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Female Circumcision in Nigeria, Prevalence and Attitudes

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ABSTRACT

Nigeria is one of the countries in Africa where female circumcision is widely practiced. Information about the prevalence and attitudes towards its practice and predictors associated with its support were collected from the 2005 National HIV/AIDS and Reproductive Health Survey (NARHS) on females aged 15-49 and males aged 15-64 years. The prevalence of female circumcision is more in the southern part of Nigeria than the Northern part, with South West and South East recording the highest percentages. There is a marked decrease of the practice in the younger age cohorts compared to the older age cohorts. As the level of education increases, the likelihood of supporting the practice of female circumcision reduces and regular use of media of communication such as radio and television is an influential factor against the practice of female circumcision in Nigeria.

Keywords: Female circumcision generalized linear model, binary logit model, HIV and AIDS.

Introduction

Female circumcision, also known as female genital cutting or female genital mutilation has been a common practice in sub-Saharan African countries over decades. The act involves the cutting of part or the whole of a female's clitoris and some other parts of her sex organ. The practice has extended to several Western countries due to immigration, and it is a concern for these countries (Fathalla, 1997; Bosch, 2001).

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There have been mixed opinions over this practice across West African countries. Female circumcision has been observed to be a cultural rather than a religious practice (Toubia, 1994; Caldwell *et al.*, 2000). The practice of female circumcision is widespread in Nigeria and the prevalence varies from one state or socio- cultural group to the other. A research study done in Nigeria on the Igbo tribe found that women believe that female genital mutilation (FGM) makes them more feminine and thus more attractive to men (Egwatu and Agusa, 1981). Research also established that FGM raises the social status for the family and generate income when the daughter gets married and the dowry is paid (Oyugi, 1998).

Literature reveals that while some people see female circumcision as an ugly practice that needs to be eradicated on ground of risk of contacting infectious diseases such as HIV/AIDS, Hepatitis and some other adverse health consequences such as heavy bleeding, severe pain and complication during childbirth which often result in caesarean operation, others see it as a practice that should be embraced for reasons which include cleanliness, social acceptance, better marriage prospects, preservation of virginity and prevention of premarital sex. Obermeyer (1999) however found that the frequency and severity of health implications after female circumcision are a function of the extent of the cutting and the circumstances of the event. Recent studies on female circumcision in African societies have shown that the practice varies widely in how it is conducted and that it is undergoing changes in some societies (Shell-Duncan and Hernlund, 2000; Gruenbaum, 2001). This change is clearly evidence in Nigeria with less prevalence in the younger generations than the older ones.

Methods

Data: The data used for this study were obtained from the 2005 National HIV/AIDS and Reproductive Health Survey (NARHS). It is a nationally representative survey undertaken in Nigeria by the Federal Ministry of Health (FMOH) and covered a sample drawn from the master sample frame of rural and urban localities. The survey involved face-to-face interviews with females aged 15-49 and males aged 15-64 years. Data collected included the background characteristics of the respondents, awareness of HIV and AIDS, knowledge of HIV preventive methods, awareness of other sexually transmitted infections. Information on sexual behaviours and other health related issues such as maternal health and family planning, cancer of the reproductive system and vesico-vaginal fistula were also collected. The survey aimed at providing information on the situation of reproductive and sexual health in Nigeria as well as the variety of factors that influence reproductive and sexual health. It is also to provide data regarding the impact of ongoing HIV and Family Planning behaviour change interventions and to yield insights into existing gaps that may require attention. The technical support, in terms of planning, implementation, data processing,

analysis and report writing of the survey was provided by the Society for Family Health. The financial support to undertake this project was provided by the British Department for International Development (DFID) and the United States Agency for International Development (USAID). The National Population Commission provided assistance in the design of the sampling methodology for the survey.

The survey covered 10,081 respondents that constituted the survey population. This is made up of 4,688 (46.5%) males and 5,393 females (53.5%). Our study is however restricted to those respondents who reported that they have heard of female circumcision (60.6%).

Model for Binary Response Variable

Binary outcomes often arise in research in which the sampling involves choosing from two alternatives. In such a design, one level of the outcome is generically referred to as success and the other level as failure. Logit and probit models are commonly used in modelling such data. However, logit model is often preferred over the probit model on account of easy interpretation of results. It is based on binomial distribution which is the assumed distribution for conditional mean for dichotomous outcome. This assumption implies that the same probability is maintained across the range of predictor values. The binomial assumption may be tested by the normal z test and it is known to be robust as long as the sample is random in which case the observations are independent of each other (Peng *et al*, 2002).

Suppose Y is a binary response variable with possible outcomes taking on value 1 if an event of interest occurs and value 0 if the event does not occur. The occurrence/non-occurrence of such an event is generically referred to as success/failure.

A binary response has a distribution specified by probabilities $\Pr(Y=1)=\pi$ of success and $\Pr(Y=0) = 1- \pi$ of failure, where $E(Y) = \pi$ and $\text{Var}(Y) = \pi(1- \pi)$. Ordinary Least Squares (OLS) could be used with a binary response variable in a model known as a linear probability model and this can be used as a way of describing conditional probabilities. However, the errors (i.e. residuals) from the linear probability model violate the homoskedasticity and normality of errors assumptions of OLS regression, resulting in invalid standard errors. For more discussion of problems with the linear probability model, see Long (1997). A more popular approach to investigating the relationship between a binary response variable and a set of predictor variables is that based on generalized linear model introduced by Nelder & Wedderburn (1972). Generalized linear model permits regression modelling of both Gaussian and non-Gaussian response variables. In the model setting, the mean of response variable Y is related to a set of predictor variables $X_1, X_2, \dots, X_p$ by

$$g(\mu) = g(E(Y/X_1, X_2, \dots, X_p)) = X'\beta \quad (1)$$

where g is a specified link function, β is vector of model parameter to be estimated. One popular link function often used for binary response variable is the logit function as used in this study, from which (1) can be written as

$$\text{Logit}(\pi) = \ln\left(\frac{\pi}{1-\pi}\right) = \beta' X \quad (2)$$

A more formal representation of the model is to consider a sample of n cases from which information on binary response variable Y are collected along with a vector of predictor variables $X_1, X_2, \dots, X_p$, and the data represented as $(Y_i, X_{i1}, X_{i2}, \dots, X_{ip})$, $i=1, 2, \dots, n$, where $Y_i \in \{0, 1\}$.

The response function is then written as

$$\Pr(Y_i | X_{i1}, X_{i2}, \dots, X_{ip}) = \pi_i$$

where $X_i = (1, X_{i1}, X_{i2}, \dots, X_{ip})$ and $\beta = (\beta_0, \beta_1, \dots, \beta_p)$

Therefore

$$E[Y_i] = \frac{\exp(X' \beta)}{1 + \exp(X' \beta)} \quad (3)$$

The likelihood function for n observations is given by

$$L = \prod_{i=1}^n \left(\frac{\exp(X' \beta)}{1 + \exp(X' \beta)} \right)^{\sum_{i=1}^n Y_i} \left(1 - \frac{\exp(X' \beta)}{1 + \exp(X' \beta)} \right)^{n - \sum_{i=1}^n Y_i}, \quad (4)$$

from which the log-likelihood is

$$l = \sum_{i=1}^n \left[Y_i \log \left(\frac{\exp(X' \beta)}{1 + \exp(X' \beta)} \right) + (n - Y_i) \log \left(1 - \frac{\exp(X' \beta)}{1 + \exp(X' \beta)} \right) \right], \quad (5)$$

Most often, in logistic regression, the parameters of interest to be estimated are the regression coefficients β and it is common to use a numerical algorithm, such as Newton-Raphson algorithm to obtain the maximum likelihood estimates $\hat{\beta}$. The information in this case will be a $(p+1) \times (p+1)$ matrix of the second partial derivatives of l with respect to the parameters β , where p is the number of parameters to be estimated, and the inverted information matrix being the covariance matrix for $\hat{\beta}$.

Statistical Analysis

Descriptive analysis

Table 1 presents the results of preliminary descriptive analysis of the data. The results show the prevalence of female circumcision by some selected factors and background characteristics.

Table 1: Percentage distributions of respondents who have heard of female circumcision, are circumcised and who supported continuation of female circumcision by some selected characteristics.

Characteristics	Number of respondents interviewed	Percentage who have heard of female circumcision	Percentage of female circumcised	Percentage who favoured continuation of female circumcision
<u>Sex</u>				
Male	4688	57.1	-	38.1
Female	5393	60.6	29.1	35.3
<u>Location</u>				
Rural	6429	52.6	26.2	39.4
Urban	3652	70.3	34.5	33.5
<u>Zone</u>				
North Central	1436	48.7	16.6	30.9
North East	1121	40.0	3.9	21.4
North West	2624	42.1	12.0	36.8
South East	1208	78.3	51.3	37.0
South South	1549	68.9	41.2	36.0
South West	2143	78.3	56.5	46.5
<u>Education</u>				
Qur'anic only	1105	43.0	15.2	40.0
Primary	2156	61.0	37.0	42.0
Secondary	3806	63.7	34.8	36.2
Higher	1012	82.4	40.5	23.6
<u>Age group</u>				
15-19	2383	42.6	20.6	39.1
20-24	1884	56.7	24.4	34.2
25-29	1456	62.5	27.7	35.4
30-39	2115	65.8	34.0	35.4
40-49	1477	67.5	42.7	38.1
50-64	766	73.6	-	41.7
-				
Overall	10081	59.0	31.2	38.4

The survey covered 10,081 respondents out of which 4,688, representing 46.5% were male and 5393, representing 53.5% were female. This study targets only the respondents who reported that they have heard of female circumcision. From Table 1, it is observed that 59% of the respondents reported that they have heard of female circumcision. Of these, 57.1% were male while 60.6% were female. Awareness about female circumcision is more in the southern part of the country than in the Northern part, with South West and South East having the

highest percentages of respondents (78.3% each) who have heard of female circumcision whereas North East and North West have the smallest percentages (40.0% and 42.1% respectively). There is also a clear difference between rural and urban dwellers with respect to awareness of female circumcision. While 52.6% of respondents in the rural area reported that they have heard of female circumcision, 70.3% from the urban areas reported so.

The prevalence rates of female circumcision are also presented in the table according to the selected characteristics. It is observed that 31.2% of the female respondents reported that they were circumcised. The percentages of respondents who reported being circumcised were higher in the Southern part of the country than the Northern part. For example, while 51.3% of respondents from the South East, 56.5% from the South West and 41.2% from the South South were reportedly circumcised, only 3.9% were circumcised from the North East, 12.0% from the North West and 16.6% from the North Central. Fewer rural dwellers than urban dwellers were circumcised. The table shows that 26.2% and 34.5% were circumcised from rural and urban areas respectively. Circumcision was less common among younger females than older ones. While only 20.6% were circumcised in age group 15-19 years, 24.6% in age group 20-24 years, it is observed that about 34.0% and 42.7% were circumcised in age groups 30-39 years and 40-49 years respectively.

A Nonparametric χ^2 test was carried out to investigate the differences in the prevalence rates of female circumcision across the levels of some selected factors. The test (results not shown) revealed significant differences ($p=0.018$) in the prevalence of female circumcision across the six geopolitical zones of the country and also across the 36 states and the federal capital territory ($p=0.001$). The test also showed a significant difference among the different cohorts of the female respondents, in which case higher percentage of respondents were circumcised in the older cohorts than the younger ones.

Modelling female circumcision with binary logit model

One question that was asked from the respondents during the survey was “Should the practice of female circumcision be continued or discontinued”. The options for the response provided were “It should be continued” and “It should be discontinued”. Other options, which are not of primary interest are “Don’t know” and “No response”. However these latter options were suppressed. We used binary logit model to investigate the relationship between this binary response of the respondents on continuation of the practice of female circumcision and a set of variables which were thought to be possible influential factors on the opinions of the respondents.

We define the response as

Let

$$y_i = \begin{cases} 1 & \text{if respondent } i \text{ says female circumcision should be continued} \\ 0 & \text{if respondent } i \text{ says female circumcision should be discontinued} \end{cases}$$

The model discussed in section (2.2) are then used for analysing the data and the results are presented in Table 2

Table 2: Results of binary logit model showing the Odds Ratios, Standard Errors, p-values and 95 % Confidence Intervals

Variable	Odds Ratio	Std. Error	P-value	[95% Conf. Interval]	
Educational Level					
Koranic	1				
Primary	0.774	0.112	0.079	0.582	1.030
Secondary	0.669	0.100	0.007	0.498	0.898
Higher	0.416	0.070	0.001	0.298	0.581
Location					
Rural	1				
Urban	0.916	0.071	0.263	0.786	1.067
Religion					
Others	1				
Islam	0.643	0.191	0.139	0.359	1.153
Protestant	0.365	0.103	0.001	0.209	0.638
Catholic	0.430	0.125	0.004	0.242	0.763
Listen to Radio					
Occasionally	1				
Regularly	0.846	0.074	0.058	0.712	1.006
Gender					
Female	1				
Male	1.374	0.101	0.001	1.190	1.586
Discuss HIV/AIDS					
No	1				
Yes	0.837	0.057	0.010	0.730	0.958
Watch Zip-up Programme					
No	1				
Yes	0.663	0.056	0.001	0.560	0.784

Current Age					
< 30 years	1				
30+ years	1.055	0.066	0.005	0.932	1.195
Geopolitical Zone					
North Central	1				
North West	0.969	0.138	0.831	0.733	1.283
North East	0.498	0.089	0.001	0.350	0.710
South West	2.775	0.320	0.001	2.212	3.480
South East	2.032	0.277	0.001	1.555	2.655
South South	1.985	0.261	0.001	1.533	2.572

Results

Table 2 shows findings from binary logit model. Considering the level of education of the respondents, it is observed from the table that respondents with primary, secondary and higher education are less likely to support continuation of female circumcision than those with Quranic education (primary, OR=0.774, p=0.079; secondary, OR=0.669, p=0.007; higher 0.416, p=0.001). Rural dwellers are less likely to support female circumcision than urban dwellers (though not significant). Respondents who are Muslims, Protestants and Catholic are less likely to support continuation of female circumcision than those in other religions (Islam, OR=0.643, p= 0.139; Protestant, OR=0.365, p=0.001; Catholic, OR=0.430, p=0.004). It is also observed that respondents who listen to radio regularly are less likely to support continuation of female circumcision than those who occasionally listen to radio (radio_reg., OR=0.86, p=0.058). Respondents who watch Zip-up programme on television are less likely to support continuation of female circumcision than those who do not (zip up, OR=0.663, p=0.001). The table also reveals that respondents who are male are more likely to support continuation of female circumcision than their female counterparts (male, OR=1.374, p=0.001). Respondents who discuss issues on HIV/AIDS are 0.837 times less likely to support continuation of female circumcision than those who do not discuss it. Reports of the views of respondents at the level of geopolitical zone generally show that southerners are more likely to embrace continuation of female circumcision than the northerners. Using North Central as the reference category, it is observed that respondents from the South West, South East and South South reported strong support for continuation of female circumcision with strongest support from South west, where respondents are 2.78 times more likely to support continuation of female circumcision than respondents from North Central with p=0.001. On the other hand, respondents from the North Eastern part of the country have the least likelihood of supporting continuation of female circumcision (North East, OR=0.498, p=0.001).

Discussion

This study investigated female circumcision in Nigeria using the 2005 National HIV/AIDS and Reproductive Health Survey (NARHS). From the findings, it was observed that female circumcision is more prevalent in the southern part of Nigeria than the Northern part, with south west and south east each recording over fifty percent of the females circumcised. This may be due to the fact that the practice is deeply rooted in the culture and tradition of the southern part of the country than the northern part. Female circumcision was seen to be higher in urban than rural areas. This may most likely be explained by the confounding effects of ethnicity.

The prevalence of female circumcision has declined over the past few decades. The younger generations are less circumcised than the older ones. This might be connected with awareness programme against the practice in the recent times.

One evidence for changes over time in female circumcision can be obtained by comparing experiences of age cohorts.

An accurate estimate of the prevalence of female circumcision is necessary for judging the relative importance of adverse health consequences and also for allocation of resources and planning intervention.

Level of education has been seen as a significant factor regarding people opinions on female circumcision. Results show that support for the practice of female circumcision declines as the level of education rises. This may be because those with education would have been exposed to some activities such as seminars and workshops relating to health and well-being. Listening to programmes on the radio and television had a remarkable influence on the attitudes of people towards female circumcision. It was discovered that support for the practice of female circumcision was more among those who do not regularly listen to radio or watch television than those who do.

Although it has not been easy to give a clear definition and measure the health complications that female circumcision is likely to have caused, the World Health Organization has compiled a list of its possible consequences, which were divided into three categories: short-term medical; long-term medical and sexual, mental and social consequences (WHO, 1996). Researches have shown that these complications could pose a serious threat to health. It is therefore necessary that adequate intervention programme be put in place by the government, NGOs and even CBOs. Since it may be difficult to proclaim a law banning female circumcision in a multi-ethnic country like Nigeria, awareness programmes by professional bodies may be a workable alternative to send a strong message of disapproval of female circumcision.

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