Conditions for a universal HIV screening test in Ivory Coast: a sample selected bias estimation and a two new 'unbalanced' logit approaches

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Abstract:
The knowledge of the serologic status of individuals helps to initiate adequate policies in the fight against HIV. Unfortunately in many African countries the HIV screening rate is significantly low. It is approximately 5% of the total populations in many sub-Sahara African countries, precisely 4.7% in Ivory Coast. But, the African continent is the most infected one and account for 70% of death due to HIV. The present work target was to study, firstly, the factors that influence the decision of individuals to accept or refuse a proposed screening test and, secondly, the factors that made those who have already done the test for doing it themselves. The Heckman two stage method is used to extract factors of acceptability of the screening test and two "new unbalanced logit" methods are proposed to estimate determinants of a HIV screening test, for people who have done a test on their one initiative.
Key Word: Heckman two stage estimation; HIV screening test; new unbalanced logit estimation.

1. Introduction

HIV / AIDS remains the pandemic that only in few years has caused the deaths and contamination of millions of people. Since the publication date of the first case, about 25 years ago, this pandemic killed more than 20 million people. More than 33 million people are worldwide infected, including 22 millions in Africa alone.
AIDS has gone beyond the medical context and stands today as a development problem. Indeed, with only 10% of the world's population, sub-Saharan Africa account for about 67% of infected people (UN, 2008) and accounts for 75% of deaths from the disease since the beginning of infection (UNAIDS, 2008). This inevitably affects the labor supply and the competitiveness of enterprises in the African continent.
Several international institutions and organizations have invested considerable sums and set up specialized projects around the world to deal with this pandemic. Despite this important device, it is clear that the disease has continued to progress, and future prospects are not much optimistic. Indeed, according to UNAIDS estimates the prevalence in 2020 could be around 100 million people infected worldwide. The current level of prevalence (on average 4% in South Africa Sahara) is three times that of 1990 and confirms the apparent upward trend of contamination. According to the EIS-2005, the prevalence in Côte d'Ivoire would be 4.7%, which corresponds to nearly half a million people infected.
Prevention remains the cornerstone of all strategies against HIV / AIDS, screening of people being one of the major objectives. However, mandatory testing of all populations is prohibited according to international and local legislation around the world. Indeed, all policies of screening are framed by a jurisdiction which is based on the freedoms and fundamental human rights as requested by WHO and UNAIDS. This strict regulation is due to the fact that AIDS is often seen as a disease of "shame" that affects people who have poor discipline sexually and who are sentenced to die in loneliness and deprivation. This situation leads in general and particularly in Africa to a rejection of them (infected people) by society. Thus, according to the rules of the WHO and UNAIDS, screening should be voluntary.
The actual turnout at the screening around the world and particularly in Africa remains low. Indeed, about 33 million people infected in 2010 identified only 40% know their HIV status. This

percentage is strongly influenced by important testing rate in developed countries. In Ivory Coast, as in many countries in sub-Saharan Africa only 3.5% of men and women aged 15 to 49 have already been tested and are aware of their status as a result of this test.

The low participation rate in voluntary testing contrasts with the observed prevalence, particularly with regard to Africa. But, this test is not yet systematically rejected by the people. Thus, understanding the factors that determine the acceptability of a screening test becomes a necessity in the fight against HIV in general, and particularly in the development of an effective screening test policy.

The objective of this work is to analyze the factors influencing the acceptance or refusal of a test when it is proposed and to highlight the factors that lead individuals to go for screening in their own initiative.

The first section of this paper will serve to present a brief literature review, following by the presentation of the methodology used throughout the study. The next section will be devoted to presenting the results, then will follow the section of the discussion and recommendations.

2. Literature review

The success of a national screening policy for HIV depends certainly on the willingness of government authorities, but also that of people. Two situations can be used to evaluate these wills. The first is one in which health authorities are moving to people to offer HIV testing. From this situation, we obtained *factors of acceptability* of the screening test. The second is where people will get tested on their own initiative, and thus allows highlighting the *determinants* of screening testing.

2.1 Factors of acceptability of the hiv/aids screening test

Studies which aim to identify factors of acceptability of a test for HIV / AIDS are generally made on small sample sizes or on targeted population groups. Usually, these studies begin with "focus groups" organized on the supervision of a psychologist (Nuwaha, 2002), (Mutula, 2003), and aim to collect beliefs about HIV / AIDS, and especially to be the basis for the development of statistical survey questionnaire that will follow these focus groups.

When the survey is made at the national level, focus groups are no longer possible. This does not alter the quality of the questionnaire developed nor the relevance of the survey.

Living conditions are decisive in the acceptance or refusal of a test (Nuwaha, 2002). De Paoli (2004) shows in addition, that the role of the level of knowledge of good practices on HIV has an important place among the factors of acceptability of the screening test. Stigmatization by society on infected people remains crucial in the process of screening, especially in African countries, where social life and community is highly valued by local people and exclusions are therefore more difficult to bear (Ouattara, 2004).

2.2 Determinants of the screening test

Identify the determinants of screening test in our study is to isolate the factors that led individuals who had already done a test before that proposed in the EIS 2005 to do so.

Having had unprotected sex, having suffered from a sexually transmitted infection and having multiple sexual partners are as regular income situations that brought people to perform the test on their own initiative (Gage, 2005; Nuwaha, 2002).

If in general the determinants of the test are similar to factors of acceptability of this test, the typology of people who do a test on their own is very different from that of populations in which the test is offered and who accept or refuse, as shown by Gage (2005) and De la Fuente (2009). While the poorest, least educated and younger are less testing on their own initiative and accept more a test offered to them, the richer, older, more educated are more likely to do so on their own initiative and longer refuse a test that is offered them in a campaign or in other situations where health authorities are moving towards them. The literature review allowed the issuance of certain assumptions.

2.3 Study assumptions

We propose to verify the following assumptions throughout this study:

H1: the sexual risk behaviors lead to a reluctance to test.

H2: Knowledge about HIV / AIDS facilitates the acceptance of the screening test.

H3: stigma made by the society on people with HIV infection causes a strong aversion to testing.

3. Methodology

Throughout the study we distinguish two situations: having accepted or refused the test proposed in the EIS[1]-2005, and having done a test before the one proposed in EIS-2005. The first situation will identify factors of the acceptability of the test, and the second the determinants of a test. The methodology used is available in a brief descriptive statistics and econometric analysis.

3.1 Econometric analysis

3.1.1 Determinants of a screening test: a logit approach

The econometric analysis will be done using a logistic model, as follows:

Let be Y the variable of interest, which for an individual i in the sample can be written as follows:

$$y_i = \begin{cases} 1 \ if\ the\ individual\ has\ the\ desired\ characteristic \\ 0\ othewise \end{cases} \quad (1)$$

Denote by $x_i=(x_i^1, \dots, x_i^k)$ the vector of k explanatory variables and $\beta^t = (\beta_1, \dots \beta_k)$ the vector of parameters to be estimated. For each individual indexed by i, the endogenous variable y, which takes the value 1 if the individual is classified as having the desired characteristic and 0 otherwise, is considered as the manifestation of a "hidden" variable y_i^* unobservable; the latter being connected to the total explanatory variables. Then, we have:

$$y_i^* = x_i^t\beta + \varepsilon_i \quad (2)$$

Where ε_i is the error term assumed to be independent and identically distributed.

We can then write the following assumptions:

$$y_i = \begin{cases} 1\ if\ y_i^* > 0 \\ 0\ othewise \end{cases} \quad (3)$$

$$p(y_i = 1) = p(y_i^* > 0) = p(\varepsilon_i > -x_i^t\beta) = F(x_i^t\beta) = \frac{e^{x_i^t\beta}}{1 + e^{x_i^t\beta}} \ \forall\, i = 1 \dots n \quad (4)$$

Where F(.) is the distribution function of the logistic model. Estimation of the model is done through the method of maximum likelihood. The likelihood function is given by:

$$L = \Pr(Y_1 = y_1, \dots, Y_n = y_n) = \Pi_{i=1}^n (P_i)^{y_i}(1 - P_i)^{1-y_i} \quad (5)$$

Finally, the logarithm of the likelihood function, we obtain the following function for which the maximum likelihood estimates.

$$\begin{aligned} LogL &= \Sigma_{i=1}^n y_i\, Log(P_i) + (1 - y_i)\, Log\,(1 - P_i) \\ &= \Sigma_{i=1}^n y_i\, LogF(\beta x_i) + (1 - y_i)\, Log\,(1 - F(\beta x_i)) \end{aligned} \quad (6)$$

The Logit estimation is a probabilistic model, it is necessary that there be some balance between the terms of the dependent variable for an excellent prediction results. However, regarding the result of the screening test, only 4.7% of Ivorians have already been tested. Thus, 95.3% of individuals have never been tested. If modeling is done using directly the fact of having already taken the test or not as the dependent variable, then the model will more predict the characteristics of people who have never been tested, thus biasing the results of the study (Cramer, 1999). To solve this problem, we propose two new methods.

For our first method, we make the hypothesis that individuals who have never done a test are "similar" regarding to relevant variables used in econometric modeling. So, sample randomly a certain percentage of these individuals (the draw is restricted to persons who have never been screened) and add people obtained from this draw to those who have already done a test can balanced our sample. We can then obtain in the final sample quasi-equal proportions of individuals who have never been screened and those who have already done the test.

In this study, 7840 individuals had never been screened before the one proposed in the EIS-2005. We performed a classification of factors and obtained seven "balanced" classes. The first contained

[1] EIS-2005 is the survey on AIDS indicators which took place in 2005 in Ivory coast

1119 individuals, 620 individuals in the second, 1470 individuals for the third class, 1030 for the fourth, 1310 for the fifth, 1060 individuals for the sixth class and 1150 individuals for the seventh class. A random sample of 10% of individuals was conducted in each class to constitute a sample of 784 individuals. These individuals were added to the 692 who had already tested so as to form a final sample of 1476 individuals. This operation (the sampled of 10% in each class) was repeated 50 times for reassurance that the results would not depend on the draw made. The final sample was selected randomly from the 50 differents samples obtained (the results were almost identical for the 50 samples demonstrating the extreme robustness of this new method of rebalancing in a logit or probit). This methodology can easily be generalized to all studies where the dependent variable is highly skewed (for the dependent variable, there are more than 90% of 1 and 10% of 0 and vice versa). But initially, we were supposed to lead this operation 1000 times and estimate parameters of each cluster obtained from the draw. We would have then computed the mean of estimated parameter, excluding cluster different from the computed mean by 10^{-2}. From the remaining[2] clusters, the final mean would have been computed, and final estimation of parameters been obtained. Unfortunately, we were not able to implement this method because of some lack in programming. We are still trying to program definitely this method.

For the second method, we used the exact logistic modelisation, not in our entire sample because it is impossible to implement exact logistic with 9686 observations, but just with 200[3] observations drawn from our sample. So we drawn[4] 200 observations from the 9686 ones 1000 times and estimated parameters from obtained cluster. We computed mean of these parameters and drop clusters from which the estimation was different from the computed mean by 10^{-2}. We the compute again the mean of parameter of the remaining cluster and obtained the final estimated parameter. We proposed that if more than the half of sample is dropped, then we conclude by saying that it is not possible by this method to estimate parameters and only the first method presented above is valid. Because of the same problem of programming, this method wouldn't be presented here.

The main target of this proposal was the open ways of research for those who faced problem of unbalanced sample when estimating qualitative variables.

3.1.2. Factors of acceptability of screening test: a sample selected bias estimate with the heckman selection procedure

Modeling factors of acceptability of the test will be done with variable interest having accepted or refused the test during the EIS-2005. During the investigation, before offering the test the respondent was reassured that no results will be posted to his identity. This caused a great acceptance of the test. Studying the factors of acceptability using this variable (having accepted or refused the test) as the variable of interest leads to a selection bias. The respondent's answer is biased by the fact that he will not be associated with any result and then has less reason of refusing the test. This is why more than 88% of respondent accepted this test. To correct this bias, he would have to be offered to the respondent whether he was willing to know the test result. This question has not been raised and we have taken as a proxy, people who had already done a test and who had seen the result.

Modeling will follow Heckman two-step selection bias estimation. In our study the first equation estimated is the one which independent variable is to want to know the results of testing or not. The Mill's ratio obtained is added into the equation whose dependent variable is accepting the test or refuses it. The independent variables are the level of wealth, the number of sexual partners of the respondent, HIV knowledge, stigma against people with HIV infection (the independent variables are discernible in the tables of results).

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[2] If more than half of clusters are dropped, we proposed that the program send an error message son that estimation is not possible.

[3] Exact logistic estimation is possible with less than 250 or 300 individuals. But sometimes, the modelisation goes too slowly. We make the remark that wit 200 it becomes more and more rapid.

[4] Draw with replacement.

3.2 Data

The data used in this study are from the Survey on AIDS indicators in Côte d'Ivoire in 2005 (CI-EIS 2005). This survey was conducted by the National Institute of Statistics of the Ivory Coast on the supervision of ORC-MACRO and has collected data on nearly 4,573 households, 5,183 women and 4,503 men aged 15 - 49 who were successfully interviewed, including 4,588 women and 3,930 men were tested for HIV.

The sample for the EIS-CI is stratified, nationally representative and fired two degrees. The old ten administratives regions grouping the 19 actual regions represent, with the city of Abidjan, the eleven selected geographic strata. The sample in the first degree was taken independently in each stratum, and the sample in the second degree has been drawn independently in each primary unit fired in the first degree. Finally, 253 primaries units were selected in stage one and in each of these units, 20 households were drawn.

4. Results of the elementary analysis

It is important before conducting the econometric analysis, to conduct an elemental analysis whose goal is to make ourselves an idea on behavior of pertinent independants variables and justify a more sophisticated analysis.

4.1 Determinants of screening test: the lessons of elementary analysis

This part will not address all the variables that will be taken into account in econometric modeling, but only the most important.

4.1.1 Reasons for screening test

With respect to individuals who have already tested, 42% would have a prior screening at their own request. The test was offered or required for an almost equal proportion (40% cumulative percent).

Especially for women, nearly 30% would undergo the test as a result of prenatal visits (Table 1).

Table 1: repartition by sex of reasons for testing for individuals already tested

gender	***Men***		***Women***		***Total***	
Reasons for testing	(%)	number	(%)	number	(%)	number
Asked for the test	57,6	170	30,4	121	42,1	291
Offert and accepted	27,8	82	31,2	124	29,8	206
Required	14,6	43	8,5	34	11,1	77
Prenatal visits	-	-	29,9	118	17,0	118
Total	100	295	100	397	100	692

Source: EIS 2005, author's computation

4.1.2 The role of stigma and knowledge of HIV / aids in screening populations

Stigma of society on those infected can not be measured directly through a variable, but by the interviewee's answers to questions related to their tolerance or not on those infected. The aggregation of these questions or items can be a proxy for measuring the stigma (Table 4). The same process is used to assess knowledge of people on HIV / AIDS (Table 2). The Cronbach's alpha is used to ensure the validity of newly constructed variable as a proxy.

Table 2: items used in the construction of the variable "knowledge of HIV"

Have you ever heard of HIV / AIDS	*yes(1)* [87.93%]*	*no(0) [12.07%]*
Can we reduce the risk of contracting HIV through abstinence?	yes(1) [65.87%]	no(0) [34.13%]
Can we reduce the risk of infection by using condoms when having sex?	yes(1) [63.18%]	no(0) [36.82%]
Can we reduce the risk of contracting the AIDS virus by having only one sexual partner who is not infected and who has no other partners?	yes(1) [68.5 %]	no(0) [31.5%]
HIV is transmitted through mosquito bites	yes(0) [58.77%]	no(1) [41.23%]

HIV is transmitted by sharing a meal with someone infected	yes(0) [55.29%]	no(1) [44.71%]
HIV can be transmitted by supernatural means or sorcery	yes(0) [51.77%]	no(1) [48.23%]
The disease is transmitted through breastfeeding?	yes(1) [43.49%]	no(0) [56.51%]
Should we avoid sharing razors / blades with people with HIV?	yes(1) [24.54%]	no(0) [75.46%]

* (1) corresponds to a correct answer, (0) to a bad. The total number of people affected by these issues is 9686. [] Give the percentage of people who were right or wrong answer.

Depending on the final scores, individuals are divided into three classes: the people with "perfect knowledge" of HIV for individuals who have had the right answer all the questions, the class of individuals who have "no knowledge "refers to individuals who have found no right answer and finally the intermediate class consists of individuals who are not in any of the two previous classes. The Cronbach's alpha obtained is 0.82.

In the group of people who have already taken the test, 38 men of 295 or about 13% of men have knowledge "complete" of HIV and among women, 43 of 397 or 11% have this knowledge "complete" (Table 3). The p-value (0231) of the chi square test between the variables score and gender was not significant at 5% and then a comparison by sex on HIV knowledge was not possible.

Table 3: Distribution of knowledge of HIV by sex among people already diagnosed

	Men		***Women***		***total***	
complete HIV knowledge	(%)	number	(%)	number	(%)	number
Yes	12,8	38	10,8	43	11,7	81
No	87,3	257	89,2	354	88,3	611
Total	100	295	100	397	100	692

Source: EIS 2005, author’s computation

For the construction of the variable "stigma against people infected with HIV," the methodology is as follows: variables related to the no tolerance of infected individuals are selected. Cronbach's alpha is used to ensure the validity of the returned variable. For each of these variables, the score (1) refers to an attitude of intolerance on the part of respondent and (0) refers to an attitude of tolerance (Table 4). The Cronbach's alpha of 0.59 was obtained.

Table 4: items used in the construction of the variable "stigma against people infected with HIV"

Will you buy vegetables to a person with HIV?	*No(1) yes (0)*
Do you think a teacher with HIV should be allowed to continue teaching?	No (1) yes (0)
Are you ready to take care of a parent at home living with HIV	No (1) yes (0)
People infected with HIV should be ashamed of themselves	No (0) yes (1)
People infected with HIV should be blamed to be the source of contamination.	No (0) yes (1)

The final scores are divided into two classes: those individuals who have a draw and have therefore a no-stigmatizing attitude on people infected by AIDS and all other individuals are considered to have an attitude of no-tolerance to infected individuals.

Regarding the people who had already tested, 58% stigmatize people with HIV, this, in regard to men. The proportion is almost identical for women (57.9%) (Table 5). However, there is no link between stigmatization of infected persons and sex, with respect to those who have already been detected (p value obtained from the independence test chi-squared is 0.973).

Table 5: Breakdown of stigmatization of PLWHA by sex of those who have had a screening test

	Men		***Women***		***total***	
Stigmatization Of PLWA[5]	(%)	number	(%)	number	(%)	number
No	41,4	122	42,1	167	41,7	289
Yes	58,6	173	57,9	230	58,3	403
Total	100	295	100	397	100	692

Source : EIS-2005, calculs de l'auteur

Perfect knowledge of good behavior for HIV is not always necessary to make a screening test. Among those already tested, more than half have an attitude of tolerance to no-infected individuals. However, it is necessary to set several variables that may influence the willingness to perform the test before drawing definitive conclusions. This will be done in the econometric analysis. What role does HIV knowledge and stigmatization of those infected when health officials decided to move to people?

4.2 The acceptability of factors screening test: the lessons of elementary analysis

4.2.1 HIV knowlegde

The p-value of 0.000 of the chi-squared independence test shows that there is a relationship between the fact of accepting or refusing the test during the investigation and knowledge of HIV. However, whatever the level of knowledge of the disease, more than 8 out of 10 individuals have accepted the proposed test at the end of the interview (Table 6).

Table 6: Distribution of knowledge of HIV based on the acceptance or refusal of testing

	Consent					
	Yes		No		Total	
HIV knowledge	(%)	number	(%)	number	(%)	number
none	94,6	1 098	5,4	63	100	1161
Partial	88,1	6 929	11,9	932	100	7861
perfect	88,1	473	11,9	64	100	537

Source: EIS-2005, author's computation

4.2.2 Stigmatization of PLWA

Among those who claim not to stigmatize people with HIV, 13.8% refused the test and only 10% among those who said they stigmatize people with HIV (Table 7). The test proportion shows that these proportions are statistically different and therefore that people who claim not to stigmatize the disease have declined over the test than those who say stigmatize PLHIV. The reason of this result can be the fact on HIV, people are afraid to show their real point of view and regularly tell lies.

Table 7: Distribution by the consent of the stigma of the disease

	Consent					
	Yes		No		Total	
Stigmatization of PLWA	(%)	number	(%)	number	(%)	number
No	86,2	1 839	13,8	295	100	2 134
yes	89,7	6 661	10,3	764	100	7 425

Source: EIS-2005, author's computation

5. Results of the econometric estimation

5.1 Determinants of screening test

Econometric modeling was carried out on the variable of interest having already done a test before that proposed in the EIS-2005. The explanatory variables are those which relate to the variable of

[5] PLWA= people living with AIDS

interest was confirmed by a chi-square test. The results are summarized in the following table:

Table 8: Results of econometric modeling (dependent variable: have done a test or not)

	Modality	**Coeff**	**p>|z|**	**odds ratio**	**Marginal effect**	**p>|z|**
Living environment (ref = urban)	Rural	-1.18	0.24	0.8346141	-0.0451199	0.239
Level of education	Primary	1.95	0.052	1.36343**	0.0769157*	0.049
(ref = no education)	Secondary	3.03	0.002	1.711508*	0.1323859*	0.002
	university	5.89	0.000	20.85754*	0.4854759*	0.000
	poor	0.19	0.851	1.045078	0.0110023	0.851
	Middle	2.4	0.017	1.747415*	0.1366182*	0.013
Standard of living	Richer	2.92	0.003	2.042901*	0.1734075*	0.002
(ref = very poor)	richest	3.19	0.001	2.287484*	0.2009829*	0.001
Number of sexual partners in life (Ref = no partner)	1	-40.56	0.000	10.2845*	-0.9745649*	0.000
	>=2	-40.85	0.000	22.506*	-0.9689841*	0.000
Gender (ref = man)	Femme	1.84	0.066	1.327945**	0.0708199**	0.066
Knowledge of HIV (ref=none)	Complete knowledge	1.45	0.148	1.3998	0.0829803	0.14
Stigmatization of PLWHA(ref = yes)	no	-3.31	0.001	1.62503094*	-0.1200438*	0.001

(Ref = reference category) (*identifies significance at 5% one and ** is for significance at 10%)

The overall model significance (p value of 0.000) shows that at least one of the explanatory variables has an effect on the dependent variable.

The living environment influences the activity of screening individuals. Indeed, people living in urban areas have a greater propensity to perform the test than those in rural areas. Individuals who have attained at least secondary education were more likely to perform the test than those who have no education. Knowledge of HIV is not significant at 5%. On the other hand, those with tolerance on those infected are more testing than those who express no tolerance.

The situation is different when health authorities are moving to the individuals.

5.2 Factors of acceptability of HIV screening test

Tableau 9: results from econometric estimation

Variable of interest: accepted or refuse the test proposed at EIS				
variables	modality	coefficient	p-value	Odds ratio
Standard of living (ref = very poor)	poor	-1.41	0.159	0.2441432
	Middle	-1.51	0.131	0.2209099
	Richer	-2.57*	0.01	0.0765355
	richest	-3.4*	0.001	0.0333732
Level of education (ref = no education)	Primary	-1.07	0.285	0.3430085
	Secondary	-2.34*	0.019	0.0963276
	university	-1.72**	0.085	0.1790661
Stigmatization of PLWHA (ref = yes)	no	2.45*	0.014	11.588346
Knowledge of HIV (ref=none)	complete knowledge	2.12*	0.034	8.3311374
Current marital status (ref= never married)	married	-2.8*	0.005	0.0608100
	Living together	-1.53	0.127	0.2165356
	widowed	-0.78	0.434	0.4584060
	divorced	-0.64	0.525	0.5272924

	Not living together	-0.35	0.727	0.7046880
Gender (ref= male)	female	4.31*	0.000	74.4404889
Total number of sexual partner (ref =none)	1	5.42*	0.000	225.879123
	>= 2	8.03*	0.000	3071.74167
Stigmatization of PLWHA (ref = yes)	No	-5.88*	0.000	0.00279479

(Ref= reference modality), (* significance at 5% and ** stands for significance at 10%)

Most variables that were significant in modeling the determinants of the test remain significant too after modeling factors of acceptability of the test. But, there is a significant change in the signs of the coefficients of the terms. Regarding for example the living environment, this time it is in the rural than the membership test is more important in contrast to previous modeling where Urban had recorded a greater propensity to testing. The level of education, living standards follow this logic. HIV knowledge is significant and contrary to what we have predicted, individuals who have knowledge "partial" accept less testing than those who have "no" knowledge of the disease. Stigmatization of those infected remains a barrier to screening.

5. Discussion and recommendations

Know their HIV status is important for a rapid response. Having made a previous screening test favors the acceptance of another test, as shown by our modeling. This is consistent with the literature (Gage, 2005) and shows that it is only the first screening which is difficult. Individuals who have ever had a sexually transmitted infection (STI) have a high propensity to accept an available test. This Shows that one of the primary objectives of screening, namely the identification of persons at risk of infection is about to be reached. This also shows that the authorities should continue their policy proposal of the screening test to all persons with STI those suffer from disease which are currently associated with HIV.

The level of education shows that people would be more appropriate to go to the less educated to offer them the test and find ways to attract more educated to do the testing on their own initiative. Access to health care remains a luxury in the Ivory Coast and this may explain this situation. Observation is the same with regard to people being classified as rich or very rich and the other, poorer.

Stigma made by the society on those infected remains a major obstacle to testing. Life in society is important in Africa and exclusions are hard to bear and face. Legislate laws to protect people with HIV would be beneficial in Ivory Coast.

HIV knowledge was a barrier to acceptance of testing and not significant at 5% for people who had done the test on their own initiative. This can be explained by the fact that this "knowledge" is a lack of knowledge as from broadcast media, which transmit the wrong message of prevention against HIV, or, what message would be misunderstood. This therefore calls communicators on HIV. They must find a way to change their communication so that it is the least possible object of fear, and thus stigmatized.

To those who organized EIS in Ivory coast or in other countries, to add in the questionnaire a question which can tell us about the wills of people to know the result of the test or not. Indeed, questions asked in EIS are good to know the total prevalence of HIV, but not appropriated to deal with factors of acceptability of a screening test. For example it can be asked after the acceptance if the interviewed would like to know the result if the test was not anonymous.

Finally, we ask the people of Ivory Coast to do their testing, since the discovery of a late infection is also due to rapid death and more in atrocious conditions. Additionally, knowing one's status can not only take care of themselves, but also to take precautions to protect his family against possible contamination.

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