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Socioeconomic, Nutritional Profile Correlates with Morbidity Risks and Quality of Health Status among Elderly Residing at Old Age Home & Residence from Different Region of South Karnataka

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ABSTRACT

Ageing is the multidimensional process in humans with changes occurring in physical, psychological and social aspects which increase their proneness to health ailments. The associated functional impairment and physical inability will influence on their absorption and metabolism leading to the changes in nutritional status. Epidemiological study was conducted among the elderly subjects with respective to understand the quality of health in relation to the nutritional profile. Using a purposive randomized sampling technique, the elderly subjects were selected and assessed for the nutrition and health condition. The investigation comprises approximately 90 subjects of old age institutions and 90 subjects of residents from different domiciles. The study was conducted using standardized validated tools and checklist with oral interview technique and one to one interactions.

Findings: In accordance with the body mass evaluation; approximately 59% elderly living at own houses were under Grade 1, Grade 2 and Grade 3 obesity in comparison to their counterpart. Medical health records indicated iron deficiency anemia among 10% of subjects. Gastritis, Diabetes, hypertension, arthritis was observed to be the major health problems. Comparatively 64% male elderly from household had oral problems and underwent for dentures. Often had three meal patterns in a day. Henceforth, there is a need to understand and address on the nutritional needs, etiology and demographic characteristics interlinked with comorbidities and health disabilities among aging population. Evidently a significant association was noticed between nutritional status on morbidities and health quality among elderly.

Keywords: Old age home, elderly, ageing, nutritional profile, quality of health

INTRODUCTION

Ageing is a natural physiological process associated with physiological, psychological, social, dietary, and environmental factors. Ageing can be described as a process of intrinsic deterioration with time that causes decreases in strength, endurance and fecundity, and increases in disease susceptibility and likelihood of death. Elderly population growth size was noted to be 5 to 5.4% during 1901 to 1951.

Resultantly during 2001 onwards elderly population growth size had increased to 7% [1]. It also estimated to be12% increased by 2030 [2]. According to 2001 census, Karnataka is the sixth most populous State in terms of proportion of aged population in India after Kerala (10.5 per cent), Himachal Pradesh and Punjab (9

per cent), Tamil Nadu (8.8 per cent), Maharashtra (8.7 per cent), Goa and Pondicherry (8.3 per cent) Karnataka has 7.7 per cent of the old age population, which is above the national average of 7.6 per cent [3].

With a rising percentage of elderly population, epidemiologists, researchers, demographers and clinicians have focused their attention towards elderly care health issues and various problems associated with ageing and numerous implications of this demographic transition. In recent years often elderly experience age related problems and require a multi-sectoral approach involving from various disciplines of health, psychology, nutrition, sociology and social sciences.

Often Urbanization has greatly influenced productivity and living practices in elderly population. The traditional way of living in joint family has been decreasing and sharing with institutions like old age homes. Elderly population experience isolation from family, relatives and society then also with financial dependency on children. As they live alone and situation get worsen with illness, they suffer from one or more communicable and non-communicable diseases. Along with these, vision and hearing impairments are the most common health problems which worsen the circumstances [4].

Physiological changes in elderly are the resultant for the onset of age related disease progression & malnutrition, especially in older adults living alone. Typically, poverty, social and food insecurity are noted be the underlying reason for the increased lifestyle disease and fatality in elderly. Markedly poor productivity, lack of income, poor self-care, are the significant factors causing illness, health disabilities and increased fatality in elderly [5].

Nutritional status has the major role in promoting health status and quality of life [6]. Older people are vulnerable to malnourishment with increased morbidity and mortality risks. Increasing in fall, several infections, poor wound healing, loss of energy are sign of undernourishment. Over nutrition like obese causes the diabetes, hypertension and other morbid profiles are also causing the malnourishment in the elderly [7]. Early nutritional screening and intervention approach could meet physiological requirements and improve quality of life in an individual.

Research Objectives

- ❖ Assessing General health and demographic profile among elderly from different domiciles
- ❖ Screening comorbidities and nutritional etiology among elderly from different domiciles

METHODOLOGY

The proposed investigation is a need based clinical experimental research, Cross sectional Epidemiological study.

Study area: Elderly living in Old age home (OAH) & Residence (R) located in rural & urban areas from Mysore & Mandya district of Karnataka.

Study duration: 3 months.

Research criteria: Inclusion criteria: a) Age ≥60 years, b) Permanent residents (≥5 years), c) Written informed consent. **Exclusion criteria:** a) Not willing to participate in the study, b) Critically ill.

Target population size: Around 180 elderly subjects were examined on a pre-tested questionnaire by face to face interview method using purposive randomized sampling technique

Demographic screening: demographic characteristics including type of family, economic, literacy and occupation status was screened using standardized checklist based on the interview method

Subjective global assessment: General health screening including Current medical condition, disease onset of occurrence, clinical manifestation and comorbidity, medical care were screened

Anthropometry screening:

Body height was measured using wall measuring tape. Participants were made to stand without footwear with heels and toes together. Head and shoulder were supposed to touch the wall. Scale was lowered from the height compressing the hair and tape and finding the top of the head and reading was measured and recorded. **Body Weight** was measured by made subjects to stand on the standardized weighing scale with minimum cloth and barefoot, and recorded the weight. This was followed by calculating the Body Mass Index (BMI) Data was collected by the researcher independently. **Waist and hip circumferences** were also measured with minimum cloth and recorded the mean of 3 measurements and calculated W/H ratio based on the standard values [8].

Dietary adequacy: type and amount of food consumption using standardized food frequency questionnaire

RESULTS & DISCUSSION

Table 1: Demographic profile of elderly from different domicile.

Demographic Characteristics	***Total Population (N =180)***							
	Old Age Home n=90				***Residents n=90***			
	Male (n=32)		***Female (n=58)***		***Male (n=36)***		***Female (n=54)***	
	%	***n***	***%***	***n***	***%***	***n***	***%***	***n***
Age years								
Young old (60-69 yrs)	19.0	6	21.0	12	58.0	21	61.0	33
Old old (70-79 yrs)	38.0	12	43.0	25	39.0	14	28.0	15
Oldest old (80 yrs& above)	43.0	14	36.0	21	3.0	01	11.0	06
Religion:								
Hindu	88.0	28	95.0	55	100.0	36	100.0	54
Christian	12.0	04	5.0	03	NO	NO	NO	NO
Muslim	NO	NO	NO	NO	NO	NO	NO	NO
Other	NO	NO	NO	NO	NO	NO	NO	NO
Family type								
Extended	15.0	47	57.0	33	44.0	16	50.0	27
Nuclear	41.0	13	31.0	18	44.0	16	35.0	19
Joint	12.0	04	12.0	07	12.0	04	15.0	08
Marital status								
Married	43.0	14	21.0	12	97.0	35	50.0	27
Un married	11.0	04	9.0	05	NO	NO	NO	NO
Widowed/widower	43.0	14	70.0	41	3	01	50.0	27
Separated	3.0	01	NO	NO	NO	NO	NO	NO
Divorced	NO	NO	NO	NO	NO	NO	NO	NO
Education:								
No education	9.0	03	22.0	13	19.0	07	58.0	31
Only know to read & write	16.0	05	22.0	13	NO	NO	16.0	09
primary	3.0	01	5.0	03	0	0	2.0	01
Upper primary	19.0	06	14.0	08	11.0	04	11.0	06
Secondary	16.0	05	28.0	16	42.0	15	13.0	07
Higher secondary	16.0	05	5.0	03	6.0	02	NO	NO
Graduation	15.0	05	4.0	02	16.0	06	NO	NO
Post graduation	3.0	01	NO	NO	3.0	01	NO	NO
Diploma	3.0	01	NO	NO	3.0	01	NO	NO

* *NO = Not observed*

Need based epidemiological study was conducted in Old Age Home (OAH) & Household residence (HR) located in rural & urban area of South India Karnataka. Investigation comprised approximately 180 elderly populations both male and female based on the purposive randomized sampling technique. Out of 90 elderly from OAHs, 64% were females and 36% were males. Relatively out of 90 elderly from residence; 60% were females and 40% were males. Supportive study by Zalavadiya et al reports [8]; Out of 88 OAHs elderly, 65.9% were females and 30 34.1% were males. From the findings it has been noted that a higher percent population were females in comparison to males from different domicile

Based on WHO Criteria the elderly population was categorized as Young old,

Old old and oldest old. From the population based community research conducted in Budgam District (J&K); majority of the population were between the age group of 60–64 years and were referred as "young old" [9]. Research findings by Zalavadiya et al 2016 [10] showed that 76.7% elderly males living in old age homes were 'young old' as compared to 84.4% elderly were from own residence in the community. From the investigation it has been observed that greater 60 percent of the elderly belonged to the "young old" age category at residents' domicile. Majority of the OAH elderly belonged to Old old (41%) & oldest old (39%) as compared to elderly living at their own residence.

In relevance to the research perceptiveness the demographic characteristics including type of family, economic and literacy status and general health status were screened. Etiological factors responsible for psychological instability & age related problem are Industrialization, urbanization and migration resulting to the negative impact on quality of health in elderly. Evidently the weakening of the traditional bonding of joint family could be the reason for poor quality of life in elderly [11]. Notably the literacy level of OAH females (62%) was higher than other respondents [12]. Findings from the study reports that 9.2% of female from rural area of Varanasi were literate [13].

Among the total elderly, 30% were illiterate especially the proportion of illiterates were higher among resident's females (58%) than OAH. Most of the respondents belonged to nuclear family (37%) in both the domicile. From the observation percentage of elderly living in joint family noticed to be less.

Table 2: Body Mass profile of elderly from different domicile [14]

BMI	***Total Population N =180***							
	Old Age Home n=90				***Residence n=90***			
	Male %(n=32)		***Female n=58***		***Male n=36***		***Female n=54***	
	%	**n**	**%**	**n**	**%**	**n**	**%**	**n**
<18.5 (under nutrition)	6.0	2	9.0	05	3.0	01	4.0	02
18.5 to 22.9 Normal	37.0	12	26.0	15	19.0	07	15.0	08
23 to 24.9 (Over weight)	19.0	06	17.0	10	31.0	11	15.0	08
25 to 29.9 (Grade 1 obesity)	25.0	08	28.0	16	36.0	13	33.0	18
30 to 34.9 (Grade 2 obesity	9.0	03	12.0	07	8.0	03	20.0	11
35 to 40 (Grade 3 obesity)	3	01	8.0	05	3.0	01	13.0	07
T test *αat p< 0.05*	t value = 4.102 p-value = 0.002				t value = 1.731 p-value = 0.094			
	t value = 2.812 p-value = 0.031							

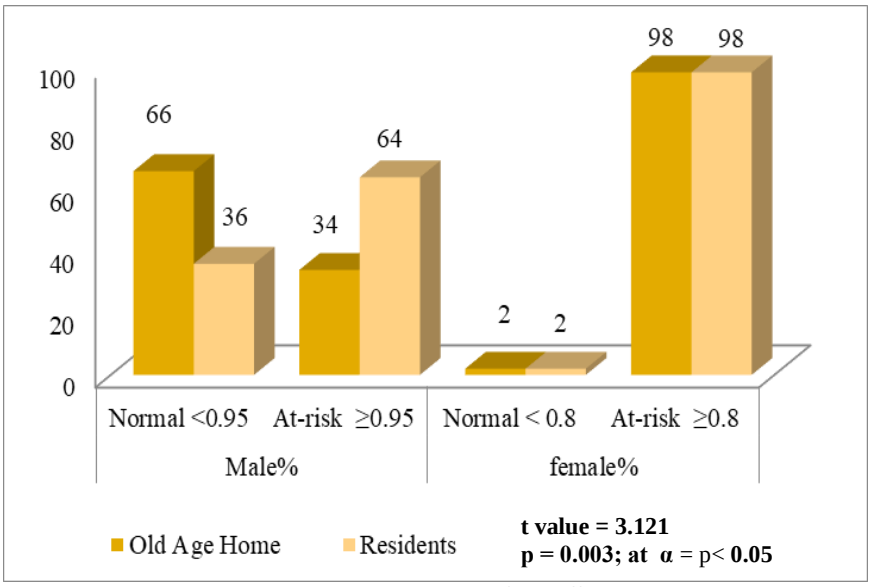

Figure 1: Waist hip ratio noticed in elderly from different domicile

Screening on body mass status among elderly from different domicile reports that, 30% OAH elderly were normal than their counter parts living at home. In accordance with the body mass evaluation; approximately 59% elderly living at own houses were under Grade 1, Grade 2 and Grade 3 obesity in comparison to their counterpart. Resultantly these are underlying risk factors leading to malnutrition and chronic morbidity issues. Notably 83 percent elderly living at their own residence were malnourished in the form of underweight, overweight or obese. Most of the females residing at house were overweight (33.0%) than the OAH participants. Findings by Khole & Soletti, 2018 [15]; reports the higher incidence of malnutrition risk in elderly i.e underweight (11.5%), overweight (26.2%) and obesity (7.7%). Evidence shows that more number of males (15.5%) were underweight compared to females (8.3%). Comparatively, higher percent of females (27.8%) were overweight in comparison to males (24.1%).

In line, OAH elderly were normal compared to their residence domicile counterparts.

Supportive dietary needs, appropriate lifestyle and physical activities are the reasons for achieving normal body mass in elderly. Significantly higher proportion of OAH elderly had normal BMI range than their counter parts from residents' domicile ($p = 0.031$; at $\alpha = p<00.05$).

Interestingly waist hip ratio parameter screened among the respondents revealed 60% OAH males to be normal. Statistically 98% females especially living at residential zone were higher at risk of central obesity ($p = 0.003$ at $\alpha = p< 0.05$).

Evidently supporting evidence from Pai, 2011 [2] has revealed the WH ratio parameter to be one of the underlying risk factor among elderly staying at home leading to the trunk development and metabolic syndromes.

As mentioned in table 3, Common comorbidities noticed in elderly from different domicile were Diabetes, Hypertension followed by Gastritis i.e 33%, 18% and 54% respectively. To a certain extent 24 percent females from residence experienced hypertension risk than their counter parts from OAH i.e 9%. Gastritis was the most regular health issues among all respondents. Wherein higher percent of elderly were provided with medications. Prevalence of Hypertension & Diabetes was the major common health issues in elderly revealed from the similar findings by [16]. Research evidences from Rafiq, 2016) reported an increased morbidity profile i.e Hypertension (37.3%) and diabetes (12.7%) among elderly.

In present study all the respondents were having one or more comorbidities and 58% of the OAH participants were having one or the other issues than home residence. Statistically the prevalence of morbidity level found to be higher among OAH participants in comparison to home residence (p-value =0.018; at $\alpha = p<0.05$)

Table 3: Comorbidity profile according to the residential zone.

Comorbidity profile	***OAH***				***Residence***			
	Male		***Female***		***Male***		***Female***	
	%	***n***	***%***	***n***	***%***	***n***	***%***	***n***
Diabetes	34.0	11	33.0	19	39.0	14	9.0	05
Hypertension	38.0	12	9.0	05	33.0	12	24.0	13
Liver problems	NO	NO	NO	NO	9.0	03	NO	NO
Arthritis	3.0	01	3.0	02	NO	NO	2.0	01
Gastritis	47.0	15	59.0	34	25.0	09	28.0	15
Asthma	3.0	01	7.0	04	NO	NO	2.0	01
T test α at p< 0.05	t value = 3.737 p-value = 0.002				t value = 3.117 p-value = 0.010			
	t value = 2.777 p-value = 0.018							

* *NO = Not observed*

Data presented in Table 4 explains the common health problems experienced among elderly with other comorbid condition. Noticeably hearing and vision impairment were the common risk exhibited among all the respondents. Especially elderly living in old age home had hearing problem and vision impairment than the household counterpart. A cross sectional study conducted in rural and urban slums, 83.3% population had vision impairment. Approximately 63.1% population self-reported hearing impairment; especially higher proportion of female population had hearing impairment compared to male ($p = 0.028$; at $\alpha = p < 0.05$). Often 64% male elderly from household had oral problems and underwent for dentures. Comparatively cross sectional finding reveals that 32.6% elderly noted to experience dental problem [12].

Table 4: Common health problems in elderly.

Common health problems	***OAH***				***Residence***			
	Male		***Female***		***Male***		***Female***	
	%	**n**	**%**	**n**	**%**	**n**	**%**	**n**
Hearing	84.0	27	79.0	46	39.0	14	33.0	18
Vision	92 .0	30	98.0	57	53.0	19	61.0	33
Joints pain	72.0	23	79.0	46	83.0	30	80.0	43
Poor attention	28.0	09	33.0	19	8.0	03	4.0	02
Trembling	22.0	07	14.0	8	30.0	11	20.0	11
Weak memory	38.0	12	26.0	15	58.0	21	57.0	31
Headache	19.0	06	5.0	3	22.0	08	54.0	29
Cold & Cough	NO	NO	NO	NO	22.0	08	18.0	10
Oral problem	47.0	15	43.0	25	64.0	23	55.0	30
Fever	28.0	09	38.0	22	50.0	18	46.0	25
Skin problem	9.0	03	3.0	02	8.0	03	22.0	12
Breathing	NO	NO	2.0	01	8.0	03	7.0	04
Diarrhea	3.0	01	NO	NO	3.0	01	NO	NO
Constipation	NO	NO	14	08	8.0	03	9.0	05
T test *α at p< 0.05*	*t value = 3.53* *p-value = 0.006*				*t value = 2.908* *p-value = 0.017*			
	t value = 2.545 *p-value = 0.028*							

**NO = Not observed*

Around 52% elderly from urban area had a practice of drinking 5 glasses of water per day. Majority of the elderly population had three meal pattern per day. Around 26% Elderly working in the agricultural land had two meals pattern per day. Preference for soft food and reduced portion size as compared to the recommendation was observed due to dental problems among the elderly. Elderly staying at old age home consumed milk everyday especially elite class old age homes. Interestingly all participants had consumption of one or two kind of vegetables, legumes from their regular diet. Considerably 24% had regular fruit consumption and 66% had a consumption of poultry, meat and fish weekly once or twice.

CONCLUSION

Elderly population is at risk of under nutrition due to physical, cognitive as well as functional decline. Increasing ill health and increasing disability are linked with nutritional risk indicators. The potential risk factors of malnutrition are multiple: reduced food intake due to loss of appetite, episodes of fasting, poor dentition, swallowing difficulties, inability to eat independently, digestive disorders, chronic diseases and depression.

Food based approach is thought to be a sustainable approach in combating non communicable diseases. Several foods are thought to possess antidiabetic and hypocholestrolemic activity by means of using whole grains, millets, pseudo cereals, legumes, soybean, flaxseed vegetable and Green leafy vegetables. Existing knowledge about nutrition and aging suggests nutrition to be the strong marker towards substantial impact on the functional health status of older individuals. Investigation elicited the

multidimensional etiological factors linked with prevalence and malnutrition in elderly.

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Ethical Approval: Approved

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