

Tulane University

Department of International Health and Development

Trends in HIV/AIDS Prevention, Family Planning, and Antenatal Care in Nigeria

**Andrea Plautz
Dominique Meekers
Gabriela Escudero**

Working Papers in
International Health and Development

No.2

2005



Department of International Health and Development
Tulane University School of Public Health and Tropical Medicine
1440 Canal Street, Suite 2200
New Orleans, LA 70112
ph. 504-988-3655 | fax 504-988-3653
www.sph.tulane.edu/~inhl

The Working Papers in International Health and Development Series

The *Working Papers in International Health and Development* aim to provide limited but speedy circulation of recent research by Faculty members of Tulane's Department of International Health and Development. To facilitate rapid circulation of new research findings, papers in the series are released as-is, without editing. Papers released in the series are intended for subsequent publication in peer-reviewed journals.

Suggested Citation Format for IHD Working Papers:

Plautz, Andrea, Dominique Meekers, and Gabriela Escudero. 2005. Trends in HIV/AIDS Prevention, Family Planning, and Antenatal Care in Nigeria. Working Papers in International Health and Development, No.2. New Orleans: Department of International Health and Development, Tulane University.

Acknowledgements

This study was funded by the United States Agency for International Development (USAID) through the MEASURE Evaluation Project and under the terms of Cooperative Agreement GPO-A-00-03-00003-00. The authors are grateful to Beth Nauman for assistance with the literature review, and to Susan Kano and Toyin Akpin for comments and suggestions.

Abstract

The Government of Nigeria, with the support of international agencies and donors, has been implementing programs to improve knowledge and utilization of family planning, STI/HIV/AIDS, and antenatal care services. One such project was the three-year USAID-funded VISION Project that sought to increase knowledge of, demand for and utilization of family planning and reproductive health services through behavior change communication activities and social mobilization efforts.

This article examines trends in HIV/AIDS prevention, family planning, and ante/postnatal care indicators targeted by the VISION Project in 15 LGAs in Bauchi, Enugu and Oyo states. Using logistic regression analysis, trends in HIV/AIDS information, HIV/AIDS risk factors, condom access and use; family planning knowledge, attitudes and use; and levels and type of antenatal care were examined.

Results indicate that significant improvements were made among indicators in all three program components (e.g., HIV/AIDS, family planning, and ante/postnatal care). For HIV/AIDS, there was a significant increase in exposure to HIV/AIDS information, in particular through radio, and an increase in knowledge on how to prevent HIV/AIDS, both of which were key components of VISION Project activities. Knowledge of family planning methods also increased significantly during the course of the VISION Project. While levels of antenatal care were already high at the start of the VISION Project, notable improvements were observed in the number of procedures and tests conducted during antenatal care visits, suggesting an improvement in the quality of antenatal care.

Findings from this study, therefore, suggest significant improvements in select HIV/AIDS, family planning and ante/postnatal care indicators in the 15 LGAs during the course of the VISION Project.

Trends in HIV/AIDS Prevention, Family Planning, and Antenatal Care in Nigeria

Introduction

In recent years, the Government of Nigeria has been implementing programs to address a wide range of reproductive health problems, including high levels of unplanned and/or premarital pregnancies, unsafe abortions, and STI/HIV infection. International donors and non-governmental organizations have joined these efforts.

Nigeria continues to have very high fertility levels, as indicated by its Total Fertility Rate of 5.7 children per woman. The corresponding population growth rate of nearly 3% annually implies that the population doubles in about 25 years. Although contraceptive knowledge and availability are high (Agha et al. 2003b; Mensch 1994), actual levels of contraceptive use have remained low (Aja et al. 1995; Oni and McCarthy 1990; NPC and ORC Macro 2004). Consequently, mistimed and unwanted pregnancies are common, particularly among unmarried youth, as are unsafe abortions (Otoide et al. 2001). While levels of antenatal care tend to be high (NPC and ORC Macro 2004), quality of care merits improvement.

HIV/AIDS is a growing concern. By the turn of the century, it was estimated that the HIV prevalence had exceeded 5%, which translates to four million HIV positive people (UNAIDS/WHO 2000; Alubo 2002; VISION Project 2005). Despite the widespread availability of condoms (Agha 2003b) and a high awareness that condom use can prevent HIV infection, several studies indicate that consistent condom use has remained relatively low (Araoye 1998; Jinadu 1993; Meekers, Van Rossem, Zellner and Berg 2004; Odujinrin 1991; Temin 1999, Van Rossem et al. 2001). This is particularly the case for marital relationships.

The Nigerian Ministry of Health, international donors, and non-governmental organizations have been implementing programs to improve the health of the Nigerian population. The VISION project, which was supported by the United States Agency for International Development (USAID), was part of these efforts. The VISION project aimed to increase the use of family planning and reproductive health services in selected target areas in three States (VISION Project 2005). Project activities included behavior change communication, community mobilization, capacity-building, contraceptive social marketing, and the development and promotion of public-private sector partnerships to increase access to health services (Agha et al. 2003a, 2003b; Adewuyi et al. 2005).

This study uses data from two waves of a household survey to examine trends in key indicators of HIV/AIDS prevention, family planning, and antenatal care during the course of the VISION family planning and reproductive health project. Specifically, it examines trends in 1) exposure to HIV/AIDS information, HIV/AIDS risk factors, and condom access and use, 2) family planning knowledge, attitudes, and use, and 3) levels and type of antenatal care.

The VISION Project

The VISION Project sought to increase the demand for and use of family planning and reproductive health services through behavior change communication (BCC) activities and community mobilization efforts. The project was implemented by EngenderHealth, in partnership with IntraHealth, Johns Hopkins University/Center for Communication Programs, and Population Services International. The project targeted 15 local

government areas (LGAs) in Bauchi, Enugu and Oyo States and was active from September 2001 through September 2004 (VISION Project 2003, 2004, 2005).

By working with local non-governmental organizations (NGOs) active in the selected LGAs, the VISION Project focused on developing “informed clients” through BCC activities aimed at increasing knowledge and empowering individuals and communities to demand quality family planning, STI/HIV/AIDS, reproductive health information and services. Special emphasis was placed on developing appropriate information and education print materials and radio public service announcements (PSA) for women with an unmet need for family planning, as well as messages aimed at men and youth focusing on male involvement and responsibility in reproductive decision-making. The VISION Project, in collaboration with local sports clubs, also developed an outreach strategy primarily aimed at youth called *Sports for Life* to promote healthy lifestyles and spread information on family planning and HIV/AIDS prevention during football competitions.

Another key component of the VISION Project was a media campaign that included a set of weekly radio programs in each of the three project states to disseminate family planning, HIV/AIDS, and other reproductive health information to the general public. VISION, with its partner NGOs, organized radio listener and discussion clubs in each of the VISION states and provided these clubs with radios. The VISION Project also worked with local government bodies, traditional and religious leaders, and community groups to solicit their support for reproductive health and child spacing programs in various communities where family planning has long been considered a sensitive topic. Through these activities, as well as through activities aimed at

improving the quality of family planning, HIV/AIDS, and reproductive health information and care provided by community-based distribution (CBD) agents and health facility staff, the VISION Project worked to increase the demand for FP/RH services among the approximately 2.6 million people living in the 15 project LGAs.

Data, Measures and Methods

Data

Data for this study are from two rounds of a household survey conducted in 2002 and 2004 in the VISION project area in Nigeria (Agha et al. 2003; Adewuyi et al. 2005). The study was conducted in 15 Local Government Areas (LGAs) in Bauchi, Enugu and Oyo states.

A multi-stage stratified study design was used. In the first stage, 40 enumeration areas (EAs) were randomly selected from LGAs in each of the three states; using probability proportional to LGA size (PPS), the number of EAs per LGA was selected. Systematic random sampling was used to select EAs from a list obtained from the State Office of the National Population Commission (NPC). An average of between 27 and 28 households were selected from each EA, again using systematic random sampling. A table of random numbers was used to select the person to be interviewed from a compiled list of all eligible members of a household.

Tulane University's Department of International Health and Development developed the questionnaire with input from the VISION partners. The survey questionnaire was adapted from the Demographic and Health Surveys (DHS) questionnaire instrument and included questions on media and program exposure,

reproduction, contraception, pregnancy, antenatal and post-natal care, sexual activity, and HIV and other STIs (Agha et al, 2003; Adewuyi et al. 2005). The questionnaire was translated into Hausa, Ibo and Yoruba, the main languages spoken in the study area and then back translated in English. Questionnaires were pre-tested and all interviewers received training before data collection began. A total of 3,196 people were surveyed in 2002 and 3,274 were interviewed in 2004.

Methods

Logistic regression analyses were used to measure net trends in indicators between the two survey rounds, after controlling for sampling differences. Analysis was first conducted using data from all three states combined. Subsequently, separate analyses were conducted for each State. All analyses controlled for age, urban/rural area of residence, Islamic religion, level of education, work status, male polygamy, media exposure in the past week and having 2 or more sexual partners in the past year. Data were weighted to correct for over-sampling in Enugu and Oyo states. All regression coefficients were converted to adjusted percentages to facilitate interpretation of the results.

Study Limitations

The adjusted percentages presented in this study are calculated by converting the logodds of the outcome measure, which is sensitive to skewed distributions. As such, the adjusted percentages highly skewed variables may appear to be inconsistent with the unadjusted results. While this may affect the level of the adjusted outcome measure, it is unlikely to

affect the interpretation of the trends. Adjusted percentage results that differ substantially from bivariate results are footnoted and should be interpreted with caution. Furthermore, since all results are self-reported, it should be kept in mind that there is a potential for recall and courtesy bias.

Results

Tables 1 – 4 show trends in sources of exposure to HIV/AIDS information and HIV risk factors, condom access and use, family planning and antenatal/postnatal care. Table 1 presents results for the entire study population, and Tables 2 – 4 specify results for the States of Bauchi, Enugu and Oyo, respectively. All results are presented separately for males and females.

Results for the total target population

a. Trends in HIV/AIDS Prevention

As shown in the first panel of Table 1, virtually all (approximately 95%) males and females had heard of HIV/AIDS. Among both males and females, radio was the most common media channel through which respondents heard HIV/AIDS information. Between 2002 and 2004, exposure to HIV/AIDS information on the radio increased slightly from 79.5% to 82.6% among females and from 85.6% to 90.0% among males. Exposure to HIV/AIDS information through other channels was substantially lower. Among males, exposure to HIV/AIDS information on television increased from 45.7% to 52.5% between the two surveys, while the percentage of women exposed to HIV/AIDS information via television remained constant at approximately 40% in both years.

Among males the percentage having heard of HIV/AIDS information from a home visit by a community health worker increased from 14.2% to 22.6%, but for females the percentage stayed constant at approximately 20%.

Table 1 also shows improvement in several indicators of HIV/AIDS prevention between 2002 and 2004, especially those related to knowledge and attitudes. In 2004 both females and males were more likely than in 2002 to have ever heard of HIV/AIDS and to know how to avoid it. These percentages increased from 68.2% to 76.6% among females and from 61.7% to 67.9% among males. The percentage knowing that a healthy looking person can be HIV-positive also increased over time, from 51.8% to 57.2% for females and from 61.7% to 67.9% for males. Additionally, both sexes were slightly more likely to report approving of teaching children about condom use. However, despite this increase, overall approval remained modest in 2004 at 45.6% for females and 52% for males. Interest in being tested for HIV actually decreased slightly between the two survey rounds. Approximately one-third of women (33.5%) and slightly less than 50% of men (44.6%) in 2004 reported an interest in HIV testing.

The data show modest reductions in sexual risk behavior. Women were less likely to report having 2 or more sexual partners in the past 12 months (3.5% in 2002 vs. 2.3% in 2004) and men were less likely to report having had sex by age 18 (27.8% in 2002 vs. 22.1% in 2004). No change was noted among either males or female in the percentage who had first sex by age 15. Indicators of condom access and use show significant increases for males, but not for females. Approximately one in four females reported knowing of a condom source in both 2002 and 2004; among males knowledge increased from 46% to 61%. Condom use at last sex increased significantly from 13% to 16% for

males, but did not improve for females (less than 5%).

b. Trends in Family Planning

The second panel in Table 1 reports levels of family planning knowledge, attitudes and practices. Results indicate significant improvements in family planning knowledge levels, especially among females. Among females, 62.8% reported knowing of at least one family planning method in 2004, compared to only 53.1% in 2002. For males these percentages increased from 58.3% in 2002 to 67.5% in 2004. Knowledge of specific types of methods remain relatively low, although improvement was observed. Male condoms and oral contraceptives were the most frequently cited modern methods among both males and females. Knowledge of both of these methods increased between 2002 and 2004. Knowledge of male condoms increased from 31.6% to 39.1% for females, and from 43.2% to 56.6% for males. Knowledge of oral contraceptives increased from 27.5% to 34.0% for females and from 25.2% to 31.6% for males. Among females only, knowledge of Intrauterine Devices (IUDs) and injectable contraceptives increased, from 9.4% to 13.2% and 20.4% to 26.4%, respectively. Reported approval of family planning remained modest at approximately 40% for both sexes.

While knowledge of family planning methods increased between the two surveys, levels of ever and current use remained relatively low and showed little improvement between 2002 and 2004. The percentage of women currently using a modern method increased from 4.9% to 6.3%, but for males there was no significant change. There was a significant, albeit small, decrease in the percentage of females reporting having a child by age 15 (7.3% in 2002 vs. 5.6% in 2004).

c. Trends in Antenatal and Postnatal Care

The results shown in Table 1 indicate that the vast majority of women are receiving antenatal care and that the care is generally comprehensive. Nine out of ten women in both years received antenatal care at some point during their last pregnancy, and approximately 80% of women receiving care did so during the first six months of pregnancy. In both years, over 90% were weighed and measured during their pregnancy. Improvement was noted in measuring blood pressure (78.8% in 2004 vs. 67.4% in 2002), taking blood samples (85.9% vs. 81.6%) and collecting a urine sample (86.5% vs. 78.4%). Slightly more than two-thirds received information about pregnancy complications (68.8% in 2002 and 71.8% in 2004). The percentage of women who reported receiving a post-partum visit from a community health worker or traditional birth attendant stayed constant at roughly 40%.

Results for Bauchi State

a. Trends in HIV/AIDS Prevention

Table 2 shows the results for Bauchi State. The percentage of Bauchi residents who heard about HIV/AIDS on the radio and from a home visit by a community health worker increased significantly. Radio exposure increased from 61.3% to 68.9% among females and from 78.7% to 87.2% among males. Exposure to HIV/AIDS information from a home visit by a community health worker increased from 3.9% to 15.2% among females and from 4.8% to 25.2% among males. Exposure to HIV/AIDS information via other channels remained low at under 20%.

Results also show that indicators of HIV/AIDS risk factors improved in Bauchi. The percentage of women who heard of HIV/AIDS and knew how to avoid it increased from 44.3% in 2002 to 67.0% in 2004; among men the percentage increased from 67.6% to 86.4%. Approval of teaching children about condom use also increased from 17.2% to 46.8% among females and from 28.3% to 55.1% among males. Interest in being tested for HIV also increased among both sexes (from 17.7% to 31.6% among females and from 33.4% to 45.3% among males).

Sexual risk behavior decreased somewhat during the study period. The percentage reporting having had sex by age 18 decreased from 19.0% to 12.4% among men, but did not change for women. While no improvement was observed in condom use, the percentage knowing where to buy condoms increased among both sexes, from 3.5% to 6.6% among women and from 15.6% to 37.0% among men.

b. Trends in Family Planning

Table 2 reports trends in family planning related knowledge, attitudes and practices in the state of Bauchi between 2002 and 2004. Family planning knowledge improved significantly. For example, the percentage of Bauchi women who knew at least one modern method increased from 25.2% to 39.8%; for males, it increased from 28.0% to 48.2%. However, neither attitudes towards family planning and nor family planning use improved. Only 15% of both women and men reported having a positive attitude towards family planning in 2002 and 2004. Ever use and current use of family planning remained below 5% in both years as well. The percentage of women reporting having had a child by age 15 did decrease significantly over time, from 25.4% in 2002 to 20.0%

in 2004.

c. Trends in Antenatal and Postnatal Care

Table 2 also reports experiences with antenatal and post-natal care among ever-pregnant women. Approximately two-thirds of women in both survey years reported receiving antenatal care at some point during their last pregnancy, and among those women, approximately three-fourths sought antenatal care during the first six months of their pregnancy. Although the level of antenatal care did not increase, there were significant improvements in the procedures and lab test that were done during ANC visits. Specifically, women were more likely to have had blood and urine tests and to have had their blood pressure taken in 2004 than in 2002. The percentage having blood and urine tests increased from 48.3% to 69.9% and from 65.6% to 81.4%, respectively, between 2002 and 2004. About eight in ten (79.9%) women in 2004 reported having had their blood pressure taken, compared to only about two-thirds (65.4%) in 2002.

The percentage of women receiving antenatal care who reported being counseled about HIV/AIDS stayed at roughly 40.5% and did not improve significantly. There was no significant improvement in the percentage who received a post-partum visit from a community health worker or traditional birth attendant (less than 20%).

Results for Enugu State

a. Trends in HIV/AIDS Prevention

Trends in indicators of HIV/AIDS prevention in Enugu State are shown in the first panel of Table 3. In general, few changes were noted, and all occurred among females. Females were actually less likely to report having heard about HIV/AIDS information

from a home visit by a community health worker in 2004 than in 2002 (25.6% in 2002 vs. 18.1% in 2004). As in the other States, radio and television were the most commonly cited source of HIV/AIDS information. In both 2002 and 2004, 85% or more of both women and men reported having heard about HIV/AIDS on the radio and approximately 50% of females and 70% of males heard about HIV/AIDS on television. Exposure from print media was low for both survey years; approximately one quarter and one-half of women and men, respectively, reported having heard about HIV/AIDS information in a newspaper or magazine.

Regarding HIV/AIDS risk factors, the only indicator where improvement was noted was the percentage of women who approved of teaching children about condom use. In 2004, over six out of ten women (61.6%) approved of teaching children about condom use compared to only 54.4% in 2002. Although other indicators did not improve, several already had high levels at the onset of the VISION program. Over 80% of women and approximately 70% of men in both years reported knowing that a health looking person can have HIV, and over 80% of women and 90% of men had ever heard of HIV and knew how to prevent it. About half of women and 60% of men reported being interested in being tested for HIV.

No changes were noted in behavioral risk factors of HIV/AIDS between 2002 and 2004. Thirty-seven percent of women and 30% of men in both years reported having had sex by their 18th birthday; less than 15% reported having their first sexual experience by age 15. Only approximately 2% of females and 10% of males reported having had 2 or more sexual partners in the past year.

In both 2002 and 2004, one-third of women and three-quarters of men knew of a

place to purchase condoms. However, levels of condom use during last sex were low and did not improve during the study period. For both survey years, less than 10% of women and approximately one in three men reported using a condom the last time they had sex.

b. Trends in Family Planning

Table 3 (second panel) shows trends in knowledge, attitudes and practices related to family planning in Enugu State. Among females, knowledge of one or more modern family planning methods increased from 51.0% in 2002 to 60.9% in 2004. Approximately two-thirds of males in both years reported knowing of at least one modern method. The percentage of women who heard of male condoms increased from 34.8% in 2002 to 45.2% in 2004. Knowledge of other methods was lower, ranging from about 20% for oral contraceptives to 10% for IUDs among females and from about 15% for oral contraceptives to 5% for IUDs among males. Approval of family planning remained modest among both females and males at approximately 45% and 55%, respectively.

Ever use of modern family planning among females in Enugu increased from 13.9% to 19.0% between 2002 and 2004. Results indicate that the increase was primarily due to increases in use of male condoms; 13.2% of women reported having ever used male condoms compared to only 8.7% in 2002. A slight increase was also noted in ever use of injectable contraceptives (from 1.2% to 2.7%). Less than one in ten women reported currently using a modern family planning method. Less than 5% of females reported having their first child by age 15. No significant changes were observed for males in Enugu.

c. Trends in Antenatal and Postnatal Care

As shown in the third panel of Table 3, while few changes in antenatal care were noted between 2002 and 2004, the percentage of women receiving antenatal care was general quite high in Enugu state. Over 95% of women in both years reported seeking care during their last pregnancy, and over 85% received care during the first two trimesters of their pregnancy. More than nine in ten women in both years were weighed and measured during pregnancy, and over 85% had a blood sample taken. Approximately three-quarters were asked to give a urine sample, and 60% had their blood pressure taken. Close to two-thirds reported receiving information about pregnancy complications and were counseled about HIV/AIDS during antenatal care visits. The percentage of women receiving a post-partum visit from a community health worker or traditional birth attendant decreased from 62.9% to 50.9%.

Results for Oyo State

a. Trends in HIV/AIDS Prevention

Table 4 shows results for respondents in Oyo State. Radio was the most commonly cited source of HIV/AIDS information in both 2002 and 2004. Between 2002 and 2004, radio exposure to HIV/AIDS information increased significantly from 82.2% to 88.7% for females. Approximately 90% of males in both years reported having heard information about HIV/AIDS on the radio. No other significant changes were noted in sources of HIV/AIDS information. Close to two-thirds of both females and males reported having seen HIV/AIDS information on television while exposure through print media and home visits from community health workers was lower.

Results shown in Table 4 also indicate that levels of some indicators measuring

HIV/AIDS risk factors improved. Both females and males were more likely to approve of teaching children about condom use. In 2004, approximately two-thirds of females approved (65.2%), compared to only about half (50.4%) in 2002. The percentage of males approving of teaching children about condom use increased from 58.1% to 72.5%. Interest in being tested for HIV/AIDS also increased from 50.7% to 60.0% for females and from 59.2% to 66.8% for males.

Results also show that reported age at first sex in Oyo decreased between the two survey rounds. The percentage of females reporting having their first sexual act by age 15 decreased from 9.1% in 2002 to 5.6% in 2004 and the percentage of males reporting becoming sexually experienced by age 18 decreased from 37.3% in 2004 to 29.1% in 2002. Among females only, the percentage reporting having two or more partners in the past year decreased from 5.1% to 2.3%. While knowledge of a condom source increased from 62.4% to 73.1% among males, levels of condom use at last sex remained constant. Among females, knowledge of where to buy condoms and condom use at last sex both remained constant at approximately 45% and 10%, respectively.

b. Trends in Family Planning

Table 4 shows trends in family planning indicators in Oyo State. Results indicate that among females, knowledge of most modern family planning methods increased between 2002 and 2004. For example, knowledge of oral contraceptives increased from 41.5% to 54.6% and knowledge of injectable contraceptives increased from 37.8% to 49.4%. Women were also more likely to have heard of IUDs in 2004 than they were in 2002 (30.0% vs. 23.7%). However, the percentage of women reporting knowledge of

male condoms decreased from 62.6% to 54.0%. Among males, while the percentage having heard of male condoms increased from 70.1% in 2002 to 76.2% in 2004, the percent having heard of IUDs and injectable contraceptives decreased between the two survey rounds (from 26.0% to 18.5% and from 41.3% to 33.6%, respectively). Approximately two-thirds of men and 60% of females reported approving of family planning in both years.

Ever use of any modern family planning decreased among females, primarily due to a decrease in the percentage who report having used male condoms. Ever use of any modern family planning method decreased among women from 39.8% in 2002 to 28.6% in 2004, and ever use of male condoms decreased from 25.4% to 13.0% during the same time period. While ever use of male condoms decreased among women, the percentage of males having ever used a male condom increased, from 28.1% in 2002 to 39.1% in 2004.

Current use of modern family planning methods remains low in Oyo State, and no significant improvements were noted in the percentage using any modern method; less than 15% of women reported currently using a modern family planning method in both years. In terms of specific methods, a slight increase was noted in the percentage currently using an injectable contraceptive (from 1.4% to 3.4%).

c. Trends in Antenatal and Postnatal Care

Table 4 also reports women's experience with antenatal and post-natal care. While few significant changes were noted, overall levels of antenatal care and testing are quite high in Oyo State. Overall, 95% of women in both survey waves reported receiving

antenatal care during their last pregnancy, and approximately eight out of ten of women receiving care did so during the first six months of their pregnancy. In general, a high percentage of women receiving antenatal care had five basic procedures done during the visit. The percentage of woman having their urine tested during an antenatal care visit increased significantly from 87.3% to 93.0% between 2002 and 2004, and approximately 90% of women in both years also were weighed, measured, had their blood pressure taken and gave a blood sample. Compared to 2002, women in 2004 were also more likely to be counseled about HIV/AIDS during an antenatal visit (77.1% vs. 65.3%) and more likely to have received a post-partum visit from a community health worker or traditional birth attendant (64.7% vs. 53.5%).

Conclusions

The VISION Project in Nigeria aimed to increase the demand for and use of family planning and reproductive health services through behavior change communication (BCC) activities and community mobilization efforts. This study has examined trends in indicators of HIV prevention, family planning, and ante/postnatal care that occurred during the course of the intervention in the program's target areas (Bauchi, Enugu, and Oyo States). Significant improvements were observed in indicators of all three program components. For HIV/AIDS, there were significant improvements in exposure to HIV/AIDS information, particularly on the radio, which was one of the key program activities. Consistent with these increased levels of information, knowledge of HIV/AIDS and how to avoid it also significantly increased. Very modest decreases in sexual risk behavior were also observed. For males, knowledge of a condom source increased, as did

condom use in last intercourse. Unfortunately, despite these increased levels of condom use remained exceptionally low. Moreover, there is no evidence of improvements in condom use for women.

Knowledge of modern family planning increased significantly during the course of the VISION intervention, for both males and females. Increases in knowledge of oral contraceptives and male condoms are particularly noteworthy. Despite these increases in contraceptive knowledge, improvements in use of modern contraceptives were negligible.

Levels of antenatal care were already very high at the start of the VISION program. However, during the course of the intervention, significant improvements were observed in the number of procedures and tests that were conducted during the antenatal care visits. These changes suggest that the quality of antenatal care has improved significantly.

In sum, data collected in the areas targeted by the VISION program show that while notable progress was achieved during the course of the intervention, much work remains to be done, particularly in the area of HIV/AIDS prevention and family planning.

References

- Adewuyi, A. et al. 2005. Nigeria (Bauchi, Enugu and Oyo) Family Planning and Reproductive Health Survey 2004. Health Facility Survey Results. Forthcoming.
- Agha, S., Escudero, G., Keating, J. and Meekers, D. 2003a. Nigeria (Bauchi, Enugu and Oyo) Family Planning and Reproductive Health Survey 2002. MEASURE Evaluation Technical Report Series, No. 16. Carolina Population Center, UNC.
- Agha, S., Escudero, G., Keating, J. and Meekers, D. 2003b. Nigeria (Bauchi, Enugu and Oyo) Family Planning and Reproductive Health Survey 2002. Health Facility Survey Results. MEASURE Evaluation Technical Report Series, No. 16B. Carolina Population Center, UNC.
- Alubo, O. et al. 2002. Acceptance and stigmatization of PLWA in Nigeria. *AIDS Care* 14(1): 117-126.
- Araoye, M.O., O.O. Fakeye and E.T. Jolayemi. 1998. Contraceptive method choices among adolescents in a Nigerian tertiary institution. *West African Journal of Medicine*, 17(4): 227-231.
- Aja, G.N., M.A. Nwangwa, I.N. Egwu. 1995. Knowledge, attitude and practice of family planning in rural communities in Nigeria. *Asia Pacific Journal of Public Health* 8(2): 85-90.
- Jinadu, M.K. and W.O. Odesanmi. 1993. Adolescent sexual behavior and condom use in Ife-Ife, Nigeria. *Clinical Nursing Research*, 2(1): 111-118.
- Meekers, Dominique, Ronan Van Rossem, Sara Zellner, and Ruth Berg. 2004. Using Behavior Change Communications to Overcome Social Marketing Sales Plateaus. Case Studies of Nigeria and India. Commercial Market Strategies, Technical Paper Series No.7. Washington, D.C.: Commercial Market Strategies.
- Mensch, Barbar, Andrew Fisher, Ian Askew, and A. Ajayi. 1994. Using Situation Analysis Data to Assess the Functioning of Family Planning Clinics in Nigeria, Tanzania, and Zimbabwe. *Studies in Family Planning* 25(1): 18-31.
- National Population Commission (NPC) and ORC Macro. 2004. Nigeria Demographic and Health Survey 2003. Calverton, MD: ORC Macro.
- Odujinrin, O.M.T. and F.O. Akinkuade. 1991. Adolescents AIDS knowledge, attitudes and beliefs about preventive practices in Nigeria. *European Journal of Epidemiology*, 7(2): 127-133.
- Oni, G.A. and J. McCarthy. 1990. Contraceptive knowledge and practices in Ilorin, Nigeria: 1983-1988. *Studies in Family Planning* 21(2): 104-109.
- Otoide, V.O., F. Oronsaye, F.E. Okonofua. 2001. Why Nigerian adolescents seek abortion rather than contraception: evidence from focus-group discussions. *International Family Planning Perspectives* 27(2): 77-81.

- Temin, M.J. et al. 1999. Perceptions of sexual behavior and knowledge about sexually transmitted diseases among adolescents in Benin City, Nigeria. *International Family Planning Perspectives* 25(4): 186-190.
- UNAIDS and the World Health Organization. 2000. Epidemiological fact sheet on HIV/AIDS and sexually transmitted infections: Nigeria. 2000 Update (revised).
- Van Rossem, R., D. Meekers, and Z. Akinyemi. 2001. Consistent Condom Use with Different Types of Partners: Evidence from Two Nigerian Surveys. *AIDS Education and Prevention* 13(3): 252-267.
- VISION Project. 2003. Annual Report October 1, 2002-September 30, 2003. Lagos: VISION Project.
- VISION Project. 2004. Quarterly Report October-December 2003. Lagos: VISION Project.
- VISION Project. 2005. VISION Project: Public-Private Partnerships for Increased Service Use, End-of-Project Report. Lagos: VISION Project.

Table 1: Trends in HIV/AIDS prevention, family planning, and ante/postnatal care among all respondents (adjusted percentages).

	Females			Males		
	2002 %	2004 %	p=value	2002 %	2004 %	p=value
HIV/AIDS Prevention						
<i>Heard about HIV/AIDS:</i>						
On the radio ¹	79.5	82.6	**	85.6	90.0	**
On television ¹	38.4	40.4		45.7	52.5	**
In a newspaper or magazine ¹	12.3	11.3		26.0	25.4	
From a home visit by a community health worker	18.8	19.5		14.2	22.6	***
Never heard about HIV/AIDS ¹	6.8	4.3	***	5.0	3.2	***
<i>HIV/AIDS Risk Factors</i>						
Knowledge that healthy looking person can be HIV+	51.8	57.2	**	61.7	67.9	***
Ever heard of HIV/AIDS and know how to avoid it	68.2	76.6	***	75.5	83.2	***
Approval of teaching children about condom use	40.5	45.6	***	45.6	52.2	***
Had first sex by age 15 ¹	18.0	16.9		10.2	10.1	
Had first sex by age 18	48.0	45.9		27.8	22.1	**
Had 2+ sexual partners in past 12 months	3.5	2.3	**	10.0	10.7	
Interested in HIV test	36.9	33.5	**	46.7	44.6	***
<i>Condom Access and Use</i>						
Know of a source for condoms	23.0	25.6		45.5	61.0	***
Used condom in last sexual act ¹	3.2	3.6		12.8	16.1	**
Family Planning						
<i>Knowledge and Attitudes</i>						
Awareness of family planning methods (spont.) ¹	53.1	62.8	***	58.3	67.5	***
Ever heard of oral contraceptives	27.5	34.0	***	24.2	31.6	***
Ever heard of IUD ¹	9.4	13.2	***	7.6	8.1	
Ever heard of male condoms	31.6	39.1	***	43.2	56.6	***
Ever heard of injectable contraceptives	20.4	26.4	***	17.8	20.2	
Approve of family planning	37.2	38.6		40.7	42.5	
<i>Ever use of family planning</i>						
Ever used any modern method	15.7	15.0		18.8	21.5	
Ever used male condoms	9.1	7.7		13.7	18.7	***
Ever used oral contraceptives	3.3	3.9		2.4	4.7	
Ever used IUD	1.4	1.6		1.1	2.3	
Ever used injectable contraceptives	1.8	3.1	***	3.1	4.3	
<i>Current use of modern family planning</i>						
Currently using any modern method	4.9	6.3	**	10.4	14.9	
Currently using a male condom for family planning	2.9	3.1		7.5	11.7	
Currently using oral contraceptives	1.2	1.3		1.3	2.3	
Currently using an IUD	.4	.5		---	---	
Currently using an injectable contraceptive	.5	1.1	***	---	---	
Had first child before age 15	7.3	5.6	**	1.0	1.0	
N of cases (100%)	1801	1853		1395	1421	

Table 1 (continued).

	Females			Males		
	2002 %	2004 %	p-value	2002 %	2004 %	p-value
Antenatal/Postnatal Care (ANC)						
Received ANC during last pregnancy ²	88.5	90.0		n/a	n/a	
Received ANC in first 6 months of pregnancy ^{1,3}	82.0	80.6		n/a	n/a	
ANC procedures and lab tests done during visit ³ :						
Weighed	91.7	94.3	**	n/a	n/a	
Measured	90.1	92.1		n/a	n/a	
Blood pressure	67.4	78.8	***	n/a	n/a	
Blood sample	81.6	85.9	**	n/a	n/a	
Urine sample ¹	78.4	86.5	***	n/a	n/a	
Received information about pregnancy complications ³	68.8	71.8		n/a	n/a	
Counseled about HIV/AIDS during ANC visit ³	55.8	61.8	**	n/a	n/a	
Received a post-partum visit from CHW or TBA	39.1	42.6		n/a	n/a	
N of cases (100%)	1801	1853		1395	1421	

Note: **.01<p<=.05;***p<=.01; All analyses have been controlled for age, urban/rural residence, Muslim religion, level of education, work status, polygyny, reading newspaper in last week, listening to the radio in the past week, watching television in past week and having two or more sexual partners in past year.

¹Skewed data may have caused adjusted percentage results for these indicators to be inaccurate; results therefore should be interpreted with caution.

Table 2: Trends in HIV/AIDS prevention, family planning, and ante/postnatal care among respondents in Bauchi State (adjusted percentages).

	Females			Males		
	2002 %	2004 %	p-value	2002 %	2004 %	p-value
HIV/AIDS Prevention						
<i>Heard about HIV/AIDS:</i>						
On the radio	61.3	68.9	**	78.7	87.2	***
On television ¹	5.6	6.2		12.7	17.7	
In a newspaper or magazine ¹	1.4	1.9		8.4	10.1	
From a home visit by a community health worker	3.9	15.2	***	4.8	25.2	***
<i>HIV/AIDS Risk Factors</i>						
Ever heard of HIV/AIDS and know how to avoid it	44.3	67.0	***	67.6	86.4	***
Approval of teaching children about condom use	17.2	46.8	***	28.3	55.1	***
Had first sex by age 15	47.4	44.4		5.4	4.7	
Had first sex by age 18	77.8	75.5		19.0	12.4	***
Had 2+ sexual partners in past 12 months	2.4	1.7		5.0	7.9	
Interested in HIV test ¹	17.7	31.6	***	33.4	45.3	***
<i>Condom Access and Use</i>						
Know of a source for condoms	3.3	6.6	***	15.6	37.0	***
Used condom in last sexual act ¹	---	---		.1	.1	
Family Planning						
<i>Knowledge and Attitudes</i>						
Knowledge of 1+ modern method	25.2	39.8	***	28.0	48.2	***
Ever heard of oral contraceptives	22.1	33.6	***	16.7	32.1	***
Ever heard of IUD	1.0	4.6	***	.8	3.3	***
Ever heard of male condoms	4.6	15.8	***	13.1	31.0	***
Ever heard of injectable contraceptives	12.7	20.3	***	8.0	17.5	***
Approve of family planning	15.1	13.7		13.2	15.5	
<i>Ever use of family planning</i>						
Ever used any modern method	3.5	3.8		1.3	1.2	
Ever used male condoms	.04	.03		.7	.7	
Ever used oral contraceptives	.4	.5		---	---	
Ever used IUD	---	---		---	---	
Ever used injectable contraceptives	.08	.2		---	---	
<i>Current use of modern family planning</i>						
Currently using any modern method	.06	.08		.08	.09	
Currently using a male condom for family planning	.01	.08		.06	.06	
Currently using oral contraceptives	.04	.01		---	---	
Currently using an IUD	---	---		---	---	
Currently using an injectable contraceptive	.01	.01		---	---	
Had first child before age 15 ¹	25.4	20.0	**	n/a	n/a	
N of cases (100%)	644	645		619	633	

Table 2 (continued).

	Females			Males		
	2002 %	2004 %	p-value	2002 %	2004 %	p-value
Antenatal/Postnatal Care (ANC)						
Received ANC during last pregnancy ²	63.8	65.7		n/a	n/a	
Received ANC in first 6 months of pregnancy ^{1,3}	79.7	73.4		n/a	n/a	
ANC procedures and lab tests done during visit ³ :				n/a	n/a	
Weighed	93.4	96.6		n/a	n/a	
Measured	85.4	90.1		n/a	n/a	
Blood pressure	48.3	69.9	***	n/a	n/a	
Blood sample	65.4	79.9	***	n/a	n/a	
Urine sample	65.6	81.4	***	n/a	n/a	
Received information about pregnancy complications ³	63.4	69.6		n/a	n/a	
Counseled about HIV/AIDS during ANC visit ³	37.8	43.7		n/a	n/a	
Received a post-partum visit from CHW or TBA	14.6	19.1		n/a	n/a	
N of cases (100%)	644	645		619	633	

Note: **.01 < p <=.05; ***p <=.01; All analyses have been controlled for age, urban/rural residence, Muslim religion, level of education, work status, polygyny, reading newspaper in last week, listening to the radio in the past week, watching television in past week and having two or more sexual partners in past year.

^{*}Unable to calculate percentage due to small sample size.

¹Skewed data may have caused adjusted percentage results for these indicators to be inaccurate; results therefore should be interpreted with caution.

²Among all women who had ever been pregnant; N=343 in 2002 and N=196 in 2004.

³Among all women receiving antenatal care during pregnancy; N=185 in 2002 and N=186 in 2004.

Table 3: Trends in HIV/AIDS prevention, family planning, and ante/postnatal care among respondents in Enugu State (adjusted percentages).

	Females			Males		
	2002 %	2004 %	p-value	2002 %	2004 %	p-value
HIV/AIDS Prevention						
<i>Heard about HIV/AIDS:</i>						
On the radio	87.5	84.9		90.6	92.3	
On television	45.8	50.6		69.4	73.4	
In a newspaper or magazine	25.9	23.5		48.4	46.9	
From a home visit by a community health worker	25.6	18.1	***	19.9	14.8	
<i>HIV/AIDS Risk Factors</i>						
Knowledge that healthy looking person can be HIV+	81.0	82.2		70.4	68.1	
Ever heard of HIV/AIDS and know how to avoid it	84.5	84.4		93.2	90.5	
Approved of teaching children about condom use	54.4	61.6	***	59.6	62.7	
Had first sex by age 15	11.0	13.9		10.3	12.8	
Had first sex by age 18	37.2	37.8		30.5	30.2	
Had 2+ sexual partners in past 12 months	2.3	2.6		10.1	8.5	
Interested in HIV test	49.3	52.8		58.7	62.2	
<i>Condom Access and Use</i>						
Know of a source for condoms	33.2	33.1		73.3	73.9	
Used condom in last sexual act	7.0	8.8		36.2	37.9	
Family Planning						
<i>Knowledge and Attitudes</i>						
Knowledge of 1+ modern method	51.0	60.9	***	65.1	69.2	
Ever heard of oral contraceptives	20.4	18.3		14.2	17.6	
Ever heard of IUD	9.9	9.9		3.0	5.5	
Ever heard of male condoms	34.8	45.2	***	57.5	63.1	
Ever heard of injectable contraceptives	14.6	14.7		8.2	9.2	
Approve of family planning	44.5	44.9		54.5	56.6	
<i>Ever use of family planning</i>						
Ever used any modern method	13.9	19.0	***	28.2	33.9	
Ever used male condoms	8.7	13.2	***	26.7	32.3	
Ever used oral contraceptives	2.2	3.6		1.4	1.5	
Ever used IUD	1.2	1.1		---	---	
Ever used injectable contraceptives	1.2	2.7	**	---	---	
<i>Current use of modern family planning</i>						
Currently using any modern method	5.6	7.9		18.0	25.2	
Currently using a male condom for family planning	4.1	5.6		17.5	24.4	
Currently using oral contraceptives	.7	.7		.4	.7	
Currently using an IUD	.05	.1		---	---	
Currently using an injectable contraceptive	.3	.6		---	---	
Had first child before age 15 ¹	4.4	4.0		n/a	n/a	
N of cases	645	666		386	383	

Table 3 (continued).

	Females			Males		
	2002 %	2004 %	p=value	2002 %	2004 %	p=value
Antenatal/Postnatal Care (ANC)						
Received ANC during last pregnancy ²	97.6	95.6		n/a	n/a	
Received ANC in first 6 months of pregnancy ³	85.3	89.2		n/a	n/a	
ANC procedures and lab tests done during visit ³ :						
Weighed	89.7	92.3		n/a	n/a	
Measured	91.4	90.6		n/a	n/a	
Blood pressure	59.3	67.6		n/a	n/a	
Blood sample	86.1	85.3		n/a	n/a	
Urine sample	74.1	80.9		n/a	n/a	
Received information about pregnancy complications ³	66.4	66.0		n/a	n/a	
Counseled about HIV/AIDS during ANC visit ³	60.8	57.5		n/a	n/a	
Received a post-partum visit from CHW or TBA	62.9	50.9	***	n/a	n/a	
N of cases	645	666		386	383	

Note: **.01<p<=.05;***p<=.01; All analyses have been controlled for age, urban/rural residence, Muslim religion, level of education, work status, polygyny, reading newspaper in last week, listening to the radio in the past week, watching television in past week and having two or more sexual partners in past year

¹Skewed data may have caused adjusted percentage results for these indicators to be inaccurate; results therefore should be interpreted with caution.

²Among all women who had ever been pregnant; N=241 in 2002 and N=246 in 2004.

³Among all women receiving antenatal care during pregnancy; N=233 in 2002 and N=229 in 2004.

Table 4: Trends in HIV/AIDS prevention, family planning, and ante/postnatal care among respondents in Oyo State (adjusted percentages).

	Females			Males		
	2002 %	2004 %	p=value	2002 %	2004 %	p=value
HIV/AIDS Prevention						
<i>Heard about HIV/AIDS:</i>						
On the radio	82.2	88.7	***	88.5	90.0	
On television	63.5	62.7		66.1	70.2	
In a newspaper or magazine	20.0	17.1		39.4	34.5	
From a home visit by a community health worker	29.5	25.7		22.5	25.4	
<i>HIV/AIDS Risk Factors</i>						
Knowledge that healthy looking person can be HIV+	59.1	60.1		63.5	66.8	
Ever heard of HIV/AIDS and know how to avoid it	68.2	72.1		68.1	71.5	
Approval of teaching children about condom use	50.4	65.2	***	58.3	72.5	***
Had first sex by age 15	9.1	5.6	***	12.7	10.2	
Had first sex by age 18	32.8	28.7		37.3	29.1	**
Had 2+ sexual partners in past 12 months	5.1	2.3	***	16.6	13.4	
Interested in HIV test	50.7	60.0	***	59.2	66.8	**
<i>Condom Access and Use</i>						
Know of a source for condoms	44.3	46.0		62.4	73.1	***
Used condom in last sexual act	10.1	10.4		28.4	35.6	
Family Planning						
<i>Knowledge and Attitudes</i>						
Knowledge of any modern method	10.9	10.5		85.1	82.1	
Ever heard of oral contraceptives	41.5	54.6	***	42.0	42.6	
Ever heard of IUD	23.7	30.3	**	26.0	18.5	**
Ever heard of male condoms	62.6	54.0	***	70.1	76.1	**
Ever heard of injectable contraceptives	37.8	49.4	***	41.3	33.6	**
Approve of family planning	59.1	58.1		65.4	69.6	
<i>Ever use of family planning</i>						
Ever used any modern method	39.8	28.6	***	32.7	43.6	***
Ever used male condoms	25.4	13.0	***	28.1	39.1	***
Ever used oral contraceptives	7.4	7.9		3.4	3.8	
Ever used IUD	4.0	4.4		---	---	
Ever used injectable contraceptives	4.6	7.3	**	---	---	
<i>Current use of modern family planning</i>						
Currently using any modern method	12.4	14.5		17.0	25.9	
Currently using a male condom for family planning	8.1	6.8		15.9	24.7	
Currently using oral contraceptives	2.2	2.2		0.7	0.6	
Currently using an IUD	1.9	2.3		---	---	
Currently using an injectable contraceptive	1.4	3.4	**	---	---	
Had first child before age 15 ¹	1.6	1.1		n/a	n/a	
N of cases (100%)	512	542		390	405	

Table 4 (continued).

	Females)			Males		
	2002 %	2004 %	p=value	2002 %	2004 %	p=value
Antenatal/Postnatal Care (ANC)						
Received ANC during last pregnancy ²	95.0	95.6		n/a	n/a	
Received ANC in first 6 months of pregnancy ^{1,3}	82.0	80.6		n/a	n/a	
ANC procedures and lab tests done during visit ³ :						
Weighed	95.4	95.9		n/a	n/a	
Measured	94.1	95.2		n/a	n/a	
Blood pressure	86.8	91.2		n/a	n/a	
Blood sample	86.9	90.7		n/a	n/a	
Urine sample	87.0	93.0	**	n/a	n/a	
Received information about pregnancy complications ³	75.5	77.9		n/a	n/a	
Counseled about HIV/AIDS during ANC visit ³	65.3	77.1	***	n/a	n/a	
Received a post-partum visit from CHW or TBA	53.5	64.7	***	n/a	n/a	
N of cases (100%)	512	542		390	405	

Note: **.01<p<=.05;***p<=.01; All analyses have been controlled for age, urban/rural residence, Muslim religion, level of education, work status, polygyny, reading newspaper in last week, listening to the radio in the past week, watching television in past week and having two or more sexual partners in past year

¹Skewed data may have caused adjusted percentage results for these indicators to be inaccurate; results therefore should be interpreted with caution.

²Among all women who had ever been pregnant; N=261 in 2002 and N=300 in 2004.

³Among all women receiving antenatal care during pregnancy; N=242 in 2002 and N=279 in 2004.