

Prevalence of chronic energy deficiency in the elderly population of Matlab

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ABSTRACT

The number of elderly people in the world increased from 13 to 45 million between 1950 and 1985. In Bangladesh, however, the absolute number of elderly registered a slight decline. The negative growth rate reflects in part, poor health conditions and consequently high adult mortality rate. This study attempts to examine the nutritional status of the elderly in Matlab, Bangladesh by looking at the prevalence of chronic energy deficiency (CED) among the elderly population and endeavors to find its determinant. Socio-economic and nutritional information of 626 elderly individuals of 2076 households, residing in 14 villages of Matlab, Chandpur, was obtained through pre-coded questionnaires. The survey duration was April - August 1995. The results suggest that the elderly are a vulnerable group of population in terms of health and nutrition, as 80% of the elderly population suffered from different degrees of CED and severe CED prevalence in elderly population was associated with sex, occupation, household economic status and family size.

INTRODUCTION

Population ageing is a major by-product of demographic transition, which has already occurred in most areas of the world. In the developed countries, the older people already form a significant proportion of the total population. Ageing issues have only recently begun to emerge as a cause of concern in developing countries because the proportion and absolute number of this special group of population in most of the countries are still quite low (1). For the developing countries, implications of the demographic shifts are - firstly, the recognition that population ageing is inevitable and secondly, that the demographic transition will be faster in the developing countries compared to developed countries. Therefore, the developing countries will have to plan for the rapid ageing of population (2).

In Bangladesh, there are 7,652,486 thousand people over 55 years of age, according to survey conducted in 1990 by Bangladesh Bureau of statistics. The rural people in this age group are involved extensively in economically productive activities. Among the 55-59 year old people, 94% males and 62% females participate in economic activities. Within people aged 60-64 years, 87% males and 61% females are involved in economically productive activities (3). The data undermines the contribution of females in household activities. House-based work may not yield income but are essential for the well-being of the family. The contribution of older people in terms of house-based work may also enable the younger people to participate in income generating activities. On the other hand, functional disability and ill health among older people may strain the resources of the family.

Chronic Energy deficiency (CED) causes functional impairment and maybe an important cause of high death rate among the older people. We specify chronic energy deficiency as a steady state at which a person is in energy balance although at a cost either in terms of risks to health or as an impairment of function and health (4). However using the cut-off points of BMI for adults, to describe CED prevalence among people over 55 years of age, is a serious limitation of this study.

Though people aged 55 years and above are active contributors to the well-being of the family, they are often not considered during the designing of development programmes. BRAC's rural development programme for example, defines productive age of a person to be 18-54 years and people from this age group are considered eligible for the rural development programme.

OBJECTIVE

The aim of our study was therefore, was to look at the nutritional situation of the people over 55 years of age, of Matlab thana, in terms of severe chronic energy deficiency and explore its association with different socioeconomic indicators. The expectation was that the findings would provide a background for designing appropriate interventions for this age group.

METHODOLOGY

This study was based on analysis of data collected as a part of BRAC-ICDDR,B joint research project during April-August 1993. (5)

Study population

Of the 60 villages within ICDDR,B's Demographic Surveillance System (DSS) area, 14 was selected at random. Villages at risk of river erosion in the near future and villages situated on both sides of flood protection embankment were excluded. The aim was to interview 500 households in each of the four kinds of intervention areas (BRAC+ICDDR,B, BRAC, ICDDR,B and no intervention). A series of outcome indicators related to nutritional status were used to calculate the total sample size. In anticipation of some households dropping out over the years, a few extra households were sampled in each kind of intervention area. Thus the total number of households interviewed were 2,076. From these households nutritional and socioeconomic information on 626 individuals aged 55 years and above were available for analysis. Among the 626 individuals, there were 281 males and 345 females.

Survey instrument

The survey used pre-coded structured questionnaires administered by trained interviewers. The questions asked were pre-coded or open ended but amenable for post coding. The questionnaire was pre-tested to ascertain their simplicity and clarity. The questions were posed in Bengali to the household heads or in their absence, to any other adult responsible member of the household. An anthropometric survey was conducted on all household members over two years of age who were available at the time of the survey. The anthropometric measurement of the older people forms a part of the survey. Individuals with deformities in the leg or spine were excluded from the survey. Standardised bathroom scale and metre scale was used to measure the weight and height respectively.

Data analysis

Initially association between the dependent and independent variable was sought through cross-tabulation and chi-square test. Later on stepwise logistic regression was run for the males and females separately using the cut-off point for severe CED (BMI<16). The independent variables that had significant association with the proportion of severe CED prevalence among males and females were chosen for the final model. Logistic regression was performed for each sex separately.

Limitation

Adult cut-off points for severe CED was used for people over 55 years of age. Special cut-off point (in terms of BMI) for this age group was not available.

Explanation of the variables

Ageing population

The ageing population was defined as people aged 55 years and above. BRAC considers 18-54 year old people to be in their productive stage of life. As people beyond this age are excluded from BRAC's development inputs, their nutritional situation was of interest.

Poor and non poor households

The population was divided into two groups according to the economic situation of the households. BRAC's definition of poverty was used as a cut-off point for determining economic status. Households with less than 50 decimal (0.5 acre) of land and where the earning member sold at least 100 days of manual labour in the last one year, were considered to be poor and the rest of the household were considered non poor.

Literacy

Persons who could read and write or only read Bangla were considered literate.

Chronic energy deficiency (CED)

Body Mass Index was used as an indicator of nutritional status of the individuals. BMI was calculated by taking individual's weight in KGs and dividing it by height in meter². Individuals having BMI less than 16 were considered to be suffering from severe CED.

Occupation

The occupational categories used in this report are as follows - 1) farming, 2) house-based work, 3) labour, 4) trade and service, and 5) unemployed and disabled.

Farming involved owning a certain amount of land and cultivating it to make a living.

House-based work referred to those occupations that were performed at home and yielded cash (e.g. kantha stitching and any other handwork).

Labour was categorised as an occupation where one had to depend on others for day to day employment involving manual activities.

Service was considered to be an occupation where one was employed by an individual or an organisation.

Trade referred to self-employment with investment of some cash capital.

Unemployed and others included people who were not involved in income generating activities. (For comprehensive list of occupations see appendix 1).

RESULTS

The mean age of the population was 64 years ranging from 55 to 93 years. The average household size was 4.5. Appendix 2 describes the study population by different socio-demographic characteristics.

According to Table 1, people in the age group 55+ had a higher prevalence of severe CED (35%) than those in the age group 45-54 in the same population (24%). 80% of the older people suffered from some degree of CED while prevalence of severe CED was 35%. Only 20% of the older had normal nutritional status. The mean BMI of the population was 17.

Table 1. Prevalence of CED and mean BMI among the older population of Matlab.

| Chronic energy deficiency | Age group 55+ | | Age group 45-54 | |
|-------------------------------|---------------|-----|-----------------|-----|
| | n | % | n | % |
| Severe (BMI<16) | 218 | 35 | 129 | 24 |
| M | 82 | 29 | 26 | 19 |
| F | 136 | 39 | 103 | 26 |
| Moderate (BMI 16-17) | 123 | 19 | 105 | 20 |
| M | 62 | 22 | 29 | 21 |
| F | 61 | 18 | 76 | 19 |
| Mild (BMI 17-18.5) | 161 | 26 | 134 | 25 |
| M | 82 | 29 | 35 | 26 |
| F | 79 | 23 | 99 | 25 |
| Normal (BMI>18.5) | 124 | 20 | 168 | 31 |
| M | 55 | 19 | 45 | 33 |
| F | 69 | 20 | 123 | 31 |
| All | 626 | 100 | 536 | 100 |

Fig.1 shows the distribution of CED among the older population according to their economic status. This indicates that severe CED prevalence was significantly higher among the older people living in the BRAC eligible poor households compared to that of non poor households ($p < 0.05$).

Figure1. Prevalence of CED among older people according to economic status of the household

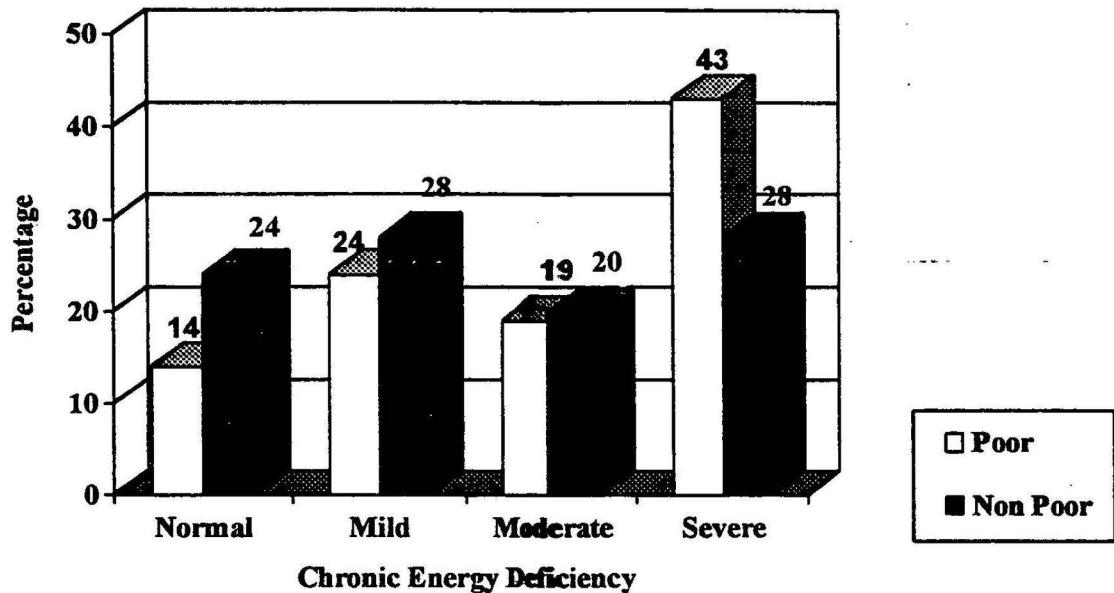


Table 2. Prevalence of severe CED by economic status of the household.

| Economic status | Male | | Female | |
|-----------------|----------------|---------|----------------|---------|
| | Severe CED (%) | p-value | Severe CED (%) | p-value |
| Poor | 34 | | 49 | |
| Non poor | 26 | 0.74 | 31 | 0.0006 |

Economic status of the household was significantly associated with the prevalence of severe CED among older women.

Marital status was divided into three groups - married, widowed and others. In the last category, those who were single, divorced or separated were considered. The percentage of severe CED prevalence was considerably higher in the other category than in the

married category. However, marital status of the individual was significantly associated with the prevalence of severe CED only in case of females (Table 3).

Table 3. Prevalence of severe CED by marital status.

| Marital status | Male | | Female | |
|----------------|----------------|---------|----------------|---------|
| | Severe CED (%) | p-value | Severe CED (%) | p-value |
| Married | 28 | | 33 | |
| Widowed | 33 | | 45 | |
| Others | 67 | 0.54 | 30 | 0.05 |

There is significant statistical association between literacy of the older individual and prevalence of CED in case of females (Table 4).

Table 4. Prevalence of severe CED by literacy.

| Literacy | Male | | Female | |
|--------------|----------------|---------|----------------|---------|
| | Severe CED (%) | p-value | Severe CED (%) | p-value |
| Literate | 30 | | 20 | |
| Non literate | 29 | 0.74 | 42 | 0.01 |

Among the males, occupation of the older individuals plays an important role in the prevalence of CED in the (Table 5). Prevalence of severe CED was the highest among people in the unemployed and others category. Occupation of the individual did not play a significant role in case of the older female.

Table 5. Prevalence of severe CED by occupation.

| Occupation | Male | | Female | |
|-------------------------|----------------|---------|----------------|---------|
| | Severe CED (%) | p-value | Severe CED (%) | p-value |
| Farming | 19 | | - | |
| House-based work | 30 | | 37 | |
| Labour, trade & service | 35 | | 35 | |
| Unemployed & others | 41 | 0.006 | 49 | 0.368 |

There was no significant association between sex of household head and prevalence of CED among older people (Table 6).

Table 6. Prevalence of severe CED by sex of household head.

| Sex of HHH | Male | | Female | |
|---------------|----------------|---------|----------------|---------|
| | Severe CED (%) | p-value | Severe CED (%) | p-value |
| Male | 29 | | 38 | |
| Female | 25 | 0.56 | 42 | 0.56 |

Prevalence of severe CED in the older females was significantly associated with monthly household food expenditure (Table 7).

Table 7. Prevalence of severe CED by monthly household food expenditure.

| Monthly household food expenditure | Male | | Female | |
|--|----------------|---------|---------------|---------|
| | Severe CED (%) | p-value | Severe CED(%) | p-value |
| Less than 2000 taka | 31 | | 43 | |
| More than 2000 taka | 25 | 0.265 | 30 | 0.022 |

DISCUSSION

Chronological age continues to be widely used to delineate groups of older people. Here a careful distinction should be made between changes in appearance and the functional capacity of an individual. In many societies, ageing invariably lessens one's ability to perform productive tasks, leading to a measure of withdrawal, but many other important jobs still remain in the hands of the elderly (6). Keeping this in mind we wanted to examine different individual and household socioeconomic characteristics that are associated to prevalence of severe CED among older population.

Personal characteristics

Among personal characteristics, gender seems to be an important factor in the prevalence of CED. It is obvious from the gender segregated bivariate tables that women's experience at old age is different than that of men. Older women are more likely to be living in poverty than men according to several studies (7). According to our study as well, economic status of the household is significantly associated with the prevalence of severe CED among women. The economic situation of the older women depends directly on the economic activities of both the spouses before they become old. Alternatively when a woman has never married, is divorced or becomes a widow, her economic situation depends considerably on her earlier income and savings (8). The result is that in most societies women are in an inferior economic position throughout their lives and poverty among women at old age is not an accidental process. Many studies around the world show that loss of a spouse not only significantly weakens the support network that operates in time of need, but also can cause immediate problems for the surviving partner (9). The data from Matlab points to a similar scenario. Severe CED is highly prevalent (45%) among the women who are widowed than those who are currently married. Among the males, marital status is not significantly associated with the severe CED prevalence.

Education is as essential for the integration of the older people into present society as any other segment of population. In professional arena adult education, including functional literacy and training in new technologies, help them play an active economic role. Education gives an older person a tool to reduce dependence and becomes a catalyst for

their productive contribution to development (10). According to our study, functional literacy was significantly associated with the prevalence of severe CED only among women. Perhaps functional literacy was not enough for taking up jobs that would result in better position in the society. Inadequate opportunities to use functional literacy could also be a reason why no significant statistical association was found between functional literacy and the prevalence of severe CED among the males. Among the females, significant association of functional literacy with prevalence of severe CED could be because majority of literate women also had higher socioeconomic status.

There is a general opinion that the older population are involved in very little economic activity. Data obtained from ILO for the year 1986 shows that 63% males and 16% females from the total population aged 55 years and above are economically active in Asia (11). However, looking at economic activity only in terms of formal labour force sector, may negate many other economic activities performed by the older people. In developing countries the older members of the family often take primary responsibility for looking after the home, for cooking and child care while the young adults work outside home. This kind of indirect economic contribution still does not receive recognition. In fact it is well known that income generation is positively related to self-esteem, social status, security and savings. As a result earning members of the family receive more attention, food and medical services than those who do not earn. According to our study, most women, after the age of 55, are occupied with housework. Housework is an invisible part of everyday life, as it does not yield income or recognition. Therefore occupation is not significantly associated with the prevalence of severe CED among women. Among the older males, however, occupation is significantly associated with the prevalence of severe CED. There are a high percentage of severely energy deficient individuals among the unemployed older males. On the other hand, in the agrarian society of Matlab men involved in farming have better food security because of the ownership of land and nature of their work. They are nutritionally better off than those holding non-farming jobs.

Household characteristics

As Cowgill points out, “the status of old people *vis-à-vis* their grownup children, varies widely around the world. This ranges all the way from an authoritarian to a domineering relationship towards their children to a complete reversal of role, resulting in abject dependence of parents on their children”(12). While the nature of the authority and power relationship varies among its members, the family remains a key mechanism for nurturing, for distributing and redistributing economic resources, for dealing with and protecting family members from economic insecurities, such as disability, widowhood, and unemployment, and for providing basic shelter and adequate living environment. Thus the family has been and will remain critical in the provision of support when the people become old and are threatened by economic deprivation, physical disability and social isolation. Keeping these facts in mind we looked at some general characteristics of the households where the severely energy deficient older people lived.

The female headed households, in general, are worse off both socially and financially than a male headed household as household heads have to balance income generating activities (which they are not trained for) with the normal caring practices. So we assumed that the older people would suffer the consequence of reduced financial and social status of the household. Our observation suggests that severe CED prevalence was not significantly associated with the sex of household head. In this study, the household head was not always the primary bread earner of the family but rather a person who was perceived to be the household head in terms of age or social seniority. Therefore, this variable was not able to give us a true picture of the situation of the households where the head of the house is a female.

Economic status of the household and monthly per capita food expenditure was also significantly associated with the prevalence of severe CED among women. This goes to show that women are quite dependent on the monthly household food expenditure and the economic status whereas men are not.

CONCLUSION

Our observation suggests that almost 80% of people above 55 years of age suffer from different degrees of CED. Hence, older people can be termed as a vulnerable group with regard to health and nutrition. Severe CED prevalence was significantly associated with the older individual's occupation in case of men and with marital status, literacy, monthly food expenditure and economic status of the household in case of women.

RECOMMENDATION AND POLICY IMPLICATIONS

- ◆ The older people, especially women, should be integrated in community development projects (i.e. the education programme). They should be given jobs that are not physically demanding but where their knowledge and experience could be used for social mobilisation, institution building and changing practices and attitudes of the rural population.
- ◆ Further in-depth studies are needed to identify the major factors that affect health and nutrition of the older population.

APPENDIX 1

Detailed list of occupations

1. *Farming*: Farming with land ownership
2. *House based work*: Income generating activities based at home
3. *Labor*: Day labor, agricultural labor, fishing, farm labor, servant
4. *Trade and service*: Service, business, self employed, boatman, rickshaw puller, tailoring, cobbler, goldsmith, driver, barber, carpenter, masonry, teaching, engineer, doctor, advocate, electrician, weaver, broker, traditional healer, animal husbandry, chairman.
5. *Unemployed and others*: Unemployed, does not work, retired, blind, disabled, old, beggar.

APPENDIX 2

Demographic and socioeconomic characteristic of the study population

| Characteristics | Male % (n=281) | Female % (n=345) |
|--|-------------------|---------------------|
| Age in years | | |
| 55 - 60 | 32 | 47 |
| 60 - 70 | 49 | 37 |
| 70 + | 19 | 15 |
| Economic status | | |
| Poor | 43 | 48 |
| Non poor | 57 | 52 |
| Literacy | | |
| Literate | 40 | 11 |
| Illiterate | 60 | 89 |
| Occupation | | |
| Farming | 43 | - |
| House based work | 4 | 76 |
| Trade , Service & Labour | 29 | 4 |
| Unemployed & others | 24 | 50 |
| Marital status | | |
| Married | 95 | 45 |
| Widowed | 4 | 52 |
| Others | 1 | 3 |
| Sex of household head | | |
| Male | 97 | 72 |
| Female | 3 | 28 |
| Household size | | |
| 1 - 6 | 64 | 70 |
| >6 | 36 | 30 |
| Monthly household food expenditure (Tk) | | |
| <2000 | 68 | 71 |
| 2000+ | 32 | 29 |
| Daily per capita calorie consumption (Kcal) | | |
| < 1805 | 41 | 39 |
| > 1805 | 59 | 61 |

REFERENCES

1. Chang TP. Implications of changing family structures on old age support in ESCAP region. *Asia Pacific Pop J* 1992;7(2):49
2. Schulz James H. *The World Ageing Situation: Strategies and Policies*; 1991:21
3. Bangladesh Bureau of Statistics 1990: 9
4. Ferro Luzzi et al. Defining chronic energy deficiency in adults; *Eur. J. Clin Nutr* 1988; 42: 969-81.
5. Bhuiya A. and Chowdhury AMR. Impact of Social and Economic Development Programs on Health and human Well-being: a BRAC-ICDDR,B collaborative project in Matlab (Working Paper1). 1995:2-13.
6. Schulz JH, Borowski A. and Crown W. Economics of population ageing: The Graying of Japan, Australia and the United States. New York, Auburn House: chap. 5
7. Dasgupta P. An inquiry into well-being and Destitution. Oxford: Clarendon Press. 1993.
8. Ellickson J. Never the twain shall meet: ageing men and women in Bangladesh. *J Cross-cultural Gerontology* 1988; 3:53-70.
9. Corcoran M., G.J. Duncan and M. Ponza. Work experience, job segregation and wages, Sex segregation in the workplace: Trends, explanation remedies, B.F. Reskin eds. 1984:171-91
10. Schulz James H. *The World Ageing Situation: Strategies and Policies*. 1991:60-62.
11. International Labor Organization. *Economically active population estimates and projections 1950-2025*. 1986:vol V
12. Cowgill DO *Ageing around the world*. Wadsworth: Belmont, California, 1986:830.