

## Malnutrition and its Risk Factors Particularly Family System in Elderly Population of Karachi

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### ABSTRACT

**Aim:** To determine the frequency of malnutrition, its risk factors and to compare the effects of living system (alone or joint family) on malnutrition among elderly population of Karachi.

**Methods:** Comparative cross sectional study was conducted on elderly of various towns of Karachi for 8 months. A total of 206 samples were selected through convenient technique including people age 60 years and above while excluded those who were bed ridden, had malignancy or any debilitating disease.

**Results:** Total population surveyed comprised of 206 elderly of which 61% were women. Mean age for the population was 67.04±6.19years. According to MNA scale, 20% of studied population was found to be malnourished while 46% were at risk. Malnutrition was found to have statistically significant association with female, house wives and living alone ( $p < 0.05$ ).

**Conclusion:** Malnutrition is prevalent in elderly population of Karachi particularly in those who live alone. Significant factors include living alone, decrease in amount, frequency & type of food intake, physical immobility, depression & dementia. An integrated approach for early identification, counseling regarding healthy food and lifestyles and promotion of joint family system would be required to overcome the malnutrition and its deleterious effects.

**Keywords:** MNA, malnutrition, Karachi, elderly.

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### INTRODUCTION

WHO in 1998 reported that six percent of the population of Pakistan was over 60 years, with a likelihood of doubling by 2025<sup>1</sup>. The elderly have a large risk of malnutrition because of unique complications such as changes in appetite and energy level, and chewing and swallowing problems<sup>2</sup>. Malnutrition is a state of nutrition in which a deficiency, excess or imbalance of energy, protein, and other nutrients causes measurable adverse effects on tissue and body form (body shape, size, and composition), body function and clinical outcomes. It affects over 10% of the population aged 65 years and above<sup>3</sup>. Common types of malnutrition seen in elderly persons are under nutrition, vitamin and mineral deficiencies and excesses, obesity, nutritional imbalances and toxicities<sup>4</sup>. In Catalonia, Poor nutritional status was recorded to be 58%<sup>5</sup> and in Nigeria it was 62%<sup>6</sup>. One out of every five persons in the developing world is chronically undernourished<sup>7</sup>. Two-thirds of malnourished individuals are concentrated in seven countries:

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Bangladesh, China, the Democratic Republic of Congo, Ethiopia, India, Indonesia, and Pakistan<sup>8</sup>. National Nutrition Survey Pakistan 2011 showed that 24.2% of elderly were overweight and 12.9% were obese. In FATA 33% were overweight<sup>9</sup>. A study done in Peshawar showed that the proportions of obese, overweight and underweight elderly were 13.1,3.1&10.8 respectively<sup>10</sup>. The prevalence of malnutrition ranges from 5-10% in free-living elderly to 30-85% in homebound, nursing home, and hospitalized elderly<sup>11</sup>.

In a report on nutritional needs of elderly, WHO in collaboration with Tufts University mentioned that nutritional status of older persons in low-income countries is inadequately documented. The scanty, mainly hospital-based, data that are available, fail to incorporate essential indicators of nutritional status. Food-intake assessments are rarely conducted among elderly in low income countries, yet such assessments play a crucial role in detecting relationships between dietary exposure and disease causation. This report also identified the nutritional problem as the root of the major communicable and chronic non communicable diseases which are impediments to achieving health goals and economic & social progress<sup>12</sup>. Although Pakistan has had some national nutrition surveys in the past, none have resulted in a national intervention program aimed at redressing the root causes and effects of

Malnutrition. Also statistics of malnutrition in free living and home bound elderly never established for our country<sup>9</sup>.

## MATERIAL AND METHODS

A Comparative cross sectional study was conducted among elderly inhabitants of various towns of Karachi i.e. Baldia, Bin Qasim, Gadap, Gulberg, Gulshan, Jamshed, Kiamari, Korangi, Landhi, Liaquatabad, Lyari, Malir, New Karachi, North Nazimabad, Orangi, Saddar, Shah Faisal towns during eight months from March to October 2012. Total 206 persons (as calculated by WHO Sample size estimation software) of 60 years and above were enrolled in the study by convenient sampling excluded the patients who were bed ridden or had malignancy or any debilitating disease.

The questionnaire [comprised of Mini Nutritional Assessment (MNA), which is a well validated screening tool with a reliable scale and clearly defined thresholds, usable by health care professionals especially in geriatric assessment for the assessment of malnutrition]<sup>14</sup> was pre-tested on small sub sample in order to identify any potential problem in data collection. The MNA is composed of simple measurements and brief questions that can be completed in about 10 minutes<sup>15</sup>. The total score obtain by MNA scale is 30. The persons who scored  $\geq 24$  classified as having normal nutritional status while those who scored 17–23 or  $<17$  distinguished as at risk of malnutrition or malnourished respectively.

Every participant was interviewed after taking written informed consent by a member of specially trained group consisting of fourth year medical students of KMDC. Standardized pattern of inquiry was devised in order to minimize interviewer bias. Consent was also taken by Ethical Review Board (ERB) of KMDC.

Data was entered in computer and analyzed by SPSS version 16. Descriptive statistics for continuous data; e.g., age, weight and height, mean and standard deviation were calculated, and proportions was calculated for all the remaining categorical data e.g. sex, education, socioeconomic condition, family system and categories of nutritional status etc. Chi square test was applied for qualitative data. P-value of  $\leq 0.05$  was considered as significant.

## RESULTS

The mean age of the participants was calculated to be  $67.04 \pm 6.19$  years. Our study population had mean weight of  $61 \pm 13$  kg and height  $1.55 \text{ meter} \pm 0.09$ . According to MNA scale, out of the total 206

respondents, 66% were either had malnutrition or at risk of it as shown in figure 1. Various demographic variables and their comparison with nutritional status are shown in table 1. While comparing the *demographic* variables with nutritional status, it was noticed that malnutrition was prevalent among female especially house wives and had no family support and this relation was statistically significant as shown in table 1. Malnutrition was found to be more than double among those who lived alone than those lived in joint family system ( $p=0.005$ ) (Table 1 & Fig. 2)

Fig. 1: Proportions of nutritional status among elderly

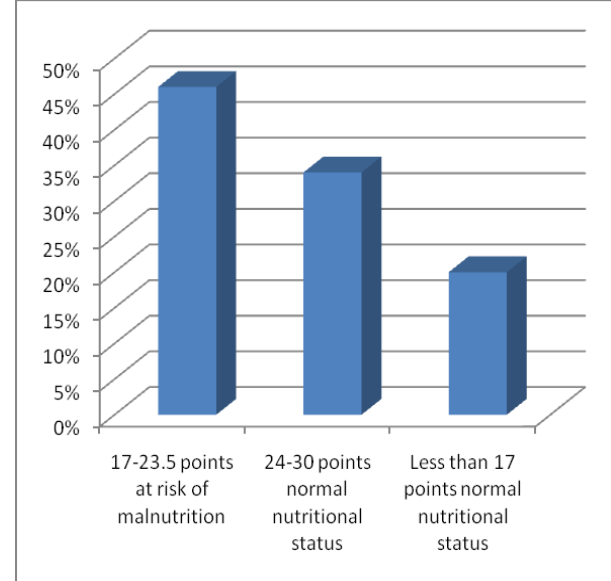
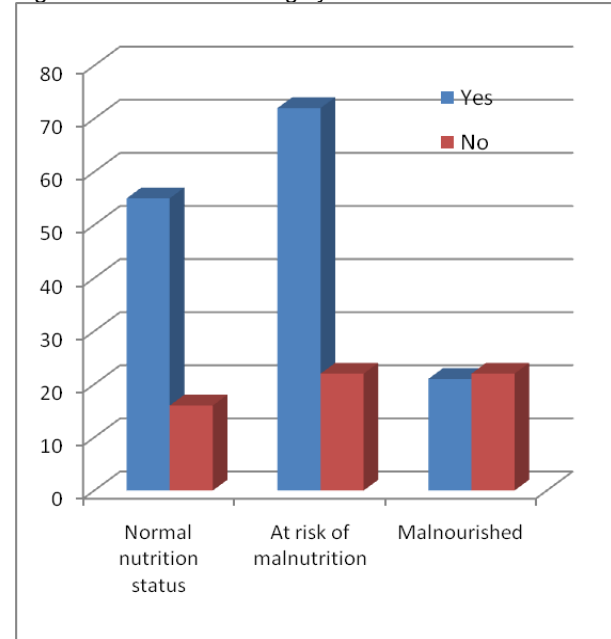


Fig. 2: Association of living system with nutritional status



We also compared the individual variable including in MNA with various nutritional status. Malnutrition was observed to be significantly associated with decline in amount of meal (0.00), consumption of < 2 vegetable or fruit per day (0.03), dependency on others for food intake (0.00) and decrease in frequency of food intake (0.00). While

amount of fluid intake, type of protein intake and frequency of prescribed medicine were not found to be significantly associated with malnutrition. While asking about the health status psychological stress, depression and dementia were noticed to be associated with malnutrition (p = 0.00).

Table 1: Comparison of nutritional status with various demographic variables.

Variables		Frequency	Nutritional Status			P – value*
			Normal MNA ≥ 24	At risk MNA =17-23	Malnourished MNA < 17	
Sex	Male	81	41	29	11	0.00
	Female	125	30	65	30	
Work status	Working	30	17	10	03	0.01
	Retired	82	32	34	16	
	House wives	94	22	50	22	
Educational Status	Illiterate	45	11	24	10	0.196
	Middle	31	08	13	10	
	Matric	41	15	17	09	
	>Matric	89	37	40	12	
Family Support	Yes	156	56	76	24	0.016
	No	50	15	18	17	
Joint family	Yes	148	55	72	21	0.005
	No	58	16	22	20	

\*Chi square test applied

## DISCUSSION

The aim of our study was to help in improving the detection of burden of malnutrition among elderly and guide towards appropriate interventions that can lead to a decrease in subsequent morbidity and mortality related to malnutrition. This thought is supported by Elia et al., 2005, who revealed a decrease in infections and length of hospital stay with an increase detection of malnutrition<sup>13</sup>.

The proportion of persons who were at risk or had malnutrition is lower in our study than that of Helsinki may be because of the fact that means age (80 years) of their study participants were more than in our study or that study was conducted on the residents of nursing homes<sup>14</sup>. Malnutrition was found to be slightly more in our study than a study of Hong Kong might be due to the difference in study setting or different tool for measurement<sup>15</sup>. The population at risk of malnutrition in our study is somewhat similar to that of Sargodha but malnourished were more prevalent in our setting because the proportion of female participants were relatively high in our study than the study conducted in Sargodha<sup>16</sup>.

The current study identified that the elderly people who had severe decrease in food intake due to loss of appetite, digestive problems, chewing or swallowing difficulties were malnourished, which is in accordance with the study of Hall & Brown, who concluded the factors that cause decrease in food

intake include oral health & physical impairments<sup>17</sup>. Visvanathan & Chapman, 2009 gave supportive evidence by stating that Poor dentition can cause difficulty with chewing food and swallowing, leading to a decrease in nutrient intake<sup>18</sup>.

Our study showed that elderly people who were unable to eat without assistance were 100% malnourished. Out of those who self-fed with some difficulty, 35.89% were malnourished, which is supported by another study which says that physical impairments such as physical immobility or the inability to feed oneself, can cause difficulty in acquiring, preparing, and eating foods<sup>18</sup>.

We found that among elderly people who were able to go out, 10% were malnourished as compared to 67% of those who were bed or chair bound. These results are in accordance with Guigoz Y, Vellas BJ who showed the prevalence of malnutrition ranges from 5-10% in free-living elderly & 30-85% in homebound<sup>19</sup>.

The prevalence of malnutrition was found to be more than double among those who live alone as compared to those who live in joint family. More than one quarter of widows was malnourished. This finding was similar to the study of Matthew Lee (2010)<sup>20</sup>. Malnutrition was found to be positively associated (p=0.00) with depression & dementia similar to the finding of German et al<sup>21</sup>.

## CONCLUSION

Malnutrition is prevalent in elderly population of Karachi particularly in those who live alone. Significant factors include living alone, decrease in amount and frequency of food intake especially fruits & vegetables, physical immobility, depression & dementia. An integrated approach for early identification, counseling regarding healthy food and lifestyles and promotion of joint family system would be required to overcome the malnutrition and its deleterious effects.

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