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# **HIV/AIDS in a Community of Western Cameroon**

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## **Abstract**

This chapter aims at raising awareness on the prevailing HIV/AIDS situation in a community of West Cameroon. Overall prevalence was 5.21%. Males were more infected than females and individuals  $\geq 36$  years old recorded highest prevalence. There was no significant difference in prevalence with profession, analysis based on marital status revealed that unmarried were more infected as compared to married, based on the motif of test, those who made the test because of sickness were infected than those who did for pregnancy purpose. The year interval [2014-2016] recorded highest prevalence as compared to other year-intervals; usage of condom in sexual practice for prevention in such individuals showed low prevalence as compared to individuals who did not consider such a prevention option. HIV/AIDS prevails in the Fondonera Community of west region and serious sensitization on its occurrence/level is of vital importance to prevent future infections.

**Keywords:** HIV/AIDS, West Cameroon

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## **1. Introduction**

HIV/AIDS remains a threat to rural development rather than simply a health issue. HIV-AIDS have claimed the lives of an estimated 310,000 [220,000–400,000] adults and children in 2016, 21% fewer than the estimated 390,000 [300,000–480,000] who died due to AIDS-related causes in 2010 in Western and Central Africa [1]. The prevalence of this disease in the African continent is country- dependent. For Cameroon, the UNAIDS estimate data on the occurrence of HIV/AIDS says 58% of the infected population are aware of their status and 38% are on treatment [1]. It is tragic that youths in Cameroon like in order African countries still have blurred information and misconception about HIV transmission and prevention [2]. Human work

force can be hampered by several pathologies such as cancer, lung diseases, malaria, gastritis, tuberculosis, HIV/AIDS and others, but since many rural African communities rely on oxen for traction services in agriculture, a pathology such as African Animal Trypanosomosis (AAT) has also contributed in hindering agricultural production [3]. Agriculture remains the backbone of Cameroon's economy, employing 70% of its work force while providing 42% of its gross domestic product (GDP) and 30% of its export revenue. Such agro-activities take place in villages where they still exist enough surface area for it like the case of our study area. From the report of Manu et al. [4], 53.1 and 19.5% among other causes of food shortages have been caused by sickness and drought, respectively. Fondonera is a poor rural community found in the west region of Cameroon with a greater fraction of its population relying on agriculture as a source of livelihood. It was noticed that about 12.2% of patients coming for HIV test were farmers, and 79.2% were pregnant women advised to carry out the test through Antenatal Clinic (ANC) checkups. This indicates the capability of this disease in reducing agricultural output in this community as reported by Salu and Adejoh [5] that the quantity and quality of labor input is strongly determined by state of health of individuals of that community.

It has been estimated that most vulnerable and affected groups to HIV in Cameroon include sex workers, truck drivers, mobile populations and military personnel; young people (15–29 years old) are also highly affected. Urbanization is associated with higher levels of HIV infection than rural residents [6], many engage in risky business (prostitution) to meet up with their needs as well as those of their children [7] living with their parents in the village or with them in town.

Protected sex is a critical element in a comprehensive, effective and sustainable approach to HIV and other sexually transmitted diseases (STDs) prevention and treatment. It was confirmed in Uganda that the use of condom coupled with increase delay in the age of first sexual intercourse and the reduction of sexual partners was an important factor in the decline of HIV prevalence in the 1990s [8].

Rural women especially in village settings still live in a world where they are expected to be submissive to men and where it is unacceptable for a woman to say no to unwanted and unprotected sex [9], and this makes it difficult for women to have a say when it comes to negotiating safer sex. Certain religions as well as social norms in many SSA contexts permit (and even encourage) men to get several wives, engage in sex with multiple partners, favor sex with younger partners, and dominate sexual decision-making [10].

In Africa, marriage is a social obligation and a woman's status in society is judged based on it [11]. Sex is considered as a marital duty to which no woman should withdraw herself from the moment when her husband wishes and even when she has doubts about her husband's sexual life [12]. Against the backdrop of such expectations, women often feel powerless to protect themselves against HIV infection and unintended pregnancies. Economic realities enable men to monopolize the sources of income. In addition, in certain village communities in Cameroon, men have the possibility of opening plantations and getting married to several women who are expected to give birth to several children who

will add to the labor force. This permits men to use their money to get any kind of young girl they want, exposing themselves and their family to the disease through such promiscuous habits.

HIV test is one of the important tests carried out in pregnant women during ANC check-ups; this is to avoid mother to child transmission (MTCT), which is another means of transmission of the disease apart from sexual intercourse. However, many villages in SSA lack health units and many pregnant women end up giving birth at home through local means, making it dangerous for both the woman and the child who has not received the necessary follow-up before delivery and obviously does not know her HIV status. Knowledge of HIV status is crucial in order that pregnant women access the appropriate treatment and care for themselves and their unborn infants [13]. The study area of this present study has one health unit offering health services to about 24 villages, and this community relies on agriculture as their main economic activity. This study seeks to determine the demographic factors and vulnerable groups associated to HIV infection in order to raise awareness about the existence/level of the disease so as to meet with the millennium development goal of Cameroon. This millennium development goal is to halve, between 1990 and 2015, the population of people who suffer from hunger through combatting HIV/AIDS, malaria, and other diseases.

## 2. Materials and methods

### 2.1. Study area

Fondonera was our study area; it is situated 30 km from the town of Dschang, to the extreme south east of Menoua Division, west region of Cameroon. This area is bordered to the North by Fongodeng, southwards by Foguetafou Village in the Sanzo community, eastwards by Fossong Wentcheng community and westwards by Fontem in the Lebialem Division. The name of this area is colloquially known as Ndoung'lah following the Bamileke tradition (meaning summit of villages). This area suspends on a mountain at altitude between 800 and 1700 m asl with surface area of 120 km<sup>2</sup> with an estimated population of about 21,000 inhabitants. The climate here is equatorial type, characterized by a long rainy season and short dry season and vegetation here is forest. Agriculture is the main activity of the natives of this community, with cash crops such as coffee, cocoa, cassava, cocoyam, plantain, banana and pepper and others. This community is made up of 24 villages and they all seek for health services in the lone Nguango health center.

### 2.2. Study design

A retrospective study was carried out by studying hospital consultation and laboratory registers from November 27, 2008 to November 20, 2015, a prospective study commenced in December 1, 2015 to February 27, 2016. A prospective study was carried out in collaboration

with consulting/counseling senior nurse and laboratory technician. In addition, questionnaires were administered and group discussions were organized. Home visits were also made to know the conditions of individuals living with the disease while collecting vital information. All patients coming to carry out the test were considered, but note was taken when studying past data to ensure that the same kit previously used for diagnosis was the same with that presently used for diagnosis. Diagnosis was supervised by a senior researcher to ensure that protocol for testing using the test kit was in accordance with manufacturer's instructions. Confidentiality of test results following the test was confidential, and only a code was designated for each test and not the patient's identity.

### **2.3. HIV testing**

Rapid diagnostic tests using standard commercially sourced 'Determine' and Uni-Gold test kits were used to determine the HIV status of individuals who come for the test. 'Determine' HIV rapid test kit ([www.who.int/diagnostics\\_laboratory](http://www.who.int/diagnostics_laboratory)) used with whole blood, serum or plasma) as pre-test. Uni-Gold test kits (The trinity Biotech Uni-Gold™ HIV test) are kits that pick or react only with HIV in blood sample and was used for confirmation. The protocol for the usage of the above kits was as outlined by Olusi and Abe [14]. Storage conditions and protocols according to manufacturers of kits were strictly followed.

### **2.4. Ethical consideration**

An authorization was given by the Chief medical officer at the Dschang health district. Based on the fact that we were working on hospital registers in collaboration with laboratory technicians and nurses following instructions of the head of health unit on patients showing up for the test, ethical clearance was not required since we were not recruiting individuals for HIV screening. All clinical investigations were conducted according to the Declaration of Helsinki principles.

### **2.5. Data analysis**

Data were analyzed using the SPSS statistical software of version 22.0, graphs and pie chart were constructed using MS excel software of version 2010. Chi-square test was used to compare HIV prevalence with, sex, age cohort, years of screening, marital status, motif of test and profession.

## **3. Results**

From November 27, 2008 to February 22, 2016, 221 individuals showed up for HIV screening to know their status, 91.4% of them were farmers and this revealed how agriculturally dependent this population is.

Sex	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
Male	21	3	14.3	4.251	1	0.039
Female	200	8	4.0			
Total	221	11	18.3			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

**Table 1.** HIV prevalence with sex.

Age	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
14–24	73	5	6.8	3.096	3	0.377
25–35	104	5	4.8			
>36	44	1	11.1			
Total	221	11	22.7			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

**Table 2.** Prevalence with age cohorts.

Prevalence with sex revealed that male (14.3%) were more infected than female (4.0%) with a statistical significant difference ( $\chi^2 = 4.251$ ,  $df = 1$ ,  $P = 0.039$ ) (**Table 1**). Prevalence recorded with respect to age showed that the highest cases were signaled in individuals of ages  $\geq 36$ , followed by 14–24 and lastly by 25–35 years, even though such discrepancies in prevalence existed with age, there was no significant difference ( $\chi^2 = 3.096$ ,  $df = 3$ ,  $P = 0.377$ ), recorded with age cohorts (**Table 2**).

Evolution of the disease in this area since 2008 till date was monitored. Prevalence based on the year of screening showed that the years between 2014 and 2016 (30.0%), recorded highest infected and 2012–2013 (4.1%) presented the least number of cases. Statistically, there was a significant difference ( $\chi^2 = 27.373$ ,  $df = 8$ ,  $P = 0.002$ ) in HIV prevalence with years of testing (**Table 3**).

Prevalence based on profession showed that traders (20.0%) presented the highest prevalence, followed by farmers (14.8%) while students and teachers had zero prevalence, despite the difference in HIV prevalence registered in various occupations, there still existed no statistical significant difference ( $\chi^2 = 9.531$ ,  $df = 6$ ,  $P = 0.146$ ) (**Table 4**). The high HIV prevalence recorded by farmers in this community is an indicator of a possible decrease in agricultural work force in this agriculture-dependent community if serious measures are not taken to prevent spread of the disease among farmers. Traders recorded the highest infection rate among others, and this is due to their high mobility rates exposing them to high risks of contracting the disease.

Year	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
2008–2009	12	1	14.3	27.373	8	0.002
2010–2011	44	5	21.2			
2012–2013	93	2	4.1			
2014–2016	72	3	30.0			
Total	221	11	69.6			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

**Table 3.** Prevalence of HIV with year of testing.

Profession	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
Farmer	27	4	14.8	9.531	6	0.146
House wife	175	6	3.4			
Student	12	0	0.0			
Teacher	2	0	0.0			
Trader	5	1	20.0			
Total	221	11	38.2			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

**Table 4.** Prevalence based on profession.

Motif	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
Pregnancy	166	5	3.0	5.44	1	0.020
Sick	55	6	10.9			
Total	221	11	13.9			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

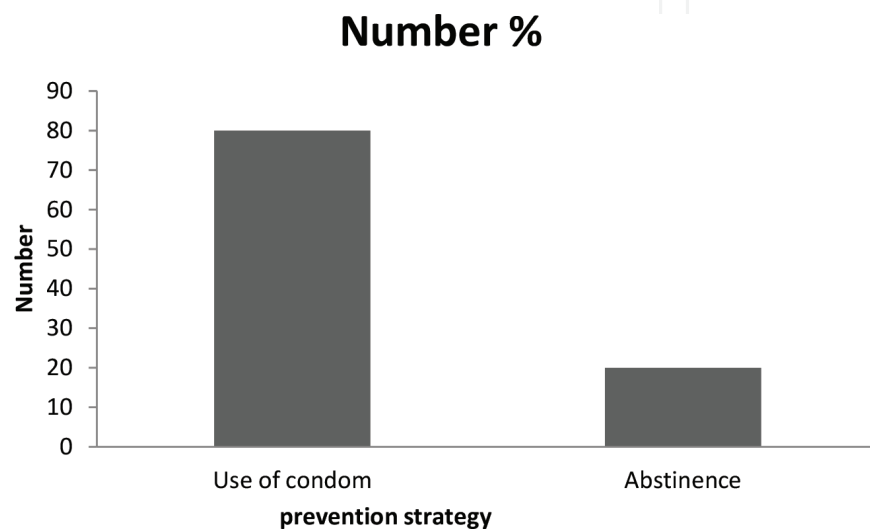
**Table 5.** Prevalence based on reason of test.

Apparently, there are two reasons why people in this study area go in for HIV screening, one being pregnancy and the other is sickness for both men and women. From data recorded, pregnant women frequently showed up for this test than those who choose to make HIV test when they come to consult because they are sick. From the prevalence results, those who diagnosed because they were sick (10.9%) as reason recorded the highest number of cases as compared to women who did for pregnancy reasons (3.0%), with a statistical significant difference ( $\chi^2 = 5.44$ ,  $df = 1$ ,  $P = 0.020$ ) (Table 5).

Marital status	N	I	P (I/N × 100)%	$\chi^2$	df	P-value
Single	25	4	16.0	7.241	1	0.007
Married	196	7	3.6			
Total	221	11	19.6			

N = number sampled, I = number infected, P = prevalence,  $\chi^2$  = Chi-square, df = degree of freedom, P-value is level of significance ( $P < 0.05$ ).

**Table 6.** Prevalence based on marital status.



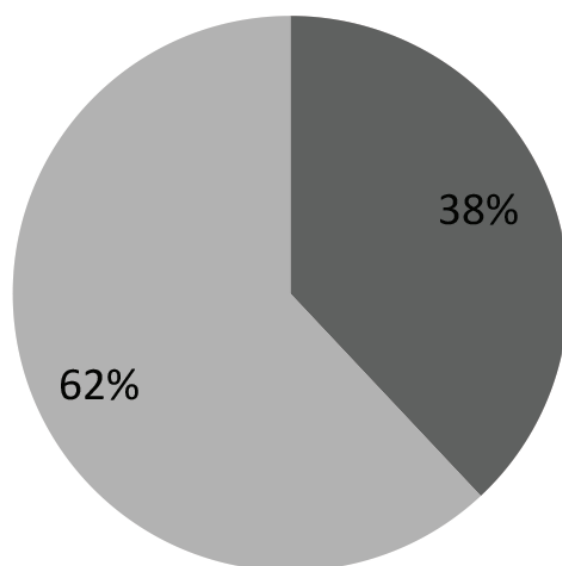
**Figure 1.** HIV prevention strategies.

Prevalence based on marital status indicated that single (unmarried) (16.0%) recorded high cases of the disease than their married counterparts (3.6%), with a statistical significant difference ( $\chi^2 = 7.421$ ,  $df = 1$ ,  $P = 0.007$ ) (**Table 6**). It was observed that married people showed up for the test than single persons.

The most frequent control measure for sexually transmitted diseases (STDs) in this community is the use of condoms. During community visits, it was discovered that 100% of shops sold condom, and when shop sellers were interviewed on which age group frequently purchased it, the response was students in secondary and high schools and rarely parents. From the results of our group discussions and questionnaires analysis, we realized that 80% of adolescent population used condom for safe sex as a preventive tool from STDs while 20% preferred abstinence (**Figure 1**). A further analysis of the effect of condom usage by youths of this village as a prevention option for HIV showed that 60% of individuals who came for screening and were diagnosed/confirmed positive did not practice safe sex (use condom); meanwhile, the other fraction who practiced safe sex with condom recorded 38% HIV-AIDS prevalence (**Figure 2**).

# Prevalence%

■ Use of Condom   ■ Non-usage



**Figure 2.** Sexual practice based on the use and nonusage of condom for safe sex.

## 4. Discussion

An overall prevalence of 5.21% was recorded in the Fondonera community of west region of Cameroon, which is greater than 2.8% reported by the Demographic and Health Survey and Multiple Indicators Cluster Survey (DHS-MICS) in 2011 for this same region. The number sampled was small as compared to other studies because people in this village rarely go to the hospital even for routine checkups; hence, the data collected represent the actual number of individuals who willingly demanded for the test. From our results, 91.4% of individuals coming for HIV screening are farmers, and this proves that a greater population of the indigenous of this area are farmers. Females (especially pregnant women and those carrying out pre-marital tests) regularly come for consultation as well as for HIV testing than men in this area. Prevalence of the disease with sex indicates that males were more infected than females; this projects a poor quality and quantity of work force and food security as they contribute more for the family upkeep as well as to agricultural work force than women. According to the DHS-MICS [15, 16], women were most infected than men, and this same report was made in a rural community known as Noni in the North West region of Cameroon by Manu et al. [4]. HIV prevalence was the highest in individuals of ages  $\geq 36$  years, this result is similar to the HIV prevalence curve for age plotted by DHS-MICS [16] which indicated peak prevalence in ages between 35 and 39 years and above. From community visit observation, 90%

of individuals from 35 years and above living in this village did not go to school and 95% of youths below 30 years have at least attended primary school. Lack of education among parents in this village has led to their unawareness of the transmission and prevention of the disease as well as lack of parental doctrine about the disease to their children. Parents in this community are equally high consumers of alcohol (beer or palm wine) which renders them senseless, exposing them to risky behaviors and disease. The years between 2014 till date recorded the highest HIV-positive cases in this community. This can be justified by referring to some socio-economic reasons which involve relocation of youths from cities during festive periods into this community and introduction of risky habits brought from the town, exposing the community to more danger. In addition, the opening up of the Santchou-Fondonera road has increased accessibility by indigenes of this village and visitors based in towns to frequently visit this area as compared to past years. From our frequency table analysis, 75.1% of individuals coming for HIV test constitute pregnant women and only 24.9% carry out the test because they are sick. It is clear from these figures that HIV test is not a priority of sick patients in this village and they prefer routine tests like stool, typhoid, and malaria. The high screening percentage for pregnant women is because HIV test is obligatory for them through ANC teachings. Even though a greater fraction consulting is made of pregnant women, they rather recorded low (3.0%) prevalence as compared to 10% in cases testing for sick reasons. This low prevalence in pregnant women in this community is still epidemiologically significant because a seropositive pregnant woman being mainly married have a far-reaching implication to the family as well as the socio-economic life of the people [17]. Based on the marital status and the frequency of consultations, free persons (single, divorced, widows, and widowers) recorded an 11.3% testing frequency as compared to 88.7% in married persons. From the prevalence results, free persons were infected than married, and this finding is contrary to that of Manu et al. [4] who reported that married were more infected than unmarried. It is logical that free persons have multiple sex partners to a greater extent than married people in a village setting like our study community. Such risky habits expose those free individual to HIV infection than those legally married; therefore, the present result was expectant. Fondonera community is an agriculture-dominated area with a greater population of indigenes resident in the villages of this community being farmers. This is portrayed from the global hospital statistics of patients consulting yearly according occupation, with 91.4% of them consulting as farmers. It was interesting even though vexing to know that farmers had the second highest consultation frequency after traders than any other occupation with no association. This finding is similar to that of Nyambi et al. [7] who reported that there is no association of HIV infection with occupation of participants in rural areas of Cameroon. Traders were highly infected because their mobility is the highest hence confirming the risk of mobile populations in the contraction of the disease. This finding is similar to that of Njukeng et al. [17] who reported highest cases with traders. The consequences of high farmer infection in this rural agriculture-dependent society can be deduced from the report of Gillespie and Kadiyala [18] in Rwanda who said that 60–80% reduction rates witnessed in farm labor are due to illness and death of infected households. It was noted from respondents about prevention strategies that 80% of them used condom for safe sex and only 20% preferred abstinence to the use of condoms. A further analysis was made on HIV prevalence among users and nonusers of condom as prevention strategy, and it revealed that 62% of infected cases did not use condom during sex

and only 38% of infected were aware of the necessity of condom in protection against STDs. It was reported by shop sellers during interviews that most of their customers are students and teachers who reported zero HIV prevalence as compared to parents who had high cases. This finding is in consonance with the report of Zacharie and Barthelemy [19] who reported that abstinence was the best option by participants to control the spread of the disease followed by use of condoms. From the abovementioned findings, it can be deduced that even though condom users recorded low prevalence than noncondom uses, condom still failed because it did not give a 100% protection from the virus hence the existence of positive cases with users.

## 5. Conclusion

From the 221 who tested to know their HIV status since 2008 till 2016, 11 of them were confirmed positive with an overall prevalence of 5.21%. Demographic information revealed that sex, marital status and years of testing showed association with HIV prevalence, but age, reason and profession showed no association with HIV prevalence in the Fondonera community. This community is dominated by farmers, and farmers recorded the highest prevalence which is a threat to agricultural production and food security in this poor rural community. As a prevention strategy, condom will not be 100% protective against the virus and should not be indispensable, but abstinence will be the best knockout option which can only be transmitted through stringent sensitization. Positive cases are encouraged to follow-up their antiretroviral treatment and avoid spread of the disease to other vulnerable groups.

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## Conflict of interest

The authors declare that they have no competing interests.

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