# Perceptions and uptake of Voluntary Counseling and Testing Services among Primary School Teachers in Nakuru County, Kenya: Addressing containment of HIV/AIDS pandemic

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## Abstract

*Voluntary Counseling and Testing (VCT) is a component of national response to HIV and AIDS prevention. It marks the entry point for early treatment; as well as providing information for behavior change and stigma management. Studies reveal a dearth of information on teachers' response to VCT services in Kenya. This study was conducted to determine perceptions on uptake of VCT services, with a view to informing policy deliberations. We applied a cross-sectional survey design to source data from 600 teachers. The analysis generated cross-tabulations with Chi-square statistic, beta co-efficients (β) and odds ratios (OR). The study found that only 157 (26.2%) participants had voluntarily taken HIV test. Teachers perceiving themselves to be 'very susceptible' to HIV infection had about 2.3 times the odds of utilizing VCT services as those believing that they were 'not susceptible' [ρ-value = 0.047, OR = 2.255, C.I. = 1.411-3.602]. Teachers perceiving that voluntary testing was 'very useful' in HIV prevention were about 1.7 times as likely to utilize VCT services as those believing that voluntary testing was 'not useful' (ρ-value = 0.013, OR = 1.737, C.I. = 1.323 -2.281). Teachers knowing at least one VCT facility had about 3.3 times the odds of taking VCT services as those not knowing any facility (ρ-value = 0.002, OR = 3.320, C.I. = 1.668-6.607). In conclusion, scaling-up information dissemination is likely to improve knowledge and service uptake. The study calls for more media campaigns through radio; mobile VCT outlets and integration of VCT facilities in schools.*

## 1. Introduction

The HIV and AIDS pandemic remains a critical global public health challenge, infecting about 34.3 million people by the end of 2011. Over the same period, about 2.5 million, new HIV infections and 1.7 million AIDS deaths were reported [1]. The United Nations (UN) report on global HIV and AIDS response shows that sub-Saharan Africa (SSA) bears the heaviest burden of HIV prevalence, accounting for 69% of the people living with HIV globally [2]. By the end of 2011, about 22.5 million adults in the SSA were living with the virus; about 1.8 million new infections and 1.3 million AIDS deaths were also recorded [2].

In Kenya, about 1.6 million people were living with HIV infection by the end of 2011, with a prevalence rate of 7.2 percent [3], up from 6.3 percent reported three years earlier [4]. The Kenya County HIV Service Delivery Profiles Report confirms significant variations in HIV prevalence across regions and counties. Rift Valley region which houses Nakuru County had a prevalence rate of 5.6% by the end of 2011, with about 57,794 people estimated to living with the virus in Nakuru County alone [5,6].

### 1.1. Effects of HIV and AIDS pandemic on teachers

HIV infection is highest in the 24-55 years age bracket, which forms the bulk of the workforce and where investments in education begin to pay off [7]. AIDS-related morbidity and mortality strike at the prime years of life; thus, impairing the earning capacity and resulting to socio-economic devastation at the individual, community and national levels [7,8].

The effect of HIV and AIDS pandemic is particularly pronounced in the education sector, where AIDS-related morbidity and mortality among teachers has decreased staffing levels and reduced teachers' productivity [7]. Even though there is no comprehensive data about AIDS-related deaths among teachers, available information suggests that deaths among teachers has been increasing over the past two decades, with AIDS being the largest hypothesized contributor [7].

Teacher morbidity has significant implications in terms of learning quality and achievement. Prolonged absenteeism due to opportunistic infections leads to

loss of learning time and a decline in the quality of teaching [7]. Each AIDS death is often preceded by about 18-20 months of disability [7,9]; suggesting that the education sector has to support a large number of unproductive individuals, which may have significant macro-economic implications [9]. At the individual level, HIV infection contributes stress, which affects the quality of instruction, curriculum completion and teacher-community relations [10].

## 1.2. The role of VCT intervention in HIV prevention

Voluntary Counseling and Testing (VCT) intervention is an important component of HIV prevention [11,12]. VCT facilities provide personalized support, intended to influence behavior change, prevent HIV transmission and serve as an entry point for treatment [13,14]. The knowledge of HIV status encourages individuals to reduce risky sexual behaviors; with those testing positive for HIV virus accessing further diagnostic investigations, treatment, care and support [15].

The testing process also empowers individuals to begin disclosing their HIV status to partners and family members. VCT clients also gain skills on how to cope with social and health challenges associated with their condition. Knowledge of one's HIV status can also decrease anxiety and stigma associated with being HIV positive [15]. In addition, VCT facilities serve as important conduits for passing health information on behavior change [16].

In Kenya, the VCT program has been operational for nearly two decades; however, among adults aged 15-64 years, only 34% had been tested for HIV and received test results [3]. This implies that about two-thirds of Kenyans aged 15-64 years had not utilized VCT services. Nonetheless, there is no information regarding the uptake of VCT services among primary school teachers and related determinants.

## 1.3. Theoretical context

The high prevalence of HIV infection in the SSA associates with many factors; however, lack of knowledge of one's HIV status takes a centre stage [17]. This poses a critical challenge in the prevention of new HIV infections and provision of effective care and support. Globally, only about 10% of the infected persons know their HIV status. In the SSA, fewer than one in ten people know their HIV status [18]. In Kenya, the high prevalence rates reported in some regions of the country, including Nakuru County, may be attributed to the fact that most people are unaware of their HIV status [14]. This has been a key challenge to the HIV prevention, as well as timely provision of care and support to the infected, including teachers [14].

The Health Belief Model (HBM) holds that perceptions about a disease and strategies available to minimize its occurrence determine health behavior [19]. The HBM was originally developed in the USA by social psychologists in the 1950s to systematically explain and predict preventive health behaviors with special focus on the linkage between health behaviors, practices and utilization of health services [20].

The original HBM consisted of four constructs, namely: perceived seriousness, perceived susceptibility, perceived benefits, and perceived barriers. However, HBM scholars later improved model's accuracy by including three new constructs, namely, cues to action, modifying factors, and self-efficacy [21].

Perceived seriousness signifies an individual's belief about the severity of a disease. While the perception of seriousness arises from medical information, or knowledge, it may also come from beliefs a person holds about the difficulties a disease would create in his or her life [22]. For instance, an individual may view that flue is less serious than HIV infection, because, while flue would require a few days to clear, HIV requires a longer period of management and finances. Hence, one is likely to change behavior faster when facing the risk of HIV infection than flue.

Perceived susceptibility is a powerful perception causing the adoption of prescribed health behaviors. The greater the perceived risk of infection, the higher the chance of behavior change. When people perceive that they are at risk of infection, they are likely to prevent it from happening by adopting prescribed measures. For instance, perceived susceptibility is what drives individuals to use protection during sexual engagements with non-regular partners to decrease their susceptibility to HIV infection. However, when people believe that they are not at risk, the adoption of preventive behaviors remains low [23].

A study conducted by [24] reported that individual perception of being at risk was one of the key factors influencing the uptake of VCT services among men in the Eastern Cape region, South Africa. However, more than one-third of male participants did not perceive themselves to be risk of HIV infection, even though they engaged in risky behaviors such as multiple sex networks and inconsistent use of condoms, leading to a low uptake of VCT services. Similar findings on risk perception have been reported by [25] and [26].

Perceived benefits refer to an individual's opinion about the usefulness of a new behavior in decreasing the risk of contracting an infection [21]. People tend

 

to adopt healthier behaviors when they believe that such new behaviors will decrease chances of developing a disease.

Perceived benefits play an important role in the adoption of preventive behaviors, such as consistent use of condoms or taking HIV test to know status. While assessing the perception of high school students towards Voluntary HIV Counseling and Testing, using HBM in Ethiopia, [27] found that students perceiving VCT services to be beneficial had about 1.8 times the odds of up-taking services as those who believed that it was not beneficial (OR=1.79; 1.44 - 2.49).

Perceived barriers refer to an individual's evaluation of obstacles to the adoption of new health behaviors. Of all the constructs constituting the HBM, perceived barriers seem to be the most critical determinants of health behavior change [28]. It is no wonder that many empirical investigations on VCT uptake have concentrated most on the role of perceived barriers. For instance, in Nigeria, for instance, the uptake of VCT services is influenced by fear of obtaining positive results, location of VCT facilities, perceived quality of services as well as stigma and discrimination [29].

Personal factors such as education level, age and gender and awareness of facilities providing VCT services also influence decisions to utilize VCT services [29]. In their study, [30] found that the uptake of VCT services is influenced by individual perceptions of VCT services, stigma and discrimination, knowledge of health facilities providing services, perceived ease of accessing the facilities, cost of services, waiting time and confidentiality as well as fear of being seen around VCT facilities. The negative role of stigma and discrimination on the uptake of VCT services has also been documented by [31].

In South African [32] found that the utilization of VCT services is a function of factors such as education level, place of residence, perception about the confidentiality of information on their health, and individual perception of being at risk. Four years earlier, [33] found that men were discouraged from using VCT services by perceived poor quality of such services. The interaction between clients and providers, especially regarding confidentiality also influences the acceptability of VCT services.

Still related to quality of services, [34] found that the utilization of VCT services among South African men was inhibited by factors such as long waiting time at the facilities before services are provided, inadequate privacy and follow-up support. In the same country, [24] found that the utilization of VCT services positively associated with educational attainment, household income, discussion with sexual partners about HIV prevention and condom use at the last intercourse.

Modifying variables such as gender, age, religion, marital status, education level, income, and knowledge about VCT also influence health behavior change [35]. Within the context of this study, these attributes influence teachers' perceptions about the seriousness of HIV infection, susceptibility to HIV infection, benefits of VCT and barriers to VCT service uptake.

Cues to action, including events, or people may move an individual to change behavior. Examples include illness of a family member, partner's opinion about HIV testing, peer influence, or health warnings in the media, associated with non-conformity [35].

Self-efficacy refers to one's own belief about the ability to do something [36]. If someone believes that, a new behavior is useful, but does not think he, or she is capable of doing it; chances are high that such new behaviors may not be tried. For instance, if an individual believes that drawing blood sample for HIV testing is painful, then the VCT service uptake as a new behavior for reducing susceptibility to HIV infection may be constrained.

In Kenya, a few studies have assessed factors influencing the uptake of VCT services [14,37]. However, their focus was on service utilization by the youth; hardly is there a study that has focused influence of individual perceptions on the uptake of VCT services among primary school teachers.

## 2. Data and Methodology

We applied a cross-sectional design to guide the research process, including data sourcing, processing, analysis and interpretation. The study targeted male and female teachers in public primary schools in Nakuru County (See the map below). Those included in the study were required to be aged 20-50 years and have a service history of at least two years, regardless of the employer type. The study also targeted teachers who had either taken HIV test voluntarily or not taken HIV test at all; implying that those who had been tested as part of treatment were excluded.

A sampling frame of all primary schools in the County was prepared with the assistance of the County Education Office. A systematic random sampling procedure was them applied to identify the schools to be sampled. At the time of the study, the County had 1,614 public primary schools (N). This was used to determine a representative sample size (n) based on fishers' formula for sample size determination from finite populations, which resulted to a sample size of 612. The sampling interval was determined as a quotient of population (N) and determined sample size (n).

 

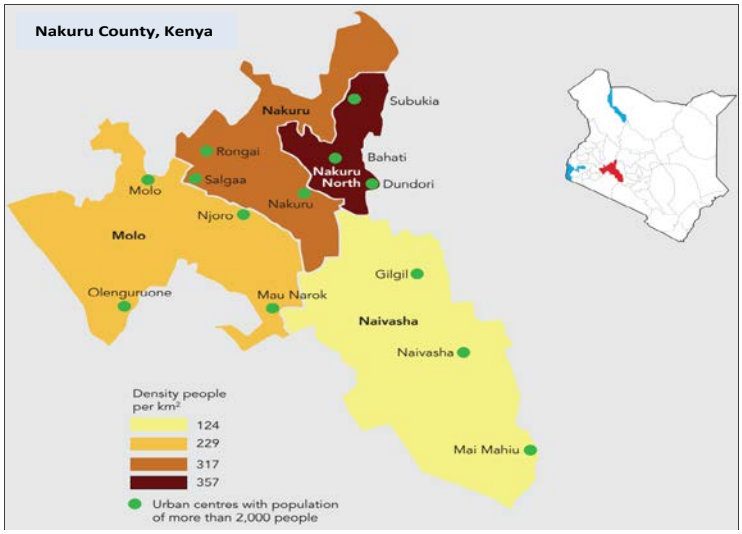


**Figure 1. Map of Nakuru County, Kenya**

Within the sampled schools, male and female teachers meeting the inclusion criteria were sampled purposively, consented and issued with self-administered questionnaires. The approach was meant to enhance confidentiality and encourage participants to share personal information.

About 650 questionnaires were issued out; however, after 20 days of data collection, 612 were collected. During data processing, 12 questionnaires were omitted due to logical inconsistencies, information gaps and non-observance of skip instructions. Primary data was collected in May 2012 and the process involved identification of potential participants, consenting, questionnaire issuance and follow-up.

Quantitative and qualitative approaches were used to process and analyze the data. Quantitative analysis generated descriptive statistics and cross-tabulations with Chi Square statistic for nominal and ordinal-scaled variables. Qualitative data were transcribed, clustered into nodes and explored for emerging themes.

Binary logistic regression determined the odds of teachers seeking VCT services, based on a host of socio-demographic, economic, cognitive and psychosocial attributes. Binary logistic regression predicts the proportion of variance in a dichotomous variable from a set of independent variables [38].

The predicted variable takes the value 1 with a probability of success θ, or the value 0 with a probability of failure 1-θ. The dependent variable in this study was the uptake of VCT services, with only two possible values – voluntarily tested (yes) or not tested (no). The model takes the form: -

$$Logit[\theta(Y)] = log\left[\frac{\theta(Y)}{1-\theta(Y)}\right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 \ldots + \beta_i X_i + \varepsilon_i \quad (1)$$

Where $Y$ = dependent variable (uptake of VCT services); $\theta(Y)$ = the probability that a teacher had taken a voluntary HIV test; $1-\theta(Y)$ = the probability that a teacher had not taken voluntary HIV test; $\alpha$ = the constant term of the equation; $\beta_1, \beta_2 \ldots \beta_i$ = partial regression co-efficients associated with independent variables; $X_1, X_2 \ldots X_i$ = independent variables and $\varepsilon$ = the error term.

The logistic regression generated beta co-efficients *(β),* odds ratios *[Exp (β)],* Hosmer-Lemeshow test of goodness-of-fit and Nagelkerke's $R^2$. Detailed description of the design and approaches that we used in this study are available in following publications, including [39], [39], [40] and [41].

The Institutional Research and Ethics Committee (IREC) of the University of Nairobi approved the study. The study was also approved by the then Ministry of Education, Science and Technology and the Ministry of Health. All participants were consented by fully explaining purpose of the study, potential benefits, and the fact that their participation was voluntary.

Participants were also informed about their right to withdraw consent at any time during the process without a penalty. Participants were further assured that the information sourced would remain confidential and used for the purpose the study only. Respondents were requested not to indicate any personal identifiers on the questionnaires. Furthermore, participants were assured that the report would be shared with MoEST and other stakeholders to inform interventions designed to improve the uptake of VCT services by teachers.

## 3. Results

The requisite information was sourced from 600 teachers, including 187 (31.2%) in Nakuru Town, 218 (36.3%) in Nakuru North, 116 (19.3%) in Molo and 79 (13.2%) in Naivasha Districts. Of the 600 teachers, 157 (26.2%) had voluntarily taken HIV test, while the majority, 443 (73.8%) had not. The results show that Nakuru Town had the highest proportion of those who had voluntarily taken the test, 65 (41.4%); followed by Nakuru North, 56 (35.7%); Molo, 21 (13.4%); and Naivasha, 15 (9.6%). The analysis obtained a computed $\chi^2$ value of 13.184, with 3 degrees of freedom and a p-value of 0.004, suggesting up to 99% chance that the proportion of teachers who had taken HIV test varied significantly across the four districts.

### 3.1. Participants' background profile and voluntary HIV testing

The cross-tabulation analysis results summarized in Table 1 show that voluntary HIV testing significantly associated with gender (computed $\chi^2$ = 42.988, df = 2 & p-value = 0.000); place of residence (computed $\chi^2$ value = 13.612, df = 1 & p-value = 0.000) and alcohol use (computed $\chi^2$ value = 59.573, df = 2 & p-value = 0.000). However, there was no significant relationship between voluntary HIV testing and participants' age, educational attainment, religion and marital status.

**Table 1. Participants' background attributes and voluntary HIV testing**

| Background attributes | | Chi Square Tests Results | | |
|---|---|---|---|---|
| | | *Computed $\chi^2$* | *df* | *p-value* |
| AGE | Age | 1.656 | 3 | 0.647 |
| GEN | Gender | 42.988 | 2 | 0.000*** |
| EDU | Education level | 0.371 | 3 | 0.946 |
| RES | Residence | 13.612 | 1 | 0.000*** |
| REL | Religion | 0.107 | 2 | 0.948 |
| MAR | Marital status | 3.844 | 4 | 0.427 |
| ALC | Alcohol use | 59.573 | 2 | 0.000*** |

*, **, *** *represents significance at 0.1, 0.05 and 0.01 error margins, respectively*

### 3.2. Access to mass media and uptake of VCT services

The results in Table 2 show that out of 600 participants, 163 (22.1%) were frequent radio listeners, while 85 (26.7%) never listen to radio. Among those who had taken voluntary HIV test were 54 (33.1%) frequent radio listeners, 91 (47.2%) occasional listeners and 12 (19.7%) non-listeners. The analysis obtained a computed $\chi^2$ value of 10.495, with 2 degrees of freedom and a p-value of 0.005, suggesting up to 99% chance that the uptake of VCT services significantly associated with the frequency of radio listening.

**Table 2. Access to mass media and voluntary HIV testing**

| Mass media access | | Summary of Chi Square Tests | | |
|---|---|---|---|---|
| | | *Computed $\chi^2$* | *df* | *p-value* |
| RAD | Radio listenership | 10.495 | 2 | 0.005*** |
| NEW | Newspaper reading | 16.007 | 2 | 0.000*** |
| TVW | TV Watching | 24.372 | 2 | 0.000*** |

*, **, *** *represents significance at 0.1, 0.05 and 0.01 error margins, respectively*

The results further show that 265 (44.2%) participants were frequent newspaper readers, while 134 (22.3%) never read newspapers. Of the 157 participants who had voluntarily taken HIV test, 80 (51.0%) were frequent newspaper readers, while 13 (8.2%) were non-readers. The analysis revealed a significant association between the uptake of voluntary HIV test and frequency of newspaper reading. Table 2 further reveals a significant association between the uptake of VCT services and the frequency of TV watching (computed $\chi^2$ value = 59.573, df = 2 and p-value = 0.000). The results suggest that regular radio listeners, newspaper readers and TV watchers are more likely to access information on HIV testing, which is likely to influence their attitude and decision to seek testing than non-listeners, non-readers and non-watchers.

### 3.3. Relationship between perceptions and uptake of VCT services

This study considered four broad categories of perceptions, based on the original constructs of the Health Belief Model, including perceived seriousness

of HIV infection, perceived susceptibility to HIV infection, perceived benefits/usefulness of voluntary HIV testing as well as perceived barriers to the uptake of VCT services.

The results showed that 65 (41.4%) participants who had taken voluntary HIV testing and 161 (36.3%) who had not indicated that HIV infection was a 'very serious' health issue. However, 9 (5.7%) who had taken testing services and 58 (13.1%) who had not felt that HIV infection was 'not a serious' issue. The results in Table 3 suggest lack of significant relationship between uptake of voluntary testing services and perceived seriousness of HIV infection; suggesting lack of significant variation between those who had taken voluntary testing services and those who had not.

**Table 3. Respondents' perceptions and uptake of VCT services**

| Respondents' perceptions | | Summary of Chi Square Tests | | |
|---|---|---|---|---|
| | | *Computed* $\chi^2$ | *df* | *ρ-value* |
| PSERIO | Perceived seriousness of HIV infection | 3.317 | 2 | 0.232 |
| PSUSCE | Perceived susceptibility to HIV infection | 8.485 | 2 | 0.013** |
| PBENEF | Perceived usefulness of voluntary HIV testing | 9.713 | 2 | 0.011** |
| PBARR | Perceived barriers to the uptake of VCT services | | | |
| *KNOWL* | *Knowledge of a facility providing VCT services* | 201.166 | 1 | 0.000*** |
| *DISTA* | *Distance to the nearest VCT facility* | 6.649 | 2 | 0.036** |
| *ATTHIV* | *Attitude towards HIV testing* | 10.277 | 2 | 0.006*** |

**, **, *** represents significance at 0.1, 0.05 and 0.01 error margins, respectively*

The analysis further indicated that 88 (56.1%) participants who had taken voluntary HIV testing services and 96 (21.7%) who had not believed that they were 'very susceptible' to HIV infection. However, 5 (3.2%) participants who had taken voluntary testing services compared to 139 (31.4%) who had not believed that they were not 'not susceptible' to HIV infection. The results in Table 3 suggest up to 95% chance that the uptake of VCT services significantly associated with participants' perceptions about their susceptibility to HIV infection.

Furthermore, 101 (64.3%) participants who had taken voluntary HIV testing and 90 (20.3%) who had not, perceived that voluntary testing was 'very useful' in HIV prevention. Contrastingly, 2 (1.3%) participants who had taken testing services compared to 142 (32.1%) who had not, felt that knowledge of one's status was not 'not useful' in HIV prevention. The results in Table 3 further suggest up to 95% chance that the uptake of VCT services significantly associated with participants' perceptions about the usefulness of voluntary HIV testing.

The results show that 293 (48.8%) participants knew at least a VCT facility, while slightly more than one-half, 307 (51.2%) did not. Of those who had taken voluntary HIV test, 153 (97.5%) indicated knowledge of a facility providing VCT services, while 4 (2.5%) did not. The results suggest up to 99% chance that the uptake of VCT services significantly associated with knowledge of facilities providing such services (computed $\chi^2$ value = 61.166, df = 1 and p-value = 0.000).

Those who reported knowledge of at least a facility were requested to indicate perceptions about distance to the nearest VCT facility from their residences. The results in Table 3 show that 151 (51.5%) described the distance as 'too far', while 59 (20.2%) stated that the distance was 'not far'. In relation to the uptake of VCT services, the analysis revealed a significant relationship between uptake of services and perceptions about distance to nearest VCT facilities (computed $\chi^2$ value = 6.649, df = 2 and p-value = 0.036).

The results in Table 3 further show that up to 286 (47.7%) participants perceived that HIV testing was a 'very important' initiative, while 101 (16.8%) believed that it was 'not important'. Among those who had taken voluntary HIV testing, up to 92 (58.6%) indicated that HIV testing is 'very important', while 22 (14.0%) felt that it is 'not important'. The analysis obtained a computed $\chi^2$ value of 10.277, with 2 degrees of freedom and a p-value of 0.006, suggesting up to 99% chance that the uptake of VCT services significantly associated with perception about importance of HIV testing.

## 3.4. Perceptions influencing the uptake of VCT services

Bivariate analysis results in the preceding sub-sections indicated that the uptake of VCT services significantly associated with teachers' background attributes, including gender, residence and alcohol; as well as mass media access factors, including frequency of radio listening, newspaper reading and TV watching. The uptake of VCT services also significantly associates with perceptions about self-susceptibility to HIV infection, usefulness of voluntary HIV testing, as well as knowledge of a facility providing VCT services, perception about distance to the nearest facility and attitude towards HIV testing. To determine perceptions influencing the

 

uptake of VCT service among teachers, the stated variables were entered into a binary logistic regression model, using stepwise likelihood ratio method. The analysis generated the model, whose output is summarized in Table 4. The model controls for background and media access factors.

### 3.4.1. Collinearity diagnostics

We tested the interrelationship between independent variables for Collinearity indicators. Using the default outlier value of 2.0, we examined the standard errors (S.E.) associated with regression coefficients (β). In this regard, standard errors larger than 2.0 indicated the existence of multicollinearity effects. We noted that the inclusion of frequency of radio listening, frequency of newspaper reading and frequency of TV watching inflated the standard errors, with last two having a stronger effect. Based on the tests the two variables were dropped from the regression model.

### 3.4.2. Odds ratios

The results summarized in Table 4 suggest that teachers perceiving themselves to be 'very susceptible' to HIV infection had about 2.3 times the odds of utilizing VCT services as those believing that they were 'not susceptible' [ρ-value = 0.047, OR = 2.255, C.I. = 1.411-3.602]. The results suggest that teachers perceiving themselves to be at risk of HIV infection were more likely to utilize VCT services than those believing that they were not at risk of infection.

**Table 4. Summary results of the adjusted logistic regression model**

| Covariates | β | S.E. | Wald | df | ρ-value | Exp(β) | 95% C.I. for EXP(β) | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | *Lower* | *Upper* |
| *Perceived susceptibility* | | | | | | | | |
| Very susceptible | 0.813 | 0.239 | 11.571 | 1.000 | 0.047** | 2.255 | 1.411 | 3.602 |
| Susceptible | 0.453 | 0.194 | 5.452 | 1.000 | 0.292 | 1.573 | 1.075 | 2.301 |
| Not susceptible (RC) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| *Perceived usefulness of HIV testing* | | | | | | | | |
| Very useful | 0.552 | 0.139 | 15.771 | 1.000 | 0.013** | 1.737 | 1.323 | 2.281 |
| Useful | 0.127 | 0.074 | 2.945 | 1.000 | 0.324 | 1.135 | 0.982 | 1.313 |
| Not useful (RC) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| *Knowledge of a VCT facility* | | | | | | | | |
| Yes | 1.200 | 0.351 | 11.680 | 1.000 | 0.002*** | 3.320 | 1.668 | 6.607 |
| No (RC) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| *Perception of distance to nearest VCT facility* | | | | | | | | |
| Not far | 0.501 | 0.363 | 1.905 | 2.000 | 0.068* | 1.650 | 0.810 | 3.358 |
| Far | 0.097 | 0.408 | 0.056 | 2.000 | 0.112 | 1.102 | 0.495 | 2.451 |
| Too far (RC) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| *Attitude towards HIV testing* | | | | | | | | |
| Very important | 0.407 | 0.404 | 1.018 | 2.000 | 0.075* | 1.503 | 0.681 | 3.310 |
| Important | 0.128 | 0.429 | 0.088 | 2.000 | 0.127 | 1.136 | 0.490 | 2.636 |
| Not important (RC) | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Constant | 0.764 | 0.696 | 1.203 | 1.000 | 0.027** | 2.146 | 1.000 | 1.000 |

*RC= Reference category; *, **, *** show significance at 0.1, 0.05 and 0.01, error margins, respectively*

Table 4 further shows that teachers perceiving that voluntary testing was 'very useful' in HIV prevention were about 1.7 times as likely to utilize VCT services as those believing that voluntary testing was 'not useful' (ρ-value = 0.013, OR = 1.737, C.I. = 1.323 - 2.281). The analysis further indicated that teachers knowing at least a facility providing VCT services had about 3.3 times the odds of taking VCT services as those not knowing any facility (ρ-value = 0.002, OR = 3.320, C.I. = 1.668-6.607). This implies that knowledge of a VCT facility is likely to increase the uptake of VCT services among teachers. Teachers perceiving the distance to the nearest VCT facility as 'not far' were about 1.6 times as likely to take VCT services as those perceiving the distance as 'too far' (ρ-value = 0.068, OR = 1.650, C.I. = 0.810-3.358).

Furthermore, teachers perceiving HIV testing as 'very important' had about 1.5 times the odds of utilizing VCT services as those hinting that it is 'not important' (ρ-value = 0.075, OR = 1.503, C.I. = 0.681-3.310). People tend to accept prescribed health services when they believe such new services will decrease their chances of developing a disease.

### 3.4.3. The Model's Goodness-of-fit

We tested the goodness of this model using Nagelkerke's $R^2$ and Hosmer-Lemeshow (H-L) goodness-of-fit statistic. In this regard, the analysis obtained a Nagelkerke's $R^2$ of 0.363 implying that the model predicted up to 36.3% of variance in the uptake of VCT services; suggesting that the model generated by this study is a fair estimation of factors influencing the uptake of VCT services among primary school teachers in Nakuru County. The H-L goodness-of-fit statistic shows that a logistic regression model is well fitting the observed data at an acceptable level when the resultant ρ-value is greater than 0.05; further

 

indicating that the model prediction does not significantly differ from the observed frequencies. In this study, the H-L table obtained a $\chi^2$ value of 4.002, with 8 degrees of freedom and a p-value of 0.237, which is higher than 0.05. This result confirms that our model was a fair fit. In addition, omnibus tests of model co-efficients obtained a computed $\chi^2$ value of 62.802, with 13 degrees of freedom and a p-value of 0.000, which was significant at 0.01 error margin, confirming up to 99% chance that the model-fit was statistically significant.

## 4. Conclusions and Recommendations

The aim of this study was to identify perceptions influencing the uptake of VCT services among primary school teachers in Nakuru County, Kenya. The results show teachers perceiving themselves to be 'very susceptible' to HIV infection had about 2.3 times the odds of utilizing VCT services as those believing that they were 'not susceptible' [ρ-value = 0.047, OR = 2.255, C.I. = 1.411-3.602]. Teachers perceiving that voluntary testing was 'very useful' in HIV prevention were about 1.7 times as likely to utilize VCT services as those believing that voluntary testing was 'not useful' (ρ-value = 0.013, OR = 1.737, C.I. = 1.323 -2.281).

Teachers knowing at least one VCT facility had about 3.3 times the odds of taking VCT services as those not knowing any facility (ρ-value = 0.002, OR = 3.320, C.I. = 1.668-6.607). This implies that knowledge of a VCT facility is likely to increase the uptake of services among teachers. Logically-speaking, action is always preceded by knowledge. Branding VCT facilities to increase visibility in the community, as well as appropriate public campaigns are key options that should be considered to increase knowledge and uptake of services.

Teachers perceiving distance to nearest VCT facility as 'not far' were about 1.6 times as likely to take VCT services as those perceiving the distance as 'too far' (ρ-value = 0.068, OR = 1.650, C.I. = 0.810-3.358). Perception is a psychosocial orientation of the mindset that may significantly influence intervention or health-seeking behaviour of individuals. Negative perception of distance to the nearest VCT facility decreases chances of service uptake among teachers, which should be approached through mobile outreaches and establishing service outlets within residential areas and schools, for easy physical access.

Teachers perceiving HIV testing as 'very important' had about 1.5 times the odds of taking HIV testing as those hinting that it is not important (ρ-value = 0.075, OR = 1.503, C.I. = 0.681-3.310). People tend to accept prescribed health services when they believe such new services will decrease their chances of developing a disease. Thus, positive perceptions about the importance of HIV testing are likely to increase the uptake of voluntary HIV testing services. Targeting teachers with relevant information is likely to re-orient negative perceptions towards HIV testing.

Enhancing the uptake of VCT services among teachers is important for ensuring quality education, which is not only one of the fundamental rights of children as stated under Article 43 (1)(f) of the Kenyan Constitution, but also, and more importantly, a crucial tool for sustained socio-economic development and hence, an important exit route from poverty. As Kenya strives to achieve Millennium Development Goal (MDG) number 2 on enhancing universal access to basic education and also makes effort to acquire the status of a newly industrialized nation by the year 2030, teachers have an enormous task to synergize the process through delivery of quality education. Therefore, scaling up the uptake of VCT services among primary school teachers is central to national development.

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