Determinants of Poor Self-rated Health among Adults in Mozambique[1]

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Abstract

Self-rated health is a measure expressing the general condition of health of individuals. Self-rated health studies are common in developed countries and in some developing regions. Despite increasing proportion of adult and older population in sub-Saharan Africa and poor population health indicators, there is a dearth of studies on self-rated health in the region. Using a population survey, we employ logistic regression to examine factors associated with poor self-rated health among individuals aged 40 years or more in Maputo metropolitan area in Mozambique. We find that about 53% of respondents aged 40 years or more believe that their health status is poor. Results also point to the importance of gender, marital status, health conditions, health believes and community health problems as key determinants of poor self-rated health.

Introduction

Self-rated health is a measure expressing the general condition of health of individuals (Mayu, Takashi and Satoshi, 2012) and it has been recommended by the World Health Organization as an indicator to verify the health status of older individuals (Campos et al., 2015). Self-rated health studies are common in developed countries (e.g., Idler and Benyamini, 1997; Ferraro and Kelley-Moore, 2001; Latham and Peek, 2013) and in some developing countries (e.g., Sapag et al., 2008; Hurtado, Kawachi and Sudarsky, 2011; Hirve et al., 2012; Singh et al., 2013; Ardington and Gesealahwe, 2014; Corburn and Hildebrand, 2015). Research on self-rated health in developed countries finds that self-rated health predicts functional decline (e.g., Idler, Russell and Davis, 2000), chronic health disorders (e.g., Manor, Matthews and Power, 2001; Latham and Peek, 2013) and mortality (e.g., Benyamini et al., 2003; Lee et al., 2007).

According to Nair (2014), sub-Saharan Africa is the region of the world where the number of people aged 60 years or more is growing rapidly. The number of people aged 60 years or more in sub-Saharan Africa was estimated in 34 million in 2005 and it is projected that in 2030 it will be over 67 million (Nair, 2014). Despite increasing proportion of adult and older

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population in sub-Saharan Africa (PRB, 2015) and poor population health indicators (WHO, 2015), there is a dearth of studies on self-rated health in the region. Although there are some studies on self-rated health in sub-Saharan Africa (e.g., Debpuur et al., 2010; Avogo, 2013; Nyirenda et al., 2013; Gómez-Olivé et al., 2014; Arokiasamy et al., 2015; Corburn and Hildebrand, 2015) there is still a limited understanding of the determinants of poor self-rated health among adults and older people in the region. We contribute for filling this gap by examining factors associated with poor self-rated health among adults in Maputo metropolitan area in Mozambique.

In particular, we investigate the role of demographic and socioeconomic factors, individual health behaviors and self-reported health conditions, individuals' perceptions of factors contributing to own good health and individuals' perceptions of community main health problems. Like most other countries of sub-Saharan Africa, Mozambique is a country with a growing size of older population especially in urban areas (INE, 2010) and poor health indicators (WHO, 2015), which makes it a best place to study determinants of poor self-rated health. Identifying key factors that increase the risk of poor health among adults and older people may be useful for designing appropriate interventions for improving the health of this population group.

Background

Studies of self-rated health in developing countries and particularly in sub-Saharan Africa are scarce. Therefore, our understanding of the determinants of poor self-rated health in sub-Saharan area is still limited. Numerous previous studies in developed countries and a few in developing countries have suggested possible correlates of poor self-rated health. Considering the age of individuals, previous studies have indicated that older persons are more likely to report poor self-rated health compared to younger ones (Hosseinpoor et al., 2012; Ardington and Gesealahwe, 2014). Most studies also find that women are more likely to report poor self-rated health than men (Hosseinpoor et al., 2012; Ardington and Gesealahwe, 2014). As for the connection between marital status and self-rated poor health some studies suggested that divorced, separated or widowed were more likely to report poor health than never married individuals (Hosseinpoor et al., 2012). Also studies in developed countries reported that those separated, divorced or widowed displayed poor self-rated health compared to married individuals (Liu and Umberson, 2008).

With respect to the role of education, studies typically find that those with more years of education tend to report better self-rated health compared to those with lower years of education (Chola and Alaba, 2013; Ardington and Gesealahwe, 2014). A link between employment and self-rated health has also been suggested. For example, Cramm and Nieboer (2011) in a study in South Africa noted that unemployment contributed for poor self-rated health. Also, Hosseinpoor et al. (2012) reported that those in paid employment enjoyed better health than their counterpart. Furthermore, studies in developed countries have suggested that holding high prestigious job was associated with lower odds of reporting poor self-rated health (Fujishiro, Xu and Gong, 2010). Household sanitation and household size in developing countries also appear to be important correlates of self-rated health. For example, a study in Kenya found that the majority of those from households using public flush toilet, pit latrines and those from households having unreliable access to water reported poor self-rated health (Corburn and Hildebrand, 2015). Also Wandera et al. (2015) suggested that those living alone were more likely to report poor health compared to those who were not.

Connections between health behaviors, health conditions and self-rated health also have been suggested. Studies in developed countries indicated that physically inactive individuals (Molarius et al., 2006; Darviri et al., 2012) underweight and obese people (Molarius et al., 2006) displayed a high risk of having poor self-rated health than their counterpart. Also, previous studies found that individuals who report having health conditions were more likely to report poor self-rated health than those who did not (Ardington and Gesealahwe, 2014; Arokiasamy et al., 2015). For example, Wandera et al. (2015) in a study in Uganda indicated that older persons with self-assessed non-communicable diseases (heart disease, hypertension or diabetes) and self-reported disability were more likely to report poor health than their pairs.

There is also a possibility that individuals' perceptions of community health problems may be associated with poor self-rated health. For example, if an individual's perception of a given community health problem stems from the fact that the referred community health problem is prevalent in the community, there could be an association between such community health problem with the individual's poor self-rated health. This idea finds support from many authors who have argued that community health circumstances (e.g., prevalence of crime, environmental sanitation and general hygiene in neighborhoods) may have effects on health outcomes (e.g., Robert, 1999; Yabiku et al., 2009; Macintyre, Ellaway and Cummins, 2002;

Corburn and Hildebrand, 2015). For example, Robert (1999:493-494) argued that "…fear of crime can indirectly affect health by increasing stress, promoting social isolation, preventing the health promoting practices of walking for exercise, and preventing access to services for those fearful of travelling freely in the community." These crime-related circumstances could ultimately contribute for poor self-rated health. It is also possible that perceptions of community health conditions (e.g., perceptions of prevalence of malaria, HIV/AIDS or people with hypertension) could be connected with poor self-rated health. For example, at individual level, Kyobutungi et al. (2009) in a study in Kenya suggested that HIV-affected older people showed poor self-rated health compared to their counterpart.

Data and Methods

This study uses data from the "Health Barometer: Individual and Community Health Promoting Practices in Maputo City" project. This project is being carried out by the Center for Population and Health Research [*Centro de Pesquisa em População e Saúde* – CEPSA] in Maputo, Mozambique. The purpose of the research project was to examine individual and community health promoting knowledge, attitudes and practices and to assess public perceptions about accessibility and quality of health services provided by the National Health System in Maputo metropolitan area. Data was collected in March 2015. The sample of the study was probabilistic and representative of the population of continental Maputo metropolitan area (excluding Ka Tembe and Ka Nyaka island).

The sampling for this study was based on the Mozambique's 2007 Census sample frame for Maputo City. The sample was selected in three stages. First, 50 enumeration areas (neighborhoods) were randomly selected within 7 municipalities of Maputo metropolitan area. Second, in each enumeration area, 22 households were randomly selected from the list of all households in the enumeration area. Finally, in each of the selected households, one female and one male individual were selected for interview if the household possessed 2 or more adult individuals. If the selected households possessed only one adult individual (female or male), the interview was held with the existing adult individual in the household. Overall, the study collected data on 1768 individuals aged 18 years or more in Maputo metropolitan area. The study collected data on several topics including on sociodemographic characteristics of respondents, characteristics of respondents' households, perceptions of respondents about health care services, perceptions of respondents about their own health and

the health status of neighborhoods of their residence. The present study uses a subsample of 581 female and male respondents aged 40 years or more.

Measures

Respondents were asked to indicate the status of their own health at the time of the interview. Possible responses could be "excellent", "very good", "good", "fair", "bad" and "very bad". Answers to the question were used to create a measure of self-rated health with two categories – good health (good, very good or excellent) versus poor health (fair, bad or very bad). This is the main outcome variable. Our predictor variables of interest attempt to measure (i) demographic and socioeconomic factors, (ii) individuals' health behaviors and health condition, (iii) individuals' perceptions about factors contributing to own good health, and (iv) individuals' perceptions about main community health problems.

The demographic and socioeconomic factors considered are individuals' age, sex, marital status, education, type of occupation, type of toilet used in the household, whether or not the respondent's household treats drinking water, whether or not the respondent's household owns a car and the household family size. Age has three categories: 40-49 years, 50-59 years and 60 years or more – the reference. Sex has two categories – female and male (reference). Marital status categories are single, divorced or separated, widow and married or in union, which is the reference. Education of the respondent was divided into no education, primary education, and secondary education or more (reference). Respondent's occupation type has seven categories: domestic work, professional work (reference), business work, small sells work, art work, student or unemployed, and other occupation. The type of toilet used in the household has four categories which are: flush toilet (reference), non-flush toilet, improved latrine, non-improved latrine or no latrine in the residence. Whether or not the respondent's household treats drinking water has two categories – drinks treated water (e.g., boiled water, mineral water, filtered water or treated water) and does not drink treated water (reference). Household's ownership of a car has two categories – owns a car (reference) and does not own a car. Household size is a continuous variable indicating the total number of people in the household.

To measure individuals' health behaviors we considered perceived body weight (a proxy for individual behaviors), practice of physical activity, smoking, alcohol consumption. For getting perceived-weight, respondents were asked to say how they consider their weight to

be, taking into account their age and height. Categories of perceived body weight were high or overweight (reference), normal weight and low weight. With respect to physical activity, respondents were asked whether their work involves intensive physical activity that causes an increase in frequency of the heart beat for at least continuous 10 minutes. This variable has two categories which are: yes or no (reference). Respondent's smoking status has two categories – yes or no (reference). Respondent's alcohol consumption has four categories, which are: no alcohol (reference), monthly or less, 2-4 times per month, 2 times or more per week. To measure perceived health condition respondents were asked to compare their current health status with their health status one year before the survey and say whether it improved, remains the same or worsened. Perceived health condition has three categories which are: health improved (reference), remains the same and worsened.

To get individuals' perceptions about factors contributing for own good health respondents were asked to say, in their opinion, three most important factors that contribute for having good health. Based on answers to this question six variables were created which are: practicing physical activity – yes or no (reference); practicing hygiene – yes or no (reference); alcohol – yes or no (reference); mental wellbeing – yes or no (reference); having job – yes or no (reference) and, individual's socioeconomic status – yes or no (reference). Respondents were also asked to name three main health problems in their community. Answers to this question were used to create ten variables measuring perceived main community health problems which are: sanitation problem (yes vs. no – reference); alcohol consumption (yes vs. no – reference); tobacco consumption (yes vs. no – reference); drugs' consumption (yes vs. no – reference); crime (yes vs. no – reference); road accidents (yes vs. no – reference); respiratory problems (yes vs. no – reference); hypertension or heart problems (yes vs. no – reference); HIV/AIDS problem (yes vs. no – reference), and malaria, tuberculosis or diarrhea problem (yes vs. no –reference). Table 1 shows descriptive statistics of the study sample.

[Table 1 about here]

Statistical Analysis

Data was prepared and analyzed using Stata version 11 (StataCorp, 2009). Our models were estimated using binary logistic regression. Model 1 examines effects of demographic and socioeconomic factors. Model 2 assesses effects of individuals' health behaviors and health condition. Model 3 adds demographic and socioeconomic factors as controls. Model 4

examines effects of individuals' perceptions about factors contributing to own good health. It is followed by Model 5, which includes demographic and socioeconomic predictors. Model 6 estimates effects of individuals' perceptions about main community health problems. Model 7 adds demographic and socioeconomic factors. Model 8 is a full model assessing effects of all predictors considered in the present study.

Preliminary Results

Of the 581 respondents in the sample, 53% believed that their health status was poor (fair, bad or very bad), 50% were female, almost a three quarters were married or in union, 22% had no education and only 29% believed that their health status had improved since a year ago (Table 1). Table 2 presents logistic regression results of determinants of poor self-rated health among adults in Maputo metropolitan area. The results are shown as Odds Ratio. Model 1 has demographic and socioeconomic factors as predictors. The results in Model 1 show that poor self-rated health significantly increases with age. Compared to men, women are over 3 times more likely to report poor self-rated health ($p.<0.01$). Relative to married or in union individuals, those who are single, widow, separated or divorced significantly display worse self-rated health. Model 1 also shows that individuals with primary education are almost 2 times more likely to report poor self-rated health than those with secondary education or more. It also shows that those engaged in small sells' activities and those from households treating drinking water significantly have better self-reported health than their references.

[Table 2 about here]

Model 2 assesses effects of individuals' health behaviors and health condition on poor self-reported health. The results suggest that those whose work involves physical activity are about 42% less likely to report poor self-rated health than their pairs [Odds Ratio (OR) = 0.58, $p. <0.01$]. Furthermore, perceptions of own health condition are significantly associated with poor self-rated health. Individuals who think that compared to the status of health one year before the survey, their current health status remains the same are nearly 2 times more likely to report poor health than those whose health status has improved. In addition, those thinking that their health status has worsened are almost 10 times more likely to have poor self-rated health than the reference group. Model 3 controls for demographic and socioeconomic factors and it finds that the association observed in Model 2 remains strong.

Model 4 examines association between individuals' perceptions about factors contributing to own good health and poor self-report health. It finds that individuals who believe that practicing physical activity contributes for good health are about 46% less likely to report poor self-rated health than those who do not. It also finds that those who believe that socioeconomic status is important display better self-reported health than their counterpart (OR=0.65, p. <0.1). When adding demographic and socioeconomic factors in Model 5, we find that only believing that practicing physical activity is important for own health remains significantly associated with poor self-rated health. Model 6 assesses effects of perceptions about main community health problems on poor self-rated health. Surprisingly, the results suggest that believing that crime is main community health problem is negatively associated with report of poor self-rated health. The results also show that the odds of reporting poor self-rated health for individuals who believe that hypertension or heart problem is the main community health problem are 76% higher than the reference group. Model 7 adds demographic and socioeconomic factors. The result about the effect of perception of crime in the community remains strong and the magnitude and significance of the result about the effect of perceptions of hypertension or heart problem as the main community health problem diminishes.

Model 8 examines the effect of all determinants of poor self-rated health considered in this study. Model 8 shows that being woman, widow, separated or divorced, considering own health status as having worsened or remaining the same compared to a year ago, and believing that hypertension or heart problem is the main community health problem is significantly associated with reporting poor self-assed health net of other factors. Model 8 also suggests that individuals engaged in domestic work, business work, small sells, those from household treating drinking water, those whose work involves intensive physical activity and those believing that practicing physical activity is good for own health are significantly less likely to report poor self-rated health adjusting for other factors.

The analysis we presented in this study point to the importance of gender, marital status, individuals' health conditions, health believes and community health problems as key determinants of poor self-rated health. Given the growing number of adult and older people in sub-Saharan Africa (Nair, 2014; PRB, 2015) and the rising importance of non-communicable diseases such as stroke and diabetes in the region (IHME, 2013) more studies that may lead to a better understanding of determinants of poor self-rated health among adults

in sub-Saharan Africa are still needed. Our study attempted to contribute for filling the gap of knowledge on this important population health issue in sub-Saharan Africa.

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Table 1. Descriptive Statistics of the study sample (percent unless indicated), Health Barometer, Maputo Metropolitan Area, Mozambique, 2015

Variable	Percent
Poor Self-rated Health	
No	46.9
Yes	53.1
Demographic and Socioeconomic Factors	
Age	
40-49	44.8
50-59	35.3
60 or more	19.9
Sex	
Male	49.6
Woman	50.4
Marital Status	
Married or in union	73.9
Single	2.3
Separated or divorced	10.5
Widow	13.4
Education	
No education	22.4
Primary	47.1
Secondary or more	30.5
Type of Occupation	
Professional work	30.1
Domestic work	14.7
Business work	17.0
Small sells	10.4
Art work	7.5
Unemployed or student	7.0
Other occupation	13.3
Type of Toilet	
Flush toilet	32.9
Non-flush toilet	36.9
Improved latrine	22.6
Non-improved latrine or no latrine in the residence	7.6
Drinking water treatment	
Does not treat	70.3
Treats	29.7
Household car ownership	
Does not own a car	72.2
Owns a car	27.8
Family size (mean, standard error in parenthesis)	6.0 (0.12)
Health Behaviors and Health Condition	
Perception about own body weight	
High or overweight	28.7
Normal	56.5
Low body weight	14.9
Work involves intensive physical activity	
No	71.3
Yes	28.7
Smoking status	
No	90.4
Yes	9.7
Alcohol consumption	
No alcohol	48.7
Monthly or less	25.5
2-4 times per month	14.8
2 times or more per week	11.1
Health Condition	
Improved	29.3
Remains the same	53.7
Worsened	17.0

Table 1 Continued.

Variable	Percent
Perceptions of Factors Contributing to Own Good Health	
Practicing physical activity	
No	76.5
Yes	23.6
Practicing hygiene	
No	87.1
Yes	12.9
Alcohol consumption	
No	82.6
Yes	17.4
Mental wellbeing	
No	82.1
Yes	17.9
Having job	
No	81.7
Yes	18.3
Individuals' socioeconomic status	
No	81.9
Yes	18.1
Perceptions about Community Main Health Problems	
Sanitation problem	
No	90.8
Yes	9.2
Alcohol consumption	
No	49.3
Yes	50.7
Tobacco consumption	
No	90.3
Yes	9.8
Drugs' consumption	
No	91.2
Yes	8.8
Crime	
No	95.1
Yes	5.0
Road accidents	
No	95.4
Yes	4.6
Respiratory problems	
No	87.0
Yes	13.0
Hypertension or heart problem	
No	57.7
Yes	42.3
HIV/AIDS problem	
No	60.5
Yes	39.5
Malaria, tuberculosis or diarrhea	
No	57.5
Yes	42.5
N	581

Table 2. Logistic regression results of determinants of poor self-rated health among adults, Health Barometer, Maputo Metropolitan Area, Mozambique, 2015 (Odds Ratio)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Demographic and Socioeconomic Factors								
Age								
60 or more (reference)	1		1		1		1	1
40-49	0.49*		0.60		0.50*		0.49	0.64
50-59	0.55*		0.59+		0.56*		0.58+	0.63
Sex								
Male (reference)	1		1		1		1	1
Woman	3.24**		4.11**		3.08**		3.31**	4.11**
Marital Status								
Married or in union (reference)	1		1		1		1	1
Single	3.53+		2.70		3.78*		4.39*	3.41
Separated or divorced	1.85+		1.72		1.90+		2.01*	1.88+
Widow	2.11*		1.95*		2.23*		2.19*	2.12*
Education								
Secondary or more (reference)	1		1		1		1	1
No education	1.03		0.68		1.03		0.99	0.62
Primary	1.99*		1.71+		1.93*		1.91*	1.58
Type of Occupation								
Professional work (reference)	1		1		1		1	1
Domestic work	0.54+		0.51+		0.52+		0.53+	0.46+
Business work	0.68		0.55+		0.69		0.65	0.50*
Small sells	0.21**		0.18**		0.20**		0.20**	0.15**
Art work	0.82		0.89		0.84		0.85	0.93
Unemployed or student	1.04		0.91		1.01		0.99	0.81
Other occupation	1.05		1.04		1.00		1.02	0.96
Type of Toilet								
Flush toilet (reference)	1		1		1		1	1
Non-flush toilet	1.11		1.13		1.16		1.04	1.12
Improved latrine	0.66		0.63		0.69		0.63	0.63
Non-improved latrine or no latrine in the residence	1.04		1.15		1.03		0.99	1.07
Drinking water treatment								
Does not treat (reference)	1		1		1		1	1
Treats	0.44**		0.49**		0.46**		0.46**	0.53*
Household car ownership								
Does not own a car (reference)	1		1		1		1	1
Owns a car	0.99		1.03		1.06		0.95	1.09
Family size	1.02		1.00		1.02		1.02	1.00
Health Behaviors and Health Condition								
Perception about own body weight								
High or overweight (reference)		1	1					1
Normal		1.07	1.28					1.26
Low body weight		0.97	1.15					1.14
Work involves intensive physical activity								
No (reference)		1	1					1
Yes		0.58*	0.60*					0.58*
Smoking status								
No (reference)		1	1					1
Yes		0.73	0.80					0.87
Alcohol consumption								
No alcohol (reference)		1	1					1
Monthly or less		0.96	1.04					1.09
2-4 times per month		0.90	1.20					1.21
2 times or more per week		0.71	1.15					1.03
Health Condition								
Improved (reference)		1	1					1
Remains the same		1.72*	1.74*					1.69*
Worsened		9.92**	12.00**					12.53**

Table 2 Continued.

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Perceptions of Factors Contributing to Own Good Health								
Practicing physical activity								
No (reference)				1	1			1
Yes				0.54**	0.61*			0.59*
Practicing hygiene								
No (reference)				1	1			1
Yes				0.75	0.91			0.81
Alcohol consumption								
No (reference)				1	1			1
Yes				1.03	0.92			0.88
Mental wellbeing								
No (reference)				1	1			1
Yes				0.98	1.00			0.96
Having job								
No (reference)				1	1			1
Yes				0.65+	0.80			0.79
Individuals' socioeconomic status								
No (reference)				1	1			1
Yes				1.10	1.18			1.03
Perceptions about Community Main Health Problems								
Sanitation problem								
No (reference)						1	1	1
Yes						1.17	1.26	1.43
Alcohol consumption								
No (reference)						1	1	1
Yes						1.00	1.03	1.03
Tobacco consumption								
No (reference)						1	1	1
Yes						1.02	0.92	0.93
Drugs' consumption								
No (reference)						1	1	1
Yes						1.24	1.05	0.94
Crime								
No (reference)						1	1	1
Yes						0.43*	0.34*	0.44
Road accidents								
No (reference)						1	1	1
Yes						0.83	0.77	0.91
Respiratory problems								
No (reference)						1	1	1
Yes						0.64	0.70	0.66
Hypertension or heart problem								
No (reference)						1	1	1
Yes						1.76**	1.58+	1.89*
HIV/AIDS problem								
No (reference)						1	1	1
Yes						1.35	1.27	1.30
Malaria, tuberculosis or diarrhea								
No (reference)						1	1	1
Yes						1.09	1.02	1.13
Model Chi-Square	77.45**	48.10**	123.36**	10.92+	80.26**	15.27	83.43**	134.92**
N	581	581	581	581	581	581	581	581

Notes: †- $p<0.1$; *- $p\leq 0.05$; **- $p\leq 0.01$.