Self-assessed health status among ethnic elderly of tea garden workers in Bangladesh

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Abstract

The proportion of elderly has been increased gradually over the past years and this has created many causes for concerns particularly in individual's health status. Relatively little is known about health status of older ethnic group across the world. The study aims to explore the health status of ethnic elderly among Tea Garden workers in Bangladesh. A total of 229 elderly were interviewed from different tea gardens. Prevalence ratio and adjusted prevalence ratio were calculated using simple and multiple Poisson regression analysis. The study revealed that more than 90% of the elderly had suffered from multi-morbidity. Gender, age, family behavior, number of meals in a day, taking milk or milk products and taking sugar were highly associated factor to lead healthy life for elderly. Female and unemployed elderly were in more risk to suffer from multi-morbidity, illiterate were also a risk factor for multi-morbidity but effected by confounding factors. An elderly who rated himself as unhealthy was 1.75 times more risk in compare to healthy elderly. In addition, the ethnic elderly who were suffering from difficulties of seeing, getting up, standing, remembering and others disability were in more risk of suffering from multi-morbidity.

Keywords: Multi-morbidity, Ethnic Elderly, Self-rate health status

Introduction

The number of elderly population (60 years and older) is growing faster than that of younger age group in all over the world (World Population Ageing, 2017). In 2017, the number of older people was 962 million and it will be more than one billion by 2020 (UN, http://www.un.org/en/sections/issues-depth/ageing/). The growth of elderly would be 250 percent by 2050 in less developed countries (WHO, 2011). It is predicted that older population in Bangladesh would be double in 2025 from 7.8 million in 2001 (BBS, 2001). Most developing countries including Bangladesh, are least prepared to meet the challenges of societies with rapid increase in ageing population (WHO, 2004)

In old age, it is more likely to develop diseases compare to younger age population (Flores & Gillespie, 2001). The risk of multi-morbidity is high among the elderly because of age, gender, socioeconomic status and disability (Landi et al., 2009; Ali, 1999). Self-rated health status is a significant predictor of morbidity (Jylhä, 2009). In cross-sectional studies, it was found that older age, gender and socioeconomic status were associated with multi-morbidity which is also confirmed by longitude studies (Marengoni et al., 2011; Violan et al., 2014). Though a number of studies on multi-morbidity have conducted in developed countries (Van den Akker et al., 1998; Britt et al., 2008; Guralnik, 1996; Kivimäki et al., 2017; Guralnik, 1996; Glynn et al., 2011), however, relatively a few studies were conducted in developing countries of Asia (Joshi, 2003; Purty, 2006 Zhou et al., 2011; Beydoun et al., 2005; Khanam et al., 2011; Kabir et al.,2003; Ahmed et al., 2005; Srinivasan et al., 2010; Jie et al., 2013). The multi-morbidity was 21.7%, 83% and 53.8% in rural area of Chain (Zhou et al., 2011), India (Joshi, 2003) and Bangladesh (Khanam et al. 2011) respectively.

Multi-morbidity may varied among the minority populations for health disparities (McGee et al., 1996). Several studies have conducted and established that there is significant relationship between racial variation and multi-morbidity (Putt et al., 2009; Gomez et al., 2007; Tammemagi et al., 2005; Mayberry et al., 1995;).

Economic status (Tewari et al., 2009), level of education (Kinsey et al., 2008 and Albano et al., 2007), lack of health expense (Fedewa et al., 2010) and multi-morbidity (Rodriguez et al., 2007;

Calle et al., 2003) may be the causes of diseases and mortality for minority. However no research has ever been conducted in Bangladesh on health status of ethnic elderly who are minority. Here the main objective of the study is to explore multi-morbidity and health status among ethnic elderly who worked in tea garden in Bangladesh.

Methodology

Multi-morbidity

Multimorbidity is defined as presence of two or more chronic conditions in the same individual (van den Akker et al., 1996). The conditions are generally based on self-reported history and clinical records. Presence of multiple conditions is defined as the presence of two or more of the following diagnoses: Diabetes, Cataracts, Eye disease (other than cataract), Gastric/Ulcer, Heart disease, Pain in joints, Back Pain, Chest Pain, Blood Pressure, High-Cholesterol Problem, Paralysis, Allergy/Itching, Hepatitis B/C, Mental stress, Dementia, Kidney disease, Anaemia, Stroke, Depression, Cancer, Urinary incontinence, Skin disease, Neuro–disease, Respiratory problem, Parkinson's, Arthritis, Constipation, Sleeping problem, Nausea, Dental problem, Bone decay, Asthma, Other breathing difficulty, Pain on passing urine/burning sensation, and Edema.

Study Design

This study was designed as a quantitative cross-sectional study among ethnic elderly of the Sylhet division. Sylhet is the house of tea production of Bangladesh. There are 163 tea gardens in Bangladesh and among them 135 are in Sylhet Division (Muaz et al., 2010). Out of 300000 workers of tea gardens, most of them are from ethnic group in Bangladesh and suffering from health problems especially among elderly (Miah et al., 2012). Therefore, Sylhet division was selected to study the multi-morbidity among the ethnic elderly who worked in tea gardens.

Sampling Strategy

This study has covered ethnic elderly of Sylhet division. The inclusion criteria for the study sample were (i) ethnic people worked in tea garden and (ii) aged 60 years or above. A sample of 223 elderly was calculated based on considering response distribution 50% (which ensure maximum

sample size), confidence interval of 95.0%, margin of error 7% and non-response rate of 10.0%. According to sample size, the power of the test achieved 0.9.

A multistage random sampling technique was used in this community based cross sectional study. From the complete list of 135 tea garden, 14 (which is 10% of total) tea gardens in Bangladesh were selected randomly. Again, 15 elderly were interviewed from each tea garden community.

Survey Instrument

Variables for the questionnaire was developed based on previous studies on elderly people. The questionnaire covered socioeconomic information, Self-rated health status, disease record and food habit. The relevant domains were analysed for the prevalence of multi-morbidity and associated predictors of self-rated health status. The questionnaire was reviewed by experts and finalized after pilot survey.

Data Collection Procedures

Face-to-face interviews using a structured questionnaire were conducted in order to collect data from the field. Trained and skilled data collectors conducted the interviews with respondents whose participation was voluntary. Each interview usually took around 60 to 80 minutes and the field coordinator, checked and reviewed all the questionnaires on a daily basis. The data collectors described all ethical issues prior to each interview session, including the right of respondents to withdraw from the study at any time plus an outline of the benefits of the study. The interviews only took place with the written agreement of each respondent.

Ethical clearance

Say some about it…….

Data Analytical Tools

Prevalence Rate

According to National Institute of Mental Health (2017), prevalence is the proportion of a population who have a specific characteristic in a given time period.

$$\text{Prevalence} = \frac{\text{Number of people in sample with characteristic}}{\text{Total number of people in sample}}$$

Prevalence of oral diseases will be calculated based on the frequency of the diseases.

Poisson Regression

Poisson regression is a type of regression in which dependent variable is a counted observe and follows Poisson distribution (Cameron & Trivedi, 2013 and Hilbe, 2014). In Poisson regression, Poisson incidence rate (μ) is determined by a set of k regressor variables. The expression relating these quantities is

$$\mu = t\exp(\beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k)$$

Note that often, $x_1 \equiv 1$ *and* β_1 is called the intercept. The regression coefficients $\beta_1, \beta_2, ..., \beta_k$ are unknown parameters that are estimated from a set of data. Using this notation, the fundamental Poisson regression model for an observation *i* is written as

$$\Pr(Y_i = y_i \mid \mu_i, t_i) = \frac{e^{-\mu_i t_i}(\mu_i t_i)^{y_i}}{y_i!}$$

Where $\mu_i = t_i \exp(\beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k)$

That is, for a given set of values of the regressor variables, the outcome follows the Poisson distribution.

Results and Discussion

Socioeconomic and Demographic Profile of the Elderly

Table 1 presents the socioeconomic, demographic and food intake profiles of the elderly persons. It was found that 72.5% elderly person of the studied area were male. About 70% of the respondents were poor, whereas the average income of a family in a month is $43 with standard

deviation $116.08. One third of the respondent (more than 75%) was healthy or fairly healthy, according to their self-assessment. The mean age of the respondents was 66.73 years with standard deviation of 9.07 years. More than 80% of the respondents were from the young old group.

Almost 84% elderly persons took meals 3 times, however, still there were 16% elderly persons who took their meals only 2 times a day. Though 51.5% elderly persons took low intensity of salt, the 43.2% elderly persons took medium intensity of salt with their meals. One third of the elderly persons did not take sugar in their food, however about 22% persons were taking a medium or high intensity of sugar.

More than 75% of the elderly persons were avoiding milk or milk product. About 98% persons were used to using palm oil or soya bean oil in cooking. Only 25% of the respondents were engaged in exercise and 33% avoiding tobacco consumption, however, more than 55% elderly persons were consuming tobacco through a cigarette or battle leaf.

Only 6% elderly were not suffering from any disease, on the other hand, more than 90% of them were suffering from multi-morbid.

Table 1 about here

Family Support to Elderly

Support from family and friends is part of life and playing a significant role in social, psychological, and behavioral functions across the lifespan. Moreover, the supports have strong relation with morbidity and mortality (Cohen & Syme, 1985; and House, Landis, & Umberson, 1988; Holt-Lunstad, J., Smith, T. B., & Layton, J. B. 2010). Among the selected elderly people of the ethnic group, about 42% were able to bear their own expense by themselves, however 52.5% were dependent on their sons and the rest were dependent on other family members (Table 2). More than 55% of the respondents were getting care support from spouse, whereas 9.8% and 6.7% were getting care from their sons and daughters respectively. The study also reveals that about 6% of the elderly had to take care of themselves. About 51% of the elderly persons received better behave from family members, on the other hand 9% reported that they were not getting any better behaved; 40% respondents reported that they received moderate behave from family members.

Only 20% of the elderly persons were completely satisfied with the way they were spending their time and 8.5% were not satisfied with their time spending way.

Table 2 about here

Self-Rated Health Status and Associated Factors

Table 3 presents the social factors that are associated with health status. Gender and age has significance association with self-reported health status (at 1% level of significance), though according to Ahmed et al. (2005) there is no significance difference between male and female rural elderly people of Bangladesh regarding morbidity. The Behavior of family members with elderly persons was found to be associated with health status. Elderly people who usually received good behave from their family members, among them 71.3% were reported to be healthy whereas the people who received moderate or not good behave from their family members among them only 40% or less than that were healthy. Cohen (2004) and Idler & Benyamini (1997) supported that good behavior and support from family and friends have significant impact on health status.

Number of times meal intake, consuming milk or milk product and taking sugar was highly significantly associated with health status. There were only 25% healthy elderly persons who took his/her meals two times, whereas, there were 50% healthy elderly persons who took meals three times. Keller (2007) and Sharkey (2003) also found the association between low food intake and morbidity as well as mortality among the elderly. About 75% of elderly persons who had drunk milk or take milk product found to be healthy, however, less than 50% of the elderly persons who never drink milk or take milk product were healthy. The result reveals that majority of the elderly person (more than 70%) who took sugar medium or high level of sugar reported to live with unhealthy.

Table 3 about here

Multi-morbidity among Elderly

Pain in joints, Back Pain, Eye Disease, Gastric/Ulcer or Skin disease were more prevalent among Elderly People. Kabir et al. (2003) also reported that the joint pain is the most common problem among the elderly of rural Bangladesh However, High Cholesterol Problem, Neuro disease, Parkinson's, Tuberculosis, Hepatitis B/C, Bone decay, Other Breathing problem, Asthma, Kidney Disease, Anemia, Edema or Cancer were rare disease among the elderly persons as less than 5% were suffered from (Figure 1).

Figure 1 about here

Figure 2 about here

Prevalence ratio of multi-morbidity from simple and multiple Poisson regression was shown in the Table 4. It was found from that female were in more risk to suffering from multi-morbidity compare to male counterparts (PR: 1.40; 95% CI: 1.19, 1.65 and APR: 1.30; 95% CI: 1.09, 153) at 1% level of significance. It is revealed that literacy has had no significant impact on multi-morbidity after the adjusting for other covariates (PR: 0.82; 95% CI: 0.70, 0.97 and APR: 0.88, 95% CI: 0.74, 1.04). This can be interpreted as there might be confounding effect of other factor(s) between literacy and multi-morbidity. An elderly who were not involved in work found to be higher risk to have suffered from multi-morbidity (PR: 1.43; 95% CI: 1.23, 1.66 and APR: 1.27, 95% CI: 1.07, 1.49).

The respondents who rated themselves as unhealthy status are more likely to be suffered from multi-morbidity.

Table 4 about here

Substantial part of the elderly population suffers from disability and those disable parts are highly predominant for multi-morbidity (De Vries et al., 2012 and Gill et al., 2010). The elderly who were suffering from Seeing Difficulty, Hearing Difficulty, Getting up Difficulty, Standing Difficulty, Remembering Difficulty and Disability Difficulty found to be associated with higher risk of multi-morbidity as PR and its 95% CI as well as APR and its 95% CI is more than 1. Khokhar et al., (2001) and Montero-Odasso et al., (2009) also found that getting in and out are highly influential factors for multi-morbidity of elderly. Self-rated unhealthy elderly are associated with higher risk of multi-morbidity than the elderly who were in good health (PR: 1.75; 95% CI: 1.51, 2.04 and APR: 1.31; 95% CI: 1.11, 1.53). The walking difficulty and going outside difficulty highly associated factors for multi-morbidity as prevalence ratio (PR: 1.78; 95% CI: 1.54, 2.07 and PR: 1.81; 95% CI: 1.57, 2.09 respectively) is higher than 1 compare to the elderly who were not suffering from these difficulties (Khokhar et al., 2001), however, these factors may have confounding effect on multi-morbidity as the confidence interval of adjusted prevalence ratio (APR: 1.10; 95% CI: 0.84, 1.44 and APR: 1.24; 95% CI: 0.94, 1.63 respectively) contain 1. Similarly, Understanding Difficulty (PR: 1.71; 95% CI: 1.40, 2.09 and APR: 0.97; 95% CI: 0.80, 1.18) is also have confounding effect on multi-morbidity though Druss et al. (2000) stated that comorbid conditions alone associated with understanding disability.

Conclusion

Tea garden workers are contributing in the economic growth of Bangladesh as Tea is the second highest exporting product of Bangladesh. However, they are the neglected community in the society and getting almost no basic facilities especially on health. As a result, more than 90% of the elderly were suffering from multi-morbidity.

Pain in joint, Gastric/Ulcer, Back Pain, Eye Disease and Skin diseases were the most frequently found diseases among the ethnic elderly community. Consuming milk or milk product and sugar were cause of unhealthy life for elderly. Female, unemployed and unhealthy health status have high risk to suffer from multi-morbidity. Disability including difficulties of seeing, getting up, standing, remembering and others disability were also risk factors for multi-morbidity.

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Table 1: Socioeconomic and Demographic Distribution of the Respondents

Characteristics	Frequency	Percent
Gender		
Male	166	72.50
Female	63	27.50
Monthly Income Distribution		
Mean ± SD	3416.59 ($43) ± 9286.33 ($116.08) BDT	
Poor	159	69.40
Middle	48	21.00
Rich	22	9.60
Age		
Mean ± SD	66.73 ±9.07 years	
<69	144	62.90
70 – 79	60	26.20
>80	25	10.90
Health Status		
Healthy	106	46.30
Fairly Healthy	66	28.80
Moderate Unhealthy	44	19.20
Severe unhealthy	13	5.70
Meal		
2 Times	36	15.90
3 Times	191	84.10
Intensity of taking Salt with meal		
Low	117	51.50
Medium	98	43.20
High	12	5.30
Intensity of taking sugar		
No	73	32.60
Low	102	45.50
Medium	34	15.20
High	15	6.70
Milk or milk products		
Yes	55	24.00
No	174	76.00
Oil do use in cooking		
Palm oil	103	45.60
Soya bin oil	118	52.20
Rice bran oil	4	1.80
Mustard oil	1	0.40
Take Exercise		
Yes	52	24.40
No	161	75.60
Smoking or Tobacco consumption		
No	89	33.30
Cigarette	46	17.20
Battle leaf and nut	107	40.10
Others	25	9.40
Multi-morbidity		
No	14	6.1
Single morbidity	7	3.1
Multi-morbidity	208	90.8

Note: $1=BDT 80

Table 2: Support to Elderly Persons

Characteristics	Frequency	Percentage
Financial Support		
Son	117	52.5
Daughter	6	2.7
Son/Daughter in Law	2	.9
Own Self	93	41.7
Others	5	2.2
Caring Support		
Spouse	125	55.5
Son	22	9.8
Daughter	15	6.7
Son/Daughter in Law	28	12.4
Self	13	5.8
Others	22	9.8
Family Behavior		
Good	115	51.1
Moderate	90	40.0
Not Good	20	8.9
Satisfied with Time Spent		
Completely Satisfied	43	19.2
Satisfied	162	72.3
Not Satisfied	19	8.5
Multi-morbidity		
No	14	6.1
Single morbidity	7	3.1
Multi-morbidity	208	90.8

Table 3: Association of self-reported health status with Social factors and food intake

Factors		Self-reported Health status		Chi square
		Healthy	Unhealthy	
Gender	Male	136 (81.9%)	27(42.9%)	15.006***
	Female	36 (57.1%)	30(18.1%)	
Age	<=69	118(81.9%)	26(18.1%)	9.931***
	69 – 79	39 (65.0%)	21(35%)	
	More than 79	15(60.0%)	10(40.0%)	
Family Behavior	Good	82(71.3%)	33(27.7%)	30.815***
	Moderate	30(33.3%)	60(66.7%)	
	Not Good	8(40%)	12(60%)	
Meals in a day	2 times	9(25%)	27(75%)	7.78***
	3 times	96(50.3%)	95(49.7%)	
Milk or milk products	Yes	41(74.5%)	14(22.5%)	12.64***
	No	82(47.1%)	92(52.9%)	
Taking sugar	No	42(57.5%)	31(42.5%)	20.59***
	Low	52(51%)	50(49%)	
	Medium	5(14.7%)	29(85.3%)	
	High	4(26.7%	11(73.3%)	

Note: *** and ** indicate 1% and 5% level of significance respectively

Table 4: Crude and Adjusted Prevalence Ratio (PR) Based on Simple and Multiple Poisson Regression

Covariates	Categories	Simple Poisson Regression			Multiple Poisson Regression		
		PR	95% CI		APR	95% CI	
			Lower limit	Upper limit		Lower limit	Upper limit
Model I: Socio-economic variables as covariates							
Gender	Male	1.00			1.00		
	Female	1.40***	1.19	1.65	1.30***	1.09	1.53
Education	Literate	1.00			1.00		
	Illiterate	0.82**	0.70	0.97	0.88	0.74	1.04
Working Status	Employed	1.00			1.00		
	Unemployed	1.43***	1.23	1.66	1.27***	1.07	1.49
Model II: Physical Challenges are considered as covariates							
Self-rated health status	Healthy	1.00					
	Unhealthy	1.75***	1.516	2.039	1.31***	1.11	1.53
Seeing Difficulty	No	1.00			1.00		
	Yes	1.67***	1.44	1.93	1.29***	1.10	1.50
Hearing Difficulty	No	1.00			1.00		
	Yes	1.17	0.98	1.40	0.91	0.78	1.07
Getting Up Difficulty	No	1.00			1.00		
	Yes	1.79***	1.55	2.07	1.46***	1.11	1.92
Standing Difficulty	No	1.00			1.00		
	Yes	1.64***	1.41	1.91	0.74**	0.55	0.99
Walking Difficulty	No	1.00			1.00		
	Yes	1.78***	1.54	2.07	1.10	0.84	1.44
Going Outside Difficulty	No	1.00			1.00		
	Yes	1.81***	1.57	2.09	1.24	0.94	1.63
Understanding Difficulty	No	1.00			1.00		
	Yes	1.71***	1.40	2.09	0.97	0.80	1.18
Remembering Difficulty	No	1.00			1.00		
	Yes	1.91***	1.66	2.21	1.42***	1.20	1.67
Disability Difficulty	No	1.00			1.00		
	Yes	1.40***	1.16	1.69	1.22**	1.03	1.44

Note: *** & ** indicates significant at 1% and 5% respectively. Prevalence Ratio was adjusted by the other factors of Model I & II

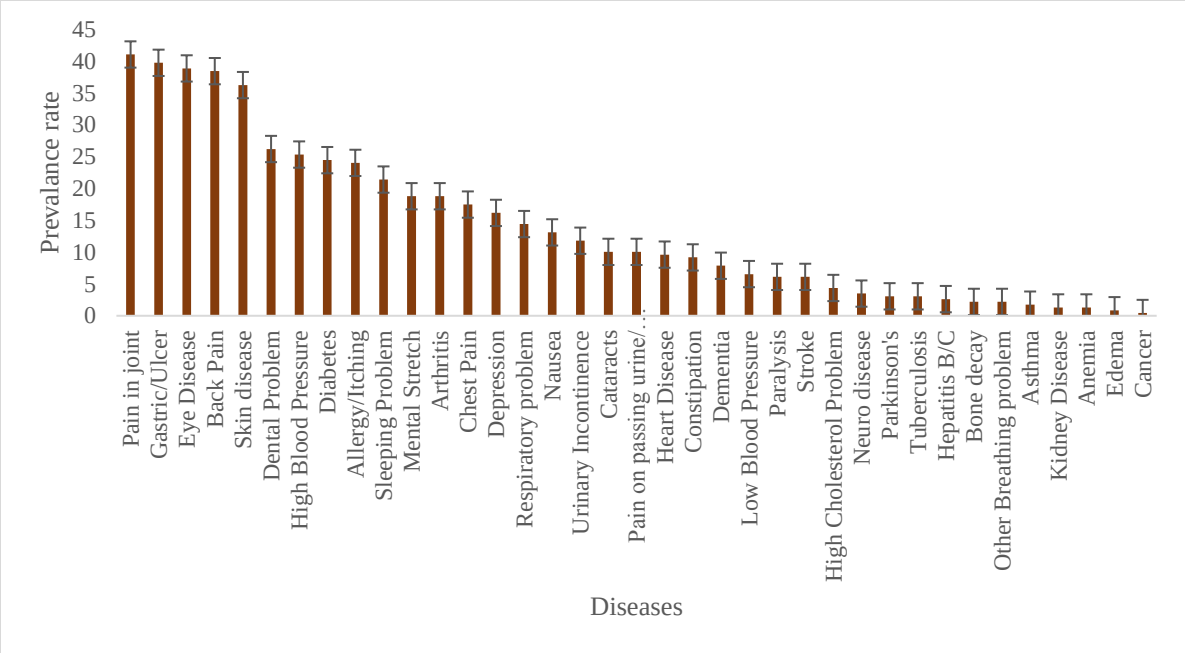

Figure 1. Prevalence rate of diseases among ethnic elderly of Bangladesh

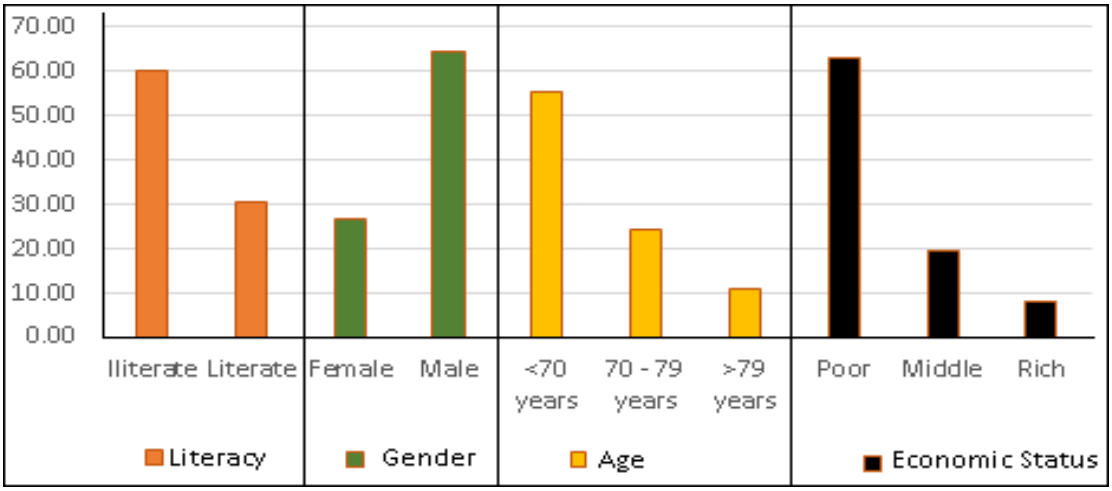

Figure 2. Multi-morbidity among the elderly by different socio-demographic factors