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People Living with HIV/AIDS at the Nkambe District
Hospital, Cameroon**

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Health Service Utilization Pattern and Costs Incurred by People Living with HIV/AIDS at the Nkambe District Hospital, Cameroon

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ABSTRACT

Purpose: Even though ART services in Cameroon are highly subsidized, people living with HIV/AIDS still incur a non-ART drug cost. This piece of paper is aimed at investigating the health service utilization pattern and the outpatient and inpatient costs incurred by people living with HIV/AIDS in the Nkambe District Hospital.

Methodology: A single facility-based cross-sectional survey was conducted between February and June 2018 at Nkambe District Hospital. A micro-costing analysis was used to determine the direct and indirect cost of treatment and access. Data were collected using an administered questionnaire and secondary data from patients' files, analyzed using a one-way analysis of variance (ANOVA). A convenient and purposive sample of 346 participants were enrolled (281 outpatients and 65 inpatients).

Results: Result shows that, majority of participants (97.5%) were in their follow up visit. 83.3% had been on ART for more than 1year, while more than half (59.5%) visited the hospital every after 3months for ART refilled. 80% of admitted cases were admitted for the first time. An average direct cost of treatment access was 2108.89FCFA (\$3.47) for outpatient and 30414.31FCFA (\$54.12) for inpatient, giving an annual average cost of 8435.56FCFA (\$15) and 121657.24 FCFA (\$216.5), respectively.

Conclusion: This work concluded that the of ART services is not sufficient to eliminate the economic burden of treatment on HIV patients.

Recommendations: Implementing effective community dispensation of ARVs and other differentiated care models like multi-month scripting and home dispensations well as creating more HIV treatment centers is vital. Also, implementation of a 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: *Health, Utilization, outpatient, inpatient Costs and HIV/AIDS, Cameroon*

INTRODUCTION

According to the Joint United Nations Program for the fight against HIV/AIDS (UNAIDS), even though global evidence showed an overall decrease in Acquired Immunodeficiency Syndrome (AIDS) in many countries in 2016, by 2017 approximately 36.9 million people were still living with Human immunodeficiency virus (HIV) and 940,000 died from HIV-related causes (UNAIDS 2018). Among individuals living with HIV, more than 69% live in sub-Saharan Africa where studies show that 1 in 20 adults live with HIV (UNAIDS, 2012). As of 2017, 1.8 million people became newly infected and 21.7 million people living with HIV were accessing antiretroviral therapy up from 20.7 million in 2016 (UNAIDS, 2018). Sub-Saharan Africa (SSA) remains the region most affected by HIV and AIDS with 2 out of every 3 infections that occur each day. It accounts for 70% of the global HIV infection burden (Kharsany, 2016). West and Central Africa accounted for 6.1 million people living with HIV, with 370,000 new infections. Even though 2.1 million people living with HIV are accessing antiretroviral therapy in this region, 310,000 people still died of HIV-related causes in 2016. (UNAIDS, 2017).

The National Aids Control Committee of Cameroon has achieved a high treatment coverage using a CD4 count of 350, later 500 thresholds. Presently the test and treat approach entails placing all patients diagnosed HIV positive irrespective of their CD4 counts or any other criteria on treatment as recommended. (WHO, 2015). Other actions outlined in the national strategic plan include creating many treatment sites, recruiting posting psychosocial workers to treatment sites to assist in patient follow up all over the country, bring HIV screening and testing services closer to the population by creating more mobile units. All these actions are aimed at achieving the 90-90-90 goal set by UNAIDS (ONUSIDA, 2014). Despite the actions put in place by the international community and Cameroon to fight HIV, many still die from HIV/AIDS. It is a significant loss for a country when the young population dies of HIV. Dead during the working-age of victims is a significant factor in the economic impact of HIV (Collins & Leibrandt, 2007).

Despite national expenses, HIV-affected households are still spending a significant amount of money for their HIV-positive family member's treatment and care for example to travel, diagnostic tests, medicine other than ART, lodging, and food. Support from the government is limited to subsidizing CD4 (cluster of differentiation four) tests and ART Medicines. A study carried out in Nepal highlighted travel cost as a significant problem and reported that the HIV-affected households were facing financial constraints for HIV/AIDS treatment (Wasti et al, 2009). A long-term illness due to HIV/AIDS demands a higher level of treatment costs for HIV. Therefore HIV/AIDS causes depletion of savings and productive assets, increasing the indebtedness of HIV –affected households (Duraisamy et al, 2006). Moreover, the higher health care expenditure of the households reduces investment for nutritional food for family members, investment for farming or business, and education of children. Studies have been conducted on the economic burden of HIV to the households looking at direct cost and indirect cost on in/outpatient bases in developing countries (Etiaba et al 2016; Poudel, Newland, Simkhada, 2015). Most studies done on HIV in Cameroon have been focused on prevalence, (DHS, 2011, CAMPHIA, 2018). Regarding the economic burden of HIV, very few studies have been realized. There is still a significant knowledge gap in health service utilization patterns of HIV/AIDS patients and the cost of HIV care services, especially in rural settings. Hence the reason for this cost of illness study explores in detail the economic burden of HIV/AIDS from the household's perspective, regarding outpatient and inpatient cost.

LITERATURE REVIEW

HIV is a virus present in the blood, semen, and other body fluids of infected individuals. Exposure to these infected fluids leads to a risk of contracting HIV infection, which is dependent on the integrity of the exposed site, type, volume of body fluid, and the viral load. The standard modes of spread of HIV infection are sexual, parenteral (such as those experiencing an occupational injury, injection drug users), and vertical (mother-to-child transmission). The course of HIV infection is related to clinical evolution. Beginning with the initial exposure of the individual to HIV and ending with total impairment of the immune system. The trend is towards the emergence of opportunistic infections leading to the final stage which is death. Different phases have been reported between the time of infection and the time of immunodeficiency. The typical course of HIV infection can be described in three phases: Primary infection (1 to 3 months); Clinical latency: (on average 8-10 years) and AIDS (on average 2-3 years)(WHO, 2016).

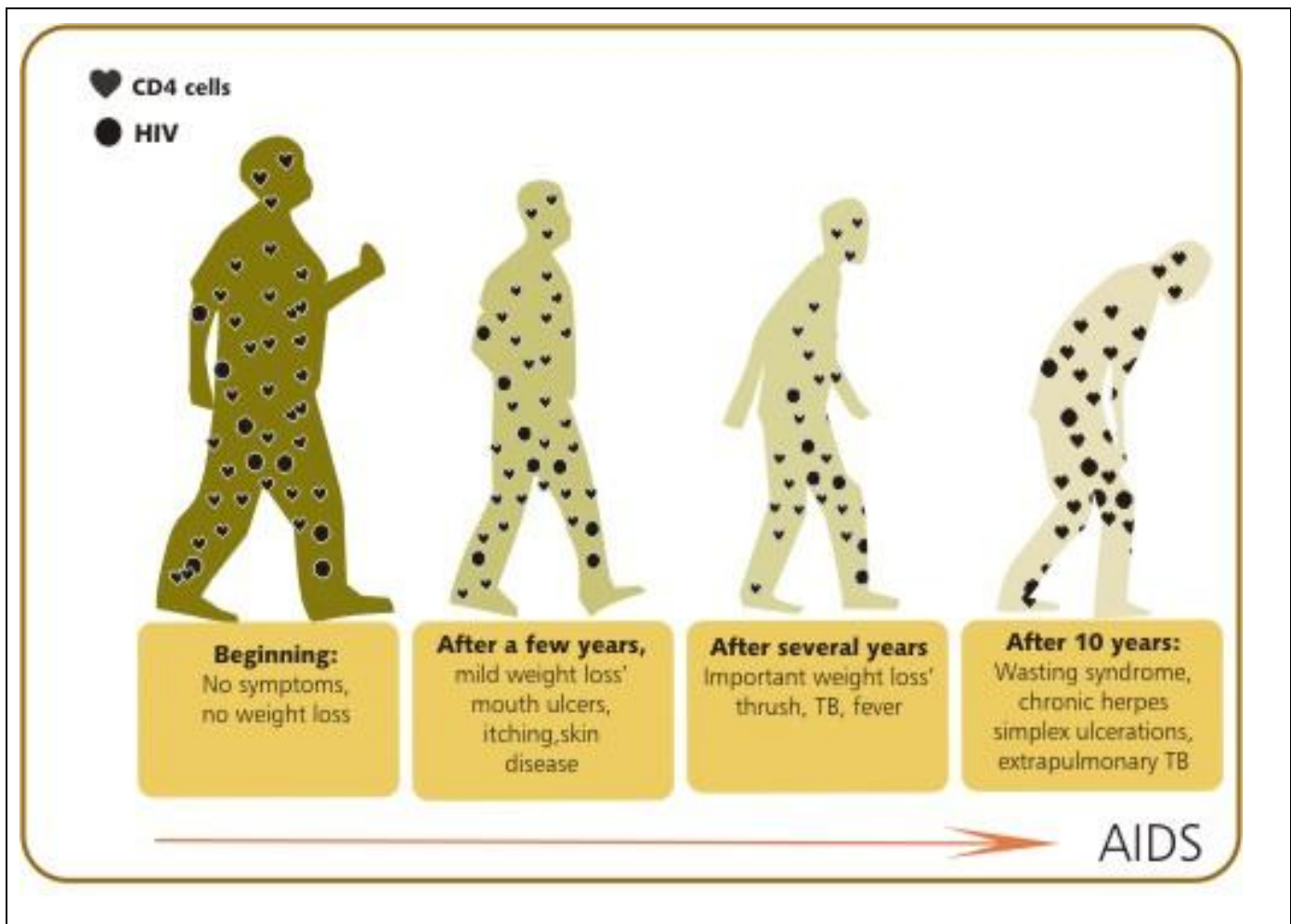


Figure 1: Natural history of HIV infection

Source: WHO (2016)

Conceptual Framework and Definitions for the Study

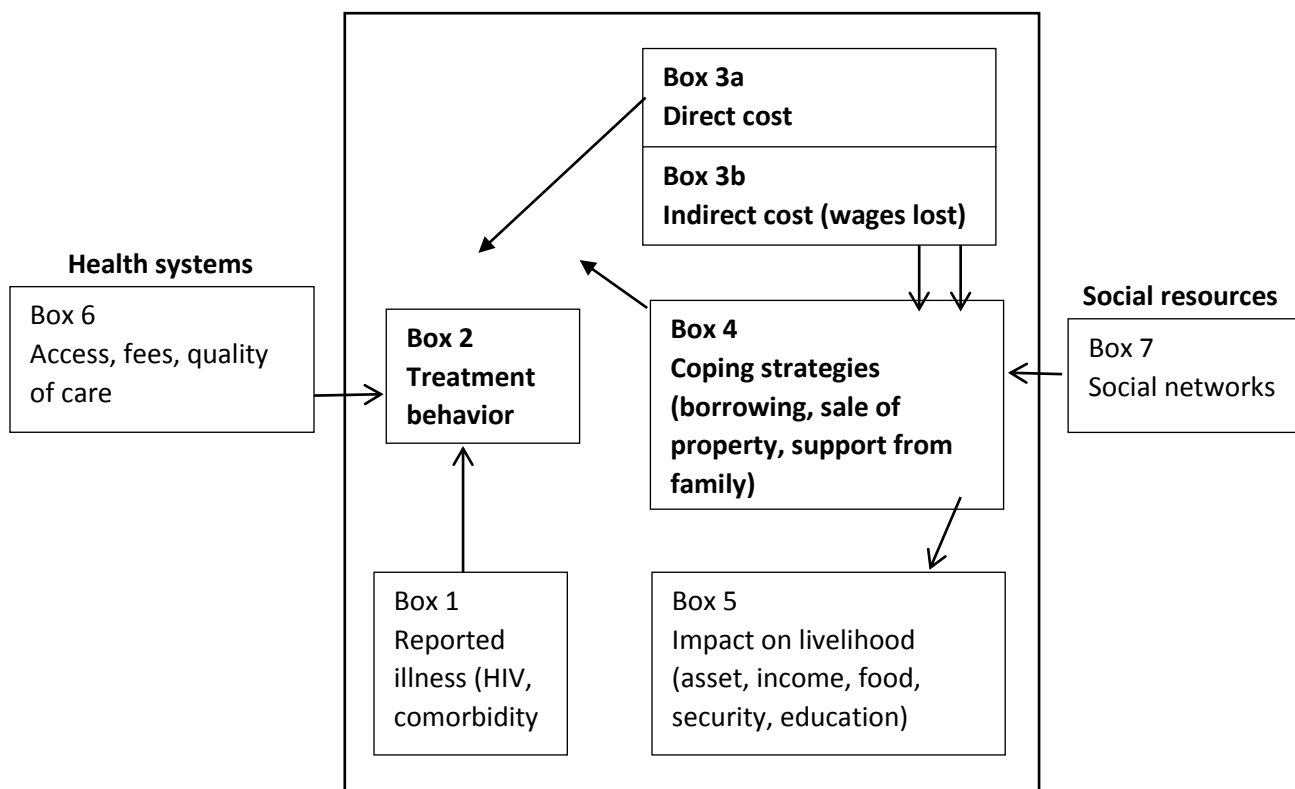


Figure 2: Conceptual framework.

Source: Russell (2004)

The conceptual framework for the study derived from a study that assessed the household costs of illness, coping strategies, and their economic impact at the household level (Russell, 2004) is presented in figure 1 was modified by the researchers to suit the context. When an individual living with HIV becomes ill (Box 1), decisions are made about whether to seek treatment and from which source, in this case, the Nkambe district hospital (Box 2), which is part of the health system (box 6) is shown here as are source outside the household on which the household can rely on. In Cameroon, the health system supports free ARTs and subsidization of specific laboratory tests and drugs that PLHIV needs. Also, there are health care providers ready to care for these individuals. When the decision to seek care is established, the patient visits the hospital either on an outpatient visit or is hospitalized (inpatient). Depending on either scenario, the cost of illness is split into the direct cost and indirect cost (box 3a and 3b). The cost of treatment refers to household expenditure linked with seeking treatment and includes medical (consultation fee, tests, drugs) and non-medical costs (transport, food, caregiver, bed fees).

The indirect cost refers to the loss of household productive labor time for patients and caregivers. The direct costs of HIV/AIDS to the individual and household includes all out-of-pocket spending on HIV/AIDS-related health services and goods paid directly by the households (Etiaba et, 2016). The type and severity of illness will affect the direct and indirect costs. Also, the costs

are influenced by health service characteristics that determine access and choice of provider. When the cost becomes catastrophic, it triggers coping strategies (box 4). In poor settings, where households struggle to meet daily wages due to illness or relatively small treatment expenses is likely to trigger such strategies (Russell, 1996). This can even lead to claims on resources outside the household such as social networks or local organizations that offer credit (box 7). The cost of illness in a patient with HIV and coping strategies that have implications for household economic status and process of impoverishment (box 5) the highlighted boxes illustrate the focus of this study.

In most developing countries, where ART is subsidized but have different payment modalities for other costs of treatment, the direct cost for this other treatment is still high (Etiaba, 2016; Poudel et al, 2015) In a cross-sectional survey of adults attending health facilities of HIV/AIDS treatments in three states in Nigeria where ART was fully subsidized but had different payment modalities for other costs of treatment, revealed that the average out-patient and in-patient direct costs were 5.49 dollars and 122.10 dollars respectively. Transportation cost was the highest non-medical cost and it was higher than most medical costs. The presence of co-morbidities contributed to household costs. All the costs were catastrophic to a household at 10% and 40% thresholds in the three states, to varying degrees. They concluded that ART subsidization was not enough to eliminate the economic burden of treatment on HIV patients (Etiaba et al, 2016).

Another cross-sectional survey of adults living with HIV in Columbia revealed that individuals and households spent about 13% of their monthly income on HIV/AIDS-related goods and services (Lopera et al, 2011). Cumulative patient contributions toward this expenditure range from \$200/year to \$3939/year in Nanning and \$13/year to \$1179/year in Xiangfan, depending on the patient's clinical stage of HIV infection. In Nanning, these expenses have been assessed as up to 340% of an urban resident's annual income or 1200% of rural residents, while in Xiangfan, it translates to 116% of annual income for city dwellers and 295% in rural areas Moon et al, 2008). In a study on the socioeconomic impact of the epidemic on households in South Africa, affected families were relatively worse off than the non-affected families. The affected households were seen to be spending lesser on food and falling into the lower end of the income distribution, with more severe incidence and depth of poverty (Boysen et al, 2004). The cost of medical care and treatment for those infected with HIV is significant (Duraisam et al, 2017).

A study in South Africa suggested that payments made for transportation can be a significant source of patient cost (Rosen et al, 2007). Another study in Malawi also found that higher cost of transportation alone was associated with lower patient uptake of ART (Zachariah et al, 2006). Estimates of out-of-pocket costs for treatment and care for HIV-positive persons in China were also found to be calamitous, with expenses likely to rise to 116% of annual income for city dwellers and 1200% for rural residents (Moon et al, 2008). The illness of a family's principal earner may result in his or her absence from work. Absenteeism may result in the loss of income. When the person dies, the temporary loss of income becomes a permanent loss. The indirect cost of HIV/AIDS at the individual and household levels can be seen in the declining productivity and the eventual loss of income. When a person becomes unable to work and earn due to illness, it directly affects the household's income, reducing the income at a time when it needs additional money to pay for treatment.

Trend analysis of an HIV-positive cohort of factory workers in Ethiopia showed that advancing HIV infection, as measured by a drop in CD4 count and increasing viral load, is associated with a reduction in productivity and increase in the number of sick leaves from work (Omer & Mirriam, 2008). In predominantly agrarian areas, HIV/AIDS greatly affects the availability, quality, and human capital of the agricultural labor force since HIV/AIDS mostly affects young adults, usually the most active and productive group of the society. (Beegle et al, 2005)

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 hospitalized 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. Nkambe District Hospital is 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 a 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.

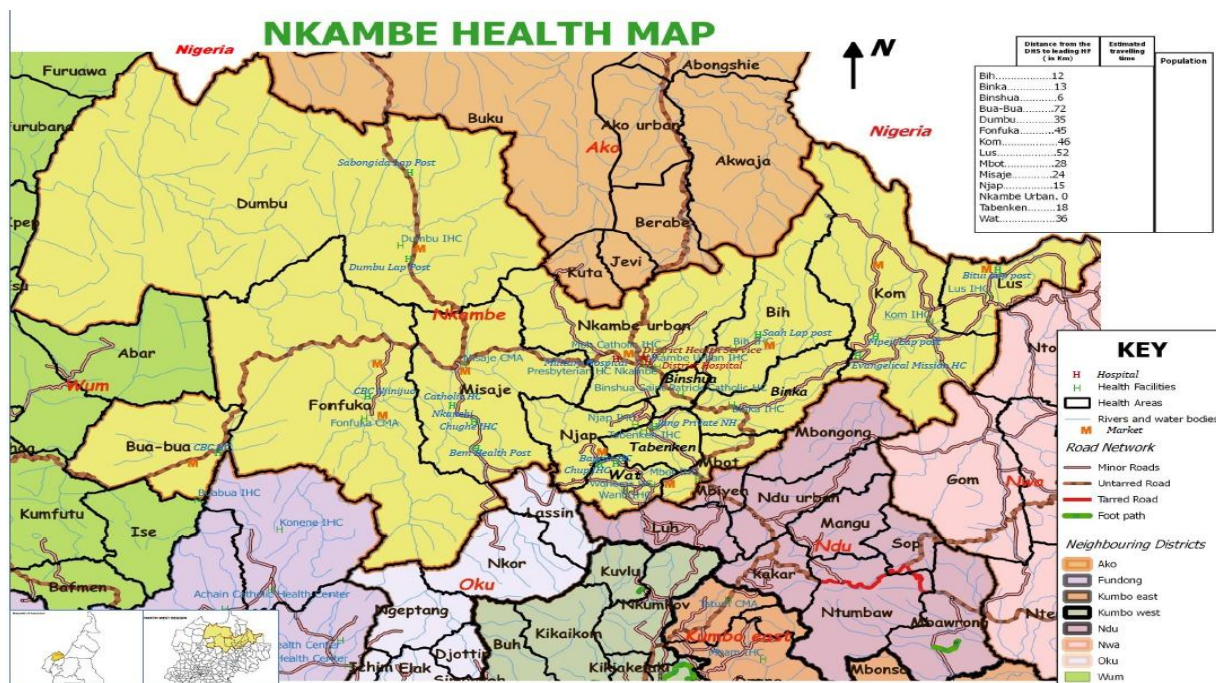


Figure 3: Location of the study area

Source: District health Service Nkambe archives (2018)

This study included any participant aged above 21 years, diagnosed HIV positive and on ARTs for at least three months at the time of recruitment, presenting at the Nkambe District Hospital, who signed a free informed consent was included in the study. Patients who were newly diagnosed with HIV and newly initiated on ARVs, as well as those coming for ANC were not included in the study. Data used in this study were obtained with the help of a semi-structured questionnaire used as an interview guide. Additional information from patient records was also

used. Data were analyzed using SPSS version 23 and Microsoft Excel 2010 for inferential and descriptive statistical analyses. Excel was used to calculate the different costs of expenditures incurred by the participants and to draw charts and figures. Descriptive methods with tools such as tables, means, standard deviations, and percentages were used as well as one-way analysis of Variance (ANOVA). The health-seeking characteristics of people living with HIV/AIDS were obtained using a questionnaire.

All the treatment activities carried out on outpatient and inpatient bases were considered as direct costs. This was factored into direct medical cost i.e. cost from registration, consultation, laboratory investigations, prescriptions made, and direct non-medical cost i.e. cost of transportation, hospitalization (for inpatients only), caregivers and food, etc. Fixed standardized prices for district hospitals were used to compute cost in FCFA and converted to dollars using the current exchange rate for 2018 to enable the comparison of our findings with other studies. The mean cost of the different items, as well as overall cost, were computed and tested for gender and residence using one-way Analyses of Variance (ANOVA) to see if there was a significant difference or not. A p-value of 0.05 was considered to be statistically significant. The out-of-pocket payments for total household non-food expenditure were computed. The direct cost was labeled T_o for outpatient services and T_i for inpatient services. Ethical considerations were made by obtaining ethical clearance from the ethical committees of Catholic university Bamenda. Authorization was also obtained from the coordinator of the Nkambe District Hospital HIV treatment center.

RESULTS

Table 1: The socio-demographic information of the participants (n=346)

Variables	Category of variables	Out-patients (%) (n=281)	In-patients(%) (n=65)
Sex	Male	54 (19.2)	22 (33.8)
	Female	227 (80.8)	43 (66.2)
	Total	281 (100)	65 (100)
Village of Origin/clan	Wat	111 (39.5)	25 (38.4)
	Tang	107 (38.1)	25 (38.4)
	Wiya	63 (22.4)	15 (23.2)
	Total	281 (100)	65 (100)
Place of Residence	Urban	93 (33.1)	18 (27.7)
	Rural	188 (66.9)	47 (72.3)
	Total	281 (100)	65 (100)
Mean Age	-	42.28 [8.937]	40.98 [12.690]

Source: Researcher using field data 2018

Note: figures in parentheses indicate percentages

Table 1 shows that 19.2% of the out-patients were males, while 80.8% were females while for in-patients, 33.8% were males, while 66.2% were females. Regarding the place of residence for out-patients, the majority were resident in the rural milieu (66.9%), against 33.1% resident urban milieu; and for the place of residence for in-patients, the majority of the participants were still from the rural areas (72.3%), while 27.7% were from the rural area. The majority of the participants were in a monogamous marital status (34.5) followed by a single (18.9%), for the in-patients, 49.2% were in a monogamous marital setting. For the out-patients, the majority were female heads (55.5%). For the in-patients, the majority were still female heads (41.7%).

Table 2: Educational and occupational information (N=346)

Variables	Category of variables	Out-patients (%)	In-patients (%)
Level of education	No education	67 (23.8)	31 (47.7)
	Primary	179 (63.7)	31 (47.7)
	Secondary	25 (8.9)	0 (0.0)
	Tertiary	10 (3.6)	3 (4.6)
	Total	281 (100)	65 (100)
Occupational status	Civil servant	7 (2.5)	5 (7.8)
	Private sector	14 (5.0)	0 (0.0)
	Student	0 (0.0)	2 (3.1)
	Self employed	36 (12.8)	11 (17.2)
	Unemployed	8 (2.8)	0 (0.0)
	Retired	6 (2.1)	0 (0.0)
	Farmer	210 (74.7)	46 (71.9)
	Total	281 (100)	65 (100)

Source: Researcher field data 2018

Table 2 shows that 23.8% had no education while for the inpatient, 47.7% had no formal education. The majority of both the outpatients (74.7%) and (71.9%) were farmers.

Health Service Utilization Pattern

Health Service Utilization Pattern for Out-patients

Table 3 shows the utilization pattern of people living with HIV/AIDS in the Nkambe District Hospital.

Table 3: Shows the Different Health Service Utilization Patterns for Out-patients

Variable	Frequency	Percentage (%)
<u>First visit(n=281)</u>		
Yes	7	2.5
No	274	97.5
<u>Period of ART(n=281)</u>		
<6 months	8	2.8
> 6 months	6	2.2
Up to 1 yr	16	5.7
> 1 yr	251	83.3
<u>Frequency of visit(n=269)</u>		
Weekly	4	1.5
Monthly	21	7.8
Every 2 months	12	4.5
Every 3 months	160	59.5
Every 6 months	14	5.2
Yearly	6	2.2
No answer	52	19.3
<u>Transportation means(n=279)</u>		
Motorbike	172	61.6
Public transport	49	17.6
Private transport	9	3.2
Walk	49	17.6

Source: Researcher field data 2018

Table 3 shows that majority of participants (97.5%) were not coming to the hospital for the first time. A good number of them (83.3%) had been on ART for more than one year, while more than half (59.5%) visited the hospital every after 3months for ART refilled. More than half of participants (61.6%) said they used motorbikes as transportation means to come to the hospital.

Health Service Utilization Pattern for Inpatients

Table 4: Health Service Utilisation Pattern for Inpatients

Variable	Frequency	Percentage (%)
<u>Admitted in past 3 months (n=66)</u>		
Yes	66	100.0
<u>Number of Admissions (n=59)</u>		
Once	48	81.4
Twice	11	18.6
<u>Treatment Received(n=59)</u>		
TB	7	11.9
Malaria	6	10.2
TB and Malaria	19	32.2
Others	27	45.7
<u>Transportation means(n=62)</u>		
Motorbike	42	67.7
Public transport	12	19.4
Private transport	1	1.6
Walk	7	11.3

Source: Research Field Data 2018

Table 4 shows that more than 80% said they were admitted for the first time. The most common means of transportation used by participants who were inpatients was motorbike (67.7%)

Cost burden Incurred by People Living with HIV/AIDS

Outpatient Cost Burden

Participants incurred a mean direct medical cost of 191.81 FCFA (\$ 0.34), a mean direct non-medical cost of 1917.08 FCFA (\$ 3.41), and a mean total out-patient cost of 2.108.89 FCFA (\$ 3.47). At an average of four visits per year, this gives an annual total cost estimate of 8.435.56 FCFA (\$ 15). The indirect cost which corresponded to wages lost by the patients was 1130.08 FCFA (\$ 2.01).

Outpatient Cost according to Gender and Residence

Table 5 presents results of a comparative analysis between the means of the direct medical cost, direct non-medical cost, and the indirect cost incurred by the outpatients

Table 5: Outpatient Cost according to Gender and Residence

Variable	Category	Gender				Residence			
		Male	Female	Combined	<i>p</i> -value	Urban	Rural	Combined	<i>p</i> -value
Direct medical cost	Consultation	00	13.22	10.68	0.273	00	15.96	10.68	0.113
	Test	370.37	125.11	172.24	0.035	296.77	110.64	172.24	0.057
	Drugs	00	11.01	8.90	0.627	00	13.30	8.90	0.483
	Total	370.37	149.34	191.81	0.075	296.77	139.89	191.81	0.132
Direct non-medical cost	Transport	1683.33	1968.28	1913.52	0.503	815.05	2456.91	1913.52	<0.001
	Food	00	4041	3.56	0.627	00	5.23	3.53	0.483
	Total	1683.33	1972.62	1917.08	0.498	815.05	2462.23	1917.08	<0.001
Indirect cost	Wages lost by patients	1047.22	1149.78	1130.07	0.271	1169.35	1110.64	0030.07	0.452
	Total	1047.22	1149.78	1130.07	0.271	1169.35	1110.64	0030.07	0.452
Total		3000.93	3273.35	3221.00	0.542	2246.24	3703.19	3221.00	<0.001

Source: Data from patient records 2018

Table 5 show that males incurred more direct cost for tests carried out during the out-patient visit than female and it was statistically significant ($p= 0.035$) but the overall direct cost for male compared to that for female was not significant. For transport cost, they were no statistically significantly difference between males' and females' spending ($p = 0.503$) and total indirect cost ($p = 0.495$). However, most rural resident respondents spend more on transport costs than urban residents and this was statically significant ($p = 0.001$). Also, there was a significant difference between rural and urban resident responses for the total indirect cost ($p = 0.001$). The overall total cost (direct and indirect) of the outpatient visits was 3221 FCFA. There was a statistically significant difference between the rural and urban residents' respondents for the overall total cost or expenditure ($p = 0.001$), while there was no significant when compared between males and females ($p = 0.542$).

In-patient Cost Burden

The overall total direct and indirect cost was 44,529.08FCFA giving an annual cost of 178.116.32 FCFA. The mean direct medical cost of treatment was 17.192.00 FCFA (\$ 30.6). The mean direct non-medical cost was 13.222.31 FCFA (\$ 23.5). The total direct cost was 30.414.31 FCFA (\$ 54.12). Considering an average of four visits per year, this gives an annual total cost estimate of 121.657.24 FCFA (\$ 216.5).

In-patient Cost according to Gender and Residence

Table 6 presents results of the direct and indirect cost incurred by the in-patient according to gender and residence using ANOVA

Table 6: In-patient Cost according to Gender and Residence

Variable	Category	Gender				Residence			
		Male	Female	Combined	p-value	Urban	Rural	Combined	p-value
Direct medical cost	Consultation	543.64	504.65	524.62	0.454	611.11	491.49	524.62	0.149
	Test	5118.18	6346.51	5930.77	0.346	6138.89	5851.06	5930.77	0.835
	Drugs	10973.64	10906.98	10929.54	0.982	12484.44	10334.04	10929.54	0.499
	Total	16330.91	17632.56	17192.00	0.718	18848.89	16557.45	17192.00	0.548
Direct non-medical cost	Transport	5154.55	3358.14	3966.15	0.116	5316.67	3448.94	3966.15	0.123
	Food	6781.82	5279.07	5787.69	0.348	6166.67	5642.55	5787.69	0.758
	Bed fee	3363.64	3303.49	3323.85	0.965	2111.11	3788.30	3323.85	0.240
	Caregiver	5668.18	2989.53	3896.15	0.023*	4519.44	3657.45	3896.15	0.497
	Total	15250.00	12184.88	13222.31	0.230	13594.44	13079.79	13222.31	0.850
Indirect cost	Wages lost by patients	10423.64	4004.65	6177.23	0.053	11045.56	4312.77	6177.23	0.05*
	Wages lost by the caregiver	4384.09	4437.21	4419.23	0.977	5975.00	3823.40	4419.23	0.259
	Cost on special diet	00	1162.79	76923	0.280	1666.67	425.52	769.23	0.275
	Total	14807.73	9697.67	11427.23	0.265	18909.44	8561.78	11427.23	0.030*
Total		5.029.45	41581.40	44529.08	0.236	56124.44	40088.30	44529.08	0.037*

Source: data from patients records 2018

According to table 4.6, the direct non-medical cost due to caregivers was more for male inpatients than for females and this was statistically significant($p=0.023$). Also, the indirect cost due to wages lost by in-patients from an urban residences was more than for patients from rural

residences and this was statistically significant ($p=0.05$). Moreover, the total indirect cost used to wages lost, cost of diet was higher for inpatients from urban residence than those from rural residence, this was statistically significant ($p=0.030$). In all, the total cost both direct and indirect put together was more for urban resident inpatients than for rural resident inpatients and this was statistically significant ($p=0.037$)

DISCUSSION

Looking at the sociodemographic findings of the study, it is demonstrated that most of the participants were females with most households headed by females. This could be explained by the fact that there are more females than males and also reflects the feminization of HIV in Cameroon as reported by the National AIDS Control Committee (NACC, 2017). A study carried out in South Africa which also offers ARVs free of charge to increase access for sicker patients and promote adherence had more female participants than male ones (Rosen et al, 2007). However, these findings are contrary to study in India where more male was accessing ART than females (Kumarasamy et al, 2007). Most participants were not well educated and were mostly farmers from a rural setting. These findings are characteristic of the grassland rural population of Cameroon which is a developing country. Agriculture is a very vital activity as a source of living in Cameroon. Studies have reported working with a similar population (Baier, 1997; Poudel et al, 2015).

Health service Utilization most participants on outpatient visits were reduced (70%) and had been on ARTs for more than one year with every 3 months checkup appointments. In Cameroon following diagnosis and initiation of ART, patients are followed up following a national guideline with well-defined appointments (NACC, 2017). After six months when patients have viral suppression following an effective ART course, the patient's frequency of visit can be reduced especially if there are factors that hinder frequent visits like distance. More participants reported 3monthly follow-up due to the multi-month dispensation approach adopted in HIV management centers for stable patients in Cameroon, which help reduce transportation costs. Most participants predominantly females and those from rural settings expressed transportation as a barrier to access treatment with many relying on motorbikes and other public transport means. These findings are similar to those reported by other studies (Dhaliwal et al., 2003); (Zachariah et al, 2006). This finding can be explained by the poor road network in Cameroon especially in rural settings hence rural dwellers rely more on a motorbike for accessibility. For those inpatients, most were very poor and suffered from tuberculosis and malaria comorbidities. Tuberculosis has been shown by studies to be the most common and costly opportunistic infection among people with HIV (Mudzengi et al, 2017).

Free ART is not enough to provide financial protection to people living with HIV. The cost of medical care and treatment for those infected with HIV are significant (Duraisamy et al,2006; Mudzengi et al, 2017). 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, A., Newland D., Simkhada P., 2015). In our study, the average direct costs for outpatients (3.75\$) and inpatients (5.49\$) are lower than the \$ 5.49 and \$122.10 reported in a study in Nigeria (Etiaba et al, 2016). The overall average cost (direct and indirect) for both outpatient and inpatient was \$ 84.96 and was comparatively higher than the \$ 30.2 reported in a study in Nepal (Poudel et al, 2015). The

annual average total cost of treatment was \$ 339.83 which falls within the range of \$ 200/year to \$ 3939/year reported by a study in China (Moon S., Van Leemput L., Durier N., 2008). The small sample size can explain the lower direct cost which corresponds to the out-of-pocket payments for both outpatient and inpatient reported in our study compared to the study in Nigeria in a single area and facility compared to the large sample size and 3 study areas reported (Etiaba et al, 2016). Also, participants in our study were mostly from rural settings with less education and mostly farmers with low income who pay for health services out-of-pocket. 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, 2008).

The study also revealed that male patients with HIV/AIDS who were hospitalized spend more on the non-medical cost of getting a caregiver than female hospitalized patients despite the female predominance reported. A study in India revealed that males needed more care than females (Kumarasamy, 2007). Most of the participants were from rural settings where culturally women are considered to stay at home while the male gets jobs and provides for the family hence men turn to be able to afford such services. Also, most women take care of themselves more than men regarding food, hygiene, and other basic needs and so often do not need a caregiver to assist in these basic needs.

CONCLUSION

Despite the availability of free ARV drugs and subsidization of some health services in Cameroon such as preventive therapies (cotrimoxazole), treatment of some opportunistic infections, laboratory services (CD4, viral load, sputum testing for AFB), and psychosocial support services, people leaving with HIV/AIDS still incurred some cost burden in accessing ARVs and management of comorbidities such as tuberculosis and malaria, especially in rural settings. The study thus concludes that the average direct cost of treatment access was 2108.89FCFA (\$3.47) for outpatient and 30414.31FCFA (\$54.12) for inpatient. This gave an annual average cost of 8435.56FCFA (\$15) and 121657.24 FCFA (\$216.5) respectively. The transport cost was most prominent. Those from rural locations spend more on health services.

RECOMMENDATIONS

Based on the work, the following recommendations are put forward; Implementation of effective community ARVs dispensation and other differentiated care models such as Multi-month scripting and home dispensation should be fully scaled up. Also, the creation of more HIV treatment centers should be done for proximity to patients, furthermore, implementation of no user fee for HIV Services and 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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