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and Coping Strategies for Households with People Living
With HIV/AIDS in the Nkambe District Hospital,
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The Determinants of Catastrophic Health Expenditure and Coping Strategies for Households with People Living With HIV/AIDS in the Nkambe District Hospital, Cameroon

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ABSTRACT

Purpose: Despite free distribution of HIV/AIDS medication to patients, the expenditures on HIV/AIDS care and treatment can still be catastrophic to patients and their households due to the costs of other components (indirect cost) of care. This work was aimed at investigating the determinants of catastrophic health expenditure and the coping strategies for households with people living with HIV/AIDS in the Nkambe District Hospital, Cameroon.

Methodology: Data were collected using an administered questionnaire and secondary data from patients' files, analyzed using frequencies and logistic regression. A convenient and purposive sample of 346 participants were enrolled (281 outpatients and 65 inpatients).

Results: Results show that the incidence of CHE was 20.3% for outpatient and 66.7% for inpatient visits, considering a 40% threshold. Factors that determine CHE identified were: use of motorbike as mode of transport (OR = 2.058, p-value = 0.05), divorced (OR 4.354, p-value = 0.033), borrowing (OR = 2.229, p-value = 0.027) and support from family members (OR = 2.367, p-value = 0.001). The most common coping strategies adopted by participants were increasing working hours and support from friends and relatives with half of the participants seeing these strategies as sustainable.

Conclusion: It was concluded that the subsidization of ART services is not sufficient to eliminate the economic burden of treatment on HIV patients as many households still experienced CHE.

Recommendations: The study recommends implementing effective community dispensation of ARVs, Multimonth dispensation as measures to curb transportation cost. Also, implementation of the elimination of user fee policy for other HIV services. Finally, accelerating the process of universal health coverage in Cameroon will go a long way to help HIV patients and their households.

Keywords: *Determinants, Catastrophic Health Expenditure, Coping Strategies, HIV/AIDS and Cameroon*

INTRODUCTION

According to the Cameroon population-based impact assessment (CAMPHIA) preliminary findings, the prevalence of HIV in 2018 was 3.4 %. Of the 3.4% infected with HIV, 46.9% of them were aged 15-64years with 91.1% of them acknowledged taking Antiretroviral Therapy (ART) with 80% of those on ART having viral suppression (CAMPHIA, 2018). By December 2016, 205,371 patients were on ARVs in Cameroon (NACC, 2017). Poverty is an essential factor in the propagation of HIV/AIDS. Poor people are more vulnerable for many reasons, including exposure to high-risk behaviors and poor access to health. HIV/AIDS and poverty are interconnected in a vicious circle. It is believed that HIV causes poverty and worsens already existing poverty (Hecht et al, 2006). There is no or little social security (such as financial allowances) in most developing countries like Cameroon; therefore, HIV has a severe economic impact on HIV-affected households in developing countries compared to developed countries.

In Cameroon, the primary sources of funding for the health sector are the state budget, households (through cost recovery and other direct payments), external financing, Local authorities, NGOs and the private health insurance which provide a marginal contribution. There is a vast disproportion between these different funding sources. In 2009, for example, out of a total funding estimated at \$5 752 750 000, the contribution of households stood at 94.6% against 3.8% to the State and 1.6% for external partners. By 2015, Cameroon had a high out-of-pocket expenditure as a percentage of current health expenditure with about 90% of health expenditures coming from the household income (WHO, 2015). The National expenditures data based on the 2013 national AIDS spending assessment (NASA) indicates that national HIV/AIDS expenditure increased from 40 million dollars in 2011 to 42millions in 2012 and then to 55.1 million in 2013. The national AIDS response is substantially funded by external sources representing 70% of the total expenditure incurred in 2013 (COP, 2016).

Past studies on the economic impact of HIV/AIDS have reported that the disease-affected households generate relatively lower income than unaffected households (Batteh *et al*, 2008). People living with HIV are often forced to leave their employment or business due to their illness (Wagner *et al.*, 2009). The decline in the health of the ill person causes a further impact on the household (Batteh *et al*, 2008). The need for life-long treatment due to the chronic nature of the disease can have life-long financial implications on such household (Kumarasamy *et al*, 2007). The expenditures on HIV/AIDS care and treatment can be catastrophic to patients and their households due to the costs of other components of care (Etiaba *et al.*, 2016). Patients pay for non-ART drugs for opportunistic infections, non-routine tests, medical consultations, transportation, feeding and hospital stays (Moon *et al.*, 2008). The cost of these often has impoverishing effects on some households and hinder them from getting the necessary care especially settings like Cameroon where payment for health care remains predominantly through out-of-pocket (OOP) payments. Lack of knowledge about health insurance or the availability of such insurance for HIV/AIDS causes higher out of pocket payment for the disease-affected households (Poudel *et al.*, 2015).

The household level impact of HIV/AIDS includes direct costs, including medical and non-medical costs and productivity costs such as loss of labor time, as a result of the morbidity of HIV positive household members, as well as time spent by others caring for them (Marlink *et al*, 2008). Out-of-pocket payment (OOP) has been shown to be the leading health financing mechanism

across developing countries (Leive *et al.*, 2008) and often presents a significant burden on underprivileged households. Depending on OOP for health care is a significant source of financial hardship in families and globally over 100million people are pushed into poverty while over 150 million people experience excessive out-of-pocket health payments that place a massive drain on their living standard (WHO, 2010).

When OOP for health services takes a higher proportion of the household available income above a certain threshold, it is said to be catastrophic (Aregbeshola, 2018). Out-of-pocket (OOP) payment is the primary health financing mechanisms in most developing countries and often posing a huge burden on underprivileged households. The costs are frequently high enough so that households are unable to recuperate them from existing resources, and, hence, ultimately slip deeper into poverty. Unfortunately, the option of financial protection mechanism to mitigate such burden is minimal (Su *et al.* 2006; Xu *et al.* 2003). As a result, protecting households from catastrophic health expenditure continues to remain a formidable challenge, particularly for countries with high levels of poverty. Coping with catastrophic OOP payments for health services is very challenging. When a member of a farming household is infected with HIV/AIDS at a young and productive age, the household either reduces the size of their farm due to a reduction in the number of workers or hires external labor to replace the ill family member or caregiver.

HIV does not only kill the economically active population but also destroy the experience; skills and knowledge built up over years (Bell, 2003). The presence of chronic illnesses like HIV usually demands some financial coping mechanisms. It has been shown that the financial coping mechanism for ill health plays an important role in the economic impact experienced by households (Adhkari *et al.*, 2009). According to DHS-MICS (2011) report, the North West region of Cameroon had an HIV prevalence of 6.3% and was second after the South region with a prevalence of 7.2%. However, CAMPHIA (2018) findings indicate a decrease in prevalence from 6.3 to 5.1% and a change in rank from the second position to the fourth position. This makes the Northwest Region a highly prevalence region and the reasons for choosing it as a case study. To curb the financial burden of HIV on household in the NWR which have been further affected by the Anglophone crisis, this work sets out to investigate the determinants of catastrophic health expenditure in HIV households and propose coping strategies for household with people living with HIV.

LITERATURE REVIEW

Catastrophic health expenditure is when the out-of-pocket payments for health services take a greater proportion of household available income and the household can be pushed into poverty as a result. The use a cutoff point or threshold to predefined level of catastrophic has been problematic and there is no clear consensus exist on the thresholds in literature (Xu, 2003). Two approaches have been described in literature (Wagstaff *et al.*, 2003). The first approach sets the threshold in terms of proportionality of income. This approach considers the OOP payments as a proportion of income (X) that is (OOP/X) . The second approach is based on ability-to-pay. This approach considers OOP payments in terms of a measure of ability to pay (y), such that (OOP/y) where $y = X - S_{exp}$.

Out-of-pocket payment is the most inefficient, inequitable and regressive forms of healthcare financing. However, it is the most important means of healthcare financing in most developing country. It can be divided into direct or indirect costs. Direct costs include doctor's consultation

fees, medications, tests, procedures, hospital bills etc. Indirect costs include transport charges to treatment site, daily living cost for accompanying household members and loss of income due to illness (Etiabaet *et al*, 2016). OOP payment is not the only cause of catastrophic payments, poverty, poor healthcare service accessibility and lack of risk pooling all contribute to the occurrence of CHE. CHE is a big issue when all these three factors are most pronounced. Out-of-pocket payment accounts for 50% of total health expenditure in the year 2007 in 33 low-income countries.

In Cameroon, the primary sources of funding for the health sector are the state budget, households (through cost recovery and other direct payments), external financing, Local authorities, NGOs and the private health insurance which provide a marginal contribution. There is a vast disproportion between these different funding sources. In 2009, for example, out of a total funding estimated at \$5 752 750 000, the contribution of households stood at 94.6% against 3.8% to the State and 1.6% for external partners. By 2015, Cameroon had a high out-of-pocket expenditure as a percentage of current health expenditure with about 90% of health expenditures coming from the household income (WHO, 2015).

Studies (Xu, 2003; Barennes *et al*, 2015) have provided a wide range of household characteristics such as position as head of the households, income level etc that affect the probability of incurring catastrophic health expenditure. However, results can be sensitive to methodology and definitions of key indicators such as the OOP expenditure (Pal, 2012). Amongst these characteristics are:

Urban Versus Rural Topography

In a study from India, the CHE was higher in rural (25.3%) compared to urban (17.5%). In most of the poor states in India, 87% of poverty linked to OOP occurred in rural areas. While in the richest states, the proportion of poverty in rural area was 67% (Gotsadze *et al*, 2009). The poverty intensity also was higher in rural areas (3.5%) compared to urban areas (2.5%) (Garg *et al*, 2005). In Kenya, even though the direct cost burden below 5% of total income is higher in urban (57.2%) than rural (51.5%), however the proportion of CHE in rural is higher (31.1%) than in urban (28.1%) (Chuma *et al*, 2007). In China, rural populations are more vulnerable for CHE since majority of the rural populations are involved in agricultural sectors that have no insurance coverage.

Socio-demographic Factors

Studies have demonstrated that Sociodemographic factors that increase the likelihood of CHE include: age of head of household, children in the household, gender of the household head, and level of education. In a Kenya, they found out that the prevalence of CHE and impoverishment is higher in rural area, where majority of the adults have no education (53.5%). The adults in urban are more educated with 28.0% have secondary level education while only 11.2% was reported as having no education¹. In Burkina Faso, CHE occurs in 6-15% of total. Even though rich households reported illnesses and received treatment more frequent than the poor, the percentage of CHE and impoverishment is higher among the poor income groups. Healthcare utilization was very low, possibly because poor people choose not to seek healthcare, reserving their income on essential needs and goods; rather than cope with impoverishment. In Georgia, households in the poorest quintile were four times more likely to face CHE when compared with the richest quintile (Murray *et al*, 2000). In Nigeria, the highest proportion of CHE is among the lower income group (23%) which is three times compared to the rich. For the richest quintile, less than 8% of households experienced CHE (Russel, 2004). In Uganda, households headed by older people,

unemployed and presence of households with disabilities were more likely to be affected by CHE (Xu, 2003). Household head with little education increased the odds of CHE within the poor and non-poor households similarly. The effect of age was more pronounced in the poor, while the effect of education was stronger in the non-poor. The sex of the household head did not influence the probability of CHE (Xu, 2003).

Type of Illnesses

Evidence from Vietnam, indicated that CHE is not usually the result of one single disastrous event, but is a series of injuries. Household with CHE had an average of 6.1 episodes of illness compared to 3.3 episodes for all households in the study (UNDP, 2007). In Burkina Faso, an increase by one illness among adults significantly increased the probability of CHE from 1.5 to 1.7 times. The presence of chronic illness among household members associated with higher risk for CHE (Tin *et al*, 2006).

Types of Health Facilities and Providers

Households with hospitalized members, with elderly, or chronically ill members (Li, 2012), and those who use in-patient service especially private hospitals (Limwanttanon, 2007) are more likely to face CHE. Also in Thailand, households using inpatient service, is at higher risks to encounter CHE as it demands higher intensity of care in general (14.6% in 2004 and 31% in 2000). For outpatient services, the incidence is 8.3% in 2004 and 12% in 2000 (Murray, 2000). The risk of CHE among households utilizing services from private healthcare is higher for both, inpatient (28.5%) and outpatient services (27.8%). For impoverishment, the incidence is highest among those using inpatient services (2.6% increment) (Murray, 2000). In Sierra Leone, more than 50% of OOP accounted from high cost treatment involving private healthcare. They calculated that: if half of these cases have been treated at public healthcare, the mean costs burden of OOP as percentage of household income can be reduced from 6.9% to 5.6%. Also, in Burkina Faso, even at low level with modest amount of healthcare utilizations, 6 to 15% of total households faced CHE (Tin, 2006). One of the key determinants is modern healthcare utilization. The study revealed that professional-care to illness ratio was a very important determinant for CHE. They projected that if all illness were treated through professional care, CHE will increased 15 to 25 times (Murray, 200). In Nigeria, private expenditure accounted for almost 70% of total expenditure on health of which 90% is OOP. This high level of OOP implies that health care can place a significant financial burden on households (Limwanttanon, 2007).

Other Factors

Availability of health insurance reduces the likelihood of occurrence of CHE (Xu, 2003; Galarraga, 2010; Amaya Lara, 2011). A study on how households cope with OOP health expenditures in 15 African countries found that in most of these countries, health financing is too weak to provide protection for households from health shocks (Leive *et al*, 2008). Thus, borrowing and depletion of assets to finance health care was prevalent among the lower income quintiles. In a study from Kenya, incidence of CHE varied with the methods and the threshold used. For example, about 10% of households incurred a catastrophic expenditure with the threshold of 25% when computation is based on the total expenditures. That proportion increased to 16% when the authors used only the non-food expenditure. The study also indicated that for any given method or threshold used, the

proportion of household facing catastrophic health expenditures decreased with the quintile of wealth, raising equity questions (Buigut *et al*, 2015)

Even when ART is provided free to HIV/AIDS patients, there can still be enormous out-of-pocket spending on various items such as transportation, consultation charges, nutrition, clinical tests, and drugs for opportunistic infections (Poudel *et al*, 2015). In all sub-Saharan countries, the area worst affected by HIV/AIDS, more than half of the total health expenditures are borne by households in the form of direct out-of-pocket expenditure at the point of service delivery (Leive *et al*, 2008).

A study conducted in Indonesia reported that seeking care for HIV/AIDS is still a financial burden to patients with HIV care expenditure comprising well over 50% of reported monthly expenditure although Indonesia has had a policy to provide free ART since 2003 (Riyarto *et al*, 2010). Another study conducted in Cambodia suggested that even when drugs are provided free of cost, the other costs (were significant and still operate as a barrier to access (Dhaliwal *et al*, 2003). In India, the cost of ART was a barrier for most AIDS patients, with many looking to family and close friends as a source of treatment or taking up other dire measures such as selling family assets, jewelry, or property (Kumarasamy *et al*, 2005). Infection with HIV can lead to impoverishment in multiple ways. First, the cost of medical care wears down a family's economic resources. Second, the disease progression itself decapitates the affected individuals, making them less able to work if they become ill. Third, there is also stigma and discrimination, which can hamper their ability to work (Russell, 2004). Fourth, it is usually the case that other family members might have to give up income-earning opportunities to stay home and provide care to an ill PLWHIV (Kipp *et al*, 2006).

METHODOLOGY

This study was a hospital-based cross-sectional survey involving HIV/AIDS patients who came for routine follow up at the treatment center, for outpatient consultation and those hospitalised in the wards of the hospital. It was carried out within a period of 5 months from February 2018 to June 2018 at the Nkambe district hospital. It was carried out at the Nkambe District Hospital located in Nkambe Health District with a population of 145,750 inhabitants with 69,119 males and 76,631 females (MINSANTE, 2018) spread in four subdivisions:- Nkambe Central, Misaje and Boom Subdivisions and part of Nwa subdivision. It also serves as referral hospital for other districts of Donga Mantung Division i.e Ako, Ndu and Nwa Health Districts. The population of Nkambe is made up of mostly farmers and grazers. Participants included patients aged 21 years above, diagnosed HIV positive and on ARTs for at least three months at the time of recruitment, presenting at the Nkambe District Hospital. To estimate the sample size, we used the method of sample size calculation described by Krejcie and Morgan (1970). This gave a sample size of 348 for the 1800 HIV patients in the district. Data was collected from both primary and secondary sources. Primary data was collected with the help of semi-structured questionnaires used as an interview guide. Secondary data was gotten from patient records stored in the hospital.

Data was analysed using SPSS version 23 and Microsoft Excel 2010 for descriptive statistical using percentages and inferential statistics using logistic regression. To estimate determinants of catastrophic health expenditure as described by Aregbeshola (2018) the formula below was used:

$$\ln(P/1-P) = b_0 + b_1(x_1) + b_2(x_2) + \dots + b_p(x_p)$$

The dependent variable (P) is the occurrence of catastrophic health expenditure dichotomized and defined as 1 when the household faces catastrophic expenditure and 0 otherwise. The independent or explanatory variable in the logistic equation above included the following variable; Gender, residence, marital status, mode of transport, ethnicity, occupation, level of education and household socioeconomic status (SES). The SES was divided into three groups using their total household expenditures (low income, moderate income and high-income groups). Low-income group (LIG) correspond to participants with total household expenditure of less than 150,000FCFA; middle-income group (MIG) are those with total household expenditure from 150,000-300,000FCFA and high income group (HIG) were those with total household expenditure greater than 300,000FCFA. To determine coping strategies to catastrophic expenses and if these strategies are sustainable frequency tables were used. Ethical clearance was obtained from the ethical committees of Catholic university Bamenda. Authorization was also obtained from the coordinator of the Nkambe District Hospital HIV treatment center.

RESULTS

To investigate the determinants of out of pocket payments in households, it is first necessary to determine the OOP with respect to household expenditure. Figure 1 indicates the ratio of OOP with respect to the household expenditure (excluding food and health) which was 22% and 78% for out-patients and in-patients respectively.

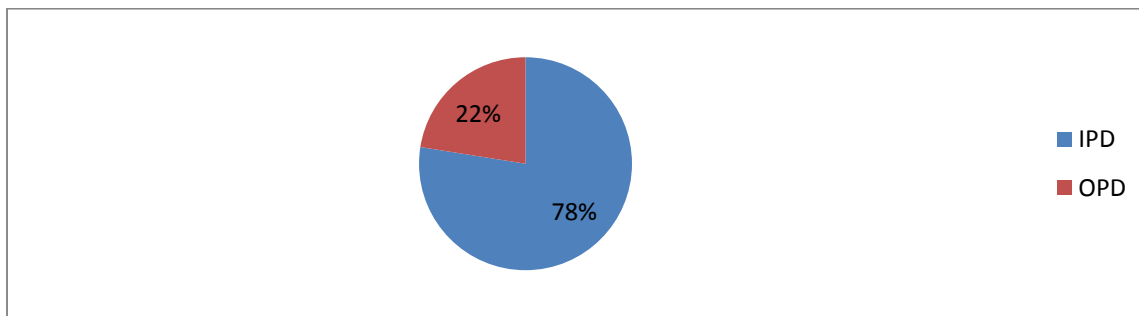


Figure 1: Ratio of OOP for in-patients and out-patients

From figure 1, the incidence of CHE presented on figure 2 is calculated. The incidence of CHE was very high for the inpatients (66.7%) compared to the out-patients (20.3%) when the 40% thresholds are considered.

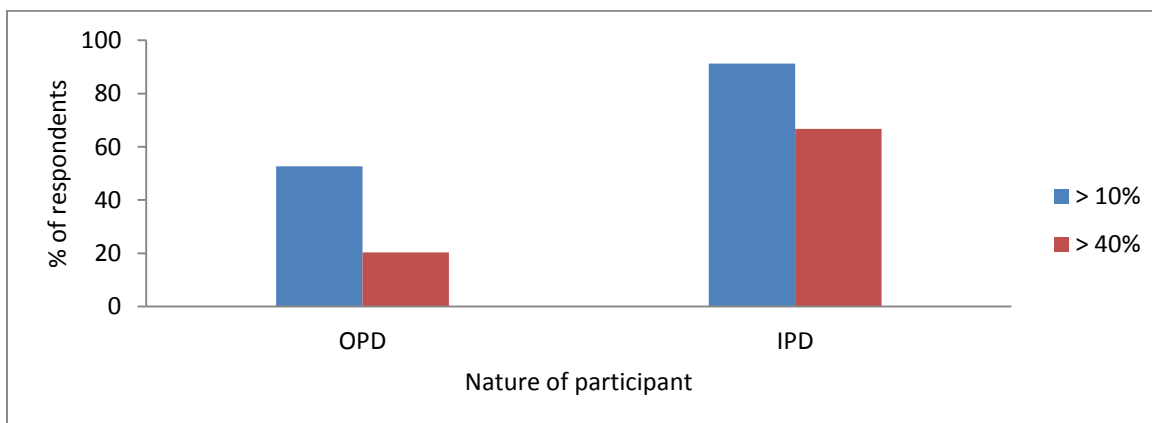


Figure 2: Incidence of CHE at 40% threshold for out-patients and in-patients

The logistic regression result of the determinants of CHE is presented on table 1.

Table 1: Determinants of Catastrophic Health Expenditure

Demographic Characteristics		Catastrophic Health Expenditure			
Variable	Category	Coeff. SE	SE	ODD Ratio	p-value
Sex	Male	0.454	0.271	1.574	0.098
	Female	0	0	0	0
Residence	Urban	-0.289	0.260	0.749	0.266
	Rural	0	0	0	0
SES	LIG	0.253	0.387	1.287	0.514
	MIG	0.788	0.462	2.200	0.088
	HIG	0	0	0	0
Village of origin	Wat	-0.569	0.317	0.566	0.073
	Tang	0.034	0.302	1.034	0.911
	Wiya	0	0	0	0
Education	No education	0.951	0.689	2.606	0.164
	Primary	0.014	0.678	1.014	0.983
	Secondary	0.051	0.808	1.053	0.949
	Tertiary	0	0	0	0
Occupation	Civil servant	0.245	0.628	2.278	0.696
	Private sector	-0.365	0.666	0.679	0.588
	Self-employed	0.181	0.342	1.198	0.598
	Unemployed	0.427	0.734	1.533	0.565
	Retired	-0.671	1.104	0.511	0.543
	Farmer	0	0	0	0
Marital status	Monogamous	0.030	0.581	2.293	0.153
	Polygamous	0.000	0.778	1.000	1.000
	Single	0.598	0.616	1.819	0.331
	Divorced	1.471	0.691	4.354	0.033
	CWS	0.270	0.680	1.310	0.691
	Widowed	0.731	0.637	2.078	0.251
	Separated	0	0	0	0
Mode of transportation	Motor bike	0.718	0.379	2.058	0.050
	Public transport	0.655	0.448	1.926	0.143
	Private	1.121	0.734	3.067	0.127
	Walk	0	0	0	0

Results on table 1 show that households with divorced participants were 4 times more significantly likely to experience catastrophic health expenditure. Our study also demonstrated that households with participants who used motorbike as mode of transportation to the facility were significantly twice more likely to experience catastrophic health expenditure. Majority of the other independent variables (education, gender, SES, residence, occupation, ethnicity and other coping strategies) did not significantly influence the CHE of a household. Table 2 further investigates other determinants of CHE.

Table 2. Determinants of Catastrophic Health Expenditure continues

Coping strategy		Catastrophic Health Expenditure			
Variable	Category	Coeff. SE	SE	ODD Ratio	p- value
Sale property	Yes	0.633	0.342	1.883	0.065
	No	0	0	0	0
Increase working hours	Yes	-0.459	0.238	0.632	0.054
	No	0	0	0	0
Burrowing	Yes	0.802	0.362	2.229	0.027
	No	0	0	0	0
Begging	Yes	0.500	0.541	1.649	0.355
	No	0	0	0	0
Family support	Yes	0.862	0.250	2.367	0.001
	No	0	0	0	0
NGO support	Yes	0.795	0.413	2.215	0.054
	No	0	0	0	0

Households who adopted burrowing as a coping strategy was twice more likely to experience CHE. Households with participants who acknowledge having support from family and relatives were also twice more likely to have CHE.

Coping Strategies

Table 3 and 4 presents the different coping strategies adopted and the notion about these strategies by the respondents in the Nkambe health district.

Table 3: Coping strategies adopted

Strategy	Frequency (n = 346)	Percentage (%)
Sale of properties (Land)	41	11.8
Increase working hours	185	53.5
Burrowing	35	10.1
Begging	15	4.3
Support from relatives and friends	104	30.1
Support from Gov't, NGOs and social groups	26	7.5

In order to cope with health care expenditures, 11.8% of the patients sold their properties, 53.5% increased working hours, 10.1% engaged in burrowing, 4.3% do beg, 30.1% get their support from relatives and friends and 7.5% of the patients get their support from government, NGOs and social groups. Table 4 presents the nothing of the respondents about the different coping strategies adopted by respondents.

Table 4: Notion with regards to coping strategy

* Variable	Frequency (n = 346)	Percentage (%)
Think strategy is sustainable	194	56.1
Awareness of support group program	173	50.0
Participate in support group program	86	24.9
Those who have benefited from it	69	19.9

Results show that 4.10, 56% think the coping strategy is sustainable, 50.0% are aware of support groups programs, 24.9% participate are in the support group program and 19.9% have benefited from the support group program. This work revealed that the use of motorbike as a mode of transportation and being divorced were significant determinants of catastrophic payments. This finding is in line with other studies who have demonstrated that CHE is encouraged by principally 3 components: poverty, health services access and use, and failure of social mechanism to pool financial risks that don't cover specific costs linked to HIV/AIDS outside the cost covered by the national HIV/AIDS program (Xu, 2003; Barennes *et al*, 2015). Use of motorbikes by most of these women increases their indirect cost of treatment thereby leading them into CHE. Being divorced is seen to reduce the household income thus pushing the individual into CHE. Form the findings of the study most households coped with the cost burden associated with seeking both inpatient and outpatient health care services by increasing their working hours and support from friends and relatives. Studies have revealed that the sickness of a household member can affect other household and family members in trying to support the care. This findings is in line with a study in India which revealed that when a male member of the household is sick, other relatives have to sacrifice finances and time to care for the sick member (Kumarasamy *et al*, 2007). This is because the sick member most time especially in the case of HIV can no longer care for himself. Family members in addition to sacrifice time to take care of him work more. It is common in Nkambe to see the community helping in the farms of sick members or women starting up a new business or picking up a job just to be able to raise the finances required to support with the spouse treatment.

CONCLUSION

This work aimed at investigating the determinants of catastrophic health expenditure and coping strategies for households with people living with HIV/AIDS in the Nkambe District Hospital, Cameroon. Results show that the incidence of CHE was 20.3% for outpatient and 66.7% for inpatient visits, considering a 40% threshold. Factors that determine CHE identified were: use of motorbike as mode of transport (OR = 2.058, p-value = 0.05), divorced (OR 4.354, p-value = 0.033), borrowing (OR = 2.229, p-value = 0.027) and support from family members (OR = 2.367, p-value = 0.001). The most common coping strategies adopted by participants were increasing working hours and support from friends and relatives with half of the participants seeing these strategies as sustainable. It was concluded that the subsidization of ART services is not sufficient to eliminate the economic burden of treatment on HIV patients.

RECOMMENDATIONS

The study recommends implementing effective community dispensation of ARVs, Multimonth dispensation as measures to curb transportation cost. Also, implementation of the elimination of user fee policy for other HIV services. Finally, accelerating the process of universal health coverage in Cameroon will go a long way to help HIV patients and their households.

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