The strain of the double burden of disease and poverty: The influence of risky healthy lifestyle behaviours

Abstract

In the midst of increasing prevalence of the risk factors of chronic disease conditions in the Global South, intervention programs are geared towards promoting healthy lifestyle behaviour (HLB) to curb the trends of morbidity and mortality. This paper examines HLB among Ghanaian adults from a healthy lifestyle perspective. Of interest are how these behaviours have changed and the determinants in the phase of health policy change. Nationally representative surveys; Ghana 2003 World Health Survey and 2008 Demographic and Health Survey were analyzed using descriptive, bivariate and multivariate analytical frameworks. Ghanaian adults are living risky lifestyles now than before with 2.5% more in 2008 reporting worst HLB than in 2003. Females continue to have worst HLB and HLB worsens with increasing age and advancement in education. This trend will expose more Ghanaian adults to chronic diseases and the resultant double burden of disease will push more people into poverty.

Keywords: Ghanaian adult: risky behaviour: regenerative health and nutrition: morbidity: mortality

INTRODUCTION

Lifestyle behaviours including healthy diets, physical activity, smoking and alcohol consumption impact on the overall health of individuals. Kruger et al. (2005) report that factors such as consumption of fruits and vegetables and physical activity are correlated with overweight and obesity in adults. Urbanisation, globalisation and nutritional transition are major drivers of unhealthy lifestyle behaviours in the Global South (Candib 2007; Popkin and Gordon-Larsen 2004; Popkin, 1997). Many countries in the Global South are going through stages of the

nutritional transition where famine has receded and there is now an abundance of refined carbohydrates and foods high in fats and salts but low in fibre (Popkin and Gordon-Larsen, 2004; Popkin, 1997). Lifestyle behaviours, particularly dietary practices and physical inactivity, are the major risk factors for obesity and overweight (Steyn and Damasceno, 2006). Chitson (1994) identifies lifestyle factors including smoking, poor dietary habits, obesity and low levels of physical activity as major risk factors for chronic non-communicable diseases, but also points out hereditary factors such as diabetes mellitus.

Obesity is a major risk factor for chronic non-communicable diseases and is also linked to urbanization, modernization, growing affluence and changing lifestyles (sedentary occupations and consumption of a wider array of foods). Research in Ghana indicates that the prevalence of obesity is increasing especially among women (Dake et al 2010). The rising prevalence of obesity in Ghana is worrying because epidemiological studies have consistently shown an increased risk of morbidity, disability and mortality with obesity (Agyemang et al. 2008).

Ghana like many countries in the Global South are at the stage of the epidemiological and nutritional transition characterised by increasing prevalence of chronic non-communicable diseases and co-existence of communicable diseases resulting in the double burden of diseases (Prentice, 2006; Agyei-Mensah and de-Graft Aikins 2010). Based on results from a nationally representative survey (World Health Survey 2003), Tagoe 2010 reports that in Ghana, about 18% of the respondents indicated they had been diagnosed with one or more chronic non-communicable disease with 45% of them currently receiving treatment.

Estimates by the WHO suggest that up to 80% of premature deaths from heart disease, stroke and diabetes can be averted with known behavioural and pharmaceutical interventions (WHO

2005). Rapid urbanisation and globalisation is accompanied by behavioural change which exposes many individuals to the risk of chronic non-communicable diseases and mortality. Regenerative health and nutrition as a health policy in Ghana was aimed at averting the increasing prevalence of behavioural risk factors associated with chronic non-communicable diseases and it resultant high disease fatality in the country. The paper assesses the trend and the socio-demographic and economic determinants of healthy lifestyle behaviours among Ghanaian adults and also highlights the implication of such behaviour on morbidity and mortality in the country. The authors hope this paper will generate a new research agenda and also bring to bear the health policy challenges risky health behaviour pose to developing countries.

The relationship between risky healthy lifestyle behaviour and morbidity and mortality are presented at the beginning of the paper to put the paper in context. This is followed by introduction and description of data, variable measurements, and methods and complete with results and discussion.

Risky behaviour and morbidity and mortality

The progressive increase in the burden of chronic non-communicable diseases has been attributed to several factors including longer average lifespan, tobacco use, decreasing physical activity, and increasing consumption of unhealthy foods (Daar *et al* 2007). Lifestyle behaviours are the greater determinants of risk factors such as high blood pressure, diets high in saturated fat, leading to elevated serum cholesterol levels, and physical inactivity (Howson 1998 and Reddy 1998). While age, sex and genetic susceptibility are non-modifiable; many of the risks associated with age and sex are modifiable. Such risks include behavioural factors (e.g. diet,

physical inactivity, tobacco use, alcohol consumption); biological factors (e.g. dyslipidemia, hypertension, overweight, hyperinsulinaemia); and finally societal factors, which include a complex mixture of interacting socioeconomic, cultural and other environmental parameters (WHO 2003 and Grundy *et al.* 2005).

However, tobacco use, altered diets and diminished physical activity due to globalization and urbanization are critical factors contributing to the acceleration of non-communicable diseases especially cardiovascular diseases, (Reddy 2002). According to the Archives of Internal Medicine (1997), the prevention of hypertension by means of dietary salt reduction and weight loss has been successfully accomplished, over a short term, in clinical trials. It has been identified that diets high in fruits, vegetables, and low-fat dairy products are extremely effective in lowering blood pressure, again, in the short term (Appel 1997).

Many countries in the Global South have initiated and implemented many health intervention programmes and policies to improve the health status of the population. However, most of these interventions have not yielded the expected results due to the risky health behaviour among the population. For example, Ghana has seen a progressive improvement in the estimates of life expectancy at birth between 2004 and 2010 (Table 1). However, the percent change over the period has seen a decline indicating a marginal increase resulting in the relatively stalling pattern of life expectancy at birth around 59-60 years.

.....Table 1: Ghana life expectancy at birth between 2003 and 2010.....

There is evidence indicating that the prevalence of lifestyle diseases (chronic non-communicable diseases) such as stroke, hypertension, type 2 diabetes, and cardiovascular diseases are on the increase and are appearing in the top ten in-patient cause of death in Ghana (Bonsu 2007). The

increase in the incidence and the prevalence of these disease conditions are directly linked to risky healthy lifestyle behaviour.

DATA AND METHODS

This paper triangulates two national representative surveys in Ghana – the World Health Survey conducted by the WHO in 2003 and the Demographic and Health Survey (DHS) conducted in 2008. The WHS and DHS comprise two parallel surveys; the household and the individual surveys. The WHS interviewed 4,965 adult 18 years and older while the DHS interviewed adults in their reproductive ages (female 15-49 and male 15-59 years) made up of 4,916 females and 4,568 males. Both surveys collected information on healthy lifestyle behaviour including physical activity, smoking, alcohol consumption, and also on fruit, and vegetable consumption.

Variables for this paper were drawn from the individual surveys and analyzed with descriptive, bivariate and multivariate analytical frameworks. Individual socio-demographic and economic status such as age, educational attainment, marital status, occupation, type of place of residence, and income quintile were explored to assess how it predicts healthy lifestyle behaviour using linear regression modelling. An index computed based on the health related behaviours was used as the dependent variable.

The components of the healthy lifestyle behaviour are (i) physical activities, i.e. if respondent engaged in any vigorous physical activity that lasted more than 10 minutes in the last seven days and the number of days respondent engaged in such activities in the last seven day. (ii) Smoking – this is a multiple response variable and was computed based on whether respondent engaged in at least one of the following: smoked cigarettes, used chewed tobacco, used cigars or used any

other tobacco substance in the last seven days preceding the survey. (iii) Alcohol – respondent consumed at least one standard measure of alcoholic beverage in the last seven days preceding the survey (iv) Fruit and vegetables – the amount of fruit and vegetables servings respondents' consumed in a day on average.

For each healthy behaviour considered, a point of zero was assigned to a response indicating negative behaviour. Example, for smoking, if respondent report smoking in the last seven days, zero was assigned if not one. Consumed alcoholic beverage zero, if not one. At the bivariate stage of analysis, the dependent variable was categorized into low risk corresponding to an index of 7 and above, moderate risk (an index between 3 and 6) and high risk an index of 2 and below. The lower and upper limits of the index was zero (0) and ten (10) respectively.

A major limitation to the study has to do with the age bracket for respondents from the different datasets. While the WHS focused on all adults aged 18 years and older, the DHS concentrated on adults in their reproductive age – female 15-49 and male 15-59. To address the differences in age brackets, the intersect of the respondents' age in both datasets was taken limiting respondents to adults aged 18-49 years. Also, all other measurements of variables used were categorized to allow for cross survey comparison.

RESULTS

Description of sample population

The analysis indicates that the mean age of the sampled population for this study was relatively higher in 2003 (32.29 years) compared to 30.84 years in 2008. Also, 54.3% of the respondents were female, three in five were rural residents, with a little over a quarter (27.5%) not married and 18% not employed at the time of the survey. With regards to education, about 27% had no

formal education with the rest having at least primary education. The sample distribution in 2008 indicates that more than half of the respondents were females (55%), approximately 44% were in urban settings and about 24% had no formal education. A third had never been married and 16% were not employed at the time of the survey.

Risky Healthy Lifestyle Behaviour

The analysis indicates that in 2003, approximately 7% of Ghanaian adults reported high risk HLB and 16.5% reported low risk HLB (Table 2). Females and urban residents had high risky HLB than their male and rural counterparts respectively. Educational attainment and income quintile exhibited a direct relationship with risky HLB. As educational attainment and income quintile improves, the proportion of Ghanaian adult reporting risky HLB increases. Adults in the population who engaged in sedentary types of employment (professional, managerial and clerical) had the worst HLB with a little over 1 in 10 of them having high risk HLB.

..... Table 2: Percentage distributions of socio-demographic characteristics of respondents by healthy lifestyle behaviour

In 2008, 9.3% of the respondents reported high risk HLB, representing 36 percentage points increase over that of 2003. Rural females and urban males reported the worst HLB - 11% and 9.3% respectively as indicated in Table 3 and 4. There was no significant difference in the distribution of risky HLB in terms of age, however, high risk HLB increased with advancing age for both females and males in 2008. High risk HLB had increased among both currently married/cohabiting and formally married men and women, with formally married individuals reporting the worst HLB in 2008. Individuals with no formal education are living high risk HLB now than before. While in 2003 approximately 5% of individuals with no formal education had high risk HLB, the proportions have increased in 2008 to 13% and 11% for females and males

respectively. The proportion of individuals with higher education living a high risk HLB decreased from 11.1% to 7.7% for females and 9.7% for males in 2008 (see Tables 2,3 and 4). In the same direction, the proportion of individuals with no formal education with low risk HLB decreased from 20.2% in 2003 to 9.6% for females and 14.1% for males. This gives an average of 11.9% for both sexes in 2008.

.....Table 3: Percentage distributions of socio-demographic characteristics of female respondents by healthy lifestyle behaviour

.....Table 4: Percentage distributions of socio-demographic characteristics of male respondents by healthy lifestyle behaviour

The trend of risky HLB among occupational groups has changed with women employed in plant/machine operation and elementary work and agricultural and fishery reporting relatively high risk HLB in 2008 than they did in 2003. In the case of men, high risk HLB was reported among those employed in sedentary occupation (professional/managerial/clerical) and as well as those in service and sales. Males in the richest income quintile reported high risk HLB currently as well as in 2003, while, women in the poorest income quintile currently report the worst HLB.

Determinants of risky healthy lifestyle behaviour

Multivariate analysis revealed that in 2003 (Table 5), being female was associated with a 0.733 reduction in HLB compared to being male. Compared to being in the 18-19 age-group being in the 40-49 age-group was associated with a 0.358 reduction in HLB. The results revealed an inverse relationship between increasing level of education and having a low risk HLB such that as level of education improved, respondents had a reduced HLB. The analysis also revealed that being in rural setting was associated with a 0.113 decline in HLB.

....Table 5: Logistic regression predicting risky health lifestyle behaviour among Ghanaians adult (2003 and 2008)

In 2008, while being an urban male was associated with a 0.253 increase in HLB (Table 5), being an urban female was associated with a 0.012 decline in HLB. The current situation in terms of marital status indicates that adults who were formally married (females and males alike) are associated with relatively high decline in HLB compared to currently married adults. There is a direct relationship between female education and HLB. As female education improves, there is an increase in HLB, however, for male respondents; it is higher educational attainment that is associated with positive HLB (Table 5).

DISCUSSION

This article examines the trend in healthy lifestyle behaviour in the midst of the regenerative health and nutrition health policy and the implication on morbidity and mortality on the adult population. Risky lifestyle behaviour such as low physical activities, smoking, consumption of alcohol and foods high in fat has been linked to chronic non-communicable disease (WHO 2003). The increasing prevalence of chronic non-communicable diseases in the Global South has resulted in the double burden of disease characterised by co-morbidities of both infectious and non-communicable disease conditions. This has significant impact on life expectancy at birth in many countries in the Global South including Ghana in spite of the many health interventions initiated in these countries.

Prior to the introduction of the regenerative health and nutrition program (i.e. in 2003) Ghanaian adults who had some level of education were less likely to live low risk lifestyles but more likely to live high risk lifestyles. The association between education and professional employment is such that people who have higher levels of education usually also have professional

employments. Such professional employments are directly linked to sedentary lifestyle with decreased physical activity and rest. However, the significant decline in risky HLB among highly educated and professional workers in 2008 after the introduction of the regenerative health and nutrition health policy in Ghana brings to the fore the issue of access to regenerative health and nutrition information. The relatively high income of professional employees gives them the opportunity to access the appropriate nutrition in terms of fruit and vegetables recommended under the programme. Having high education also means they are an audience who can be reached with the messages of the program. They are thus likely to change their behaviour since they have heard the messages.

The seemly sustained improvement in life expectancy at birth in developing countries like Ghana does not commensurate the level in health policy intervention. The epidemiology of most countries in the Global South is characterised by increasing prevalence of chronic non-communicable diseases attributed mainly to risky healthy lifestyle behaviour. Even though statistics indicates that malaria still remains the number one health problem reported in health facilities across the country, chronic disease conditions such as stroke and hypertension are now among the top ten in-patient causes of death (Bonsu 2007).

Our finding reveals an increase in risky healthy lifestyle behaviour among Ghanaian adults with an increase of 2.5% in 2008 over that of 2003. While more women continue to live high risky lifestyle behaviours, education and wealth had significant influence on healthy lifestyle behaviour. Age and marital status now exhibit statistically significant association with healthy lifestyle behaviour. The continuation of this trend will push more individuals and households under the strain of double burden of disease. The resultant is a high burden of disease and poverty. Health interventions that will help curb the increasing risky healthy lifestyle behaviour

are pivotal in having a positive impact on the health status of the population in the areas of morbidity and mortality. These findings provide the leverage for further assessment of the regenerative health and nutrition health initiative on healthy lifestyle behaviour and its influence on morbidity and mortality. This would foster its adoption in other countries in the Global South.

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TABLES

Table 1: Ghana life expectancy at birth between 2003 and 2010

Year	Life expectancy at birth	Rank	Percent change	Date of information
2003	56.5	179		2003 est.
2004	56.0	181	-0.94 %	2004 est.
2005	58.5	181	4.41 %	2005 est.
2006	58.9	181	0.68 %	2006 est.
2007	59.1	176	0.42 %	2007 est.
2008	59.5	178	0.63 %	2008 est.
2009	59.9	182	0.61 %	2009 est.
2010	60.1	183	0.42 %	2009 est.

Source: CIA World Factbook, 2010

Table 2: Percentage distributions of socio-demographic characteristics of respondents by healthy lifestyle behaviour

Socio-demographic and economic characteristics	Healthy lifestyle behaviour		
	High risk	Moderate risk	Low risk
Sex* **			
Female	8.1	81.6	10.3
Male	5.3	70.8	23.9
Type of place of residence* **			
Urban	7.6	80.3	12.1
Rural	6.3	74.3	19.4
Age group			
18-19	4.8	77.4	17.7
20-29	7.0	76.8	16.2
30-39	7.0	76.1	17.0
40-49	7.0	77.2	15.9
Marital status			
Never married	6.8	76.9	16.4
Currently married/cohabiting	6.9	75.7	17.4
Formally married	6.8	82.2	11.0
Highest level of educational attainment* **			
No formal education	4.7	75.1	20.2
Primary	7.2	77.0	15.6
Secondary	9.6	77.1	13.3
Higher	11.1	82.7	6.2
Main occupation* **			
Not working	8.3	78.0	13.7
Professional/managerial/clerical	10.9	80.1	9.0
Service and sales	9.9	78.6	11.5
Agricultural and fishery	4.6	73.4	22.0
Plant/machine operators and elementary work	2.8	81.5	15.7
Income quintile* **			
Poorest	6.0	73.0	21.0
Poorest	4.4	77.4	18.2
Middle	6.0	74.3	19.6
Rich	7.8	77.6	14.6
Richest	10.3	78.4	11.3
Total	**6.8**	**76.7**	**16.5**

*** $p < 0.001$ Source: Generated from the WHS, Ghana 2003

Table 3: Percentage distributions of socio-demographic characteristics of female respondents by healthy lifestyle behaviour

Socio-demographic and economic characteristics	Healthy lifestyle behaviour		
	High risk	Moderate risk	Low risk
Type of place of residence* **			
Urban	7.6	84.7	7.8
Rural	11.0	80.3	8.7
Age group **			
18-19	5.9	89.2	8.0
20-29	8.0	84.3	7.7
30-39	10.7	80	9.3
40-49	12.1	79.8	8.2
Marital status*			
Never married	6.7	84.2	9.2
Currently married/cohabiting	10.1	82.0	8.0
Formally married	11.5	79.6	8.9
Highest level of educational attainment* **			
No formal education	13.0	77.5	9.6
Primary	11.4	80.9	7.7
Secondary	6.8	85.5	7.8
Higher	7.7	82.9	9.4
Main occupation* **			
Not working	9.1	84.5	6.5
Professional/managerial/clerical	5.3	87.1	7.6
Service and sales	7.7	84.6	7.7
Agricultural and fishery	11.5	78.3	10.2
Plant/machine operators and elementary work	13.8	77.6	8.6
Income quintile* **			
Poorest	15.6	74.1	10.2
Poorest	9.0	83.3	7.7
Middle	5.9	87.2	7.0
Rich	6.9	85.0	8.1
Richest	9.1	82.7	8.2
Total	**9.5**	**82.2**	**8.3**

*p<0.05 **p<0.01 ***p<0.001

Source: Generated from female dataset of Ghana DHS 2008

Table 4: Percentage distributions of socio-demographic characteristics of male respondents by healthy lifestyle behaviour

Socio-demographic and economic characteristics	Healthy lifestyle behaviour		
	High risk	Moderate risk	Low risk
Type of place of residence**			
Urban	9.3	77.3	13.5
Rural	8.8	81.8	9.4
Age group***			
18-19	4.1	82.3	13.7
20-29	7.4	82.0	10.7
30-39	10.3	78.0	11.7
40-49	12.6	77.5	9.9
Marital status***			
Never married	5.2	83.2	11.6
Currently married/cohabiting	11.5	77.5	11.0
Formally married	12.2	79.5	8.3
Highest level of educational attainment**			
No formal education	11.0	74.9	14.1
Primary	8.1	82.7	9.3
Secondary	8.5	81.2	10.2
Higher	9.7	76.4	13.9
Main occupation			
Not working	6.6	80.7	12.7
Professional/managerial/clerical	12.0	77.0	11.0
Service and sales	9.7	78.5	11.7
Agricultural and fishery	8.9	80.8	10.3
Plant/machine operators and elementary work	8.0	80.4	11.6
Income quintile			
Poorest	9.5	78.9	11.6
Poorest	7.3	82.1	10.5
Middle	8.7	82.7	8.7
Rich	9.0	80.2	10.8
Richest	10.3	76.2	13.5
Total	**9.0**	**79.8**	**11.1**

*p<0.05 **p<0.01 ***p<0.001

Source: Generated from male dataset of Ghana DHS 2008

Table 5: Logistic regression predicting risky health lifestyle behaviour among Ghanaians adult (2003 and 2008)

Socio-demographic variables	2003		2008 (female)		2008 (male)	
	B	Sig.	B	Sig.	B	Sig.
Sex of respondent						
Male◙						
Female	-.733	.000				
Type of place of residence						
Rural◙						
Urban	-.113	.115	-.012	.840	.253	.000
Age						
18-19◙						
20-29	-.190	.144	-.114	.178	-.269	.004
30-39	-.270	.059	-.061	.522	-.330	.003
40-49	-.358	.017	-.086	.391	-.479	.000
Marital status						
Never married◙						
Married/cohabiting	.050	.552	-.190	.004	-.203	.007
Formally married	-.044	.721	-.226	.017	-.341	.013
Highest level of educational attainment						
No formal education◙						
Primary education	-.292	.000	.043	.512	-.145	.114
Secondary education	-.388	.001	.170	.006	-.146	.075
Higher education	-.594	.001	.409	.004	.059	.637
Main occupation						
Not working◙						
Professional	-.248	.051	.142	.242	-.199	.047
Sales/services	.020	.840	.278	.000	-.081	.463
Agriculture/fishery	.444	.000	.450	.000	.049	.611
Plant/machine operators and elementary work	.266	.032	.060	.503	.003	.975
Income quintile						
Poorest◙						
Poor	.095	.283	.217	.002	.088	.287
Middle	.149	.101	.240	.002	-.103	.285
Rich	-.047	.624	.211	.017	-.103	.332
Richest	-.016	.885	.038	.694	-.220	.061
Constant	5.545	.000	4.113	.000	5.113	.000

◙= Reference category Source: Generated from Ghana WHS 2003 and GDHS 2008