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Article

Association between self-rated health status and chronic diseases among the elderly in the Sylhet city of Bangladesh

Mohammad Nayeem Hasan*

Shahjalal University of Science & Technology, Sylhet, Bangladesh

*Corresponding author: Mohammad Nayeem Hasan, Shahjalal University of Science & Technology, Sylhet, Bangladesh. E-mail: nayeem5847@gmail.com

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Abstract: Aging is one of the embryonic problems in Bangladesh and this has been gradually increasing with its far-reaching consequences. Elderly can develop new and complicating health problems. In most cases the diseases are chronic and complex. The structures were designed to investigate the health status, depression, and function of the daily living of the older men and women in the Sylhet region of Bangladesh. The data were collected using stratified sampling. We have used cross-sectional methods to analyze the data and performed a chi-square test to test the association and a then bivariate and multivariable logistic regression model was used to evaluate the major risk factors of CVD. In this study, 229 elderly people were considered aged from 60 to 60+ years-old face to face personal interviews. Among them 16.6% elderly are suffering in depression. According to residence, the condition of health is good in the ethnic group (21.9%) and this situation is worse in the rural group (97.5%). In addition, people who have depression were 0.087 times or 91.3% (OR = 1.115, 95% CI 0.273-4.552) less likely to have healthy compared to the people who did not have depression. In this study, we have seen that there were many factors that were associated with health status among different communities' elderly people in Sylhet. This research will help clinicians and policymakers to develop appropriate strategies of CVD patients and organize health education programs for changing lifestyles among elderly in Sylhet.

Keywords: elderly people; health status; depression; diabetes; gastric

1. Introduction

A universal definition of old age is deceptive. In many developing countries, old age is seen to begin at the point when active contribution is no longer possible (Gorman and Heslop, 2002). It is true that elder peoples become senile and lose their ability in physically and mentally (Ferman *et al*., 2008). Although some individuals may develop illness but (Roos and Havens, 1991) shows that it is possible for elder persons to maintain a high degree of physical and intellectual activities into their very late years.

Aging is one of the embryonic problems in Bangladesh and this has been gradually increasing with its far-reaching consequences. Only 6.13 percent is elder (60+) in Bangladesh (Rahman *et al*., 2011). The most alarming situation is this number will reach 14.6 million (about 9 percent of the total population) by the year 2025 (Akhtar, 2017; Anonim, 2002). But according to Ogundare1 *et al*. (2017) the aging in SAARC countries does not appear to be alarming till to-day-percentages of the elderly which vary between 5-6 percent. In the absence of well-established system for providing adult social services, the elderly will have to rely on them to live closely with economic, social and physical support, such as their economic productivity and health reduction (Domingo and Casterline, 1992). In Thailand, there is a widespread expectation that the elderly will be taken care of by their children and that at least one child will co-reside with them (Anonim, 2002; Domingo and Casterline, 1992; Siriboon and Knodel, 1994). It has been found that if the survival of the adult lives with an additional child or son, they will increase (Mostafa and van Ginneken, 2000).

(Phillips *et al*., 1993) observed that the ratio of self-perceived morbidity varies by disease and across communities. They found that adolescence usually grows during adolescence, larger than men than women, and

it is more common among the rich than the poor. Although social support has a major impact on the health and well-being of the elderly, it is less clear how this effect might operate (Phillips *et al*., 1993). Unlike elderly men, who may have their wives to depend on when they fall ill, older women are quite likely to have to rely on children and other relatives.

Older women face different health problem compared to older men. From a study by (MH, 1994), the aged in Bangladesh shows a depressing picture. In this survey, among other things, about 77 per cent of the total sample reported that they did not have adequate income to meet their basic needs. One out of every three in the sample suggested that government should come forward to help the aged, while some also suggested that the state should provide food. So, the long-term caring need of the aged in terms of community and institution-based services is going to be a matter of great concern (Ferman *et al*., 2008). A survey study on living arrangements of the elderly and their sources of support reveal a predominant pattern of co-residence with their spouse and/or their children (Westley and Mason, 2002) and those who are not co-residents but live in close proximity of children and spouse. Thus, the living and health care arrangements of the elderly in view of demographic change and socio-economic transformation taking place in this country (Aghajanian and Thompson, 2016) and also to explore the current situation and future trend of population aging under the changing condition, proper investigation is firmly needed.

In this study, we performed a comprehensive investigation of elderly health status and its determinants among, compare the findings with the elderly group by residence. To the best of our knowledge, there is no information on the health status of ethnic and tea garden people living in Sylhet. Our aim is to estimate the prevalence of elderly diseases in elderly group of people and explore the prevalence, severity, risk factor and socio-demographic distribution. Moreover, the study can help public health policymakers determine priorities for intervention.

2. Material and Methods

2.1. Study design

A stratified random sampling with proportional allocation technique was used to collect the data. To capture the socio-economic and demographic condition as well as the ethnicity of the Sylhet, the total study area was divided into four strata, namely urban area, rural area, ethnic minority, and tea garden area. The survey was conducted applying a stratified random sampling with proportional allocation. Firstly, from four strata, a ward in an urban area, a union in a rural area and ethnic community respectively were selected at random. Finally, data from elderly people (age 60 years or above) at the household level was collected by using a structured questionnaire. A total of 230 old men and women were successfully interviewed. The sample size was determined using standard formula applicable in case of stratified random sampling.

2.2. Response variable

In this study, the dependent variable is self-rated health status. Elderly is identified as bad health status if they reported that they have disease prior to the data collection otherwise they were considered as non-healthy.

2.3. Predictor variables

Predictor variables: Depression, Insomnia, Diabetes, Disability, Cataracts, Gastric, Anxiety and Counseling are assumed as possible predictor variables on the basis of previous study and included in this study.

2.4. Statistical analysis

We used a complex multivariate logistic regression model for identifying the risk factors associated with health status and crosstab was applied on our data set to find exact prevalence of different group among various factor. The statistical analysis and data management for this study has been carried out using R and SPSS (IBM SPSS 25).

3. Results

In our data 62% older people live in a rural area, 13.5% percent in tea garden area, 13.1% in the urban area and only 11.4% are ethnic. Among them, 72.5% sample is male and 27.5% are female. We have found three religion in our data where 72.1% are Muslim (which is the highest percentage), 25.3% are Hindu and only 2.6% has others religion. Elderly people (55%) responded that they do work and 45% don't. Prevalence of elderly (30.1%) live separately from their family and 69.9% live with their family members. Only 9.6% of elderly people response that their monthly income is higher than 10000 Bangladeshi takas and 90.4% is lower than

10000 takas. By marital status, 79.9% older people is married and 19.2% are widowed or widower but 0.9% are never married in their life circle (Table 1).

Table 1 also displayed that male is more literate than female. 24.5% male is literate, the female is 7.4% and 20.1% male are illiterate. Occupation condition is better for male than female as 48% male is employed. On the other hand, only 8.3% of the female is employed at their age. Monthly income is also higher for men than female. 65.1% of male's income is less than 10000 takas while only 25.3% for female. 68.1% male and 11.8% female are still married but 0.4% in both sexes are never married in their life. Only 3.9% male and 15.3% female are widowed/widower.

Illness of elderly people is so many among them depression, insomnia, diabetes, disability, cataracts, gastric and anxiety have highly occurred. For this reason, we just include these highly occurring diseases in our study.

Among all the elderly, 17.10% are disabled physically and 82.90% are not. From their self-explained health condition, 46.3% of elderly people are healthy and 53.7% is not healthy. From the uncountable disease, 24.5% have diabetes, 38.9% have cataracts, 39.7% have gastric, 18.8% have anxiety, 16.6% have depression and 21.4% have insomnia (Figure 1).

Depression is the main problem among the elderly. We have found 16.60% elderly suffering from depression. Among them, 44.58% male and 55.42% female suffering from depression. In this case of insomnia, female is more sufferer than male. Nowadays diabetes seems to be familiar among elderly people, especially in rural people. It also causes for unhealthy status to elderly people. Diabetes is common among elderly men than female. We have found diabetes 80.41% for male and 19.59% for female. Cataracts are common among elderly people especially we have found 74.23% male and 25.77% female have cataracts. Gastric is a most familiar problem in Bangladeshi people and for the elderly, we have found 65.99% have gastric which is almost double than female (34.01%). Anxiety problem has seen almost the same for male (48.94%) and female (51.06%). By taking counseling, the disease can be preventing and this is the best way for staying healthy. Male (66.67%) older people are more advanced than male (33.33%)) to take counseling regularly. Only 3.90% older people take counseling regularly and 96.10% do not take any counseling from certified doctor or psychiatrist (Figures S1-S16).

Depression rate is higher in tea garden older people than other residences which are 9.2%. In ethnic elderly people, depression is lowest which is 0.9%. In rural and urban residence, the depression rate is 4.8% and 1.7% respectively. Depression is one of the causes of Insomnia. Rural older people are highly affected in Insomnia and this rate is 9.2% and the lowest rate is 3.1% for ethnic older people. Urban (4.8%) and 4.4% tea garden residence older people are suffering in Insomnia. Also, 19.7% of rural older people have gastric problem and this is the highest than urban (7.4%), tea garden (6.6%) and ethnic (6.1%). In the rural area, 15.3% elderly have diabetes, in urban area 5.7%, in ethnic 0.9% and in tea garden 3.5% respectively. In rural 8.7%, older people have anxiety, in tea garden 6.1%, in ethnic 2.6% and in urban only 1.3%. Also, 28.4% rural elder, 5.2% tea garden elder, 3.9% urban elder and 1.3% ethnic elder have eye disease. We have found that only some elderly people from ethnic (3.1%) and rural (0.9%) take counseling while from urban and tea garden the percentage is zero. This data is presented in Table 2.

We have done the chi-square test in different diseases to see the relationship on health status. From the analysis, we can see that depression, insomnia, disability, diabetes, gastric and anxiety are significant to health status. Counseling is also significant but cataracts problem is not significant. So, depression, insomnia, disability, diabetes, gastric and anxiety have a positive impact on the health status of elderly people. Generally, people who take counseling regularly are conscious about their health. Here education also fact for the consciousness of taking counseling (Table 3).

We have done a multivariable logistic regression model to see the dependency of different disease on the status of health. From Table 4, we have found diabetes, gastric, anxiety, depression and counseling are significant. That is, they have a positive impact on the health situation for elderly people. In addition, people who have diabetes were 1.115 times (OR = 1.115, 95% CI 0.273-4.552) more likely to have healthy compared to the people who did not have diabetes. For Insomnia the odds ratio is 0.154 (CI: 0.033-0.713) which implies that the possibility of health in older people is 84.6% less likely the older who have no Insomnia though it was not significant. On the other hand, the likelihood of gastric, anxiety and depression had decrease 0.248 times [95% CI=0.068 to 0.907], 71.4% less likely [95% CI=0.059 to 1.389] and 0.087 [CI: 0.018, 0.409] times fewer odds of having healthy in comparison to the elderly had gastric, anxiety and depression, respectively.

Table 1. Percentage of the elderly by socio economics characteristics and by sex.

Socio economic factors		Sex		Total
		Male (%)	Female (%)	
Education	Literate	24.5	7.4	31.9
	Illiterate	20.1	48.0	68.1
Family Type	Joint	49.8	20.1	69.9
	Unitary	7.4	22.7	30.1
Occupation	Employed	46.7	8.3	55.0
	Unemployed	19.2	25.8	45.0
Religion	Hindu	0.9	1.7	2.6
	Muslim	59.8	12.2	72.1
	Others	11.8	13.5	25.3
Children	0-3	31.4	11.8	43.2
	3<	41.0	15.7	56.8
Income	0-10000	65.1	25.3	90.4
	10000<	7.4	2.2	9.6
Marital Status	Married	68.1	11.8	79.9
	Never Married	0.4	0.4	0.9
	Widowed	3.9	15.3	19.2
Wealth Index	Rich	19.7	10.9	30.6
	Poor	52.8	16.6	69.4
Health Status	Healthy	41.0	5.2	46.3
	Fairly	18.3	10.9	29.3
	Moderate	9.6	9.2	18.8
	Severe	3.5	2.2	5.7
Residence	Rural	53.3	8.7	62
	Tea Garden	6.1	7.4	13.5
	Ethnic	5.7	5.7	11.4
	Urban	7.4	5.7	13.1

Table 2. Percentage of elderly according to the various diseases by residence and sex.

Diseases	Residence				Total
	Urban (%)	Rural (%)	Ethnic (%)	Tea garden (%)	
Depression	1.7	4.8	0.9	9.2	16.6
Insomnia	4.8	9.2	3.1	4.4	21.4
Diabetes	5.7	15.3	2.6	0.9	24.5
Disability	0.9	10.5	2.2	3.5	17.1
Cataracts	3.9	28.4	1.3	5.2	38.8
Gastric	7.4	19.7	6.1	6.6	39.7
Anxiety	1.3	8.7	2.6	6.1	18.8
Counseling's	0.0	0.9	3.1	0.0	3.9
Total	**25.7**	**97.5**	**21.9**	**35.9**	

Table 3. Percentage of elderly according to the various disease by residence and sex.

Diseases		Health Status			P-Value
		Good (%)	Bad (%)	Total (%)	
Depression	Yes	16 (28.6)	22 (12.7)	38 (16.6)	0.006*
	No	40 (71.4)	151 (87.3)	191 (83.4)	
Insomnia	Yes	11 (6.4)	38 (67.9)	49 (21.4)	0.000*
	No	18 (32.1)	162 (93.6)	180 (78.6)	
Diabetes	Yes	8 (14.3)	48 (27.7)	56 (24.5)	0.042*
	No	48 (85.7)	125 (72.3)	173 (75.5)	
Disability	Yes	15 (26.8)	24 (13.9)	39 (17.1)	0.025
	No	41 (73.2)	149 (86.1)	190 (82.9)	
Cataracts	Yes	24 (42.9)	65 (37.6)	89 (38.8)	0.481
	No	32 (57.1)	108 (62.4)	140 (61.2)	
Gastric	Yes	10 (17.9)	79 (45.7)	91 (39.7)	0.000*
	No	46 (82.1)	94 (54.3)	138 (60.3)	
Anxiety	Yes	34 (60.7)	9 (5.2)	43 (18.8)	0.000*
	No	22 (39.3)	164 (94.8)	186 (81.2)	
Counseling's	Yes	9 (16.1)	0 (0.0)	9 (3.9)	0.000*
	No	47 (83.9)	173 (100)	220 (96.1)	

Table 4. Result of multinomial logistic regression analysis on health status in terms of different disease of the elderly population.

Diseases		OR	95% CI	P-Value
Diabetes	Yes	1.115	[0.273, 4.552]	0.040*
	No	Ref.	-	-
Insomnia	Yes	0.154	[0.033, 0.713]	0.127
	No	Ref.	-	-
Gastric	Yes	0.248	[0.068, 0.907]	0.035*
	No	Ref.	-	-
Anxiety	Yes	0.286	[0.059, 1.389]	0.000*
	No	Ref.		-
Depression	Yes	0.087	[0.018, 0.409]	0.005*
	No	Ref.	-	-
Cataracts	Yes	1.478	[0.389, 5.616]	0.566
	No	Ref.	-	-
Disability	Yes	0.589	[0.188, 2.837]	0.189
	No	Ref.	-	-
Counseling	Yes	2.453	[1.243, 8.451]	0.000*
	No	Ref.	-	-

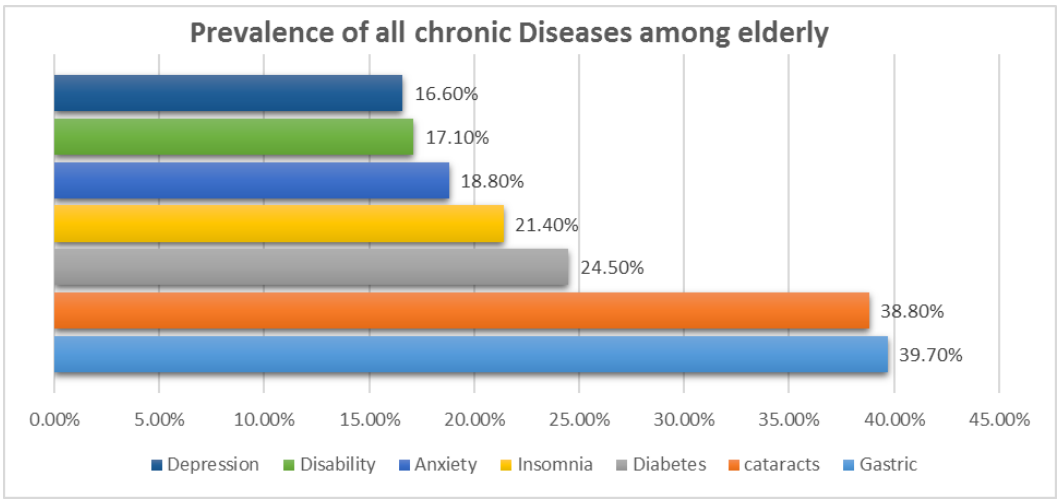

Figure 1. The prevalence of different diseases among elderly people in Sylhet.

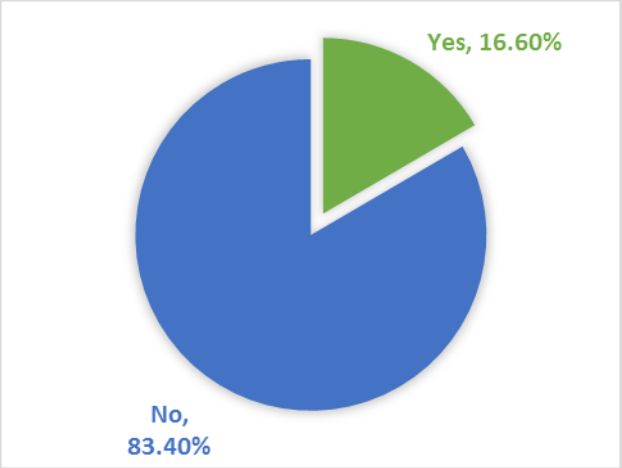

Figure S1. Prevalence of depression.

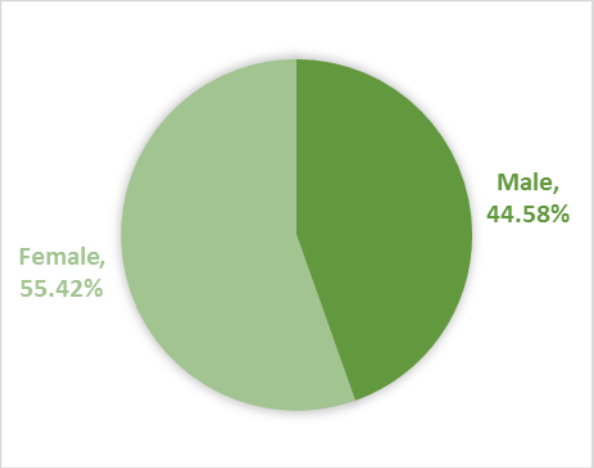

Figure S2. Prevalence of depression by sex.

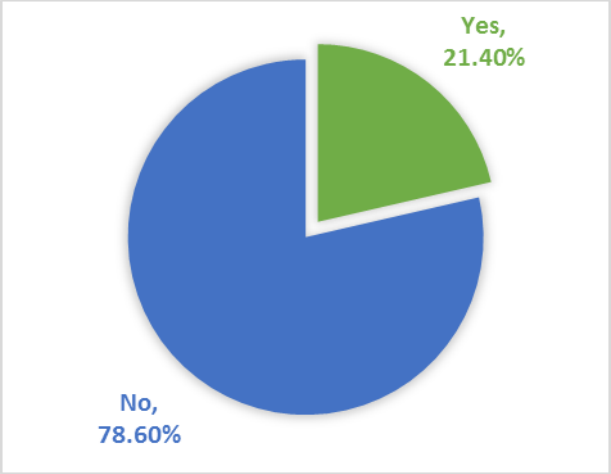

Figure S3. Prevalence of insomnia.

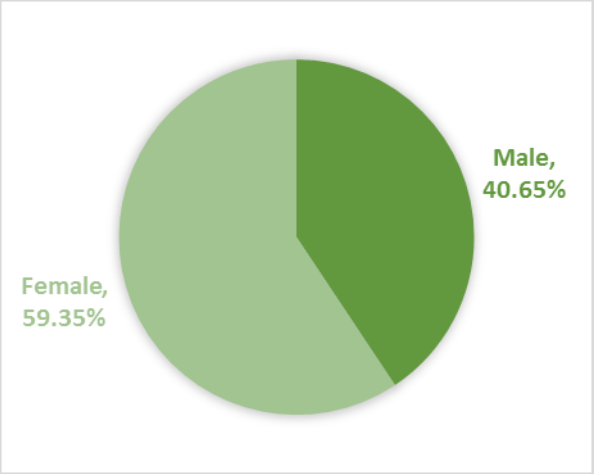

Figure S4. Prevalence of insomnia by sex.

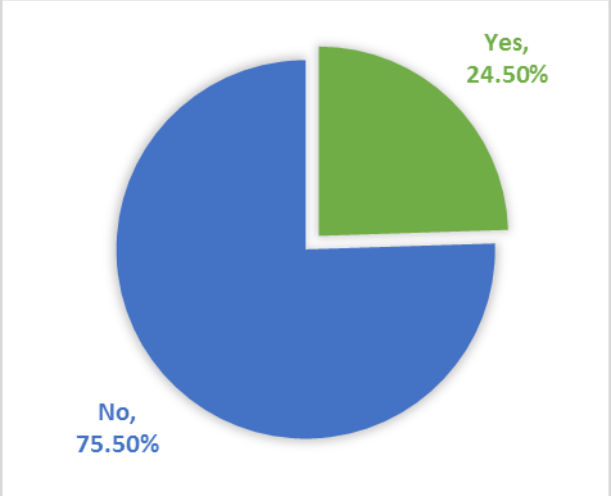

Figure S5. Prevalence of diabetes.

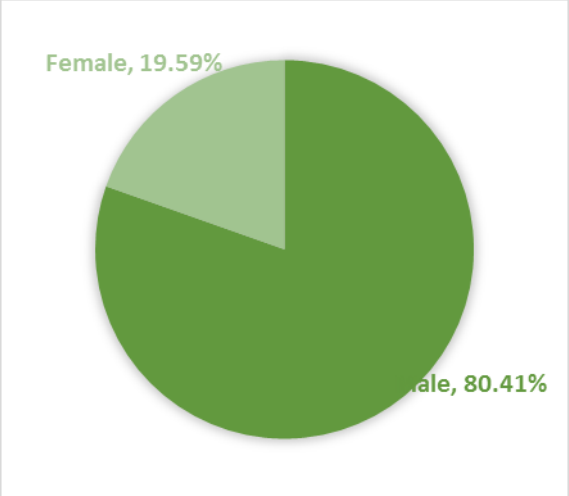

Figure S6. Prevalence of diabetes by sex.

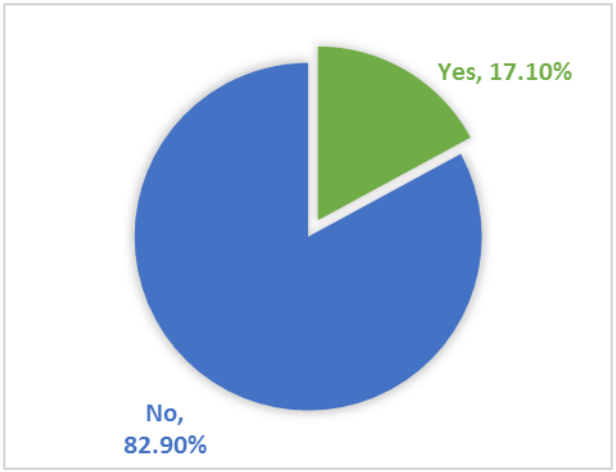

Figure S7. Prevalence of disability.

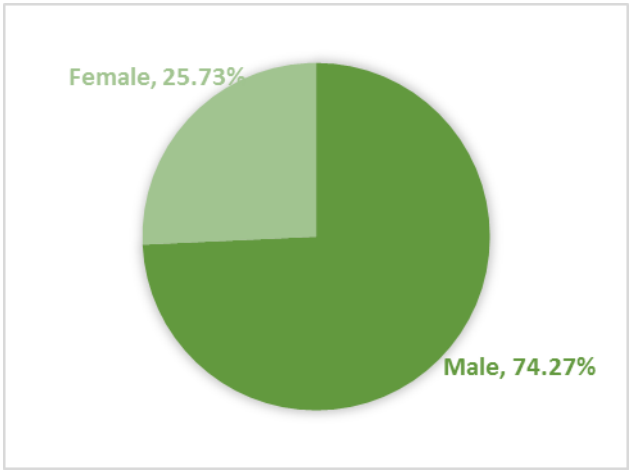

Figure S8. Prevalence of disability by sex.

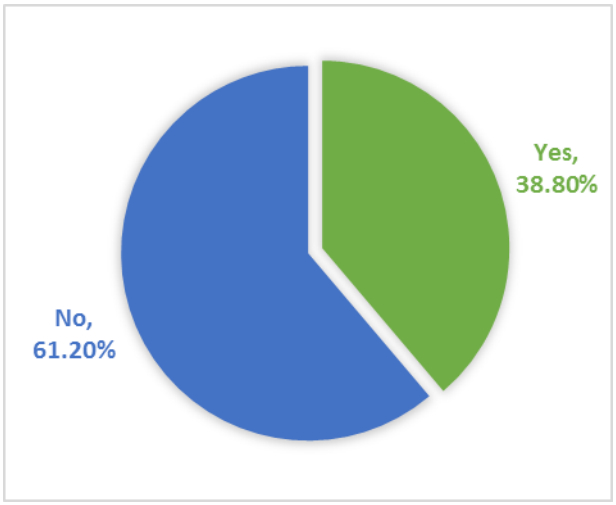

Figure S9. Prevalence of cataracts.

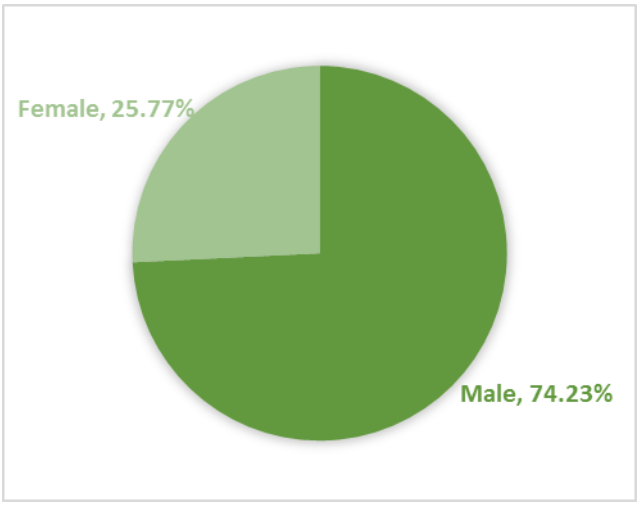

Figure S10. Prevalence of cataracts by sex.

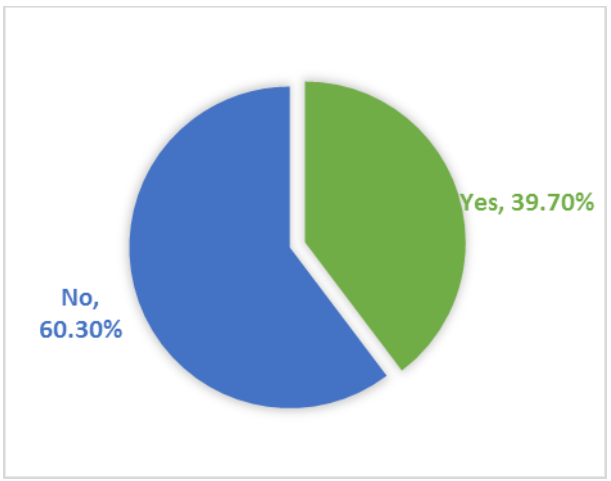

Figure S11. Prevalence of gastric.

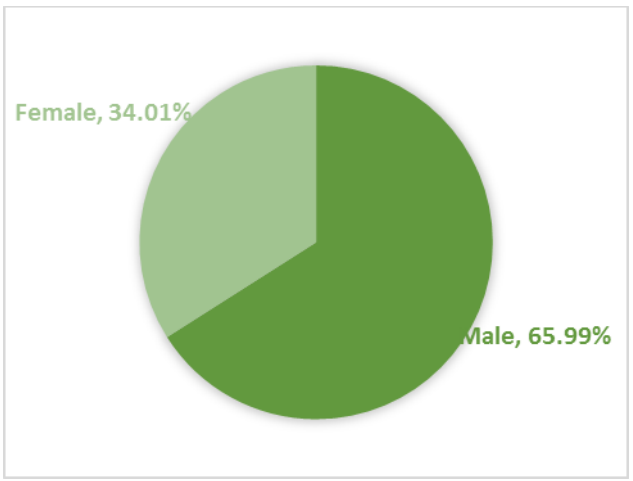

Figure S12. Prevalence of gastric by sex.

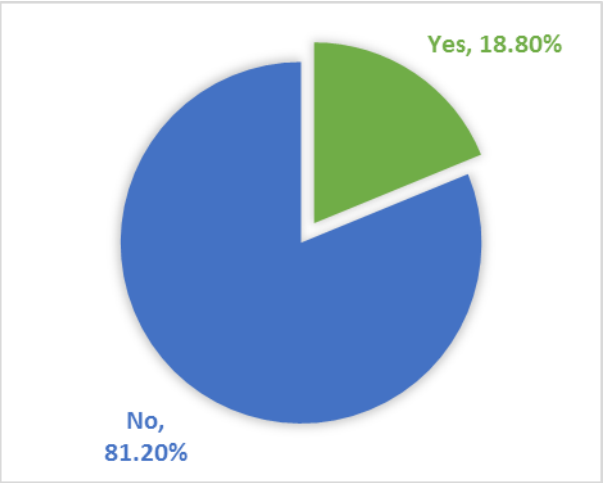

Figure S13. Prevalence of anxiety.

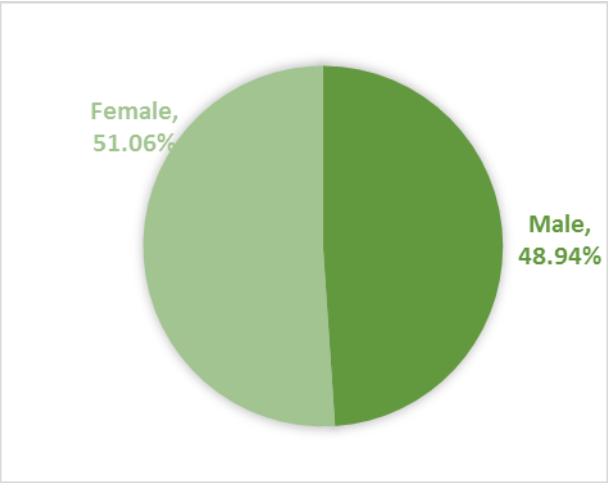

Figure S14. Prevalence of anxiety by sex.

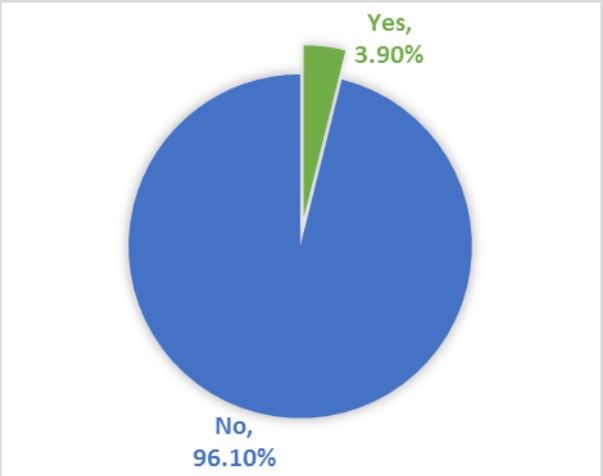

Figure S15. Prevalence of counseling.

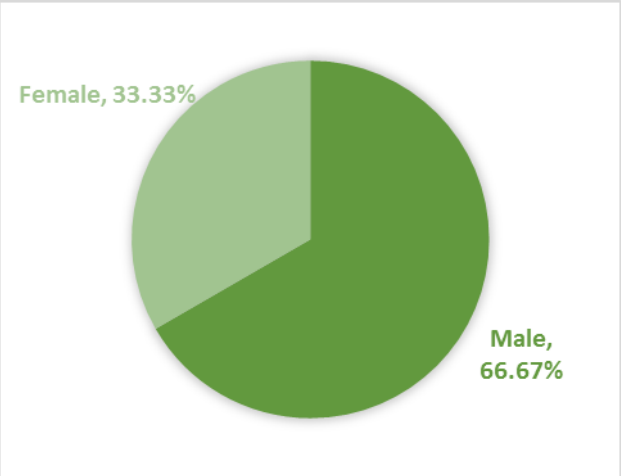

Figure S16. Prevalence of counseling by sex.

4. Discussion

In Bangladesh mostly all the elderly people live with family and care for by the family members up to their end of life. Family bonding and care system for elderly people help to a decreased health-related problem. This study found that most of the total population were male elderly. This figure is close to the proportion of elderly people of South Asia but much lower than that in western countries (Apt, 2002; Harper, 2006; Martin, 1990). Percentage of the elderly people belonging to the mid-range income group was higher when compared with other groups of elderly of this area. This indicates that the chances of survival for elderly people were higher when they belonged to the higher income group. This could be due to their overall improved quality of life and resources. This result is consistent with some recent research (Rahman, 1999). The studies also revealed the fact that nearly 68% of the elderly people had never received any formal education. The study also found that more than half of the elderly males were married (68%). This finding corroborates with other studies from South Asia (Rahman *et al*., 1992). All these features make females more vulnerable to physical as well as mental health problems compared to males and eventually have higher mortality. This study also revealed most of the elderly (72.1%) of the elderly people. A similar result was found in many recently published paper (Hurt *et al*., 2004; Menken *et al*., 2003; Monawar Hosain and Begum, 2011).

The prevalence's of risk of depression in the present study were where 16.60% of elderly residents had symptoms of mild depression; 16.6% had depression and also similar those reported in a study in the other region of Bangladesh, 44.58% among male and 55.42% among female, was observed. Depression rate is higher in tea garden older people than other residences. In ethnic elderly people, depression is lowest, among all group of elderly (bbas Uddin, 2017a, 2017b; Das, 2014; Das *et al*., 2014; Pracheth, 2016; Selim, 2010; Wahlin *et al*., 2015). The prevalence of anxiety increases with age, as there are people who begin to develop anxiety in their

youth and people who develop the condition as older adults. According to the anxiety scale applied, 18.8% of elderly persons in Sylhet were at risk of anxiety, a finding that coincides with results reported previously (Bouisson, 2002; Hersen and Van Hasselt, 1992; Palmer *et al*., 1997; Parmelee *et al*., 1993). In terms of disability found in this study, only 17.10% of elderly persons had such disability, with a higher prevalence among male, similar to findings in (Al Mahmud Titumir Jakir Hossain, 2005; Farah *et al*., 2016; Hossain *et al*., 2006; Rahman *et al*., 2018) with lower dependency among the elderly for the performance of basic activities.

5. Conclusions

Older people are the most valuable in our society. They have enough contribution to run society well. Rural people have a lack of education as well as their percentage of occurring disease is higher than other community. Also, for ethnic this situation is lower for all the diseases. Diabetes, cataracts and gastric is more common among older people than other diseases. From our common responsibility, we need to improve the health situation of elderly people, especially for rural elderly people. This study will help the government, policymakers and other organization to take the proper step to run the program so that older people can live with a healthy life.

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Conflict of interest

None to declare.

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