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Knowledge and attitudes of healthcare providers towards prenatal HIV screening and prevention of mother-to-child transmission in Nigeria

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KNOWLEDGE AND ATTITUDES OF HEALTH CARE PROVIDERS TOWARDS PRENATAL HIV SCREENING AND PREVENTION OF MOTHER-TO-CHILD TRANSMISSION IN NIGERIA.

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ABSTRACT

Knowledge, Attitudes and Practices of Healthcare Providers towards Prenatal HIV Screening and Prevention of Mother-To-Child Transmission in Nigeria

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The purpose of this study was to assess the knowledge, attitudes and practices of healthcare providers regarding prenatal HIV screening and the use of antiretroviral drugs in the prevention of mother-to-child transmission of HIV in Nigerian pregnant women. A cross-sectional survey using self-administered questionnaires among 150 healthcare providers (physicians and nurses) was conducted at four healthcare facilities in Nigeria from June to August 2000. Two of these healthcare facilities are the designated pilot centers for the national prevention of mother-to-child-transmission (PMTCT) program. Differences in responses between physicians and nurses were compared for each category. Of 150 self-administered questionnaires that were fielded, 86 healthcare providers responded, for a response rate of 57%. Less than two-thirds of respondents had correct knowledge regarding the use of antiretroviral drugs in mother-to-child transmission with physicians being more knowledgeable than nurses. Despite the differences in knowledge levels, more nurses than physicians agreed on the importance of screening pregnant women for HIV (93% vs. 70.91%; P=0.04). In addition, a significantly larger proportion of nurses routinely inquire about the HIV status of pregnant women (60% vs. 38%). Current healthcare providers have limited knowledge levels regarding the use of antiretroviral drugs in the prevention of mother-to-child transmission. In addition, a significant proportion of healthcare providers do not have attitudes or practices conducive to the prevention of perinatal transmission. This may negatively impact on the success of the PMTCT programs in Nigeria. This study highlights the need for continuous and comprehensive training of healthcare providers at government and private healthcare facilities to increase the likelihood of achieving the objectives of PMTCT programs.

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INTRODUCTION

A. The HIV/AIDS Burden in Nigeria

Each year, an estimated 700,000 children around the world contract the HIV virus, mostly through perinatal transmission. (1) The Sub-Saharan African region has the largest proportion of these new infections. In the western world, such infections have been reduced to a large extent by institution of antiretroviral regimens, elective cesarean sections, and exclusive formula feeding. However, the institution of such programs in developing countries has been extremely challenging due to the high cost and resource requirements of such interventions.

In Sub-Saharan Africa, the countries hardest hit by the epidemic have been the southern African countries such as South Africa, Botswana, and Zimbabwe where prevalence rates range from 20.1% (2) to 38.8% (3). Equally alarming, however, is the HIV/AIDS situation in West African countries such as Nigeria. There are an estimated 3.5 million Nigerians living with HIV/AIDS and it currently has the third largest number of HIV-positive people in the world (4). The prevalence of HIV in Nigeria, although remaining comparatively low, has steadily increased over the last decade. According to the Nigerian Federal Ministry of Health Sentinel sero-sentinel surveys, the prevalence of HIV in Nigeria has risen from 1.8% in 1991 to 5.8% in 2001 (5,6). This prevalence rate is projected to increase to 15% by 2010 (7) (Figure 1).

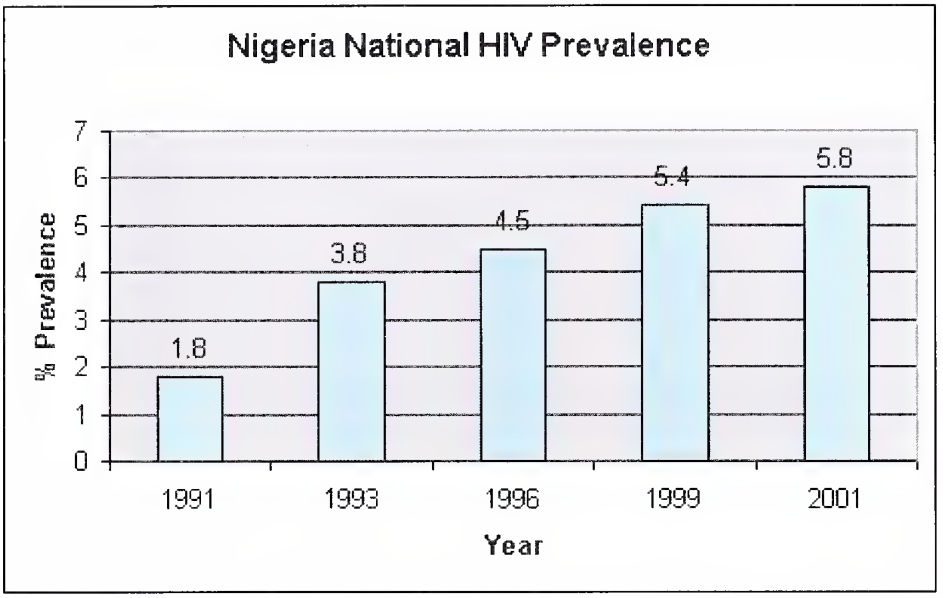

FIGURE 1. Nigeria's HIV Prevalence. Nigerian Federal Ministry of Health. 2001.

The overall percentage of HIV-positive people in Nigeria may appear small in comparison with other Sub-Saharan countries like South Africa and Botswana. However, Nigeria is the most populous country in sub-Saharan Africa with over 123 million residents. As such, the absolute number of HIV-infected Nigerians is high.

B. ***Prevalence of HIV in pregnant women and children***

The median prevalence of HIV disease in urban and rural antenatal clinics increased from 1% in 1991 to 5% in 1999 (8). As of 2001, prevalence rates at antenatal clinics were as high as 10% in some states in Nigeria (9). Numbers currently do not exist for the estimated percent of Nigerian HIV-positive pregnant women because of the lack of routine voluntary counseling and testing. However, it is estimated that one out of eight pregnant women is HIV-positive (10). With an average fertility rate of 6 births per Nigerian woman (11), the number of HIV cases resulting from perinatal transmission is

expected to increase significantly. According to UNICEF, an estimated 4.7 million pregnancies occur in Nigeria every year and, with an estimated 45% perinatal transmission rate (12), approximately 220,000 HIV-positive children will be born each year. As of 2002, there were an estimated 750,000 children who were HIV-positive (13). Since HIV/AIDS is largely spread by heterosexual transmission, it is likely that the majority of these children contracted the virus by perinatal transmission.

An underrepresented story of the Nigerian HIV/AIDS epidemic is the issue of AIDS orphans. At the end of 2001, an estimated 1 million children under the age of 15 were orphaned as a direct consequence of the epidemic. This number is projected to increase to 2.5 million by 2010. (14) Although it is concerning that Nigeria does not possess the systems and structures necessary to care for *healthy* orphans, the burden of caring for HIV-positive orphaned children will be much greater. These projections highlight the necessity of comprehensive Prevention of Mother-to-Child Transmission (PMTCT) programs to reduce the number of HIV-positive orphans who contract the virus through perinatal transmission.

C. Government Efforts and Policies

During the beginning stages of the epidemic in Nigeria in the early 1990's, the government did very little. Prior to this, almost all of the efforts against HIV were conducted by the numerous Non-Governmental Organizations (NGOs) throughout the country. However, with the advent of civilian rule in 1999 when Mr Olusegun Obasanjo became president of Nigeria, the government's response to the HIV/AIDS epidemic

increased significantly. The government decided to make HIV/AIDS a national priority and consequently established a national body known as NACA (Nigerian Action Committee Against AIDS) to formulate and implement policy to address the HIV/AIDS situation. In 2001, NACA developed a 3-year strategic plan, the HIV/AIDS Emergency Action Plan (HEAP), to address the HIV/AIDS situation. One of the sub-strategies identified in the HEAP Plan was to implement an extensive PMTCT program to address the growing number of HIV-positive children that were contracting the virus via perinatal transmission. At the time, the only option available to HIV infected pregnant women was termination of pregnancy. Most women were unaware of their status and so did not do anything to prevent vertical transmission (15).

D. Prevention of Maternal to Child Transmission (PMTCT)

Perinatal HIV transmission without antiretroviral drug intervention is estimated to range from 14 to 48% (16). In 1994, Pediatric AIDS Clinical Trial Group protocol 076 (PACTG 076) showed that administration of zidovudine to HIV-infected women during pregnancy, labor and to the newborn for at least 6 weeks after delivery reduced perinatal transmission by almost two-thirds (from 25.5% to 8.3%) among women who did not breastfeed (17). Subsequently, the HIVNET-012 trial showed that peripartum nevirapine was a more cost-effective regimen for PMTCT in resource-poor countries. This study showed that a combination of nevirapine and earlier weaning would decrease perinatal transmission to approximately 15% at 5 years (18).

The combination of HIV screening, counseling, and antiretroviral drug administration has dramatically reduced mother-to-child transmission of HIV in western countries (19,20). In the developing world, however, the uptake of PMTCT programs has been inadequate due to deficiencies in staff and resources, logistical problems such as high import duties on the drugs, and lack of funds. In July 2000, the German based company Boehringer Ingelheim pledged to donate the drug nevirapine to all governments, individuals, NGOs or private organizations in World Bank classified "least-developed" countries which agreed to institute a PMTCT program. Over the first couple years, there was a slow initial uptake by the countries, which was attributed to problems with logistics and staff supply. However, as of August 2003, 44 countries from Africa, Eastern Europe, Asia, and the Caribbean had taken up Boehringer Ingelheim's donation. Nigeria became a recipient of this drug donation program in November 2001.

E. Nigeria's National PMTCT Program

As part of the Nigerian Emergency Action Plan, a national policy was formulated with the objective of implementing a comprehensive PMTCT system of antenatal HIV counseling and testing and antiretroviral treatment. Although the PMTCT program was scheduled to be launched in 2001, it was delayed because of financial and ethical obstacles. The PMTCT program was finally initiated at 8 pilot centers in June 2002. The pilot centers are all located at teaching hospitals throughout the country. These include: (1) Ahmadu Bello University Teaching Hospital Zaria, Kaduna; (2) University of Maiduguri, Borno; (3) Lagos University Teaching Hospital, Lagos; (4) University of Nigeria Teaching Hospital, Enugu; (5) National Hospital, Abuja; (6) Jos University

Teaching Hospital, Jos; (7) University of Port Harcourt Teaching Hospital, Port-Harcourt; and (8) University College Hospital Ibadan, Oyo. (Figure 2)

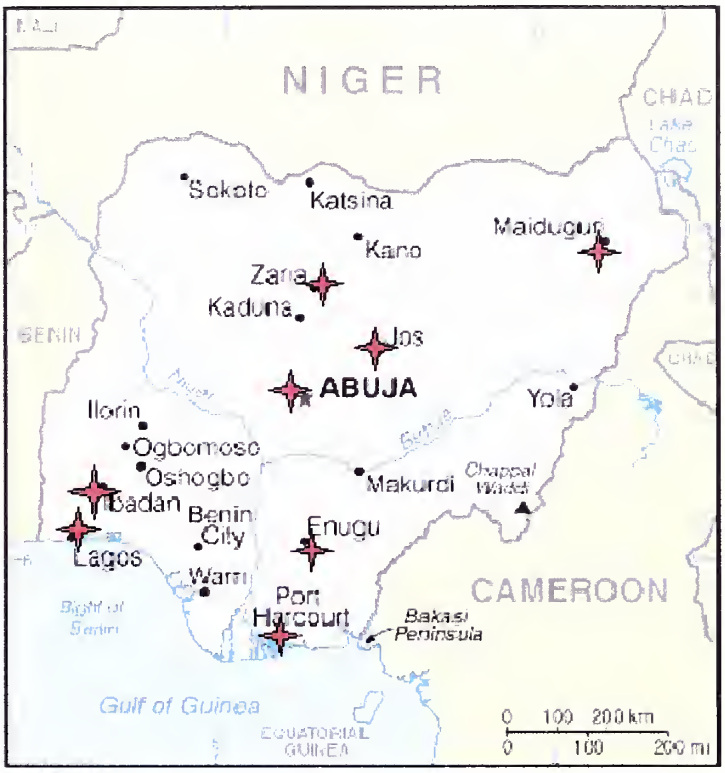

FIGURE 2: Location of Pilot Centers (Reproduced from www.greenwichmeantime.com)

The program aims to treat pregnant mothers using the HIVNET 012 regimen (one dose of oral nevirapine 200 mg at the onset of labor followed by a dose of 2 mg/kg orally to the child within 3 days of birth). In addition, all mothers (and HIV-positive children) are eligible to receive free antiretroviral treatment after delivery. The stated goal is to treat 5,000 HIV-positive pregnant women by 2004. As of 2002, only 141 HIV-positive women had been enrolled in the national PMTCT program. This represents only 1 of every 2,000 HIV-positive pregnant women. In an attempt to reach more HIV-positive pregnant women, other organizations such as Family Health International, an international NGO, have plans to launch additional PMTCT sites in different Nigerian states.

F. Challenges with PMTCT Programs

Despite the relative efficiency of antiretroviral drugs in reducing perinatal transmission, complete prevention of MTCT transmission is predicated on a number of external factors such as a system of antenatal testing, continuous drug availability during labor and in the immediate postpartum period, *and* the awareness and willingness of healthcare providers to recruit or diagnose HIV-positive women. This action requires that healthcare providers not only provide counseling and testing consistently, but also maintain the appropriate knowledge regarding perinatal transmission and chemoprophylaxis in HIV-positive pregnant women (21). It is not surprising, therefore, that studies have shown that the attitudes, values, and knowledge of health care providers can play a huge part in the health outcomes of their patients partly due to the way in which they present and discuss issues with patients. (22)

G. Knowledge, Attitudes and Practices of healthcare providers towards people living with HIV/AIDS.

Several studies have been done on a global level to document the knowledge, attitudes and practices of healthcare providers towards people living with HIV/AIDS. In the early 1990's, there was a low level of knowledge and widespread negative attitudes among majority of healthcare providers towards such patients. Since then, however, there has been a trend towards increased basic knowledge levels and more positive attitudes towards people living with HIV/AIDS. This has been attributed in large part to extensive training of healthcare providers. However, there has been little data collected on the

knowledge, attitudes, and practices of providers regarding the PMTCT services. This dearth of information provided the impetus for the implementation of our study. More recently, a large-scale study to examine the role of attitudes and practices of healthcare providers on PMTCT programs was initiated by the Quality Assurance Project in Rwanda.

Healthcare providers are essential players in educating society about HIV/AIDS prevention and transmission. In addition, these providers play a pivotal role in the care and treatment of people living with HIV/AIDS in Nigeria. Healthcare providers are subject to a higher risk of infection when caring for HIV infected or AIDS patients. Consequently, fears of infection and general perceptions may serve as a barrier to the provision of care to such patients and their families. Oftentimes, health care providers may deny people living with HIV/AIDS access to healthcare because of the perception that they have HIV/AIDS. A recent study conducted in Lagos, Nigeria demonstrated that only 18% of healthcare providers would visit a person living with HIV/AIDS while only 53% would be willing to work in the same office as such a person. These numbers are particularly alarming when interpreted in the context of a nationally sanctioned PMTCT program. To make this type of a program successful, healthcare providers will undoubtedly have to play a major role in encouraging HIV-positive pregnant women to take nevirapine to decrease the risk of HIV transmission to their children. To increase the enrollment of pregnant women into the voluntary counseling and testing program, it is imperative that healthcare providers are informed and sensitized to this particular population. Studies are currently being conducted by the Quality Assurance Project to

examine the impact of HIV/AIDS stigma among healthcare providers on the quality of care provided in PMTCT services. These studies are being carried out in Rwanda, Tanzania, and Haiti to assess HIV knowledge, attitudes, and practices of health providers as a first step towards designing interventions to reduce stigma.

In order to improve the health status of Nigerian HIV-positive pregnant women and to decrease perinatal transmission of HIV infection, the relationship between knowledge of PMTCT and attitudes and practices concerning prenatal screening and antiretroviral drug administration should be explored. There are currently no published studies on the knowledge and attitudes of Nigerian health care providers towards pregnant women with HIV/AIDS. Our study aims to evaluate the knowledge and attitudes of Nigerian health care providers towards prenatal screening and PMTCT in Nigerian pregnant women.

STATEMENT OF PURPOSE AND HYPOTHESIS

The purpose of this study was to assess the knowledge, attitudes, and practices of healthcare providers towards antenatal HIV screening and the prevention of mother-to-child transmission of HIV in Nigerian pregnant women. We surveyed physicians and nurses at three teaching hospitals and four private hospitals in Nigeria on their views and practices regarding HIV testing in pregnant women and the use of antiretroviral therapy to prevent perinatal transmission. The teaching hospitals comprise two of the eight designated pilot centers for the national PMTCT program.

We hypothesized that Nigerian healthcare providers' level of knowledge of mother-to-child transmission would be low and their attitudes towards antenatal HIV screening would hinder the success of the nationally sanctioned PMTCT program. The aims of the study were:

(1) To define the providers attitudes towards pregnant women with HIV,

(2) To document their knowledge of mother-to-child transmission of the HIV virus, and

(3) To assess the impact of their knowledge, attitudes, and practices on the feasibility of the nationally sanctioned PMTCT program.

METHODS

We performed an anonymous cross-sectional survey of healthcare providers at three major teaching hospitals and four private health care facilities in Nigeria. Institutional Review Board approval was obtained from the Yale University School of Medicine. The teaching hospitals were: Gwawaladja Hospital in Abuja, the Federal Capital Territory and Lagos University Teaching Hospital in Lagos, and the University of Nigeria Teaching Hospital in Enugu. The private hospitals were located in Lagos: Schubbs Dental Clinic, Child Care Pediatrics, International Medical Group (IMG), and Life Support Clinic . We chose to survey an array of healthcare providers including both nurses and physicians, because this group of professionals is responsible for counseling pregnant women before and after HIV testing, for performing the HIV test, and for administering the medication. The physicians surveyed were family practitioners and obstetrician-gynecologists. This group of healthcare providers caters to most pregnant women who seek antenatal care in urban Nigeria. They are in a unique position to reduce HIV perinatal transmission by

screening pregnant women, identifying those who are HIV-positive, and offering antiretroviral therapy to them in order to decrease the incidence of pediatric HIV/AIDS by mother-to-child transmission.

A total of 150 self-administered 12-question surveys were fielded at the 7 different health care facilities and there was a response rate of 57.3% (86 surveys were returned). Survey questions included provider knowledge about facility testing capabilities and utility of antiretroviral therapy in PMTCT as well as provider attitudes and behavior regarding HIV screening in pregnant women. The surveys were fielded from June to July 2000.

There were 3 or less respondents at three of the hospitals surveyed, including Scrubbs Dental Clinic, IMG, and ChildCare Pediatrics. As such, the data from these respondents (9 in total) were removed from the analysis. In addition, three laboratory technologists erroneously filled out the survey and their data too was excluded from the analysis. This gave an overall response rate of 51.3% (77 out of 150 respondents). Chi-square tests for proportions were used to evaluate significance of difference between the categorical variables. A significance level of 0.05 was used for the data analysis.

RESULTS

Physicians Knowledge

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. HIV Testing is available in their work area	53/55 (96.3)	2/55 (3.6)	
2. Results of HIV testing are available in 24 hours	29/55 (52.7)	26/55 (47.2)	
3. Results of HIV testing are available in 6 hours.	14/55 (25.4)	40/55 (72.7)	1/55 (1.8)
4.HIV medications can be used safely during pregnancy	35/55 (63.6)	10/55 (18.1)	10/55 (18.1)
5. HIV medications can be used safely during labor	37/55 (67.2)	7/55 (12.7)	11/55 (20.0)
6. Treatment with AZT during labor reduces maternal to child transmission of HIV.	36/55 (65.4)	6/55 (10.9)	13/55 (23.6)
7. HIV medications given to pregnant women cause fetus harm	12/55 (21.8)	29/55 (52.7)	14/55 (25.4)

Physician's knowledge of the availability of HIV testing facilities at their respective hospitals was high, with 96.4% of the physicians aware that testing was available at their centers. However, their knowledge of the timing of results was low. Discussion with the clinical laboratories at each of the centers confirmed that, at all the centers, HIV test results were available an average of 72 hours later. There were no centers where HIV test results were available in 24 hours or 6 hours. Only 47.3% (26/55) of physicians were aware that test results were not available in 24 hours, while 72.7% (40/55) of physicians were aware that rapid testing was not available (these results were not available in 6 hours). 63.7% (35/55) knew that HIV medications could be used safely during

pregnancy, while 67.3% (37/55) knew that HIV medications could be used safely during labor. Overall, 65.5% (36/55) knew that AZT could be used to reduce maternal to child transmission of HIV, while only 52.7% (29/55) believed that HIV medications do not cause harm to the fetus.

Physicians Attitudes

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. Pregnant Women should be screened for HIV during pregnancy	49/55 (89.1)	10.91%	
2. Pregnant women should be screened for HIV during labor if their status is unknown or was not tested during pregnancy	39/55 (70.9)	14/55 (25.5)	2/55 (3.6)
3. Important to know HIV status of women during pregnancy	50/55 (90.9)	5/55 (9.1%)	

In terms of physician's attitudes, 89.1% (49/55) felt that women should be screened for HIV during pregnancy while 70.9% (39/55) believed that women should be screened for HIV during labor if they had not been tested during pregnancy. In addition, 90.9% (50/55) felt that it was important to know the HIV status of women during pregnancy.

Physician Practices

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. Most women they take care of are HIV-positive.	1/55 (1.8)	53/55 (96.4)	1/55 (1.8)
2. They routinely inquire about maternal HIV status at labor onset	21/55 (38.2)	29/55 (52.7)	5/55 (3.6)

Most of the physicians surveyed said that they do not take care of HIV-positive women. Most respondents said they do not take care of HIV-positive women (96.4%) while one respondent said she did and one respondent gave no answer.

Nurses Knowledge

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. HIV Testing is available in their work area	100%	-	-
2. Results of HIV testing are available in 24 hours	14/15 (93.3)	1/15 (6.7)	-
3. Results of HIV testing are available in 6 hours.	8/15 (53.3)	7/15 (46.7)	-
4.HIV medications can be used safely during pregnancy	4/15 (26.7)	5/15 (33.3)	6/15 (40)
5. HIV medications can be used safely during labor	4/15 (26.7)	5/15 (33.3)	6/15 (40)
6. Treatment with AZT during labor reduces maternal to child transmission of HIV.	7/15 (46.7)	3/15 (20)	5/15 (33.3)
7. HIV medications given to pregnant women cause fetus harm	5/15 (33.3)	4/15 (26.7)	6/15 (40)

Unlike physicians, all nurses knew that HIV testing is available in their work area. Only 6.7% (1/15) knew that results of HIV testing were not available within 24 hours while only 46.7% (7/15) knew that results of HIV testing were not available within 6 hours. Only 26.7% (4/15) of nurse respondents knew that HIV medications might be used safely during pregnancy and during labor. In addition, only 46.7% (7/15) of respondents knew that treatment with AZT during pregnancy reduces MTCT. Lastly, one quarter (26.7%) of nurses believed that HIV medications causes harm to the fetus.

Nurses Attitudes

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. Pregnant Women should be screened for HIV during pregnancy	15/15 (100)	-	-
2. Pregnant women should be screened for HIV during labor if their status is unknown or was not tested during pregnancy	14/15 (93.3)	1/15 (6.7)	-
3. Important to know HIV status of women during pregnancy	15/15 (100)	-	-

Unlike physicians, all nurse respondents felt that pregnant women should be screened for HIV during pregnancy. In addition, 93.3% (14/15) of nurses felt that women should be screened for HIV during labor if they were not tested during pregnancy. All nurses felt that it was important to know HIV status of women during pregnancy.

Nurses Practices

Questions	Yes Number (%)	No Number (%)	No Answer Number (%)
1. Most women they take care of are HIV-positive.	1/15 (6.7)	14/15 (93.3)	-
2. They routinely inquire about maternal HIV status at labor onset	9/15 (60)	4/15 (26.7)	2/15 (13.3)

Overall, a larger proportion of nurses appeared to believe that the women they served were HIV-positive and were more likely to inquire about HIV status at labor onset than physicians.

There were significant differences between the physicians and nurses regarding their knowledge of the HIV testing capabilities of their facilities (p=0.004). There was also a

significant difference between the proportion of physicians and nurses who knew that antiretroviral medications could be used safely during pregnancy and during labor. (p=0.01; p=0.004 respectively). The differences between physicians and nurses' level of knowledge regarding the other areas of mother-to-child transmission were not statistically significant. (Figure 3)

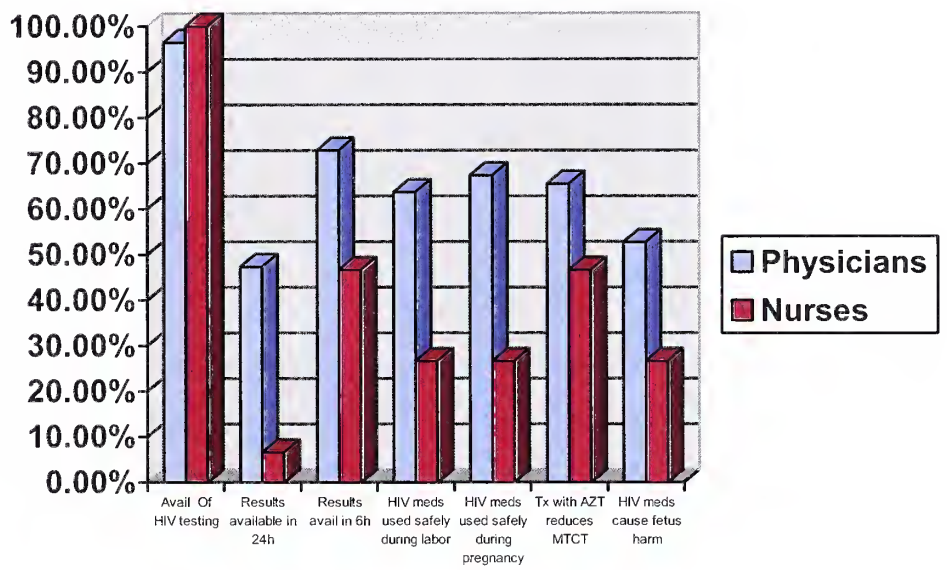

FIGURE 3: Comparison of physicians and nurses level of knowledge.

Across the four hospitals surveyed, there were differences in levels of knowledge, attitudes, and practices between healthcare providers:

University Teaching Hospital (UNTH)

Providers' Knowledge

At UNTH, 92.6% (25/27) of healthcare providers knew that HIV testing is available in their work area. 55.6% (15/27) of respondents knew that results of HIV testing were not available within 24 hours while only 77.8% (21/27) knew that results of HIV testing were

not available within 6 hours. Only 55.6% (15/27) of respondents knew that HIV medications may be used safely during pregnancy and 59.3% (16/27) of respondents knew that these medications could be used safely during labor. In addition, 74.1% (20/27) of respondents knew that treatment with AZT during pregnancy reduces mother-to-child transmission. Lastly, 48.2% (13/27) believed that HIV medications cause fetuses harm.

Providers Attitudes

Twenty-five respondents (92.6%) felt that pregnant women should be screened for HIV during pregnancy. However, 74.1% (20/27) of respondents felt that women should be screened for HIV during labor if they were not tested during pregnancy. Majority of respondents (92.6%) felt that it was important to know HIV status of women during pregnancy.

Providers Practices

Less than half of respondents (40.7%) said that they routinely inquire about the HIV status of pregnant women. Only one respondent stated that most of the women he took care of are HIV-positive. Although data does not exist for the prevalence of HIV-positive patients who attend the different healthcare facilities, there are numbers for the prevalence rates at antenatal centers in different regions. In Enugu state where UNTH is located, the HIV prevalence rate in 1999 was estimated to be 4.7% (23).

Lagos University Teaching Hospital (LUTH)

Providers' Knowledge

At LUTH, out of 13 respondents, 100% of healthcare providers knew that HIV testing is available in their work area. Yet, only 33.8% (4/13) of respondents knew that results of HIV testing were not available within 24 hours while 69.2% (9/13) knew that results of HIV testing were not available within 6 hours. Only 53.9% (7/13) of respondents knew that HIV medications may be used safely during pregnancy and 46.2% (6/13) of respondents knew that these medications could be used safely during labor. In addition, 46.2% (6/13) of respondents knew that treatment with AZT during pregnancy reduces mother-to-child transmission. Lastly, 46.2% (6/13) knew that HIV medications do not cause fetuses harm.

Providers Attitudes

Nine respondents (69.2%) felt that pregnant women should be screened for HIV during pregnancy. However, only 7 respondents (53.9%) felt that women should be screened for HIV during labor if they were not tested during pregnancy. Ten respondents (76.9%) felt that it was important to know HIV status of women during pregnancy.

Providers Practices

All respondents denied that the majority of patients they take care of are HIV-positive yet only 38.5% (5/13) of respondents said that they routinely inquire about the HIV status of pregnant women. The HIV prevalence rate in Lagos state was estimated to be 6.7% in 1999 (24).

Gwawaladja Teaching Hospital

Providers' Knowledge

At Gwaradja, out of 20 respondents, 100% of healthcare providers knew that HIV testing is available in their work area. Yet, only 43.5% (9/20) of respondents knew that results of HIV testing were not available within 24 hours while 87% (17/20) knew that results of HIV testing were not available within 6 hours. Approximately 73.9% (15/20) of respondents knew that HIV medications might be used safely during pregnancy and during labor. In addition, 73.9% (15/20) of respondents knew that treatment with AZT during pregnancy reduces mother-to-child transmission. Lastly, 34.8% (7/20) knew that HIV medications do not harm the fetus.

Providers Attitudes

Most respondents (95.65%) felt that pregnant women should be screened for HIV during pregnancy. However, fewer respondents (16/20) felt that women should be screened for HIV during labor if they were not tested during pregnancy. The majority of respondents (19/20) felt that it was important to know HIV status of women during pregnancy.

Providers Practices

Only 1 respondent claimed to serve predominantly HIV-positive patients while a little more than half of respondents (52.2%) routinely inquire about the HIV status of their patients. The HIV prevalence rate in Abuja was determined to be 7.2% in 1999. (25)

Life Support Center

Providers' Knowledge

At Life Support Center, out of 13 respondents, 100% of healthcare providers knew that HIV testing is available in their work area. Yet, no respondents knew that results of HIV testing were not available within 24 hours and none of the respondents knew that results of HIV testing were not available within 6 hours. Only 23.1% (3/13) of respondents knew that HIV medications might be used safely during pregnancy during labor. In addition, only 30.8% (4/13) of respondents knew that treatment with AZT during pregnancy reduces mother-to-child transmission. Lastly, only 15.4 % (2/13) knew that HIV medications do not harm the fetus.

Providers Attitudes

All respondents felt that pregnant women should be screened for HIV during pregnancy. Most respondents (92.3%) felt that women should be screened for HIV during labor if they were not tested during pregnancy. All respondents felt that it was important to know HIV status of women during pregnancy.

Providers Practices

All respondents denied that the majority of patients they take care of are HIV-positive yet only 38.5% (8/13) routinely inquire about the HIV status of their patients. The prevalence rate of HIV in Lagos state (where Life Support is located) is 6.7%. (26)

DISCUSSION

The 2002 UNAIDS Update stressed that, given its large population and an HIV seroprevalence rate of 5.8%, Nigeria is one of four countries in the world with the largest number of people living with HIV/AIDS (27). Indeed, Nigeria's 3.5 to 4 million cases of HIV account for almost one-tenth of the HIV/AIDS cases worldwide. Furthermore, the federal government projects that, by the end of 2004, there will be an additional 500,000 new cases of HIV with 350,000 cases occurring in mainly reproductive age women. When these numbers are interpreted within the context of maternal-to-child transmission, they indicate that – in the absence of medical and social intervention - the number of children born with HIV is likely to increase substantially. The provision of antiretroviral prophylaxis to HIV-positive pregnant woman is one of the critical elements to mitigating this aspect of the epidemic and reducing the number of children born with HIV. The recent efforts by the national government, the private sector, and the civil society to institute PMTCT programs throughout Nigeria are undoubtedly a major step to reduce the number of perinatally transmitted HIV cases. However, if healthcare providers are not well informed about basic HIV/AIDS knowledge and if their attitudes about the viability of screening HIV-positive pregnant women and offering antiretroviral therapy to such women to prevent perinatal transmission remain negative, then the utility of such programs will certainly be impaired.

Our survey indicates that two-thirds (65.5%) of all physician respondents were knowledgeable about the utility of antiretroviral drugs in preventing the transmission of

HIV from mother to child. Furthermore, only half (52.7%) of all physician respondents were aware that such drugs would not cause the fetus harm. It is alarming that at one of the major PMTCT centers and one of the premier teaching centers in the country, LUTH, less than half of both physician and nurse respondents were aware that treatment of the mother with AZT reduces mother-to-child transmission of HIV and that HIV medications can be used safely during labor. These numbers were only slightly higher at UNTH, another top teaching hospital and national PMTCT center. At the private center, Life Support, the level of knowledge was very low. Nigerian teaching hospitals usually are more up to date with new research findings; however, physicians who practice at such hospitals usually supplement their earnings by practicing at private hospitals. The expectation is that this dual-job lifestyle of academic physicians benefits the private hospitals through the provision of current medical information and research to these hospitals. The low levels of knowledge at the private medical center suggest that more center-specific training is needed for healthcare providers. This lack of knowledge among providers may prove to be a major barrier in the identification of pregnant women who are HIV-positive and could facilitate the growing number of HIV-infected children being born each day.

Nurses also appear to have a very low level of knowledge, which has been replicated in numerous studies (28). However, a larger proportion of the nurses appeared to have attitudes and behavior more conductive to identifying HIV-positive women. The majority believed that it is important to know the HIV status of women and report that they routinely inquire about the status of the women they see. As can be seen in Figure 3,

despite the larger proportion of positive attitudes and practices among nurses, physicians had higher levels of knowledge than the nurses.

The significant differences in the level of knowledge between physicians and nurses highlights the need for programs designed for both types of healthcare providers. Although the baseline level of knowledge for either type of healthcare provider is unacceptable, the fact that nurses have lower levels of knowledge than physicians should be addressed by the creation of education and training programs specific for them.

Given that healthcare providers are in a unique position to identify pregnant women with HIV and to consequently offer a means for them to reduce the likelihood of transmitting the virus to their newborns, it is concerning that they have such a low level of knowledge. Since the study was done before the implementation of the national policy on the establishment of 8 PMTCT centers, it is possible that subsequent training has led to improvements in the AIDS-related knowledge, attitudes, and practices among healthcare providers in Nigeria. However, the National Action Committee on AIDS (NACA) did state that they have had difficulty in the establishment of these centers, and cited a lack of adequate training as one of the major barriers to the institution of the centers.

It is imperative that all healthcare providers who will influence a pregnant woman's decision to be screened for HIV and to receive antiretroviral prophylaxis should receive

comprehensive training on basic AIDS-related information and on HIV/AIDS disease management.

Prior to the institution of the PMTCT programs, healthcare providers may have been uncomfortable with inquiring about the status of their patients because they felt that there were no treatment options available for them. Although exclusive breastfeeding and elective cesarean procedures are also effective in reducing perinatal transmission, these options are not readily available to women in resource-poor countries. Exclusive formula-feeding requires continuous access to and availability of clean water, a rarity in many developing countries. Women in these countries often cannot afford to purchase formula, thus breast milk is usually the only available source of nutrition for the child. An exclusively formula-fed child in a region without access to safe water is at increased risk of malnutrition and diarrhea. In addition, stigmatization of women who exclusively formula-feed in developing countries is often a deterrent to women who consider discontinuing breast-feeding. Elective caesarean procedures are not feasible for the general population in resource-poor regions given that most women deliver at home and not in the hospital. For the women who do deliver in the hospital, c-sections are an added expense that they often cannot afford. In addition, few hospitals in Nigeria have adequate staffing, surgical supplies, drugs, and blood products that would be necessary. As such, the provision of antiretroviral drugs to mothers and infants is the most feasible intervention to significantly reduce perinatal transmission in Nigeria.

Since many providers were unaware that antiretroviral drugs can be used to reduce the risk of perinatal transmission, they likely believed there was little utility in asking about the status of their patients. This is the reason often given when healthcare providers are asked why they do not inquire about the HIV status of their patients. Given that healthcare providers are often considered to be the largest perpetrators of stigma towards people living with AIDS, it is possible that the providers did not want to know the HIV status of their patients because of their own stigmatization of persons living with HIV/AIDS.

At the private healthcare facility, Life Support Center, most respondents felt that it was important to know the HIV status of pregnant women. This was particularly interesting since a low number of these same respondents (25%) believed that treatment with AZT could reduce the risk of delivering an HIV-positive child.

Limitations of our study include the relatively low response rate, which may impede our ability to generalize these results to all healthcare providers in Nigeria. In addition, the survey questionnaire did not elicit the demographic or specialty details of the physicians. The lack of HIV-prevalence specific data at each health care center made it difficult to compare the actual demographics of the patient populations with the self-reports of the healthcare providers. In addition, we did not investigate the reasons for the negative attitudes on the part of the healthcare providers. Despite these limitations, the survey gives credence to the need for comprehensive and continuous training of

healthcare providers regarding their knowledge and attitudes toward HIV screening and antiretroviral treatment of pregnant women.

The low knowledge levels and negative attitudes and practices of healthcare providers towards pregnant women with HIV are major barriers to the success of the nationally sanctioned PMTCT programs in Nigeria. Nigeria's HIV epidemic is projected to worsen significantly in the next few years. The burden of the epidemic can be mitigated, at least in part, by reducing the mother-to-child transmission of HIV through the identification of HIV-positive pregnant women and the use of antiretroviral prophylaxis to them during labor. Healthcare providers in Nigeria must receive adequate and continuous comprehensive AIDS-related training in order for these PMTCT programs to be successful.

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ADDENDUM

Questionnaire for Health Care Providers on HIV Testing

Hospital_____

Occupation_____

	YES	NO
1. HIV testing is available in my work area.	Y	N
2. Results of HIV testing are available within 24 hours.	Y	N
3. Results of HIV testing are available within 6 hours.	Y	N
4. Most women that I take care of are HIV positive.	Y	N
5. Pregnant women should have HIV testing during their pregnancy.	Y	N
6. If a pregnant woman has not had HIV testing during the pregnancy, she should have testing when she comes into labor.	Y	N
7. It is important to know HIV status of women during their pregnancy.	Y	N
8. I routinely inquire about maternal HIV status at the onset of labor.	Y	N
9. HIV medications can be used safely by a woman during pregnancy.	Y	N
10. HIV medications can be used safely during labor.	Y	N
11. Treatment for HIV during labor with AZT reduces the transmission of the HIV virus from mother to child.	Y	N
12. HIV medications given to women when they are pregnant cause harm to the fetus.	Y	N

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