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A CROSS SECTIONAL STUDY ON HEALTH STATUS, FAMILY SUPPORT SYSTEMS AND NEED ASSESSMENT OF ELDERLY POPULATION AT THREE DISTRICTS IN BANGLADESH.

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Abstract: Population aging is expected to have a major impact on many aspects of life in the new millennium. In Bangladesh, people aged 60 and over are considered as elderly citizens. About 6% of the total population of Bangladesh constitutes the elderly population and the corresponding absolute number is 10 million. The present study aims at understanding the health and physical conditions, health facilities, family support system, need assessment and other factors related to the elderly people in rural Bangladesh. A total of 216 aged people was drawn from three district of Bangladesh named Gopalganj, Patuakhali, and Bagerhat from March 2022 to May 2022, following a well- structured questionnaire under a multi-stage sampling technique. The analysis suggests that major problems of elderly people are the health problems and lack of care. The analysis suggests that major problems of elderly people are the health problems and lack of care. The analysis suggests that elderly people's concerns are on health, living arrangement and family and community support. The socio-economic characteristics of the Elderly people suggest that they are more vulnerable in terms of access to food, health and shelter. Both univariate and bivariate analysis were carried out to understand their problems. There is an association between elderly people's health status and their age, marital status, size of household, type of house, household land, cultivable land, occupation, monthly income, distance of the nearby health center, negligence during treatment. The analysis suggests that the basic needs of the elderly people are food, clothes, treatment, and shelter. Logistic regression analysis is also carried out using the significant variables of bivariate analysis. Logistic regression analysis suggests that elderly people's age, education, work status, area of cultivable land, monthly income, distance of health center, whether all sons live together and any negligence during treatment are statistically significant with the health status of the elderly people. The policy implications of the study are also discussed.

Index Terms: Aging, health status, family support system, need assessment, Logistic regression.

1. INTRODUCTION

Old age is one of the most vital demographic events of the last two eras. The age structural dynamics of a population and public policy are strongly interrelated. A population's needs and its potential are strongly shaped by its demographic composition i.e. by age structural transitions (NUPRI, 2001). Over the past few decades, there have been changes in the age structures of the Bangladesh population. It is a country of about 160 million people, including more than 10 million older persons, is facing a difficult challenge of providing social security, health care and other supports and safety to the seniors. The proportion of people aged 60 and over is increasing significantly and is raising formidable social and economic challenges related to financial support of elderly people and to the provision of care for frail elderly.

All over the world, nations have prized longevity and have counted it as an accomplishment of advanced knowledge and technology. Aging is a complex and fascinating process, something that all human being has to experience. Its many facets, psychological, emotional, economic and interpersonal – all influence social functioning and well beings. Until recent times it was thought that aging was a feature of the western countries only. But now a day this is not true. For example, China and India, the two most populous countries of the world, share the problem of aging population like the western world (Amzad, 1999).

The number of nuclear families is increasing, while the traditional status and roles of the elderly are decreasing (The Daily Star, 2015). In a patrilineal joint family, sons are expected to take care of their elders and provide help to them, but the traditional joint family structure in Bangladesh (where most of our elderly people live) has been disintegrating in the last few decades due to poverty, self-interestead attitudes, quarrels , non-adaptability and so on and is gradually being replaced by nuclear families (UNESCO, 1992). Poverty on the one hand and lack of social security on the other make the elderly a burden on their children. So many do not

want to take on the responsibility of their elderly parents. Most elderly people in Bangladesh suffer from some basic human problems such as poor financial support, geriatric illness and absence of proper health and medical facilities, exclusion and neglect, deprivation and socio-economic insecurity. About 80% of the aged people of Bangladesh live in rural areas. Their suffering is the cumulative impact of a lifetime (The Daily Star, 2011).

Although the percentage of the elderly population is increasing, their participation in the labor market is decreasing. The proportion of older people in the labor force has decreased from 62.5% in 1950 to 46.6% in 2000 and is expected to decrease further to 42.9% by 2010 (WPP, 2009). This may require proper economic security later in life. Illiteracy, unhealthy physical condition, highest economic dependency of already poor families make the elderly vulnerable to elder neglect and abuse (Rahman, et al. 2010). Bangladesh is one of the developing countries of the world, characterized by increasing population growth and high population density, low per capita income, low literacy rate, low status of women and girls, and lack of economic and social security for all. However, recently there has been a noticeably high increase in the elderly population, which is a new phenomenon for Bangladesh today. Now, Bangladesh is one of the 20 countries with the largest elderly population. By 2025, Bangladesh, along with four other Asian countries, will account for about half of the world's total elderly population (Rahman, 2012). Again, the elderly population is growing much faster than the overall population along with their vulnerability. Most of the aging people in Bangladesh now living both rural and urban societies and their literacy rate are not well enough. No separate health policy existing for the aging in Bangladesh. Geriatric problem are usually ignored in medical education and profession. Present situation of the older persons in the country is much more terrific than that of the develop societies. Most of them are seriously suffering from some basic human needs related challenges, it includes-lack of minimum income and employment opportunities, extreme poverty, senile diseases accompanied by absence of proper health, medical care, food, nutrition and comfortable living arrangements, isolation, exclusion, loneliness, negligence, psychological and cultural complexities etc. Their capacities for doing creative and socially useful work are under estimated. It call for proper action programs to reduce their vulnerabilities and bring them in the stream of social life as active, productive, healthy and right based dignified members of the society.

2. OBJECTIVES OF THE STUDY

The major objective of the study is to investigate the living arrangement and family and other support system of the elderly population and prescribe some strategies to formulate family support systems and community-based services for the care of elderly people on the basis of findings of the study for ensuring the wellbeing of elderly during their old age.

The specific objectives of the study are to:

i). Investigate type of health problems of the elderly population and gender differentials in health problems
ii). Investigate sex discrimination in the treatment of the elderly population.
iii). To know the extent of neglect and types of neglect the elderly faced.
iv). Investigate cost involved with health care services and
v). To understand the behavior pattern of the society towards the aged.
vi). To identify the elderly people's needs and recommend for formulating policy in favor of their welfare.

3. METHODOLOGY

3.1. TARGET POPULATION

The study is on the challenges of ageing people in Bangladesh. So the target population of our study is the rural area of three districts named Gopalganj, Patuakhali, and Bagerhat in Bangladesh.

3.2 SAMPLING UNITS

Using statistically determined sample size data were collected. The data were collected from both elderly men and women. For the purpose of the study population aged 60 years above were treated as the sampling unit.

3.3 SAMPLE SIZE DETERMINATION

To determine sample size, we use the following formula:

$$n = \frac{z^2 \times p \times q}{d^2}$$

Where n = the desired sample size
z = the standard normal deviate, 1.96 which corresponds to the 95% confidence level.
p = the proportion in the target population estimated to be aged people.
q = 1-p
d = degree of accuracy desired (Precision level of the estimate)
p for different characteristics is different - ranging from 0 to 1.

In the presence of prior knowledge, we take, p=0.075.
d = 0.0363, z =1.96, p = 0.075, q =1-0.075 = 0.925
p=0.075 would yield maximum sample size and thus ensure efficient estimates.

$n = \frac{(1.96^2)(0.075)(0.925)}{(.0351^2)} = 216.322 \approx 216$

Therefore, the necessary sample size is 216.

3.4 SAMPLING DESIGN

A multistage sample design was used. First from Dhaka division one district; from each of Barisal and Khulna divisions' one district were selected randomly. At the second stage two Upazillas was selected randomly from each selected district yielding a total of 6

Upazillas. From each Upazillas two unions were selected again on randomly. A total of 12 unions and from each union two Wards were selected. Thus there were 24 sampling units. From each ward 9 respondents were selected randomly for the study. The total sample respondents were $9 \times 24 = 216$ (108 elderly men and 108 Elderly women).

3.5 DATA COLLECTION

Primary data collection is used here. To collect data we first built up a questionnaire. Afterwards we collected data by using personal interview method.

3.6 DATA PROCESSING

The collected data from the primary source will be coded and tabulated manually. The computer software SPSS and Microsoft Excel are applied the purpose of analysis of these data.

3.7 CODING

Coding is a system which makes easier to process the data. Information on the questionnaires will coded into code sheet. The coded data will check by the reference of original data form and edited the miscode by computer, which is called machine editing.

3.8 DATA ENTRY AND MODE OF ANALYSIS

Coded information will enter into the computer to analyze the data. Analyzing of the data was done by computer programmer. Package program such as IBM SPSS 26 and Microsoft Excel will be used. The purpose of data analysis was to provide answers to research objectives being studied. The analysis plan for this study was planned to clearly address the objectives of the study.

4. RESULTS AND DISCUSSION

4.1 DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS:

To analysis the socio-economic and demographic condition of the elderly people, it is necessary to understand how they are surviving in this society. In this paper the age 60 and more than that is considered as the age of the elderly people. The rate of aging population is increasing remarkably and they will feel the effect of it within the next few decades. Population aging will be among the most prominent demographic trends of the new millennium. Increased in the proportion of older persons in a population result from declines in fertility and mortality. In tradition society like Bangladesh, the elderly used to live in extended, multigenerational household and rely primarily on the adult children for the economic support and personal care. Today, the traditional support system is under pressure from demographic, social and economic change. So, attempts should be made to understand the problems faced by the elderly people. It is important matter to improve their health and socio-economic conditions. It is also necessary to discuss the socio-economic characteristics of their family. Therefore, in view of the above points the aging, family structure, education, occupation, marital status, monthly income, land ownership etc. are discussed here.

Among the elderly population, about 32.4 percent constituted age group 60-65 and about 29.6 percent constituted age group 65-70 and so on. The median age of the elderly people as found was about 67 years.

From the Table 1, about 45.9 percent of the elderly people were from single family and 54.1 percent were from joint family. It seen that most of the elderly people live in a joint family system.

Table 1 indicates that about 75 percent of the elderly were in marital union at the time of survey. According to the survey information about 18.1 percent were widowhood at the time of interview. Divorced or separated cases were very small i.e.3.7 percent. In our society divorced or separated cases were not seen in virtuous conduct.

Elderly education is important to develop in their life style as well as society and the country. From the Table 1, it is shown that about 39.4 percent are illiterate, which is high. About 19 percent of the elderly people could sign only and about 24.1 percent of the elderly people are educated.

Since most of the samples were collected from rural elderly people. So information suggests that about 11.6 percent elderly people are farmer. Many elderly people physically are unable to work and about 35.6 percent do nothing. From Table 1, it is found that about 9.7 percent of the respondents had retired from their jobs, 27.3 percent of them is house wife and so on.

Housing has great influence on the quality of life of any age group in any country. Suitable housing is more important to the elderly. Distribution of the sample elderly people by the type of house is shown in the Table1, about 25.9 percent possess a pacca structure, about 22.2 percent have half pacca house, 44.5 percent respondents have tin shed houses, and 7.4 percent have kaccha houses. Majority possesses a tin shed structure.

Table 1 shows the distribution of the elderly people by their toilet facilities. Here about 7.4 percent use kaccha latrine, about 38.0 percent use sanitary toilet and 53.7 percent use ring slab. So it is shown that half of the respondent use ring slab toilet.

It is shown from the table that about 65.7 percent of the elderly people have no monthly income, about 6.0 percent of the respondent have income between Taka 100 to 5000, about 11.1 percent of the respondent have Taka 5,000 to 10,000, about 8.8 percent have Taka 10,000 to15,000 and only 2.3 percent have monthly income over Taka 20,000.

Ownership of land is another indicator of economic condition of the rural elderly people. From the table it is noted that 55.6 percent of the total respondents have no cultivable land, about 19.9 percent have 1-50 decimal, about 12.5 percent have 50-100 decimal, and only about 7.4 percent have more than 150 decimals.

Household land is main wealth of the elderly people. It is noted that about 29.2 percent of the total respondents have no household land. In this study maximum respondents have own household land and median area of household land is about 5.5 decimal.

The elderly people were asked the number of dependents they need to look after. The information gathered on it is given in table 1. As evident from the information about 74.5 percent elderly people mentioned that they had no dependents and rest of the 25.5 percent elderly people had 1 to 4 dependents. This is an economic burden for the elderly people. It is imaginable how these elderly people are surviving without any income. Therefore, elderly people who are vulnerable and poor, the dependency are a major concern for their support and livelihood.

Ownership of home is another indicator of economic condition of the elderly people. As well as comprising a potential form of economic contribution, home ownership could serve to reduce the economic vulnerability of elderly, and increase their bargaining powers with other relations. From the table 1, it is noted that about 54.2 percent of the elderly people owned their own home. 15.3 percent of the elderly people lived in house owned by their son, 20.4 percent of the elderly people lived their husband's home and few pay rents.

Table1. Background characteristics of the respondents:

Variable	No. of respondents	Percentage	Variable	No. of respondents	Percentage
Age			**Family type of household**		
60 -65	70	32.4	Single Family	99	45.9
65-70	64	29.6	Joint Family	117	54.1
70-75	39	18.1			
75- 80	18	8.3	**Marital status**		
80-85	14	6.5	Married	162	75
85+	11	5.1	Unmarried	7	3.2
Median age 67 Years			Widow/widower	39	18.1
			Separated	8	3.7
Educational Status			**Occupation**		
Illiterate	85	39.4	Nothing	77	35.6
Can sign only	41	19.0	Retired	21	9.7
No schooling but can read & write	7	3.2	Business	14	6.5
Up to class V	31	14.4	Farmer	25	11.6
Passed class six-ten	19	8.8	job	13	6.0
Passed S.S.C	13	6.0	House Wife	59	27.3
Passed H.S.C	8	3.7	Day labor	3	1.4
Graduate and above	12	5.6	Others	2	0.9
Type of house			**Sources of drinking water**		
Pacca	56	25.9	Own Tube-Well	123	56.9
Half Pacca	48	22.2	Neighbors Tube-Well	41	19.0
Tin	96	44.5	River Water	6	2.8
Kaccha	16	7.4	Buying Water	46	21.3
Type of toilet			**Respondent's monthly income**		
Kaccha	16	7.4		142	65.7
Sanitary	82	38.0	No income	13	6.0
Ring slab	116	53.7	100-5000	24	11.1
Others	2	0.9	5000-10,000	19	8.8
			10,000-15,000	13	6.0
			15,000-20,000	5	2.3
			>20,000		
Cultivable land (in decimal)			**Area of house hold land**		
No land	120	55.6	0	63	29.2
1-50	43	19.9	≥10	90	41.7
50-100	27	12.5	11-50	60	27.8
100-150	10	4.6	50+	3	1.4
>150	16	7.4	Median area of household land = 5.5 decimal		
Whether receive any pension			**Whether receive any old allowance**		
Yes	17	7.9			
No	199	92.1	Yes	64	29.6
			No	152	70.4
Number of dependent children			**Ownership of home**		
0	161	74.5	Self	117	54.2
1	19	8.8	Son's	33	15.3
2	22	10.2	Daughter's	5	2.4
≥3	14	6.5	Rent	8	3.7

Husband's	44	20.4
Others	9	4.2

4.2 LIVELIHOOD AND HEALTH CARE:

Among the most basic needs for the elderly for which the demand increases are health care service, social care and nursing. Ideally health service to the elderly should not be justified solely on ethical and human considerations towards impaired and dependent citizens. It should be viewed that adequate health care can assist them to remain economically and socially productive or at least physically sound hence reduce the burden on the society (Kabir and Salam, 2000).

The basic needs of the elderly population as evident from Table2 are food, clothes, treatment, and shelter. The elderly people were also asked to state that who helps to meet basic need. From Table 2 it is noted that about 76.7 percent of the respondents mentioned that their sons helped to meet their basic need, about 22.8 percent of the elderly people said that their daughter helped to meet their basic needs. Daughter-in-law, grandchild, relatives, neighbors also helped to meet basic need.

Most elderly population expressed concern about their health as it has a direct impact on their ability to earn for their livelihood. All the sample elderly were asked whether they had any health problem and about 75 percent mentioned that they have different health problems.

Some of the common occurred physical problems faced by the elderly people in the survey areas were eye problem, high/low pressure, weakness, waist/back pain, pain in joint, sleeping problem, pain in body, Problem in heart. The other physical problems were diabetes, denture problem, dysentery/diarrhoea, paralysis, asthma, gastric and so on.

Table2. Percentage distribution of elderly people by their livelihood and health status

Variable	Number	Percent of Cases	Variable	Number	Percent of Cases
Basic need (Multiple response)			**Source of receiving daily needs (Multiple response)**		
Food	190	94.5	Son	155	76.7
Cloth	184	91.5	Daughter	46	22.8
Shelter	24	11.9	Daughter in Law	52	24.6
Treatment	164	81.6	Granddaughter	17	8.4
Social security	21	10.4	Grandson	2	1.0
Family care	14	7.0	Relatives	2	1.0
Recreation	6	3.0	The neighbor	4	2.0
			Society / NGO	3	1.5
			other's	17	8.4
Whether having health problem			**Whether the elderly women were go to health center**		
Yes	162	75	Yes	121	56.0
No	54	25	No	95	44.0
Types of health problem (Multiple response)			**Expenditure of treatment**		
	25	16.8	No cost		
High/Low blood pressure	27	18.1	≤1000	53	24.5
Diabetes	27	18.1	1001-5000	52	24.1
Eye problems	10	6.7	5001-10000	50	23.1
Denture problem	20	13.4	10001-20000	24	11.1
Weakness	12	8.1	>20000	18	8.3
Pain in joint	4	2.7		18	8.3
Dysentery/Diarrhea	28	18.8	**Whether the health service providers are willing to solve the problem of elderly**		
Waist/back pain	15	10.1			
Problem in heart	6	4.0			
Paralysis	3	2.0	Yes	102	84.3
Hearing problem	7	4.7	No	19	15.7
Sleeping problem	4	2.7	**Expenditure of treatment**		
Problem in moving	2	1.3	No cost	53	24.5
Constipation	8	5.4	≤1000	52	24.1
Allergy	16	10.7	1001-5000	50	23.1
Asthma / difficulty in breathing	4	2.7	5001-10000	24	11.1
Body aches	17	11.4	10001-20000	18	8.3
Headache	7	4.7	>20000	18	8.3
Cancer	26	17.4			
Gastric	15	10.1			
other's					
Sources of receiving treatment cost			**Distance of health center (in kilometer)**		
Son	87	40.3	1	68	31.5
Daughter	14	6.5	2	57	26.4
Self	21	9.7	3	55	25.5

Relatives	18	8.3	4	8	3.7
Husband	67	31.0	≥5	28	13.0
Others	9	4.2			
Walking status of respondents					
Can walk himself	196	90.7			
Walk with support of others	17	7.9			
Cannot walk	3	1.4			

From the table 2 it is revealed that about 18.1 percent had eye problem, 13.4 percent had weakness, 17.4 percent had gastric, 18.1 percent had diabetes, 18.8 percent had Waist/back pain, 4.7 percent had sleeping problem and so on.

They were asked whether they go to health center for the treatment. About 56 percent of the elderly having health problems go to health center and 46.6 percent of the elderly did not go any health center. Among all respondents 84.3% mentioned that the providers are willing to solve their problem and 15.7 percent mentioned that the providers are not willing to solve their problem as older.

Treatment cost for the poor elderly is an important determinant for seeking treatment in health center or in hospitals. The elderly respondents who had received treatment last time were asked to provide information about cost of treatment for transportation, doctor's fee, and buying medicine. The overall costs involved with the treatment are shown in the Table 2. From the Table 2 it is noted that about 24.1 percent of the elderly spend less than or equal to 1000 Tk. for their treatment, 23.1 percent spend 5001-10,000 Tk. and 8.3 percent of the elderly spend more than 20,000Tk. for their treatment purpose. The median cost of treatment is 1000 Taka.

The information suggests that health care cost is a crucial factor for which many elderly women may not seek health services when needed. If they don't receive financial support from others including from their children very few would seek treatment. Due to high cost of treatment many elderly populations may delay in seeking medical attention until they become seriously ill, thereby prolonging their illness. This is particularly true for women who are immovably dependent on their sons. The respondents were asked to state their sources of money for treatment. Only about 9.7 percent of the elderly people mentioned that they spend for treatment expenses from their own savings but in most cases they mentioned that their sons (40.3 percent) provided treatment cost. About 31.0 percent elderly women mentioned that their husband provided the treatment cost. Relatives and neighbor also provided them treatment cost.

Distance of the health care center is also a factor for which elderly people either receive or do not receive the modern health care services. Distance of the health center is related to the transportation cost and it was found that the average distance is less than 3 kilometers.

Physical condition of the elderly was also investigated i.e. whether they can walk or they cannot walk at all. Majority of the elderly 90.7 percent reported that they could walk themselves without any support.

4.3 NEED ASSESSMENT AND SUPPORT SYSTEM:

In Bangladesh old age security or pensions do not protect a large majority of the aged population, and among those many continue to work well beyond age 60. In the poorer segments of the population, where family members usually pool resources for fulfilling their basic needs for food, shelter and security, the economic and political pressures are contributing to the insecurities to life and socio-psychological state of elderly (Kabir and Salam, 2000).

A few proportions of the rural elderly people in Bangladesh are in service and only this small fraction of the population will get pension benefit when they retired. It is noted from the table that only about 7.9 percent of the total respondents got pension.

Form Table 3, it is noted that among total of 216 elderly people, only about 29.6 percent have received old allowance or Biosko Bhata and most of them who got old allowance were mentioned that it was not sufficient to maintain their livelihood.

Table 3. Percentage distribution of elderly people by type of help they need

Need Assessment and Support System	Number of respondents	Percentage	Need Assessment and Support System	Number of respondents	Percentage
Whether receive any pension			**Whether receive any old allowance**		
Yes	17	7.9	Yes	64	29.6
No	199	92.1	No	152	70.4
Whether this old allowance is sufficient or not			**Whether any NGO working for the welfare of the elderly**		
Yes	5	2.3	Yes	124	57.5
No	59	27.3	No	92	42.5
Not applicable	152	70.4			
Whether support tax from UP			**Type of support elderly people need (Multiple response)**		
Support	192	88.9	Family support	176	88.0
Not support	3	1.4	Social support	130	65.0
Can't tell	21	9.7	Govt. support	145	72.5
			Non-Govt. support	36	18.0
			Others support	12	6.0

Type of help need from family (Multiple response)			Type of help they need from society (Multiple response)		
Service, care & love	188	66.7	More support from neighbors	62	46.2
Food	41	14.5	Neighbors should see us in distress	51	38.1
Love & care by daughter-in-law	2	.7	Social harmony	24	17.9
Support by the children	35	12.4	Arrangement of grave after death	5	3.7
Want to stay with children in his own home	8	2.9	Arrangement of food	8	6.0
Will make arrangement of essential thing	14	5.0	Sympathy of the neighbors	17	12.7
Take the responsibility of treatment	27	9.6	Support & cooperation from the elected member	5	3.5
Will talk in laughing face	9	3.2	Neighbors will visit them, sit aside, talk to them, gossip	4	3.0
Responsibility	55	19.5	Maintain mutual cooperation & communicate	10	7.5
Stop dispute & live together	4	1.4	Respect, praise, good behavior from neighbor	12	9.0
Care by sons	28	10.0			
Financial help from other family members	10	3.5			
Communicate & visit regularly	47	16.7			
Provide monthly/family expenditure	6	2.1			
Others	8	2.8			

Need Assessment and Support System	Number of respondents	Percentage	Need Assessment and Support System	Number of respondents	Percentage
Type of help need from GOVT (Multiple response)			**Type of help need from NGO (Multiple response)**		
Boishko Bhata	118	26.4	Arrangement of shelter	9	17.9
Improved/Free health care service	201	78.5	Arrangement of credit	22	56.4
Solution of food problem	55	12.3	Provide financial support	12	30.8
Shelter	111	24.8	Boishko Bhata	4	10.3
Provide cloths	5	1.1	Arrange of health care service	9	23.1
Credit facility/Financial help	76	60.9			
Buying livestock/poultry through micro-credit	8	1.7	**Type of help need from others (Multiple response)**		
Arrange Boishko Shikkha	15	3.3	Job for son/daughter/ daughter-in-law	19	67.9
Repair house	11	2.5	Marriage of daughter	5	17.9
Others	4	.9	Arrange of income generating activities	7	25.0
Whether stay in govt. shelter if provided			**Whether the elderly people can maintain livelihood if training and financial support provided**		
Yes	49	22.7	Yes	128	59.3
No	167	77.3	No	88	40.7
Reasons for not staying in the government shelter			**Name of livelihood elderly people would like to involve if training & financial support provided**		
Will not go anywhere leaving homestead	67	23.6			
Do not want to go leaving grand children	39	13.7	Dairy firm for livestock rearing/Poultry	47	23.5
Sick so she will not go	28	8.4	Small Business	92	46
Feel good to be with family members/they not want	116	40.8	Buying land	8	4.0
Want to die in my own village/husband's	13	4.6	Agricultural work/vegetable gardening	20	10
Cannot live without sons	66	23.2	To expand the cottage industry work	9	4.5
He has to look after family	69	24.3	Plantation & fisheries	6	3.0
Fear	19	6.7	Arrangement of sewing/ handicrafts	26	13
Sons will not allow to go	13	4.6	Others	7	3.5
Will not go without husband/wife	37	13.4			

Name of livelihood elderly people would like to involve if training & financial support provided		
Dairy firm for livestock rearing/Poultry	47	23.5
Small Business	92	46
Buying land	8	4.0
Agricultural work/vegetable gardening	20	10
To expand the cottage industry work	9	4.5
Plantation & fisheries	6	3.0
Arrangement of sewing/ handicrafts	26	13
Others	7	3.5

Elderly people's opinion for the betterment of them		
Retain good relationship with family member	46	10.0
Separate shelter for the elderly men and women	84	18.1
Social security/Help from society/neighbor	5	1.1
Need financial support	130	28.1
Ensure food	25	5.4
Livestock/Poultry rearing	146	31.6
Boishko Bhata	166	35.9
Provide health care service	122	26.4
Boishko Shikkha	80	17.3
Arrangement of earning capacity for the elderly people	48	10.4
Medicine/Treatment at free of cost	8	1.7
Vegetable gardening	4	.8
Monthly Bhata	7	1.5
Credit without interest	8	1.7
Others	36	7.8

Note: In case of multiple responses percentage may not add to 100 percent because of multiple responses.

According to the survey it is found that NGOs are currently working for the welfare of the elderly population and about 57.5 percent of elderly people mentioned that NGOs are working for the welfare of them.

The majority of elderly people in Bangladesh live in absolute poverty. Because of prevailing system elderly population are left out from the micro-credit system due to age barrier. So the elderly people were asked whether they support tax from UP for the aged population of the locality. Most of the elderly people about 88.9 percent reported that they would support tax from UP.

All the sample elderly people were asked to state what type of support they need. The information is shown in Table. Most of the elderly people said that they need support from the family (88.0%) and government (72.5%). The other supports are social help (65.0 %) and NGO's help (18.0 %). The detailed information about what type of support the elderly people need from family, society, government, NGO and others are mentioned in the table.

The elderly people were asked whether they would like to stay in the government shelter if they would offer to live and those who said they would not like to stay in the government's shelter were again asked to provides the reason for not staying in the government shelter. It is noted that about two thirds of the elderly people did not like to stay in the government's shelter. The reasons why they are not willing to stay in the government shelter are that most of the elderly people did not like to go anywhere leaving home. They prefer to stay with their children. They would feel more comfortable to live with family members than staying in the government's shelter.

About 59.3 percent of the elderly people reported that they would maintain their livelihood if training and financial support are provided. All the elderly people were asked if they were given financial support and training then what type of income generating activities they would like to be involved. About 23.5 percent of the elderly people like to be involved in dairy firm for livestock rearing/ poultry followed by small business (46%); sewing (10%), agriculture/vegetable gardening (10%) and cottage industry work (4.5%).

The elderly people were asked to state their opinions what should be done for the betterment of Elderly people. They provided a range of options for their betterment.

About 28.1% elderly people expressed their views that they should be provided with financial support, about 35.9% elderly people desired that their should be provided Biosko Bhata, 31.6% desired that they should be provided training on livestock / poultry rearing for their livelihood, 26.4% elderly people desired that they should be provided health care service and so on.

4.5 LOGISTIC REGRESSION ANALYSIS

Examining each independent variable individually, as bivariate analysis is performed, can only provide a preliminary idea of the importance of each variable. Multivariate techniques are needed to examine the relative importance of all variables simultaneously. Multiple regression analysis is a related technique that quickly comes to mind. However, these techniques handle the difficulty when the dependent variable can have only two values, the event occurs or does not occur. When the dependent can have only two values, the assumptions necessary for hypothesis testing in regression analysis are necessarily violated. For example, it is not reasonable that predictor values cannot be interpreted as probabilities. They are not constrained to fall between 0 and 1.

A logistic regression model can be used not only to identify risk factors, but also to predict the probability of success. A general logistic model expresses a qualitative dependent variable as a function of several independent variables, both qualitative and quantitative (Fox, 1984). It is important to understand that the goal of logistic regression is the same as the goal of any model building technique used in statistics to find the most appropriate and parsimonious but reasonable model to describe the relationship between outcome (dependent or response variable). and a set of independent (predictor or explanatory) variables. The independent variables are often called covariates.

.Let yi be n individuals each takes only two values 0 and 1 depending whether yi is success and failure respectively. Also suppose that for each of the n individuals, p independent variables xi1, xi2, … , xip are measured. These variables can be either qualitative or quantitative. Assume that the yi's are normally distributed with mean *Pi* and variance σ2, and *Pi*, defined as the probability of success, or

$$P_i = P\langle \ y_i = 1 \,|\, x_{i1}, \ldots\ldots, x_{ip} \rangle$$

$$1 - P_i = P\langle \ y_i = 0 \,|\, x_{i1}, \ldots\ldots, x_{ip} \rangle \ ; \ i = 1, \ldots \quad , n$$

In the linear logistic regression model, the dependence of the probability of success on independent variables is assumed to be

$$P_i = \frac{\exp(\sum_{j=0}^{p} b_j x_{ij})}{1+\exp(\sum_{j=0}^{p} b_j x_{ij})} \text{ and } 1-P_i = \frac{1}{1+\exp(\sum_{j=0}^{p} b_j x_{ij})}$$

where $x_{i0} = 1$ and b_j are unknown coefficients. The logarithm of the ratio of P_i and $1 - P_i$ is a simple linear function of x_{ij}.

Let

$$\lambda_i = \log \frac{P_i}{1-P_i} = \sum_{j=0}^{p} b_j x_{ij} \ldots\ldots \qquad (*)$$

$$i.e., \lambda_i = \log \frac{P_i}{1-P_i} = b_0 + b_1 x_{i1} + \ldots\ldots\ldots\ldots\ldots + b_p x_{ip}$$

λ_i is called the logistic transform of P_i and (*) is called a linear logistic model. λ_i is also called log odds of the occurrence on an event as a linear function of independent variables. The *logit* is thus the *logarithm* of *odds* of success, that is, the *logarithm of the ratio* of the probability of success to the probability of failure.

In logistic regression parameter of the models are estimated by maximum likelihood method. That is the coefficient that makes observed results most "likely" are selected. The contribution of independent variable in logistic regression dependents on the other individual variables and the interpretation is difficult when they are highly correlated. In logistic regression, just as linear regression, the codes for the independent variable must be meaningful.

4.5a Factors influencing the health status of the Elderly people

In order to identify the factor, which influence the health status of the elderly people logistic regression model was used.
There is a strong argument that socio-economic and demographic differentials like age, education, working status, total family member, type of house, type of toilet, area of cultivable land, monthly income, whether goes to health center, distance of health center, whether sons live together, feeling loneliness etc. influence the health status of the Elderly people. To justify this argument from survey evidence we like to apply a powerful statistical technique like logistic analysis. Logistic analysis is nothing but a regression technique dealing with criterion variables. As we are doing the study to see the actual situation of the elderly people in Bangladesh, we put emphasis to find out which factors are significantly influencing the health status of the elderly people with the help of logistic regression technique. Several methods were developed to understand the elderly people's health status and the independent variables. **The dependent variable used in this analysis is the present health status of the elderly which takes value 0 if there is no problem and 1 otherwise.** The independent variables included in the model are age, education, working status, monthly income, whether goes to health center, distance of the health center and whether feeling loneliness, Total family member, Type of house respondent lives, Type of toilet and Area of cultivation land.

The independent variables are defined below:

X_1 : Age of the respondent } 0 Less or equal 65 years
1 Above 65 years
X_2 : Respondent's education } 0 Literate
1 Illiterate
X_3 : Respondent's working status } 0 Working
1 Not working
X_4 : Monthly income } 0 Above 500 tk.
1 Less or equal 500 tk.
X_5 : Whether goes to health center } 0 Yes
1 No
X_6 : Distance of the hospital } 0 Less or equal 2 km
1 Above 2 km
X_7 : Feeling loneliness } 0 No
1 Yes
X_8 : Total family member } 0 above 3
1 less or equal 3
X_9 : Type of house respondent lives } 0 Otherwise
1 Tin/Kaccha
X_{10} : Type of toilet } 0 Sanitary/Ring slab
1 Kaccha
X_{11} : Area of cultivation land } 0 above 50 decimal
1 Less or equal 50 deci
X_{12} : Whether all sons live together } 0 Yes
1 No

Table 4. Logistic Regression Model one having dependent variable health status of the elderly people

Variables	Coefficient	Standard error	Wald	P-value	Odd Ratios
Age of the Elderly people, X_1	-.444	.230	3.720	.054*	1.559
Education, X_2	.388	.276	1.091	.046*	1.334
Working status, X_3	-.439	.245	3.217	.073**	.645
Monthly income, X_4	-.669	.384	3.032	.082**	.512
Whether goes to health center, X_5	.078	.215	.131	.718	1.081
Distance of the health center, X_6	-.488	.218	4.988	.026*	.614
Feeling loneliness, X_7	.040	.226	.032	.858	1.041
Total family member, X_8	.269	.239	1.269	.260	.764
Type of house, X_9	.166	.330	.251	.616	.847
Type of toilet, X_{10}	.103	.248	.171	.680	.903
Area of cultivable land, X_{11}	.490	.244	4.041	.044*	1.632
Whether sons live together, X_{12}	.677	.403	2.815	.093**	1.967
Constant	1.006	.339	8.795	.003*	2.734

-2 Log Likelihood	522.638
Chi-Square Value	22.436
Degrees of Freedom	12
P value	.033
Number of Cases	437

*$p < 0.05$ and ** $p < 0.1$

Using the above table the logistic model can be written as

$$\lambda_i = 1.006 - 0.444X_1 + .338X_2 - .439X_3 - .669X_4 + .078X_5 - .488X_6 - .040\,X_7 + .269X_8 + .166\,X_9 + .103\,X_{10} + .490X_{11} + 0.677X_{12}$$

From the above table 4 we get the logistic regression coefficients for different independent variables, four of which (X_1, X_2, X_6, and X_{11}) are statistically significant at 5% level of significance and three (X_3, X_4 and X_{12}) at 10% level of significance. The constant term of the model is also statistically significant at 5% level of significance. The positive sign of the coefficient indicates that if the corresponding independent variable changes to 1 then the proportion of female aged having health problem increases. The vice versa result is true for the negative coefficients.

For example, the regression coefficient for the variable, type of house respondent lives (X_9) is 0.166, which is positively related to the dependent variable (present health status of the Elderly people). This indicates that the present health status of the female elderly who lives in tin/Kaccha typed house is bad. The regression coefficient for the variable, area of cultivable land and whether all sons live together is .490 and .677 respectively, which is also positively related with the dependent variable health status of the Elderly people i.e. the health status of the Elderly people who had area of cultivable land more than 50 decimal is better than the Elderly people who had land less than 50 decimal and the health status of the Elderly people whose all sons live together is better than those Elderly people whose all sons did not live together.

The odd ratio of .388 is 1.334 for the education of the respondents, means that the odds of present health status of the Elderly people are 1.334 times higher for those elderly who are illiterate as opposed to those who are literate when the other independent variables are held constant. The odd ratio of -.439 is .645 for the working status of the respondents, means that the odds of present health status of the Elderly people are .645 times lower for those elderly who not working as opposed to those who are working.

The *Log Likelihood* Function- the probability of the observed results, given the parameter estimates (the coefficients of the predictors included in the model) is known as the *likelihood*. Since the *likelihood* is a small number less than 1, it is usual to use -2 times the log of the likelihood (*-2 Log likelihood*) as a measure of how well the estimated model fits the data. A good model is one that results in a high likelihood of the observed results and that translates into a small value for *-2 Log likelihood*. If a model fits perfectly, the likelihood is 1 and *-2 Log likelihood* is 0. In this model, *-2 Log likelihood* of 522.638 is large and suggests that the model is not an overly good predictor.

5.1 SUMMARY

Elderly is serious reality and it is the last step of life cycle. None can avoid this stage. At present global population situation in respect of age structure has been changing and showing the elderly 60+ as a growing segment. This is because of declining trend in fertility and mortality and also increasing trend of life expectancy exceeding lower age limit 60 years of the old due to increasing awareness of health as well as improving health care services. In 1950 world aging population was 8%, which was 10% in the year 2000 and will raise to 22% in 2050. Most of the older people were live in the developing countries. It is the rapidly increasing, and in the year 2050 the number of older people will be equal to the number of children.
If this large segment of population is kept isolated from the development agenda and are not included in the productive workforce, the result will be a tremendous economic and social imbalance.

The trend in the size and growth rate of the elderly population in Bangladesh reveals that aging will become a major social challenge in the future when a considerable resources will need to be directed towards the support, care and treatment of the elderly population.

In the past, the elderly were not considered a specifically vulnerable group because of their proportion and absolute number were not large enough to consider special measures for providing medical care for aging. Old age diseases are demanding in terms of diagnostic equipment, long duration of hospitalization, treatment and rehabilitation. This would pose new challenges for Bangladesh's health system. However , with the expected increase in the size of the elderly population in Bangladesh, it is important to consider how health services can meet demands of the elderly people (Kabir, M and Yeasmin Siddiqua, 2003).

The main goal of this research is to provide a brief but good picture of the elderly people in Bangladesh together with their socio-economic and health condition. The study has identified problems facing by elderly people from a micro study and suggested means through which elderly people can continue to make active contribution to the economic, social and cultural life of the families and communities.

This study deals with micro level data derived from a house hold survey to investigate into the various aspects such as, socio-demographic characteristics, old age problems, family structure, health problems and community attitude and support of the Elderly people. The population, surveyed was 60 years and above. About 216 Elderly people were interviewed through a structured questionnaire specially designed for this purpose.

One manifestation of an older age structure is thought to be higher dependency ratio, generally measured as the ratio of the population under age 15 or over age 65 to that aged 15-64. The information reflects some regard it is reflecting the increased "burden" on the productive portion of the population. But since the dependency ratio is made up of both older and younger dependent groups, one-to-one correspondence does not exist between an increase in the proportion elderly and a rise in the dependency ratio (East-West center, 1995).

The data for this study obtained from rural area of three districts named Gopalganj, Patuakhali, and Bagerhat in Bangladesh.

5.2 CONCLUSION

Aging issue in Bangladesh is not a main concern until recently because the demographic transition started only in recent years. In Bangladesh about half of the population lives under poverty line or do not have adequate housing and the majority of the elderly population will be found in rural areas where poverty is a serious problem.

Along with various aspects of population problems, the aging of population has become an important issue, necessitating social and economic adjustment. It is a matter of great concern that, aging has endangered the social strain in the potential process of determining the allocation of resources to serve, in particular, in terms of social and fiscal supports, health services, income supports etc. The growing number of the aged population and change in the population age structure coupled with change in life style and values of the young and tendency to decline traditional family support system, the elderly population has emerged as a vulnerable group in the society.

The proportion of people aged 60 and over is increasing significantly and is raising formidable social and economic challenges related to financial support of elderly people and to the provision of care for frail elderly.

Because of women's greater longevity in Bangladesh and the tendency for men to marry women younger than themselves, women are more likely than men to end their lives as widows. The implication of this is a serious gender asymmetry in the support and care of the Elderly people. This would also increase problem of loneliness among the Elderly people.

Currently very little is known about socio economic status of the elderly population of Bangladesh. Scattered information suggests that one of the major problems of elderly population are facing is the health problems and lack of care. For instance, there is no separate health service for the elderly population. In the rural areas, the problems of health care for the elderly are even worse. Those who visit health facility queues were typically very long, and providers rarely had time for detailed examinations. Reducing

queues at government health facilities, increasing contact time with the providers, and strengthening outreach services will not be an easy task. To cater to the needs of the elderly population geriatric services would be important needs for unmet need of health care of the elderly population. Because of migration and poverty the family will not support most of the elderly in future. In such a situation how much the burden of caring for elderly population can be transferred from the family to the community requires investigation.

Although any attempt to predict the direction of future socio-economic changes is involved with uncertainty because of fragile economy, the increase in the size of Bangladesh's elderly population in the near future will be a challenging one. Therefore, information on elderly population is needed in socio-economic planning. The possible policy options such as the program than enhances traditional support systems of family support; encouraging the elderly population to participate income earning activities who are physically capable of doing work.

Because of deteriorating social and economic conditions coupled with proverty the family structure has been changing to a nuclear family. Changes in the family size, from large to small family norm has also future implications with smaller number of children, the burden of providing care for their elderly parents this responsibility.

In recent years, there has been a change in the ages at which people marry. This suggests that when they will be in old age, their children would still be young and dependent upon them for support.

As the aging process increases, the aged population would experienced diminishing capabilities. Since there are no special treatment facilities for the Elderly people, they faced varieties of problems related to health such as dysentery/diarrhoea, eye problem, problem in heart, sleeping problem, pain in body, headache, problem in uterus, fever, cold/cough, gastric become more severe when the Elderly people had other illness and debility. The state of mental health of the Elderly people is of considerable concern. Their loneliness is aggravated by the perceived alieneation.

A large majority of older women in Bangladesh are widowed. Once a woman is widowed, she is often denied access to resources as husband's resources may be distributed among family members. As a result, widows have no security, and they are heavily dependent on sons/family, and they face relatively worse socio-economic situation and because of lack opportunities to earn income and do not hold savings.

The key issue is whether norms are strong enough to guarantee that families will maintain their roles and keep their traditional ties to their elderly despite the increase in the dependency burden, the decline of the family economy, migration and increasing participation of women in economic activity outside the home. The future prospects for the Elderly people differ according to development and one would expect continued modernization would lead to a future decline in the status of Elderly people in Bangladesh.

5.3 RECOMMENDATION

I. Government should give serious consideration to introducing a national welfare pension program to ensure income security for the elderly. Such an effort will contribute significantly to removing the great resistance to family planning arising mainly from the fear of old age income security in old age.

II. In addition, it is important to remove impediments to the elderly seeking jobs. Their employment is an essential factor in development and in the stability of families and societies. In other words, the best way to make the elderly less isolated, lonely and marginal is to make them more productive and independent.

III. Further, helping older people retain or find productive employment also helps society as it makes the Elderly people more self - reliant. This lowers their dependency on family or the state, brings them important physical, psychological and economic benefits.

IV. The extent of the aging problem in absolute numbers is cause for alarm in Bangladesh. These escalating numbers have important and far-reaching implications for national policy on the elderly. Naturally, the aging of the population of Bangladesh will pose serious problems in the future unless they are addressed now with sound policy initiatives. Consequently, Bangladesh should start introducing arrangements to cope with this growth without further delay.

V. Elderly people must be allowed as full participants in the development process and also share in its benefits. Organizations of older persons are an important means of enabling participation through advocacy and promotion of multigenerational interactions.

VI. Government allowances for the elderly should be gradually increased to cover the target group entirely. Essential health care should be provided at a subsidized cost by Government hospitals and clinics.

VII. Housing for the aged people must be viewed as more than mere shelter. In addition to the physical, it has psychological and social significance, which should be taken into account to release the aged from dependence on others, national housing policies should purse the following goals:

a) Helping the aged to continue to live in their own homes as long as possible, provision is being made for restoration and development.

b) Coordinating policies on housing with those concerned, with community services (social, health, cultural, leisure, communications) so as to secure, whenever possible, a specifically favoural position for housing the aged vis-à-vis dwellings for the population at large.

VIII. Further, the communities at the local level should be encouraged to form voluntary organizations to provide support for the aged and their families. Broad information and educational programs can be initiated to create awareness and understanding of the issues of aging. These can be done properly organizing the local level elderly and Bangladesh context, these can be arranged in school/colleges after normal working hours and also in mosques and community centers respectively.

IX. The support of the mass media is essential as an on-going exercise to take the message across to a wider section of the population in the country. The programmes can be directed towards educating the general public, especially the young segment, on values, attitudes and proper use of leisure time activities aimed at strengthening the bonds within the family as well as the country.

X. The ministry of social welfare for non-government agencies can undertake to distribute information leaflets and other reading materials as well as use others forms of the mass media to educate the public. Topics may include those on the process of aging, feelings about old age, as well as the physical and emotional needs of the aged persons.

XI. The Non-Government Organizations/agencies (NGO) should continue playing the role of complementing and supplementing the services rendered by the government. Members of the youth clubs, voluntary, religious and other societal institution should be encouraged to undertake more community projects such as social, health, legal aid, housing, education, communication and recitation services, to meet the needs of the Elderly people. Voluntary organizations can also set up " home help service", like building chalets or huts or repairing the houses of the aged persons, doing shopping or escorting them to places, on a voluntary basis.

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