

# Screening older at risk of malnutrition using MNA tool as cross sectional study of geriatrics

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**Abstract** - Nutritional status is directly associated with physical status and functional disability of old age people. The study aimed at evaluating nutritional status using Mini Nutritional Assessment associated with functional and psychological inability influencing the health of old age people.

In this cross sectional survey, we enrolled 100 numbers of geriatric samples. They were examined to assess the Nutritional, functional and psychological aspects using MNA tool and IADL and PADL test. The disability was evaluated by the difficulty in performing one or more self-reported tasks related to basic Physical activities of daily living (PADLs) and instrumental activities of daily living (IADLs).

The result of the study shows that the subjects who were prone to poor nutritional status were directly affected with their functional ability and psychological disturbance in their old age.

Medical history of the geriatrics reveals that disease status among the gender, male community were comparatively loss their health care than the female. The findings also shows that 69.2 % of male suffered from high blood pressure, since this group include (n=55) of them were malnourished. In the subgroup analysis of the participants good nutritional status was higher among female respondents than male.

Reduced MNA scores associated with poorer physical functional ability were identified using IADL and PADL test tools. Impairment of poor nutritional status and functional ability also decrease the psychological aspects of the individual. The study recommends the use of this indicator to monitor the health of the elderly.

**Index Terms** - Mini Nutritional Assessment, Instrumental activities of daily living, Physical activities of daily living, functional ability.

## INTRODUCTION

During aging, body composition undergoes changes, from increasing body weight in the first part of life, which stabilizes in late middle age, and decreases in very old people (Dey et al 2001.) Public awareness has increased in recent years, and improvement in nutritional care for older people is an important discussion on both national and international aspects.

To promote routine nutritional screening the ESPEN has published guidelines on nutritional screening for elders. The Mini Nutritional Assessment instrument is recommended for people aged 65 years and older.

In order to evaluate and identify the risk of malnutrition in elderly people the MNA tool was used. Functional ability of elders was assessed using IADL and PADL test tools. Important contributors of lifestyle of elders can be balanced in muscular strength and functional ability can be assessed using these test attributes. In addition, the findings of these tests can be used to direct the process of decision-making to improve the effectiveness of rehabilitation strategies for these individuals. Therefore, the researcher of this study elicits information of the selected individuals through questionnaire and investigate the information's of nutritional status, functional ability and psychological changes over the age groups of 65 years of both gender residing in Salem district, Tamil Nadu in India.

## METHODS

### Study design

The cross-sectional study was undertaken to collect data from different geriatric individuals over a single period of time. The study was undertaken in urban area of Salem district inclusion of residential and home living old age people. As part of the study N= 100, among which male respondents n=55, and female n= 45 were included.

**Study Instrument**

The questionnaire developed by WHO served as the basis for the study instrument. The questionnaire was written in English and translates into the local language (Tamil) during collection of data. The questionnaire was divided into five portions such socio and demographic profile, nutritional assessment, dietary habits, physical and functional ability as well as psychological disturbances of old age people. Three experts evaluated the instrument's content validity. They were asked to review and rate the instrument based on its clarity, relevance, comprehensiveness, translation correctness, and cultural sensitivity. As a result several changes were made and redesigned the questionnaire and a pilot study with 25 participants, who were then eliminated and finally number of subjects for the study under taken as hundred in numbers.

**Anthropometric measurement**

Weight and height index in per cent was determined and BMI of the person was calculated. The BMI helps to identify the medical problems associated with increase or decrease of ideal body weight recommended for the relevant age groups. The mid arm circumferences and skinfold thickness were measured at the mid-point between the acromion and olecranon process.

**Nutritional checklist**

Mini Nutritional Assessment tool was used to develop valid and reliable screening tool to facilitate nutrition intervention among the selected old age people. The sum of the MNA score distinguishes between the elderly people with mal nutrition, at risk of mal nutrition, and those in good nutritional status.

**Instrumental activities of daily living**

Instrumental activities of daily living (IADL) are those activities that allow an individual to live independently in a community. The instrument is most useful for identifying how a person is functioning at the present time, and to identify improvement or deterioration over time. There are some domains of function measured with the Lawton IADL scale.

**Physical activities of daily living**

Generally, older adults need to be able to manage PADLs and IADLs in order to live independently without the assistance of another person. PADL are also termed as ADL. Physical activities of daily living tool used to measure the skills required to full fill the basic needs of daily living of the individuals. The IADI and PADL tools helps to assess the functional ability of the old age people.

**Psychological Function**

The Beck Depression Inventory (BDI) is widely used to screen for depression and to measure behavioral manifestations and severity of depression among the individuals.

**Statistics**

Statistical methods used in this study were arithmetic mean, standard deviation, paired t- test and variance analyses.

**Results**

Demographic data of the studied groups are presented in the Table -1. A total of 100 elderly people were included in the study. The large majority of the people were in the age group of 60-70 years. Similarly 80% of them were found in Hindu religion. In Educational qualification aspects 43% of geriatrics were holds degree, among them male respondents had higher percentage of college education than female.

Table -1 Demographic profile of the selected geriatric people.

Personal Profile	Male N=55		Female N=45		Type of Accommodation			
	N	%	N	%	Institution		Residence	
					M= 12	F=18	M=43	F=27
Age								
60-70	47	85.4	32	71.1	08	11	29	13
71-80	7	12.7	6	13.3	04	06	13	07
>80	1	1.8	7	15.5	0	01	01	07
Religion	Male		Female		M %		F %	
Hindu	48		32		87.2		71.1	
Christian	2		3		3.6		6.6	
Muslim	5		10		9.0		20	
Educational Qualification					Number of Respondents			
					Percentage			
					M		F	

School level	Primary education	12 M=5, F=7	9.09	15.5
	Secondary education	25 M=12, F= 13	21.8	28.8
College level	Under graduate	25 M=19, F=6	34.5	13.3
	Post graduate & above	18 M=15, F=3	27.2	6.6
Un educated		20 M=4, F= 16	7.2	35.5

Figure – 1 Educational Qualification of the selected respondents

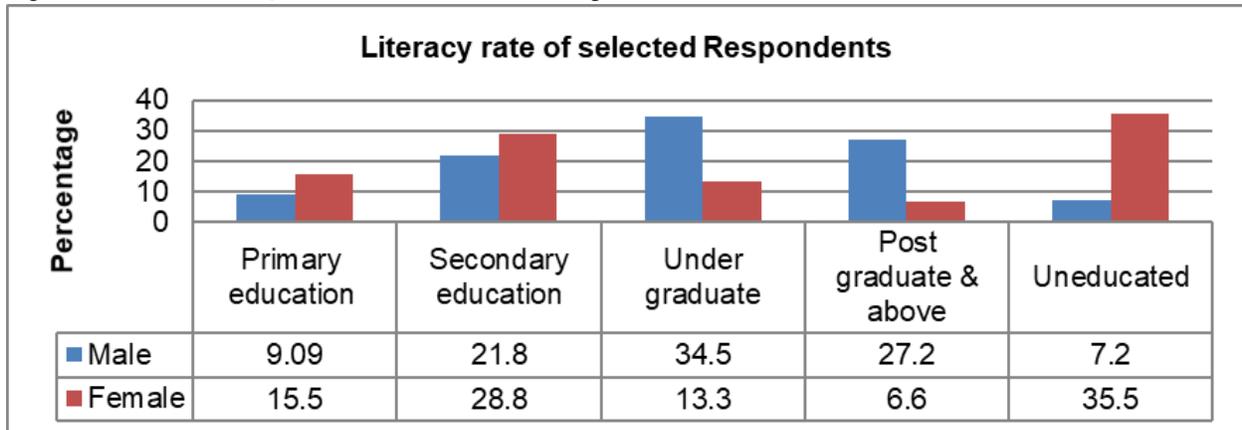
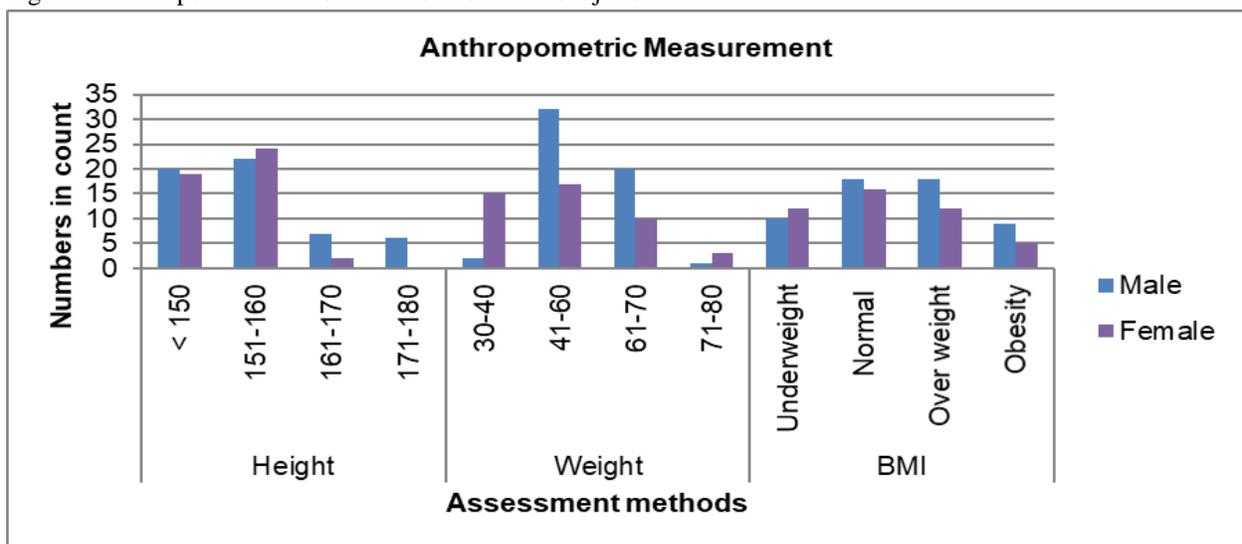


Table-2 Nutritional Assessment - Anthropometric measurement

S. No	Particulars	Height of the subjects				Weight of the subjects				BMI			
		< 150	151-160	161-170	171-180	30-40	41-60	61-70	71-80	Under weight	Normal	Over weight	Obesity
1.	Male N=55	20	22	7	6	2	32	20	1	10	18	18	9
2.	Female N=45	19	24	2	-	15	17	10	03	12	16	12	5

Figure 2 Anthropometric measurements of selected subjects



According to the MNA questions 18% of male and 12 % of female were categorized as overweight. However, 9% and 5% of male and female were graded to obesity.(Table 2). Mealtime habits of the samples also indicates poor nutritional habits prevalence on both gender of all age groups. Age is the most important risk factor for malnutrition. With increase in age the natural drive to eat also decreases resulting in

risk of malnutrition. The decline in food intake systematically affects the functional ability of the individual. The result of the study also indicates that 56% (Table 3) of the geriatrics were found to be risk in malnutrition, the considered percentage was higher among female than male.

Table-3 Mini Nutritional Assessment

S.No	Particulars	Total Numbers	Male		Female	
			n	%	n	%
1.	Risk of Mal Nutrition	56	26	46.4	30	53.5
2..	No risk of Malnutrition	30	10	33.3	20	66.6
3.	Good Nutritional state	14	06	42.8	8	57.14

Table -4 Dietary habits of the selected subjects

Dietary Habits	Selected subjects	Male	Female	Percentage	
				M	F
Type of diet					
Vegetarian	32	12	20	37.5	62.5
Non- vegetarian	68	22	46	32.3	67.6
Meal pattern per day					
Less than three meals a day	52	27	25	51.9	48.0
Three meals a day	48	33	15	68.5	31.2
Skipping meals					
Yes	76	30	46	39.4	60.5
No	24	18	6	75	25
If yes					
Once in a week	9	2	7	22.2	77.7
Twice in a week	37	12	24	32.4	64.8
Very often	30	12	18	40	60
Protein intake					
High	13	6	7	46.1	53.8
Adequate	55	29	26	52.7	47.2
Low intake	32	17	15	53.1	46.8
Fruits and vegetables					
Yes	65	30	35	46.1	53.8
No	35	16	19	45.7	54.2
Fluid consumption					
Less than 3 cups	15	8	7	53.3	46.6
3-5 cups	47	24	23	51.0	48.9
More than 5 cups	38	18	20	47.3	52.6

The age related changes are regarded to malnutrition by increasing the risk of extreme in sufficient to meet out the nutrient requirements. It is crucial to

developing various disease and conditions and increases disability in their daily activities also disturbing the psychological mood.

Table -5 Medical history of selected geriatrics in Salem district

Disease status	Status in Numbers	Percentage		Male	Female	Mean + St.Deviation	P-Value
		Male %	Female %				
High BP	13	69.2	30.7	9	4	6.5±3.5	0.021266
Diabetes	36	61.1	38.8	22	14	18±5.6	
Renal disease	11	45.4	54.5	5	6	5.5±0.7	
Asthma	15	46.6	53.3	7	8	7.5±0.7	
Anaemia	15	60	40	9	6	7.5±2.1	
HCV	4	100	0	4	0	2±2.8	
Healthy	6	33.3	66.6	2	4	3±1.4	
Ulcer	11	45.4	54.5	5	6	5.5±0.7	

The prevalence of diseases were inter related to poor nutritional conditions of the individuals. The data predicted on the table -5 depicts that old age people were suffered more from high blood pressure as 69.2% of male. Over all 36 % of individuals suffered from diabetes like that 15% Asthma and anaemia were

found. Hepatitis C virus was infected by male respondents, renal and gastro intestinal problems probably shows the same percentage among male and female respondents. Only 2 numbers of male and 4 of female were found to be healthy among 100 numbers of geriatrics.

Table – 6 Functional ability Assessments

S.no	IADL	Percentage%		PADL	Percentage%	
		Need assistant	Without assistant		Need assistant	Without assistant
1	Walk in door	38%	62%	Dressing	54%	46%
2	Transportation	75%	25%	Comb Hair	25%	75%
3	Shopping	30%	70%	Bathing	47%	53%
4.	Manage stairs	77%	33%	Feeding	63%	37%
5.	House Keeping	83%	17%	Cut toe nails	87%	13%
6.	Taking medications	76%	24%	Toileting	79%	21%

The functional ability of the individuals assessed using IADL and PADL shows that majority of the geriatrics were need assistant to carry out their personal doings.

The result of the table also indicates that risk of mal nutritional status leads to poor performance to full fill the basic needs of their daily needs.

Figure- 3 Functional ability of geriatrics using IADL tools

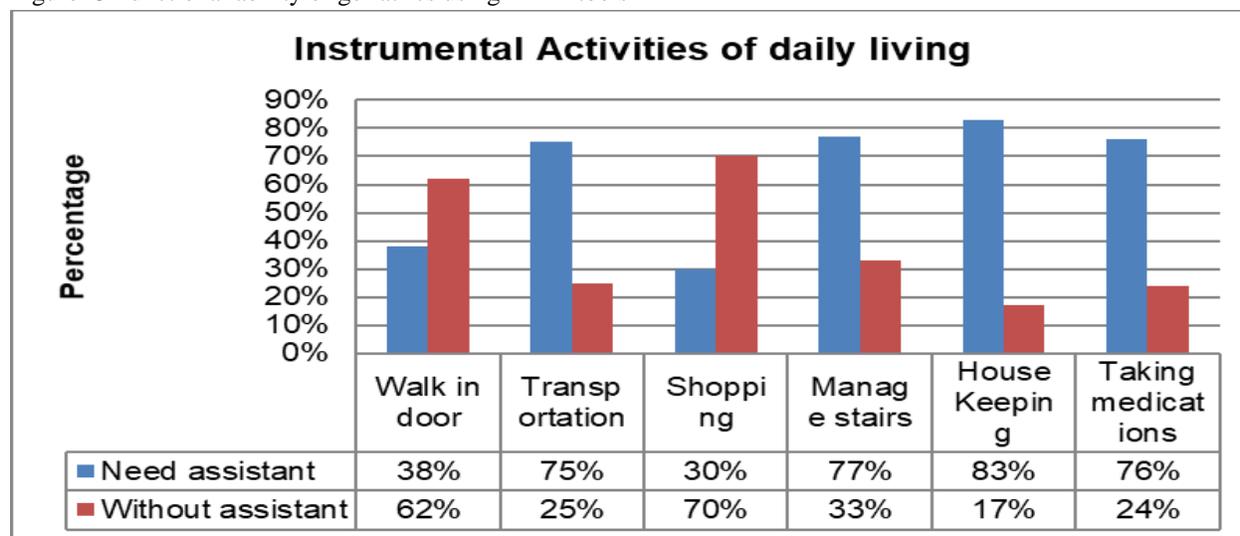


Table – 7 Psychological changes of geriatrics

S.no	Psychological function	No. of the respondents	Percentage%
1	Felt nervous	50	58%
2	Felt depressed	58	66%
3	Happy along with friends	37	43%
4	Irritable towards ( little bit of the time)	43	49%
5	Visiting other ( for every week)	34	39%

To examine the psychological changes among the selected respondents 58% of them were found to be depressed, and 66 % were felt nervous to talk with

other. Happily with friends were found to be 43% at the meantime 49% found as irritable by others and 39% of them were like to visit friends and family.

### CONCLUSION

The present study was concluded that nutritional status of geriatrics residing in Salem district was risk of mal nutrition. The socio economic status and poor eating habits were the main reason for not consuming the balanced diet. The analysis of their intake shows that the nutrient intake was insufficient as per the ICMR requirements of geriatrics. Significant association was

noticed between nutritional status and functional inability of geriatrics. It is necessary to pay special attention to manage the nutritional deficiency in order to uplift the functional ability and psychological feelings of geriatrics.

The results of the study revealed that used to create and evaluate the needed intervention programs aimed to improve the nutritional status of the old age people.

Conflict of Interests: Authors declare no conflict of interests to disclose.

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