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Factors responsible for the health status of elderly people: A case study in Sylhet district

Pinto Bushan Datta[1], Md. Nazrul Islam[2], Gowranga Kumar Paul[3]

[1] M.Sc. (Thesis) Student, Department of Statistics, Shahjalal University of Science and Technology, Sylhet, Bangladesh

[2] Professor, Department of Statistics, Shahjalal University of Science and Technology, Sylhet, Bangladesh

[3] Assistant Professor, Department of Statistics, Mawlana Bhashani Science and Technology University, Tangail, Bangladesh

Abstract
The objective of this study is to determine the factors that are responsible for health status of the elderly of Sylhet in Bangladesh. Aged people are selected from five urban and five rural villages in Sylhet division by using Primary sampling unit (PSU) list provided by Bangladesh Bureau of Statistics (BBS). Bivariate analysis and Multinomial logistic regression analysis were used to meet the objective. The analysis reveals that more than half of the respondents (54.44%) are in age group 50-60. Among the respondent, 56.33% are male and the rest are female. About one-third of the respondent (31.0 %) is illiterate. Over half of the aged people (58.79%) are found that they have no work at present. About half of the respondents are reported that their health condition is not quite well and has hypertension problem. The analysis also found that the health condition of aged peoples is significantly associated with sex, breadwinner, smoking status, cardiac disease, hypertension and diabetic. Considering BMI as dependent variable urban area, hypertension and stroke has higher risk of being overweight and male, illiterate has less risk. Aged people with hypertension have 3.95 times more risk of being poor health than those of good health condition aged people without hypertension. Aged people with diabetic have 3.21 times more likely of being moderate health condition and 5.32 times more likely of being poor health than diabetic free aged people. Underweight aged has 1.44 times more likely of being high blood pressure and 8.81 times more likely of being low blood pressure than those of normal blood pressure with normal weight aged. Over weight aged people has 4.80 times more likely of being high blood pressure and 55 percent less likely of being low blood pressure than those of normal blood pressure with normal weight aged.

Keywords: elderly, diabetic, hypertension, breadwinner and BMI

Introduction

The main feature of demographic change in the world has been considerable incensement of the absolute and relative number of aged people. According to the World Health Organization, the number of elderly worldwide in 2004 was approximately 580 million and this figure is expected to increase in the coming years. In Bangladesh the aged people are increasing day by day. According to 2001 census report, the percentage of it is 6.13 (BBS, 2003) [2].

The age of 50 or more years is a realistic statistical definition for aging in Asian and Pacific regions, particularly taking into account average retirement age, legislation, health condition and so on. According to the world health organization the definition of ageing is to be developed, it should be either 55 or 60 years of age, but even this is somewhat arbitrary and introduces additional problems of data comparability across nations. A study identified that when male and female reach the elderly stage, it has been found that their health profile differ and affecting the risk of disability and handicap faced by two sexes (Garner and Mercer, 1989) [5] and another study recognized that older woman have been suffering higher risk than male from certain health disorder such as arthritis, hypertension and diabetes and they are also more likely bedfast or unable to perform self –care tasks (Yadav and Singh, 2001) [12].

It is generally accepted that elderly people are the best when care is provided in their own homes. However, some conditions require more intensive management than can be provided in the community. The admission of elderly patients to hospital, their treatment and subsequent discharge can prove challenging. The Department of Health recognizes the importance of providing quality care to the elderly and has produced a raft of guidelines outlining the sort of issues which need to be considered when planning services. Many of these are enshrined in the National Service Framework for Older People.

Most of the elderly people in Bangladesh are not in a good socio-economic position due to various problems such as poverty, wage discrimination, want of essential good and commodities, shelter and compulsory retirement from job when age limit is attained. Elderly patient has been severely suffering from insufficiency of medical care, malnutrition and financial insolvency (Rahaman, 2000). Mostafa and Razzaque (2002) [8] analyzed the data of health and demographic Surveillance System (HDSS) and found that male elderly faces a much higher risk of dying than female elderly in Matlab, a rural area of Bangladesh. The risk of dying is much lower among married elderly than the widows Moreover the family members are unwilling to spend money for the elderly as they think that such kind of expenditure is meaningless in the long run. The elderly in Bangladesh will face many problems such as insolvency, loss of authority, social insecurity, insufficient recreation facilities, lack of overall physical and mental care, problems associated with the living

arrangements etc. (Abedin, 2003) [1].

Living arrangement may have a direct as well as indirect impact on health. The prevalence of disability will increase with age and there will be an urgent need to extend assistance to the elderly, especially the older individuals among them (Gupta and Sankar, 2003) [6]. Shanta kumar (1994) [11] analyzed the census of population in Singapore and found that there are certain disabilities associated purely with the ageing process and that the main factor in increased need for health care and long term care services for the elderly patient is the high prevalence of multiple chronic diseases and functional impairments. Gupta, *et al.*, (2001) [7] found that women may be more vulnerable than men due to reasons such as lack of productive employment and income, their widowhood status and low education, all of which make them dependents of others and also less empowered so that they are unable to voice their needs and problems.

The objective of the present study is to go through the analysis of the socio-economic and health condition and some disease associated with elderly people.

Data and Methodology

The study is mainly based on primary data. To make the study admirable we follow primary sampling unit (PSU) which is provided by "Bangladesh Bureau of Statistics". For this study we collect data from 10 PSU, 5 from urban and 5 from rural area in Sylhet region during July to November 2014. This method relates to collect data directly from selected elderly people and a total number of 529 individuals were interviewed. To observe the possible association between health condition and various socio-economic factors chi-square test of association has been performed. Multinomial Logistic Regression technique has been used to know the magnitude and direction of the association.

Health Status: Levels and Determinants

The socio economic background of the elderly people: Table 1 shows that, over half of the elderly live in urban areas and 56 percent of them are male. Education is the most important variable related to the socio-economic status. It is a key variable that determines the status of an individual in a society. It is shown that education has strong effects on demographic and health issue including attitude and awareness related to family health and hygiene. Table 1 showed that most of the higher educated peoples live in urban areas. About one-third (32.0%) of the aged people are primary educated and a smallest portion (2.8%) are post graduate. The table also shows that among the illiterate people 66.5 percent live in rural and 33.5 percent live in urban area where as among higher secondary educated elderly 79.2 percent live in urban and 20.8 percent in rural area. It is important to note that among the post graduate 94 percent lives in urban and 6.0 percent lives in rural area. From the above discussion we can conclude that in urban area higher education rate is higher than rural areas.

Family type is important socio economic background of elderly person. In respect of take care; joint and extended family are better place than nuclear family. It is found that the largest percentage (49.9 %) elderly person lives in nuclear family, 45.2 percent in joint family and 4.9 percent live in extended family. It is reveals that elderly person from extended family, 42.3 percent live in urban and 57.7 percent live in rural area. From above information we observe that in urban area most of the older people in nuclear family where in rural area most of them in joint or extended family. Elderly person breadwinner is most important for their take care. Most of the Elderly person breadwinner is son (41.2%), followed by self (36.9 %), Spouse (17.4 %) and daughter (4.5 %). Most of the elderly people who are take care by spouse and daughter, lived in urban area.

In Bangladesh total number of elderly not over total number of young people. It is observed that about one-third of the elderly person (33.5%) belongs to 50-55 age group and small percentage in higher aged age group (70+). In age distribution of elderly person, in age group 50-55, 61.0 percent in urban and 39.0 percent in rural area. Whereas, most of the elderly belonging to the age group 75+ are lived in rural area. Income is one of the most important socio economic characteristic. Most of the study shows that urban people's income is higher than rural people. It is observed that about two third elderly people (64.1%) has limited income (0-4000 taka) whose most of them are unemployed due to they become aged. It is clear from the Table 1 that in urban most of elderly person belongs to higher income group.

Table 1: Frequency distribution according to socio economic characteristics

Characteristic	Place of residence		Total (%)
	Urban (%)	Rural (%)	
Sex			
Male	50.7	49.3	56.3
Female	63.2	36.8	43.7
Education			
Illiterate	33.5	66.5	30.4
Primary	51.8	48.2	32.1
Secondary	73.3	26.7	19.1
Higher secondary	79.2	20.8	09.1
Graduate	91.2	08.8	06.4
Post graduate	94.0	06.0	02.8
Type of family			
Nuclear	70.8	29.2	49.9
Joint	41.4	58.6	45.2
Extended	42.3	57.7	04.9

Breadwinner			
Self	53.8	46.2	36.9
Spouse	60.9	39.1	17.4
Son	55.0	45.0	41.2
Daughter	66.7	33.3	04.5
Religion			
Muslim	49.1	50.9	82.4
Hindu	89.2	10.8	17.6
Age			
50-55	61.0	39.0	33.5
56-60	59.5	40.5	20.9
61-65	53.6	46.4	15.9
66-70	54.8	45.2	11.7
71-75	51.3	48.7	07.3
75+	42.9	57.1	10.6
Income			
0-4000	56.6	43.4	64.1
5000-10000	77.1	22.9	12.8
11000-20000	64.2	35.8	12.7
21000-80000	85.5	14.5	10.4

Health status of aged people

Health condition, good or bad depends on disease existing on body. The self reported health status of the elderly person and percentage distribution of health related variable according to place of residence are discussed in Table 2. Health condition represents elderly healthiness and physical fitness for movement. It is found that about half of elderly (52.2%) has Moderate health condition, only 36.3 percent elderly has good health condition and remaining 11.5 percent elderly has poor health condition. This situation of elderly health condition is alarming.

Smoking is very harmful for health. It is reveals that most of the elderly (70.7%) has no habit of smoking. We can say that in rural area smoking behavior are higher than urban area (Table 2). It is well known that in present time, allopathic treatment is much popular. About 85.0 percent of elderly take allopathic treatment, among them 96.3 percent lives in urban area and 68.5 percent in rural area. Vision problem is a common feature among elderly. It is found that 80.8 percent elderly person has vision problem in urban area and 70.7 percent in rural area. It is found that small percentage of elderly (19.1 %) has cardiac disease. About 17.8 percent elderly in urban and 20.7 percent in rural has cardiac disease.

Table 2: Percentage distribution of aged people with respect to health related variables

Characteristic	Place of residence		Total (%)
	Urban (%)	Rural (%)	
Health condition			
Good	35.0	37.9	36.3
Moderate	54.2	49.6	52.2
Poor	10.8	12.5	11.5
Smoking status			
Regular	13.1	16.8	14.7
Frequently	11.1	19.0	14.6
No habit	75.8	64.2	70.7
Treatment seeking behaviour			
Traditional	01.7	09.1	04.9
Allopathic	96.3	68.5	84.1
Homeopathic	00.3	08.2	03.8
All	01.7	14.2	07.2
Vision problem			
Yes	80.8	70.7	76.4
No	19.2	29.3	23.6
Cardiac Problem			
Cardiac Problem free	82.2	79.3	80.9
Cardiac Problem	17.8	20.7	19.1

Determinants of health status of elderly

An attempt has been made to find outs the determinate of the health status of the aged people which are common in many known diseases. We discuss bellow association of health condition of elderly person with some factors.

Elderly person breadwinner is important factor for their health status. In older age group 70 and above, elderly person depends on other person specially relatives. Elderly person

Breadwinner has significant association with their health condition. It is found that about 41 percent, which is the largest portion of elderly who are depends on son. About 37 percent elderly are self dependent followed by 17.4 percent are spouse, 4.5 percent are daughter dependent. From the Table 2 we observe that among the health condition good, 55.2 percent are self, 22.9 percent are spouse, 20.8 percent are son and 1.0 percent are daughter dependent aged person. Among the poor health condition elderly 8.2 percent are self, 3.3 percent are spouse, 77.0 percent are son and 11.5 percent dependent on daughter. From above discussion we say that self dependent aged people have good health condition and son, daughter dependent has bad health condition.

Sex of elderly people has significant association with their health condition. It is also found that over half (56.3 %) elderly is male. From the Table 3 we observe that among the good health condition elderly most of them are male (62.5%). In poor health condition 45.9 percent are male and 54.1 percent are female. We can say from above discussion that male aged people health condition is better than female aged people.

Cardiac disease is a serious disease. This disease of elderly person has significant association with their health condition. It is found that small percentage of elderly (19.1 %) has cardiac disease. Hypertension is a fatal disease all over the world. Overweight is one of the most important factors responsible for hypertension. About half of the elderly (53.9 %) has hypertension which is alarming. Among the good health condition elderly 66.1 percent are hypertension free but in poor health condition larger percentage is hypertension affected (68.9%). We conclude that most hypertension affected people have poor health condition (Table 3). Diabetic is a chronic disease all over the world. Diabetic affected elderly become frail and loss prevention power day by day. Diabetic disease has significant association with aged people health condition. It is found that 26.8 percent elderly has diabetic. Among good health condition elderly 87.5 percent are diabetic free. So we can say that most diabetic affected people have bad health condition (Table 3).

Table 3: Percentage distribution health condition with respect to demographic and health variables and their association condition.

Characteristic	Health condition				
	Good (%)	Moderate (%)	Poor (%)	Total (%)	Chi-square
Sex					
Male	62.5	54.3	45.9	56.3	6.10**
Female	37.5	45.7	54.1	43.7	
Breadwinner					
Self	55.2	30.4	8.2	36.9	97.77***
Spouse	22.9	16.7	3.3	17.4	
Son	20.8	47.5	77.0	41.2	
Daughter	1.0	5.4	11.5	4.5	
Cardiac disease					
Cardiac disease	4.2	25.4	37.7	19.1	48.39***
Cardiac disease free	95.8	74.6	62.3	80.9	
Hypertension					
Hypertension	33.9	64.5	68.9	53.9	48.99***
Hypertension Free	66.1	35.5	31.1	46.1	
Diabetic					
Diabetic	12.5	33.0	44.3	26.8	34.81***
Diabetic Free	87.5	67.0	55.7	73.2	

Level of significance: *p< 0.10, ** p< 0.05, *** p< 0.01

Multinomial logistic regression for health condition of elderly

The dependent variable of this study is the aged people health status, which can be categorized into three groups as (i) Good (ii) Moderate and (iii) poor. The advantage of considering the multinomial logistic regression model is that the aged people with Moderate and poor health status can be compared with those of good health status.

Hypertension of elderly positively associated with their different level of health condition. Aged people with hypertension have 3.35 times more risk of being not good health condition than aged people without hypertension. On the other hand, an aged person with hypertension has 3.95 times more risk of being poor health than those of good health condition aged people without hypertension. Hypertension affected people has incredible chance of being not well and poor health condition because of its nature (Table 4).

It is observed that diabetic disease of elderly positively associated with their different level of health condition. Aged people with diabetic have 3.15 times more risk of being Moderate health condition than those of good health condition aged people of without diabetic. On the other hand, aged people with diabetic have 5.03 times more risk of being poor health than those of good health condition aged people without diabetic. From above discussion we can say that diabetic is a hazardous disease for aged people (Table 4).

Table 4: Multinomial logistic regression of health condition of elderly

Logits →	Health condition Moderate			Health condition poor		
	β	P-value	Odds ratio	β	P-value	Odds ratio
Intercept	-0.48	0.01		-2.27	0.000	
Hypertension						
Yes	1.22	0.000	3.35	1.47	0.000	3.95
No	0[b]	...	...	0[b]	...	...
Diabetic						
Yes	1.15	0.000	3.15	1.62	0.000	5.03
No	0[b]	...	...	0[b]	...	...

a. The reference category is: GOOD. b. This parameter is set to zero because it is redundant

Multinomial Logistic Regression for blood pressure condition

The dependent variable of this study is the blood pressure of the elderly, which can be categorized into three groups as (i) high (systolic>139, diastolic≥89) (ii) normal (systolic=120-139 and diastolic=80-89) and (iii) low (systolic<120and diastolic<80). To identify the factors of aged people, blood pressure by considering these three categories of the dependent variable, multinomial logistic regression model is the ideal technique to find out the predictors of aged people blood pressure since our dependent variable is categorized into more than two categories.

Male elderly are 66.0 percent less likely of being high blood pressure than those of female with normal blood pressure people. On the other hand, Male aged people are 69.0 percent less likely of being low blood pressure than those of female with normal blood pressure. So we can say that female elderly has risk of both high and low blood pressure than their male counterpart. Urban aged people have 1.70 times more risk of being high blood pressure than those of normal blood pressure rural aged people. On the other hand, urban aged people are 42.0 percent less likely of being low blood pressure than those of normal blood pressure rural aged people. That is urban aged people has high risk high blood pressure which indicate urban people fatness (Table 5).

Aged people with smoking habit have 2.53 times more risk of being high blood pressure than those of normal blood pressure no habit of smoking people. On the other hand, Aged people with smoking habit have 2.33 times risk of being low blood pressure than those of normal blood pressure no habit of smoking people. This result indicates that smoking is dangerous for both high and low blood pressure. Under weight aged people has 1.44 times more risk of being high blood pressure than those of normal blood pressure of normal weight aged people. On the other hand, Underweight aged people have 8.81 times more risk of being low blood pressure than those of normal blood pressure underweight aged people. This result indicates underweight people have high risk of develop low blood pressure (Table 5). Over weight aged people has 4.80 times more risk of being high blood pressure than those of normal blood pressure of normal weight aged people. On the other hand, over weight aged people are 55 percent less likely of being low blood pressure than those of normal blood pressure of normal weight aged people. Above result indicate that over weight older people has high risk of developing high blood pressure (Table 5).

Table 5: Multinomial logistic regression of blood pressure condition

Logits →	Blood pressure condition high			Blood pressure condition low		
	β	P-value	Odds ratio	β	P-value	Odds ratio
Intercept	0.54	0.033		0.17	0.56	
Sex						
Male	-1.08	0.000	0.34	-1.16	0.001	0.31
Female	0[b]	...	...	0[b]	...	...
Place of residence						
Urban	0.53	0.024	1.70	-0.55	0.064	0.58
Rural	0[b]	...	...	0[b]	...	...
Smoking status						
smoke	0.93	0.001	2.53	0.85	0.019	2.33
No habit	0[b]	...	...	0[b]	...	...
Body mass index						
Under weight	0.36	0.42	1.44	2.18	0.000	8.81
Over weight	1.57	0.000	4.80	-0.81	0.17	0.45
Normalweight	0[b]	...	....	0[b]	...	...

a. The reference category is: normal blood pressure condition.

Conclusion and Recommendation

The study reveals that, slightly over half of the respondents (54.4 %) are in age group 50 to 60. Among the respondents 56.3 percent are male and 43.7 percent are female. Majority of the respondents (82.4%) are Muslim and rest of them are non-Muslim. The analysis reveals that most of the aged people (42.2%) are dependent on their son. In Bangladesh literacy rate are very poor and most of the aged people (30.4 %) are illiterate. Majority of the aged people (58.8%) are unemployed. Among the aged people more than half of the aged people (64.1%) have income less than 4000.

It is reported that, over half of the respondents (52.2%) are Moderate heath and 36.3 percent has good health condition. There are about 54.0 percent elderly has hypertension problem. Among the elderly most of the respondent (73.2%) are free from diabetic disease. Health condition of aged people has significant association with sex, breadwinner, smoking status, cardiac disease, hypertension and diabetic.

From multinomial logistic regression of health condition of aged people, the study found that aged people with hypertension have 3.46 times more likely of being not well health and 4.33 times more likely of being poor health condition than hypertension free healthy aged. Aged people with diabetic have 3.21 times more likely of being not well health condition and 5.32 times more likely of being poor health than diabetic free healthy aged.

Multinomial logistic regression of blood pressure condition reveals that urban aged people have 1.70 times more likely of being high blood pressure and 42.0 percent less likely of being

low blood pressure than those of normal blood pressure rural aged people. Aged people associated with smoking have 2.53 times more likely of being high blood pressure and 2.33 times more likely of being low blood pressure than those of normal blood pressure aged people of not associated with smoking. Obesity is considered to be a condition of high socioeconomic status in many developing countries (Caballero, 2007). The present study of multinomial logistic regression of blood pressure reveals that, underweight aged has 1.44 times more likely of being high blood pressure and 8.81 times more likely of being low blood pressure than those of normal blood pressure with normal weight aged. Over weight aged people has 4.80 times more likely of being high blood pressure and 55 percent less likely of being low blood pressure than those of normal blood pressure with normal weight aged.

Recommendations

- The aged people should not be treated as burden of the family rather their rich experience and residual capacities should be used of national development.
- Need sufficient and regular government allowance for aged people.
- Mass media campaign is required to increase awareness the aged people about their health and aged related disease.
- Effective policies, information and health education programmes for aged people are required to ensure adequate access to the health services.
- Special medical team available at doorstep with namely paid.
- Mass media campaign is required to increase awareness the aged people about their health and aged related disease.

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