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Health shocks and households' welfare in Ghana: does social assistance mitigate the effects?

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Abstract

Purpose – Health shocks are among the factors that have impeded households from experiencing better welfare. To mitigate the consequences of these shocks, individuals have sought to enrol in a formal insurance scheme or borrow from banks. This study estimates the effects of health shocks on households' welfare while examining the mitigating role of social assistance in Ghana.

Design/methodology/approach – The study utilized the three-stage least squares and feasible generalized least squares to estimate the impact of health shocks on households' welfare.

Findings – The authors find that health shocks put households at risk, particularly disability and severe illness, which significantly limits individuals' ability to smooth consumption to increase welfare. We further find that hospitalization due to illness significantly allows households to increase welfare through consumption. Finally, we find that social assistance has the potential to reduce these adverse effects of shocks conditioned on the type of shock and the outcome variable in question.

Research limitations/implications – First, we only used cross-sectional data for the two waves and therefore lacked panel data across time for analyses. Second, the data do not provide information on the exact amount of cash received by beneficiaries, so it was quite impossible to measure the exact effect of social assistance on welfare. We could only track whether or not having such assistance could mitigate the effect of a health shock.

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Practical implications – The practical implication of the findings is that Ghana needs to build a resilient health system in order to withstand the health shocks of individuals.
Originality/value – No study has attempted to investigate the differential effect of health shocks – hospitalization, disability and labour days lost due to illness in Ghana. Our choice is dependent on the fact that these shocks have been an issue for many households in Ghana, thus the need to examine their impact on individual well-being. Second, social assistance has been Ghana's flagship social protection programme, but what is missing in the literature is whether this programme is capable of reducing the effect of health shocks faced by beneficiaries' households in Ghana.
Keywords Ghana, Social assistance, Household welfare, Health shocks
Paper type Research paper

1. Introduction

Health shock is an unpredictable event that deteriorates the health status making members of a household incapacitated (Dercon and Krishnan, 2000; Mitra *et al.*, 2016). In developing countries, these shocks are noted to be one of the biggest shocks peculiar to individuals and households and a common driver of households becoming vulnerable to welfare loss (Dercon and Krishnan, 2000; Wagstaff, 2007; Atake, 2018). In particular, individuals faced with these shocks often affect their behaviour toward consumption stability (Dercon, 2006; Wagstaff, 2007). The cost of such a strategy to smooth consumption sometimes deepens poverty and food insecurity in some households, plunging them into welfare loss now and in the future (Atake, 2018). This can have serious and adverse economic implications for national policies on poverty reduction, economic growth, and human capital development (Wagstaff and Lindelow, 2014; Boniface Ajefu, 2018; Onisanwa and Olaniyan, 2019). For instance, the World Health Organization (2015) estimated that each year, 150 million people suffer from out-of-pocket (OOP) payment for medical services, 400 million people lack access to basic healthcare services, and 100 million people are pushed into poverty. While these shocks tend to jeopardize households in both developed and developing countries, the latter are more likely to experience severe effects of the shocks, probably because of the increased vulnerability to poverty and low health financing systems.

Using 2015 as a baseline, the World Health Organization (WHO) in 2019 reported that more than 926.6 million and 208.7 million people from developing countries incurred out-of-pocket spending exceeding 10% and 25%, respectively, of their households' consumption and income (WHO, 2020). Consequently, households can become vulnerable in society when faced with an increased unexpected loss of income and reduced consumption due to catastrophic health expenditures (Thanh and Duong, 2017). Although the degree of severity, frequency, and duration of shocks differ for different people due to diverse coping mechanisms, the fact is that most of them are resource-constrained and are severely hit when faced with such a shock (Wagstaff, 2007).

In Ghana, health shocks are among the factors that have impeded households from experiencing better welfare (Asuman *et al.*, 2020). For example, a report from Ghana Statistical Service (GSS) in 2014 indicates that out of 14% of the population that suffer from illness or injury, 62.4% of them had to stop their usual activities and 54.5% of medical expenses were borne by household members in 2013. The GSS report in 2019 revealed that 15% of the population suffered from illness in 2017, which resulted in 47.3% of them stopping their usual activities. Not only would that limit the ability of the sick person to work to earn income, but some of the members of the household would temporarily stop working to care for the sick (WHO and World Bank, 2011; Takyi and Leon-Gonzalez, 2022). It becomes even more alarming when an individual is required to substitute production expenditure and current consumption for health care in the short run (Novignon *et al.*, 2012; Thanh and Duong, 2017; Takyi and Leon-Gonzalez, 2022). In the long run, this can harm households' productive investments of households, withdrawing children from school and substantially disrupting their welfare (Thanh and Duong, 2017; Takyi and Leon-Gonzalez, 2022).

To mitigate the consequences of these shocks, individuals sought to enrol in a formal National Health Insurance Scheme (NHIS) or borrow from banks (Apata *et al.*, 2018; Devereux *et al.*, 2018). Although Ghana introduced NHIS in 2004, efforts at ensuring universal health insurance coverage have proven futile (Devereux *et al.*, 2018; Takyi and Leon-Gonzalez, 2022). This may serve as an impediment to households' health coping strategies to insure against shocks. For example, out of the total population of Ghana based on the 2010 population and housing census, the country has experienced an increase in membership from 8.16 million in 2010, 10.15 million in 2013, and then 12 million in 2019 representing 33.1%, 38%, and 40%, respectively (UNICEF, 2019; Kipo-Sunyehzi *et al.*, 2020). However, most of these people regularly lack the means to renew, or even if they do, the scheme does not cover all sicknesses (Kipo-Sunyehzi *et al.*, 2020).

Notwithstanding, some households with little or no collateral securities are sometimes credit rationed from the banks making them difficult to access funds for productive engagements (Dhanaraj, 2016; Ba and Mughal, 2022). Furthermore, most people are increasingly faced with covariate shocks (uncertainties associated with nature such as climate change) that pose production uncertainties, thus affecting their ability to repay the amount borrowed (Onisanwa and Olaniyan, 2019; Ba and Mughal, 2022). These limiting factors could affect households with health problems, thereby increasing the vulnerability to welfare loss in the long run (Mitra *et al.*, 2013; Onisanwa and Olaniyan, 2019). Due to this, any household with little or no means of mitigating health effects may decide not to seek formal care, especially those with onset health shocks (Alam and Mahal, 2014; Simeu and Mitra, 2019). Therefore, it is curious to determine the differential effect of health shocks on individual well-being. In particular, how do shocks make households vulnerable to welfare loss now or in the near future in Ghana?

Given the global concerted effort at fighting poverty among low-income households, social protection programmes have increasingly emerged, particularly in developing countries as a major policy framework to address the issue of poverty and vulnerability. In this regard, much attention has been paid to developing a more reliable and regular social assistance programme, such as cash transfers for the marginalized in society, to help reduce poverty and break the poverty cycle for generations to come (Barrientos *et al.*, 2011). As a result, the Ghanaian government with the support of the Department of International Development (DFID) and the World Bank helped implement the Livelihood Empowerment Against Poverty (*LEAP*) in 2008 (Sackey and Remoaldo, 2019). The emergence of *LEAP* as a cash transfer programme came as an urgent need for the country to combat the growing concern of poverty. As a consequence, social protection can be viewed as a right. This required the need for social assistance as a means of alleviating the plight of the poor and marginalized in society to better manage risks and adopt strategies to protect their assets. The question is: Could *LEAP* be effective in sustaining recipient welfare in the face of prevailing health shocks in Ghana?

Since there is no better conceptualization and characterization of health shocks in the literature, particularly in Ghana, this study contributes to the body of knowledge in two ways: First, no study has attempted to investigate the differential effect of health shocks, hospitalization, disability, and labour days lost due to illness in Ghana. Our choice is dependent on the fact that these shocks have been an issue for many households in Ghana, thus the need to examine their impact on individual well-being. Second, social assistance (*LEAP*) has been Ghana's flagship social protection programme, but what is lacking in the literature is whether this programme can reduce the effect of health shocks facing beneficiaries' households in Ghana. Since no studies have examined the complementary effect of *LEAP* and health shocks on welfare, it is crucial to understand this association to allow policymakers and international organizations to incorporate shocks into their development agendas. To fill these gaps, we pooled the two most recent waves of the Ghana

Living Standard Surveys (rounds 6 and 7) for the analysis using three-stage least squares (3SLS) and feasible generalized least squares (FGLS) for robustness check. The adoption of these techniques is based on their ability to account for both the cross-equation error correlation and the possible unobserved heterogeneity in the models for consistent estimates.

We find that disability and labour days lost contribute to the worsening levels of household welfare measured by total consumption, food consumption and non-food consumption. This is because disability showed an adverse impact on household consumption per capita, especially total consumption, and non-food consumption by 9.5% and 21.9%, respectively, thus increasing the vulnerability to a welfare loss. Again, severe illness (labour days lost) to an individual negatively affects welfare, particularly in food consumption by 3.2%. Given these impacts, households might be at risk of losing their assets permanently. However, being hospitalized improves the welfare of the household by about 8.2% and 10.3% since their consumption patterns are smoothened as a result of assets selling or intra-household or borrowing from relatives. Also, social assistance through the *LEAP* programme does not mitigate the effect of the incidence of a health shock on household welfare.

The rest of the paper is structured as follows. Section 2 presents the literature on past studies related to health shocks, social assistance, and welfare. Section 3 presents the empirical strategy used for the study. The empirical results and their discussion are presented in section 4, whereas section 5 concludes the paper with policy implications.

2. Related literature

Theoretically, we attempt to base our study on the following two theories; full insurance theory and intertemporal consumption theory. Arrow (1964) developed the full insurance theory adopted by Townsend (1995) and Asfaw and Braun (2004) to examine the relationship between health shock and welfare, particularly consumption smoothing. The theory postulates that when a perfect market exists and households are risk averse, the extra satisfaction derived from consumption is maximized through informal coping institutions like cooperative societies, selling of assets, and others. The theory further assumes that households are risk-sharing agents and that they would employ different risk-sharing strategies to achieve the additional utility that would be derived to maximize consumption. Similarly, the theory of intertemporal consumption is adopted to explain the uncertainties that households face due to health shocks that make them unable to smooth out consumption (Bales, 2013). The theory states that risk-loving households faced with health shocks would want to maximize satisfaction over time, given household consumption. The theory further indicates that when there are institutional barriers to credit and the absence of borrowing facilities, it is pertinent to use different risk mitigation strategies such as borrowing from relatives, government transfers, and non-governmental organizations (NGOs) for households to preserve welfare (Bales, 2013; Dhanaraj, 2016). Since health shocks to households are inevitable, such as disability, illness, hospitalization, labour-lost days, or death, the absence of these mitigation strategies can have a significant negative impact on the welfare of households.

2.1 Health shocks and welfare

Given the theoretical underpinnings, most studies (Dercon and Krishnan, 2000; Asfaw and Braun, 2004) concluded that households faced with health shocks can smoothen consumption by improving their well-being, particularly food and nonfood consumption. However, other studies (Townsend, 1995; Lindelow and Wagstaff, 2005; Genoni, 2012) revealed that households faced with health shocks are severely hit with high health expenditure, loss of income, and limited health insurance leading to an adverse impact on their consumption pattern. Evidently, in Ghana, Novignon *et al.* (2012) examined health and

vulnerability to poverty in Ghana using the GLSS 5 dataset. They found that 56% of households are more vulnerable to poverty than the 2012 poverty estimate of 29% by GSS. They also show that households living in poor hygiene conditions are likely to become vulnerable in the future, especially those in urban communities. The findings further indicate that the current health status of households is an important condition for determining the vulnerability to poverty, given the general health decline of households living in poor hygiene areas. The results also indicate that the size and education of households directly or indirectly influence vulnerability to poverty through consumption. Similarly, Akazili *et al.* (2017) investigated the catastrophic effect of out-of-pocket expenditure in Ghana using GLSS 5 and concluded that Ghanaians spent more than 5% of the total health expenditure on healthcare. Asuman *et al.* (2020) sought to look at how disability and welfare relate in terms of costs using GLSS round 7. Estimates show that people with disabilities incurred extra costs of 26% of their annual household consumption expenditure. Not only that, but they also found that the poverty level of disabled households tends to increase from 38.5% to 52.9%, and rural households incur high costs when faced with disability compared to those living in urban areas of Ghana.

Regarding studies beyond Ghana, Bales (2013) used the Vietnam Household Living standards survey to assess the economic impact of health shocks on households' welfare. The author concludes that disability significantly affects the reduction in the labour supply of poor households. Moreover, non-poor households are severely influenced by illness, especially among insured members. The findings further show that non-poor households experience an increase in earned income than poor households faced with illness or disability. However, social health insurance did mitigate the effect of out-of-pocket health expenditure for those insured in both poor and nonpoor households. Despite these effects on income and health expenses, consumption per capita was unaffected by the shock. Mitra *et al.* (2016) examined the economic impact of health shocks in Vietnam on households' consumption and found that households were able to smooth consumption expenditure when faced with ruinous health expenditure. The study also revealed that households in Vietnam protect themselves against disability by disposing of their valuable assets, borrowing as well as withdrawing their children from school. Simeu and Mitra (2019) examined similar implications of disability on well-being using an Indonesian family life survey with a fixed effects estimator. They found that households with disabilities have increased health expenditures and reduced labour supply. The results also show that household assets are depleted for those with disabilities.

Using the general household survey in Nigeria, Onisanwa and Olaniyan (2019) examines whether health shocks affect the smoothing of consumption among rural households by employing fixed effects and multinomial logit estimators. They found that death and disability have an adverse effect on food consumption and nonfood consumption. The author revealed that people who face severe illness, death, and disability can mitigate the effects by borrowing from family, friends, and banks. Thanh and Duong (2017) examined the effects of health shocks and the mitigating role of microcredit among rural households in Vietnam. The study employed the village fixed effect estimator and found health shocks harmed households' income but vary in the kind of shocks. Furthermore, the results indicate that people who are hospitalized have a high medical care cost, higher consumption, and out-of-working age of the labour supply. Households who have access to microcredit are less affected by health shocks than those who do not have access.

2.2 Social assistance and welfare

Since different research objectives require different empirical evidence, we provide empirical evidence associated with social assistance, health shocks, and welfare. Handa *et al.* (2013)

evaluated the impact of *LEAP* on the livelihood of Ghanaians and found the *LEAP* programme has a positive effect on food consumption, non-food consumption, and an increase in access to health insurance and child enrolment in schools among beneficiaries of cash transfers. Similarly, Fisher *et al.* (2017) examined the impact of cash transfers on livelihoods in some beneficiary countries in the Sub Sahara, Kenya, Malawi, Lesotho, Zimbabwe, and Ghana. The authors revealed that a small flow of cash has positive effects on beneficiaries in their choice of livelihood and productive investments. Not only that the transfers also provide vulnerable households with the ability to have risk-sharing arrangements and networks for economic collaboration. Ottie-Boakye (2020) used multiple logistic regression models coverage of non-receipt of cash transfers and associated factors among older persons in the Mampong Municipality, Ghana. The study found that most of the participants were non-beneficiaries of the *LEAP*. The results showed that the programme had a much greater impact on people living in rural areas than in urban centres.

Furthermore, Levine *et al.* (2011) analysed the impact of cash transfers on households' welfare using multivariate probit regression in Namibia. The study confirms that the use of universal and noncontributory cash transfers plays a significant role in poverty reduction, particularly in very poor households. It further shows that the poverty reduction effect of child grants has the potential to increase if access is expanded rapidly. The mean testing for child grants is not effective for the poor, even if administrative costs are absent. Slater (2011) evaluates the different types of cash transfers, which form a growing part of social protection programmes as a tool for reducing poverty in developing countries. The study found that a fine balance is required for targeted versus universal transfers and conditional versus unconditional transfers, especially where there is a weak administrative capacity for targeting. Wang *et al.* (2019) examine the impact of social assistance on household consumption in urban China using data from the China Household Income Project with the propensity score matching method. The findings showed that the receivers prioritized spending on education and health over non-beneficiaries. The study also found that recipients' consumption decreases in making ends meet.

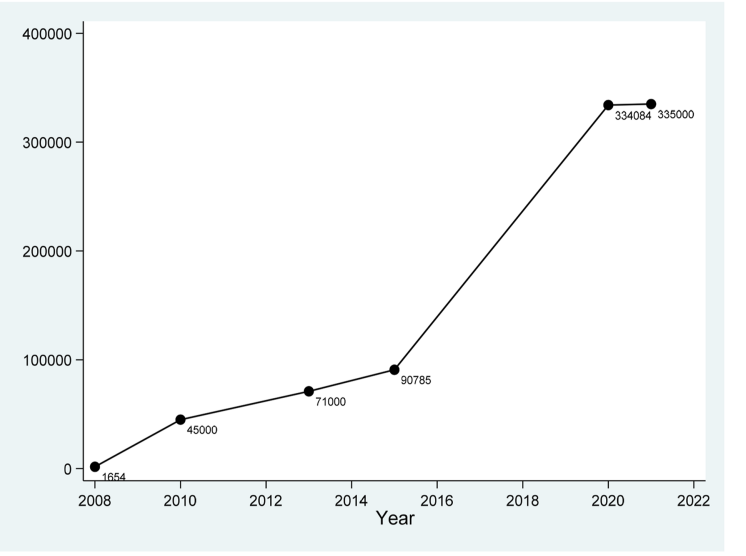
In conclusion, our present study differs from the numerous kinds of literature reviewed in two folds. First, no study has attempted to investigate the differential effect of hospitalization, disability, and labour days lost due to illness in Ghana. Our choice is dependent on the fact that these shocks have been an issue for many households in Ghana, thus the need to examine their impact on individual well-being. Second, social assistance (*LEAP*) has been one of Ghana's flagship social protection programmes, but what is lacking in the literature is whether this programme can reduce the effect of health shocks faced by beneficiaries' households in Ghana. Since no studies have examined the complementary effect of *LEAP* and health shocks on welfare, it is, therefore, crucial to understand this association on welfare for policy insights in Ghana.

2.3 Livelihood empowerment against poverty programme in Ghana

In the 1990s, global communities received a publication from the World Development and Human Development Reports on the subject of 'global efforts towards poverty reduction' (World Bank, 2000). These documents succeeded in painting the horrific nature of poverty and providing some policy direction to address the issue. Due to that, social protection programmes have become increasingly important in developing countries as a major policy framework to address the issue of poverty and vulnerability. In this regard, much attention has been paid to developing a more reliable and regular social assistance programme such as cash transfers for the marginalized in society to help reduce poverty and break the poverty cycle for generations to come (Barrientos *et al.*, 2011). Cash transfers as a social policy have been practised in many countries in the world including Ghana.

The emergence of the livelihood empowerment against poverty (*LEAP*) programme in Ghana came as an urgent need for the country to combat the increasing concern of poverty, in particular the elderly poor and the vulnerable children as well as the disabled. Although Ghana had programmes geared towards reducing poverty among the citizenry such as school feeding, programme, capitation grants, free senior high education, and others, most of these programmes are conditional and more general and could not affect the neediest people in the country. As a result, the government of Ghana, the Department for International Development (DFID), and the World Bank with both technical and financial support rolled out the *LEAP* in Ghana in 2008 (Handa *et al.*, 2013). The programme was implemented by the Department of Social Welfare managed by the Ministry of Gender, Children, and Social Protection (MoGCSP), with special support from stakeholders at the district and community levels. The main objective of the *LEAP* was to provide cash transfers to extremely poor households who lived in deprived areas like rural and suburban to reduce poverty and encourage investment in human capital development. The targeting process is based on a community-oriented approach and then later verified centrally with a proxy means test (Handa *et al.*, 2013). Therefore, during the selection process of beneficiary households, a community *LEAP* implementation committee identifies beneficiary households and is then verified by the MoGCSP.

Uniquely, beneficiaries receive a free national health insurance scheme (NHIS) to help members manage their health problems. Figure 1 presents the trends in the number of beneficiaries from the inception year (i.e. 2008) to 2021. The number of beneficiaries as of 2021 had increased by about a factor of 200, i.e. from 1,654 to 335,000 beneficiaries. (MoGCSP, 2022). Before 2012, *LEAP* beneficiaries were paid bimonthly with GH¢8–15 per month depending on the number of beneficiaries per household. This amount represents on average 11% of the beneficiary household consumption. Subsequently, the transfers range from GH¢ 48.00–90.00. Specifically, an eligible member in a household receives GH¢48.00 ($12), two eligible members receive GH¢60 ($15), three eligible members receive GH¢72 ($18) and a household with four (4) eligible beneficiaries or more receives GH¢90.00 ($23).



Source(s): Authors' construct using data from MoGCSP

Figure 1.
LEAP beneficiaries from 2008–2021

The sixth and seventh waves of the GLSS conducted by the Ghana Statistical Service provide detailed information on individuals having access to the *LEAP* cash transfers. Information on whether or not an individual is enrolled in the programme, the year of enrolment, whether an individual has received any cash assistance, how much was received, and the number of times the assistance has been received are all provided. This unique information or characteristics in both waves makes it suitable to assess the mediation role of *LEAP* between health shocks and households' welfare. Again, using both waves gives us the advantage of large samples to increase the statistical power of our estimation.

3. Empirical strategy

In this section, we explore the specification of the model including estimation techniques, data identification, and descriptive statistics.

3.1 Model specification

Following Thanh and Duong (2017), the general formulation of the economic model is specified as follows.

$$Y_{iht} = f(HS_{iht}, X_{iht}, Z_{iht}, H_{iht}) \tag{1}$$

where Y_{iht} represents welfare indicators measured as total expenditure per capita, food expenditure per capita, and non-food expenditure per capita. *HS* represents health shocks measured by disability, severe illness (i.e. labour days lost), and hospitalization of individuals. X denotes the moderating variable called social assistance (*LEAP*) and H captures the characteristics of the household (age, marital status, education status of the household head, region, and household size). Z captures all other factors (i.e. access to loans, location, poverty) that may play a significant role in explaining the welfare of households. Also, i, h, and t denote the individual, household, and survey year respectively. Following Gajate-Garrido (2015), we specify the general econometric model as:

$$\ln Y_{iht} = \alpha + \beta HS_{iht} + \varphi X_{iht} + \phi Z_{iht} + \delta H_{iht} + \theta_t + \gamma_h + \varepsilon_{iht} \tag{2}$$

In this specification, θ_t controls for the survey year fixed effect to account for all the macroeconomic changes that may have occurred within the two survey periods. γ_h is the fixed effect of the household, also, the outcome variables are in their logarithm form.

3.1.1 Estimation techniques. Following Gallant (1975) and Zellner and Theil (1992), three-stage least squares estimation (3SLS) is used as the main estimator in this study. This method combines a system of equations, also known as seemingly unrelated regression (SUR), with two-stage least squares (2SLS). It is a type of instrumental variable estimation that allows correlations of unobserved disturbances across several equations, as well as restrictions between coefficients of different equations, and improves the efficiency of equation-by-equation estimation by taking such correlations across equations into account. Unlike SUR and 2SLS, 3SLS estimates all coefficients at the same time. It assumes that each equation in the system is at least just identified. However, under-identified equations are ignored in the 3SLS estimation. Zellner and Theil (1992) proposed three stages for effective estimation: the first stage involves estimating the residuals of structural equations using two-stage least squares of all identified equations; the second stage entails computing the optimal instrument using the estimated residuals to construct the disturbance variance-covariance matrix; and the third stage entails the joint estimation of the system of equations using the optimal instrument. Given this, 3SLS estimates are strongly consistent, asymptotically normally distributed, and more efficient (Gallant, 1975; Zellner and Theil, 1992).

Therefore, the adoption of this estimator would provide a reliable result because of its ability to control for unobserved heterogeneity as well as cross-equation error correlation. Therefore, we present the baseline regression equation as specified in equation (2).

To account for the moderating effect of the LEAP on welfare (Njagi *et al.*, 2021), we interact each health shock variable with the *LEAP* variable as specified in the following equation:

$$\ln Y_{iht} = \alpha + \beta HS_{iht} + \rho LEAP_{iht} + \vartheta (HS{*}LEAP)_{iht} + \varphi X_{iht} + \phi Z_{iht} + \delta H_{iht} + \theta_t + \gamma_h + \varepsilon_{iht} \quad (3)$$

The coefficients of interest in this specification is ϑ which measure the interaction effect of health shock and the social assistance variable.

3.1.2 Robustness check. We further estimated the models using Feasible Generalized Least Squares (FGLS), which also allows for heterogeneity. The FGLS is assumed to be strongly consistent and asymptotically normally distributed compared to ordinary least squares (OLS). We, therefore, employ the estimator as a baseline model for the robustness of our estimates for consistency.

3.2 Data and identification strategy

The study uses data from rounds 6 and 7 of the Ghana Living Standard Survey (GLSS) conducted by the Ghana Statistical Service, which focuses on key household socioeconomic units that provide information on the living conditions of people such as expenditure, agriculture, health, education, financial services credits and assets governance, peace and security. GLSS defines a household as a person or group of people who live together in the same home, share the same housekeeping arrangements, and are accounted for as one unit. During these surveys, a nationally representative sample was obtained from 1,200 and 1,000 enumeration areas that cover 18,000 and 15,000 households nationwide for both rounds 6 and 7 respectively across the ten regions of Ghana. Respectively, of these sampled households, 16,772 and 14,009 households were successfully enumerated within the stipulated period.

The survey contained information on health shock modules regarding questions not only about the nature of a recent illness, but its duration such as the number of days lost from work due to illness, the number of days hospitalized, and whether you are disabled. In addition, *LEAP* is used as a measure of social assistance and is expected to positively moderate the effect of shock on the welfare of the household. The *LEAP* beneficiaries were obtained from the population without random assignment. The two waves are said to have information about *LEAP* on whether the individual enrolled in the programme, the year the person was enrolled, whether the person has ever received any cash assistance, how much was received, and the number of times the person received the money. We categorized these individuals into two groups: receivers and non-receivers.

Furthermore, the data contained information on total consumption, food consumption, and non-food consumption, which we used as welfare indicators. These expenditures on food and nonfood from households were obtained by combining all items purchased directly or indirectly by the household measured in per capita, which is defined as the mean annual cedi spent on each household member. Importantly, for a total sample of 30,524 observations, the number of observations varies across columns depending on the availability of welfare outcomes and the estimator used. However, the obtained sample revealed that more than 89.38% of the population had to stop their usual activities due to illness. This shows how severe an illness can have on the physical functioning of the individual or the household. Due to that, this study used the labour days loss (which is captured as severe illness) and the number of days spent in the hospital due to illness as measures for health shock (Onisanwa and

Olaniyan, 2019). In addition to that, disability is one of the shocks that are more visible and noticeable and reporting tends to be objective and less error emanating from measurement. Because of that, the study used disability as one of the measures to capture the effects of shock on welfare (Asuman *et al*., 2020). Following Gertler and Gruber (2002), Wagstaff (2007) and Onisanwa and Olaniyan (2019), we assume that health shocks are exogenous.

3.2.1 Descriptive statistics. Table 1 presents the summary statistics for the sample and indicates that female-headed households constitute about 29.6% of the total sample, 45.7% are married whiles 56.3% are located in the rural areas. The mean age is about 46 years while the average household size is about 4 members. Furthermore, the number of individuals who applied for loans from financial institutions had a mean value of 8.7%. Regarding education, this study classified them into no education, high education (an average of 78.8%) comprising of primary, junior high, or senior high school; and tertiary education, representing 12.13% compared to the baseline education.

Importantly, variables of health shock such as lost labour days, hospitalization, and disability on average had 89.4%, 8.2%, and 3.0% of the population, respectively, experiencing ill health conditions. Also, the mean number of households that benefitted from *LEAP* is 1.2% of the sample used in the study. The table also indicates that the mean values for total consumption, food and non-food expenditures are respectively Gh ¢3001.70, Gh ¢1502.95, and Gh ¢1498.76.

4. Results and discussion

4.1 Health shock and household welfare

Generally, health shocks exacerbate the risk that individuals become vulnerable, particularly with disabilities and severe illnesses, and therefore pose a serious economic implication for households and Ghana as a whole. Although the study controls for household characteristics

Variables	Mean	Std. dev.
Age	46.024	15.896
Gender (1 if female)	0.296	
Marital status (1 if married)	0.457	
Locality (1 if rural)	0.563	
Loans (1 if access to loan)	0.087	
LEAP (1 if beneficiary)	0.012	
Poor (1 if poor)	0.247	
Education		
1 if high school, 0 otherwise	0.788	
1 if tertiary, 0 otherwise	0.121	
Household size	4.241	2.825
Health shock variables		
Severe illness (1 if loss of labour days)	0.894	
Disability (1 if disabled)	0.030	
Hospitalization (1 if hospitalized)	0.082	
Outcome variables		
Total consumption expenditure	3001.702	3615.875
Food expenditure	1502.947	1557.402
Non-food expenditure	1498.755	2618.879

Source(s): Authors' own work

Table 1.
Summary statistics

and other factors, we focused our discussions on the main variables of interest to understand their implications on welfare.

4.1.1 Disability and welfare. Disability, in general, is noted to be one of the negative health outcomes that expose individuals to material insecurity and financial risk (Asuman *et al.*, 2020). As expected, people with disabilities have less food consumption, non-food consumption, and total consumption per capita. This could mean that individuals with disabilities are more likely to substitute consumption for health care spending and thus have a detrimental effect on total consumption and non-food consumption. The estimated disability coefficient, with all things being equal, significantly reduces total consumption and nonfood consumption per capita by 9.5% and 21.7%, respectively, compared to those without disabilities.

This negative effect on consumption may be due to the increasing demand for health services. Thus, in an attempt to improve one's well-being through health care, consumption is sacrificed, hence negatively affecting their welfare. This means that individuals with disabilities are more likely to dispose off their valuable assets, borrowing excessively from relatives as well as withdrawing children from school (Mitra *et al.*, 2016). Households are at risk of depleting their assets and are financially insecure, which can affect their investment in both physical and human capital development (Gertler and Gruber, 2002; Genoni, 2012; Simeu and Mitra, 2019). The results from the FGLS models serving as robustness checks gave similar results in terms of the signs, albeit the magnitudes slightly differed (see columns 4 to 6 of Table 2).

Variable	3SLS			FGLS		
	TCONpc	FCONpc	NFCONpc	TCONpc	FCONpc	NFCONpc
Panel A: Disability and Welfare						
Disability	−0.095***	−0.033	−0.217***	−0.071**	−0.025	−0.196***
	(0.032)	(0.034)	(0.043)	(0.031)	(0.032)	(0.048)
Observations	21,224	21,224	21,224	21,224	21,224	21,224
R^2	0.606	0.517	0.542	0.654	0.527	0.543
Panel B: Hospitalization and Welfare						
Hospitalized	0.084***	0.082***	0.103***	0.084***	0.081***	0.099***
	(0.018)	(0.019)	(0.024)	(0.017)	(0.019)	(0.023)
Observations	14,904	14,904	14,904	14,905	14,905	14,904
R^2	0.607	0.518	0.542	0.644	0.526	0.545
Panel C: Severe illness and Welfare						
Severe illness	−0.027*	−0.028*	−0.029	−0.025*	−0.029*	−0.023
	(0.016)	(0.017)	(0.021)	(0.015)	(0.016)	(0.021)
Observations	15,017	15,017	15,017	15,018	15,018	15,017
R^2	0.606	0.517	0.541	0.644	0.526	0.543
Controls						
Household Characteristics	✓	✓	✓	✓	✓	✓
Other factors	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Regional dummies	✓	✓	✓	✓	✓	✓

Note(s): Standard errors are in parentheses, where ***$p < 0.01$, **$p < 0.05$, and * $p < 0.1$. $TCON_{PC}$, $FCON_{PC}$, and $NFCON_{PC}$ are the dependent variables and represent logs of Total consumption expenditure, Food expenditure, and Non-food expenditure respectively. The subscripts pc denotes Per capita. Controls here consist of household characteristics (age, marital status, educational status, household size), and other factors (access to loans, location, poverty)
Source(s): Authors' own work

Table 2.
Results of the effect of health shocks on welfare

4.1.2 Hospitalization and welfare. Hospitalization as one of the measures of health shock is considered statistically significant among all welfare indicators, demonstrating that households faced with such a shock tend to experience improvement in welfare. One would have expected a reduction in food, non-food, and total consumption when faced with hospitalization. Interestingly, we find that hospitalization increases total consumption, food consumption, and nonfood consumption by 8.4%, 8.2%, and 10.3% respectively compared to the base category all things being equal. This tends to suggest that households faced with hospitalization can smooth consumption and increase the demand for healthcare services, probably because of intrahousehold support or selling of assets or borrowing from relatives when a member is being hospitalized. This is consistent with Thanh and Duong (2017) who reported that people hospitalized and have access to microcredit have a high medical care expenses and higher consumption among rural households in Vietnam. The results imply that increasing the demand for healthcare and consumption positively reduces the effect of health shock and thus improves individual well-being. The increase in consumption indicates that health is an asset and a commodity for investment and consumption; therefore, a reduction in any of these indicators would mean a reduction in health (Grossman, 1972; Novignon *et al.*, 2012). This finding confirms the findings of Thanh and Duong (2017) that the household prioritized consumption in response to hospitalization. This is because when food consumption is reduced, health problems can become more serious in both the short and long run.

4.1.3 Severe illness and welfare. Similarly, households faced with labour days lost (severe illness) due to illness affect their income generation ability, particularly when the person in question is the breadwinner of the family or the main earner. This is because, when an individual becomes ill, the probability of such a person absenting from work is high, as a result, income will be lost and that may have an adverse impact on consumption. The results suggest that an increase in workdays lost due to illness results in a 2.8% decrease in food consumption per capita, all else equal compared to people with no loss of labour days. This demonstrates how severe health shock especially severe illness could have on individual labour earnings and how vulnerable they could become when faced with such a shock. This finding, as expected, is consistent with the findings of (Onisanwa and Olaniyan, 2019). The results also show that severe illness negatively affects total consumption, leading to a reduction of approximately 2.7% in well-being. This suggests that people who suffer from illness and have to stop their usual activities are at risk of substituting their current consumption and productive investments for health care, thus having a permanent impact on the individual's welfare. This is because the loss of income due to illness affects the ability of the sick person to demand more health care for health improvement and could subsequently create serious health problems. Therefore, it is important to provide measures to assist members at the household level to effectively access quality and affordable healthcare that will not affect their consumption decisions.

4.2 A complementary effect of social assistance and health shocks on welfare

The results in Panel A of Table 3 show that people with disabilities who benefited from cash transfers experience a positive change in welfare in terms of consumption compared to non-receivers, but statistically not significant. Also, in panel B, the results indicate that people faced with hospitalization, and at the same time, a *LEAP* recipient, can increase their welfare through consumption, albeit not statistically significant.

This is an indication that *LEAP* can play an important role in reducing the effects of hospitalization and disability on welfare through increased household consumption

Variable	3SLS TCONpc	3SLS FCONpc	3SLS NFCONpc	FGLS TCONpc	FGLS FCONpc	FGLS NFCONpc
Panel A						
LEAP	0.0036	0.026	−0.068	0.0014	0.0197	−0.0228
	(0.038)	(0.040)	(0.054)	(0.039)	(0.041)	(0.061)
Disability	−0.095***	−0.033	−0.219***	−0.082***	−0.033	−0.197***
	(0.025)	(0.026)	(0.035)	(0.026)	(0.025)	(0.037)
*LEAP**Disability	0.034	0.0435	0.150	0.0319	0.0453	0.0783
	(0.207)	(0.216)	(0.293)	(0.259)	(0.177)	(0.503)
N	21,224	21,224	21,224	21,229	21,229	21,224
R^2	0.625	0.545	0.540	0.654	0.558	0.547
Panel B						
LEAP	−0.011	0.019	−0.096*	−0.011	0.014	−0.056
	(0.040)	(0.042)	(0.056)	(0.042)	(0.043)	(0.064)
Hospitalized	0.053***	0.055***	0.072***	0.058***	0.054***	0.067***
	(0.015)	(0.016)	(0.021)	(0.015)	(0.016)	(0.021)
*LEAP**Hospitalized	0.124	0.0432	0.298	0.107	0.0303	0.308
	(0.132)	(0.137)	(0.186)	(0.082)	(0.140)	(0.206)
Observations	21,127	21,127	21,127	21,132	21,132	21,127
R^2	0.625	0.546	0.540	0.654	0.558	0.546
Panel C						
LEAP	0.043	0.030	0.008	0.065	0.039	0.065
	(0.115)	(0.120)	(0.163)	(0.157)	(0.129)	(0.233)
Severe illness	−0.009	−0.032**	0.009	−0.020	−0.036**	0.013
	(0.014)	(0.014)	(0.019)	(0.013)	(0.014)	(0.019)
*LEAP**Sev. illness	−0.043	−0.002	−0.078	−0.067	−0.020	−0.094
	(0.122)	(0.127)	(0.172)	(0.162)	(0.136)	(0.241)
N	21,278	21,278	21,278	21,283	21,283	21,278
R^2	0.624	0.545	0.539	0.653	0.558	0.545
Controls						
Household Characteristics	✓	✓	✓	✓	✓	✓
Other factors	✓	✓	✓	✓	✓	✓
Year dummies	✓	✓	✓	✓	✓	✓
Regional dummies	✓	✓	✓	✓	✓	✓

Note(s): Standard errors are in parentheses, where ***$p < 0.01$, **$p < 0.05$, and *$p < 0.1$ represent the level of significance; $TCON_{PC}$, $FCON_{PC}$, and $NFCON_{PC}$, are the dependent variables and represent logs of Total consumption expenditure, Food expenditure, Non-food expenditure respectively. The subscripts pc denotes Per capita. Controls here consist of household characteristics (age, marital status, educational status, household size), and other factors (access to loans, location, poverty)
Source(s): Authors' own work

Table 3.
Results on the effect of social assistance and health shocks on welfare

though not statistically significant. However, in Panel C, contrary to our expectations, the result shows that *LEAP* is unable to reduce the effects of severe illness on the welfare of individuals. This is not surprising because UNICEF (2019) report shows that small cash transfers and irregularities in terms of delays in the disbursement of funds to recipients can influence individuals' well-being. The small amount is also not often adjusted for local prices on food and other items (inflation), which could erode the purchasing power of the recipient. This may be a contributing factor to the realization of the insignificance of the interaction terms on consumption per capita. Although the coefficients of the interaction terms are not statistically significant, we can infer that *LEAP* can be a good moderating

variable in increasing the welfare of individuals, depending on the type of illness faced by a household.

Nevertheless, *LEAP* can effectively provide households with better health care and improve consumption if appropriate measures are implemented. First, we believe that if providers increase the amount of money given to beneficiaries with a predictable flow of funds to recipients, it will significantly affect their welfare, particularly those using it for productive activities. Second, the government should ensure individuals with onset health challenges, especially severe illnesses are fully covered with special avenues that can be health-improving given the monies. In addition, the government and the Ministry of Gender, Children and Social Protection should ensure proper monitoring of *LEAP* beneficiaries to ensure that monies are used in welfare-improving productive activities.

This study is not without limitations. First, we only used cross-sectional data for the two waves and therefore lacked panel data across time for analyses. Second, the data do not provide information on the exact amount of cash received by beneficiaries so it was quite impossible to measure the exact effect of social assistance on welfare. We could only track whether or not having such assistance could mitigate the effect of a health shock. Therefore, when interpreting this impact should be done with caution to avoid overstated welfare impacts.

5. Conclusions and policy implications

The varying economic impact of health shocks and the role of social assistance in mitigating these effects provide policy insight for policymakers and social welfare activists. For instance, health shocks measured as disability, severe illness (labour days lost) and hospitalization have varying effects on household consumption per capita. Importantly, disability and severe illness have been shown to contribute significantly to increased vulnerability to welfare loss among households in Ghana. Due to that, households are at risk of permanently losing their valuable assets and reduction in consumption, and this may have a spillover effect on national policies on poverty reduction and human capital development. These impacts can limit an individual's potential for smooth consumption and access to healthcare, and that may have a devastating impact on their welfare. This means that the costs involved in treating sick people have the potential to influence the individual's future well-being either directly or indirectly and would even further push them into permanent destitution. This may undermine Ghana's fight to achieve the Sustainable Development Goals (1, 2, and 3), which require nations to end poverty, zero hunger, ensure healthy lives and promote well-being for all at all ages.

Therefore, it is recommended that the government of Ghana remains committed to raising the living standards of the vulnerable and poor in society by increasing its budget allocation to the Ministry of Gender; Children and Social Protection to allow wider coverage of households. Raising the budget allotted to the *LEAP* programme will ensure that the beneficiaries received a significant amount that will mitigate the unexpected health shocks and hence improved their welfare. Again, macroeconomic instabilities like inflation erode the purchasing power of recipients and this undermines their welfare as they tend to have lower consumption levels. Therefore, consistently raising the *LEAP* budget in line with the economic conditions will induce higher household welfare.

Furthermore, given that social assistance does not reduce the effect of a health shock on the welfare of households, we call for the expansion of the social assistance programme through mechanisms that ensure that households build resilience to health shocks. That is, by integrating social and health policies in a way that provides adequate, quality, and affordable healthcare to vulnerable and marginalized groups of society to protect them from additional risks at the household level in Ghana.

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