

Comparative Study of Nutritional Status of Geriatric Population living in Old Age Homes vs. Those living with Families in Pakistan

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Abstract

Background: Elderly population is one of the most vulnerable groups that are at risk of malnutrition. A comparative study was conducted to evaluate the nutritional status of the geriatric population living with families and living in old age homes in the city of Lahore Pakistan. Objectives: To assess the nutritional status of the geriatric population living with families versus those living in old age homes or nursing homes.

Methods: Two hundred elderly individuals above the age of 60 years were included in this study for macronutrients intake calculations, clinical assessment, anthropometric assessments, Body Mass Index (BMI), Mid Arm Circumferences (MAC) and Calf Circumferences (CC). The Mini Nutritional Assessment tool (MNA) was used in the assessment process.

Results: The Mini Nutritional Assessment (MNA) results revealed the prevalence of malnutrition in elderly individuals living in nursing homes to be 8.0% higher as compared to those living with families which similarly have a 3.0% higher risk of malnutrition. Intake of carbohydrates, protein, energy, were significantly higher in the geriatric population living with families when compared to the geriatric population living in old age homes ($p < 0.05$).

Conclusion: There is a high risk of malnutrition in the geriatric population living in nursing homes and illustrated the need for health support and nutritional interventions.

Keywords: Nutritional Status; Geriatrics; Malnutrition; Mini-Nutritional assessment

Introduction

Aging in human beings is a complex phenomenon and accompanied by biological, physiological, psychological and social changes which contribute to declining health status. Infancy is the first phase of age after birth followed by childhood, and then adolescence which turns into adulthood, followed by middle age, and the final phase is old age [1]. These life phases of humans are irreversible and old age is logically the final stage or 'the final stage of the life cycle. With old age, there is a dependency factor, especially; in relation to the economical and decision-making issues [2]. Old age in itself is not a disease, but due to the weakening of the human body and to the decline in functionality, many diseases especially non-communicable diseases are common among the elderly. Chronic diseases, such as diabetes, coronary heart diseases, as well as hypertension are generally associated with old age. Elderly people also face a lack of appetite as well as difficulty in chewing and swallowing which in turn reduces total caloric and nutrient intake [3].

Well balanced diet with essential nutritional requirements for the geriatric population is consequently crucial to maintain in order to preserve good health and efficiently enhance independence and excellence of daily living [4]. The frequency of malnutrition especially in the geriatric population is almost 15% to 60% worldwide. The elderly populations with malnutrition problems are often hospitalized, reside in nursing homes, or are most likely placed under care in-home programs [5].

Constant and continuous monitoring of the health status is required to maintain good nutritional health standing and to prevent malnutrition among the geriatric population. Malnutrition in the elderly living in old age homes can be instigated due to many reasons

including shortness of trained staff, unappetizing food, unnecessary restrictions, inappropriate dietary intake, economic insecurity, and fear of neglect and isolation [6]. Malnutrition and the decrease in vital nutritional intake affect the elderly person's health negatively by lowering the immunity levels and the capacity to fight stress and disease [7].

Anthropometric measurements play an important role in the nutritional status assessment and provide information about body size, fat distribution, and BMI. These are all vital measurements for monitoring the nutritional status of individuals [8].

The results of such measurements can indicate "over" nutrition, "under" nutrition, or "regular" nutrition. Over and under nutrition are both problematic to the human body and can cause increased vulnerability to diseases. It provides an insight into the effectiveness of nutritional intervention programs. An effective nutritional intervention program depends on a complete evaluation and assessment of the individual diagnosed with malnutrition [9]. Mini Nutritional Assessment-Short Form (MNA-SF) is a tool to identify those already malnourished or at-risk of malnutrition [10]. Scores between 12 to 14 represent the normal status of nutrition, 8 to 11 signify at-risk, and

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0 to 7 designate malnutrition. An inclusive assessment includes a set of additional assessments along with the fundamental nutritional assessment based on physical, mental, and social status. This will lead to a logical method to obtain the nutritional needs of the geriatric population [11]. It is significant for the geriatrics population to utilize adequate nutrition which helps them to sustain their daily living activities and preserve a healthy autonomy [12]. High-quality nutrition along with appropriate physical exercise is a health-promoting lifestyle in the geriatrics population. An insufficient nutritional intake will lead to sarcopenia (i.e., loss of muscle mass), a decrease in functional capacity, and the development of different diseases [13].

In this study, the researchers assessed the nutritional status of the elderly population living in Lahore Pakistan and compared between two groups; those living in nursing homes and those living with families. The purpose was to identify if there are any significant differences in nutritional status.

Methods

This was a descriptive cross-sectional comparative study. It was undertaken in six major old age homes and the geriatric populations living with their families in Lahore. Participants aged above 60 years were included in the study according to the WHO official definition of the elderly population [15], and who agreed to participate in the study were included in the study. Comparison of two hundred elderly persons, hundred living in old age homes and hundred with families was done.

Nutritional Assessment was done by using the Mini Nutritional Assessment Tool (MNA). This assessment is a screening tool with a reliable scale and clearly defined thresholds, used for the evaluation of nutritional status in the geriatrics population. The questionnaire consisted of five sections:

- 1 In the first section, socio-demographic information
- 2 The second section consisted of 12 questions related to nutritional screening.
- 3 The third section of assessment was on Anthropometric assessment including weight (kg) height, mid-upper arm circumference (MAC) was taken from the upper right arm. Measurement of calf muscles was taken to the nearest 0.5 cm from the large circumference

of the calf ankle bent at 90o angles [16]. Body mass index (BMI) was calculated by using (kg/m²). Interpretation of scores was done as follows: score <17: malnourished score 17–23.5: At the risk of malnutrition, and score > 23.5: Well-nourished (16). The fourth section Energy from macronutrients intake were calculated through 24 hours dietary history and dietary intake

4 The fifth section address the clinical assessment based on physical examinations, observing sign and symptoms of nutritional deficiencies.

5 Ethical clearance was taken from the institutional ethics committee before the study. Informed consent was taken from the elderly people before the study.

Statistical analysis

Data were entered into SPSS version 20. Mean and SD was calculated for the quantitative variables. Chi-Square [17] was used to examine the relationship between demographic variables and nutritional status variables. Comparison of macronutrients intake was done using t-Test between the geriatric populations living with families versus living in an old age home. P-values calculated at the margin of 5 percent error, 95% confidence level (p<0.05).

Results

The table 1 shows that 64% of the elderly living in their own homes or with family were males while the remaining 36% were females, and the majority (56.0%) of the total participants were from the age group of 60 to 70.

Anthropometric measurements less than normal are depicted in Table 2. Moreover, the Chi-Square value is 2.539 while the calculated p-value is 0.014. Similarly, the Chi-Square value of MAC is 0.261 with 1 degree of freedom while the calculated p-value is 0.643. The gender-wise prevalence of malnutrition with 27.1% in females and 23.1% in males with p values 0.056 and 0.006 respectively.

The results in Figure 1 shows that 29% of elderly population living in old age home were malnourished, 45% were at-risk and only 26% were nourished. On the other hand, only 13% of the geriatric population living with the family was malnourished, 39% were at-risk and 48% had well-rounded nutrition.

| Variables | Measures | Elderly Living With Family | Elderly Living in Old Age Homes | Total Count (%) |
|----------------|----------------|----------------------------|---------------------------------|-----------------|
| Gender | Male | 64 | 66 | 130 (65.0) |
| | Female | 36 | 34 | 70 (35.0) |
| Age | 60-70 | 61 | 51 | 112 (56.0) |
| | 71-80 | 34 | 37 | 71 (35.5) |
| | Above 81 | 5 | 12 | 17 (8.5) |
| Marital Status | Unmarried | 3 | 13 | 16 (8.0) |
| | Married | 75 | 59 | 134 (67.0) |
| | Widow/Divorce | 22 | 28 | 50 (25.0) |
| Education | Illiterate | 43 | 20 | 63 (31.5) |
| | Primary | 31 | 26 | 57 (28.5) |
| | Metric | 18 | 34 | 52 (26.0) |
| | Graduate | 8 | 20 | 28 (14.0) |
| Monthly Income | Nil | 18 | 74 | 92 (46.0) |
| | > 5,000 | 18 | 19 | 37 (18.5) |
| | 5,000 – 10,000 | 35 | 5 | 40 (20.0) |
| | > 10,000 | 29 | 2 | 31 (15.5) |

Table 1: Socio-demographics characteristic.

| Variables | Measures | Elderly Living With Family | | Elderly Living in Old Age Homes | | Total (%) n=200 |
|-----------|-------------|----------------------------|--------|---------------------------------|--------|--------------------|
| | | Male | Female | Male | Female | |
| BMI | BMI < 19 | 2 | 5 | 8 | 6 | 10.5 |
| | BMI 19 - 21 | 17 | 6 | 10 | 8 | 20.5 |
| | BMI 21 – 23 | 7 | 5 | 11 | 9 | 16 |
| | BMI > 23 | 38 | 20 | 37 | 11 | 53 |
| MAC | MAC < 20 | 5 | 8 | 13 | 9 | 19.5 |
| | MAC 20 – 22 | 15 | 6 | 13 | 7 | 20.5 |
| | MAC >= 22 | 40 | 22 | 40 | 18 | 60 |
| CC | CC < 31 | 20 | 13 | 25 | 15 | 36.5 |
| | CC >= 31 | 44 | 23 | 41 | 19 | 63.5 |

Table 2: Anthropometric measurements.

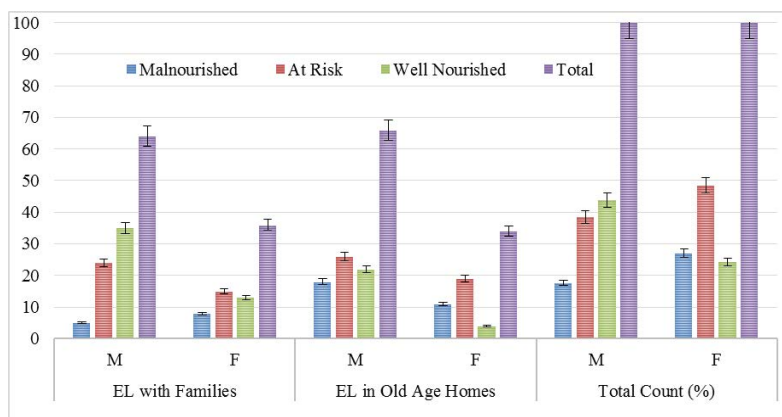


Figure 1: Distribution of nutritional status as per gender and residence.

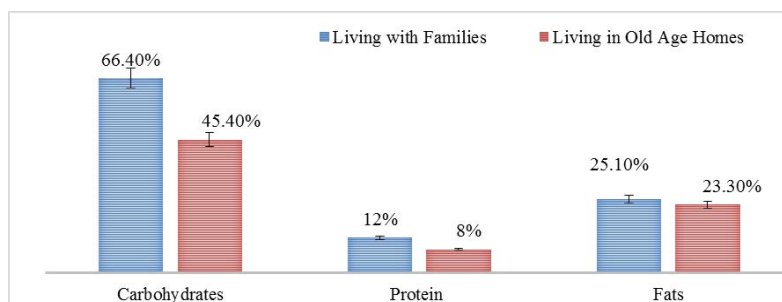


Figure 2: Energy derived from carbohydrates, protein and fat in the diets.

Figure 2 shows the Intake of carbohydrates, protein, energy, was significantly higher in the geriatric population living with families when compared to the geriatric population living in old age homes ($p < 0.05$).

Discussion

The main purpose of this present study was to access the occurrence of malnutrition in the elderly population living in old age homes of Lahore city Pakistan. Literature from developed countries illustrate that various disease conditions, nutritional deficiency, and advanced ages are common features of the geriatric population that cause malnutrition [18].

In the current study, 6.50% populations living with families were malnourished assessed with MNA as in Figure 1 Study supported by [19] while 5.53% subjects were malnutrition. In contrast of In this study

17% malnourished and 58% at risk [20]. The prevalence of malnutrition in the elderly population was 17% moreover 42.3% were at risk [21]. The nutritional status of elderly people residing in the residential zone was much better as compared to elderly people residing in old age homes [22].

In the present study participants in old age home 14.50% malnourished 22.50% at risk. Results supported by [23,24] were majority were mal-nourished and were at risk of malnutrition [25]. The prevalence of malnutrition was a great concern residing in old-age homes. Lower energy intake due to dietary nutrient insufficiency is linked to the reduction of height and weight in geriatric [26]. The reduction in height especially in geriatric results in a decrease in the length of the spinal cord that is linked with osteoporosis and. For the prevention of disease and maintenance of healthy intake of adequate macronutrients for the provision of energy is important [27]. BMI,

| Variable | Elderly Living With Family (%) | Elderly Living in old age homes (%) | Total | p Value |
|------------------------|--------------------------------|-------------------------------------|------------|---------|
| | | | Count (%) | |
| Sever loss in appetite | 10 (5.0) | 5 (2.5) | 15 (7.5) | 0.229 |
| Weight loss | 21 (10.5) | 9 (4.5) | 30 (15.0) | 0.14 |
| Decrease Mobility | 10 (4.0) | 7 (3.5) | 17 (8.5) | 0.002 |
| Stress Yes | 43 (22.5) | 30 (15.0) | 73 (36.0) | 0.002 |
| Sever Dementia | 9 (4.9) | 5 (3.5) | 14 (7.0) | 0.028 |
| Take > 3 prescription | 19 (9.5) | 25 (12.5) | 44 (22.0) | 0.197 |
| Pressure sore Yes | 3 (1.5) | 5 (2.5) | 8 (4.0) | 0.36 |
| 1Meal/Day | 25 (12.5) | 25 (12.5) | 50 (25.0) | 0.712 |
| 1x protein /day | 46 (23.0) | 31 (15.5) | 77 (38.5) | 0.001 |
| <2 fruit & vegetables | 76 (28.0) | 57 (28.5) | 133 (66.5) | 0.004 |
| <of fluid/day 3 cups | 8 (4.0) | 6 (3.0) | 16 (8.0) | 0.222 |
| Self-Feed Difficulty | 2 (0.5) | 7 (3.5) | 9 (4.5) | 0.111 |
| Self-view Nutritional | 18 (9.0) | 8 (4.0) | 26 (13.0) | 0.086 |
| Not as good as peers | 11 (5.5) | 34 (17.0) | 45 (22.5) | 0.14 |

Table 3: Mini Nutritional assessment.

| Variable | Living with Families | | Living in Old Age Homes | | Total (%) | | Value |
|-----------------------|----------------------|----|-------------------------|----|------------|------------|-------|
| | Yes | No | Yes | No | Yes | No | |
| Edematous | 6 | 94 | 8 | 92 | 14(7.0) | 186 (93.0) | 0.391 |
| Activity Level | 22 | 78 | 26 | 74 | 48 (24.0) | 152 (76.0) | 0.31 |
| Dermatitis of Skin | 18 | 82 | 15 | 85 | 33 (16.0) | 167 (83.0) | 0.352 |
| Impaired Vision | 54 | 46 | 71 | 29 | 125 (62.5) | 75 (37.5) | 0.01 |
| Nausea/Vomiting | 5 | 95 | 8 | 92 | 13 (6.5) | 187(93.5) | 0.284 |
| Inflamed of tongue | 14 | 86 | 19 | 81 | 33 (16.5) | 167 (83.5) | 0.223 |
| Dental Carries | 47 | 53 | 54 | 46 | 101 (55.0) | 99 (49.5) | 0.198 |
| Diarrhea | 2 | 98 | 6 | 96 | 8 (4.0) | 192 (96.0) | 0.14 |
| Constipation | 32 | 68 | 28 | 72 | 60 (30.0) | 140 (70.0) | 0.379 |
| Bone Tenderness | 30 | 70 | 24 | 76 | 54 (27.0) | 146 (73.0) | 0.339 |
| Joint Pain | 47 | 53 | 59 | 51 | 106 (53.0) | 104 (52.0) | 0.059 |
| Level of Satisfaction | 76 | 24 | 34 | 66 | 110 (55.0) | 90 (45.0) | 0 |

Table 4: Clinical assessment.

mid-arm circumference, and calf circumferences were significantly different in both groups living in old age homes and living with families (Table 4.23). Similar findings were observed that the geriatric living with families has high BMI and high MNA [28]. The occurrence of malnutrition increased with the decrease in the frequency of meals, low intake of dairy products, and low consumption of fruits and vegetables (Figure 2). Similar findings Malnutrition more commonly the participants were eating less meat and bread, fruits and vegetables. Decrease the activity level and metabolism and also decrease the energy requirement those populations eat less [29].

Most of the clinical manifestation was age-related and was common in both generations living in old age homes and living with families. Edematous, skin irritability muscles wasting hair thinning, and loss of hairs, were a result of imbalance nutritional status. Similar findings were observed by [29,30] where weakness was reported by more than 50% of the geriatric population especially in the old age homes population.

Conclusion

The current study has concluded that there was a significant difference in dietary intake, anthropometric measurements and clinical assessment between the geriatric populations living in old age homes and those living with families. The energy intake and some nutrients especially protein in the geriatric population living in old age homes

was lower than recommended dietary intake. There is a high risk of malnutrition in the geriatric population living in nursing homes and illustrated the need for health support and nutritional interventions.

Recommendations

Based on the results, the authors recommend the following in order to reduce the risks of malnutrition in the Geriatric Population.

- Further studies should be conducted in neighboring areas of Lahore and other cities of Pakistan as well as to assess nutritional status in elderly population especially those living in old age homes.
- Assessment of nutritional status should be compulsory upon admission in old age home and periodically.
- Provision of a healthy well-balanced diet, and considering needs of nutrients and specific micronutrients including iron, vitamin A, carotene, and similar nutrients in the planning of menus for elderly living in old age homes.
- There is a need to increase the quantity of fruits; vegetables and dairy products also a need for suitable amounts of protein.

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