

## Determinants of Depression among Elderly People Attending Day-Care Centre in Pokhara

Ananta Raj Dhungana\*

\*School of Development and Social Engineering, Pokhara University, Nepal.

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### ABSTRACT

**Introduction:** Depression is an important public health challenge in developing countries. Old people have a much higher risk of suicide than the general populations and are suffered from depression. Depressed elderly individuals have a poorer quality of life, lower rehabilitation success and a higher mortality. In this context, this study aims to find the determinants of depression among elderly people attending in day-care center in Pokhara.

**Methods:** This is a cross-sectional study which has adopted both the descriptive cum analytical type of research design as it has described the depression among elderly people and analyzed the determinants of depression among them. For this purpose, a day-care center i.e. Bindabasini Jestha Nagarik Milan Kendra, Pokhara was selected purposively. Then information was collected from all the elderly people attending in that center using structured questionnaire. Geriatric Depression Scale was used to find the depression level of the elderly people. A binary logistic regression was carried out to identify the independent association of risk factors with depression.

**Result:** Majority of the respondents were female, literate, married and were from joint family. Majority of the elderly people were suffered from depression (58.6%). The risk of depression for the elderly people is 13.7% more chance as the age increases. Illiterate elderly has 4.798 times more chance to be depressed as compared with literate elderly. The risk of depression for female is 7.597 times higher than male.

**Conclusion:** Age, sex and education were the major determining factors for depression among elderly people attending the day-care center in Pokhara. Female and illiterate elderly have more change to be depressed in compared with male and literate elderly. So female and illiterate are more vulnerable.

**Keywords:** Day-care center, Depression, Determinant, Health, Elderly people

### INTRODUCTION

Elderly people are encountering both physical and psychological distancing in families, they feel isolated and side tracked. Due to the demands of the modern cash economies, most children and grandchildren do not stay with their older members of the family and as such the family members are unavailable to assist such older persons. Consequently, many older people are lonely and have limited opportunities for interaction. This is exacerbated by the lack of facilities, such as day-care centers and recreational facilities [1]. Elderly who died of suicide and had a past history of suicidal behavior were more likely to suffer from depression [2]. Health status of elderly people living in old aged home was not good since most of the elderly were suffered from chronic physical health problem and females are more vulnerable [3]. Depression is associated with poor quality of life, prevalence of cancer,

chronic diseases and suicide and thus may contribute to an increase in mortality [4]. Several socio-demographic characteristics, such as age, gender, marital status, education level, and income have been associated with depressive symptoms [5]. Further, 65.3% of the study population had depression (mild-36.2%, severe-29.1%) and the association of this depression with age, gender, residence, marital status,

**Corresponding author:** Ananta Raj Dhungana, School of Development and Social Engineering, Pokhara University, Nepal, Tel: +977-9856021122, E-mail: anantastat@gmail.com

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education, occupation, family type and economy dependency, living condition was statistically significant [6]. Age, sex, marital status, previous occupation, and activities for entertainment in elderly homes were the major factors associated with degree of depression [7]. The study in Bangalore shows that Significance was obtained for female sex ( $p = 0.00$ ) and widowed elderly ( $p < 0.001$ ) with the presence of depression [8]. A study in Surat city of India showed that the prevalence of depression was moderately high (39.04%) among the elderly population [9]. Another study in Melbourne states that old people have a much higher risk of suicide than the general population. Moreover, of those who attempt suicide, older people are most likely to complete the attempt with males 3-4 times more likely to suicide than females [10]. In this context, this study aimed to analyse the determinants of depression among elderly attending the day-care center of Pokhara.

## MATERIALS & METHODS

This is a cross-sectional study which has adopted both the descriptive cum analytical type of research design as it has described the depression among elderly and analyzed the determinants of depression among them. Data was collected from fifty-eight elderly people aged sixty years and above who were visiting day-care center i.e. Bindabasini Jestha Nagarik Milan Kendra, Pokhara. The elderly people, who were unable to speak, hear, complete the interview process, have severe psychiatric disorder, did not have no sickness and disability in terms of having neurological problems, did not have verbal consent to participate in this study were excluded from the study. The study is based on primary data and these data were collected by using Geriatric Depression Scale (Long Form) having 30 questions and structured questionnaire containing different socio- economic and other variables were also used. Face to face Interview was carried out for data collection. For validity of the questionnaire, it was maintained using standard survey questionnaire that are already tested for measuring the level of depression. Further for the easy of understanding in local people in day-care center of elderly people, the questionnaire was translated in Nepali language. Verbal and informed consent was obtained from the participants and the related institution. Geriatric Depression Scale (Long Form) contains 30 yes/no questions [11]. One point has been given for each of the following answers of 30 questions otherwise zero has been given. 1. NO 2. YES 3. YES 4. YES 5. NO 6. YES 7. NO 8. YES 9. NO 10. YES 11. YES 12. YES 13. YES 14. YES 15. NO 16. YES 17. YES 18. YES 19. NO 20. YES 21. NO 22. YES 23. YES 24. YES 25. YES 26. YES 27. NO 28. YES 29. NO 30. NO. Then total score was calculated for each respondent. Finally, the respondent with score 0-9 is considered as normal, with score 10-19 is mild depressives and with score 20-30 is severe depressives. For multivariate analysis, binary logistic regression model has been carried out to analyze the determinants of depression among elderly people. In binary logistic regression, the response variable contains two

categories like true and false etc. More formally, let  $Y$  be the binary outcome variable indicating failure/success with 0/1 and  $p$  be the probability of  $Y$  to be 1, i.e.  $p = \text{prob}(Y=1)$ . Let  $X_1, X_k$  be a set of predictor variables. Then the logistic regression of  $Y$  on  $X_1, \dots, X_k$  estimates parameter values for  $\beta_0, \beta_1, \dots, \beta_k$  via maximum likelihood method as in the equation:  $\text{logit}(p) = \log(p/1-p) = \beta_0 + \beta_1 X_1 + \beta_k X_k$

In terms of probabilities, the equation can be stated as

$$p = \exp(\beta_0 + \beta_1 X_1 + \beta_k X_k) / [1 + \exp(\beta_0 + \beta_1 X_1 + \beta_k X_k)]$$

## RESULTS

Based on the information collected from the elderly people living in day-care center of Pokhara, this study has following results.

### Background characteristics of the elderly people

Majority of the respondents are female, literate, married and are from joint family. Elderly's age varies from 60 to 90 years with mean age 74.48 years and standard deviation as 8.77 years. Majority of the respondents do not worry about any member of their family and have their own land or house (Table 1).

### Level of depression

The level of depression is calculated on the basis of total score secured by each respondent using Geriatric depression scale. The level is categorized into three categories as Normal, Mild and Severe. The level of depression among elderly people in the study area is presented in Table 2.

It is found that majority (44.8%) of the respondents have mild depression level followed by normal (41.4%) and severe (13.8%). So, it can be concluded that more than half of the respondents are suffered from depression while just over two fifth do not have depression.

### Determinants of depression

In this part, analysis was carried out using binary logistic regression model. To find the determinants of depression, depression is taken as dependent variable which is defined as present and absent. Normal is taken as no depression and mild as well as severe is taken as having depression. So, depression is categorized into two categories as present and absent while age, sex, marital status, educational status, worries about any member of household, family type and land or house ownership are considered as independent variables. Table 3 contains the odds ratio of logistic regression coefficients, their P values, and 95% confidence interval for odds ratios for each category and variables. From the fitted model, age, sex and education of the respondents are found to be significant to the depression. The odds ratio of age is 1.137 which indicates that the risk of depression for the elderly people is 13.7% more chance as the age increases and 95% confidence interval for odds ratio lies between 1.038 and 1.246. The risk of depression for

female is 7.597 times higher than male respondent. However, illiterate elderly has 4.798 times more chance to be depressed as compared with literate elderly. However, marital status, family type, worries about any member of household and land or house ownership do not have any significant effect on depression among elderly people. For

goodness of fit, Hosmer Lemeshow chi-square statistic is 9.774 with P value 0.281 which imply that the model fits the data at an acceptable level. Here Cox & Snell R<sup>2</sup>=0.193 and Nagelkerke R<sup>2</sup>=0.26 which indicates that 19.3 % to 26% of the variation in the degree of depression has been explained by the covariates.

**Table 1.** Background characteristics of the elderly people (n=58).

Characteristics	Frequency	Percentage (%)
<b>Age of Respondents (in years)</b>		
Minimum=60, Maximum=90, Mean=74.48, S.D.=8.77		
<b>Sex of the Respondents</b>		
Male	27	46.6
Female	31	53.4
<b>Education</b>		
Primary	9	15.5
Secondary	8	13.8
Higher	5	8.6
Informal Education	12	20.7
Illiterate	24	41.4
<b>Marital Status</b>		
Married	31	53.4
Widow/Widower	27	46.6
<b>Family Type</b>		
Nuclear	19	32.8
Joint	39	67.2
<b>Worried about any Member of Household</b>		
Yes	13	22.4
No	45	77.6
<b>Ownership of Land or House</b>		
No	22	37.9
Yes	36	62.1

Source: Field Survey, 2020

**Table 2.** Depression Level of Respondents.

Characteristics	Frequency	Percentage (%)
Normal	24	41.4
Mild	26	44.8

Severe	8	13.8
<b>Total</b>	<b>58</b>	<b>100.0</b>

Source: Field survey, 2020

**Table 3.** Fitted model for explaining the depression (n=58).

Variables	P-value	OR=exp(B)	95% C. I. for exp(B)	
			Lower	Upper
<b>Age</b>	0.006*	1.137	1.038	1.246
<b>Sex</b>				
Male(R)				
Female	0.023**	7.597	1.318	43.792
<b>Educational Status</b>				
Illiterate(R)				
Literate	0.049**	4.798	1.003	22.943
<b>Marital Status</b>				
Married(R)				
Widow/widower	0.620	0.700	0.171	2.870
<b>Worried about any members of household</b>				
Yes(R)				
No	0.556	1.548	0.361	6.642
<b>Family type</b>				
Nuclear(R)				
Joint	0.560	0.665	0.168	2.624
<b>Ownership of house or land</b>				
No(R)				
Yes	0.606	1.380	0.405	4.696
Constant	0.004*	0.000		
OR = Odds Ratio, R = Reference, C.I. = Confidence interval				
Hosmer and Lemeshow: P = 0.281 chi-square value =9.774			Cox & Snell R <sup>2</sup> = 0.193	
Nagelkerke R <sup>2</sup> = 0.260			Final -2loglikelihood =66.212	

\*Significant at 1% level of significance

\*\*Significant at 5% level of significance

**DISCUSSION**

Present study shows that more than half of the respondents are suffered from depression. This result is similar to the study of Saha and Saha [6]. Further present study shows that age of elderly people is one of the major determining factors

for depression which is supported by the study of previous epidemiological study [6-7,12] and in contradiction of the study in India [13]. The risk of Female elderly has high chance to be depressed than male which is similar to the result of other studies [12,8]. The risk of illiterate elderly has high chance to be depressed than literate which is similar to

the study by Laksham et al. and Saha and Saha [12,6]. Hence female and illiterate elderly are more vulnerable.

### CONCLUSION

Majority of the respondents are female, literate, married and are from joint family. More than half of the respondents are suffered from depression. Age, sex and education of the respondents are found to be the major determining factors of depression. The risk of depression for female is higher than male elderly. So, female are more vulnerable regarding depression level. Illiterate elderly has more chance of having depression than literate elderly. Age matters for determining the depression. However marital status, family type, worries about any member of household and ownership of land or house do not matter for determining the depression.

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