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Original Research

# Influence of knowledge about discriminatory practices towards HIV-positive individuals with the uptake of HIV testing during pregnancy among reproductive-aged women in Nigeria

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## Abstract

**Background:** The fear of positive HIV results has been reported as a determinant of HIV testing among pregnant women and women of reproductive age. When pregnant women know about discriminatory practices toward other people based on their HIV-positive status, it may impact their testing for HIV. Therefore, the purpose of this study was to examine the association between Nigerian pregnant women's knowledge of discriminatory practices against persons living with HIV and their self-reported HIV testing during antenatal visits or childbirth.

**Methodology:** A secondary analysis of data from 659 t women who had experienced pregnancy aged 15–49 years from the 2013 Nigeria Demographic Health Survey (NDHS) was done. Multivariable logistic regression analysis was done to determine the association between knowledge about discriminatory practices towards HIV-positive individuals (independent variable) and HIV testing during pregnancy (dependent variable) after controlling for covariates (demographic characteristics). A P-value of $\leq 0.05$ was taken as statistically significant.

**Results:** Bivariate logistic regression analysis findings showed that educational level, place of residence, and religion statistically significantly predicted HIV testing of pregnant women, while age categories and marital status did not. The women's knowledge of discriminatory practices towards persons living with HIV/AIDS was not statistically significant at Alpha = 0.05 (AOR,1.51; 95% CI: .46, 4.95) Higher levels of education (Primary Education, AOR = 1.81; 95% CI: 1.03, 3.18; Secondary Education, AOR = 3.73; 95% CI: 1.92, 7.25; Higher Education, AOR = 10.92; 95% CI: 4.25, 28.05) and those living in urban areas (AOR = 1.62; 95% CI: 1.04, 2.51) were significantly associated with testing for HIV in the stepwise multivariable regression model of pregnant women's knowledge of discriminatory practices towards persons living with HIV/AIDS.

**Conclusion:** Although knowledge of discriminatory practices did not predict pregnant women's HIV testing in this study, interventions by stakeholders to eliminate or reduce these practices should be stepped up towards facilitating positive social change.

**Keywords:** Antenatal Visits; Childbirth; HIV Testing; Pregnant Women; Knowledge; HIV/AIDS Discriminatory Practices.

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## Introduction

The burden of HIV/AIDS is highest in sub-Saharan Africa, responsible for an estimated two-thirds of all global HIV cases and 58% of new HIV infections globally in 2020.[1] Women aged 15 years and above accounted for approximately 60% of the estimated 4.7 million people living with HIV in West and Central Africa in 2020.[1]With over 200 million people, Nigeria has an HIV prevalence rate of 1.3%, with 1.7 million people living with HIV at the end of 2020.[1] Women of reproductive age 15-49 years in 2020 accounted for most of the infections compared to men. [1] They are responsible for 56% of the HIV-infected population in Nigeria in 2020.[1] Therefore, they must know their status to take appropriate steps to prevent transmitting the infection to their children. New infections occurred in Nigeria in 2020 at 0.42 per 1000 adult males and females within these age groups.[1] The entry point to achieving HIV/AIDS prevention and control involves knowing one's status, which requires HIV testing.[2]

Correct knowledge, attitudes, and behaviors regarding HIV/AIDS and the prevention and control methods are the cornerstones for preventing and controlling HIV/AIDS.[3][4][5]UNAIDS estimated that globally, about 16% of the individuals who are HIV positive do not know their status.[1]Testing for HIV is the entry point for treatment, care, and support among people living with HIV, and early treatment initiation facilitates reduced likelihood of transmission of the infection, better treatment outcomes, and reduced morbidity and mortality.[2][6]HIV testingenables people to know their HIV status so that those who are seronegative will continue to engage in safe behavior, while seropositive individuals will make an informed decision about treatment, care, and support services options available.[2]The availability of antiretroviral therapy has made it essential to scale up testing strategies among at-risk populations. It has necessitated studying factors that may impact the HIV testing decision of pregnant women.[2][6] Women are more susceptible to HIV infection because transmission is mainly through the sexual route,[2][7] making them prone to discriminatory practices by individuals and the community if they are HIV infected.[8]The high prevalence rate of HIV infection in women of reproductive age in Nigeria (Women 15-49 years, 1.6%; < 15 years, 0.6%) contributed to the increasing number of HIV-infected children due to mother-to-child transmission.[1][9]

According to UNAIDS, discrimination refers to prejudicial behaviors towards another individual based on beliefs or feelings that show devalued stereotypes.[10] Although many studies have evaluated the effects of discriminatory attitudes towards HIV testing,[8][11][12]Literature on the impact of knowledge of discriminatory practices towards individuals living with HIV/AIDS on HIV testing of pregnant women is scarce. The knowledge of discriminatory practices may serve as a barrier to HIV testing. When individuals know that persons living with HIV/AIDS are discriminated against based on their HIV status, it may impact their testing for HIV due to the fear of experiencing similar discriminatory practices. Cases have been reported globally about HIV-positive individuals being denied their right to freedom of movement, employment, healthcare, and education.[13] Knowledge about this type of practice may negatively impact HIV testing of pregnant women due to the fear of the positive result. Moreover, Colombini et al. and Ojikutu et al.[8][11] have reported that anticipated and community-level HIV stigma and gender violence are some reasons why people, particularly women, will shy away from HIV testing. According to the analysis of the HIV stigma index, Asia and Pacific regions report 16% and 50% of those surveyed in Fiji and Cambodia, respectively, have lost their jobs or source of income in the last 12months preceding the study on account of their HIV status.[14] Also, about 9% in Bangladesh and 38% in the Philippines were denied job opportunities.[14]Therefore, this study's objective was to assess the association between pregnant women aged 15-49 years' knowledge of discriminatory practices against persons living with HIV/AIDS and HIV testing in Nigeria.

## Materials and Methods

### Ethics

This study is a secondary analysis of publicly available de-identified data from the 2013 Nigeria Demographic and Health Survey; therefore, anonymity was maintained. The Demographic and Health Survey (DHS) program granted permission to download and use the dataset for this study on request. The Institution Review Board for DHS public-use datasets procedure does not allow the identification of participants, households, or sample communities.

### Study Population

The study population includes women of reproductive age 15-49 years who reported ever being pregnant before and during the conduct of the 2013 NDHS. Those who did not fall into the above category were excluded from the study sample.

### Variables Measure

Independent variable: Knowledge of discriminatory practices (have knowledge and do not have knowledge) towards individuals living with HIV/AIDS was operationalized by the responses given by the respondents to these questions: (1) Do you personally know someone who has been denied health services in the last twelve months because he or she has or is suspected to have the AIDS virus (2) Do you personally know someone who has been denied involvement in social events, religious services, or community events in the last twelve months because he or she has or is suspected to have the AIDS virus (3) do you personally know someone who has been verbally abused or teased in the last twelve months because he or she has or is suspected to have the AIDS virus. A yes answer by the respondents to any or all these three questions on the knowledge of discriminatory practices against persons living with HIV/AIDS is considered knowledge of discriminatory practices, while a no answer to all the questions is regarded as no knowledge.

Covariates: Age categories were categorized into age bands of five-year intervals from 15 to 49 years and numbered in ascending order. Education; No education = 0, primary = 1, secondary = 2, higher = 3. The Place of Residence was coded as Urban = 1and Rural = 2. Religion was coded as Catholic = 1, Other Christians = 2, Islam = 3, Traditionalist = 4, Others 97. Marital status categories were recoded as Currently Married (combining married and living with a partner as if married options) = 1, Not currently Married (combining other options) = 0.

Dependent variable: A combination of four questions was used to create the dependent variable from the responses of the pregnant women who participated in the 2013 NDHS as follows: 1. Did you test for HIV as part of antenatal visits? 2. Did you test for HIV between the time you went for delivery and before the baby was born? 3. Did you get the results of the HIV test as part of antenatal visits? 4. Did you get the results of your HIV test before the baby was born? The binary dependent variable `Self-reported HIV testing during pregnancy among women aged 15-49 years was coded as; No=0 if the respondent did not test, tested but did not receive the result, and Yes= 1if the respondent tested, and received the result during antenatal visits or childbirth. The ever/currently pregnant women status was created from the sample of women of reproductive age by combining three questions: Total child ever born + currently pregnant + ever had a terminated pregnancy. Ever/currently pregnant status was coded as Yes = 1 and No = 0.

### Study Design

This study used data from a cross-sectional survey of the 2013 Nigerian Demographic and Health Surveys (NDHS). It involved women of reproductive-age group of15-49 years. The 2013 NDHS is a nationally representative study that used a three-stage stratified cluster design to select the study

respondents and collect data on the variables of interest using the DHS women questionnaire. The detailed survey methodology for the 2013 NDHS has been described elsewhere.[15]

**Data Management and Analysis**

Statistical Package for Social Sciences (SPSS) Version 25 was used for the study analysis. The calculated minimum sample size based on a two-sided confidence level (1-alpha) of 95% was 292 participants. However, a design effect of 2.24 calculated for all variables in the 2013 NDHS was applied to compensate for the clustering effect and non-use of a simple random sampling technique.[7] This increased the minimum sample size to 659. The increase in sample size increased statistical power, reduced standard error, and increased the study estimates' precision.[16]Descriptive statistics showed cases with missing data on some of the study variables. Little's MCAR test was conducted to determine the missingness of the data.[17] The result shows that missingness is not random ($\chi^2$ (df = 652) = 5,374.55); *p*-value. = < .01< Alpha = .05. The missing data was handled by performing multiple imputations using the regression method to account for selection bias due to the non-randomness of the missing data.[18],[19] The analysis included six hundred and fifty-nine pregnant women (659) randomly selected using the SPSS command. DHS programs provided the sample weights used for the analysis to ensure the representativeness of the survey findings due to the non-proportional allocation of samples to states and places of residence, including the different response rates in the primary study.[7] Bivariable and multivariable logistic regression was used to predict the association between pregnant women's knowledge of discriminatory practices towards persons living with HIV/AIDS, the covariates, and their HIV testing. The significance level was set at Alpha = .05. Predictor variables that were not statistically significant at alpha = 0.05 in the bivariate analysis were omitted from the multivariable regression analysis. Crude and adjusted odds ratios with their 95% confidence interval were reported for the predictor variables compared to their reference categories. Predictors with a P-value of ≤ 0.05 in the bivariate and multivariable regression analyses were taken as statistically significantly associated with pregnant women's self-reported HIV testing in Nigeria.

## Results

Table 1 shows the sociodemographic characteristics of the respondents. Women who have knowledge of discriminatory practices towards persons living with HIV/AIDS were 616 (93.47%), while those without knowledge were 43 (6.53%). The ages of the pregnant women ranged from 15-49 years and were categorized into 5-year age groups. Women within 25-29 years were the highest in the sample, 139 (21.09%), while those within 15-19 years were the lowest with38 (5.77%). Pregnant women who had no education were highest in the sample, 296 (44.92%), followed by those with secondary education, 184 (27.92%), and higher education,50 (7.59%). More women lived in rural areas, 412 (62.52%), than in urban areas, 247(37.48 %). Most pregnant women belong to Islam, 367 (55.69%), followed by Other Christians, 219 (33.29%). Pregnant women who are currently married (i.e., Married or living with a man as if they are married) were 594(90.14%) of the respondents, while those who are not currently married (Never in a union, Widowed, Divorced, and No longer living together/Separated) were 65 (9.86%).

**Table 1. Sociodemographic Characteristics of the Respondents**

| Predictors | Weighted Frequency (n) | Weighted Percent (%) |
|---|---|---|
| Knowledge of Discriminatory Practices | | |
| No knowledge of Discriminatory practices | 616 | 93.47 |
| Have Knowledge of Discriminatory Practices | 43 | 6.53 |
| Age Categories (Years) | | |
| 15-19 | 38 | 5.77 |
| 20 – 24 | 112 | 17.00 |
| 25 – 29 | 139 | 21.09 |
| 30 – 34 | 115 | 17.45 |
| 35 – 39 | 101 | 15.33 |
| 40 – 44 | 82 | 12.44 |
| 45 - 49 | 72 | 10.93 |
| Educational Level | | |
| No Education | 296 | 44.92 |
| Primary Education | 129 | 19.58 |
| Secondary | 184 | 27.92 |
| Higher Education | 50 | 7.59 |
| Place of Residence | | |
| Urban | 412 | 62.52 |
| Rural | 247 | 37.48 |
| Religion | | |
| Catholic | 65 | 9.86 |
| Other Christian | 219 | 33.23 |
| Islam | 367 | 55.69 |
| Traditional | 8 | 1.21 |
| Marital Status | | |
| Not Currently Married | 65 | 9.86 |
| Currently Married | 594 | 90.14 |

The results of stepwise multivariable logistic regression analysis showed that only educational level and place of residence statistically significantly predicted self-reported HIV testing of pregnant women. Pregnant women's knowledge of discriminatory practices towards persons living with HIV/AIDS was not statistically significant at Alpha = 0.05 (AOR,1.51; 95% CI: .46, 4.95). The results of the bivariate and multivariable regression analysis of the association between the main independent variable, covariates, and self-reported HIV testing of pregnant women aged 15 – 49 are shown in Table 2.

**Table 2. Result of the bivariate and multivariable regression analysis of the predictor variables' association with self-reported HIV testing of the pregnant**

| Predictors | COR (95% C.I.) | AOR (95% C.I.) |
|---|---|---|
| Knowledge of Discriminatory Practices | | |
| No Knowledge | *Ref* | *Ref* |
| Have Knowledge | 1.67* (.57, 4.92) | 1.51(.46, 4.95) |
| Educational Level | | |
| No Education | *Ref* | *Ref* |
| Primary Education | 2.04** (1.16, 3.46) | 1.44 (.75, 2.77) |
| Secondary Education | 4.45** (2,50, 7.96) | 2.78 (1.43, 5.40) |
| Higher Education | 14.21** (5.95, 33.93) | 8.09 (2.97, 22.06) |
| Age Categories (Years) | | |
| 15-19 | *Ref* | *Ref* |
| 20 – 24 | 2.00* (.28, 14.54) | - |
| 25 – 29 | 2.56* (.27, 24.73) | - |
| 30 – 34 | 3.15* (.42, 23.67) | - |
| 35 – 39 | 2.75* (.33, 23.20) | - |
| 40 – 44 | 2.26* (.18, 28.37) | - |
| 45 - 49 | 2.12* (.20, 23.07) | - |
| Place of Residence | | |
| Rural | *Ref.* | *Ref.* |
| Urban | 2.67** (1.79, 3.98) | 1.66** (1.09, 2.53) |
| Religion | | |
| Islam | *Ref.* | *Ref* |
| Catholic | 4.67** (2.47, 8.85) | 2.61* (.97, 7.06) |
| Other Christian | 2.84** (1.78, 4.52) | 1.43* (.86, 2.36) |
| Marital Status | | - |
| Currently Married | *Ref.* | - |
| Not Currently Married | 1.61* (.87, 2.98) | - |

*Note.* *p > .5 and **p < .05

## Discussion

The purpose of this study was to determine the association of pregnant women's knowledge of discriminatory practices towards persons living with HIV/AIDS with their HIV testing. The result of the bivariable models showed that the pregnant women with knowledge of discriminatory practices were not more likely to test for HIV than those without the knowledge of the discriminatory practices (OR, 1.67; 95% Cl: .57, 4.92); P-value = .32 > Alpha level =.05. The multivariable regression model corroborated the bivariable finding with no significant difference in HIV testing between the pregnant women who have and those that do not have knowledge of HIV/AIDS discriminatory practices towards persons living with HIV/AIDS (AOR, 1.51; 95% Cl: .46, 4.95); P-value = .46> Alpha level = .05) controlling for the effects of covariates (Level of Education, Place of Residence and Religion). These models' findings are not consistent with what has been reported in some other similar studies where discriminatory attitudes towards persons living with HIV/AIDS negatively impacted testing for HIV.[8][12][20] The findings are also surprising because, in line with one of the constructs of the Health Belief Model, knowledge of discriminatory practices is supposed to act as a barrier to HIV testing. When individuals are aware that others have been discriminated against based on their HIV status, it may affect their HIV testing decision due to fear of positive results and similar behavior against them. Studies have reported that pregnant women have refused HIV testing due to fear of positive results, stigma, and discrimination. [12][21][22][23]

However, this finding may be associated with the HIV testing Opt-Out Approach or Model practiced in Nigeria that requires all pregnant women who attended antenatal care or were brought in at childbirth to a health facility to be tested for HIV unless they refused.[24] The Opt-Out Approach is a model that requires all pregnant women visiting the antenatal clinics for the first time to be counseled about the importance of knowing one's status, including the danger of mother-to-child transmission of HIV Pregnant. The mandatory provision of information on HIV/AIDS to these pregnant women about the risks of not testing and the benefits of testing for HIV may have acted as a cue and impacted their readiness and testing decision. According to the Health Belief Model, when people believe they are at risk of a health problem, their understanding of the gains of taking action to avoid the problem facilitates their readiness to act.[25][26]

Women with a higher level of education are more likely to test for HIV than those with no education in this study (AOR, 8.09; 95% CI: 2.97, 22.06). Atnafu et al., Alemu et al., and Ndege et al. corroborated this finding in their reports.[3][27][28] Also, Shodimu et al. reported that persons with higher levels of education were less likely to manifest discriminatory attitudes toward persons living with HIV/AIDS than those with lower levels of education.[12] This is consistent with the NDHS 2013 and 2018 editions reports that women with higher levels of education have better knowledge of HIV/AIDS, its prevention methods, and mother-to-child transmission of HIV, which may have impacted pregnant women's HIV testing.[7][15]

Pregnant women dwelling in rural areas were found in this study to be less likely to test for HIV than those dwelling in urban. This finding is consistent with what was reported in other similar studies.[23][29][30] This finding may be associated with women dwelling in urban areas being more aware of HIV testing services. According to the 2013 NDHS, women living in urban areas are more aware of HIV testing services than those living in rural areas, and this may have impacted their HIV testing.[15]It may also be related to the fact that urban dwellers are more likely to have access to electricity, radio, television, and the internet, which will facilitate their access to information on HIV/AIDS. This study reported that religion did not significantly impact pregnant women's HIV testing. This finding is consistent with what has been reported in other studies.[24][31] Al-mujtaba et al. reported in their Nigerian study that religion played no role in attitudes and behaviour towards maternal health services utilization.[32]The nature of the HIV/AIDS prevention and control programme campaign in Nigeria is such that it cuts across the religious divide and religious, political, and opinion leaders are involved in it.

## Limitations

The cross-sectional design of the primary study is a limitation because it does not establish causality between the predictors and the dependent variable. Another limitation is recalling bias, which may have impacted this study's findings because the NDHS was a self-report of the respondents who participated in the survey.

## Conclusion

This study found that pregnant women's knowledge of discriminatory practices towards persons living with HIV/AIDS does not predict their HIV testing. This finding may have been impacted by the HIV/AIDS prevention and control activities and strategies being undertaken by the Nigerian government and development partners that provide appropriate information to the population to help discourage discriminatory attitudes toward persons living with HIV/AIDS. More of these intervention initiatives are recommended for addressing the effect of HIV stigma and discrimination on the control of the HIV/AIDS epidemic in Nigeria.

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**Conflict of interest**
We have no conflicts of interest.

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