The Effect of Age on Knowledge of HIV/AIDS among African American Undergraduate Students

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Authors’ contributions

This work was carried out in collaboration between both authors. Author POA designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors POA and RNA managed the analyses of the study and managed the literature searches. Both authors read and approved the final manuscript.

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Original Research Article

ABSTRACT

Objective: This study assessed the effect of age on HIV knowledge level among African American undergraduates at Jackson State University (JSU).

Methods: A total of 400 respondents were randomly selected from undergraduate students at JSU. A cross-sectional study design was utilized. Self-administered questionnaires regarding HIV knowledge level were used.

Results: Some respondents of this study had HIV knowledge gaps and misconceptions about the disease. This research results showed that majority of the students had good HIV knowledge level and there was no significant difference between students aged 18-24 and students aged 25 and above regarding HIV knowledge (P = 0.65).

Conclusions: Some knowledge gaps and misconceptions about HIV/AIDS were identified in this study. This research study suggests the use of drama and other social media messaging platforms that are more appealing to this vulnerable age group in the elimination of HIV knowledge gaps and misconceptions identified in this study.

Keywords: HIV/AIDS; undergraduate Students; HIV knowledge; CDC.
1. INTRODUCTION

Human immunodeficiency virus (HIV) has been a devastating inferno and a global public health menace that has claimed 36.3 million lives since the start of HIV epidemic [1]. It is estimated that 37.7 million individuals are living with HIV/AIDS globally. In 2020, about 1.5 million new infections were recorded and AIDS related deaths accounted for 680,000 thousand deaths [1]. In the United States (U.S.), it is estimated that about 1.2 million residents are living with HIV and 15,815 thousand deaths occurred among individuals living with the disease [2]. Centers for Disease Control and Prevention (CDC) estimates that about 13% of those living with the disease in the U.S. do not know their HIV status and will need testing [3]. In the U.S, African Americans are disproportionately affected more than any other ethnic groups. Highest rate of HIV infections diagnoses was recorded among African Americans, and they accounted for about 42% of new HIV infections in 2019 [2].

In the U.S., men who have sex with men (MSM) are mostly affected by HIV infections. MSM accounted for about 2% of U.S. population but accounted for 69% of new HIV infections recorded in 2019 [3]. In the same year, heterosexual contact accounted for 23% of all HIV diagnoses [3]. In the U.S, African American MSM are driving the high HIV infection rate seen among MSM [3]. CDC estimates that African American MSM account for 37.9% of HIV diagnoses among all MSM in 2019 [3]. African American males have the highest HIV infection among all African Americans, they accounted for 75% of HIV infections among all African Americans, most of which (82%) were attributed to MSM. African American males aged 25–34 years have highest HIV infection (43%), followed by those aged 13–24 years (27%) in 2019 [4]. HIV knowledge gaps and misconceptions have impeded fight against this disease among African Americans [5-7]. This heavy toll of HIV infections seen among African Americans underscores the need for effective HIV prevention campaigns gear toward eliminating lack of HIV knowledge, misinformation and misconceptions common among African Americans youths.

Sexually transmitted diseases (STDs) continue to have heavy burden on young adults. The highest rate of HIV infection was recorded among people aged 25-34 (30%) and followed by youths aged 13 to 24 (21%) [3,7]. More than half (51%) of youths aged 13-24 that are living with the disease, do not know their HIV status. Highest rate of undiagnosed HIV infection is found among young people aged 13 to 24 [8]. Most university undergraduates are within the age range that are mostly infected by HIV and other STDs [9]. If these youths are not protected from HIV and other STDs, any future investment among these young adults may be waste of human resources [9]. It is quite challenging to prevent HIV infection among young people in any society. Many youths lack basic information about HIV and how to protect themselves from the disease. Young adults are also at risk of HIV infections due to low rates of condom use, misinformation, alcohol or drug abuse and misconception of the disease [6-9].

There may be positive behavior changes among young adults if they are well informed about the various risks of HIV infections. Some previous studies have found that an increase in HIV knowledge will lead to positive behavior changes [9-13]. Youth friendly HIV education programs tailored toward young adults remain a vital tool for providing HIV information among youths. A similar study has shown that well executed health information program increased knowledge and positive sexual behaviors among their study participants [14]. There is public health need to prevent young adults from being infected with this dreadful disease. Young adults being valuable work force of our society, they should be guided with effective and youth friendly HIV education programs. Some previous studies have shown that misconceptions and lack of HIV knowledge are more frequent among undergraduate students [15–19]. Common misconceptions of the disease are that HIV can be transmitted through shaking hands, mosquitoes' bites, sharing clothes and public toilet with infected individuals [16–19]. These common misconceptions should be replaced with current scientific findings about this infectious disease.

These misconceptions relating to HIV infections underscore the need to keep these undergraduate students well educated about this dreadful disease. A similar study found that age-appropriate health education program led to increased perceived susceptibility to HIV infection and facilitated positive sexual behavior changes among their study participants [20]. According to CDC, young adults under the influence of alcohol or illicit drugs are at higher risk of HIV infections [21]. Absence of parental supervisions at the various higher institutions of
learning in the U.S. have exposed youths to risk HIV infections and opportunity to explore risk sexual behaviors such as having multiple sexual partnerships, having unprotected anal sex, lack or inconsistent use of condoms, having sexual intercourse under the influence of illicit drugs use and excessive alcohol consumptions [21-24].

This research findings will provide important empirical data on HIV knowledge that may serve as a useful tool in formulating HIV prevention policies among U.S. undergraduate students. It will also provide scientific data on the association between age and HIV knowledge among undergraduate students necessary to reduce the prevalence of HIV infections. There are serious knowledge gaps and misconceptions about HIV infections among young adults. Thus, it is imperative to investigate the effect of age on the knowledge of HIV among these undergraduates. Also, there are very few studies that have examined the association between age and HIV knowledge level among African American undergraduate students in the U.S. Thus, this study assessed the effect of age on HIV knowledge among this study participants.

2. STUDY METHODOLOGY

2.1 Study Design

We conducted a cross-sectional study among Jackson State University (JSU) undergraduate students. Main campus of Jackson State University is located at Jackson. Jackson is a city in the State of Mississippi and serve as the capital of Mississippi State in the U.S. JSU had about 9,000 undergraduates at the time of this study. Among institutions of higher learning in Mississippi State, JSU was the fourth largest institution of higher learning in the State and fourth largest Historically Black Universities in the U.S. [25]. This study respondents were randomly selected, and the inclusion criteria were as follows: (a) participants must be senior, junior, sophomore or freshman undergraduate students at Jackson State University; (b) respondents must give consent to participate in the study; (c) participants must be African American undergraduate students at Jackson State University; and (d) must be at least 18 years of age.

Michel and Talbot formulas were utilized in this study [26,27] to calculate the minimum sample size of 369 undergraduate students. Sample size was later increased to 400 respondents to accommodate for the possibilities of non-responses. JSU undergraduate students were encouraged to participate in the study. The survey questionnaires were answered in classrooms after obtaining permission from their lecturers. All study participants signed informed consent forms before participating in this study. The survey questionnaires took participants an average of eight minutes to complete. Participants of this study were told that the survey was a voluntary study, that they have absolute right to withdraw from the study anytime and may refuse to respond to any specific question without penalty or prejudice against them.

2.2 Study Data Collection

Approval for this research was obtained from JSU Institutional Review Board. Anonymous structured survey questionnaires (which was divided into two sections, section A: students demographic backgrounds and section B: knowledge of HIV/AIDS assessment were administered for completion by undergraduate students from January to September 2016, to seek basic information about their knowledge of HIV symptoms, prevention methods and transmission. Prior to administration of the study survey questionnaires, some samples were given to a group of JSU undergraduates to ascertain clarity. The survey questionnaire Cronbach’s alpha coefficient value was 0.78 on HIV/AIDS knowledge. Cronbach’s alpha coefficient value closer to 1.0 (range 0-1) shows higher internal consistency of the survey questionnaire [26,28]. We analyzed 400 properly completed questionnaires. Data were analyzed using chi-square (p<0.05) of SAS® 9.3 statistical software (SAS Institute Inc., Cary, NC, 2012).

2.3 Scoring of HIV Knowledge

Each correct answer to the survey questionnaire questions was given a score of 1. Any wrong or unsure answer was given a score of 0. HIV/AIDS knowledge section had scores ranged between 0-21. HIV Knowledge level scores from 0 to 10 were considered as poor knowledge level of the disease, while total scores more than 10 were considered as good knowledge level of the disease.

3. STUDY RESULTS

3.1 Respondents’ Profile

A total of 400 respondents participated in the study. Of the respondents 353 (88.3%) were
Christians and 47 (11.7%) students were non-
Christians. The mean age of the research
population was 21.9 ± 5.7 and the students ages
ranged from 18 to 57-year-old (Table 1). A total
of 340 (85%) students were between the age of
18- to 24-year-old and total of 60 (15%) were
between the age of 25- to 57-year-old. Of the 400
study participants, 35.2% were male while 64.8% were female.

Table 1. Characteristics of the students that
participated in the study

| Characteristics       | n (%) or Mean ± S.D. |
|-----------------------|----------------------|
| Age                   | 21.9 ± 5.7           |
| Gender                |                      |
| Female                | 259 (64.8)           |
| Male                  | 141 (35.2)           |
| Religion              |                      |
| Non-Christians        | 47 (11.7)            |
| Christians            | 353 (88.3)           |

% = Percentage; S.D = Standard Deviation; n = Number of students in each group

3.2 HIV/AIDS Knowledge Results

This research findings showed that more than
97% of the undergraduate students indicated that
unprotected sex, infected semen and sharing
unsterilized sharps such as needle could transmit
HIV infections (Table 2). More than 90% of the
study respondents indicated that infected
mothers could transmit HIV infections to their
children and receiving infected blood could
transmit the disease. Whether abstinence
practice could prevent HIV infections, about
87.3% of the students indicated that abstinence
could prevent infections. About 84.8% of
respondents knew that HIV is a virus. About 95%
of respondents indicated that multiple sexual
partners could predispose partners to HIV
infections. About 28.7% of respondents knew
that inconsistent condom use could increase the
risk of HIV infections. Whether infected persons
immune systems are affected by the virus, about
93.3% indicated that HIV attacks immune
systems. However, about 35.3% of the students
indicated that HIV and AIDS do not have the
same signs and symptoms in all infected
individuals. About 48.3% of respondents knew
that avoiding excessive alcohol consumptions
and illicit drug abuse could lower HIV infections
risk. About 87.5% of respondents indicated that
HIV is a pandemic disease; and about 74.8% of
respondents knew that untreated STDs increase
HIV infections risk.

This research findings showed that about 20% of
the study participants answered that sharing
clothes with infected persons will transmit HIV
infections, and about 21.7% of the students
indicated that sharing toilet with infected persons
will transmit the disease. There are
misconceptions toward HIV/AIDS identified in
this study. About 54.5% of respondents
answered that insects’ bites transmit HIV
infections. About 5.7% of the students answered
that HIV infected persons could be recognized
from their facial appearances. However, about
4.2% of the students answered that HIV cannot
infect youths, and about 19% of the respondents
answered that there was a total cure for
HIV/AIDS.

Table 2. HIV/AIDS knowledge among study participants

| Variables                                      | Appropriate responses | n (%)     |
|------------------------------------------------|----------------------|-----------|
| HIV/AIDS affects the immune system             | True                 | 373 (93.3) |
| HIV is already pandemic disease                | True                 | 350 (87.5) |
| Opportunistic infections are common            | True                 | 158 (39.5) |
| HIV and AIDS have the same clinical manifestations | False               | 141 (35.3) |
| HIV is a type of virus                         | True                 | 339 (84.8) |

People can get HIV from:

| Through infected semen | True | 389 (97.2) |
| Infected mother-to-child transmission | True | 377 (94.3) |
| Sharing infected needles and sharps | True | 389 (97.3) |
| Receiving infected blood | True | 369 (92.3) |
| Sexual intercourse without a condom | True | 389 (97.3) |

HIV infection can be prevented through:

| Sexual abstinence | True | 349 (87.3) |
| Consistent use of condoms can prevent HIV Infection | True | 285 (71.3) |
After stratifying HIV knowledge into poor HIV knowledge group (scores of 0–10) and good HIV knowledge group (scores of 11–21) about 96.5% of the students ≤ 24 years and 96.7% of respondents ≥ 25 years had good HIV knowledge. Mean score regarding HIV knowledge level was 16.7 ± 2.8 (Table 3). The study found no significant difference between students ≤ 24 years and students ≥ 25 years regarding HIV knowledge level (P = 0.65).

4. DISCUSSION

We have succeeded in assessing the effect of age on HIV knowledge level among this study participants. Some undergraduate students still have misconceptions regarding HIV infections and practice sexual risk behaviors. There are misconceptions identified in this study, and some of these misconceptions include the belief that sharing toilet and clothes can transmit HIV infections. Some students still believe that insects’ bites could transmit HIV infections. These misconceptions can be eliminated through effective youth friendly programs. It is disturbing that some students believed that HIV does not infect youths. Some respondents believed that HIV can be diagnosed by looking at the infected person’s facial expression and that HIV can be cured. Closely related research studies found similar results among their study participants [15-19]. Some of these erroneous beliefs identified among this study participants about HIV infections are quite disturbing. Some of the participants of this study believed that inconsistent use of condoms and sexual abstinence do not reduce the risk of HIV transmission among young adults. However, the higher scores regarding HIV knowledge level recorded among this study respondents may be attributed to university education they have acquired as university undergraduate students. If this study is conducted among youths that are not enrolled in university, we may record less HIV/AIDS knowledge level and more misconceptions. Thus, it is important to develop well-planned and effective youths’ friendly prevention programs geared toward increasing their competency and resilient to avoid risk behaviors to HIV infections. Some of the knowledge gaps identified among these young adults are startling considering global efforts to improve HIV knowledge level since the inception of HIV pandemic. This study did not find any significant difference between respondents ≤ 24 years and those respondents ≥ 25 years of age regarding HIV knowledge level. This finding is consistent with similar research finding [29]. Age-appropriate HIV prevention programs that will eliminate knowledge gaps and misconceptions identified in this study should be promoted at various institutions of higher learning. HIV prevention campaigns should focus on abstinence practice promotion, consistent use of condoms and sexual partner fidelity among these vulnerable young adults. Although some studies

| Variables | Appropriate responses | n (%) |
|-----------|----------------------|-------|
| HIV Misconceptions: | | |
| HIV is transmitted through sharing clothes | False | 320 (80) |
| HIV is transmitted through insect bites | False | 182 (45.5) |
| Diagnose HIV by looking at facial expression | False | 377(94.3) |
| HIV is transmitted through using public toilet | False | 313(78.3) |
| AIDS is a curable disease | False | 324 (81) |
| HIV does not affect young | False | 383(95.8) |
| HIV infection risk: | | |
| Avoiding alcohol and drug abuse reduce HIV risk | True | 193(48.3) |
| Multiple sex partners increase HIV infection risk | True | 380 (95) |
| Untreated STD increases HIV infection risk | True | 299 (74.8) |

% = Percentage; n = Number of students; AIDS=acquired immune deficiency syndrome
HIV= Human immunodeficiency virus; STD= Sexual transmitted disease

| Age          | Knowledge | P   |
|--------------|-----------|-----|
|              | Good knowledge | Poor knowledge |
|              | n (%)      | n (%) | |
| ≤ 24 years   | 328 (96.5) | 12 (3.5) | 0.65 |
| ≥ 25 years   | 58 (96.7)  | 2 (3.3)  | |

% = Percentage; P: p-value; p < 0.05 is considered significant; n = Number of students in each group
have shown that mass media play important role in dispensing HIV prevention information [30-35]. However, health educators should explore other HIV prevention methods such as role play and the use of social media messaging platforms that are more appealing and youth friendly.

5. CONCLUSIONS

This study has succeeded in identifying some of the knowledge gaps and misconceptions regarding HIV/AIDS that may be aiding the spread of the disease among these young adults. This study did not find any significant difference between respondents \( \leq 24 \) years and those respondents \( \geq 25 \) years of age regarding HIV knowledge level. Age-appropriate HIV prevention programs that will eliminate knowledge gaps and misconceptions identified in this study should be promoted at various institutions of higher learning. Finally, health educators should explore other HIV prevention methods such as role plays and the use of social media messaging platforms that are more appealing to this vulnerable age group.

CONSENT

All study participants signed informed consent forms before participating in this study.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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