Catastrophic household expenditure for health care in a low-income society: a study from Nouna District, Burkina Faso

Tin Tin Su,[a] Bocar Kouyaté,[b] & Steffen Flessa[c]

Objective To quantify the extent of catastrophic household health care expenditure and determine the factors responsible for it in Nouna District, Burkina Faso.

Methods We used the Nouna Health District Household Survey to collect data on 800 households during 2000–01 for our analysis. The determinants of household catastrophic expenditure were identified by multivariate logistic regression method.

Findings Even at very low levels of health care utilization and modest amount of health expenditure, 6–15% of total households in Nouna District incurred catastrophic health expenditure. The key determinants of catastrophic health expenditure were economic status, household health care utilization especially for modern medical care, illness episodes in an adult household member and presence of a member with chronic illness.

Conclusion We conclude that the poorest members of the community incurred catastrophic health expenses. Setting only one threshold/cut-off value to determine catastrophic health expenses may result in inaccurate estimation leading to misinterpretation of important factors. Our findings have important policy implications and can be used to ensure better access to health services and a higher degree of financial protection for low-income groups against the economic impact of illness.

Keywords Health expenditures; Catastrophic illness/economics; Episode of care; Chronic disease/economics; Socioeconomic factors; Poverty; Households; Burkina Faso (*source: MeSH, NLM*).

Mots clés Dépenses de santé; Pathologie lourde/économie; Maladie chronique/économie; Période soins médicaux; Facteur socioéconomique; Pauvreté; Ménages; Burkina Faso (*source: MeSH, INSERM*).

Palabras clave Gastos en salud; Enfermedad catastrófica/economía; Episodio de atención; Enfermedad crónica/economía; Factores socioeconómicos; Pobreza; Hogares; Burkina Faso (*fuente: DeCS, BIREME*).

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Voir page 26 le résumé en français. En la página 26 figura un resumen en español.

يمكن الاطلاع على الملخص بالعربية في صفحة 27.

Introduction

Any health expenditure that threatens a household's financial capacity to maintain its subsistence needs is termed as catastrophic and does not necessarily equate to high health-care costs. Even relatively small expenditures on health can be financially disastrous for poor households. This is because almost all their available resources are used for basic needs and they are thus less able to cope with even very low health expenditures compared to richer households.[1–7]

WHO estimates that families who spend 50% or more of their non-food expenditure on health care are likely to be impoverished.[8] However, there is no consensus on the catastrophic threshold and cut-off values ranging from 5–20% of the total household income have been reported in the literature.[1, 9–12] Health expenditure has been also defined as catastrophic if a household's health expenditure exceeds 40% of income remaining after subsistence needs have been met.[3]

Households in developed countries are protected from catastrophic spending by adequate health insurance coverage or a tax funded health system. In developing countries, however, high out-of-pocket payments, an absence of risk-pooling mechanisms in health financing systems and high levels of poverty can result in catastrophic health care expenditure.[3]

Certain household characteristics, such as households headed by an elderly or disabled person, families with a low income and those who have a member with chronic disease are at risk for catastrophic expenditure.[1, 12] We analysed different threshold/cut-off values for factors that affect the determinants of household catastrophic spending and attempted to answer the following questions: How much are households currently spending on health care? What percentages of households are suffering from catastrophic health expenditure? Which households are at risk of facing catastrophic payment? What factors lead to catastrophic health expenditure?

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Methods

Study area

Burkina Faso, a West African country with a population of approximately 11 million, has 45.3% of its population living below the poverty line.[13] It is divided into 11 administrative health regions, comprising 53 health districts, each covering 200 000–300 000 individuals.[14] We conducted the study in Nouna District in north-west Burkina Faso. Almost most of the 230 000 inhabitants in this district are subsistence farmers.[15] User fees was implemented in this district since the early 1990s. Although a national policy on exemption exists, it was not effective in the study area. Out-of-pocket expenditure was more than 50% of the total health care expenditure.[16] There was no risk-pooling mechanism in financing health care during the data collection period.

Study design

We used the Nouna Health District Household Survey (NHDHS) to collect population-based morbidity data and socioeconomic information from 800 households (about 10% of the study population) during June 2000–June 2001. We selected 320 of 2802 households in urban Nouna and 480 of 4630 households in 41 villages (40% urban and 60% rural) by two-stage cluster sampling. In the first stage, seven clusters from urban Nouna and 20 clusters in the 41 rural villages were selected. In the second stage, respondent households were selected from each cluster. The schematic view of the sampling procedure is presented in Fig. 1.

We administered the socioeconomic module twice a year and the morbidity module four times a year to capture seasonal variations.[17] Using a recall period of one month, we collected information on past-perceived illness (reported morbidity), its severity and treatment and expenditure for treatment. Since the total cost of health care encompasses much more than out-of-pocket expenditure, we investigated the direct household costs for seeking treatment. This included out-of-pocket expenditure for drugs, consultation fees, costs for hospital beds and services, transport charges to the treatment site and daily living cost, including food and lodging for the accompanying household members. Since we used representative data of the study area, the geographical distribution of health facilities and resulting transport costs should not affect our findings.

The socioeconomic module in this survey gathered information on income and assets of the household and household expenditures. For this module, two recall periods were used: the last month and the five months preceding the last month. We checked the figures from the five-month-recall period for plausibility, and found them to be reliable. Instead of using reported income, we considered household expenditure as a better proxy for household income as done in several other studies.[18–20]

Statistical analysis

Microsoft Access was used for data entry. The database was re-coded and transformed into a STATA data set. Analysis was done in STATA, version 8. A descriptive analysis was undertaken to understand the occurrence of illness, treatment seeking behaviour and burden of direct household cost-of-illness. We used household non-food expenditure as a proxy measure for a household's capacity to pay. The share of health care expenditure in non-food expenditure (R_j) was derived as follows:

$$R_j = H_{exp} / NF_{exp} * 100$$

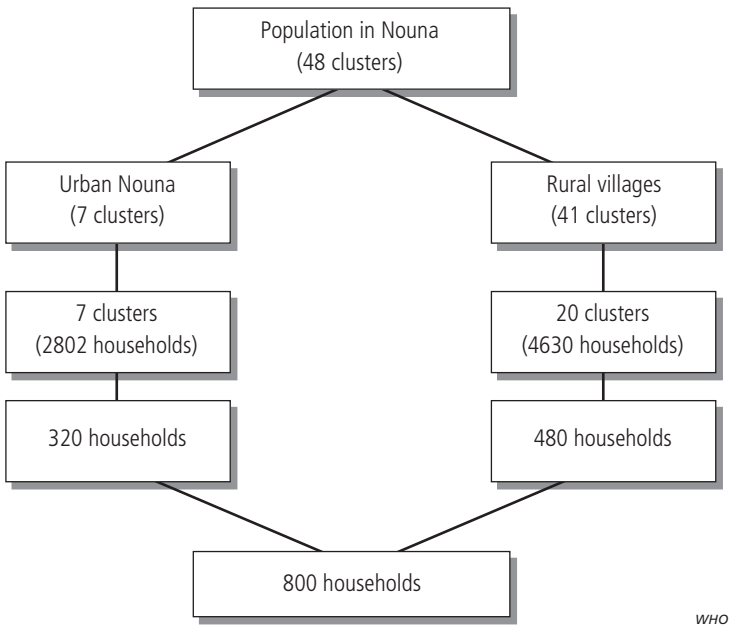
where, R_j is the share of health expenditure in non-food expenditure, H_{exp} is the average household monthly expenditure on health, NF_{exp} is the average household monthly non-food expenditure.

A dichotomous choice (logit) model was developed to predict the probability of catastrophic health expenditure in households. We assumed that households having catastrophic expenditure are affected by patterns of illness and treatment, household characteristics and their economic status.

The first group of explanatory variables was illness and treatment pattern. We expected the number of illness episodes that occurred in households to be positively correlated to catastrophic expenditure. Therefore, instead of using absolute numbers, we derived average illness episodes for an accurate reflection of disease occurrences in a household. We included average illness episodes per adult and per child in a household as separate variables to capture age bias. The variable treatment episodes included all types of care seeking, from self-medication to hospital care. We decided to also include professional care–illness ratio for an accurate estimation of a household's modern health care utilization. Professional care means modern medical care received from both institutional and private providers. We expected that households with a member with disability or chronic illness would tend to have high health care expenses.

The second group of variables included household characteristics, such as

Fig. 1. **Sampling procedure**



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literacy levels and gender of the household head, household size and whether the household was located in Nouna town. We assumed that large households experienced more illness and were likely to incur catastrophic expenditure.

The third factor included economic status of households. We used dummy variables of income quartiles derived from total household expenditure for the analysis. We assumed that households belonging to higher income quartiles are less likely to incur catastrophic health expenditure. The probability of catastrophic health expenditure was calculated by Greene's logit equation[21] and the model goodness-of-fit was assessed by Hosmer–Lemeshow test.[22]

$$Pr[y=1]=\frac{\exp(x_i\beta)}{1+\exp(x_i\beta)}$$

where, y is presence of catastrophic health expenditure (Yes = 1, Otherwise = 0], x_j is a set of predetermined variables, β a set of parameters to be estimated.

Table 1. **Illness and treatment, household characteristics and economic status of the sampled households, Nouna District, Burkina Faso**

Variable	Mean (SD) or no. (%) (n = 620)	Mean (SD) or no. (%) (n = 774)
Illness and treatment		
Average illness episodes per child	0.29 (0.43)	0.24 (0.4)
Average illness episodes per adult	0.73 (0.74)	0.58 (0.72)
Number of treatment episodes	2.6 (2.6)	2.1 (2.6)
Professional care–illness ratio	0.15 (0.26)	0.12 (0.24)
Having disabled person (Yes = 1)	84 (14)	109 (14)
Having a member with chronic illness (Yes = 1)	438 (70.65)	438 (56.6)
Household characteristics		
Household head can read and write (Yes = 1)	86 (14)	107 (13.8)
Gender of household head (Female = 1)	53 (9)	63 (8.1)
Household size	8.4 (6)	8.1 (5.8)
Living in Nouna town (Yes = 1)	237 (38)	296 (38)
Economic status		
Household income quartile		
(Lowest) 1	144 (23)	193 (24.9)
2	151 (24.3)	193 (24.9)
3	154 (24.8)	193 (24.9)
(Highest) 4	171 (27)	195 (25.2)

Results

Data from 774 households were available for our analysis. (We did not include households that had relocated or for whom we had incomplete information for the whole year). The average number of members per household was eight. The average household monthly expenditure was 17 723 CFA (US$ 23) of which 43% was spent on food.

During the recall period, 620 households had at least one illness episode. Of these, 438 had members with chronic illness mostly caused by non-communicable diseases (56%). The average number of illness episodes per household during the data collection period was 3.6 and the household monthly direct cost was 1033 CFA (US$ 1.3). Transport costs accounted for 3.2% of the total health expenditure and rest of the expenses were related to treatment costs. Only 15.62% of illness episodes in children and 14.92% of illness episodes in adults received professional health care. Table 1 provides the results of the descriptive analysis. We calculated the prevalence of catastrophic expenditure among households and the average monthly health expenditure for four threshold/cut-off levels — equal to or greater than 20% of non-food expenditure, 30% of non-food expenditure, 40% of non-food expenditure, and 60% of non-food expenditure (Table 2). A large proportion of households (6–15%) in our study area had catastrophic health expenses even among those with modest health expenditure.

We decided to use all cut-off levels for the multivariate logistic analysis. Tables 3 and 4 present the estimated coefficients and odds ratios obtained from logit models. Based on the Hosmer–Lemeshow test, the model goodness-of-fit was satisfactory.

Many variables in the illness and treatment group were statistically significant. The average number of illness episodes among children in a household had no effect on catastrophic expenses, contrary to our hypothesis. However, illness episodes among household adults significantly increased the probability of catastrophic expenses. An increase by one for average illness episodes among adults increased the probability of catastrophic expense by 1.5 to 1.7 times at the different cut-off values. The number of treatment episodes and professional care–illness ratio were positively associated, as expected resulting in catastrophic expenses. Any type of care-seeking for one illness episode resulted in 1.1 times more chance of catastrophic spending at all threshold levels. Our results revealed that professional care–illness ratio was a very important determinant and a better proxy of health care utilization than the

Table 2. **Prevalence of catastrophic health expenditure, by threshold/cut-off levels**

Catastrophic threshold	No. of households	% of households with illness (n = 620)	% of total households (n = 774)	Household monthly health expenditure CFA[a] Mean (SD)
⩾ 20% of non-food expenditure	117	18.87	15.12	3865 (6378)
⩾ 30% of non-food expenditure	82	13.23	10.59	4901 (7319)
⩾ 40% of non-food expenditure	67	10.8	8.66	4718 (7339)
⩾ 60% of non-food expenditure	50	8.1	6.46	5346 (8215)

[a] CFA = Burkina Faso currency. US$ 1 = 772 CFA, June 2001).

Table 3. **Estimated coefficient in logit model for different catastrophic threshold/cut-off levels**

Variable	Coefficient			
	20%	30%	40%	60%
Intercept	-3.65[a]	-4.46	-4.71[a]	-5.13[a]
Illness and treatment				
Average illness episodes per child	0.02	0.03	-0.06	-0.07
Average illness episodes per adult	0.44[b]	0.47[b]	0.52[a]	0.56[a]
Number of treatment episodes	0.16[a]	0.14[a]	0.14[a]	0.15[a]
Professional care-illness ratio	3.23[a]	3.08[a]	3.09[a]	2.75[a]
Having disabled person ($y = 1$)	0.1	-0.22	0.08	-0.13
Having a member with chronic illness ($y = 1$)	1.19[a]	1.69[a]	1.80[a]	2.06[a]
Household characteristics				
Household head can read and write ($y = 1$)	0.25	0.58	0.48	0.3
Gender of household head (Female = 1)	0.004	-0.31	-0.62	-0.41
Household size	0.04	0.05[b]	0.05[c]	0.03
Living in Nouna town ($y = 1$)	0.39	0.54	0.56	0.5
Economic status				
Household income quartile[d]				
(Lowest) 2	-0.39	-0.79[b]	-0.81[b]	-0.99[b]
3	-1.01[a]	-1.03[a]	-1.29[a]	-1.17[b]
(Highest) 4	-1.95[a]	-2.40[a]	-2.75[a]	-2.3[a]
Log likelihood	-253.2	-199.1	-171.7	-139.1
χ^2 (df)	151.2 (13)	124.95	112.4	92.36
	$P = 0.000$	$P = 0.000$	$P = 0.000$	$P = 0.000$
Pseudo R^2	0.23	0.24	0.25	0.2492
Hosmer–Lemeshow test	χ^2 (8) = 8.7	χ^2 (8) = 2.98	χ^2 (8) = 3.72	χ^2 (8) = 5.22
	$P = 0.37$	$P = 0.95$	$P = 0.88$	$P = 0.7338$
Observations	774	774	774	774

[a] Significant at 1%.
[b] Significant at 5%.
[c] Significant at 10%.
[d] Quartile 1 = reference group.

absolute numbers of total treatment episodes. If all illness episodes were treated through professional care, catastrophic payments would increase 15 to 25 times from the highest to lowest thresholds. Having a disabled person in a household had no effect on catastrophic expenses and thus differed from our assumption. The presence of a member with chronic illness in a household increased the probability of catastrophic consequence by 3.3 to 7.8 times at different thresholds.

Among household characteristics, only household size had a positive association with catastrophic expenses at the 30% and 40% threshold levels but the association was rather weak. Households that belonged to higher income quartiles were less likely to incur catastrophic health expense at any cut-off value.

Households belonging to higher income groups reported more illness than households in lower income quartiles (Fig. 2). As expected, the average number of treatment episodes for any type of care and seeking of professional care were also higher in richer households than in poor households. However, more households in the lowest income quartile had catastrophic expenditures at all threshold levels (Fig. 3).

Discussion

Our analysis has shown that economic status, a household's health care utilization especially for modern care, average number of illness episodes among adult household members as well as the presence of a member with chronic illness were important factors leading to catastrophic expenses.

Our results showed that economic status was a key determinant of catastrophic expenditure. This finding is similar to those reported from macroeconomic data[3] and studies from developed countries.[1,10,12] Though richer households reported illnesses and received treatment more than poor households, the percentage of households with catastrophic health expenses were higher in the lower income groups at all threshold levels.

Health care utilization, another key determinant of catastrophic expenditure (especially with regard to modern medicine), was very low among our study population possibly because people chose not to seek health care rather than cope with impoverishment. However, households preferred to incur catastrophic health expenditure if it meant saving the lives of members of the household.

Although seeking of professional care was similar for children and adults, illness episodes only among adults were significantly associated with catastrophic expenses. Previous studies have reported an age bias in intra-household allocation of resources with adult members of the household, who could ensure household production, being given priority.[23–25] This investigation was beyond the scope of our study and we recommend that research concerning inequality of health

Table 4. **Estimated odds ratio in logit model for different catastrophic threshold/cut-off levels**

Variable	Odds ratio (95%CI)			
	20%	30%	40%	60%
Illness and treatment				
Average illness episodes per child	1 (0.58–1.7)	1 (0.5–1.9)	0.9 (0.4–1.8)	0.9 (0.4–1.9)
Average illness episodes per adult	1.5 (1.1–2.1)[b]	1.5 (1.1–2.2)[b]	1.6 (1.1–2.4)[a]	1.7 (1.1–2.6)[a]
Number of treatment episodes	1.1 (1–1.2)[a]	1.1 (1–1.2)[a]	1.1 (1–1.2)[a]	1.1 (1–1.2)[a]
Professional care-illness ratio	25 (11–57)[a]	21 (8–56)[a]	21 (7–63)[a]	15 (4–54)[a]
Having disabled person ($y = 1$)	1 (0.58–2)	0.8 (3–1.7)	1 (0.4–2.3)	0.8 (0.3–2.2)
Having a member with chronic illness ($y = 1$)	3.3 (1.7–6.3)[a]	5.3 (2.3–12)[a]	6 (2.3–15)[a]	7.8 (2.3–26)[a]
Household characteristics				
Household head can read and write ($y = 1$)	1.2 (0.6–2.6)	1.7 (0.7–3.9)	1.6 (0.6–3.9)	1.3 (0.4–3.7)
Gender of household head (Female =1)	1 (0.4–2.2)	0.7 (0.2–1.8)	0.5 (0.1–1.5)	0.6 (0.2–2)
Household size	1 (0.9–1)	1 (1–1.1)[b]	1 (0.9–1.1)[c]	1 (0.9–1)
Living in Nouna town ($y = 1$)	1.4 (0.8–2.5)	1.7 (0.8–3.3)	1.7 (0.8–3.5)	1.6 (0.7–3.6)
Economic status				
Household income quartile				
(Lowest) 2	0.68 (0.36–1.2)	0.4 (0.2–0.9)[b]	0.4 (0.2–0.9)[b]	0.37 (0.1–0.9)[b]
3	0.36 (0.2–0.72)[a]	0.3 (0.1–0.7)[a]	0.27 (0.1–0.6)[a]	0.31 (0.1–0.7)[b]
(Highest) 4	0.14 (0.06–0.3)[a]	0.09 (0.03–0.2)[a]	0.06 (0.01–0.2)[a]	0.09 (0.02–0.3)[a]

[a] Significant at 1%.
[b] Significant at 5%.
[c] Significant at 10%.
[d] Quartile 1 = reference group.

care for children be undertaken in the study area given that Burkina Faso has very high childhood mortality.[15]

Our results have shown that those with the greatest health needs gave low priority to health expenditure. This was in contrast to our assumption that disabled persons are likely to be sicker than normal ones and that households with such members tend to spend more on health care. These findings are different from those reported from a developed country.[1]

Chronic disease was also found to be an important determinant of catastrophic expenditure. This is similar to reports from the developed world.[1, 12]

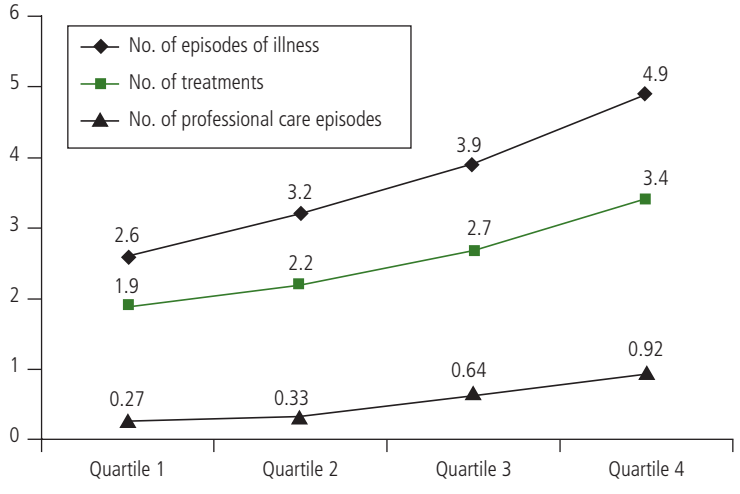
While disease control programmes in sub-Saharan Africa have traditionally focused on infectious diseases, we suggest caution in adopting this approach, as the imminent chronic non-communicable disease burden would have a greater impact on catastrophic expenses.

Although all key determinants were found to be significant at all threshold/cut-off levels, their magnitudes of coefficients and levels of significance were different. Thus, setting only one cut-off value may result in inaccurate estimation leading to misinterpretation of the importance of some variables. We suggest that different threshold/cut-off levels be used for comparisons.

Our study had a few shortcomings. We could not include in-kind payments for health care and the possible income loss due to illness in our calculations due to non-availability of data. A study from Cambodia had reported that persons from households with initial debts due to high out-of-pocket payments could not repay their loan causing them to sell their land and subsequently become poor.[26] Unfortunately, we did not have information from our study area on how many households faced indebtedness and became impoverished.

Although user fees was implemented in this district to overcome government budgetary constraints, this should not have resulted in catastrophic health expenditure and discouraged people from seeking health care. We believe that an exemption policy on the existing cost sharing scheme in the area should provide a safety net for the poorest and disadvantaged groups so that the very

Fig. 2. **Average number of illnesses, total treatments and professional care occurring in households, by income quartile (n = 620)**



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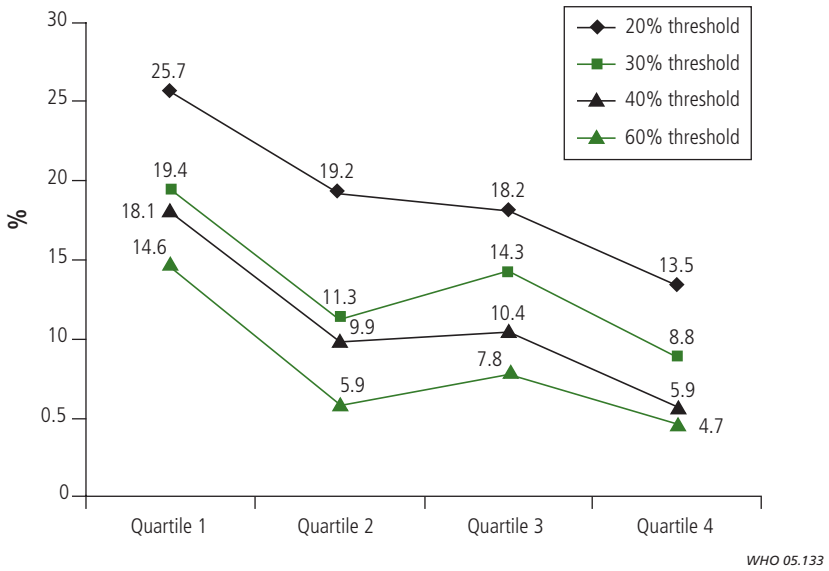
needy are not excluded from access to necessary health care. A community-based health insurance was introduced in Nouna District after the study period. This promises to be an alternative financing tool for mobilizing resources and offering financial protection for users in low-income countries, where institutional capacity is not strong enough to organize nationwide risk-pooling and large portion of the population works in the informal sector.[11, 27]

In our study area, the poorest members of the community incurred catastrophic health expenses. Protection of the interests of these disadvantaged groups should be addressed in policy formulations to ensure better access to health services and a higher degree of financial protection against the economic impact of illness. We suggest that results from our study be incorporated in formulating policy for an on-going community based health insurance for this District. ■

Fig. 3. **Percentage of households facing catastrophic expenditure at different threshold/cut-off levels, by income quartile (*n* = 620)**



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Résumé

Dépenses de santé catastrophiques des ménages dans les sociétés à faibles revenus : une étude du district de Nouna au Burkina Faso

Objectif Le but était de mesurer l'étendue des dépenses de santé catastrophiques des ménages et de déterminer les facteurs responsables de cette situation dans le district de Nouna au Burkina Faso.

Méthodes Nous avons utilisé, pour notre analyse, l'enquête sur les ménages dans le district sanitaire de Nouna pour recueillir des données sur 800 ménages en 2000-2001. Les déterminants des dépenses catastrophiques des ménages ont été déterminés par analyse en régression par analyse en régression logistique multivariée.

Résultats Même à de très faibles niveaux d'utilisation des soins de santé et avec des montants modestes de dépenses, 6 à 15 % de l'ensemble des ménages du district de Nouna devaient faire face à des dépenses de santé catastrophiques. Les principaux déterminants des dépenses catastrophiques en matière de santé étaient la situation économique, le recours à des soins de santé par le ménage, et notamment à des soins médicaux modernes, les épisodes morbides chez un membre adulte du ménage et la présence d'un membre atteint d'une maladie chronique.

Conclusion Nous en avons conclu que les membres les plus pauvres de la communauté étaient exposés à des dépenses de santé catastrophiques. Le fait de ne fixer qu'une seule valeur seuil/limite pour déterminer les dépenses de santé catastrophiques peut se traduire par une estimation inexacte, conduisant à une mauvaise interprétation de facteurs importants. Nos conclusions ont des répercussions non négligeables sur le plan des politiques et peuvent servir à garantir un meilleur accès aux services de santé et un degré plus élevé de protection financière contre les conséquences économiques de la maladie pour les groupes à faible revenu.

Resumen

Gastos catastróficos de los hogares en atención sanitaria en una sociedad de bajos ingresos: estudio realizado en el distrito de Nouna, Burkina Faso

Objetivo Cuantificar los gastos catastróficos de los hogares en atención sanitaria y determinar los factores responsables de esos gastos en el distrito de Nouna, Burkina Faso.

Métodos Utilizamos la Encuesta de Hogares del distrito de salud de Nouna para reunir datos sobre 800 familias durante 2000–2001. Los factores determinantes del gasto catastrófico de los hogares se identificaron mediante el método de regresión logística multifactorial.

Resultados Aun a niveles muy bajos de uso de los servicios de salud y con un nivel moderado de gasto sanitario, entre el

6% y el 15% de los hogares del distrito de Nouna tuvieron que afrontar gastos catastróficos en salud. Los factores determinantes más importantes de ese tipo de gasto fueron el nivel económico, el grado de uso de la atención sanitaria por los hogares, especialmente en lo que respecta a los medios modernos de atención médica, los episodios de enfermedad sufridos por un miembro adulto de la familia, y la existencia de un miembro afectado por una enfermedad crónica.

Conclusión Los miembros más pobres de la comunidad tuvieron que afrontar gastos catastróficos en salud. Si nos limitamos a fijar un valor umbral para determinar los gastos catastróficos, se corre el riesgo de hacer estimaciones inexactas que lleven a malinterpretar algunos factores importantes. Nuestros resultados tienen implicaciones normativas relevantes y pueden servir para lograr que los grupos de bajos ingresos gocen de un mejor acceso a los servicios de salud y de un mayor grado de protección financiera frente a las consecuencias económicas de las enfermedades.

ملخص

نفقات الرعاية الصحية الباهظة المرهقة للأسرة في مجتمع منخفض الدخل دراسة من منطقة نونا، في بوركينا فاسو

الهدف: كان هدفنا هو تحديد إلى أي مدى تكون النفقات الصحية الباهظة مرهقة للأسرة، وتحديد العوامل المسؤولة عن ذلك، في منطقة نونا، ببوركينا فاسو.

الطريقة: استخدمنا المسح الصحي الذي أجرى على العائلات في منطقة نونا، وذلك لجمع المعطيات عن 800 أسرة، على مدى العامين 2000 – 2001، للقيام بتحليلها. وقد تم التعرف على محددات النفقات الصحية الباهظة المرهقة للأسرة، من خلال استخدام طريقة التحوُّف اللوجستي المتعدد المتغيـــرات.

الموجودات: حتى عند المستويات المنخفضة للاستفادة من خدمات الرعاية الصحية، وإنفاق قدر متواضع من النفقات الصحية، كان ما بين 6% إلى 15%، من إجمالي عدد الأسر الموجودة في منطقة نونا، يتحملون نفقات صحية باهظة ومرهقة. وكانت أهم محددات التكاليف الصحية الباهظة هي الحالة الاقتصادية، ومدى استفادة الأسرة من خدمات الرعاية الصحية، خاصة فيما يتعلق بالرعاية الصحية الحديثة، وعدد هجمات المرض عند أحد أفراد الأسرة البالغين، ووجود مرض مزمن لدى أحد أفراد العائلة.

الاستنتاج: لقد وجدنا أن أكثر أفراد المجتمع فقراً يتحملون نفقات رعاية صحية باهظة ومرهقة، وأن وضع عتبة أو قيمة فاصلة لتحديد مقدار معين للنفقات الصحية الباهظة، قد يفضي إلى عدم الدقة في التقدير الأمر الذي قد يؤدي إلى وجود تفسير خاطئ لعوامل هامة. وإن لموجوداتنا آثار هامة على السياسات ويمكن استخدامها لضمان الوصول بشكل أفضل إلى الخدمات الصحية، وبلوغ درجة أعلى من الحماية المالية للفئات ذات الدخل المنخفض، ضد الآثار الاقتصادية التي يخلفها المرض.

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