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Effect of health shocks on the absenteeism magnitude at work in Togo: is health insurance a mitigating factor?

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Abstract

Background The occurrence of health shocks affects households economically in various ways. It most often leads to missed work, thus inducing a decrease in productivity and a loss of income. These effects are even more significant if the extent of absenteeism is high or if its duration is long.

Purpose This study aims to analyse the effects of health shocks on the magnitude of absenteeism and to highlight the potential mitigating effect of health insurance on the magnitude of absenteeism among households affected by the shocks.

Methodology/Approach Absenteeism at work was measured here by the number of days lost due to health problems. Data from the Harmonised Survey on Household Living Conditions (EHCVM) 2019 were used for this purpose. To account for the endogeneity problem in this context, we use Two-Stage Least Square (2SLS) model to achieve our objectives.

Results Our results suggest that health shocks significantly increase the magnitude of absenteeism from work by increasing the probability of a longer duration of absenteeism. Health insurance mitigates the magnitude of absenteeism by significantly reducing the probability of moving from short to long absenteeism by 3.27.

Conclusion Health shocks have a significant effect on the magnitude of absenteeism. Given the role of health insurance in mitigating the effect of health shocks, this study highlights the need for an extension of health insurance to a greater number of people for a more significant effect.

Keywords Health shocks, Health insurance, Absenteeism

Background

Health is one of the essential elements for the development of human capital for production [1, 2]. This places health insurance at the forefront of public policy concerns. Indeed, health insurance affects the well-being of beneficiaries mainly through two channels: improving health and smoothing health-related spending [2, 3]. Through increased use of healthcare in cases of morbidity, insurance helps to reduce the number of days lost for health reasons. Absenteeism leads to a decrease in the productivity not only of workers but also of companies [4]. This results in a loss of income and therefore a decrease in household well-being, especially if the morbid episode affects the main income provider in the household.

These effects could be avoided if adequate formal social protection mechanisms, including health insurance,

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were in place for this purpose. There is much empirical evidence on the subject, particularly in developing countries where health insurance is being strongly promoted. However, even if a reduction in the effects of shocks can be seen as a result of wider health insurance coverage [2], the results are not homogeneous across countries. The effect is sometimes negative [5], where the presence of health insurance is associated with higher health expenditure and mixed effects on mitigating the effects of shocks on household well-being. The supply-induced demand theory seems to justify these orientations, as providers can prescribe expensive treatments to patients to maximise their income [6]. This contributes to an unnecessary increase in health spending without there being a gain in terms of health indicators. In addition, moral issues must be considered regarding insured persons potentially abusing care provisions.

In Togo, the actions of the State in recent years to ensure health coverage for different layers of the population, starting with civil servants in 2011 and several trades thereafter, testify to the central nature of this intervention in the actions of the health sector. This interest is part of a broader framework for integrating universal health coverage within populations [5].

The effectiveness of universal health coverage may be due to its ability to mitigate the effect of health shocks on household well-being in an environment where health is financed mainly by direct expenditure. Household income is negatively impacted in the event of shocks as a direct result of lost working days [7]. It therefore seems important to provide empirical evidence on these issues in a country that is currently undertaking major reforms toward universal health coverage for the poorest and most vulnerable people.

Some research work in the developing countries context, such as Togo, has addressed health shocks issues, the problem of catastrophic health expenditure [8] and that of insurance [9]. The results note that at-risk households devote a significant part of their monthly expenditure to health. The risk is greater among female-headed households and those with the poorest incomes in the country [8]. In addition, it was reported that economic status, hospitalisation, type of care used and household size are factors associated with high financial health risks [9].

However, these studies have failed to examine the combined effects of health shocks and the mitigating role of health insurance with a focus on the magnitude of absenteeism. We contribute to knowledge by taking this aspect into account and seeking to answer the question of whether health insurance mitigates the magnitude of absenteeism in the event of health shocks.

To answer this question, this paper aims to analyse the effects of health shocks on the magnitude of absenteeism and to highlight the potential mitigating effect of health insurance.

Theoretical and empirical framework

The economic literature on the role of health insurance shows that it can affect economic activity through its contribution to sickness risk coverage [2, 3, 10]. Indeed, health insurance is implemented to reduce the cost of health care, thereby improving health, which in turn affects human capital and consequently productivity. Becker [11] highlighted the existence of a factor of production, human capital, which increases the level of production. The concrete decline in human capital has made it possible to distinguish several components, one of which depends on health and the other on education. Based on these theories and focusing on the health aspect, Grossman [12] developed a model of healthcare demand in which the aim is to maximise the temporal utility of the individual.

To this end, Grossman assumed that health is an endowment in the form of capital that decreases over time and requires means of maintenance to reduce the rate of decline of said capital. Grossmann's model goes beyond health as a factor of production but sees it as an intermediate good that serves to maximise the utility of the individual and the production of other consumer goods. Health is then valued by the individual through the time he can devote to market activities, production, and leisure activities. It is therefore a good that directly increases the degree of well-being of the individual, but also a factor of production that allows him to generate income to improve it further.

Health thus affects productivity. Indeed, healthy people tend to have better productivity because they are physically more energetic and have more robust intellectual capacity [2, 3]. They have more time for work because the moments of absence due to illness (of the subject or relatives) are minimised. In addition, healthier people live longer and are more likely to invest in capacity development because they expect a return on these investments over long periods [10].

Health is the result of several factors, with genetic, environmental, social, and behavioural aspects [12]. Thus, the occurrence of health shocks may be associated with an unfavourable environment (lack of certain amenities such as adequate water and sanitation services, or neglect of hygiene rules), economic factors that maintain precariousness and malnutrition, especially among children, or behaviour and overconsumption of other types of goods (alcohol, tobacco, etc.) that induce noncommunicable diseases.

Health shocks are associated with a significant reduction in income and impact on labour supply [13],

particularly among households with low incomes who are unable to fully smooth over income losses resulting from moderate and severe health shocks [14].

A single-income household can be greatly affected if its head is facing severe illness shock [15, 16]. A health shock can lead to reduced working hours, total or partial withdrawal from the labour market, and potentially permanent job loss [15, 17]. These effects may be even greater in urban areas if the person is less educated or whose work in the formal sector requires little technicality [17]. Indeed, for most educated people doing highly technical work, their replacement in the company can be a complex process, a factor that ultimately promotes the safeguarding of their job during a period of absence from work related to illness. In addition, more educated people tend to use more effective means of care, resulting in a shorter duration of reduction in working time due to illness [17].

According to Grossman's model [12], healthcare utilisation contributes to improved health status. The cost of this care involves health insurance, which has a dual role in the economic sphere: improving the health of populations by promoting the use of care in the event of morbidity and enabling households to cope with shocks associated with illness, while maintaining their purchasing power and productive capacity. Health insurance, through its ownership of pooled health risks within households, is one of the approaches that considerably mitigate the impact of these shocks on households [7, 16, 18, 19].

Indeed, the availability of health insurance makes it possible to reduce health expenses borne by patients and thus facilitate the management of preventive care [10, 16, 20]. This creates a willingness to live in an environment not conducive to illness and thereby decreases the propensity for health shocks. Shen's [21] analysis of rural insurance in China, using a quasi-experimental difference-of-differences approach, identified a positive relationship between the number of working hours reported by beneficiaries and the likelihood of nonwork due to health problems. Similar results are noted by Dizioli [10] for the beneficiaries of insurance provided by employers examined using an instrumental variable approach; workers with health insurance missed, on average, 52% less working time than those who were uninsured.

These effects are not uniform. Health insurance may not always influence health [1], and the use of care may not be related to productivity [22]. Indeed, the existence of health insurance can lead to greater consumption of care provisions due to demand induced by supply, without necessarily benefitting the health of users [23]. Overall, increased use of care does not necessarily mean better health, which is dependent on several factors [1].

Better health is also not necessarily associated with increased labour supply and resultant productivity [2]. As better health increases the time available that the individual could allocate either to leisure or to work, if his satisfaction functions better for leisure, this time could be allocated to leisure instead of work [22].

Thus, Alam [14] notes the absence of a significant impact of health insurance on the effects of health shocks. A review by Azzani [20] highlights the duality of the impact of health insurance on the impact of shocks. When there is an effect, it depends on a pattern where a protective effect is seen in urban areas, but the opposite is seen in rural areas. One possible explanation for this result is the limited coverage of outpatient care, use of self-medication, and traditional medicine treatments, which are more common in rural areas, exacerbated by the absence of care centres close to households.

Wagstaff [15] highlighted the negative impact of the use of care that integrates more technology and is therefore more expensive for the insured. Indeed, because of the existence of health insurance, which has a high capacity to pay in the eyes of healthcare providers, the care offered is the most expensive and profitable from their point of view. In such conditions, insured households end up with higher health costs than uninsured households for the same type of morbidity [6].

The contradictory effects noted by the theory are reflected in empirical studies on the subject that attempt to establish the relationship between health insurance and productivity; these studies struggle to show a positive link [3]. A literature review by Lê [2]on the subject highlights that most studies fail to show a link, or indeed report a negative relationship between state-subsidised health insurance and the labour supply of beneficiaries, whether that is social insurance beneficiaries or their dependents.

It should be noted that health shocks induce expenditures that are likely to affect household factors of production. The economic consequences of health shocks can be severe for the uninsured [19]. These severe shocks may push households to opt for borrowing or mortgages, financial support from relatives and friends, or the sale of productive assets and livestock [14, 19]. The most affected households are generally those with forms of vulnerability, including people with chronic diseases, young children, elderly people, or people living with disabilities, and those households whose head has a low level of education or is female.

In summary, health shocks can lead to a decline in labour supply and thus lower incomes in affected households. Health insurance, by smoothing the expenses associated with these shocks, can contribute to the mitigation of these effects. However, the benefits of health insurance

cannot be assumed, and several other factors must be considered.

Methodology

Data source and variable definition

Data source

The data used in this paper come from the 2019 Harmonised Survey on Household Living Conditions (EHCVM) of Togo. This survey was conducted by the National Institute of Statistics (INSEED) and covered 6,462 households, or 28,815 individuals selected randomly across the entire national territory. The information collected by the EHCVM concerns households and their members, in particular on socio-demographic characteristics of household members including education, general health, individual jobs, non-employment income, savings and credit, food security, non-agricultural businesses, housing, household assets, transfers, shocks suffered by households and survival strategies, safety nets, agriculture, livestock, agricultural equipment, fishing and subjective poverty.

Variable definition

The literature on the subject of changes in household well-being following health shocks measures changes by a set of variables, including financial variables, such as catastrophic or impoverishing health expenditures [8, 9, 14]. This approach has the advantage of examining the financial impact of health shocks but does not take into account shocks that do not necessarily generate health costs, for reasons such as the non-use of health services or the choice to use traditional therapists. Other authors examine shocks by the duration of hospitalisation after a health problem [24], the number of days lost reported in the household [7], or the declaration of health shocks by the household [25]. In this study, we use the latter measure of health shocks. This method takes into account shocks that do not necessarily generate health expenditures. The advantage of this measure is that it does not link shocks to expenditure thresholds that may depend on the level of household income; rich and poor households do not approach 20% of their expenditure in the same way, so our method incorporates the scale of the health problems in question given by respondents [26]. However, similar to all measures related to interviewees' self-reports, these measures are limited as they depend on the household's psychological perception of their health and definition of a health shock [13].

The measurement of health shocks in this study uses the shocks section of the EHCVM survey. This section discusses different types of shocks facing households, including drought, floods, fire, job loss, etc., and the subsequent effects on well-being. We were interested in shocks related to serious illness or accidents of a household member. In this section, households are asked whether they have been negatively affected by a disease shock in the 12 months preceding the survey. The shock occurrence variable is coded 1 if the household answers yes and 0 otherwise.

Concerning the number of days lost due to illness, individuals who had faced the shock were asked whether this health problem prevented them from going about their activities normally, and for how long. We coded this variable into three modalities: no absence, less than a week, and more than a week. This analysis was carried out for working-age people only.

The choice of independent variables was based on the literature on factors associated with health shocks and their mitigation measures [18, 22, 23, 27, 28]. To address endogeneity issues, the number of people with chronic diseases was chosen as an instrument.

The characteristics of the head of the household, including gender, were recorded, as female gender is a vulnerability factor mentioned by several authors [18, 22, 23]. Geographic factors included place of residence, categorised into rural and urban, and region of residence, categorised into six categories. In addition, factors such as household size [18, 23, 28], number of children under five years of age and the number of people over 60 years of age [18, 28] are decisive. In addition to these factors, the number of household members hospitalised [18, 23] or the number of household members with chronic illness [18, 27, 29] are factors that influence resilience to health shocks by increasing households' propensity to cope with disease-related financial risks.

Details of variables of interest and their measurement are presented in Table 1 (in Appendix).

In addition, descriptive statistics of variables of interest are presented in Table 2 (in Appendix).

This table shows that approximately one-third of households had to deal with a health shock in the 12 months preceding the survey. In addition, the rate of household health coverage is still low, with 5.6% of heads of household covered by health insurance.

Empirical Modelling

To the best of our knowledge, the analysis of the effects of health shocks on household well-being should be carried out by an experimental study to measure variables relating to the living conditions of households, before and after the onset of health shocks. In the literature on this subject, this approach has been widely used because of the availability of data [7, 13, 16, 29]. These experimental approaches are, in the absence of temporal data, replaced by instantaneous sectional analyses such as logistic regressions [27], which we will use for this study.

The first level of our analysis focuses on the effects of health shocks on the magnitude of absenteeism at work. To do this, we first confirm the fact that normally, a health shock will result in absenteeism by estimating the following relationship:

$$\boldsymbol{Y_i = \alpha_0 + \alpha_1 choc_i + \alpha_2 assur_i + \alpha X_i + \varepsilon_i} \quad (1)$$

where i is the household index; Y is the variable relating to absenteeism at work for health reasons (binary dependent variables with 1 in case of absenteeism and 0 otherwise); ***choc*** relates to the occurrence of health shock; ***assur*** relates to health insurance; X is the other independent variable of the model, $\boldsymbol{\alpha_0}$, $\boldsymbol{\alpha_1}$, $\boldsymbol{\alpha_2}$, $\boldsymbol{\alpha}$ are the coefficients and the $\boldsymbol{\varepsilon}$ is the terms of error.

Next, we capture the effect of health shocks on the magnitude of absenteeism by creating duration modalities. Thus, we create three modalities for absenteeism as follows:

$$Y_i = \begin{cases} 0 \, if \ there \ is \ no \ absenteeism \\ 1 \, if \ there \ is \ absence \ for \ less \ than \ a \ week \\ 2 \, if \ there \ is \ absence \ for \ more \ than \ a \ week \end{cases} \quad (2)$$

With this new definition of the dependent variable, the analysis of the effect of health shocks on the magnitude of workers' absenteeism at work for health reasons is performed using an ordered logistic model. Equation 1 is repeated for estimation but with a difference in the nature of the dependent variable:

$$\boldsymbol{Y_i = \alpha_0 + \alpha_1 choc_i + \alpha_2 assur_i + \alpha X_i + \varepsilon_i} \quad (3)$$

where $\boldsymbol{Y}$ is the variable relating to the magnitude (duration) of absenteeism at work for health reasons (ordinal dependent variable).

However, capturing the effects of health shocks on household well-being (such as absenteeism or its magnitude which negatively affects productivity) is subject to the issue of endogeneity, with some variables being simultaneously related to household well-being and resilience to health shocks [7, 15]. Shock effect measurement variables are most often subject to endogeneity problems related to variables of interest, such as the occurrence of health shocks and different effects [7, 15]. Four potential sources of endogeneity can be determined: reverse causality, omitted variables, measurement error, simultaneity, and selection bias.

It is the concern to correct this endogeneity issue that justifies, in our work, the use of instrumental variables. This technique makes it possible to estimate by integrating instruments that then integrate several equations. The Two-Stage Least Square (2SLS) model with instrumental variables is used, primarily, to address the issue of endogeneity due to reverse causality and omitted variable bias. We used, in this paper, the number of people suffering from chronic diseases as the instrumental variable [7, 15] to address the endogeneity problem due to reverse causality. Using this instrument which is correlated with the independent variable (health shocks) but not directly with the dependent variable (absenteeism or its magnitude) allows to isolate the exogenous variation of the independent variable. This allows to identify the causal effect of the independent variable on the dependent variable without the influence of the inverse causality. Two equations are specified:

$$\begin{cases} Y_i = \alpha_0 + \alpha_1 choc_i + \alpha_2 assur_i + \alpha X_i + \varepsilon_i \\ choc = \beta_0 + \beta_1 assur_i + \beta_2 X_i + \eta_1 Z_i + \delta_i \end{cases} \quad (4)$$

where $\boldsymbol{Z}$ is then the instrument, which is the number of people suffering from chronic diseases and $\boldsymbol{\eta}_1$, the coefficient associated to the instrument and $\boldsymbol{\delta}$ the terms of error.

The second level of our analysis focuses on the analysis of the potential mitigating effect of health insurance on the magnitude of absenteeism caused by health shocks.

To understand this potential mitigating effect of health insurance, we constructed the ***chocass*** variable, which is equal to 1 if the household experiences both a health shock and is insured and 0 otherwise. Considering this interactive variable, Eq. (3) then becomes:

$$Y_i = \alpha_0 + \alpha_1 choc_i + \alpha_2 assur_i + \alpha_3 chocass + \alpha X_i + \varepsilon_i \quad (5)$$

The sign of the coefficientα_3 is then the object of attention. If $\alpha_3 < 0$, then health insurance mitigates the magnitude of absenteeism caused by health shocks; otherwise, no mitigating effect is observed.

Results

Our results are presented in two steps. First, the effect of health shocks on the magnitude of absenteeism. Then, the potential mitigating effect of health insurance on the magnitude of absenteeism.

The effect of health shocks on the magnitude of absenteeism

Baseline model estimation results

Without addressing the endogeneity problem, the results presented in Table 3 (in Appendix) are obtained from logistic and ordered logistic estimations. The logistic estimation is performed to confirm the fact that a health shock will result in absenteeism while the ordered logistic is used to estimate the effect of the health shock on the magnitude of absenteeism specifically for health reasons, which is an indicator of productivity decline associated with illness.

The results presented in the first column of Table 3 show a positive and significant coefficient of 1% between

health shock and absenteeism. This result confirms the fact that a health shock will result in absenteeism. The results in the second column reveal that health shocks increase the magnitude of absenteeism. In other words, with a significantly positive coefficient, health shocks increase the probability of moving from short to long duration of absenteeism.

Results of estimations addressing the endogeneity problem

The potential endogeneity resulting from the double implication between the variables of interest and the health shocks led us to use an instrument (the number of people suffering from chronic disease) to correct endogeneity. The 2SLS estimation is used for this purpose.

In the context of 2SLS regression, the validity of an instrument is important for obtaining consistent and unbiased estimates of the causal effect. The primary criteria for the validity of an instrument are observed through the first stage of the 2SLS regression results presented in Table 4 (in Appendix).

The results show that the number of people suffering from chronic disease is strongly correlated with the occurrence of health shock with a positive and significant coefficient at the 1% level. The values of the Fisher statistics are greater than 10, thus reflecting the rejection of the null hypothesis that the number of people suffering from chronic disease does not influence the occurrence of health shock. This variable is therefore used as a valid instrument to correct the endogeneity problem.

This instrument is used to account for endogeneity in the estimations whose results are presented in Table 5 (in Appendix).

Estimation results show that the previously reported relationship is maintained (Table 5). This suggests that health shocks significantly increase the duration of absenteeism from work by increasing the probability of moving from short to longer duration of absenteeism. The coefficient indicates that each unit increase in health shocks is associated with an increase in the probability of moving to a longer duration of absenteeism by 2.926.

Our results also reveal certain factors that are significantly associated with the magnitude of absenteeism related to health shocks. These are the gender and highest education level of the household head, the household size, the fourth quartile of expenditure, and the type of care required.

The mitigating effect of health insurance on the magnitude of absenteeism caused by health shocks

The results of the mitigating effect of health insurance on the magnitude of absenteeism caused by health shocks are obtained from the 2SLS estimation performed with the interactive variable. The interactive variable here allows us to group those who experience both a health shock and are covered by health insurance on the one hand, and all others on the other hand. The results are presented in Table 6 (in Appendix).

Contrary to the results of other models, we observe a significant positive effect of health insurance on the magnitude of absenteeism. Thus, health insurance in the Togolese context increases the magnitude of absenteeism, which could be associated with a moral hazard, in pushing households with health insurance to seek more care [28].

However, when considering the interactive variable, a mitigating effect of health insurance on the magnitude of absenteeism caused by health shocks appears. We observe a negative coefficient associated with the interaction variable. This finding reflects the fact that, when households are affected by a health shock, the magnitude or duration of absenteeism is mitigated for those who are covered by health insurance. Health insurance in this situation mitigates the magnitude of absenteeism by significantly reducing the probability of moving from short to long absenteeism by 3.27.

While separating public from private insurance, the magnitude of the mitigating effect of health insurance on the duration of absenteeism appears to be different, as presented in Table 7 (in Appendix).

The results show a positive and significant association between both types of insurance and the magnitude of absenteeism caused by health shocks. However, public insurance seems to have a more significant mitigating effect on absenteeism. This could be explained by the fact that this insurance gathers a larger number of beneficiaries and that its mutualisation power is greater, inducing more effects.

Discussions

In this paper, we first analyse the effects of health shocks on the magnitude of absenteeism. Then, we highlight the potential mitigating effect of health insurance on the duration of absenteeism among households affected by shocks.

Using the number of people suffering from chronic disease as an instrument, the 2SLS estimation results confirm the positive and significant relationship found between absenteeism and health shocks with ordered logistic regression. However, the magnitude of the effects is more pronounced with the 2SLS estimation.

We found that health shocks not only result in absenteeism but also increase its magnitude or duration. Our results are consistent with those of studies that have found that health shocks are associated with the magnitude, duration or rate of absenteeism

accompanied by a loss of income from work [4, 30–32]. Bertel and al [33]. highlight that apart from inflicting pain and suffering, poor health can affect individual and social welfare by reducing hours worked and earning capacity through an increase in hours of absenteeism. Ose [34], based on the Shapiro and Stiglitz efficiency wage model and separating the effects of voluntary absences from absences related to poor health, finds that long-term absence is relatively higher when health shocks occur. In their research on the effect of health problems on sickness-related absence, Bryan and al. [32] found that health problems affect the number of hours of absenteeism.

The effects of health shocks on the magnitude or duration of absenteeism may also influence the ability of affected individuals to find future work in the labour market [26]. These combined effects can promote income inequalities and perpetuate a vicious cycle of vulnerability [35]. In addition, the magnitude of absenteeism is associated with a loss of productivity of the head of the household; this can also affect other members of the household, who may have to abandon their activities to provide care [2].

Our results reveal that members of female-headed households have a higher probability of moving from short to long periods of absenteeism. Because of their typically more prominent role as caregivers, women are more affected by health shocks even if they are not the ones who suffer directly from the episode of morbidity [36]. This result, which shows that women are more exposed to the risk of absenteeism and its duration, can also be explained by discrimination at work [37, 38], biological factors, [39] and relative preferences for absenteeism as a means of investing in health [40]. In addition, for the richest households, the probability of having a long duration of absenteeism is low. This finding is consistent with those that have shown that work absences related to health shocks are important for differences in socioeconomic outcomes such as income [41].

The results obtained suggest that health shocks, by affecting income downward and health expenditure upward, lead to a decline in labour productivity as a result of days lost due to illness. These income effects are therefore likely to affect the well-being of households that are forced to make fairly difficult adjustments to cope with shocks [16, 42]. These effects are felt more by women, who simultaneously carry the social and economic burdens associated with health shocks [36].

The mitigating effect of health insurance is reflected in a reduction in the number of days of absence due to illness. We found, using the interactive variable, that health insurance in this Togolese context mitigates the magnitude of absenteeism by significantly reducing the probability of moving from short to long absenteeism by 3.27 in the case of health shocks.

Health insurance therefore has the effect of improving the productivity of workers (affected by health shocks) by allowing them to make greater use of healthcare and accelerating the healing process [2]. In addition, health insurance facilitates the recovery of sick workers who experience health shocks with access to adapted care, which is inherent in health insurance [10]. Those affected by health shocks but not covered by health insurance are unable to access care, evidenced by their lower rate of visits to health facilities compared to those with health insurance.

Our results are consistent with those of a recent study that demonstrated that employees who are covered by health insurance are less likely to be absent from work due to illness and record fewer work days lost compared to those who are not insured [43, 44]. Similarly, Dizioli [10] showed that workers with health insurance miss an average of 76.54% fewer work days than uninsured workers.

Note that health insurance, without the interaction with health shocks, appears to be positively associated with absenteeism and its magnitude in general. This could be linked to a moral hazard problem, where individuals covered by insurance use healthcare more often, leading to a longer duration of absenteeism [28]. This has been observed in a study in Germany, where the authors found that the extension of health coverage has led to an increase in the total number of days of absence of at least 10%, or one day per employee per year [45].

When we make a distinction between public and private insurance, our results show that public insurance has a more significant mitigating effect on the duration of absenteeism in households affected by a health shock. This could be explained by better risk pooling and population coverage within public health insurance systems, as Bai and al. [46] have pointed out.

Our results show that health shocks increase the magnitude of absenteeism. This effect is mitigated by insurance among individuals who have suffered the health shock and who are covered by health insurance. Given that long periods of absenteeism are accompanied by a significant loss of productivity and income, it would be pertinent for public policies to better define and target mechanisms that strengthen household resilience to health shocks. To this end, the focus should be on health insurance, which promotes a faster recovery of health and reduces the effects of shocks on the most vulnerable households.

Appendix

Table 1 Summary of analysis variables

Variables	Measurement	Modalities
Health shocks	**Occurrence of shock**	
	whether the household have been negatively affected by a disease shock in the 12 months preceding the survey	**No** **Yes**
Absenteeism	**Absent due to illness**	
	Did the health shocks faced prevented from going to work?	**No** **Yes**
	Extent of absence from work/ how long it lasted	
	Number of days absent due to illness	No absence Less than a week More than a week
Gender of head of household (HH)		
	whether the head of household is male or female	Masculin Feminine
Place of residence		
	The place where the members of the household reside	Urban Rural
Health insurance for the head of household		
	Head of household covered by health insurance	No Yes
Region		
	The region where the members of the household reside	Maritime Plateaux Central Kara Savanes Lomé commune
HH Professional Category		
	The type of occupation of the head of household	Frame Worker/laborer Own account
HH level of education		
	Head of household education level	None Primary Secondaire1 Secondaire2 Upper
Type of care		
	The type of care that households have access to	No care Public care Private care
Number of children under 5 in the household	The total number of children under 5 years old in each household	
Number of people with chronic illness in the household	The number of household members suffering from chronic illness	
Household size	The total number of household members	

Source: Author from EHCVM 2019

Table 2 Descriptive statistics of variables

Variables	Eff	%/average	Min	Max
Number of days absent due to illness				
No absence of health	4639	75.17		
Less than a week	704	11.41		
More than a week	828	13.42		
Health shock				
Not	4180	67.80		
Yes	1985	32.20		
Gender of head of household				
Masculin	4530	73.48		
Feminine	1635	26.52		
Place of residence				
Urban	2267	36.77		
Rural	3898	63.23		
Health insurance for the head of household				
Not	5822	94.44		
Yes	343	5.56		
Region				
Maritime	946	15.34		
Trays	1099	17.83		
Central	819	13.28		
Kara	1124	18.23		
Savannahs	1144	18.56		
Lomé commune	1033	16.76		
HH Professional Category				
Frame	237	4.23		
Worker/laborer	977	17.43		
Own account	4392	78.34		
HH level of education				
None	2293	37.19		
Primary	1553	25.19		
Secondaire1	1373	22.27		
Secondaire2	615	9.98		
Upper	331	5.37		
Type of care				
No care	3404	55.16		
Public care	2115	34.27		
Private care	652	10.57		
Number of children under 5 in the household	6171	0.7	0	10
Number of people with chronic illness in the household	6171	0.04	0	2
Household size	6165	4.45	1	31

Source: EHCVM 2019 and our calculations

Table 3 Estimation results without addressing endogeneity problem

	Absenteeism from work for health reasons	
	Occurrence	**Magnitude (duration)**
Health shock	. 312***	.3286***
HH health insurance	-.151	-.168
Type of HH		
Feminine	.560***	.5452***
Household size	-.086***	-.081***
Place of residence		
Rural	.158	.1988**
Region		
Plateaux	.019	-.056
Central	-.111	-.155
Kara	-.056	-.080
Savannahs	-.344***	-.402***
Lomé commune	-.177	-.180
Quartile of expenditure		
2e quartile	.114	.1073
3e quartile	.301***	.2817***
4e quartile	.392***	.3821***
HH Professional Category		
worker/laborer	.065	.0325
own account	.206	.2403
HH level of education		
Primary	-.183*	-.166*
Secondaire1	-.209**	-.228**
Secondaire2	-.231	-.220
Upper	-.094	-.091
Type of care		
Public care	1.462***	1.461***
Private care	1.368***	1.388***
Number of children under 5	-.125***	-.147***

*** significant at 1%

** significant at 5%

* significant at 10%

Table 4 First stage of the 2SLS regression results

	Occurrence of health shock	**Occurrence of health shock**
Number of people suffering from chronic disease	.1150***	.1836***
	(.0348)	(.0298)
HH health insurance	.0030	
	(.0341)	
Gender of HH		
Feminine	.0123	
	(.0156)	
Household size	.0081***	
	(.0030)	
Place of residence		
Rural	.0578***	
	(.0173)	
Region		
Plateaux	-.000	
	(.0213)	
Central	.0024	
	(.0230)	
Kara	.0213	
	(.0217)	
Savanes	-.051**	
	(.0223)	
Lomé commune	-.053**	
	(.0253)	
Quartile of expenditure		
2e quartile	.0054	
	(.0164)	
3e quartile	.0181	
	(.0186)	
4e quartile	.0018	
	(.0227)	
HH Professional Category		
worker/laborer	.0059	
	(.0400)	
own account	.0216	
	(.0407)	
HH level of education		
Primary	-.012	
	(.0162)	
Secondaire1	-.008	
	(.0177)	
Secondaire2	-.035	
	(.0256)	
Upper	-.101***	
	(.0356)	
Type of care		
Public care	.0248*	
	(.0138)	
Private care	.0405*	
	(.0215)	
Number of children under 5	.0008	
	(.0080)	
_cons	.2059***	
	(.0510)	
F-test	10.48	37.79
R2	0.0414	0.0061
N	5606	5606

1. The Modalities retained as references for the categorical variables; Health coverage: not covered; Gender of CM: male; Place of residence: urban; Region: maritime; Well-being quartile: 1st quartile; Professional category of CM: Executive; Level of education of CM: none; type of care: No care

2. In parentheses the standard deviations of the estimators of the coefficients

*** significant at 1%

** significant at 5%

* significant at 10%

Table 5 Results of 2SLS estimation addressing the endogeneity problem

	Absenteeism from work for health reasons	
	Occurrence	**Magnitude (duration)**
Health shock	1.709***	2.926***
HH health insurance	-.033	*-.064*
Type of HH		
Feminine	.075**	.1061*
Household size	-.027***	-.043***
Place of residence		
Rural	-.069	-.107
Region		
Plateaux	.000	-.049
Central	-.023	-.063
Kara	-.045	-.096
Savannahs	.035	.0246
Lomé commune	.058	.0887
Quartile of expenditure		
2e quartile	.008	.0065
3e quartile	.022	.0249
4e quartile	.063	-.273**
HH Professional Category		
worker/laborer	.001	-.022
own account	.009	-.001
HH level of education		
Primary	-.008	-.005
Secondaire1	-.021	-.047
Secondaire2	-.024	.0411
Upper	-.154*	.2642*
Type of care		
Public care	.195***	.3091***
Private care	.149***	.2370***
Number of children under 5	-.016	-.035
_cons	*-.228*	*-.381*

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Table 6 Results of 2SLS estimation integrating the interactive variable

	Magnitude (duration) of Absence due to illness
Occurrence of shock	3.394***
HH health insurance	*.8539***
Type of HH	
Feminine	.1047*
Household size	-.048***
Place of residence	
Rural	-.123
Region	
Trays	-.058
Central	-.089
Kara	-.131
Savannahs	.0324
Lomé commune	.0814
Quartile of expenditure	
2e quartile	-.003
3e quartile	.0223
4e quartile	.1073
HH Professional Category	
Worker/laborer	.0254
Own account	.0193
HH level of education	
Primary	-.007
Secondaire1	-.055
Secondaire2	.0859
Upper	.2213
Type of care	
Public care	.2847***
Private care	.2190**
Number of children under 5	-.035
Interactive variable created with health Shocks and assurance interaction	*-3.27****
_cons	*-.493*

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Table 7 Results of estimates by differentiating between public and private insurance

	Private Insurance	**Public Insurance**
Occurrence of shock	2.869***	3.493***
HH health coverage	.5524*	.8881**
Type of HH		
Feminine	.1083**	.0934
Household size	-.043***	-.049***
Place of residence		
Rural	-.101	-.127
Region		
Trays	-.055	-.045
Central	-.069	-.072
Kara	-.101	-.125
Savannahs	.0193	.0418
Lomé commune	.0798	.1102
Quartile of expenditure		
2e quartile	.0063	-.003
3e quartile	.0268	.0128
4e quartile	.1026	.0931
HH Professional Category		
worker/laborer	.0006	.0388
own account	.0214	.0288

	Private Insurance	Public Insurance
HH level of education		
Primary	-.003	-.007
Secondaire1	-.049	-.054
Secondaire2	.0419	.0766
Upper	.2334*	.2636
Type of care		
Public care	.3100***	.2808***
Private care	.2378***	.2142**
Number of children under 5	-.035	-.035
Interactive variable created with health Shocks and assurance interaction	-2.55**	-3.41***
_cons	-.388	-.528

The standard deviations of the coefficient estimators are in parentheses

*** indicates significance at 1%, ** indicates significance at 5%, and * indicates significance at 10%

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Authors' contributions
S.Y conceived and designed the analysis, contributed to the analysis tool, performed the analysis, wrote the paper, reviewed the results, and approved the final version of the manuscript. D.A conceived and designed the analysis, contributed to the analysis tool, performed the analysis, reviewed the results, and approved the final version of the manuscript. C.M conceived and designed the analysis, contributed to the analysis tool, reviewed the results, and approved the final version of the manuscript.

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