH leads to more depressive symptoms particularly among adults aged 65–79 and there exists a bidirectional effect between self-rated health and depressive symptoms among older adults.[18]

It was found that depression was at a higher rate among those who have done a surgery in the past (46%). It was an independent predictor of depression. Not many studies have assessed the association between past surgical history and depression in the elderly. In a literature review by Ghoneim et al, it is reported that postoperative cognitive impairment (POCD), is a relatively serious complication of anaesthesia and major surgery for elderly patients over 60 years of age. This cognitive decline can lead to depression in post -surgical patients. Depression and anxiety have been widely reported immediately after coronary artery bypass surgery and remain evident for one year after surgery. The outcome of coronary artery disease, despite successful surgery, can be disappointing, because of the associated psychological impairments. The prevalence of depression approximates between 30% and 40% and it increases the risk of morbidity and mortality in such patients. Morbidly obese patients who undergo bariatric surgery are also found to have an increased risk of depression.[19]

Fear of fall was another significant risk factor for depression (58%) similar to the observation by Neeti Mishra et al that a significant positive correlation exists between depression and fear of fall.[20]

Conclusion

To conclude, depression is a disease with epidemic potential. The present study revealed a high prevalence of 38.1% (95% CI:31.6% - 46.1%) for depression among the elderly using the Geriatric depression scale – short form. Absence of formal education, low socio-economic status, being unmarried/ widowed/ separated/ divorced, having no role in decision- making, poor/ average self-perceived health

status, past surgical history and fear of falls were some of the independent predictors of depression.

Though depression is a common mental health problem in the elderly, it is not a normal part of old age. It increases the risk of mortality in older persons and negatively influences their quality of life (QOL). Depression in older adults often goes unrecognized as many of them present with less obvious symptoms like tiredness and disturbed sleep, or may not be willing to disclose their feelings.

Older people should never be considered a burden to society. Negligent attitude towards the elderly should change and due consideration should be given to the geriatric population while making health policies and programs.

Recommendation

In the present study, more than one-third of the elderly population was found to be depressed. To reduce the burden of depression, the elderly should be encouraged to do physical activities and to involve themselves in some activities during day time. Social activities like meeting friends and family members, going out for small trips and, helping others should be promoted. Activities like cooking, cleaning and, shopping for the household, if possible, can also help the elderly to spend their day time effectively. Governing bodies should implement the formation of day care centres for the elderly, where they can spend time with like-minded people. Such centres can be linked to Anganwadi centres through which they can be provided all necessary services including adequate nutrition. Aged people should put their focus on the quality of food they eat. Intake of quality protein, complex carbohydrates, plenty of fruits, vegetables, whole grains and healthy fats, along with reduction of sugar and refined carbohydrates should be advised.

Family members of the elderly and health care professionals should be made aware of the high burden of depression found among the geriatric population and also regarding the symptoms of depression which can aid in the early detection of cases. Family members should also be encouraged to involve elderly in the house while taking decisions in the family. Screening for depression in elderly should be incorporated into already available programs, for early detection and treatment. As fear of falls was found to increase depression, elderly people should be advised to hold on to support while walking and appropriate measures like proper lighting in the house and, two secure rails on stairs should be taken. Health promoting behaviours should be started at least by late adulthood and awareness should be created from a young age itself to promote healthy ageing.

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