# *Health Literacy: Investigating the Knowledge and Attitudes of HIV/AIDS among Students in Southern Ethiopia*

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**Abstract**

The HIV/AIDS epidemic continues to claim millions of lives worldwide. Africa alone represents the majority of HIV/AIDS cases, where the young aged 16-30, are at greatest risk. The research suggests a gender dichotomy in HIV/AIDS knowledge levels between male and female students in Ethiopia. The purpose of this research is to explore the knowledge and attitudes of HIV/AIDS among a group of Ethiopian male and female post-secondary students. An observational study was conducted among 126 female and 101 male college and university students. The HIV Knowledge Questionnaire and AIDS Attitude Scale were used to measure participants' knowledge. The t-test demonstrated no difference between male and female HIV knowledge scores ($t=0.6$, $df=225$, $p=0.4$). The correlation analysis indicated a significant negative relationship between HIV knowledge scores and avoidant AIDS attitude scores ($r=-0.2$, $p<0.01$). The linear regression demonstrated that for every one unit increase of AAS avoidant scores, HIV knowledge scores decreased 0.7 units ($p<0.01$), suggesting that students who scored higher in negative attitudes achieved lower scores on HIV knowledge levels. The study findings demonstrate the call to address the knowledge gap in HIV sexual transmission among a vulnerable population. Future research is needed such that HIV/AIDS awareness campaigns can be specifically tailored to the student population within the Ethiopian context.

Keywords: HIV/AIDS; students; Africa; attitudes and knowledge

**Introduction and Literature Review**

It is estimated that Ethiopian young adults from the ages of 15-24 account for more than half of all new HIV infections in the country (Andargieet al., 2009). Recent literature highlights sexual risk behaviors such as early onset of sexual debut, multiple sexual partners, and unprotected intercourse linked to the increased rates of HIV/AIDS among this target population (Derese, Seme, &Misganaw, 2014; Shiferaw et al., 2011). Although Ethiopia has made great strides in lowering HIV infections rates, there still remains persistence in higher infection rates among young adults in the country (UNAIDS, 2010). A study conducted in Eastern Africa reports younger adults were 60% less likely to use a condom in comparison to their older counterparts (Hladik, Shabbir, Jelaludin, Woldu, Tsehaynesh, &Tadesse, 2006). The correlation between high-risk behavior and HIV/AIDS knowledge is strongly related in the literature (De Visser& Smith, 2001; Taffa, Klepp, Sundby, & Bjune, 2002; Ukwuani, Tsui & Suchindran, 2003). A comparative analysis demonstrates education initiatives such as school awareness programs on HIV transmission improve condom use among high school students (Ukwuani, Tsui, &Suchindran, 2003). Yet, despite such educational initiatives, African youth continue to represent more than half of all new HIV infections and still lack factual HIV transmission knowledge (UNAIDS, 2008). Several descriptive studies highlight the increased rates of risky behaviors among this target population, which further compound their exposure to HIV/AIDS. Notably, various researchers illustrate the lower knowledge rates among young Africans and the need for further awareness programs (Buseh, Glass, McElmurry, Mkhabela, & Sukati et al., 2001; Negash, Gebre, Benti & Bejiga, 2003). Studies among Ethiopian students report the decreased usage of condoms and the lack of HIV transmission knowledge among this specific population (Alene, Wheeler, &Grosskurth, 2004; Yerdaw, Nedi, &Enquoselassie, 2002).

According to a study by Dingeta, Oljira and Assefa (2012), only 20% of sexually active university students consistently use a condom, compared to more than 60% of students that stated they rarely use a condom. Cross-sectional research among high school students reveal that only 41% of female students and 44% of male students were educated on the various modes of HIV transmission (Alene et al., 2004). Correspondingly, the national survey of Ethiopia reported a similar trend, whereby 28.7% of young men and only 15.8% of young women were knowledgeable on the varied modes of horizontal HIV transmission (HAPCO, 2008). Several factors such as lower literacy rates, contextual gender roles, and lower school enrollment are linked to the lower HIV/AIDS knowledge among young women in relation to young Ethiopian men (UNICEF 2006; Ukwunai et al., 2003). Select qualitative studies explore the context of HIV/AIDS knowledge among university students. One qualitative study in particular explored the knowledge of HIV/AIDS transmission among college students in Tanzania (Maswanya, Brown & Merriman, 2009). The thematic analysis reveals students' misinformation regarding HIV transmission, whereby several students believed HIV transmission is passed through water and saliva. Students also perceive themselves as less susceptible to contracting the virus. Specific insights into these barriers and facilitators would yield important cues and future direction on how to implement gender specific HIV/AIDS awareness programs within Ethiopian schools. Yet few studies address the reported gender differences in HIV knowledge levels among this target population (Ragnarsson, Onya & Aarø, 2009;Terry, Masvaure, & Gavin, 2005).

**Methods**

The descriptive study took place at two tertiary institutions including a college and university campus in the southern province of Ethiopia. Ethics approval was obtained from both Canadian and Ethiopian institutions. Consent forms were translated in Amharic (Ethiopia's

official language). All participants provided a written and informed consent. The recruited participants were male and female students enrolled at the post-secondary institutions. The students at the college and university were similar in age, culture and geographic background. All participants provided written and informed consent. Participants were between the ages of 18 and 30 years and spoke Amharic and English. The sampling method was based on non-probabilistic sampling. Student outreach volunteers were chosen to help recruit participants to take part in this study. The study questionnaires were translated from English to Amharic. The questionnaires were translated back to English in order to ensure consistency from the original English version of the questionnaire (Sobel & Kugler 2007). All participants and volunteers received a gift of remuneration for their time.

**Data Analysis.**

An independent t-test was applied in order to decipher whether or not male and females have different mean scores for the HIV-KQ-18 and AAS scales. A Pearson's correlation and regression test was used to measure the relationship strength between HIV knowledge levels and the empathy avoidance scale, while adjusting for the demographic variables. The demographic variables included age, sex, language, ethnicity, relationship and religion. The significance level of the test results was set at the 0.05 level. Data were analyzed using SSPS version 17 statistical software.

**Study Questionnaires**

AAS is a 21 item scale which measures two subscales of empathy and avoidance regarding HIV/AIDS. The scale is based on a six point Likert scale varying from one (strongly disagree) to six (strongly agree). The AIDS Attitude Scale (AAS) by Froman, Owen, and Daisy (1992) was first formulated to ascertain the attitudes of health professionals towards HIV/AIDS

(see Appendix G). Since then, the AAS has been applied in sub-Saharan countries and with varying populations (Diesel, Ercole, & Taliaferro, 2012; Pickles, King & Belan, 2012). The AAS is composed of two correlated subscales: 14 empathetic items and 7 avoidant items. The empathetic items are described as questions, which denote positive attitudes towards HIV/AIDS, while avoidant subscales are described as negative attitudes. A higher score on the empathetic subscale indicates a more acceptant attitude towards HIV/AIDS, while a higher score on the avoidant subscale denotes more negative attitudes towards people living with HIV/AIDS.

The HIV knowledge questionnaire (HIV-KQ-18) formulated by Carey and Schroder (2002) was utilized to measure knowledge of HIV transmission. It is an 18-item, self-administered questionnaire, which measures the general knowledge of transmission, prevention and treatment of HIV/AIDS. Respondents were asked to indicate whether the statements were true or false. See table 1 for the questionnaire and correct answers. The HIV-KQ-18 is internally consistent (a=0.91) and achieved satisfactory test-retest reliability among a pilot control group after one week (r=0.83).

**Demographic Results**

The total sample size included 227 participants, 101 males and 126 females. The age of participants ranged from 18-30 years, with a mean age of 20.2 (SD=2.3). The mean age among females was 20.0 (SD=2.2), while male participants were slightly older with a mean age of 20.4 (SD=2.3). The majority of female students reported not being sexually active (78.3%), in comparison to 48.8% of males. In contrast, 51.2% of male students reported yes to being sexually active, whereas only 21.7% of females stated they were sexually active. A large percentage of both male and female students reported their relationship status as single (males

82.2%, females 60.3%). Only 13.9% of male students stated they were in a relationship, whereas 31.0% of female students stated they were in a dating relationship.

**Questionnaire Results**

The mean HIV-KQ-18 score among the male group was 12.4 (SD=2.3), while the female mean score was slightly lower 12.3 (SD=2.5). The t-test demonstrated no difference between male and female HIV knowledge scores ($t=0.6$, $df=225$, $p=0.4$). However, male and female groups scored lower on sexual transmission knowledge of HIV. Notably, both groups scored lower on Q17, "a person can get HIV from oral sex". Only 41.6% of males and 40.5% of females answered correctly on Q17 (see Table 1). The mean total AAS scores among male students was 1.6 (SD= 1.1). Female students scored slightly lower with a mean score of 1.5 (SD=1.3) on the AAS (See Table 3), yet there was no significant difference among male and female mean scores ($p=0.1$). The majority of male and female students identified an empathetic attitude towards those living with HIV/AIDS (see table 2). The mean AAS avoidant scores demonstrated a higher mean score among the females (mean=3.4, SD=0.7) in contrast to the male group (mean=3.2, SD=0.8).

**Association Between HIV-KQ-18 and AAS Scores**

The results of the Pearson's test demonstrate a significant negative relationship between AAS avoidant scores and HIV knowledge scores ($r=-0.2$ $p<0.01$). The scatter dot diagram in Figure 1 demonstrates a weak negative relationship between HIV scores (y axis) and AAS avoidant scores (x axis). The correlation result between HIV knowledge scores and AAS total scores illustrates a negative relationship ($r=-0.19$, $p<0.05$). Based on the correlation analysis, the linear regression analysis demonstrates a significant relationship between HIV knowledge scores and AAS avoidant scores ($p<0.01$). The best-fit line illustrates a significant negative linear

relationship. Thus, we see for every one-point increase in avoidant AAS scores, HIV knowledge levels decrease by almost one point.

**Discussion**

The key findings of the AAS demonstrate an overall empathetic attitude between male and female students towards people living with HIV/AIDS (PLWHA). Students highly identified with the need to treat PLWHA with the same dignity as the general public. The high score of empathetic AAS items correlates with the current literature (Alemu, Abseno, Degu, Wondmikun, & Amsalu, 2004; Negash et al., 2003; Yerdaw et al., 2002). The study conducted by Yerdaw et al (2002) compared and contrasted the AIDS attitudes between students, urban dwellers, farmers, and sex workers in Ethiopia. Students were found to have the highest positive attitude towards HIV/AIDS in comparison to all other groups. Negash et al (2003) found similar results, whereby 60% of the young population disagreed with the social isolation of PLWHA. These findings suggest a correlation with the current study results, which demonstrates an overall high empathetic attitude score among post-secondary students.

The AAS avoidant item scores showed similar results for male and female students combined. Notably, the analysis of avoidant items demonstrates students' discordant attitudes towards homosexual populations and PLWHA. The majority of students felt that PLWHA deserved reproach. For example, students scored highest towards items that outlined the negative connotation of HIV/AIDS and the association with homosexual peoples. However, the participants only identified negative attitudes towards PLWHA if the transmission of the virus occurred from either drug abuse or sexual promiscuity. Therefore, students were more sympathetic to PLWHA who were infected through blood transfusions or vertical transmission such as the mother transmitting HIV in utero.

Overall, the results from the HIV-KQ-18 questionnaire demonstrate a lower knowledge score for male and female students. Particularly, both male and female students answered considerably lower on items regarding the specific modes of HIV transmission. The majority of male and female students believed "HIV is transmitted by deep kissing" (Q9). Similarly, a large percentage of students also scored low on vertical transmission items. For instance, the majority of both male and female students agreed that HIV is not transmitted by oral or anal sex (Q4 and Q17). These study results correspond with the current literature, which demonstrates a gap in knowledge among Ethiopian youth regarding the varied modes of HIV transmission (Alemu et al., 2004; Cheri, Mitkie, Ismail, & Berhane, 2005; Yerdaw et al., 2002). Cheri et al. (2005) reports comparable results among high school students in Addis Ababa. Their study showed lower knowledge levels regarding the various modes of HIV transmission among students in particular.

The regression analysis demonstrates a significant relationship between HIV-KQ-18 scores and avoidant AAS scores. HIV knowledge levels decrease by almost one point for every one-point increase in avoidance AAS scores. That is, both male and female students who identified more highly with negative AAS avoidant item scores achieved a lower score on HIV knowledge levels. The literature suggests similar findings, whereby increased negative attitudes and stigmatic viewpoints towards HIV/AIDS correlate with lower knowledge levels regarding the transmission and progression of the virus (Medel-Anonuevo, 2005; Rahlenbeck, 2004; Walusimbi & Okonsky, 2004).

A study conducted in Uganda among university students found similar results regarding HIV/AIDS knowledge levels and attitude scores (Walusimbi&Okonsky, 2004). The authors found a significant negative linear relationship between fearful AIDS attitudes and lower

HIV/Knowledge scores (Walusimbi&Okonsky, 2004). Correspondingly, a cross-sectional study conducted in Rwanda revealed health practitioners who identified more highly with positive attitudes also scored higher on the HIV knowledge questionnaire (Rahlenbeck, 2004). According to Medel-Anonuevo (2005), HIV literacy programs on HIV transmission and knowledge were found to change negative attitudes among young Ethiopians. The current study did not find a significant relationship between empathetic attitudes, although the literature suggests correlating factors between changes in negative attitudes and increased HIV literacy.

**Implications and Conclusion**

The knowledge and attitudes of HIV/AIDS are salient predictors in mitigating the high rates of HIV among young Ethiopians. The results demonstrate the importance of addressing the avoidant HIV/AIDS attitudes towards people living with HIV/AIDS. Brown, Trujillo and Macintyre (2003) highlight the need to address firstly the avoidant attitudes towards HIV/AIDS in order to change the HIV knowledge of a given population. Brown et al. suggest a multi-pronged approach not only centered upon HIV education, but also focused on coping skill acquisition, counseling and demystifying HIV/AIDS misconceptions.

The literature review highlights the increased sexual risk behaviors among the specific population of urban male and female students. These findings illustrate the need to have further observational studies that assess the specific gendered knowledge of HIV/AIDS among urban post-secondary students. Future studies directed towards an urban student population would help compare and contrast the findings from this study and highlight specific areas of potential research. These results are insightful in directing the content and delivery of HIV/AIDS educational resources. Program evaluation and cost-analysis research should further explore the cost-effectiveness of providing the same educational content for both male and female post-

secondary students. These initiatives should target the specific population of post-secondary students and the various misconceptions of HIV sexual transmission.

Table 1: Number and Percentages of Correct Answers in HIV Knowledge Items (HIV-KQ-18) among Male and Female Students

| **HIV Knowledge Scores Correct Answers: n(%)** | **Male n=101** | **Female n=126** |
|---|---|---|
| 1. Coughing and sneezing do not spread HIV. **(T)*** | 82(81.2) | 114(90.5) |
| 2. A person can get HIV by sharing a glass of water with someone who has HIV. **(F)*** | 91(90.1) | 110(87.3) |
| 3. Pulling out the penis before a man climaxes keeps a woman from getting HIV during sex. **(F)** | 71(70.3) | 82(65.1) |
| 4. A woman can get HIV if she has anal sex with a man. **(T)** | 14(13.9) | 7(5.6) |
| 5. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV. **(F)** | 92(91.1) | 116(92.1) |
| 6. All pregnant women infected with HIV will have babies born with AIDS. **(F)** | 78(77.2) | 104(82.5) |
| 7. People who have been infected with HIV quickly show serious signs of being infected. **(F)** | 83(82.2) | 108(85.7) |
| 8. There is a vaccine that can stop adults from getting HIV. **(F)** | 91(90.1) | 114(90.5) |
| 9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth, if their partner has HIV. **(F)** | 40(39.6) | 52(41.3) |
| 10. A woman cannot get HIV if she has sex during her period. **(F)** | 86(85.1) | 97(77.0) |
| 11. There is a female condom that can help decrease a woman's chance of getting HIV. **(T)** | 86(85.1) | 104(82.5) |
| 12. A natural skin condom works better against HIV than does a latex condom. **(F)** | 28(27.7) | 34(27.0) |
| 13. A person will not get HIV if she or he is taking antibiotics. **(F)** | 81(80.2) | 96(76.2) |
| 14. Having sex with more than one partner can increase a person's chance of being infected with HIV. **(F)** | 88(87.1) | 115(91.3) |
| 15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV. **(F)** | 72(72.3) | 102(81.0) |
| 16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV. **(F)** | 70(69.3) | 90(71.4) |

(Table 2 continued)

| | | |
|---|---|---|
| 17. A person can get HIV from oral sex. **(T)** | 42(41.6) | 51(40.5) |
| 18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV. **(F)** | 59(58.4) | 47(37.3) |

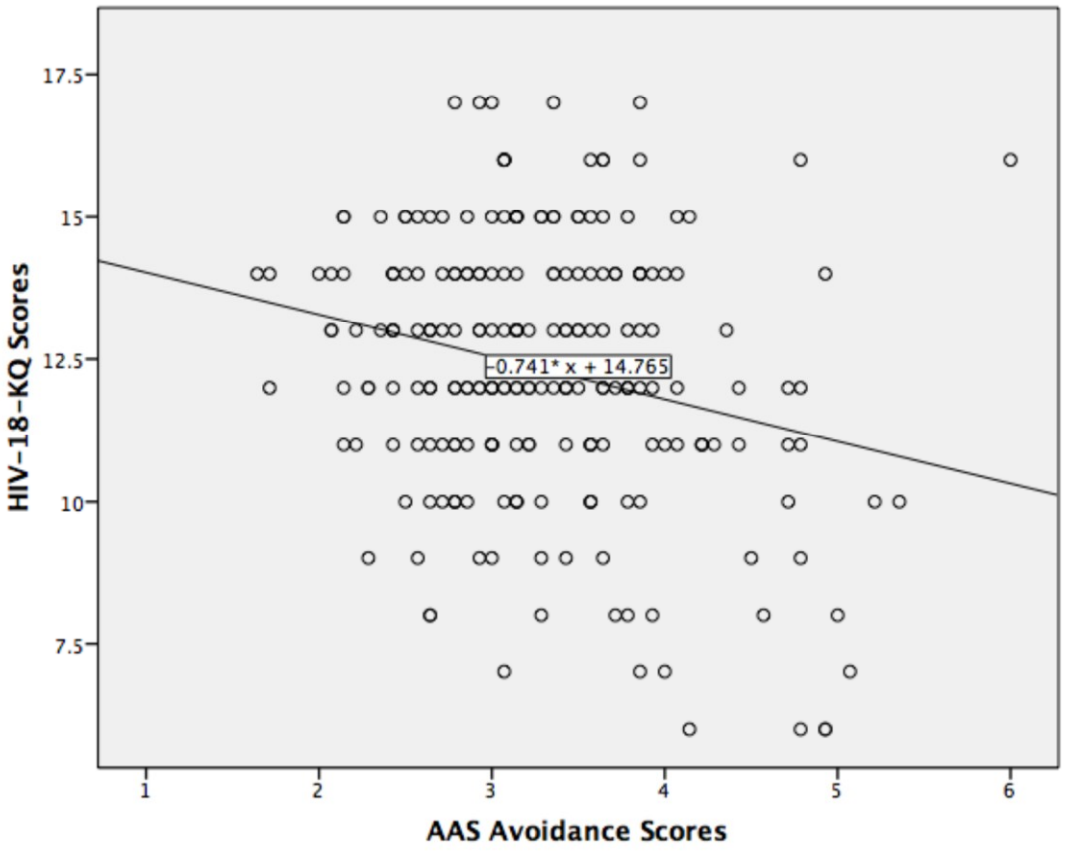
* True and False

Table 2: Mean(SD) of HIV/AIDS Attitudes (AAS) among Male and Female Students

| Aids Attitude Scale: Mean(SD) | Male n=101 | Female n=126 |
|---|---|---|
| 1. Most people have AIDS have only themselves to blame.* | 3.5(1.7) | 3.7(1.5) |
| 2. Most people who have AIDS deserve what they get.* | 3.3(1.7) | 3.4(1.6) |
| 3. Hospital patients who are HIV positive should not be put in rooms with other patients.* | 3.1(1.8) | 2.7(1.8) |
| 4. If I had to have contact with someone with AIDS, I would worry about putting my family and friends at risk of contracting the disease.* | 2.1(1.4) | 2.3(1.6) |
| 5. Young children should be removed from the home if one of the parents is HIV positive.* | 1.9(1.5) | 1.8(1.5) |
| 6. I think patients with AIDS have the right to the same quality of care as any other patient. | 5.3(1.3) | 5.3(1.4) |
| 7. It is especially important for hospital patients with AIDS to be treated in a caring manner. | 5.0(1.5) | 5.0(1.6) |
| 8. I think people who are IV drug users deserve to get AIDS.* | 2.7(1.5) | 3.1(1.6) |
| 9. I think women who give birth to babies who are HIV positive should be prosecuted for child abuse.* | 3.2(1.8) | 3.2(1.7) |
| 10. Homosexuality should be illegal.* | 5.0(1.6) | 5.3(1.4) |
| 11. I feel more sympathetic toward people who get AIDS from blood transfusions than those who get if from IV drug abuse. | 4.0(1.8) | 4.6(1.7) |
| 12. A homosexual hospital patient's partner should be accorded the same respect and courtesy as the partner of a heterosexual patient. | 3.8(1.6) | 3.7(1.7) |
| 13. Hospital patients with AIDS should be treated with the same respect as any other patient. | 4.5(1.7) | 4.5(1.8) |
| 14. If I found out that a friend of mine was a homosexual, I would not maintain the friendship.* | 3.9(1.9) | 4.3(1.8) |
| 15. I'm worried about getting AIDS from social contacts with someone.* | 2.2(1.6) | 2.0(1.5) |
| 16. I am sympathetic toward the misery people have with AIDS experience. | 5.0(1.4) | 4.8(1.6) |
| 17. I would like to do something to make life easier for people with AIDS. | 5.1(1.3) | 5.5(5.7) |
| 18. I would do everything I could to support people with AIDS. | 5.0(1.5) | 5.0(1.4) |
| 19. Children or people who get AIDS from blood transfusions are more deserving of treatment than those who get it from IV drug abuse.* | 3.6(1.8) | 4.1(1.8) |
| 20. I would be worried about my child getting AIDS if I knew that one of his teachers was a homosexual.* | 3.1(1.8) | 3.0(1.7) |
| 21. I have little sympathy for people who get AIDS from sexual promiscuity.* | 3.3(1.6) | 3.5(1.7) |

* Avoidant Aids Attitude Items

Figure 3: Regression Coefficients for HIV Knowledge (HIV-KQ-18) and AAS Avoidant Scores



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