

Title: Healthy Life Expectancy and the Correlates of Self-rated Health for the Elderly in Rajshahi District of Bangladesh

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Abstract

In view of population size, scarcity of resources, existing poverty, insufficient health facilities and the absence of a social security system, ageing is going to be a major problem in Bangladesh. Thus, this paper examines how many years the elderly expect to be in good health, and what are the correlates of self-rated health (SRH). The data used in this study come from 896 elderly from Rajshahi district in Bangladesh and from United Nations projected population figures. Results show that individuals at age 60 expected about 41 percent of their remaining life to be in good health, while individuals at age 80 and above expected only 21 percent of their remaining life to be in good health. Having exercised during the 6 months prior to the survey was the single most important correlate of SRH: odds ratio = 5.49 (4.03-7.47) without any adjustment. While rural-urban differentials, gender inequality and some health decline in old age are inevitable, four factors (exercise behaviour, sufficiency of income, physical limitations, and facing abusive behaviour) are to a certain extent modifiable and therefore provide a potential for improvement in SRH and in healthy life expectancy in Bangladesh.

Key words: Healthy life expectancy; Self-rated health; Elderly; Bangladesh

Introduction

Health expectancy, an extension of the concept of life expectancy (LE), is a summary measure of population health that takes into account both mortality and morbidity of a population, and partitions the expected years of life at a particular age into healthy and unhealthy years (Yong and Saito 2009). In the early 1970s, Sullivan (1971) proposed a simple method for estimating life expectancy as a function of disability or health states (Robine JM and Ritchie K 1991). Life expectancy can be measured by a variety of different health dimensions, and if self-rated health (SRH) prevalence is used in the computation, the result is often called healthy life expectancy (HLE) (Yong and Saito 2009). In this paper, we used SRH prevalence to compute HLE for the study area. As an intuitive and meaningful summary measure combining length and quality of life, HLE has become a standard in the world for measuring population health (Stiefel, Perla, and Zell 2010). Moreover, HLE data are invaluable for predicting future needs, evaluating health programs and identifying trends and inequalities, and planning health and social services, long term care and pensions. To date, despite a great deal of HLE studies in developed countries, there are few such studies in developing countries, especially in Bangladesh. Therefore, measuring population health through HLE is urgently needed.

This paper proposes a simple framework (Figure 1) to define a causal relationship between LE and HLE by incorporating SRH prevalence and the factors contributing directly to SRH and indirectly to HLE. For analytic purposes, we first used SRH prevalence from survey data and life expectancy to estimate HLE, a population measure. SRH prevalence is an individual's evaluation of their health and can reflect aspects of health not captured in other single health measures. Though this evaluation of SRH is influenced by several socio-demographic and contextual factors (French et al. 2012), specifically explained by Jylhä (2009), it is a strong and independent

predictor of subsequent illness and both all-cause and specific mortality (Benjamins et al. 2004; DeSalvo et al. 2006; Idler and Benyami 1997; Lyyra et al. 2006; Miller and Wolinsky 2007; WHO 1996). We then used multivariate analysis to investigate the factors affecting SRH. In this way, we have obtained the correlates of SRH (Table 4) which might indirectly affect the HLE of the study population. Thus, we believe that improving HLE is possible through improving the correlates of SRH.

<Insert Figure 1 about here>

Though Bangladesh currently has the third largest number of poor elderly after India and China (HAI 2009), population research in Bangladesh pays relatively little attention to aging. As the elderly (60 years old and over) in Bangladesh will constitute about 10 percent of the total population by 2025-2030, effectively making Bangladesh an aging society, the country will face several challenges. Indeed, the elderly will grow in population size from 7 to 65 million this century, and their numbers will place many and varied demands on the health system (Streatfield and Karar 2008). This 'aging' shift has major implications for health as more than half of all deaths occur in this age range. Scarcity of resources, existing poverty, insufficient health facilities and the absence of a social security system in Bangladesh, moreover, will compound the problem of aging. Therefore, using HLE estimation, this paper seeks to investigate the current health status and quality of life of the elderly in Bangladesh, as well as examine the correlates of SRH. This could contribute to improving the health status as well as the HLE of the elderly and thereby help create a healthy-aged-society in Bangladesh.

Materials and Methods

Sample

Data came from a promotional research project titled, ‘Socio-demographic status of the aged population and elderly abuse: A study on rural-urban differentials in Rajshahi district, Bangladesh’ of the Social Science Research Council (SSRC), Planning Division, Ministry of Planning, of the Government of Bangladesh. The objectives, sampling design and methodologies are described elsewhere in detail (Tareque 2009). In brief, the project was a socio-economic as well as demographic study of the aged population (60 years old and over) of Rajshahi district, Bangladesh. Rajshahi is situated in the northern part of Bangladesh and has a total area of 2407.01 square km. It is one of the least developed divisional districts in Bangladesh. Two Mouzas of Yusufpur Union (namely, Baduria and Sahapur) from rural areas and Ward number 5 from an urban area of Rajshahi district were selected as study areas with probability proportion to size (in terms of households) sampling technique. All households in the selected Mouzas and Ward were enumerated, and all elderly residing in the households were interviewed during April, 2009. 896 individuals constituted the total sample size, out of which 477 came from rural areas and the rest from urban areas. To reach the goals of the project, a questionnaire was prepared and pre-tested by a pilot survey. Then, necessary corrections were made to the final version of the questionnaire. Finally, field investigators went to the homes with eligible people and asked the questions, the answers to which were then recorded on the questionnaires. To reach a 100 percent response rate, repeated visits were made. A structured interview schedule containing closed questions (except for questions related to income) was devised to collect information on the following: (i) identification of respondents, (ii) details about family members, (iii) health conditions, (iv) daily activities (v) economic activities, (vi) living arrangements and conditions, (vii) abuse, etc. For proper data collection and for the convenience of interviewees and field

investigators, a Bengali version of the questionnaire was prepared. It was subsequently converted into English for data entry and analysis.

Measures

Outcome variable

SRH is a multidimensional concept (Shooshtari, Menec, and Tate 2007), may be a better indicator of potential service use than of actual health conditions (Fillenbaum 1984). It is the most informative measure of human health status as well as a unique, valuable and most widely used single measure of human health status (Jylhä 2009). It is a deceptively simple variable that likely measures a great deal more than disease burden (Strawbridge and Wallhagen 1999). In spite of variation in the wording of the question, there is extensive evidence that SRH is a potent predictor of future survival/mortality and morbidity (Bailis, Segall, and Chipperfield 2003; Idler and Benyami 1997), functional decline (Idler, Hudson, and Leventhal 1999) and disability and utilization of health care (Bailis, Segall, and Chipperfield 2003; Goldman, Gleib, and Chang 2004). Here, it is measured based on a 5-point Likert scale to the individual question, ‘How would you describe your state of health these days? Would you say it is... a) Very good; b) Good; c) Fair; d) Poor; e) Very poor?’ This variable serves as the outcome variable where a value of 1 was assigned if the response was very good or good or fair, and 0 if the response was poor or very poor. It is important to note that a different coding scheme (i.e., poor/very poor or fair vs. good/very good) would probably result in a less sharp contrast and some attenuation in our results. This is because in the cultural context of Bangladesh, individuals, even when they are in good/very good health, are reluctant to classify themselves as being in good/very good health (because of the sense that “it might attract the attention of ‘the gods’”), and the tendency is to say that one is in fair health (Rahman and Barsky 2003). Thus, the fair health category in all

likelihood is composed of a substantial proportion of people in good/very good health, and it seems reasonable to combine the fair and the good and the very good categories, so that the dichotomy of poor/very poor versus fair/good/very good would provide the sharpest contrast.

Explanatory variables

Five age categories were created (60-64, 65-69, 70-74, 75-79, and 80 and above) for healthy life expectancy calculations and chi-square tests. Two religious categories were created (Muslim and non-Muslim) with non-Muslim including Hindu, Buddhists, Christians and others. Three educational categories were created (No education, 1-5 years as primary, and 6 years and above as secondary and above). Two marital status categories were created (married and others) with others including single individuals, widows or others. Living arrangements were measured based on responses to the question, 'Whom do you live with?' Five options were (a) alone; (b) spouse; (c) unmarried son/daughter; (d) married son/daughter; (e) others. To obtain two categories, those claiming to live alone were put in one category, while those who mentioned living with someone (options b-e) were merged into another category. Respondents' monthly incomes as well as families' monthly incomes were categorized into three groups (<3000 Bangladeshi currency Taka (BDT), between 3000 to 5999 BDT, and \geq 6000 BDT). Education and income were found to have small but significant effect on self-rated health in other studies (Markides and Martin 1979). Activities of daily living (ADL) and instrumental activities of daily living (IADL) were assessed from 7 ADL and IADL items: the ability to perform (a) dressing, (b) eating, (c) bathing/using the toilet, (d) walking, (e) shopping, (f) household work, and (g) handling money. We constructed a mixed measure of daily living activities ability, using 1 (can easily do all the activities) and 0 (have trouble with one or more activities). Physical limitations (squatting, lifting up objects weighing 5 kilograms, walking about 1 kilometer and climbing stairs of 2-3 steps) and

impairments (paralysis, blindness and deafness) were combined into one measure, with 0 (no physical limitations) and 1 (one or more limitations). Exercise in the 6 months prior to the survey was categorized into two groups with 0 if the respondent answered ‘no’ and 1 if he or she answered ‘yes’. A negative association between SRH and physical and/or sexual abuse and emotional mistreatment has been found in some studies (Amstadter 2010; Bauldry et al. 2012; Parker 2004). In this study, the question, ‘Have you ever been abused?’ was asked to the elderly to uncover the actual situation of elderly abuse. The response ‘yes’ was considered as 1 and ‘no’ as 0. Respondents’ *linking social capital* was assessed by asking whether respondents were active members of any of six types of voluntary groups (elderly groups, professional groups, vocational groups, housewives’ groups, co-operative groups, and/or voluntary groups). The rationale behind this question is that those reporting to be active members are likely to be interacting with other members, thereby creating network ties (Gele and Harsløf 2010) that help keep individuals healthy.

Computation of Healthy Life Expectancy (HLE)

To compute HLE, we used the method devised by Sullivan (1971). This method partitions total life expectancy into the different health states based on the prevalence of SRH within a representative sample at a single point in time. As SRH prevalence data came from 2009 survey data, this method required the 2009 life table for the study area. Using the UN projected population (UN 2008) for 2005 and 2010, we first estimated the 2008 and 2009 age-specific population for Bangladesh based on the exponential growth rate from 2005 and 2010. These estimates for Bangladesh were then proportioned for the Rajshahi district using the 2001 Bangladesh Population Census data to produce 2008 and 2009 population estimates for the district by age. Preston and Bennett’s (1983) method was then applied to the age distribution to

compute life tables for the study area in 2009. By combining the computed life expectancies with age-specific SRH prevalence rates obtained from the survey, we computed HLE for our study population.

Statistical Analysis

Univariate classification analysis was performed in order to find the percentage of self-reported occurrences of the background characteristics. Socio-demographic differences in having good health were assessed by Chi-square tests; the significance of all analyses was set at $p < 0.05$. Finally, 4 logistic regression models for SRH were fitted for determining the correlates that are indirectly affecting the HLE of the elderly population. Sufficiency of income alone was included in the multivariate analysis instead of three variables- respondent's monthly income (RMI), sufficiency of income (SI) and family's monthly income (FMI) because of high positive correlations among them (RMI vs. SI: 0.56; RMI vs. FMI: 0.47; SI vs. FMI: 0.33). Moreover, multicollinearity in the logistic regression analyses in our study was checked by examining the standard errors for the regression coefficients. A standard error larger than 2.0 indicates numerical problems, such as multicollinearity among the independent variables (Chan 2004). All the variables significant in Chi-square tests were included in a binary logistic regression model and the forward method was performed to identify the most significant explanatory factor for Model I first. Extensions to Model II and Model III were done in steps including less significant and theoretically relevant variables. And all the variables significant in Chi-square tests were included in Model IV. The entire analysis of the study was conducted using SPSS version 15.0 for windows (SPSS, Inc., Chicago, IL).

Results

Table 1 provides the distribution of the characteristics of the respondents of the present study. As can be seen from Table 1, the average age of the respondents was 68.37 years, and 57.9 percent were young-old (i.e., 60-69 years). More than half the elderly (54 percent) were female and 53 percent of the elderly came from rural areas. Education levels were low, with about 3 in 5 elderly illiterate. About 60 percent of the elderly remained married, and approximately 3 in 5 elderly rated their health as poor/very poor.

<Insert Table 1 about here>

Figure 2 shows the percentage of elderly reporting having poor (poor/very poor) and good (average/good/very good) health by age groups. Older individuals are generally more likely to have poor health than their younger counterparts. The proportion of respondents in good health declined from 48.2 percent to 39.4 percent between age groups 60-65 and 70 years. It continued to decline steeply to 21.3 percent for those individuals 80 years and older. It is important to note that these SRH proportions with the computed life table for Rajshahi district produced the HLE figures.

<Insert Figure 2 about here>

Table 2 shows total life expectancy, expected number of years in poor and good self-rated health with 95 percent confidence intervals and the expected proportions of life-time in good health at age 60, 65, 70, 75, and 80 and over for Rajshahi district, 2009. Life expectancy and expected life in poor and good SRH decreases as age increases. At each age, the expected life in poor health is longer than in good health. The expected life in good health declined by about half from 41.15

percent to 21.30 percent for Rajshahi's elderly between age groups 60 and 80 years and over (Figure 3). Figure 3 also reveals the proportion of life expectancy in poor health as experienced later in life.

<Insert Table 2 about here>

<Insert Figure 3 about here>

Table 3 shows the association between SRH and socio-demographic characteristics of the study respondents with Chi-square tests. The percentage of good SRH decreased significantly with increasing age. Elderly males (49 percent vs. 35 percent) and the urban elderly (50 percent vs. 34 percent) demonstrated having significantly higher percentages of good SRH. The educated and married elderly, and individuals living with someone, having safe toilet facilities, higher individual monthly incomes, higher family monthly incomes, and income sufficiency reported having good health in higher percentages than their counterparts. In addition, the elderly with daily living activities abilities, with no physical limitations, and exercising in the 6 months prior to the survey, as well as those never having been abused, having *linking social capital* and, somewhat unexpectedly, having intoxication habits reported having good SRH in significantly higher percentages than their counterparts.

<Insert Table 3 about here>

In Table 4 we used a binary logistic regression with adjustments for significantly associated variables in Chi-square to examine the predictors of SRH, focusing initially on the impact of the most significant variable. As already noted, the outcome variable is poor or very poor compared with fair or good or very good SRH. Table 4 shows that, unadjusted for any other controls, there

is a significant advantage for SRH of doing exercise: odds ratio (OR) = 5.49 (4.03-7.47) for Model I. Controlling for age, sex, and residence decreases the advantage of doing exercise, OR = 4.93 (3.56-6.82) for Model II. The advantage of doing exercise for SRH is attenuated but persists after controls for income sufficiency, physical limitations and ever abused are added: OR = 4.45 (3.20-6.19) for Model III. And, finally, the advantage of doing exercise for SRH is attenuated but persists as the most significant predictor after controls for all significantly associated variables in Chi-square are added: OR = 4.35 (3.11-6.10) for Model IV. Residence came out as the second most significant predictor of SRH. When exercise, age and sex are controlled for, rural individuals are more likely to report poor health than their urban counterparts in Model II, and the residence effect persists when several controls are added in Models III and IV. With regard to age trends, when exercise, residence and sex are controlled for, older individuals are more likely to report poor SRH in Model II, and this also persists in Models III and IV. With regard to gender, when exercise, residence and age are controlled for, male elderly are more likely to report good SRH in Model II, but the gender effect becomes insignificant when controls are added in Models III and IV. The results of the final model (Model IV) show that several different dimensions of health, such as sufficiency of income, physical limitations, and ever abused, also have significant independent impacts on SRH, while some significant variables (in Chi-square) such as educational levels, living arrangements, having safe toilet facilities, daily living activities abilities, intoxication habits and *linking social capital* become insignificant. Finally, age and gender interactions for each of these distinct SRH indicators were tested and were found not to be significant.

<Insert Table 4 about here>

Discussion

Bangladesh is now passing through the third stage of demographic transition (Bairagi and Datta 2001), where the combination of declining fertility since the late 1970s, declining mortality since the mid-twentieth century and increasing life expectancy has produced a huge youthful population and a growing number of older adults (Razzaque et al. 2010) who are more prone to non-communicable diseases. This should be a matter of concern (Streatfield and Karar 2008), because disease patterns are changing from infectious to non-infectious (Razzaque, Carmichael, and Streatfield 2009; Streatfield and Karar 2008). As a result of mortality decline during the past few decades, life expectancy has increased significantly in Bangladesh, but it is unknown whether health expectancy has improved. The study found that life expectancy and expected life in poor and good health decreased with increasing age. Individuals at age 60 expected about 41 percent of their remaining life in good health, while individuals 80 years old and above expected only 21 percent of their remaining life in good health. It is likely that this population will need more support (physical/co-residence, social and economic) as the number of older people is increasing rapidly along with an increase in chronic diseases (Razzaque et al. 2010).

In this study, age, sex, residence, educational level, marital status, living arrangements, safe toilet facilities, income, sufficiency of income, daily activities abilities, physical limitations, exercise behavior, intoxication habits, abuse status and *linking social capital* were significantly associated with SRH. Female disadvantages in SRH status is in agreement with recent studies (Rahman and Barsky 2003; Razzaque et al. 2010) indicating that older females are worse-off than their male counterparts. Health is better among the educated/married/those with daily activities ability/those with no physical limitations/ those who have never been abused/ and those with *linking social capital*. This study also found significant differences in good SRH among urban people, people

having more income than rural people, and people having less income.

Finally, the results from multivariate analyses suggest that SRH in our study population is multifaceted. This study identified exercise in the 6 months preceding the survey as the single most important determinant of SRH, as well as the most significant indirect factor affecting HLE in the study population. The effect of exercise persisted (in an attenuated fashion) even when controls were added. This is in line with the observation that adopting a healthier lifestyle, by doing more exercise and not smoking, is beneficial in old age (Ford, Spallek, and Dobson 2008). Place of residence and gender were found to be significant predictors of HLE as rural and female disadvantages (not significant when controls are added) in SRH were detected in Table 4. In developing countries, women who are totally dependent for economic livelihood upon their husbands are particularly affected when they suffer domestic abuse (Vlassoff 2007). In our sample, this female disadvantage does not vary with abusive behavior (i.e. there are no Sex \times Ever abused interactions). Age was also the correlate of SRH: a gradual deterioration in SRH was observed with the advancement of age. As in other studies (Huisman, van Lenthe, and Mackenbach 2007; Singh-Manoux et al. 2007; Zimmer et al. 2000), socioeconomic status is a strong correlate of SRH in this study: individuals with sufficient income were more likely to report good SRH. This draws our attention to the plight of the elderly, especially the poor elderly, in Bangladesh (HAI 2000). The majority of elderly people in Bangladesh can be seen as having problems in meeting their basic needs, due to lack of social security, loss of income and physical disability (Ahmed et al. 2002; Mostafa and van Ginneken 2000). Family remains the primary source of support for elderly people, and sons, especially, are expected to support their elderly parents (Kabir, Szebehely, and Tishelman 2002). But even this support is undermined by poverty (Ahmed et al. 2002). In agreement with a study (Munsur, Tareque, and Rahman 2010) that

abused elderly are more likely to report poor SRH, in this study, individuals with physical limitations and facing abusive behaviors were less likely to report good SRH than their counterparts.

Limitations

This study has a few limitations. Caution should be exercised in trying to generalize the results of this study to the whole of Bangladesh given that the sample size is limited and collected from one district, Rajshahi. Moreover, the institutionalized population was not taken into account in the computation of HLE. Also, the subjective nature of SRH, rather than the assessment of health by physician diagnoses, might introduce gender bias in the findings (Case and Paxson 2005). Some priority measures such as types and duration of physical exercise, diseases statuses, and objective measures of health have not been addressed here because of financial and time constraints. Addressing these limitations in detail in future research is vital for the making of a healthy-aged-society. To our knowledge, no one has done similar research in this area, and so this study can be considered as ground work to reduce not only the future menacing problem of aging to society but also the expected life in poor health of each individual.

Conclusions

To improve the health of the population, especially the health of the elderly, it is important to know their health status and quality of life, and this can be done by estimating HLE. The periodic calculation of HLE permits the evaluation of the impact of new health policies at a given moment, as well as the assessment of trends under changing health conditions. Health objectives can also be fixed through HLE, which is a toll for checking ‘what is occurring’ or ‘what is being done’ at present, because it makes possible a detailed evaluation of present

conditions (Robine, Michel, and Branch 1992). This paper has revealed the specific correlates of SRH that indirectly affect HLE. The factors most strongly associated with good SRH among the elderly in Bangladesh are exercise behavior, sufficiency of income, physical limitations, and facing abusive behavior. While rural-urban differentials, gender inequality and some health decline in old age is inevitable, the above four factors are to a certain extent modifiable and therefore provide a potential for improvement of SRH and HLE. Therefore, the findings of this study have policy implications in terms of assessing elderly quality of life and health intervention programs.

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Table 1: Basic characteristics by percent of elderly respondents

Variables	Mean	95% CI
Average Age	68.37	67.79-68.96
	Percentage	Numbers
Age group		
60-64	36.6	328
65-69	21.3	191
70-74	21.5	193
75-79	6.9	62
80+	13.6	122
Sex		
Male	45.9	411
Female	54.1	485
Residence		
Rural	53.2	477
Urban	46.8	419
Religion		
Muslim	96.9	868
Non-Muslim	3.1	28
Educational level		
No education	59.0	529
Primary	16.7	150
Secondary and above	24.2	217
Marital status		
Married	59.7	535
Others	40.3	361
SRH		
Poor/very poor	58.5	524
Fair/good/very good	41.5	372

Notes: CI indicates confidence interval; SRH: Self-rated health.

Table 2: Life expectancy and healthy life expectancy in Rajshahi district, 2009

Age	Life Expectancy	Expected life in poor health		Expected life in good health		Proportion in good health
	Years	Years	95 % CI	Years	95 % CI	Percent
60	15.71	9.25	(8.57-9.92)	6.46	(5.63-7.29)	41.15
65	12.60	7.85	(7.19-8.52)	4.74	(3.88-5.61)	37.66
70	11.13	7.44	(6.74-8.13)	3.69	(2.71-4.67)	33.18
75	6.80	4.93	(4.33-5.53)	1.88	(0.96-2.79)	27.58
80+	4.94	3.89	(3.48-4.29)	1.05	(0.27-1.83)	21.30

Note: CI indicates confidence interval.

Table 3: Socio-demographic characteristics and having good health among the elderly of Rajshahi district

Variables	N	Having good health, %
Age group		
60-64	328	48.2
65-69	191	48.2
70-74	193	39.4
75-79	62	32.3
80+	122	21.3
p value		<0.001
Sex		
Male	411	49.1
Female	485	35.1
p value		<0.001
Residence		
Rural	477	34.2
Urban	419	49.9
p value		<0.001
Religion		
Muslim	868	41.6
Non-Muslim	28	39.3
p value		0.808
Educational level		
No education	529	34.8
Primary	150	39.3
Secondary and above	217	59.4
p value		<0.001
Marital status		
Married	535	47.7
Others	361	32.4
p value		<0.001
Living arrangements		
Alone	64	26.6
With spouse/children/others	832	42.7
p value		0.012
Safe toilet facilities^a		
No	163	27.6
Yes	733	44.6
p value		<0.001
Work status		
No	336	39.3
Yes	560	42.9
p value		0.294

Respondent's monthly income		
BDT < 3000	655	33.3
3000 ≤ BDT < 6000	162	62.3
BDT ≥ 6000	79	67.1
p value		<0.001
Family's monthly income		
BDT < 3000	235	25.5
3000 ≤ BDT < 6000	310	43.5
BDT ≥ 6000	315	50.4
p value		<0.001
Is income sufficient		
No	821	38.7
Yes	75	72.0
p value		<0.001
Who bears family expenditures		
Max. by own/spouse	455	48.8
Max. by children	425	34.1
By others	16	31.3
p value		<0.001
Daily living activities ability		
No	24	8.3
Yes	872	42.4
p value		<0.001
Physical limitations		
No	508	49.2
Yes	388	31.4
p value		<0.000
Exercise during last 6 months preceding the survey		
No	373	19.6
Yes	523	57.2
p value		<0.000
Intoxication habit^b		
No	321	36.8
Yes	575	44.2
p value		0.031
Ever abused		
No	586	46.4
Yes	310	32.3
p value		<0.001
Linking social capital		
No	876	41.0
Yes	20	65.0
p value		0.031

Notes: p values are of Chi-square tests; ^a Respondents were asked whether or not they have sanitary toilets and safe materials such as hand rails, no water on the toilet floor, toilet slippers, etc; ^bIntoxication habits include consumption of tobacco such as bidi/cigarette, betel leaf, ganja, tari- a kind of home-made wine; Bidi consists of sun-dried and cured tobacco flakes hand-rolled in a rectangular piece of paper or tobacco leaf. BDT: Bangladeshi currency- Taka.

Table 4: Odds ratios for good versus poor SRH in Rajshahi district

Variables	Model I		Model II		Model III		Model IV	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Exercise during last 6 months preceding the survey								
No®								
Yes	5.49*	4.03-7.47	4.93*	3.56-6.82	4.45*	3.20-6.19	4.35*	3.11-6.10
Residence								
Urban®								
Rural			0.46*	0.34-0.62	0.55*	0.39-0.77	0.54*	0.37-0.79
Age								
			0.96*	0.94-0.98	0.97*	0.95-0.99	0.97‡	0.95-0.99
Sex								
Female®								
Male			1.44†	1.07-1.95	ns		ns	
Sufficiency of income								
Sufficient					1.93†	1.06-3.52	2.10†	1.11-3.99
Not sufficient®								
Physical limitations								
No®								
Yes					0.68†	0.49-0.96	0.70†	0.50-0.99
Ever abused								
No®								
Yes					0.68†	0.48-0.96	0.67†	0.46-0.99

Notes: ® indicates reference category; OR means odds ratios; Model IV is adjusted for the effects of all significant variables in Table 3 ($p < 0.05$); CI indicates confidence interval; Level of significance: * < 0.001 ; ‡ < 0.01 ; † < 0.05 ; ns indicates not statistically significant.

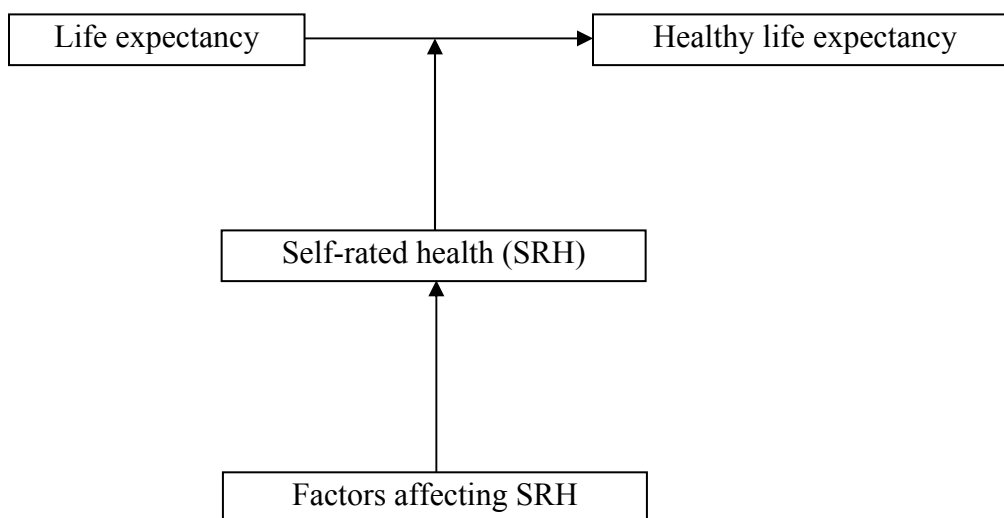


Figure 1: Indirect correlates of healthy life expectancy

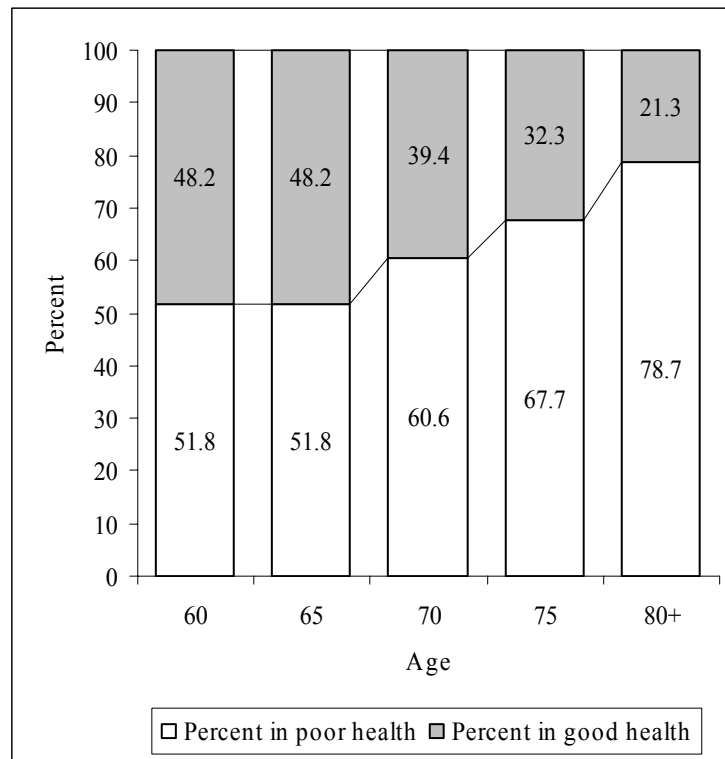


Figure 2: Reported percentage of having poor and good health by age groups

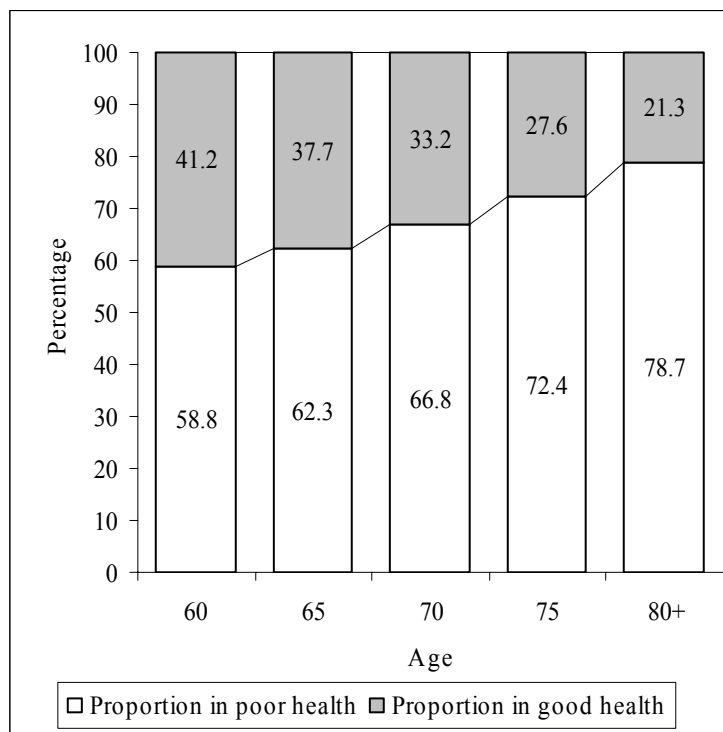


Figure 3: Proportion of life expectancy in poor and good health by age groups