

The status and socio-demographic predictors of geriatric malnutrition of rural Maharashtra of central India: A cross-sectional study

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Abstract:

Introduction: The elderly population has a lot to give to society but various issues like malnutrition hinder their activities and affect their quality of life. **Objectives:** The current study was proposed to assess the nutritional status of the elderly in rural Maharashtra of central India. **Method:** This cross-sectional study recruited 460 elderly individuals and was conducted in selected four villages of same district in central India for 5 months (Aug-Dec 2021). Stratified sampling method was used. This study used the MNA (Mini Nutritional Assessment) questionnaire and haemoglobin level to assess the nutritional status of the elderly. Univariate analysis and multivariate analysis were carried out using R software. **Results:** Out of 460 study subjects, 42 (9.13%) were malnourished and 286 (62.17%) were at risk of malnutrition. The study assessed 300 elderly for hemoglobin status and 129 (43%) were found anemic. The elderly who belonged to the age group 71-80 years had lesser odds of having satisfactory nutritional status (OR=0.53) while age group >80 years was more prone to anemia (OR= 1.71). The odds of satisfactory nutritional status were higher for elderly who had education less than secondary school (OR=2.02) and for elderly those who had completed high secondary schooling (OR=4.94) and those who belonged to the nuclear family (OR=1.59). The study showed elderly who belonged to Open caste had lesser odds of having anemia (OR=0.68). **Conclusion:** The study found high prevalence of anaemia (43%) and at-risk malnutrition (62.17%) in the geriatric population. Policymakers should prioritise nutritional interventional policy, and stakeholders should promote the existing nutritional policies of this vulnerable group


Key words : Anemia, Elderly, Malnutrition, Mini-Nutritional Assessment

Introduction:

The elderly are a vulnerable population; neglected in many cultures because of their mental and physical weakness. Several elderly people are ignored, marginalised, and rendered useless.^[1] A variety of factors influence their health and vulnerability, including nutritional consumption, chronic illness, social support, and so on.^[2] There are

two broad aspects in geriatric health: psychosocial condition and malnutrition.

Malnutrition includes undernutrition, micronutrient deficiency, and over-nutrition. The Gerontology Society of America stated that malnutrition can be defined as having recently lost weight without trying or eating poorly because of decreased appetite.^[3] A vicious cycle exists between

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malnutrition and chronic disease. Malnutrition can exacerbate an existing illness, and chronic illness can impair appetite, resulting in malnutrition.^[4] Malnutrition has an impact on the quality of life of elderly individuals by limiting physical activity and causing mental stress, both of which lead to socio-emotional discomfort.^[5] The elderly population is diverse in their physical, social, and economic activities. They have a lot to give to the society but the various issues like malnutrition hinder their activities and affect their quality of life. With the predictable patterns of population ageing, we will witness a demographic shift, necessitating the need to prepare the society to address their issues like malnutrition of the elderly. To better comprehend the ageing population and create options for their improvement, more research is required. Many research on the ageing population have been conducted in nations such as the United Kingdom, China, Taiwan, and Europe. But, there are various sub-areas in geriatrics in India that require additional research.^[6]

Not many studies related to the nutritional status of the elderly have been conducted in central India. This study will throw light on the nutritional status and their predictors among the elderly in rural areas.

Objective:

The present study was carried out to assess the nutritional status of the elderly in rural areas using the Mini-Nutritional assessment tool (MNA tool) and Haemoglobin estimation, and to study the socio-demographic predictors of malnutrition among the elderly.

Method:

A cross sectional study was conducted for five months (Aug-Dec 2021) in selected four villages in central India, which were the field practice areas of a Medical College. These adjacent villages were chosen on a convenient basis, considering the feasibility to facilitate the timely delivery of blood samples from the field to the pathology lab at the Medical College.

Study population-

This study recruited elderly males and females (>60 years of age) to evaluate nutritional status, as well as determinants, because both are vulnerable.

Inclusion criteria

- o Apparently healthy individual
- o An individual who gives consent

Exclusion criteria

- o The elderly with comorbid conditions like diabetes, hypertension, and chronic obstructive pulmonary diseases (COPD) with a duration of more than 1 year
- o Uncontrolled or with complications of comorbid conditions
- o Bed-bound elderly
- o Had diminished hearing and visual sensations

This study was carried out on 460 elderly individuals. This sample size was calculated by using Open Epi^[7] using the prevalence of malnutrition in the elderly (78.6%) from a previous study.^[8] and with 5% absolute precision. The sampling method used was stratified random sampling. So, 1.5 design effect for stratified sampling method was included with 10% non-response rate. Among the study population after applying the finite population correction, for estimating 38% hypothesized prevalence of anemia^[9] with 5% absolute precision, at a 95% confidence level, a sample size of 300 elderly was needed for hemoglobin estimation. The study participants for haemoglobin estimation were selected randomly out of total sample. Accordingly, blood sampling was done in a subgroup of 300 elderly.

Stratified random sampling was used. The list of elderly from selected villages was procured from the departmental database. An elderly individual was the unit of study. The obtained list was stratified according to age. Then elderly individuals were chosen randomly from each stratum as per their proportional population size of each stratum considering the village and gender.

Method of measurement

- a. **Socio-demographic data-** A pretested semi-structured interview schedule was used to collect information of socio-demographic profile. It included details on age, gender, caste, religion, education, working status, socio-economic status, contact number, family type.
- b. **Tool for measurement of nutritional status-** This study used the MNA (Mini Nutritional Assessment) questionnaire^[10] and haemoglobin level to assess nutritional status in the elderly. MNA tool is useful to assess nutritional status in the elderly. MNA questionnaire is 18 items validated nutritional screening tool. A maximum of 30 points can be obtained. A score <17 indicates malnutrition, a score of 17 – 23.5 indicates the risk of malnutrition while >24 score indicates satisfactory nutritional status. MNA tool is validated and used in India for assessing nutritional status in the elderly.^[10]

While, Hb value <12mg/dl for women [>15 years of age] and <13mg/dl for men [>15 years of age] was considered as cut-off value for anemia.^[11] According to the WHO, anemia is graded as- mild (Hb men:11-12.9 gm%, Hb women: 11-11.9gm%), moderate (Hb in both: 8-10.9 gm%), severe (Hb in both: <8 gm%) and same criteria had been used to classify anemia in the present study.^[12]

Methods of data collection

In the first phase, questionnaires were made in the KOBO toolbox which were then imported in the android hand-held device through KOBO collect app (which is useful for paperless data collection) and pre-tested. Pretesting was carried out to find out any scope for improvement.

The second phase- Data collection was started after taking informed written consent from selected individuals. Interviews were conducted through house to house visits. MNA questionnaire included anthropometric measurements like BMI, Calf circumference, Mid-upper arm circumference. BMI was measured using the formula: weight in kg divided by the square of height in meters. In the end, a blood sample was collected for the haemoglobin estimation. Haemoglobin estimation was done by an automated method.

Data from the KOBO tool was exported as an excel sheet. Analysis was carried out using R software. Univariate analysis was carried out to find frequency and proportions. Multivariate analysis was done by the ordinal and binomial logistic regression methods to find the predictors of nutritional status and anemia respectively. As nutritional status was an ordinal outcome variable, ordinal logistic regression was done. The proportional odds model was used and it was assumed that the effect of exposure is the same for all splits of the categories of the outcome variable.^[13] In the model, malnutrition, at risk of malnutrition, and satisfactory nutritional status were the different outcome categories.

Ethical Consideration:

The current study was a part of the thesis which was initiated only after the approval from the Institutional Ethics Committee. The informed consent was taken from the study participants before the application of the questionnaires. The elderly found with mild anaemia were treated with Iron-Folic acid tablets and nutritional counselling, while the elderly with moderate to severe anemia were referred to the nearest health center.

Table 1: Socio-demographic details of the study subjects (N = 460)

Characteristics		Frequency	Percentage
Age(years)	60 – 70	344	74.78
	71 – 80	100	21.74
	>80	16	3.48
Gender	Male	182	39.57
	Female	278	60.43
Religion	Hindu	345	75
	Muslim	18	3.91
	Christian	1	0.21
	Buddhism	96	20.87
Caste	Open	61	13.26
	Other Backward Class	205	44.57
	Scheduled Caste	119	25.87
	Scheduled Tribe	30	6.52
	Others	45	9.78
Education	No Formal school	151	32.83
	Primary Schooling	137	29.78
	Secondary Schooling	124	26.96
	Higher secondary schooling	28	6.08
	Graduation/Masters	20	4.35
Occupation	Farmer	67	14.57
	Business	22	4.78
	Retired	74	16.09
	Laborer	69	15
	Homemaker	129	28.04
	Unemployed	99	21.52
Type of Family	Nuclear	203	44.13
	Generation	247	53.70
	Joint	10	2.17
Caste	Open	61	13.26
	Other Backward Class	205	44.57
	Scheduled Caste	119	25.87
	Scheduled Tribe	30	6.52
	Nomadic tribes	45	9.78
Socio-economic status	APL(Above Poverty Line)	217	47.17
	BPL(Below Poverty Line)	153	33.26
	AYY(Antyodayi-extreme poverty)	90	19.57

Table 2: Responses from Participants on MNA Questionnaire (N=460)

MNA Questionnaire	Response options	n(%)
1. Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?	1. Severe decrease	19(4.13%)
	2. Moderate decrease	121(26.30%)
	3. No decrease	320(69.57%)
2. Weight loss during the last 3 months	1. Does not know	215(46.74%)
	2. No weight loss	155(33.70%)
	3. Weight loss between 1-3 kg	58(12.60%)
	4. Weight loss greater than 3 kg	32(6.96%)
3. Mobility	1. Bed or chair bound	0
	2. Able to get out of bed/ chair but does not go out	10(2.17%)
	3. Goes out	450(97.83%)
4. Has suffered psychological stress or acute disease in the past 3 months?	1. Yes	107(23.26%)
	2. No	353(76.74%)
5. Neuropsychological problems	1. Severe dementia or depression	10(2.17%)
	2. Mild dementia	78(16.96%)
	3. No psychological problems	372(80.87%)
6. Body Mass Index (BMI) = weight in kg / (height in m ²)	1. BMI less than 19	100(21.74%)
	2. BMI 19 to less than 21	88(19.13%)
	3. BMI 21 to less than 23	139(30.22%)
	4. BMI 23 or greater	133(28.91%)
7. Lives independently (not in a nursing home or hospital)	1. Yes	460(100%)
	2. No	0
8. Takes more than 3 prescription drugs per day	1. Yes	30(6.53%)
	2. No	430(93.47%)
9. Pressure sores or skin ulcers	1. Yes	16(3.48%)
	2. No	444(96.52%)
10. How many full meals does the patient eat daily?	1. 1 meal	33(7.17%)
	2. 2 meals	376(81.74%)
	3. 3 meals	51(11.19%)
11. Selected consumption markers for protein intake At least one serving of dairy products (milk, cheese, yogurt) per day	1. Yes	104(22.61%)
	2. No	356(77.39%)
• Two or more servings of legumes or eggs per week	1. Yes	185(40.22%)
	2. No	275(59.78%)
• Meat, fish, or poultry every day	1. Yes	456(99.13%)
	2. No	4(0.87%)

12. Consumes two or more servings of fruit or vegetables per day?	1. Yes	423(91.96%)
	2. No	37(8.04%)
13. How much fluid (water, juice, coffee, tea, milk...) is consumed per day?	1. Less than 3 cups	15(3.25%)
	2. 3 to 5 cups	214(46.53%)
	3. More than 5 cups	231(50.22%)
14. Mode of feeding	1. Unable to eat without assistance	0
	2. Self-fed with some difficulty	42(9.13%)
	3. Self-fed without any problem	418(90.87%)
15. Self-view of nutritional status	1. Views self as being malnourished	373(81.09%)
	2. Is uncertain of nutritional state	47(10.22%)
	3. Views self as having no nutritional problem	40(8.69%)
16. In comparison with other people of the same age, how does the patient consider his / her health status	1. Not as good	98(21.30%)
	2. Does not know	67(14.57%)
	3. As good	266(57.83%)
	4. Better	29(6.30%)
17. Mid-arm circumference (MAC) in cm	1. MAC less than 21	48(10.43%)
	2. MAC 21 to 22	166(36.09%)
	3. MAC greater than 22	246(53.48%)
18. Calf circumference (CC) in cm	1. CC less than 31	331(71.96%)
	2. CC 31 or greater	129(28.04%)

Results:

Socio-demographic details of all study subjects are given in Table 1. All families of the elderly were having ration card. The nutritional status was assessed by using the MNA (Mini-Nutritional Assessment) questionnaire which is an 18 items instruments, in which the maximum score that could be obtained was 30. Out of 460 study subjects, 42 (9.13%) were malnourished, 286 (62.17%) were at risk of malnutrition, 132 (28.70%) were with satisfactory nutritional status. Out of 42 (9.13%), malnourished elderly, 11 (26.19%) were male, and 31 (73.81%) were female. While 112 (39.16%) males and 174(60.84%) females were at risk of malnutrition. Out of 132 (28.70%) elderly with satisfactory nutritional status, 59 (44.70%) were male and 73 (55.30%) were female.

MNA questionnaire items

During the nutritional assessment, 26.30% and 4.13% of the elderly had a moderate and severe decrease in food intake, respectively, over the past 3 months due to loss of appetite, chewing, digestive, or swallowing problems. The study found that 46.74% of the study population did not have any idea about their weight loss, while 6.96% and 12.60% of the study population had weight loss >3 kg and weight loss between 1-3 kg, respectively. The study did not include any chronically ill or bed-bound subjects but around 2.17% of study subjects had mobility problems while 97.83% of study subjects could go out without any problem.

The study showed that 23.26% of the population had psychological stress/acute psychological condition in the past three months. BMI was calculated during application of the MNA

Table 3: Association of nutritional status with various sociodemographic factors (Multivariate analysis -Ordinal Logistic Regression)

Variables		β coefficient	SE	aOR (Lower Limit- Upper Limit)	p-value
Age(years)	60 – 70	Ref			
	71 – 80	-0.62	0.26	0.53(0.31-0.90)	0.01*
Gender	>80	-0.21	0.54	0.80(0.26-2.31)	0.68
	Male	-0.09	0.26	0.91(0.54-1.52)	0.71
	Female	Ref			
Caste	Open	0.47	0.5	1.60(0.61-4.44)	0.34
	Other Backward Class	0.05	0.44	1.06(0.64-2.62)	0.9
	Scheduled Caste	0.3	0.45	1.35(0.57-3.43)	0.5
	Scheduled Tribe	Ref			
	Nomadic tribes	0.63	0.51	1.88(0.70-5.29)	0.21
Education	No Formal school	Ref			
	Less than primary schooling	0.27	0.3	1.31(0.71-2.39)	0.37
	Primary school completed	0.46	0.35	1.60(0.80-3.18)	0.18
	Less than Secondary schooling	0.7	0.34	2.02(1.03-3.98)	0.04*
	Secondary school completed	0.19	0.34	1.22(0.61-2.40)	0.57
	Less than Higher Secondary	0.97	0.87	2.65(0.44-15.85)	0.26
	Higher secondary school completed	1.59	0.53	4.94(1.78-14.6)	0.002*
	Graduation and above	0.99	0.56	2.71(0.89-8.33)	0.07
Occupation	Farmer	0.21	0.35	1.24(0.62-2.47)	0.53
	Business	-1.16	0.6	0.31(0.09-1.01)	0.054
	Retired	-0.14	0.37	0.86(0.41-1.79)	0.69
	Laborer	-0.68	0.36	0.50(0.24-1.03)	0.06
	Homemaker	-0.18	0.31	0.83(0.45-1.53)	0.54
	Unemployed	Ref			
Type of Family	Nuclear	0.46	0.2	1.59(1.06-2.39)	0.02*
	Generation	Ref			
	Joint	0.08	0.76	1.09(0.21-4.60)	0.91
Socio-economic status	APL	0.1	0.28	1.11(0.64-1.94)	0.7
	BPL	-0.24	0.29	0.78(0.44-1.39)	0.39
	AYY	Ref			

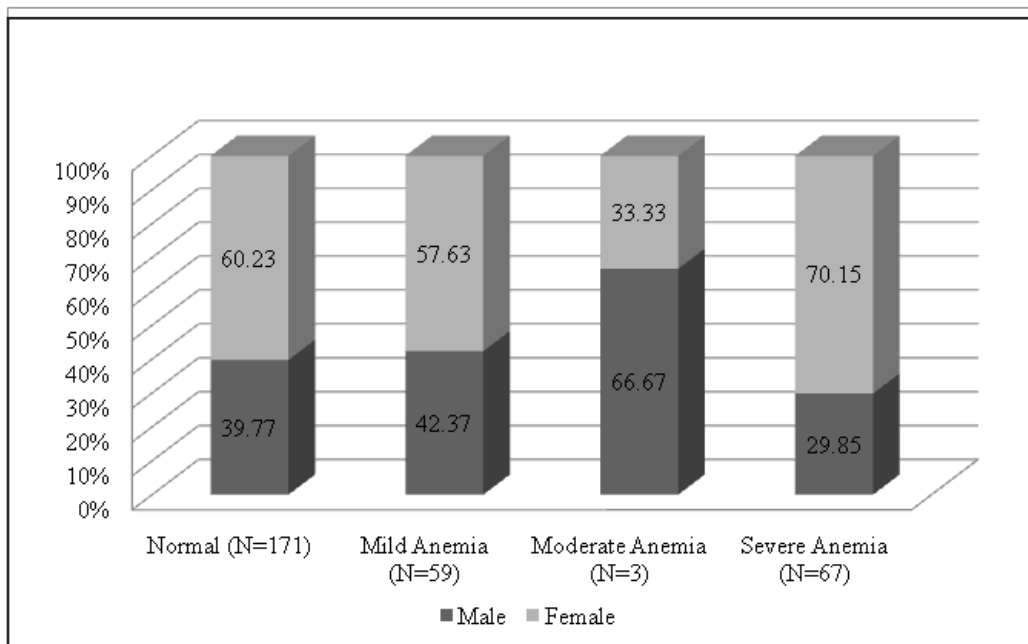
*=significant, pseudo R square=0.125

Table 4: Association of Anemia status with various factors (Multivariate Analysis- Binomial Logistic Regression)

Variables		Anemia N(%) n=117	No Anemia N(%) n=183	β - coefficient	SE	aOR (Lower Limit- Upper Limit)	p-Value
Age (years)	60 - 70	89(37.55%)	148(62.45%)	Ref			
	71 - 80	20(37.04%)	34(62.96%)	-0.02	0.08	0.97(0.83-1.15)	0.75
	>80	8(88.89%)	1(11.11%)	0.53	0.17	1.71(1.22-2.41)	0.002*
Gender	Male	43(37.39%)	72(62.61%)	0.03	0.07	1.04(0.90-1.20)	0.59
	Female	74(40%)	111(60%)	Ref			
Caste	Open	5(16.13%)	26(83.87%)	0.38	0.14	0.68(0.51-0.90)	0.008*
	Other Backward Class	56(39.16%)	87(60.84%)	-0.12	0.11	0.88(0.70-1.11)	0.28
	Scheduled Caste	35(40.70%)	51(59.30%)	-0.12	0.12	0.88(0.69-1.12)	0.3
	Scheduled Tribe	12(60%)	8(40%)	Ref			
	Nomadic tribes	9(45%)	11(55%)	-0.1	0.15	0.90(0.66-1.22)	0.51
Education	No Formal school	45(43.69%)	58(56.31%)	Ref			
	Less than primary schooling	10(33.33%)	20(66.67%)	0.04	0.09	1.05(0.86-1.28)	0.63
	Primary school completed	17(47.22%)	19(52.78%)	-0.08	0.1	0.92(0.75-1.14)	0.44
	Less than Secondary schooling	17(38.64%)	27(61.36%)	-0.01	0.09	0.98(0.81-1.19)	0.85
	Secondary school completed	19(35.85%)	34(64.15%)	-0.001	0.09	1.00(0.83-1.20)	0.98
	Less than Higher Secondary	1(20%)	4(80%)	-0.11	0.23	0.89(0.56-1.40)	0.6
	Higher secondary school completed	4(25%)	12(75%)	-0.09	0.15	0.91(0.68-1.22)	0.54
	Graduation and above	4(30.77%)	9(69.23%)	-0.11	0.16	0.89(0.64-1.23)	0.48
Occupation	Farmer	8(23.53%)	26(76.47%)	-0.1	0.11	0.90(0.72-1.12)	0.33
	Business	1(11.11%)	8(88.89%)	-0.23	0.18	0.79(0.55-1.13)	0.19
	Retired	20(40%)	30(60%)	0.07	0.1	1.08(0.87-1.33)	0.5
	Laborer	22(45.83%)	26(54.17%)	0.07	0.1	1.08(0.89-1.31)	0.45
	Homemaker	41(43.62%)	53(56.38%)	0.09	0.09	1.10(0.92-1.31)	0.32
	Unemployed	25(38.46%)	40(61.54%)	Ref			
Type of Family	Nuclear	51(39.53%)	78(60.47%)	0.03	0.06	1.03(0.92-1.17)	0.57
	Generation	64(38.55%)	102(61.45%)	Ref			
	Joint	2(40%)	3(60%)	0.02	0.23	1.02(0.65-1.61)	0.92
Socio-economic status	APL	55(39.86%)	83(60.14%)	0.03	0.08	1.03(0.88-1.21)	0.7
	BPL	37(38.14%)	60(61.86%)	0.01	0.08	1.01(0.86-1.19)	0.87
	AYY	25(38.46%)	40(61.54%)	Ref			
Malnutrition	Malnourishment	15(48.39%)	16(51.61%)	Ref			
	At risk of Malnutrition	72(39.13%)	112(60.87%)	-0.1	0.11	0.90(0.72-1.11)	0.32
	No Malnourishment	30(35.29%)	55(64.71%)	-0.1	0.12	0.90(0.70-1.16)	0.42

*=*significant*, pseudo R square=0.164

Figure1 : Gender wise distribution of Anemia cases



tool, 21.74% of elderly had BMI less than 19kg/m², 19.13% had BMI between 19-21 kg/m², 30.22% had BMI between 21-23 kg/m², 28.91% had BMI greater than 23 kg/m².

All the elderly in the study were living independently (not in a hospital). The study showed, 6.53% were taking medication more than thrice a day. Most of the elderly 81.74% in the study ate 2 meals daily. While assessing protein intake the study found, only 22.61% of the elderly consumes at least one serving of dairy products daily, only 40.22% consumes two or more serving of legumes or eggs weekly. Majority of the elderly, 91.96% reported consuming two or more servings of fruits and vegetables daily and 50.22% drank more than five cups of fluid daily. The findings showed, 90.87% of the elderly were self-fed without any problem while 9.13% had some difficulty. In the study, 81.09% of the elderly viewed themselves as malnourished, 10.22% were uncertain while 8.69% viewed themselves without any nutritional problem. When we asked about their health status in comparison with other people of the same age, 21.30% of the elderly felt not as good, 14.57% were uncertain, 57.83% felt good, and only 6.30% felt better.

During the study, Mid-arm circumference (MAC) and calf circumference (CC) were measured. Around 53.48% of the elderly had MAC greater than 22cm. (Table 2).

The burden of anemia among elderly

In the study, 300 elderly were assessed for hemoglobin status and anemia was graded according to the WHO criteria. The study found that 171 (57%) of the elderly have normal hemoglobin while 129 (43%) were found anemic. The anemic participants further classified as, mild anemic (19.67%), moderately anemic (1%) and severely anemic (22.33%). Out of 59 (19.67%) mild anaemic elderly, 25 (42.37%) were males and 34 (57.63%) were females. Out of 67 (22.33%) severe anaemic elderly, 20 (29.85%) were males and 47 (70.15%) were females. (Figure 1)

Predictors of Nutritional Status

Different socio-demographic factors were studied and it was found that age, education, and type of family were significantly associated with malnutrition. The result (Table 3) showed age group 71-80 was more prone to malnutrition. The elderly who belonged to the 71-80 years of age group had

lesser odds of having satisfactory nutritional status (OR=0.53, 95% CI:0.31-0.90, $p=0.01$).

The elderly who had education less than secondary school ($p=0.04$) and who had completed high secondary schooling ($p=0.002$) had higher odds of having satisfactory nutritional status. While those who belonged to the nuclear family had higher odds of having satisfactory nutritional status ($p=0.02$).

Predictors of Anemia

The study (Table 4) showed age and caste were the factors significantly associated with anaemia. The elderly who belonged to >80 years of age had higher odds of having anemia (OR= 1.71, 95%CI: 1.22-2.41, $p=0.002$). While the elderly who belonged to Open caste had lesser odds of having anemia (OR=0.68, 95%CI: 0.51-0.90, $p=0.008$).

Discussion:

Malnutrition is a major health concern among the elderly, leading to a deterioration in physical and cognitive performance. While using the MNA tool, one specific item revealed that 81.09 % of the elderly considered themselves to be malnourished, the final score of the MNA tool revealed that only 9.13 % of the elderly were malnourished, and the majority (62.17 %) were at risk of malnutrition. Malnutrition was shown to be significantly associated with age, education, and family type in the study. Malnutrition is a multifaceted concept that arises from physical, psychological, biological, and social changes that occur in a variety of different settings. Only a few research had focused on the relationship between ageing and malnutrition.^[14,15] But the current study showed a significant association between advanced age and malnutrition. Also, education as the important predictor of malnutrition has been demonstrated by several studies from low-middle income countries.^[16-18] In the study, the nuclear family was identified to be a major protective factor for malnutrition. This may have been possible as a result of decreased food sharing (food availability), food purchasing freedom, and dietary preferences. In the

study, 81.74 % of the elderly stated they ate two meals per day, and nearly 91.96% said they ate two or more portions of fruits or vegetables per day. The factors associated with food diversity and satisfactory nutrition status were found to be food availability, food shopping, and food preferences in different studies.^[15,19,20]

In addition to the MNA questionnaire, haemoglobin estimation was done to assess malnutrition among the elderly and it showed that the anemia was more prevalent in females than males insignificantly. The present study showed advanced age (>80 years) and open category were the strongest predictors of anemia among the elderly (Table 4). Patel et.al, in their article, reported that after 50 years of age, the prevalence of anemia increases with advancing age and exceeds 20% in those aged 85 years and older.^[11] The association of higher caste with anemia in the elderly was also found to be similar to a cross-sectional study that was conducted in South India.^[21]

Based on the finding following recommendations may help the elderly to improve their nutrition status: a. Strengthening of promotive, preventive, and rehabilitative services within the primary health care service package can be a crucial step to add quality services to the elderly. b. Comprehensive geriatric assessment for the nutritional screening. c. Provision of social platforms for nutritional education, health camps.

The current study used a validated tool, which added strength to the study. Another strength of the study was that it evaluated nutritional status using both the MNA tool and haemoglobin estimate. The IFA (Iron Folic Acid) tablets were provided to the elderly who were found to be anaemic.

The study had several limitations. First, the limitation of over reporting. Second, recall bias could be a possibility. Third, the study excluded elderly who were confined to their beds and with comorbidities. However, it paves the way to future opportunities to understand their nutritional challenges.

Conclusion:

The current study concluded the prevalence of malnutrition was 9.13% among the elderly, and it was significantly associated with age, education, and the nuclear family. The prevalence of anaemia was 43% among the elderly, and it was significantly associated with age and caste. The geriatric age group had a significant prevalence of anaemia and was at risk of malnutrition, so policymakers should emphasise the intervention in the health programme. Strengthening a component of preventative, promotional, and rehabilitative care for the elderly may be desired.

Declaration:

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Conflict of Interest: Nil

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