

HOUSEHOLD BURDEN OF CHRONIC DISEASES IN GHANA

H. A. TAGOE

Regional Institute for Population Studies, University of Ghana, Legon

Corresponding Author: Henry Armah Tagoe

Email: niihenry@gmail.com

Conflict of Interest: None declared

SUMMARY

Background: This paper assesses the burden of non-fatal chronic non-communicable diseases on households in the midst of a paradigm change in Ghana's health policy that shifts healthcare costs to persons and households.

Method: Using data on 4,121 households from the World Health Survey for Ghana 2003, measures of direct and indirect burden of chronic diseases at the household level are constructed and assessed using bivariate and multivariate analyses.

Result: About 18% of the respondents indicated they had been diagnosed with one or more NCDs with 45% of them currently receiving treatment. About 11% of the respondents currently receiving treatment are living with more than one NCD condition, 7 in 10 of whom belong to households in the middle and higher income quintiles. Female respondents are more likely to report having NCDs, and the odds that a respondent would currently have NCDs increases with age and household income quintile. Mean healthcare expenditure for households with respondent currently living with NCDs is 49% higher than households with healthier respondents.

Conclusion: The relatively high direct cost of illness among households with person(s) living with NCDs and the associated high indirect burden of illness places undue stress on households. Research requires better measurement of the indirect burden with focus on the household. These findings suggest the necessity of interventions at the national and community levels that focus on households providing care and support to persons living with NCDs.

Keywords: Household disease burden, chronic disease, burden of disease, Ghana.

INTRODUCTION

Chronic non-communicable diseases (NCDs) are reaching epidemic proportions, even in developing countries with high prevalence of infectious diseases. According to the 2001 World Health Report,¹ NCDs accounted for almost 60% of deaths and 46% of the global burden of diseases in 1998. It is projected that by 2020 NCDs will account for 80% of the global

burden of disease, causing seven out of every ten deaths in developing countries.² About 77% of the total mortality and 85% of the total burden of disease in low and middle-income countries are attributable to NCDs.³ Substantial economic losses in developing economies are due to the reduced productivity caused by NCDs.⁴

Improved economic conditions and rapid urbanization are key demographic factors that underpin the growing public health importance of NCDs in the developing world. In Ghana, the proportion of the population living in urban communities increased from 29% to 44% between 1984 and 2000. During this period the prevalence of NCDs increased. Prevalence of risk factors such as hypertension and obesity also increased. Among adult Ghanaian women, the prevalence of overweight and obesity increased from 10% to 25% between 1993 and 2003.⁵ At the health facility level stroke, hypertension, diabetes and cancer were among the top ten causes of death in 2003.⁶

Ghana's health policy changes since the 1990s have produced a health system that compounds the burden of living with NCDs. In 1992, user-fees were instituted in all public health facilities, resulting in a reduction in subsidies on all health services in the country.^{7,8} Drugs and pharmaceuticals were also priced at full cost. Ghana has no national policies for NCDs.⁹ The current National Health Insurance Scheme (NHIS) does not cover all NCDs. Crucially, the introduction of the NHIS reduced the percentage of the Ghanaian government's budget spent on health by 39% in 2003¹⁰ (the year of the survey) and increased household health care costs, exacerbating the country's existing level of household health inequality.

Research on the burden of disease at the household level is limited. This restricts our understanding of the multifaceted burden of NCDs and the formulation of policies and strategic programmes that can reduce the impact of disease on individuals and households. Bridging this gap requires the use of more appropriate models that allows for estimation of both direct and indirect costs of illness, including at minimum, the cost of treatment and disease management, the illness experience and all its psychosocial dimensions.

This paper presents results of a study that assessed the direct and indirect burden of chronic diseases in Ghana. This paper is guided by two perspectives -- the cost-of-illness (COI) approach¹¹ and “biographical disruption”.¹² The cost-of-illness approach measures costs associated with ill-health and can be categorised into direct (medical costs), indirect (the concomitant loss of functional capabilities), and intangible (pain and suffering) costs.

Bury’s (1982) concept of ‘biographical disruption’ refers to disruptions that illness cause to the physical body and the life trajectory of the sufferer.¹² A person’s inability to perform everyday tasks including self-care creates psychological strain, which can lead to social isolation.¹³ But individuals are members of households, and households are organized in a way that aggregate both contributions and needs across members. Households that include people with chronic illness must rebalance contributions to account for illness-related changes in employment, and redistribute resources relative to increased needs of members with NCDs.

METHODS

Data are drawn from the World Health Survey (WHS) a multi-country survey implemented in 70 countries including Ghana conducted by the World Health Organisation (WHO). Stratified sampling was used to sample 5,662 households from all ten administrative regions. The WHS comprises two parallel surveys, household and individual surveys. One person (aged 18 years or older) per household selected randomly using the Kish table method was interviewed

Variables used were from both surveys. Information on household healthcare expenditure in the last four weeks preceding the survey, household member in institution of care due to ill-health, and household member needing home-based care were used to assess indirect burden of disease. Socio-demographic characteristics of respondents were explored to assess how it predicts NCD status. Respondents were classified as currently living with NCDs if they received treatment, medication or any therapy during the two weeks preceding the survey for a NCD condition. The health cost component was computed from household healthcare expenditures for the four weeks preceding the survey.

There are two measures of the household burden of chronic disease. The first measures direct cost including cost of health care services including cost of treatment and use of other health care services and products. Analysis of Variance (ANOVA) was used to assess differentials in mean household healthcare

expenditure between households with respondents currently living with and those with respondents not living with NCDs using F-tests statistics. Indirect burden of disease is referenced by the inability of the respondent currently living with NCDs to take up employment due to his or her health. A second indicator of indirect healthcare costs is whether a member of the household needs care and support at home due to ill-health.

RESULT

Respondents background characteristics

A total of 683 (17.6%) of the 3,873 respondents, self reported having ever been diagnosed with at least one NCD condition including arthritis, angina, asthma, diabetes, depression and schizophrenia. Respondents currently living with NCDs numbered 306, representing 8% of all respondents and about 45% of respondents ever diagnosed with NCDs. Majority (62%) of the respondents currently living with NCDs were women. Approximately 58% of respondents with NCDs lived in rural settings. The most frequently mentioned NCD was arthritis (52%) followed by angina (23%), asthma (18%), diabetes (9%), schizophrenia (6%), and depression (4%). Over two-thirds of the respondents currently living with NCDs had middle to upper level household incomes.

Table 1 reports descriptive statistic on key variables by NCD status. Women, those who are not married, and those not working were more likely to report NCDs. Proportions of respondents with an NCD increased with age and household income. Neither the education gradient nor the urban-rural distinction yielded significant differences in NCD status.

Table 2 reports coefficient estimates from a binary logistic regression predicting NCD status and allows us to determine the net effects of these demographic characteristics on the probability of reporting an NCD. Results are generally consistent with the differences noted in Table 1. Women, respondents aged 40 or older, non-employed, and those in higher income households were more likely to report an NCD

Direct burden of disease on the household

Of the 3,563 households in the survey, 647 households (approximately 19%) did not incur healthcare cost. Among households that reported healthcare expenses, mean household health expenditure was GH¢ 11.09, with a median of GH¢3.50 and maximum of GH¢500.00. (Computation was based on household healthcare expenditure in the last four weeks preceding the survey. National minimum daily wage 2003 = GH¢ 0.92. Bank of Ghana exchange rate as at December 2003: GH¢1=US\$0.8845).

There was a significant difference in the mean household healthcare expenditure between household with respondent having NCD(s) (GH¢13.09) and household with healthier respondents (GH¢8.76) representing a 49% higher cost with a p-value (0.007). Comparing median household healthcare expenditure revealed that half of households with respondents reporting an NCD spent more than GH¢3.83, whereas half the households with non-diagnosed respondents spent less than GH¢2.00, which is only 52% of the former value. This indicates a significant direct burden of illness on households with respondents reporting NCD(s) as healthcare expenditure is higher among this category of households.

Indirect burden of chronic disease and psychosocial support

Health conditions restrict the ability of people to engage in economic activity. In situations where institutionalisation or home-based care is required both the infected and affected persons are significantly burdened. Households with respondents currently living with NCDs and who were not working was about 59% higher than households with healthier respondents. Eleven percent of the respondents attributed their unemployment status to their health. These individuals had to depend on others, especially household members, friends and social groups, to support treatment and management of disease conditions and also care and support at home. The dependency on these groups is necessary because there are limited alternative support networks for Ghanaians living with NCDs, especially in rural areas.¹³

Table 1: Summary table of background characteristics of respondents by NCDs status

Background characteristics	NCDs status		P-value
	No NCD (n=3,502)	NCD (n=306)	
Sex			0.008
Female	90.9	9.1	
Male	93.2	6.8	
Type of place of residence			0.234
Urban	91.3	8.7	
Rural	92.4	7.6	
Age group			0.000
>20	97.8	2.2	
20-39	95.5	4.5	
40-59	90.2	9.8	
60 and above	83.4	16.6	
Marital status			0.000
Never married	95.7	4.3	
Currently married/co-habiting	92.1	7.9	
Separated/divorced/widowed	87.5	12.5	
Highest level of education attained			0.272
No formal education	91.1	8.9	
Primary	92.1	7.9	
Secondary and higher	93.6	6.4	
Working status			0.000
Working	92.9	7.1	
Not working	88.0	12.0	
Household income quintile			0.031
Poorest	93.5	6.5	
Poor	93.2	6.8	
Middle	92.7	7.3	
Rich	90.2	9.8	
Richest	90.0	10.0	
Total	92.0	8.0	

Source: Computed from WHS, Ghana 2003.

Table 2: Multivariate logistic regression analysis of the effect of the background characteristics on current NCDs status

Background characteristics	B	S.E.	Exp(B)
Sex			
Female (RC)	.000		1.000
Male	-.283*	.138	.754
Setting			
Urban (RC)	.000		1.000
Rural	.184	.155	1.201
Age			
<20(RC)	.000		1.000
20-39	.886	.546	2.426
40-59	1.782**	.567	5.943
60+	2.333***	.571	10.314
Marital status			
Never married(RC)	.000		1.000
Currently married/co-habiting	.182	.236	1.199
Separated/divorced/widowed	.212	.276	1.237
Education attainment			
No formal education(RC)	.000		1.000
Primary	.294*	.148	1.342
Secondary or higher	-.110	.263	.895
Working status			
Working (RC)	.000		1.000
Not working	.555**	.167	1.743
Household income quintile			
Poorest (RC)	.000		1.000
Poor	.112	.219	1.119
Middle	.145	.223	1.156
Rich	.629**	.220	1.876
Richest	.788**	.252	2.200
Household health expenditure (GHC)			
<5.00 (RC)	.000		1.000
5.00-24.99	-.197	.782	.821
25.00-49.99	.171	.771	1.186
50.00+	.001	.770	1.001
Constant	-4.751	.965	.009

Source: Computed from WHS, Ghana 2003

® = Reference category ***p<0.001

**p<0.01 *p<0.05

-2 Log likelihood = 1831.400 Nagelkerke R² = 0.87
 $\chi^2=134.2$, df = 17 Model significant = 0.000

DISCUSSION

This study yielded two key insights. First, there was a significant difference in the mean household healthcare expenditure between households with respondents currently living with NCDs and those with respondents not living with NCDs. The statistically significant association observed between current NCDs and household income quintile was not observed in the case of ever diagnosed NCD status and household income quintile.

This phenomenon illustrates the negative economic impact of NCDs posited by Suhrcke et al.¹¹ A recent study in Burkina Faso showed that the probability of catastrophic expenditures for healthcare – ie medical expenses that undermine a household's ability to maintain its usual standard of living - increased by 3.3 to 7.8 times when a household member has a chronic illness.¹⁴ Second, the analysis showed that the average income of people with chronic illness was considerably lower than that of healthy people. This suggests that households with chronically ill members are in a relatively disadvantaged situation.

The relatively high dependence on family members, friends and other relations as a resource to finance healthcare expenditure among chronically ill persons shows the financial dimension of biographical disruption and the importance of social support systems. Studies show that financial dependence on others result in abandonment and social isolation, which further compound the psychosocial burden of NCDs.^{9,13}

The finding that female respondents are more likely to be currently living with NCDs and that the odds that living with NCDs increases with increasing age, household income quintile and household healthcare expenditure correspond with the findings of Biritwum et al.¹⁵ These results point to the role of risk factors like obesity and other risky behaviours in the development of NCDs, particularly type 2 diabetes and some cardiovascular diseases. They also have implications on household studies, since current knowledge suggests that female-headed households are economically disadvantaged compared to male-headed households.

Adeyi et al¹⁶ observe that in general, direct costs of illness may be lower in poorer countries and among poorer populations. This is attributed to lack of medical options which tend to be associated with significant increase in indirect costs. Due to lack of effective quantitative measures for indirect costs, they are not counted in standard cost analyses.

Since indirect costs are not assessed, policy makers have been provided with only part of the overall picture. Households that cannot afford the cost of treatment tend to interrupt the routine treatment regime.

The resultant effect is drug resistance and high fatality rates as others turn to alternative sources of treatment that often worsen their already compromised conditions. This study has demonstrated that there are high direct and indirect costs of illness among households with individuals living with NCDs. Both sets of costs have an impact on healthy household members who have to provide both financial and psychosocial support. Further research is needed to examine the burden of disease at the household level and the implications for quality of life and economic productivity of households. Social and financial support interventions for people with NCDs, particularly in poor communities, are also needed.

ACKNOWLEDGEMENT

This paper uses data from the WHO World Health Surveys and was written while I was supported with generous funding from the William and Flora Hewlett Foundation. My gratitude also goes to Prof. Francis Doodoo and Dr Ama de-Graft Aikins for mentorship, and all my academic advisors: Prof. Emmanuel Tawiah, Prof. Chuks. Mba, Dr. Philomena Nyarko, Dr. Stephen Kwankye, Prof. Samuel Codjoe and Dr. Delali Badasu.

REFERENCES

1. WHO. The World Health Report 2001: Mental health: new understanding, new hope. Geneva: WHO, 2001
2. WHO. The World Health Report 2003: Shaping the future. Geneva: WHO 2003
3. Boutayeb A. and Boutayeb S. The burden of non communicable disease in developing countries, *International Journal for Equity in Health*, 2005;4:2
4. WHO. Preventing Chronic Diseases: A Vital Investment. WHO. Geneva 2005
5. Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro 2004 *Ghana Demographic and Health Survey 2003*. Calverton, Maryland: GSS, NMIMR, and ORC Macro.
6. de-Graft Aikins A. Ghana's neglected chronic disease epidemic: a developmental challenge. *Ghana Med J* 2007; 41(4): 154-159.
7. Badasu, D. M. Implementation of Ghana's Health User Fee Policy and the Exemption of the Poor: Problems and Prospects. *Population and Poverty in Africa. African Population Studies. Supplement A* 2000;19:285-302.
8. Agyepong, I. A. Reforming Service Delivery at District Level: The Perspective of a Ghanaian District Medical Officer. *Health Policy and Planning* 1999;14(1):59-69.
9. Bosu, W. K. Ghana's National NCD Programme: history, prospects and challenges. Paper presented at the 1st Annual Workshop, British Academy UK-Africa Academic Partnership on Chronic 2007
10. Planning and budget unit (PPME). Ministry of Health Ghana
http://www.moh-ghana.org/moh/facts_figures/;
date accessed 30th June, 2008.
11. Suhreke, M, Nugent, RA, Stuckler, D and Rocco, L Chronic Disease: An Economic Perspective. 2006, London: Oxford Health Alliance.
12. Bury, M. Chronic illness as biographical disruption. *Sociology of Health and Illness* 1982; 4: 167-182.
13. de-Graft Aikins, A. Healer-shopping in Africa: new evidence from a rural-urban qualitative study of Ghanaian diabetes experiences. *BMJ* 2005; 331:737.
14. Tin Su T, B Kouyaté and S Flessa Catastrophic household expenditures for health care in a low income society: a study from Nouna district, Burkina Faso *Bulletin of the World Health Organization* 2006; 84: 21-27.
15. Biritwum, R. B, Gyapong, J and Mensah, G. The epidemiology of obesity in Ghana, *Ghana Med J* 2005; 39(3):82-85
16. Adeyi, O, Smith, O, and Robles, S (2007). Public Policy and the Challenge of Chronic Noncommunicable Diseases. The International Bank for Reconstruction and Development/The World Bank 1818 H Street, NW Washington, DC 20433