International Journal of Innovations & Research Analysis (IJIRA)
ISSN :2583-0295, Impact Factor: 5.449, Volume 03, No. 04(II), October- December, 2023, pp 01-06

A COMMUNITY BASED STUDY ON NUTRITIONAL STATUS AND BMI AMONG AGING ADULTS IN PILANI, RAJASTHAN

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ABSTRACT

Nutrition is an important element for physical biological and psychological health among aging adults and it's also affected aging process. Successful aging is said to be multi-dimensional and has been defined as "encompassing the avoidance of disease and disability maintenance of cognitive and physical function and sustained social and protective activity" (WHO, 2006).

Keywords: *Nutrition, Physical Biological and Psychological Health, Cognitive and Physical Function.*

Introduction

Malnutrition and obesity are the common health problem in elderly population that can lead to unfavorable outcomes (Payahoo et al., 2013). Malnutrition in the elderly peoples is very common because daily food consumption decrease or irregular with old age also consumed food is deficient in nutrients, contributing to nutritional deficiencies (Lahiri et al.,2014).

Obesity is the one of the factor associate with disability conditions and premature death. Evident exist that excess body weight game during middle age contribute to the development of chronic conditions like cardiovascular disease diabetes mellitus hypertension and osteoporosis in letter year (Jensen GL, And Rogers J.,1998).

Obesity may occur in the later years for many reasons, including a decrease in physical activity, a decrease in metabolic rate, or alter fat storage mechanism. Obesity may be considered a form of malnutrition in order people also its incidence decrease with older age (older than 75 years) and is associated with an increased risk of coronary heart disease and myocardial infarction, diabetes, osteoarthritis, hypertension and stroke (Ortega RM, and Andres P.,1998).

Good nutrition seems to play crucial role in maintaining the fitness of elderly. Considering healthy diet (the consumption of root vegetable and milk products enough amount of liquid use of vitamin and mineral supplements and increasing physical activity) can improve nutritional status and prevent the outcomes of brain lesions in the elderly people (Wahlqvist ML and Savige GS., 2000). In additional, useful strategies that increase the quality of life in this group should be considered**.**

Methodology

The present cross sectional study was carried out to assess the nutritional status and BMI among aging adults, age from 60 years and 60 above, residing in Pilani, Jhunjhunu district of Rajasthan (India). A total number of 345 aging adults were selected by purposive sampling for this study. The data was collected using personal interview method paying repeated visit to the CEERI dispensary in interview is semi structured validated questions were used.

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Tool used in this Study

- **MNA:** Mini nutritional assessment (MNA) was used to assess nutritional status. The MNA (Guigoz et al., 1994) tool comprised of 18 questions based on 4 assessment sections: General assessment, anthropometric parameters, Dietary analysis and subject assessment. Those with score more than 23.5 had normal nutrition, and 17-23.5 were at risk of malnutrition and <17 were malnutrition.
- **BMI:** PMI has been recognized as even of the most useful index for adiposity both in children and adults. Low BMI (<18.50) is now being used as an indicator of chronic energy deficiency while high BMI (more than 23.00)Indicative of obesity. It is calculated as:

$$\text{BMI} = \frac{\text{Weight (kilograms)}}{\text{Height (meters)}^2}$$

- **Statistical analysis:** SPSS software version 16 was used for statistical analysis of the data. Continuous variable expressed as mean,± standard deviation and qualitative data was present as frequency (percent). Chi-square test was used for comparison of nominal variable and square men's correlation was employed to determine the relationship between variables in total and in male and female. P- value less than 0.05 considered as significant.

Results

We collect data from 345 elderly subjects with 60-70 years old and 70 years above. The General profile of the respondents is projected in figure 1 and 2. The overall mean age for both men & women respondents was 67.41±6.23 years; 67.06±6.48 for women respondents and 67.66± 6.04 for men respondents. Out of the total ageing adults, 68.3 percent of the respondent belonged to 60-70 year of age group, whereas 31.7% subject belonged to >70 year age group.

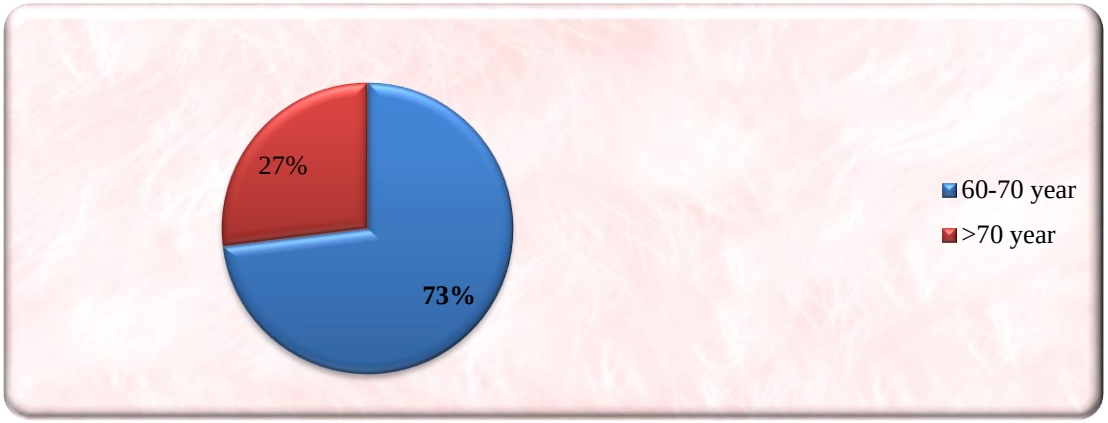

Figure 1: Age wise Distribution of the Respondents

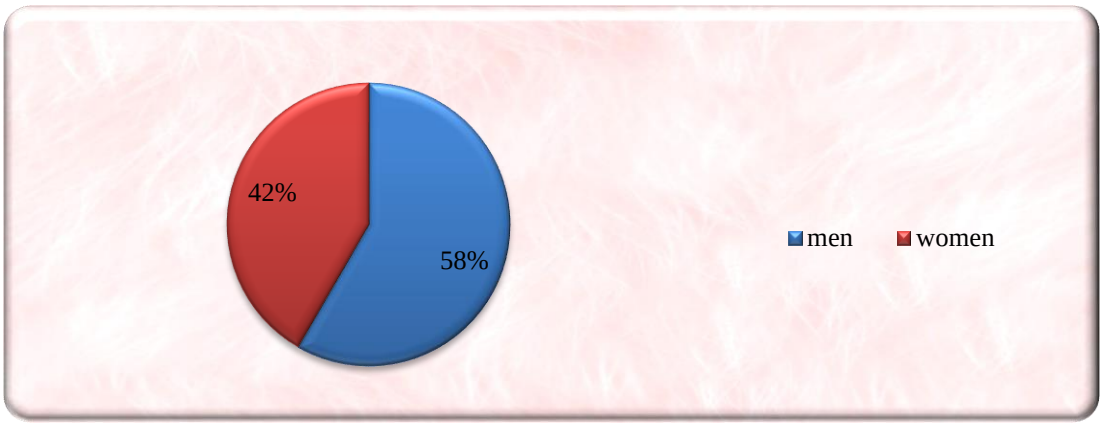

Figure 2: Gender wise distribution of respondents

The maximum number of male respondents was graduates (46.2%) and compare to female respondents (13.8%). Data shows that majority of the respondents (54.7%) were occupied earlier and only 7.3% respondents were re-employed or self employed.

Table No. 1: Frequency distribution of the subjects according to category of BMI 2010(WHO, 2010) for Asians.

Classification	BMI	No of subjects %					
		Men (n-201)		Women (n-144)		Total (n-345)	
		No.	%	No.	%	No.	%
Severe thinness	<16.00	3	1.5	-	-	3	0.9
Moderate thinness	<16.00-16.99	0	0	0	0	0	0
Mild thinness	17.00-18.49	8	4.0	11	7.6	19	5.5
Normal	18.50-22.99	40	19.9	24	16.7	64	18.6
Pre obese	23.00-27.49	119	59.2	67	46.5	186	53.7
Obese class1	27.5 -34.9	30	14.9	38	26.4	68	19.8
Obese class2	35.50-39.99	1	0.5	3	2.1	4	1.2
Obese class3	40.00 above	0	0	1	0.7	1	0.3

Source: Adapted from WHO, (1995, 2004 and 2010).
Note: Figures in parenthesis denoted the percentage

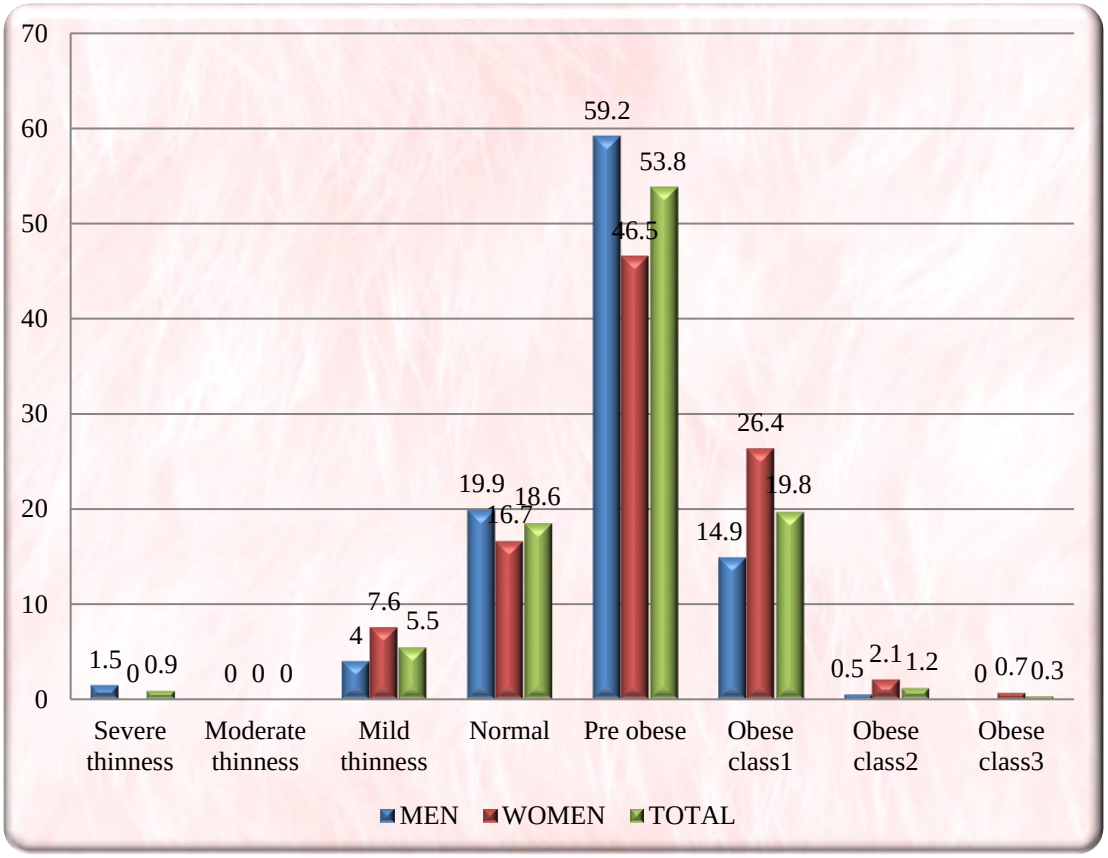

Figure No. 3: Frequency distribution of respondents according to categories of BMI

Table 1 and figure 3. depict the group wise distribution of respondents according to categories of BMI for Asian men and women. Results revealed that approximately4% and 20% of men respondents fell into each of the categories for mild thinness and normal respectively. Approximately 8%, and 18% of the women respondents had a mild thinness and normal BMI where as a majority of the men and women respondents were overweight.

Table 2: Frequency Distribution of the respondents based on the Categories of mini nutritional assessment

Categories of MNA	Men			Chi Sq (p-value)	Women			Chi Sq (p-value)	Total (men & women)		Chi Sq (p-value)
	60-70 years (n-138)	>70 years (n-63)	Total (n=201)		60-70 years (n-114)	>70 years (n-30)	Total (n=144)		60-70 years (n-252)	>70 years (n-93)	
Well nourished (24 to 30)	89 (64.5)	23 (36.5)	112 (55.7)	15.675 (0.000)**	60 (52.6)	5 (16.7)	65 (45.1)	15.097 (0.001)**	149 (59.1)	28 (30.1)	25.698 (0.000)**
At risk of malnutrition(17 to 23.5)	49 (35.5)	39 (61.9)	88 (43.8)		52 (45.6)	22 (73.3)	74 (51.3)		101 (40.1)	61 (65.6)	
Malnourished (less than 17)	0 (0.0)	1 (1.6)	1 (0.5)		2 (1.8)	3 (10.0)	5 (3.6)		2 (0.8)	4 (4.3)	

Note: Figures in parenthesis denoted the percentage

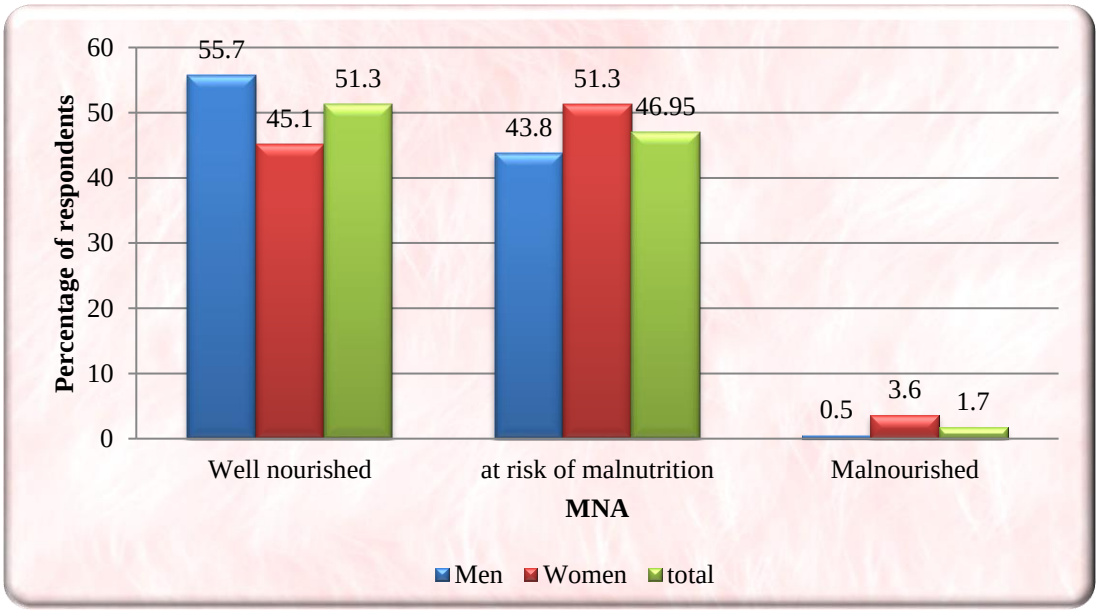

Figure No.4: Percentage distribution of respondents according to categories of MNA

Table no. 2. and figure no.4 shows the frequency distribution of the respondents that majority of men respondents (approximately 64%) belonging to the 60 to 70 years age group well nourished and 36% of the men were at risk of malnutrition. Approximately 37% of the men belonging to more than 70 years age group were well nourished whereas 62% were at risk of malnutrition. The difference between the variables in the two age groups was statistically significant (p 0.000**).

Results revealed that approximately 53% of the women respondents were well nourished whereas around 45% were at risk of malnutrition in the 60 to 70 years age group. Around 2% of the women respondents were malnourished. In the above 70 years age group, only 17% of the women respondents were well nourished, 73% were at risk of malnutrition and 10% were malnourished. A highly significant difference (p 0.001**) was observed between the MNA parameters between both the age groups.

Table 3: Correlation coefficient between Mini Nutritional assessment and BMI of the respondents

Variable	MNA (n-345)			(r-value) For BMI versus MNA
	Normal	At Risk of Malnutrition	Malnourished	
BMI	177 (51.30)	162 (46.96)	06 (1.74)	0.509

Note: Figures in parenthesis denote percentages

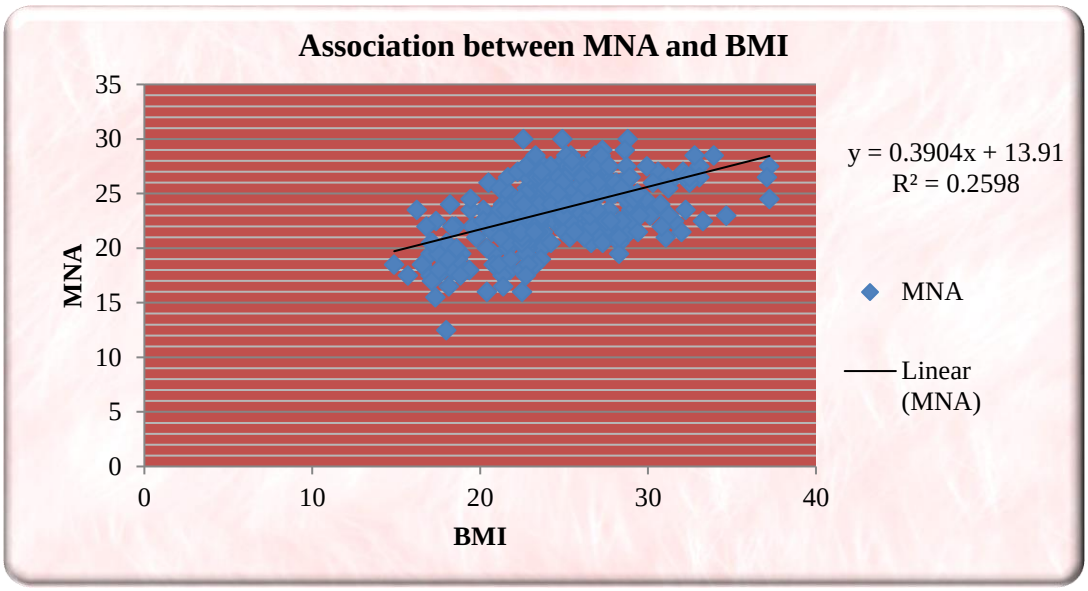

Figure 5: Correlation between MNA and BMI

Table 3. and figure no. 5. Show that BMI and MNA were positively correlated, that is, with an increase in BMI the MNA score also increases. A higher than 23.5 MNA score indicates normal category and a score lower than 17 indicates malnourishment.

Discussion

- Elderly population need specially care service to maintain high level of quality of life due to the physiological and psychological changes in this period of life.
- In present study we assessed nutritional status and BMI of aging others the result of numerous study regarding the prevalence of malnutrition in different elderly population work different.
- This study indicate that majority of elderly population was obese. Similarly Chernoff (2001) also found that majority of elderly was obese or overweight.
- According to Gandhi et al. (2018) 63% participants had a BMI of 23 or higher, 28% had a BMI of 21 to less than 23, 7% had a BMI of 19 to less than 21, and 1.3% had a BMI of less than 19 according to MNA scale. Whereas a study done in rural Belgravia showed that 44.70% subjects had under nutrition, 15.80% had Normal BMI, and 34.70% were pre obese (Kansal et al. 2016).
- Mini nutritional assessment appear to be a practical and reliable method to assess the nutritional status among aging adults and more important should be attached to those leaving lonely in Home to prevent they are nutritional problems
- In present study, MNA score showed 2% ageing adults had malnourished, 47% were at risk of malnutrition and 51% were normal. On comparing the total sample comprising of men and women, a highly significant difference (p 0.000**) was found in the MNA parameters.
- In accordance to the present study, Agarwalla et al., (2015); Pai, (2011); and Vedantam et al., (2009) also found similar results. A study conducted in Spain also showed similar results for malnutrition and risk of malnutrition (4.3% and 25.4%, respectively) (Cuervo et al., 2009). The MNA questionnaire has been used in another in western Rajasthan and the results revealed that the rural elderly as compared to urban elderly had a high prevalence and risk of malnutrition (11% and 62% vs. 2% and 36%, respectively) (Lahiri *et al*. 2015). Agarwalla et al., (2015)

observed a significant relation between age group and MNA status. MNA status and gender were found to be associated significantly (Baweja et al., 2008). Same studies were reported that the nutritional status was significantly associated with occupation. (Pai, 2011; and Vedantam et al., 2009).

- Present investigation shows that BMI and MNA were positively correlated, that is, with an increase in BMI the MNA score also increases. Similarly some study revealed that, the MNA score showed significant correlation with BMI among Ageing Adults (Pai, 2011 and Thomas et al., 2002)

Conclusion

Under nutrition as well as obesity are common health hazards in our geometric population. The elderly are posed at greater risk of health problems resulting from obesity. There is need and scope for geriatric nutritional interventions in elderly population.

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