

## **Strengths and Limitations of Using Household Surveys for Health Care Financing Analysis**

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### **Abstract**

Developing countries are faced with inadequate health care financing and constrained development aid in addition to among others, a burden of non-communicable diseases (NCDs). These constraints challenge them to strengthen existing financing mechanisms; seek alternative funding for healthcare; and, formulate policies and action plans that promote preventive behaviour by curbing consumption of items that accelerate risk factors associated with NCDs. Against this background, this paper assesses the scope of household income and expenditure surveys (HIES) in a bid to contribute to debates on the designs of social protection policies, within the context of universal health coverage (UHC) in developing countries.

**Keywords:** Health financing, household surveys, strengths, non-communicable diseases, universal health coverage.

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### Introduction

Over the past decades, globalization and urbanization have taken greater strides in developing countries and increased food intake choices.[8] On the detriment, an increase in food intake choices has resulted in increased levels of non-communicable diseases.[25] In turn, this has put pressure on fiscal structures of most developing countries as in most cases, non-communicable diseases (NCDs) consume a larger chunk of health care budgets.[15, 22] Some of these NCDs however, can be alleviated through adopting policies that will generate revenue to finance health care, while at the same time, promoting preventive behaviour by curbing the consumption of items accelerating the risk factors associated with such NCDs. [15,22] Ultimately, this will reduce the burden of disease-driven health financing and expenditures and thus, save funds that would otherwise have been directed towards such preventable diseases. Drawing policies that can both generate revenue and promote preventive behaviour, can be made possible through enhancing the comprehensiveness of certain household surveys, to ensure their diverse usefulness.

Most countries for instance, collect household budget or income surveys every five years or on a consistent basis<sup>1</sup>. These surveys collect information on household consumption patterns and therefore, play a key role of not only facilitating the compilation of consumer price index (CPI), but also provide a rich source of information to allow the analysis of poverty and inequality. In keeping up with big data and data revolution, over time there have been some improvements in the income (budget) and expenditure surveys geared towards ensuring the diverse usefulness of the HIES surveys. Such improvements include for example, additions of questions into the survey instruments of subsequent HIES [24]; adoption of the Classification of Individual Consumption According to Purpose (COICOP) away from the Standard Trade Classification (STC) and; a switch from requiring households to recall expenditures they made in the previous 12 months, to recording their weekly expenditures on diaries [20]. Furthermore, an interrogation of these HIES surveys by researchers has contributed meaningfully in informing policy on how equitable, the financing of health care through

direct and indirect means is (see for instance. [3,4,] Partly, such evidence can be tied to the focus for lowest and middle-income countries to pursue the goal of universal health-care coverage (UHC) and access through the expansion of contributory pre-payment health financing schemes. However, despite these efforts, more still needs to be done to further improve the comprehensiveness of the HIES surveys, if the consensus to move towards universal health coverage (UHC) and promote access to quality care is to be greatly realised.

Against this background, we undertake our analysis with a particular goal in mind: examining the scope of Household Income and Expenditure surveys (HIES) for Botswana, to contribute to debates on the designs of social protection policies within the context of universal health coverage (UHC) in developing countries. Our objective is two-fold. Firstly, we examine the way out-of-pocket expenditure data is collected in the HIES for Botswana and suggest how it can be improved upon. Secondly, as a way to suggest the need to look into the possibility of introducing sugar tax in order to curb NCDs whose risk factors are associated with consumption of sugar, we consider how food expenditure data has been collected and suggest how it can be improved upon to suggest possible health policy interventions that can be explored. Our interest in evaluating HIES for Botswana emanates in the country's classification as middle income country which means there is limited development assistance flowing into this country. As such, the country has to extensively explore ways of enhancing fiscal revenue through domestic resources to fund health care, education and other publicly provided services. In furtherance, while the need for diversification efforts to expand the existing health financing options is there on paper for Botswana, [16] to date nothing has happened. Public health care continues to be financed largely through government spending, coupled with a virtually free primary health care system and minimal charges for inpatient care in public hospitals.[17] While this can be argued as some form of UHC, given the country's heavy reliance on a vulnerable sector (diamond mining) for its revenue, in the future this larger portion of health financing through government spending, may be unsustainable and this will likely impact on who pays for health care and also on who accesses care. The recent closure of the Bamangwato Concessions Limited (BCL) mine producing copper and nickel in Botswana, attest to such vulnerability and hence, un-sustainability in government revenue that is financing public services largely being attributable to mining. Our analysis is qualitative in

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<sup>1</sup> Since 1995/96, South Africa has conducted nationally representative income and expenditure surveys every 5 years (Statistics South Africa, 2011). Botswana has so far conducted nationally representative household income and expenditure surveys every 8 years: 1993/94, 2002/03 and 2009/10 [24].

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nature since it only involves suggestions into which variables may be included in the HIES surveys to improve their comprehensiveness.

### Methods

This paper reviews the 1993/1994, 2002/2003 Household Income and Expenditure Surveys (HIES) and 2009/2010 Botswana Core Welfare Indicator Survey (BCWIS). All the surveys followed a two-stage sampling technique. The first stage was selection of primary sampling units which were the enumeration areas (EAs). After this selection, the next stage involved selection of occupied households within the selected EAs and these served as a sampling frame for that EA. The HIES surveys, were conducted to measure income poverty while the latter survey (BCWIS) improves upon those two surveys, by expanding coverage of topics to include modules on health, education, access to amenities, employment, community activities in addition to household income and expenditures [23]. BCWIS collected information on 4,114 EAs while the sample size for the 1993/1994 and 2002/2003 HIES surveys was 30, 000 EAs.

The 1993/94, 2002/03 HIES surveys and the 2009/10 Botswana Core Welfare Indicator Survey (BCWIS) used the Standard Trade Classification categorization to collect data on household purchases made for medicines, therapeutic appliances and services, clinic and hospital care and other services. While this kind of data has enabled an investigation of how equitable is the financing of health care through out-of-pocket (see for instance, [1], there has been certain limitations with regards to how data is collected in these surveys. We review these limitations below and suggest possible improvements to enhance the usefulness of the HIES surveys with regard to health care analysis.

### Results and Discussions

#### *Out-of-Pocket Expenditure Data*

In the 1993/94, 2002/03 HIES and the 2009/10 BCWIS surveys, collects and reports out-of-pocket health care expenses data as a lump-sum household figure. This means that one cannot state with certainty, the amount that was spent on each individual who consumed health care whether for preventive or curative care. Furthermore, even in instances where the household survey improved on the questionnaire structure by asking household members whether or not they were ill and where they consulted, the out-of-pocket expenditures are not broken down to reflect how much was paid to

the different health care providers. While both the 1993/1994 and 2002/2003 HIES surveys failed to disaggregate out-of-pocket payments by public-private type of health facility, this oversight was somehow corrected for in the 2009/2010 BCWIS. In addition to obtaining data on household incomes and expenditures, the 2009/2010 BCWIS for example, collected information on each individual household member` illness/injury status and on whether they consulted and place of consultation i.e public or private health facility. Data is also obtained for each individual household member` access to health insurance or medical aid. In the 1993/94 and 2002/2003, such information was not collected. Despite the improvements made in the 2009/2010 BCWIS, certain limitations still exist.

For those who consult in public health facilities, drugs are provided for free. Therefore, providing a break-down of out-of-pocket payments by type of provider is of importance as it may shed light on the quality of health care that is provided in public health care facilities as guided by household`s purchase of medicine for example, in private facilities, for those who consulted in public facilities. Furthermore, a break-down is needed to capture data in HIES in a way that shows for every household member, where those with a medical aid sought medical attention when ill and whether they paid out-of-pocket on medicine that was prescribed than just reporting for household head. This is of importance to policy because, evidence has shown that, in some cases, the uninsured even if they are eligible for free health care, because they perceive private care as supposedly of better quality than public health care, they tend to spend out-of-pocket to consume private care [11-12]. For the insured, they have been found to consume public health care for free without using their medical aid even if provision is there on paper, that such individuals ought to use medical aid in public facilities. In other instances, even if individuals have medical aid, they consume public care because they have exhausted their benefit package [3,13,19]. If captured in the survey, this kind of information can be useful in guiding policy debates on how to design health financing reforms that are comprehensive to ensure that universal coverage and access are achieved.

In addition, since HIES captures data on household ownership of assets, there is also need to capture data on (i) whether household sold their assets to finance the costs of health care or; (ii) health care was financed through other means such as borrowing, or other household`s dis-saving mechanisms over time. In furtherance, as efforts to prevent reductions in wages due to absenteeism associated with illness, there may be intra-

household labor substitution for some households. In some instances, this may mean children being asked by their parents to absent from school to stand in for them at their workplace. For others, the decision may involve ignoring the disease and carrying on with normal activities in order to enjoy similar or higher wage earnings. All these aspects would not only result in poor health outcomes but also impact on initiatives to reduce poverty if households end up being trapped in a cycle of borrowing and selling assets to finance health care. Hence, this paper also recommends that information should be collected capturing the welfare effects of illness which may be reflected through the loss of earnings or income in HIES surveys.

#### *Sugar Sweetened Beverages, Fats and Oils*

Concerning data on food consumption, all the Botswana HIES surveys and the BCWIS survey, give data as a lump-sum figure for food expenditures without provision that enables researchers to decompose the food spending into different components to allow one to see a pattern of consumption of SSBs, oils and salt, meat, eggs and fish, cereals, sugar and stimulants (tea and coffee). This information is ideal in cases where policy-makers need evidence on consumption of those items and on which households (poor or non-poor) are those foods concentrated in order to inform policy on possible interventions to be

undertaken.

Due to the limitation of HIES of not providing data on food at the disaggregated level to allow a disentangling of food consumption into different components, we looked into data from Food Agricultural Organization (FAO) Food Balance Sheet (FBS) to inspect how over time, the consumption patterns of sugar, fats and oils have been like. FBS uses data for each country and calculates the food produced in and imported into a country less food exported net of imports, food fed to animals or food otherwise not available for human consumption, divided by the population size.[26] Thus, FBS describes consumption of foods per capita for a country and does not depict the amount of food actually consumed. Even though this result in over-estimation of food consumption as compared to data collected at the individual level through dietary surveys, the aim here was just to observe the pattern of sugar consumption over time among the population. These results are presented in Table 1 below and as suggested, there has been a positive trend in consumption of sugar (raw sugar) and sweeteners (honey) of about 82%. Such positive trends have also been documented for South Africa though at a relatively lower value of 7.1% [26] yet unlike Botswana, South Africa is considering introducing sugar tax in April 2017 as efforts to promotive preventive behaviour by reducing consumption of sugar.

**Table 1: Total sugar and stimulants (coffee and tea) consumption in Botswana assessed by FAOSTAT Food Balance Sheet (FBS)**

Food item	FAOSTAT FBS (kg/capita/year)										% change (1966 – 2011)
	1966	1971	1976	1981	1986	1991	1996	2001	2006	2011	
Total sugar	16.4	16.6	17.4	21.9	22.8	27.4	22.2	24.4	29.7	29.9	82.3
Sugar cane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sugar (raw equivalent)	15.8	16.1	15.3	18.4	19.1	19.8	20.8	21.3	26.9	25.7	62.7
Sweeteners	0.6	0.5	2.1	3.5	3.7	7.6	1.4	3.1	2.8	4.2	600
Honey	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total stimulants	1.0	1.1	1.6	1.5	1.2	1.4	1.8	1.4	0.7	1.9	90
Coffee	0.0	0.0	0.2	0.5	0.4	0.5	0.9	0.6	0.6	1.0	0.0
Tea	1.0	1.1	1.4	1.0	0.8	0.9	0.9	0.8	0.1	0.9	-10
Total spices	0.0	0.0	0.2	0.6	0.3	0.5	0.6	0.7	0.7	1.5	

Source: author's calculations using FAO Food Balance Sheet (FBS) data for Botswana.



With regards to fats and oil consumption patterns, data from FBS suggest (presented in Table 2 below) that there has been an increase in consumption of oil, but a decrease in consumption of animal fat. From a health perspective, an increase in oil consumption is of concern but, a careful inspection shows that this increase has

been towards oils extracted either from crops or vegetable crops hence, tend to be a better alternative to oil (or fats) extracted from animals. While these results shed light somewhat, on a rising trend in the consumption of sugar, fats and oil, it would have been interesting if these were deduced from HIES surveys.

**Table 2: Distribution of Per Capita Health Expenditure by Region by Financing Agents (\$)**

Food item	FAOSTAT FBS (kg/capita/year)										
	1966	1971	1976	1981	1986	1991	1996	2001	2006	2011	% change (1966 – 2011)
Total animal fats	1.4	1.5	1.5	1.2	1.2	3.7	1.3	0.7	0.8	1.0	-28.6
Total oil crops	1.6	1.8	3.4	5.1	4.3	7.2	7.6	6.5	9.0	10.3	543.8

Source: author's calculations using FAO Food Balance Sheet (FBS) data.

Worth noting is that, HIES makes provision to allow one to observe household spending on alcohol beverages and tobacco. From a policy perspective this is commendable as knowledge of alcohol and tobacco consumption patterns is required for pricing policies in order to curb consumption of these food items since they are considered risk factors for some non-communicable diseases. However, adding questions related to illness and type of illness, body weight, height and body mass index can further enhance the HIES surveys. This will allow researchers to link consumption patterns with disease incidence. Consequently, as there is no single path to UHC, this will provide a window of opportunity for researchers to examine the potential opportunities of health financing reforms that can be explored to reach UHC while promoting preventive behaviour at the same time.

### Conclusion and Recommendations

While most countries have kept pace with data revolution and ensuring big data by increasing the scope and coverage of existing household surveys, given the challenges associated with improvements in economic conditions and changes in age structure, more still needs to be done to improve the data collection methods so as to measure health outcomes and the attainment of universal health care coverage. This can be achieved by continuous improvements of existing household surveys to ensure comprehensiveness in how data collection is done so as to enhance the diversity of those surveys in availing scientific evidence on many grounds apart from their primary aim.

With regards to HIES, despite their primary aim of assisting in compilation of consumer price index, empirical evidence that has employed these surveys has guided policy on how to effectively strengthen UHC reforms. In some countries, income and expenditure surveys are currently guiding debates on how to promote preventive behaviour in efforts to curb NCDs in some developing countries. This has been made possible by the disaggregation of food items to allow an observation of consumption patterns for each item over time. For Botswana, there is need for data to be collected on a disaggregated form to enable an understanding of consumption patterns of different commodities in order to suggest possible health reforms to be adopted.

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