

Mini Nutritional Assessment and Instrumental Activities of Daily Living: Association of Social Support among the Oldest-old People of Midnapore Town of Paschim Medinipur District, West Bengal, India.

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ABSTRACT: The present study aims to examine the association of social support with the nutrition and instrumental activities of daily living of the oldest-old people of Midnapore Town of West Bengal. 500 individuals (249 males and 251 females) above the age of 80 years have been randomly chosen for the present study. Socio-demographic information has been collected with the help of pre-tested questionnaires. Mini Nutritional Assessment (MNA) and Instrumental activities of Daily Living (IADL) related data have been collected by universally accepted questionnaires. As no sexual dimorphism has been observed in the prevalence of MNA and IADL categories using chi-square analysis, the data has been pooled for sex. Step-wise logistic regression analyses predict years of living alone and family type as the best predictor of MNA and IADL, respectively. The present study showed that the Oldest-old people were more comfortable in living in nuclear and joint families instead of a broken family.

INTRODUCTION

Ageing is a very common and universal process and it affects most of the human being in the world. One of the major features of demographic transition in the world has been the considerable increase in the absolute and relative numbers of elderly people (WHO, '99). In recent years the science of gerontology and the process of ageing have been inflated due to their good quality of life span and better life expectancy. The oldest-old (80 years and above) among the elderly in India is expected to grow faster than any other elderly group (UNPF, 2017). Simultaneously, health statuses, both mental and physical, of the people of the oldest-old group are needed to be addressed with substantial significance.

However, when the individuals attain a particular age at which one's productive contribution declines and one becomes economically dependent on their family members, then those individuals can probably be treated as they have reached at the aged stage of life. As because the ratio of individuals leading active daily lives declines and the disability rates increase dramatically with age, the oldest-old people are more likely need help in daily living (Yi *et al.*, 2002). Therefore, responsibility for caring the elderly will fall on young age earners of the family (Channa and Talwar, '87). The impact of social support is influenced by a variety of factors, i.e. marital status, financial source, years of living alone, frequency and quality of emotional interaction. An Indian study revealed association between poorer health outcome and absence of spouse for both sexes (Sudha *et al.*, 2006). In addition, it has also been shown that economic

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and mental support from kin would improve the health outcomes of the elderly as well as presence a specific kin rather than the number of each type of family member was important.

A brief idea about Gerontology

The global number of elderly is projected to rise from an estimated 524 million in 2010 to nearly 1500 million in 2050, predominantly in the developing countries (Global Health and Aging, 2011). Oldest-old people remain vulnerable to malnutrition for various reasons, which mainly include physiological and functional alterations that occur with increasing age, years of living alone, lack of monetary support and getting not enough food. The functional status of the elderly can be understood by their inability to carry out their daily activities including preparation of food and intake of the same, which in turn affect nutritional status. In India, problems of health of the elderly are multifaceted by poor nutrition together with medical issues, including both communicable and non-communicable diseases. Malnutrition and morbidity create a vicious cycle as because nutrition of the older people is often neglected. However, nutritional interventions could play a part in the prevention of degenerative conditions of the older people and an improvement of their quality of life. The Mini Nutritional Assessment (MNA) is a well-validated tool for assessing malnutrition in the elderly (Agarwalla *et al.*, 2015).

Over the last decade, Cultural Gerontology has become as one of the most vivacious elements of writing about age (Twigg and Martin, 2015). Reflecting the wider cultural turn, it has expanded the field of gerontology beyond all recognition. In a few countries, notably the United States and a few European countries, efforts have been made to attract the attention of academicians and policy makers to the circumstances of the oldest-old (Suzman *et al.*, '92; Vaupal *et al.*, '98; Baltes and Mayer '99). Elsewhere in the world, on the contrary, less attention has been paid to ensure sufficient representation of the oldest-old in national surveys, and most studies on the elderly include few or no subjects aged 80 and older (Grundy *et al.*, '96).

Initially gerontological research in India was initiated by Prof. P.V. Ramamurti in the early 1960s.

The major aim of his research was to find out the specific psychological problems faced by the elderly people after their retirement. Since then, there has been a large number of studies in the field of gerontology in the country. For example, a cross sectional study shows significant association of nutritional status with older age group, female gender, dependent functional status and inadequate calorie intake among the villagers of Boko-Bongaon, Assam (Agarwalla *et al.*, 2015).

Aims of the present study

However, it is revealed that the researchers on social gerontology in India were more inclined to study the middle class aged population and same may be revealed from the annotated bibliography entitled '*Elderly in India*' compiled by Malini Karkal and published by the Tata Institute of Social Sciences, Mumbai in the year 2000, which contains abstracts of more than 2000 research studies on Gerontology presented in the form of books, research articles, M.A./M.Sc., M.Phil. and Ph.D. dissertations. Many studies have been carried out in India to examine the association of social support with nutrition and daily activities among the elderly population (Mathuranath *et al.*, 2005; Yanos and Moos, 2007; Lahiri *et al.*, 2015). However, it may be said that none of the above mentioned studies considered 80 years and above aged elderly (referred as oldest-old in different literatures) as a special category while dealing various issues of the elderly population of India. Hence, the present study aims to examine the association of social support on the nutrition and instrumental activities of daily living among the oldest-old people of Midnapore town of West Bengal.

MATERIALS AND METHODS

Study area and nature of the sample

The present study was conducted among the oldest-old (80 years and above) population distributed over 25 municipal wards of Midnapore town in the district Paschim Medinipur of West Bengal. For the purpose of locating the oldest-old population of Midnapore town, a separate voter list of 80 years and above age group of Midnapore town was consulted. This voter list has been prepared and published by Election Commission of India in the year 2016 and the same has been procured by the

present authors from the office of the District Magistrate of Paschim Medinipur District.

Bengali speaking Hindu population has been selected for the present study. The study has selected only those individuals who did not have any problem in talking and who were not seriously ill at the time of fieldwork. Verbal consent from each study participant has been taken prior collecting any data. A total of 500 individuals (249 males and 251 females) have been randomly chosen to participate in this study.

Nature of the data collected

Data on socio-economic, demographic and social support issues of the individuals have been collected by interview with the help of a pre-tested structured questionnaire. The socioeconomic and demographic data included income, occupation before retirement, age marital status, sex, educational status and so on. The whole population was divided into four age groups in years (80-84, 85-89, 90-94 & 95 and above). The marital status was categorized into two groups. The first group consists of individuals currently in wedlock and the other groups include unmarried, widowed, widower and separated individuals. The educational status was categorized into three groups, viz. non-literate, upto class X and school final and above. Occupation before retirement was divided into four groups, viz. government sector, non-government sector, housewife and labourer and others. The living arrangements of the study participants were categorized into several groups depending on the family members with whom the study participants were presently living. Data on Nutritional status has been collected by using Mini Nutritional Assessment

(MNA) questionnaire prepared by Nestle Nutritional Institute (MNA, 2016). The nutritional status was divided into two categories, normal and malnourished. Data on Instrumental Activities of Daily Living (IADL) has been obtained by universally accepted questionnaire (Graf, 2008). The IADL was categorized into two categories, low function dependent and high function independent.

Statistical analyses

Test of equality of proportion (z-value) and Chi-square statistics were performed to find sex differences in prevalence of different socioeconomic, demographic as well as nutritional status and IADL related variables. The categories of MNA and IADL were purposely clubbed into binomial categories to perform inferential statistical analysis for a better interpretation of the output. (Step wise) logistic regression analysis was done to find out the best predictor of MNA and IADL, separately. All the statistical analyses were done with the help of SPSS 16.0 (windows) and the significance level was fixed at $p < 0.05$.

RESULTS AND DISCUSSION

The socio-demographic characteristics of the study population, by sex, have been shown in Table 1. Just above 60% of the participants were in the age group 80 – 84 years, irrespective of sex. As expected, the lowest frequency of study participants was in the age group 95 years and above. No age group showed any statistical difference in the distribution of sex. Significantly higher number of males was literate and living currently in wedlock.

Table 1. Socio-demographic characteristics of the study population

Age Group (in years)	Males (n=249)		Females (n=251)		z value
	n	%	n	%	
80 - 84	151	60.64	151	60.16	0.11
85 - 89	62	24.90	66	26.29	-0.36
90 - 94	29	11.65	24	9.56	0.76
95 & above	7	2.81	10	3.98	-0.72
Marital status					
Currently in wedlock	128	51.41	80	31.87	4.52*
Unmarried/widow/widower/ separated	121	48.59	171	68.13	-4.52*
Educational status					
Non-literate	33	13.25	51	20.32	-2.13*
Upto class X	87	34.94	94	37.45	-0.58
School final & above	129	51.81	106	42.23	2.16*

* significant at $p < 0.05$ level

The occupational status of the study participants before attaining their 60 years of age, by sex, has been depicted in Table 2. Significantly higher ($p<0.05$) percentage of males were observed to be government service holder when they were below 60 years, while females showed significantly higher ($p<0.05$) percentage in the category of house wife. Similarly, significantly higher ($p<0.01$) percentage of males were also found to be involved in the non-government or any private sectors, labourer and also involved in other occupations like farmer, shop keeper, household

chores in neighbours family, small scale business etc. at their age below 60 years.

The living arrangement of the study participants, by sex, has been shown in Table 3. Irrespective of sex, highest number of participants was staying with their married son/s and his family. The table also shows that significantly higher ($p<0.05$) percentage of females were living alone than their male counterparts. Moreover, a fairly good number of study participants, irrespective of sex, were living with their unmarried daughters.

Table 2. Present and past occupational status of the study population

Occupation before attainment of 60 years	Males (n=249)		Females (n=251)		z value
	n	%	n	%	
Government sector	104	41.77	63	25.10	4.01*
Non-Government sector	72	28.92	22	8.76	5.96*
House wife	0	0.00	133	52.99	-16.82
Labourer & Others	73	29.32	33	13.15	4.51*

* significant at $p<0.05$ level

Table 3. Living arrangement of the study participants by sex

Living Arrangement	Males (n=249)		Females (n=251)		z value
	n	%	n	%	
Living alone	16	6.43	38	15.14	-3.17*
Joint family	37	14.86	54	21.51	-1.94
With spouse only	32	12.85	19	7.57	1.96*
With married son and his family	77	30.92	59	23.51	1.87
With un-married son	6	2.41	7	2.79	-0.27
With married daughter and his family	6	2.41	3	1.20	1.02
With un-married daughter	40	16.06	40	15.94	0.04
Other relatives	27	10.84	18	7.17	1.44
Family not related to respondents	8	3.21	13	5.18	-1.10

* significant at $p<0.05$ level

The prevalence in different categories of MNA among the study participants by sex and age group, has been shown in Table 4. Significantly higher ($p<0.05$) prevalence of males were observed in the category of

normal nutritional status in the age group of 80-84 years than their female counterparts. It has been found that in all the age groups, majority of the study participants, irrespective of sex, were malnourished.

Table 4. Prevalence of Nutritional Status (MNA) among the study participants, by sex and age group

Age Group (in years)	Males (n=249)		Females (n=251)		z-value
	n	%	n	%	
80 - 84					
Normal Nutritional Status	67	26.91	48	19.12	2.08*
Malnourished	84	33.73	103	41.04	-1.69
85 - 89					
Normal Nutritional Status	17	6.83	28	11.16	-1.70
Malnourished	45	18.07	38	15.14	0.88
90 - 94					
Normal Nutritional Status	8	3.21	10	3.98	-0.46
Malnourished	21	8.43	14	5.58	1.25
95 and above					
Normal Nutritional Status	4	1.61	2	0.80	0.83
Malnourished	3	1.20	8	3.19	-1.52

* significant at $p<0.05$ level

The prevalence of IADL categories among the study participants, by sex and age group, has been demonstrated in Table 5. Significantly higher ($p < 0.05$) prevalence of females were lying in the category of low function, dependent in the age group of 80-84 years, while male showed significantly higher ($p < 0.05$) prevalence in the category of high function, independent in the same age group. Significantly higher ($p < 0.05$) prevalence of male were found in the category of high function, dependent, than their female counterparts in the age group of 90-94 years.

Table 5. Prevalence of Instrumental Activity of Daily Living (IADL) among the study participants, by sex and age group

Age Group (in years)	Male (n=249)		Female (n=251)		z-value
	n	%	n	%	
80 - 84					
Low function, dependent	58	23.29	83	33.07	-2.45*
High function, Independent	93	37.35	68	27.09	2.47*
85 - 89					
Low function, dependent	34	13.65	49	19.52	-1.77
High function, Independent	28	11.24	17	6.77	1.75
90 - 94					
Low function, dependent	16	6.43	22	8.76	-0.98
High function, Independent	13	5.22	2	0.80	2.91*
95 and above					
Low function, dependent	7	2.81	9	3.59	0.50
High function, Independent	0	0.00	1	0.40	-1.00

* significant at $p < 0.05$ level

Table 6. Result of Chi-square test to know the association of sex with MNA and IADL, separately

	Value	MNA		IADL		
		d.f.	p-value	Value	d.f.	p-value
Pearson Chi-Square	0.051	1	0.822	0.040	1	0.841
Continuity Correction	0.000	1	1.000	0.000	1	1.000
Likelihood Ratio	0.051	1	0.822	0.040	1	0.841
Linear-by-Linear Association	0.050	1	0.823	0.040	1	0.841

No significant association of sex was found between the MNA and IADL separately from Table 6. Hence, the inferential analyses were done on the data pooled for sex.

Results of stepwise logistic regression analysis was performed using MNA and IADL, separately, as dependent and other social support related variables as independent variables and the results

have been depicted in Table 7. Years of living alone and family type were observed to be the most significant predictor of MNA and IADL, respectively.

Table 7. Result of stepwise logistic regression analyses using MNA and IADL, separately, as dependent and other social support related variables as independent variables

Variable	Wald	d.f.	Exp (B)	95% CI	Sig.
MNA					
Years of living alone	13.981	1	1.473	1.202-1.804	0.000
IADL					
Family Type	10.213	1	1.374	1.131-1.669	0.001

DISCUSSION

As the ageing is an unavoidable developmental stage bringing along a number of changes in physical, mental and the social conditions, it is very important and problematic period of one's life and this is acceptable to some extent that they are dependent on the others. Necessity of social support in majority of the aspects of daily lifestyle is immense in this particular stage of life. In Indian perspective, the prevalence of elderly population is relatively higher than other developing countries and is continue to increase in an alarming way. Studies are extremely rare among the super senior citizens pertaining to their physical and psychosocial health and their socio-demographic correlates. Therefore, the present study has been undertaken to provide a clear-cut scenario of oldest-old population residing in Midnapore town of West Bengal. Specifically, the present study has been carried out to examine the plausible association between the Mini Nutritional Assessment (MNA) and Instrumental Activities of Daily Living (IADL) with the different aspects of social support like living arrangements, family type, years of living alone, financial sources, addiction, source of care, mobility, loneliness etc.

The present study depicts that more than 50% were widowed, while more than 50% of the males were currently living with their spouse. It is interesting to note that not a single case of divorce was observed among the study population. This reflected the stability of married life pattern among the oldest-old population of the Midnapore town. Past occupation status of the study population showed that most of them were retired government service holders. The present Interchange the position of the words reported that many study participants were still workers in different age groups. Here, workers mean they could move themselves for different household

works and/or some moderate works outside home, like household chores in neighbouring families, selling vegetables in nearby daily market, running small tea stall etc.

The study participants of the present study were above the age of 80 years and thus, very few of them, mostly males, were rarely capable of earning any money by doing some kind of job. Hence, pension and family pension were the principal sources of income for them. Present study, thus, expectedly showed a better nutritional status among the males than their female counterparts in the youngest age group. In Midnapore town, the oldest-old remained susceptible to malnutrition for many reasons that occur with age. Midnapore is a small town and the employment opportunity is comparatively lesser than the nearest urban city centre, i.e. Kolkata, which is about 150 kms away from the town. Simultaneously, the younger generation of the families were residing out of their home for better jobs. Therefore, the senior family members remained more or less alone in their home. They were bound to prepare their own food and consume the same. Declined ability of consuming sufficient nutritive food at this vulnerable age was very much important factor for malnutrition among the elderly. Moreover, they had to perform certain household works in the absence of the younger members of the family, such as, rearing their grandchildren, taking care of the kitchen and so on.

As no sexual dimorphism has been observed in the prevalence of MNA and IADL categories using chi-square analyses, the data was pooled for sex for inferential analyses. Logistic regression analyses had identified years of living alone and family type as the best predictors of MNA and IADL, respectively. Similar results have been observed in many studies elsewhere (Garry *et al.*, '82; Bleda *et al.*, 2002). It is expected that increasing age has its independent

effect on many physiological systems of a human being. Effect of age on central nervous system affects the regular working pattern, thought process and memory loss. These are some of the principal trait found to be associated with poor nutrition and activity pattern of the individuals. In many families of the study participants, such symptoms have been reported. The reasons behind such impairment could be lower financial support from pension, which was the result of low scale job before their retirement age. Poor educational status was also a key factor behind their occupational status before attaining the age of retirement. It is expected that losing of spouse creates trauma in one's life and this incidence creates even bigger problems if the same happens at an early age. After losing the principal support these individuals have to depend on the younger member of the family for certain activities. Hearing and visual impairment were two most common illnesses found among them. In addition, some of the chronic illnesses like hypertension, diabetes, osteoarthritis were prevalent among the oldest-old people of Midnapore town. Thus, the active support of other family members becomes inevitable to carry out their daily livelihood. The present study shows that those, who are in nuclear families, were much more active than those who stays in broken family, an observation similar to that reported by Fillenbaum *et al.* ('99).

The present small scale cross-sectional study showed that the oldest-old people were more comfortable in living in nuclear and joint families instead of a broken family, since this type of family is marked by the features like solitary living, leading life as a widow with unmarried son or daughter etc. this may be considered as the presence of good family bondage between the oldest-old population with their children. Further large scale studies is required to examine their depression level and other mental health condition, which would be of immense interest to ascertain their current health scenario.

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