Knowledge and Attitudes of Ugandan Midwives Regarding HIV

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In Uganda, 60% of HIV-infected adults are women of childbearing age. Considering this, midwives in Uganda play a pivotal role in reducing HIV transmission and providing high quality care to the many women and families affected by the disease. In this pilot study, investigators described the knowledge and attitudes of Uganda's private midwives regarding HIV. Overall knowledge levels were reported to be low, and the majority of participants reported overwhelming fear of contracting the disease from practice. Despite these challenges, the midwives' attitudes regarding HIV were positive. The results of this study support previous results. Additional studies focusing on midwives and traditional birth attendants in Uganda are warranted. The initiation of HIV continuing education programs and professional support for Ugandan midwives is also recommended.

Key words: *Africa, AIDS, attitude, fear, HIV, knowledge, midwifery, midwives, sub-Saharan, Uganda*

HIV and subsequent AIDS have deeply affected communities throughout the world over the past two decades. According to the World Health Organization (WHO), global estimates of HIV infections as of 2006 were 39.5 million, with 64% of those infected living in sub-Saharan Africa (UNAIDS, 2006). In 2005, WHO estimated the percentage of HIV-infected adults (ages 15-49) in Uganda to be 6.7% of the adult population, with women being more than half of those infected (UNAIDS, 2006). These rates are especially striking when compared with the estimated .6% of the adult population in the United States who are HIV infected (UNAIDS, UNICEF, & WHO, n.d.). In Kampala, the capital city of Uganda, HIV prevalence among patients at antenatal clinics has declined (UNAIDS, 2006; UNAIDS et al., n.d.). Of great concern, however, is the fact that since 2002, HIV prevalence rates increased among pregnant women in rural villages in Uganda (UNAIDS et al., n.d.).

Intensive HIV prevention initiatives begun in 1986 by the government of President Yoweri Museveni have contributed to falling rates of HIV infections and high levels of public awareness of the disease in Uganda (Uganda Ministry of Health, 2000). The Ugandan government recognized that HIV prevention and compassionate care of those affected by HIV required a multisector approach and began collaborating with religious and community leaders, nongovernmental organizations (NGOs), community based organizations, social marketing groups, the mass media, and schools (Uganda Ministry of Health, 2000; "Uganda Tackles," 1999). Additional positive developments in the fight against HIV in Uganda included voluntary and confidential HIV testing with treatment for those who were in need of services,

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increased community support of caregivers of AIDS orphans, distribution of free or inexpensive condoms, increased use of condoms, an increase in the time before initiation of sexual activity, a decrease in the number of sexual partners, and a stable source of government funding for HIV initiatives (Uganda Ministry of Health, 2000; "Uganda Tackles," 1999).

Unfortunately, despite successes in tackling the many issues stemming from HIV, Uganda still faces many challenges. The country's lack of critical development benchmarks contributes to these challenges. In the United Nations global development index, Uganda ranked 159 out of 175 countries, being classified as one of the poorest countries in the world. Women have a 50% literacy rate, and the men's is less than 74%. Low literacy rates among women may be a barrier to accessing information and health care services. Compared with an infant mortality rate of 7 per 1,000 live births in the United States, Uganda's infant mortality rate is a staggering 103 per 1,000 live births. Additionally, the percentage of births attended by trained health personnel in Uganda is 38%, compared with 99% in the United States (Salvage, 1999; Uganda Ministry of Health, 2000).

The Uganda Ministry of Health has drafted an HIV/AIDS Strategic Plan for the years 2000-2006. Opportunities to reduce HIV transmission are set forth from a number of different perspectives within the document. Taking into account that 60% of HIV-infected adults in Uganda are women of childbearing age, midwives have an especially important role in reducing transmission (including vertical transmission) of HIV and providing compassionate quality care to those women and their families who are affected by HIV.

In Uganda, midwives practice both in public government hospitals and in private settings such as NGO hospitals and midwife-run antenatal clinics and birth centers. The Uganda Private Midwives Association (UPMA) has partnered with a number of international organizations to increase opportunities for midwives to start their own businesses. Members of UPMA include any midwife who is not employed by the government health service; these private midwives charge direct fees to consumers for services provided. Because of the high rates of HIV-infected pregnant women in need of antenatal, intrapartum, and postpartum care, it is inevitable that midwives will come in contact with HIV-infected women at some point in their careers. Therefore, it is important to gain an understanding of midwives' baseline levels of knowledge regarding HIV and their attitudes toward caring for HIV-infected patients to intervene as necessary to ensure appropriate and high-quality care for all Ugandan women.

Despite the high rates of HIV in sub-Saharan Africa and the incidence of HIV among health care workers in this region, little has been published about the knowledge and attitudes of Ugandan midwives. There have been few studies of knowledge and attitudes among health care workers in sub-Saharan Africa. Creek et al. (2004) studied 82 midwives and counselors in Botswana and were specifically interested in knowledge and attitudes regarding prevention of mother-to-child transmission of HIV. They reported a need for more knowledge about HIV transmission. In addition, they reported that one third of the providers were uncomfortable informing women of their HIV status and providing advice to them (Creek et al., 2004). Another study conducted among 350 health care workers in rural Rwanda led researchers to conclude that, based on participants' knowledge and attitudes, there is an urgent need for educational programs for health care workers (Rahlenbeck, 2004).

Walusimbi and Okonsky (2004) studied knowledge and attitudes about HIV among nurses and midwives who worked in the major teaching hospital in Kampala. These researchers reported that as the knowledge level increased fear of the disease decreased. They also reported that there were knowledge needs in relation to HIV precautions and prevention. Midwives made up 30% of the sample in the Walusimbi and Okonsky study, and knowledge levels of the midwives were lower than that of the nurses. The Walusimbi and Okonsky study served as the basis for the present study.

Study Purpose

The purpose of this study was to survey private midwives working in Uganda and to describe their baseline levels of knowledge about HIV and their attitudes regarding caring for patients with HIV. The research questions guiding this study were (a) what is the baseline level of knowledge regarding HIV among

Ugandan midwives? (b) what is the attitude of Ugandan midwives toward caring for patients with HIV? (c) what is the knowledge and attitude toward caring for patients with HIV among Ugandan midwives in different demographic groups? and (d) are Ugandan midwives interested in continuing education focused on HIV?

Methods

This descriptive cross-sectional pilot study was a replication of Walusimbi and Okonsky's (2004) investigation of the knowledge and attitude of Ugandan nurses and midwives in a large referral hospital in Kampala. The current study focused on private midwives and was part of a collaborative ongoing initiative, Project Uganda, between the schools of nursing and medicine at Case Western Reserve University (CWRU), New York University, and the faculties of medicine and nursing at Makerere University in Uganda. Internal review board approval for this study was granted by CWRU as well as Makerere University.

Sample

The targeted population for this investigation was midwives in Uganda. A convenience sample of 89 private midwives was obtained with the help of the UPMA. Private midwives are midwives who work in the private sector. In all, 4 participants were not included in the total knowledge score and 3 were not included in the total attitude score because of large amounts of missing data in those sections. Inclusion criteria for this study were ability to speak, read, and write English; graduation from a midwifery school; and membership in the UPMA.

The research team consisted of a primary investigator and a coinvestigator. The coinvestigator, a Ugandan nurse-researcher who worked in Uganda during the time of this investigation, was responsible for recruitment of participants and data collection. A cooperative relationship with UPMA was established through Project Uganda and the Faculty of Nursing at Makerere University. The coinvestigator attended the annual UPMA meeting at UPMA headquarters in Kampala and explained the study to UPMA leaders. Questionnaires were then distributed to leaders of 9 of the 11 regional centers of UPMA including the Eastern branch, Jinja, Kabarole, Kampala, Masaka, Mbarara, Mpigi, Mukono, and Wakiso. The other two central branches serving midwives in Lira and Hoima/Masindi/Kibaale were not included in recruitment because of political instability. The leaders returned to their regional centers and distributed the questionnaires to interested UPMA members. Only those who volunteered to participate were included. Data were collected over a 3-month period.

Measures

The data collection instrument was adapted from a three-part questionnaire developed by Eckstein (1987) examining demographic, knowledge, and attitude variables. Eckstein tested 270 U.S. nurses' level of knowledge with 33 items ($\alpha = .67$) and attitudes with 38 items ($\alpha = .95$) regarding HIV and nurses in the United States. Walusimbi, a Ugandan nurse researcher (Walusimbi & Okonsky, 2004), adapted the instrument for use in Uganda with 335 nurses and 142 midwives who worked in a government hospital. Knowledge items had an internal consistency reliability of .63 and attitude items had an alpha coefficient of .85. The investigator of the current study more specifically adapted the instrument for use with Uganda private midwives. These adaptations included background data questions regarding midwifery education, work organizations, employment positions, and clinical scenarios used in the knowledge and attitude portions of the instrument. The instrument was then used to measure midwives' HIV knowledge and attitudes for the current study. This study showed that the knowledge items had an alpha coefficient of .57 and the attitude items had an alpha coefficient of .84.

The first section of the questionnaire consisted of 19 items and was focused on background data of gender, tribal and religious affiliation, marital status, educational background, years of midwifery experience, current type of worksite, position held at worksite, previous midwifery experience with HIV, degree of interest in continuing education and support groups focused on HIV, and level of fear of contracting HIV from midwifery practice. These data were used for descriptive purposes.

The knowledge section of the questionnaire consisted of 33 true or false questions. The knowledge content covered five subcategories: agent and immunology (6 items), course and manifestation (6 items), transmission and incidence (6 items), risk group (6 items), and precaution and prevention (9 items) (Walusimbi & Okonsky, 2004).

Data measuring attitudes were collected in the third part of the questionnaire and consisted of 35 items. The items were scored on a Likert scale ranging from a score of 1 to 5. The highest possible score was 175. Possible responses included *strongly agree*, *somewhat agree*, *do not agree or disagree*, *somewhat disagree*, and *strongly disagree*. Scoring was reversed as necessary to show a higher score in relation to a more positive attitude.

Results

Sample Characteristics

The majority of participants fell into the age category of 41 to 50 years (40.4%, $n = 36$). There was only one male respondent. The largest proportion of participants (42.5%, $n = 37$) was religiously affiliated with the Protestant church. Catholics made up 36.8% ($n = 32$) of the sample, and Muslims made up 11.5% ($n = 10$). The vast majority of participants were affiliated with the central (Ganda) tribe (59.6%, $n = 53$). Eastern tribal affiliation accounted for 23.6% ($n = 21$), and western tribal affiliation accounted for 14.6% ($n = 13$), with only 2.2% ($n = 2$) reporting northern tribal affiliation. More than half of participants (58.4%, $n = 52$) were married, followed by 19.1% ($n = 17$) never having married and 13.5% ($n = 12$) widowed.

The current educational system of Uganda is composed of primary school (P1-P7), followed by secondary school, which is divided into two parts: ordinary (O-level) and advanced (A-level). Ordinary is known as S1-S4 and advanced noted as S5-S6. In a comparison with the educational system in the United States, O-level can be considered a combination of middle and high school, and A-level can be thought of as the senior year of high school plus one additional year of academic preparation. Upon entering midwifery school, 1.1% ($n = 1$) of the sample had finished A-level, 86.4% ($n = 76$) had finished O-level, and 5.7% ($n = 5$) had finished primary school.

In 1982, when the first case of HIV was identified in Uganda, 62.2% ($n = 49$) of the research participants were already working as midwives. The midwives in this study had an average of 23 years of clinical experience. Although a range of midwifery educational preparation was reported for this study, the majority of participants were enrolled midwives (56.3%, $n = 49$). The enrolled midwifery level is a 2.5-year educational program in Uganda. The second largest group of respondents (24.1%, $n = 21$) was prepared at the registered midwifery level, a 3-year educational program. Some participants (14.8%, $n = 13$) had also been trained as nurses, either at the enrolled or registered level. Staff midwives made up the largest portion (57%, $n = 49$) of participants in the study followed by charge midwives (14%, $n = 12$). A smaller percentage owned their practice (9.3%, $n = 8$). The rest of the participants worked in a number of positions, including administration, UPMA, nursing, health provider, or a combination of these.

A total of 72% ($n = 54$) of the research participants began working in their current positions of employment after HIV prevention efforts began in Uganda in 1986. The private practice setting was the most common place of employment for the private midwives in this investigation (36.5%, $n = 31$). However, a large percentage (22.4%, $n = 19$) worked in domiciliary care settings.

Although a majority of the participants had provided direct care to an HIV-infected patient (75.3%, $n = 67$), many (75.3%, $n = 64$) did not believe that the resources available to obtain current HIV information were adequate. Seminars and workshops were the primary sources of HIV information, according to 51.7% ($n = 46$) of the participants. The media plays a large role in the dissemination of HIV information for Ugandans, including midwives. Radio (49.4%, $n = 44$) and television (20.2%, $n = 18$) were used by these midwives as a source of HIV-related information. Friends and colleagues (27%, $n = 24$) also contributed to the information obtained by midwives.

A portion, 39.3% ($n = 35$), of the participants had attended an educational program about HIV.

However, there was great interest in such educational offerings, as shown by the data. All respondents stated an interest in group discussions about caring for patients with HIV as well as participating in support groups to discuss HIV problems. Most of the participants (98.9%, $n = 87$) were also interested in in-service programs on caring for patients with HIV. These results were further supported by the levels of fear reported by the midwives in this study. On a scale of 1 to 10 with 1 representing no fear and 10 representing overwhelming fear, 54.7% ($n = 47$) rated their fear at a level 10, and 87.3% ($n = 75$) rated their fear at a level of 5 or above.

Knowledge Level

The knowledge level section of the questionnaire had a possible total score of 33 points. Participant scores ranged from a low score of 8 points ($n = 2$) to a high score of 27 points ($n = 1$). Four questionnaires were omitted from analysis of the total knowledge score because of significant amounts of missing data. Therefore, 85 questionnaires were included in scoring the total knowledge level. A little more than half of the midwives (51.76%, $n = 44$) scored above the knowledge level mean of 16 true/false items answered correctly. Almost half of the participants (49.41%, $n = 42$) scored between 16 and 21 correct responses (see Table 1). Participants scored higher in the areas of prevention and precaution (52.6%, $n = 47$), risk group (51.5%, $n = 46$), and course and manifestation (50.5%, $n = 45$). Lower scores were shown in the area of agent and immunology (12.2%, $n = 11$) and transmission and incidence (31.5%, $n = 28$). Although the midwives scored higher in some areas, the overall knowledge level can be interpreted as low because, on average, they were able to answer only half of the items correctly.

Attitudes

With 35 items, the attitude section of the questionnaire had a total possible score of 175 points. Total scores and subcategory scores were adjusted for ease of comparison; the raw score was divided by the total number of possible points to formulate an adjusted score, which ranged from 1 to 5. An adjusted score of 3.00 was used as the cutoff point to measure a positive attitude (Walusimbi & Okonsky, 2004). Three questionnaires were omitted from analysis of the total attitude score because of significant amounts of missing data. Therefore, 86 questionnaires were included in scoring the total attitude score. Adjusted total attitude scores for this sample ranged from 2.00 to 4.77. An overall positive attitude was confirmed, with 79.07% ($n = 68$) scoring above 3.00 (see Table 2). As in previous analyses using Eckstein's instrument, the attitude scale was subsequently divided into five subcategories: fatal outcome (4 items), fear of contagion (7 items), social stigma (6 items), direct care (10 items), and education and counseling (8 items) (Walusimbi & Okonsky) (see Table 3). The first three items described factors that influenced the midwives' attitudes and the last two described how those attitudes affected the midwives' care of seropositive patients. The education and counseling subcategory had the highest adjusted mean score at 3.62; 85.4% ($n = 76$) scored above the cutoff point. The adjusted mean score for the subcategory fatal outcome was 3.50; 75.3% ($n = 67$) scored above the cutoff point. The subcategories fear of contagion and social stigma both had an adjusted mean score of 3.41 with 70.8% ($n = 63$) and 78.7% ($n = 70$) respectively scoring above the cutoff point. Although still showing a positive attitude in this area, the lowest adjusted mean score was in the subcategory of direct care, with a score of 3.40; 68.5% ($n = 61$) scored above the cutoff point.

Table 1. Total Knowledge Scores[a]

Total Correct Responses	Frequency	Percentage
8-10	6	7.06
11-15	24	28.24
16-20	42	49.41
21-27	13	15.29

a. $n = 85$, mean = 16.79, 51.76% scored ≥ mean ($n = 44$), possible score = 33, $SD = 4.00$.

Discussion

In addition to knowledge and attitude scores rising in relation to one another, evidence of higher knowledge and attitude scores among different demographic groups was shown in this study. Higher knowledge

Table 2. Adjusted Attitude Scores[a]

Adjusted Score	Frequency	Percentage
1.00-1.99	0	0
2.00-2.99	18	20.93
3.00-3.99	51	59.30
4.00-5.00	17	19.77

a. Mean = 3.46, n = 86, SD = .54, adjusted score = raw score/35, possible adjusted score = 5.00.

Table 3. Attitude Subcategories[a]

Subcategory	Percent Adjusted Score ≥ 3.00	Adjusted Mean Score for Subcategory (*SD*)
Factors influencing attitude		
Fear of contagion	70.8	3.41 (.73)
Fatal outcome	75.3	3.50 (.73)
Social stigma	78.7	3.41 (.73)
How attitude influences:		
Direct care	68.5	3.40 (.85)
Education/ counseling	85.4	3.62 (.65)

a. Total mean score = 3.46, n = 89, adjusted score = raw value/total items in subcategory.

levels and a more positive attitude were reported for those midwives who had attended a formal HIV education program, had nursing education, had O-level schooling, had experience caring for HIV-infected patients, and who had reported lower levels of fear. Those midwives who reported having adequate access to resources for obtaining current HIV information also had higher knowledge scores.

At the time of this investigation, only one other study had been performed that described the HIV-related knowledge and attitudes of Ugandan nurses and midwives; the sample was drawn from a government hospital in Kampala (Walusimbi & Okonsky, 2004). Because the current study examined a similar population and was a replication of that study, it is pertinent to compare the key results. Compared with the private midwives sampled in this study, participants in Walusimbi and Okonsky's study had higher knowledge and attitude scores, higher levels of education, fewer total years of clinical experience but more experience caring for patients with HIV, and lower levels of fear. Their results also showed that nurses had higher knowledge scores than midwives. Furthermore, Walusimbi and Okonsky reported a significant positive relationship between knowledge and attitude levels and a significant negative relationship between knowledge and fear levels.

In the current study, midwives reported very high levels of fear of contracting HIV from practice. In addition, the least positive attitude scores were in the area of providing direct patient care. Measures to ensure universal precautions in health care settings may not be readily available to Ugandan health care providers, which may explain a greater sense of fear of providing direct care (Mungherera et al., 1997). Fear of contagion from patient care activities was also a common result within the literature (Mbanya et al., 2001; Mungherera et al., 1997; Uwakwe, 2000). Not only has fear been described in relation to knowledge and attitude scores, researchers have reported that it has an impact on patient care. Fear of nursing an HIV-infected patient has been described as a predicting factor of lower intention to provide patient care. Also, midwives and nurses who had more experience caring for patients with HIV had lower levels of fear (Grellier, 1999; Walusimbi & Okonsky, 2004).

Despite the results in this study showing a negative impact on patient care, Ugandan midwives showed great enthusiasm for increasing their ability to provide higher quality care to their patients who were living with HIV. Nearly all of the research participants reported interest in HIV discussion groups, support groups, and in-service programs. Participants who had attended a formal HIV education program had higher overall knowledge scores, and more than half reported that they relied on seminars and workshops as their primary sources of HIV information. However, 75% reported inadequate access to resources for current HIV information. This result was widely supported within the literature (Mungherera et al., 1997; Walusimbi & Okonsky, 2004). As in many other countries, in Uganda, public media plays a primary role in providing information about HIV to nurses and midwives. However, general information aimed at the public is not sufficient to guide professional practice because health care providers must have in-depth information about treatment options for the disease and its related health issues.

Limitations

With a possible sample of 600, a response rate of only 15% was unexpectedly low. There are several reasons for the low response rate. Not all of the regional centers could be included in the study as planned because of political instability. In addition, only one researcher, the coinvestigator, was available to conduct data collection in Uganda. With additional assistants, more contact with UPMA leaders and midwives might have been possible and the data collection time period could have been extended, which may have led to an increased sample size. Because questionnaires were not completed in a single setting at one time, it was necessary for the coinvestigator to travel long distances and into less accessible rural areas to collect completed surveys. To account for this difficulty, follow-up telephone calls were made by the coinvestigator to leaders to ensure that trips to the regional centers would yield as many completed surveys as possible. Considering the cost of photocopying, travel, and long-distance telephone calls, a minimal budget was limiting.

In addition, not all UPMA members were actively involved in the association on a regular basis, so UPMA leaders were unable to access the total population of UPMA members. The regional leaders recruited only those who were known to them. Potential participants may have faced barriers such as time constraints because of workload and travel difficulty because of the wide geographic areas served by the regional centers.

Additionally, because many different languages and dialects are used in Ugandan society, the inclusion criteria of fluency in English may have excluded a large number of midwives from participation. Perhaps using translators as research assistants or translated instruments as well as providing an incentive to participate such as an educational seminar or discussion group would have increased interest in this study. An additional limitation might have been the bias introduced because those who chose to participate might have had more knowledge about HIV.

Reliability of both instruments was reported to be lower in this study than in the previous two that used Eckstein's instrument (Eckstein, 1997; Walusimbi & Okonsky, 2004). Although slightly lower than previously shown, the attitude items had an acceptable alpha coefficient of .84. Knowledge items scored lower, with an alpha coefficient of .57. Possible ways to increase the internal consistency reliability of the knowledge survey include removing items that may have measured a different construct, replacing them with items that measured knowledge more consistently, increasing the number of items in the survey, and increasing the sample size to reduce sampling bias. The knowledge survey should also be updated to include more current HIV information because the instrument was developed at the beginning of the HIV epidemic and did not include results from more recent research on HIV and its treatment.

Data presented in this study may not be generalized to the population of midwives in Uganda because of sampling bias; the response rate was low and the sample was fairly small and not randomly selected. However, this exploratory study was useful in beginning to describe Ugandan midwives' HIV knowledge, attitudes, and interest in continuing education and professional development, thus building upon the knowledge base of health care providers and their roles in HIV care and prevention. Also, this study can serve as a pilot study for future research.

Recommendations

Professional development in the form of support and discussion groups for those midwives caring for patients with HIV should be initiated. Midwives in this study expressed a very high level of interest in participating in such groups. The planning and oversight of these activities could be included in UPMA's role of promoting the professional development of its members.

Entry requirements for schools of midwifery should include, as a minimum, completion of O-level schooling. However, this may not be feasible until other general factors that limit access to education are resolved. Many students in developing nations do not have the resources to continue school and must enter the workforce at an early age. Additionally, increasing education requirements could lead to a decreased number of midwives in the workforce.

Standardized HIV education programs should also be integrated in both enrolled and registered midwifery programs. The curriculum should include

current didactic information on the virus, prevention, and care of seropositive patients, as well as a clinical practice component to ensure that all midwives entering practice have experienced caring for HIV-infected patients. A standardized HIV curriculum for continuing education for those midwives already practicing should also be implemented throughout the public and private sectors at no cost to the midwives. One possibility for implementation could be mandatory continuing education for renewal of midwifery credentials or for continued membership in UPMA.

Access to continuing education for a large number of midwives working in rural areas could be made available through collaboration with the public media because this has been shown to be a widely used source of HIV information by Ugandan midwives. UPMA leaders may also be a resource for coordinating continuing education programs from the regional centers, thus decreasing the need for midwives to travel long distances to attend programs. In all education programs, emphasis should be placed on prevention of transmission in the health care environment (whether domiciliary or institutional), with practice of universal precautions reinforced.

For midwives to practice universal precautions properly and consistently, however, they need access to protective supplies, disinfectants, and appropriate disposal of biohazardous waste. It is imperative that the public and private sectors develop funding sources to provide supplies to all health care workers to decrease the risk of HIV transmission in the clinical setting. Organizations that could potentially be involved in funding development include public and private hospital-based HIV committees, religious organizations, community-based HIV support programs, professional health care associations such as UPMA, and the public media.

Continued study of the knowledge and attitudes of midwives working in both the public and private sector is necessary to build upon the results of this investigation. Qualitatively examining midwives' barriers to increasing their HIV knowledge levels would be useful to guide program planning. Studies using educational and experiential interventions that are geared toward different learning styles would be useful in determining the types of professional development programs that would be effective in improving HIV knowledge in midwives. The use of affective interventions in studies with midwives may also lead to strategies for increasing their positive attitudes. Development of a research instrument is necessary for use in these intervention studies. Revision of Eckstein's (1987) instrument, including increasing reliability and currency of information, is also imperative for use in future research.

In addition to continuing research focused on formally trained midwives, investigation into the knowledge and attitude of traditional birth attendants who do not have formal midwifery or health care training is warranted. A total of 60% of births in the African region are attended by traditional birth attendants (WHO, n.d.). Therefore, this group's HIV knowledge and attitudes have implications for the health and well-being of people living with the virus in Uganda.

Conclusion

Although great strides have been made in Uganda to reduce HIV infection rates, the virus continues to have an impact on a large portion of the population. Results from this investigation illuminate the need for an increased HIV knowledge level among midwives in Uganda. Because of their indispensable role as health care providers throughout the country, it is imperative that they be up to date with current HIV information and prepared to take the necessary actions to assist their patients in reaching and maintaining optimal health and well-being.

Clinical Considerations

- HIV education must be included in all levels of midwifery primary and continuing education courses to reduce fear of contagion as well as increase quality of care.
- Resources necessary for practicing universal precautions must be made available to midwives.
- Midwives need access to formal support and discussion groups that focus on HIV.

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