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Assessing the nutritional status of elderly in the selected municipalities of Chitwan district, Nepal

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Abstract

Background: Increasing the number of elderlies, the nutritional status is also an emerging issue and plays a crucial role in daily activities and non-communicable diseases. The main objective of this study was to assess the nutritional status of elderly in municipalities of Chitwan District.

Method: An analytical cross-sectional study design was used to assess the nutritional status of elderly. Probability Proportion to Size sampling method was used to select sample. A total of 442 elderly recruited from community and collected data by using Mini-Nutritional Assessment standard tool and self-constructed socio-demographic questionnaire. Descriptive and inferential statistics were used to analyze data in SPSS 20 version.

Result: Among 442 elderly participants, 215 were male and rest (227) female and the mean age was 70.6±7.7 years. Almost half of participants were from Brahmin/Chettri ethnic group and the highest number (72%) followed Hinduism and were illiterate. Almost four-fifths (77.8%) of participants were living with their son/daughter-in-law and their main household income was agriculture. Three-fifths of participants were at risk of malnutrition on screening (65.4%) and nutritional assessment (59.3%). There was a significant association of nutritional status with age ($p<0.001$), cast/ethnicity ($p<0.041$), chronic diseases ($p<0.001$), family type ($p<0.003$), and education ($p<0.034$) of participants. The participants currently ill were twice more likely to be at risk of malnutrition or malnourished than not being ill (OR: 2.319, 95%CI: 1.534-3.505).

Conclusion: With the increasing age of respondents there was an increased risk of malnutrition. Brahmin/Chettri were the more at risk. Those who were suffering from chronic diseases, and were illiterate had a higher risk of malnutrition.

Keywords: Elderly, Mini Nutritional Assessment, Nutritional Status, Screening

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Introduction

Nutrition is crucial to health and developmental growth, and productive life particularly in.[1] All ages benefit from good nutrition for vitality, balanced weight, disease prevention, and quality of life.[2] Proper nutrition and a healthy lifestyle are crucial for the elderly. The World Health Organization is concerned about the elderly suffering from a wide range of chronic illnesses associated with insufficient diet intake. Physiological, psychological, and social factors have an impact on the nutritional status of the elderly.[3]

Aging is inevitable and can have a significant role in low self-esteem due to loss of earning power and social recognition.[4] The UN and the Senior Citizen Act of Nepal specify the elderly as persons sixty years or older.[5,6] The aging population in Nepal is increasing as a result of a decline in fertility, and immigration of economically active people to other countries.[7]

Malnutrition in the elderly is frequently misdiagnosed, ignored by family and society, and requires careful assessments to determine the nutritional status.[8] In Nepal, one-fourth of the elderly are undernourished, and at risk, more in women and marginalized groups, and associated with poor quality of life, diminished functional capacity, and premature death.[9-13]

Method

After ethical approval from the Shree Medical and Technical College Institutional Review Committee, an analytical study was conducted among the elderly people of different municipalities of Chitwan district, Nepal. Data were collected from March to May 2021. For the sample size calculation and sampling technique, the Probability Proportionate to Size (PPS) method was used from 56106 of the total elderly population.[13] Since the researcher did not select the elderly participants randomly, it considered the design effect for clusters to minimize the sampling error besides considering the non-response rate. Therefore, the total sample size was 442. From each cluster (wards) 26 samples were collected by assuming the center of the ward and nearest household was selected as a first household and researcher moved to the clockwise motion until the 26 samples were collected. The same procedure was followed for all the selected wards (clusters). Data was collected by using a self-constructed structured questionnaire for sociodemographic-related characteristics, and a validated standard Mini Nutritional Assessment (MNA) tool to find out the nutritional status.[14] The voluntary participation of the participants was ensured, and confidentiality and privacy were maintained. The Nepali language was used for data collection and respondents were allowed to withdraw at any time during the data collection. After getting informed consent, data was collected by using face-to-face interviews and an anthropometric measurement (MNA) tool[14] and analyzed in the SPSS 20 version and the raw scores were calculated and analyzed by using the MNA guideline.[15] Frequency distributions have been evaluated by Pearson's chi-square ($\chi 2$) test and the Logistic regression analysis to find out the association between independent and dependent variables. A p-value of less than 0.05 has been considered statistically significant.

Result

Among 442 participants, more than half were between the ages of 60 and 69 years, mean of 70.6±7.7. Nearly half of the males (45.1%) and females (46.3%) were from Brahmin/Chettri ethnicity and a majority (72.3%) of them followed Hinduism and 2/3rd was illiterate (72.1%). The majority of males (83.3%) and females (59%) were married and living with spouses and most of the males (69.3%) and females (72.7%) belonged to joint families. Most (77.8%) of participants were living with their son/daughter-in-law and agriculture was the current occupation (40%) and main source (45.7%) of household income, Table 1.

Half of both male and female participants were suffering from at least one type of chronic disease. Hence, participants were suffering from multiple chronic diseases. More than half of males (65.7%) and females (50.9%) were suffering from high blood pressure and one-fifth of both males and females were suffering from high blood sugar, Table 2.

Table 1. Socio-demographic characteristics of elderly who were assessed for nutritional status (n=442)

Variables	Male	Female	Total
Age (Years)	n(%)	n(%)	n(%)
60-69	106(49.3)	118(51.9)	224(50.6)
70-79	71(33.0)	71(31.2)	142(32.1)
80+	38(17.67)	38(16.7)	76(17.1)
Mean age	70.76±7.8	70.48±7.6	70.6±7.7
Caste/ethnicity			
Brahman/Chhetri	97(45.1)	105(46.3)	202(45.7)
Janajati	88(40.9)	88(38.8)	176(39.8)
Others (Dalit, and Madhesi)	30(14.0)	34(15.0)	64(14.4)
Religion			
Hindu	157(73.0)	163(71.8)	320(72.3)
Buddhists	54(25.1)	53(23.3)	107(24.2)
Others (Muslim and Christian)	4(1.9)	11(4.8)	15(3.3)
Education			
No education	116(53.9)	203(89.4)	319(72.1)
Primary level	53(24.6)	19(8.4)	72(16.2)
Secondary and above	46(21.3)	5(2.2)	51(11.5)
Marital status			
Never married	2(0.9)	-	2(0.4)
Married	179(83.3)	134(59.0)	313(70.8)
Widowed	34(15.8)	93(41.0)	127(28.7)
Family type			
Nuclear	60(27.9)	56(24.7)	116(26.2)
Joint	149(69.3)	165(72.7)	314(71.0)
Extended	6(2.8)	6(2.6)	12(2.7)
Living arrangement			
Alone	-	12(5.3)	12(2.7)
Spouse only	47(21.9)	24(10.6)	71(16.1)
Son/daughter-in-law	164(76.3)	180(79.3)	344(77.8)
Other relatives	4(1.8)	11(4.9)	15(3.4)
Current occupation			
Agriculture	99(46.0)	78(34.4)	177(40.0)
Service/salaried	18(8.4)	7(3.1)	25(5.7)
Wage labour	7(3.3)	6(2.6)	13(2.9)
Business	14(6.5)	7(3.1)	21(4.8)
Household work	14(6.5)	57(25.1)	71(16.1)
Not able to work	51(23.7)	71(31.3)	122(27.6)
Pension	12(5.6)	1(0.4)	13(2.9)
Major source of household income			
Agriculture	107(49.8)	98(41.9)	202(45.7)
Service/salaried	28(13.0)	35(15.4)	63(14.3)
Wage labour	9(4.2)	8(3.5)	17(3.8)
Business	26(12.1)	36(15.9)	62(14.0)
Foreign employment	25(11.6)	34(15.0)	59(13.3)
Pension	14(6.5)	8(3.5)	22(5.0)
Old age allowance	6(2.8)	11(4.8)	17(3.8)

More than half of the participants were at risk of malnutrition in screening (65.4%) and nutritional assessment (59.3%), Table 3.

Nutritional status was statistically associated with age (p=0.008), chronic diseases (p=0.001), educational status (p=0.009), spouse living

status (p=0.046), and working ability (p=0.001), Table 4.

In logistic regression analysis, current illness was significantly associated with nutritional status. The participants who were currently ill were twice as likely to be at risk of malnutrition or were malnourished than not having illness currently (OR: 2.319, 95%CI: 1.534-3.505).

Similarly, educational status and current occupation were significantly associated with nutritional status. Participants who were Illiterate and not able to work were more likely to be at risk of malnutrition or malnourished as literate and engaged in occupation. However, age and spouse alive were not associated with nutritional status in the adjusted Odd ratio in logistic regression, Table 5.

Table 2. Presence of chronic illnesses in elderly who were assessed for nutritional status, (n=442)

Variables	Male n(%)	Female n(%)	Total n(%)
Presence of any chronic illness			
Yes	108(50.2)	117(51.5)	225(50.9)
No	107(49.8)	110(48.5)	217(49.1)
Type of chronic illness*			
Musculoskeletal problem	15(13.9)	25(21.9)	40(18.0)
Respiratory problems	13(12.0)	21(18.4)	34(15.3)
High blood pressure	71(65.7)	58(50.9)	129(58.1)
Heart diseases	6(5.6)	2(1.8)	8(3.6)
GI problems	9(8.3)	9(7.9)	18(8.1)
High blood sugar	25(21.3)	26(22.8)	51(23.0)
Thyroid problems	3(2.8)	7(6.1)	10(4.5)
Neurological problems	5(4.6)	2(1.8)	7(3.2)
Others(Eye, ear, skin problems and BEP)	4(3.7)	4(3.5)	8(3.6)

*Multiple responses

Table 3. Nutritional status by screening and assessment of elderly participants, (n=442)

Nutritional status	n	%
Screening status		
Normal nutritional status	108	24.4
At risk of malnutrition	289	65.4
Malnourished	45	10.2
Assessment status		
Normal nutritional status	159	36
At risk for malnutrition	262	59.3
Malnourished	21	4.8

Table 4. Association between sociodemographic variables and nutritional status of elderly, (n=442)

Variables	Normal nutritional status, n(%)	At risk/Malnourished n(%)	Total n(%)	p-value
Age				
60-69	94(42)	130(58.0)	224(50.7)	0.008
70 and above	65(29.8)	153(70.2)	218(49.3)	
Sex				
Male	83(38.6)	132(61.4)	215(48.6)	0.262
Female	76(33.5)	151(66.5)	227(49.1)	
Cast/ethnicity				
Brahman/Chettri/Janajati	142(37.6)	236(62.4)	378(85.5)	0.090
Dalit/Others	17(26.6)	47(73.4)	64(14.5)	
Chronic illness				
Yes	59(26.2)	166(73.8)	225(50.9)	0.001
No	100(46.1)	117(53.9)	217(49.1)	
Family type				
Single	34(29.3)	82(70.7)	116(26.2)	0.082
Joint/Extended	125(38.3)	201(61.7)	326(73.8)	
Education				
Illiterate	103(32.3)	216(67.7)	319(72.2)	0.009
Literate	56(45.5)	67(54.5)	123(27.8)	
Marital status				
Married	121(38.7)	192(61.3)	313(70.8)	0.067
Unmarried/other	38(29.5)	91(70.5)	129(29.2)	
Spouse Alive				
Yes	116(39.2)	180(60.8)	296(67.0)	0.046
No	43(29.5)	103(70.5)	146(33.0)	
Working ability				
Not able to work	28(23.0)	94(77.0)	122(27.6)	0.001
Able to work	131(40.9)	189(59.1)	320(72.4)	

Table 5. Logistic regression on nutritional status in elderly with different variables, (n=442)

Variables	Crude OR	Adjusted OR
Age		
60-69	Ref.	Ref.
70 and above	1.702(1.149-2.522 **	1.183(0.763-1.834)
Educational status		
Literate	Ref.	Ref.
Illiterate	1.753(1.145-2.682 **	1.682(1.064-2.661)*
Current Illness		
No	Ref.	Ref.
Yes	2.405(1.613-3.585)***	2.319(1.534-3.505)***
Spouse alive		
Yes	Ref.	Ref.
No	1.544(1.009-2.362)*	1.096(0.683-1.760)
Working ability		
Able to work	Ref.	Ref.
Not able to work	2.327(1.444-3.750)***	1.820(1.072-3.088)*

*p<0.05, **p<0.01, ***p<0.001

Discussion

The present study revealed that the mean age of participants was 70.6±7.7 years, consistent with other studies from Nepal[11,16], Pakistan[17] and Bangladesh[18]. Similarly, half of the participants were from Brahmin/Chettri ethnicity; however, a study of rural Nepal reported a higher proportion (57.0%) of participants were from the upper cast.[10] In this study, the majority followed Hinduism, related to joint family, and involved in agriculture. These findings are supported by the study finding of Katmandu in Nepal[19], Bangladesh[20,18] and West Bengal in India[21] but contradicts another study from India.[22] Likewise, the majority of participants had no formal education (72.1%) and lived with son/daughter-in-law (77.8%) the study from south India[23] and west Bengal[21] in India.

In this study, there was a higher proportion of at-risk for malnutrition found among participants aged 70 years and above (p=0.008), which signifies that nutritional status decreases with increasing age according to the MNA score. In the study from Nepal[9,11,19], Sri Lanka[24], South India[23], China[25] and Thailand[26] also reported similar results. The nutritional status of the elderly was significantly associated with chronic disease conditions p=0.001) and educational status (p=0.009). Studies from India[23], Sri Lanka[24], Nepal[9], and Spain[27] have reported similar findings.

Likewise, chronic illness was two times like risk for malnutrition or malnourished than not having illness (OR: 2.319, 95% CI: 1.534-3.505). Other studies from Nepal[28], Thailand[26], Spain[27] and Iran[29] have also reported similar findings. The elderly with numerous chronic illnesses tend to use multiple medications which may be related to poor nutrition.[11,30]

Educational status and current occupation of participants were statistically significant with nutritional status and being illiterate and not able to work and earn could be the risk of malnutrition. Other studies from Nepal[9,10], China[25], Sri Lanka[24] and Iran[29] have also reported similar findings. Age and spouse being alive were not associated to nutritional status in adjusted odd ratio in logistic regression. Other studies from Iran[31] and contrary to our findings from China[25], Australia[32] and United State America[30] have reported similar findings. Spouse assistance with food preparation, serving, and socio-psychological support seems invaluable. Following the death of a spouse, the elderly may need to modify their activities, which may have an impact on their nutritional state.

Conclusion

Elderly people are at risk of malnutrition. The elderly were suffering from one or more types of chronic disease, high blood pressure being common in both sexes. Medical conditions and low literacy rates were twice as likely the cause of malnutrition.

Author contribution

Concept, design, planning- JKP, SP; Literature review- All; Data collection/analysis- PR, PP, SP; Data analysis: GPD; Draft manuscript: All; Final manuscript and accountability of the work- All.

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Conflict of interest

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Supplementary material

The data and supplementary material that support the findings of this study are available from the corresponding author upon reasonable request.

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