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Assessment of nutritional status and quality of life in the elderly registered at three rural elderly day care centres in Anekal Taluk, Bangalore Urban District

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ABSTRACT

Introduction:The elderly in rural India are at risk of malnutrition and decreased quality of life (QOL). The Department of Community Health, St.John's Medical College, Bangalore initiated the "Grama Hiriyara Kendra"("village senior center") project in three villages in Anekal Taluk, Bangalore district where elderly village residents arrive in the morning, go through a program of physical activity, prayer, social interaction, a meal at 1 pm, and leave in the afternoon. This study was done to assess nutritional status and QOL of the GHK attendees, which could be used to assess the utility of the GHK intervention. **Objective:**To assess the nutritional status and quality of life of elderly persons registered in three village senior centers in Anekal Taluk, Bangalore district. **Methodology:**A cross-sectional study was done among 66 elderly persons registered in 3 GHKs. A structured interview schedule consisting of socio-demographic details, WHO Quality of Life (QOL)-BREF, Mini nutritional assessment, Hindi mental state examination and Activities of Daily Living scale were administered. A basic health assessment was done. Informed consent was taken from all the study participants. **Results:**Of the 66 study participants, 26(39.4%) were at risk of malnutrition and 7(10.4%) were malnourished. Scores for all four domains of QOL dropped as age increased. Elderly subjects who were involved in household activities (20%) were found to score better in the physical domain of QOL. Thirty-two (49.2%) of the elderly assessed were at risk for fall. **Conclusion:**Almost 50% of the subjects were malnourished or were at risk for malnutrition. Quality of life of the subjects dropped with increasing age. Repeat assessments will help document the difference made by the GHK intervention.

Key-words: Nutritional status, quality of life, rural elderly, elderly day care centres

INTRODUCTION

"Good health adds life to years" was the theme of World Health day 2012.(1)Population ageing is the trend in the developing countries all over the world. Between 2015 and 2030, the number of people in the world aged 60 years or over is projected to grow by 56 per cent, from 901 million to 1.4 billion, and by 2050, the global population of older persons is projected to more than double its size in 2015, reaching nearly 2.1 billion.(2)The elderly population in India, (defined as those aged 60 years and above)(3) forms 8.6 % of the total population currently.(4)It is projected that this will go up to 11.9% by 2031 and 17.3% by 2051.(5) This demographic transition has been attributed to increasing life expectancy and falling fertility rates.(6)Within the next five years, it is expected that the number of adults aged 65 and over will outnumber children under the age of 5,and by the year 2050,older adults will outnumber children under the age of 14. The focus now should be on how good health throughout life can help older men and women lead full and productive lives and be a resource for their families and communities.(1) It is time to concentrate more on the health of the elderly to move along with the transitions happening across the world.

According to the WHO, "Developing countries will become old before they become rich, while industrialized countries became rich while they were growing old".(7)

Malnutrition can affect any person across the globe irrespective of age. Malnutrition in children was the prime focus all these years. Older persons are also equally vulnerable for malnutrition considering the physiological changes occurring in the body as well as other socio-environmental factors that contribute to the same. Even though malnutrition in the elderly is common in the clinical setting, it is usually under-recognized. Malnutrition in general can lead to serious consequences in terms of morbidity and mortality among older persons. It is seen as a marker for illness but is usually ignored in daily clinical practice, both in the hospital and community settings.(8)

Malnutrition can be considered as being under nutrition or over nutrition. But in developing countries like India, when we say malnutrition, it frequently refers to under nutrition, even though with globalization and industrialization, the life style and the eating habits of the population is changing. Now we are moving to the double

burden of malnutrition.(6)Under-nutrition can be due to macronutrient deficiency, micronutrient deficiency or both. Considering that older persons are particularly vulnerable to malnutrition, attempts to provide them with adequate nutrition presents many practical problems, an important one of which is that their nutritional requirements are not well defined. Along with the natural ageing process there are dietary factors which contribute to this.(9) Hence, improvements in diet and other nutritional interventions need to be carried out for the elderly population in India. Few studies have been carried out to assess the prevalence of malnutrition in the elderly worldwide. Most of them are based on the Mini Nutritional Assessment form (MNA).The MNA® is a screening tool to help identify elderly persons who are malnourished or at risk of malnutrition.(10) In a study done in West Bengal in 2014 using MNA®, 29.4% elderly were malnourished and 60.4% were at risk of malnutrition. Females (59.4%) were significantly more malnourished than males (40.6%).(11)

Quality of Life (QOL) also is affected as the age advances. This can be due to physical, mental or social changes that occur with ageing process. WHO defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.(12) A new concept of elderly day care centres are slowly emerging which is similar to that of an 'Anganwadi Kendra' for children. In a study conducted in Tamil Nadu, using WHO – QOL BREF scale, in a day care centre, there was a significant reduction in psychiatric morbidity and improvement in quality of life scores at 3 months for subjects who attended the program. The improvement in quality of life persisted after adjusting for gender, socioeconomic status and baseline scores.(13)

The Department of Community Health, St.John's Medical College, Bangalore initiated the *Grama Hiriyara Kendra* (GHK- village senior centers) project in three villages in Anekal Taluk to address the holistic needs of elderly in rural areas through these "village senior centers". A typical GHK begins to function at 9.00am run by a teacher and helper. The elderly gather at the centre by 10.00 am. The different activities include some prayer or bhajan, physical activity, mingling with each other, weaving, or games. Supplementary nutrition also is provided in the form of milk/ buttermilk and one meal. As a unique social and nutritional intervention, it is necessary to study the effect that participation in a centre like this would have in the people who attend. This study was done, to yield information on nutritional status and QOL which could be used to assess the utility of the GHK intervention.

Objectives: The objective of this study was to assess the nutritional status and quality of life of the elderly registered in three "village senior centres" in Anekal Taluk, Bangalore district.

This was a cross sectional study done in three rural elderly centres in Anekal Taluk (Mugalur, Adigarakallahalli and Handenahalli) for a period of 2 months from July 2016- Aug 2016. Institutional Ethical Committee approval was obtained before the start of the study. All members attending the three rural elderly centres were included in the study after obtaining their informed consent. Since all the members were included, sample size calculation was not done. The interview schedule consisted of socio demographic details of the subjects,WHO Quality Of Life - BREF scale(WHOQOL-BREF), Mini Nutritional Assessment(MNA),Hindi Mental Status Examination(HMSE), and Barthel's Activities of daily living index(ADL). Socioeconomic status was assessed using Standard of Living Index (SLI).The WHOQOL-BREF scale contains a total of 26 questions based on a four domain structure; physical health, psychological, social relationships, and environment. The four domain scores denote the individual's perception of quality of life in each domain. Domain scores are scaled in a positive direction. The raw scores were converted into transformed scores during analysis.(14)MNA full form (MNA-FF) was used, with the following cutoffs: 24-30 points (Normal

Nutritional status), 17-23.5 points (at risk of malnutrition), <17 points (malnourished).(15)Along with the interview schedule, a basic health assessment which included measurement of blood pressure, random blood sugar, anthropometry, and risk of fall was done. The data was entered in Microsoft Excel and analyzed using SPSS 16. Kruskal-Wallis test was used to check for associations.

RESULTS

The study was done on 66 elderly persons attending the three GHKs with a response rate of 100%. Mean age of the population was 68.26 years. (SD: 6.36) Majority (56.1 %) of the respondents were aged 60 - 69 years. The youngest was 60 years old and the oldest, 86 years. The other demographic findings were as follows: Of the 66 study participants, 83.3% were females, most (56.1 %) have not attended school; many (60.6 %) were currently unemployed. About 81.8 % followed Hindu religion and 54.5 % were widowed. Approximately 51.5 % of the elderly were either from three generation or joint family. (Table 1)

The habits among the elderly who attended the day care centres were also assessed. Majority of the elderly, 47 (71.2%) were in the habit of using oral tobacco. Functional assessment of the elderly was done using different methods. The Barthel's ADL index mean score was 18.97 (minimum score of 15 and maximum score of 20) with all the elderly examined being functionally independent. The HMSE scores indicated that 47 (71.2 %) were cognitively impaired. The risk of fall assessment

showed 33 (50.8%) were at risk of fall. (Table 2) Co-morbidities of the elderly included both self reported as well as high recordings of blood pressure measurements and random blood sugar levels. 28 (42.4 %) of them did not have any self reported co morbidities. The prevalence rates of diabetes and hypertension (self reported and newly diagnosed) was, 10.6 % and 21.2 % respectively. 19.6 % had both conditions.

Table 1: Socio-demographic details (n= 66)

Variables	Category	Number (%)
Age(years)	60 -69	37 (56.1)
	70- 79	23 (34.8)
	80 -89	6 (9.1)
Gender	Male	11(16.7)
	Female	55 (83.3)
Education	Not attended school	37 (56.1)
	Primary school	17(25.8)
	Middle school	7(10.6)
	High school	4(6.1)
	Graduation or above	1(1.5)
Occupation	Government official	1(1.5)
	Farmer	1(1.5)
	Manual laborer	1(1.5)
	Home maker	7 (20)
	Currently unemployed	40 (60.6)
	Others	3 (4.5)
Religion	Hindu	54(81.8)
	Muslim	12(18.2)
	Nuclear	16 (24.2)
Type of family	Joint	5 (7.6)
	Three generation	29 (43.9)
	Extended	16 (24.2)
Marital status	Married	30 (45.5)
	Widow/widower	36 (54.5)
SLI	Low	9 (13.6)
	Middle	28(42.4)
	High	29 (43.9)

Table 2: Functional assessment of the elderly

Variable	Category	Number (%)
Timed get up and go test (TUG) (n = 65)*	Normal for age	33 (50.8)
	Risk of fall	32 (49.2)
HMSE (n = 66)	Normal	9 (13.6)
	Cognitive impairment	47 (71.2)
ADL(n =66)	Mean score :18.97	SD: 1.252
Min.Score: 15	Max Score: 20	

*One subject refused

The nutritional status of the elderly was assessed using the MNA scores. Out of the 66 elderly, 26 (39.4 %) were at risk of malnutrition and 7 (10.4 %) were malnourished. The QOL assessed using the WHOQOL – BREF had four domains for which the mean scores, median, and inter quartile range were obtained. The elderly had better median scores in the environmental and psychological domains compared to social relationships and physical health. The lowest median score was seen in the physical health domain. Since the data was not following normality the median and inter quartile ranges were used for further analysis (Table 3)

Table 3. Quality of life of the elderly (WHOQOL –BREF) (n =66)

Domain	Mean score	Standard deviation	Median	Inter quartile range
Physical health	45.09	22.173	44	31 -63
Psychological	64.12	20.551	69	48.5 -81
Social relationships	59.02	27.77	56	31 -81
Environmental	70.94	14.456	72	61.25 -81

Table 4: Association between HMSE score and educational status

Education	HMSE Score		
	Cognitively impaired	Normal	Total
No schooling	7(18.9)	30(81.1)	37(100)
At least primary school	12(41.4)	17(58.6)	29(100)
Total	19(28.8)	0.143(71.2)	66(100)

*chi square value =4.001, p value = 0.045. Numbers within the parenthesis are percentages.

Kruskal-Wallis test was performed to find out if there is any association between each score and demographic variables. Significant association was found between HMSE scores and education as well as QOL and nutritional status.(Table 4&5)

DISCUSSION

The purpose of this study was to assess the QOL and nutritional status of elderly attending the day care centres. In this study we found that majority 37 (56.1%) of respondents were aged 60-69 years which constitutes the ‘young old’ among the elderly. 55 (83.3 %) of them were females and 37 (56.1%) have not attended school .The higher proportion of females maybe due to the fact that elderly males are still working and hence they are not able to attend the day care centres. 60.6 % of the respondents were engaged in mostly agriculture before and currently they are not working. Majority, 55% lost their spouses, and most of the households are still following a joint family or three generation family norm. Majority of the elderly belonged to high social class according to SLI, which may be attributed to the fact that the village itself has a high majority of high social class population. Another explanation for this would be due to the fact that

the middle and lower income groups are still working for meeting their daily needs, compared to the higher class group.

Table 5: Associations between QOL and other factors (n =66)

Score	WHOQOL -BREF			
	Physical (IQR**)	Psychological (IQR)	Social Relationships (IQR)	Environmental (IQR)
Age Group(Years)				
60 -69	44 (31 -72)	69 (50 -81)	69 (44 -87)	75 (59.5 - 81)
70 -79	44 (25 -63)	69 (44 -81)	56 (31 -81)	75 (63 -88)
80 -89	25 (17 -47)	47 (17.5 - 67.5)	50 (28 -94)	59 (45.25 - 67.5)
p value	0.094	0.143	0.737	0.098
Occupation				
Currently unemployed	44 (31 -72)	69 (50 -81)	69 (44 -87)	75 (59.5 - 81)
Home -maker	44 (25 -63)	69 (44 -81)	56 (31 -81)	75 (63 -88)
Others	25 (17 -47)	47 (17.5 - 67.5)	50 (28 -94)	59 (45.25 - 67.5)
p value	0.094	0.143	0.737	0.098
Nutritional status				
Normal	63 (38-75)	69 (56 -84)	69 (50 -81)	75 (69 -88)
At risk of malnutrition	41 (14 -56)	63 (48.5-81)	69 (31 - 84.25)	66 (56 -81)
Malnourished	31 (25 -31)	31 (25 -44)	31 (25 -56)	56 (56 -63)
p value	0.002	0	0.122	0.002

Tobacco use is very much prevalent in the population under study, with 54.5 % of them still continuing to use oral tobacco. Habitual chewing of betel quid or use of tobacco in smoking or smokeless forms by men and women in India is due to less awareness of its health hazards or because of prevalent socio-cultural perceptions of its beneficial effects.(16) In a study conducted among adults in Gujarat, the overall prevalence of tobacco use (in all forms) was 18.2%; among all participants, 14.2% smoked while 9.4% chewed tobacco in several forms. Among tobacco users, 77.8% smoked bidis and cigarettes while 51.7% chewed or used smokeless forms of tobacco such as paan masala, paan, gutka, toothpaste, and other commercially available tobacco products.(17)

All the subjects were functionally independent according to ADL index, which is probably because the highly dependent population would not be able to use facilities

such as the GHK. The high proportion with cognitive impairment would probably an error in the results which can be explained by the association of the same with educational status. The HMSE tool had questions which were difficult to be understood and answered by a person without a formal education. The study found out that 33 (50.8%) of the study subjects were at risk of fall, which is an eye opener to focus more on the gait and musculoskeletal problems in the elderly.

The QOL scores showed that the elderly had better median scores in the environmental and psychological domains compared to social relationships and physical health. In our study, the mean (SD) for Physical QOL Psychological QOL, Social Relationship QOL and Environmental QOL were 45.06 (22.1), 64.12(20.55), 59.02 (27.77) and 70.94 (14.45) respectively. In a study conducted in Malaysia, the mean (SD) for Physical QOL Psychological QOL, Social Relationship QOL and Environmental QOL were 56.7 (10.64), 57.9 (11.73), 66.8 (15.01) and 65.3 (13.02), respectively which is comparable except for a significant difference in the physical health domain. This can be attributed probably to the osteoporotic musculoskeletal problems prevalent in the elderly.(18)

Out of the 66 elderly, 7 (10.4 %) were malnourished and 26 (39.4 %) were at risk of malnutrition. In a study done in West Bengal in 2014 using MNA®, 29.4% elderly were malnourished and 60.4% were at risk of malnutrition. Females (59.4%) were significantly more malnourished than males (40.6%).(11) According to a study in Tamil Nadu, South India, as evaluated by the MNA, 14 % of the 227 subjects were malnourished and 49 % were at risk of malnourishment.(19) The difference in the proportions may be due to the less sample size.

As shown in table 8, the physical domain of QOL reduced as the age advanced which may be due to the age related physiological changes like reduction in the muscle mass as well as bone density. The physical domain of quality of life remained better, in those who are engaged in regular household activity compared to other categories which signifies the importance of being active to be physically fit. Those who were having a normal nutritional status had better scores in the QOL domains which were statistically significant. In a study conducted in Austria, the MNA®-FF score was significantly associated with QOL domains 'physical health' ($\beta=0.23$; $p=0.036$), and 'social participation' ($\beta=0.28$; $p=0.013$). (20)

Conclusion

Almost 50% of the subjects were malnourished or were at risk for malnutrition. Quality of life of the subjects dropped with increasing age. 49.2% of subjects were at risk of fall. With the interventions done in the GHK, which includes supplementary nutrition for all elderly attending the day care centre, and physical exercises to address risk of fall, we expect improvement in the above mentioned problems. Repeat assessments will help document the difference made by the GHK intervention.

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