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Research Paper

Association Between Age, Nutritional Status and Depression Among Community Dwelling Elderly Women in Kolkata, India

Medical Science

KEYWORDS : Elderly women, Community dwelling, Age, Nutritional Status, Depression

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ABSTRACT

The study aims to explore the association between age, nutritional status and depression among community dwelling women in Kolkata, India. Nutritional status and depression level according to age was assessed by Mini Nutritional Assessment (MNA®) and Geriatric Depression Scale (GDS-30), respectively among 169 elderly women (≥ 60 years). 28.4%, 54.4.5% and 17.2% of the participants were well nourished, at risk of malnutrition and malnourished, respectively. 41.4%, 37.9% and 20.7% of them had no depression, mild depression and severe depression, respectively. Both, malnutrition and depression increased significantly with the advancement of age. Significant negative correlations were found between age and MNA as well as age and GDS. GDS score increased significantly with decrease in nutritional status. The study reveals that a) age is a risk factor for both malnutrition and depression and b) significant negative association exists between nutritional status and depression level among the study population.

Introduction:

Malnutrition in elderly is found to be a common and wide spread pathological problem [1, 2]. It has some age specific risk factors like dentition, problems in mobility, neuropsychological problems etc [3, 4]. Psychological factors are closely associated with malnutrition. Malnutrition is associated with severe complications like decreased immunity, muscle wasting, decreased functionality, increased risk of mortality and morbidity [5, 6].

Some studies have shown that depression is less prevalent in elderly than the younger adults [7,1], however it is a serious psychiatric problem and leads to comorbid medical conditions in old age[8-10].

Depression is associated with poor food intake and weight loss and is an important psychological component for becoming malnourished in late life [7]. On the other hand depression is common among individuals with impaired nutritional status and can be a result due to imbalance of neurotransmitter. Nutrition has a great role on brain function including synthesis of neurotransmitter [11]. Lack of antioxidant vitamins and vitamins like folate and B12 are associated with depressive symptoms [11,12].

Like the European societies Asian countries like India is facing a sharp growth of elderly population. According to the report of Govt. of India elderly population (aged 60 years and above) was 7.4% of the total population in 2011. It was 5.6% of the total population in 1961 and is projected to rise up to 12.4% of the total population in 2026 [13].

Depression is considered as a chronic disorder for the elderly [11], therefore assessment ofnutritional risk and depression are essential to understand the association of these among the elderly.

Objectives

a) To assess nutritional status of the elderly women
b) To determine the depression level of them
c) To find out the association between nutritional status and depression

Materials and Methods

Study sample:

Only women were selected for the study from different parts of Kolkata, India. Total 169 community dwelling elderly women (60 years old and above) agreed to participate in this study.

Exclusion criteria:

Unwilling participants, the very ill persons or the persons who were unable to standup, women who were in the hospitals or suffering from severe cognitive impairment were excluded from the study.

Ethics:

Ethical clearance was obtained from Bioethics Committee for Animal and Human Research Studies, University of Calcutta ((No. BEHR/1099/2304).The study was explained thoroughly to get their written consent and their participation was completely voluntary.

Study design:

A cross-sectional study was conducted among the willing community dwelling elderly population from November, 2013 to September, 2014. Door to door survey was conducted. However, some data were collected from the persons who visited the stationary medical unit of Help Age India, Kolkata branch.

General information: General information viz. age, occupation, marital status, livelihood status etc. were collected using a self-structured interview schedule.

Nutritional Status Assessment: Nutritional status was assessed by Mini- Nutritional- Assessment (MNA- ®). MNA-® is a validated and rapid tool for the assessment of nutritional status in the elderly. It is divided into five groups: a) Anthropometric measurements (Height, weight, Calf circumference, Mid- arm circumference),b)functionality (mobility, independent living, autonomy of eating),c) general Assessment (Acute disease, medication, neuropsychological problems), d) diet information (protein intake, milk and milk product intake) and e) subjective

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assessment(self- perception of health and nutritional status).

Total MNA score is 30 and it is graded as normal nutritional status (24-30), at risk of malnutrition (17-23.5) and malnourished (< 17) [14].

Assessment of depression: Depression was assessed by using 30 items Geriatric- Depression- Scale. Total score is 30, which is graded as normal (0-9), mild depression (10-19) and severe depression (20-30) [15].

Statistical Analysis:
Data were entered in Microsoft excel worksheet (Microsoft, Redwoods, WA, USA) and accuracy was checked. Categorical data were presented in proportions, while continuous data were expressed in mean values. Standard deviation (SD) was used to express the dispersion of data. For qualitative data, significance of association between the attributes was analyzed using Pearson's chi-square (χ^{2}) test. Different types of scoring like MNA and GDS were used, which belongs to ordinal scale, thus difference between mean values were tested by Kruskal Wallis test. Spearman's rho coefficient was used to check the correlation between age, MNA and GDS scores. A binary logistic regression model was also generated using GDS as independent variable and MNA as dependent variable. All tests were done using SPSS version 19.0(Statistical Package for the Social Sciences Inc, Chicago, IL, USA). P value ≤ 0.05 was considered as statistically significant.

Result
Participant's information:
Mean age of the participants was 66.9± 6.8 years. About, 92.4 % of the participants were living with their families, mainly with their children and 7.6% were living alone. All participants belonged to the middle income group whereas 43.2% elderly lady had no monthly income and 30.2% had average monthly of income Rs. 5000/- or less.

30.2% of the elderly women were married, 62.7% were widow and 7.1% were single.

Nutritional status and depression:
Mean MNA score was found to be 21.07. According to the MNA score, 28.4% (n=48) of the study population had normal nutritional status, 54.4% (n=92) were at risk of malnutrition and 17.2% (n=29) were malnourished. A significant (p< 0.05) inverse relationship found to exist between age and nutritional status. Mean values were also significantly (p<0.05) different at different age groups as evident from Kruskal Wallis test (Table 1).

Mean GDS score was 12.1. According to GDS-30; 41.4% (n=70) had no depression, 37.9% (n=64) had mild depression and 20.7% (n=35) had severe depression. Depression was found to increase steadily with increase in age as evident from the increasing mean score of GDS values, which was also statistically significant (p< 0.05). But the mean values of GDS at different age group was not significant statistically (Table 1).

Proportion of elderly women having mild depression and severe depression was found to increase significantly (p<0.05) in at risk of malnutrition and malnourished group of study subjects.GDS score increased significantly (p< 0.05) with decrease in nutritional status (Table :2).

The logistic regression model was significant using the $\chi 2$ test omnibus table (P = 0.01). GDS explains about 19.1% to 27.4% variation of MNA using Cox & Snell and NagelkerkeR$^{2.}$ Overall, the model correctly predicted 74% of outcomes, as shown by the classification table. Significant negative beta coefficient was found for GDS with MNA (P < 0.05). High GDS score was 0.111 times more likely to have an unfavourable outcome i.e. decreased nutritional status.

Table 1: Relationship of MNA and GDS according to different age groups, N = 169

AGE (years)	MNA MEAN±SD	GDS MEAN ± SD
60 – 64	22.2± 4.4	10.6 ±7.1
65 – 69	21.2 ± 4.3	12.4 ± 7.5
70- 74	20.6 ± 3.9	13.0 ± 6.5
75-79	19.6 ± 3.7	13.7 ± 7.1
≥ 80	17.3 ± 2.4	15.9 ± 5.7
Correlation coefficient	Spearman's Rho= -0.266 P < 0.01	Spearman's Rho= 0.161 P < 0.05
Kruskal Wallis test	Chi-square = 19.23 P < 0.001	Chi-square = 0.282 P > 0.05

Table 2:Distribution of the study population according to their nutritional status and level of depression, N=169

MNA	GDS			
	Normal n = 70 Number (%)	Mild depression n = 64 Number (%)	Severe depression n =35 Number (%)	Mean ± SD
Normal nutritional status (n = 48, 28.4%)	37 (77)	9 (18.8)	2 (4.2)	6.5 ± 1.5
At risk of malnutrition (n = 92, 54.4%)	28 (30.4)	42 (45.7)	22 (23.9)	13.8 ± 6.8
Malnourished (n = 29, 17.2%)	5 (17.2)	13 (44.9)	11 (37.9)	15.8 ± 5.9
Statistical test	Pearson's Chi-square = 38.94 P < 0.05			Kruskal Wallis Chi-square 35.94 P < 0.05

Spearman's Rho = 0.449, P < 0.05

Discussion:
Depression has always been a common disorder found in elderly [8,9,10,16]. Females are more prone to depression than men [6]. Lack of social support, widowhood, stressful life, previous history of depression, chronic diseases are some of the causes of depression in old age[6].

Present study revealed the prevalence of poor nutritional status at high percentage among the elderly women (at risk of malnutrition 54.4%, malnourished 17.2%). Moreover, nutritional status was found to significantly (p<0.05) decrease with age (Table:1).

Depression is found to exist in high percentages (mild depression 37.9%, severe depression 20.7%). It significantly increased with age (p< 0.05) (Table:1).

Therefore age itself is a significant risk factor for both nutritional risk and depression.

We found that association between nutritional status and depression is significant (p< 0.05) (Table:2). To further clarify this association we performed binary logistic regression analysis and we got a negative beta coefficient for GDS with MNA (p< 0.05), which clearly indicates that GDS has significant influence on poor nutritional status. Other researchers in different countries found similar results [6,7,16]. Our earlier study conducted among the elderly women residing in old-age homes of Kolkata also found similar result[17]. However, actual reason for this association is not clear[6,16,18].

Strength of this study is in finding relationship between nutritional status and depression among the community dwelling elderly women in Kolkata. Therefore, the association between age-

ing, depression and nutritional status is further established.

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