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Identification of Individual and Regional Features Impacting HIV/AIDS Knowledge and Sentiment

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Identification of Individual and Regional Features Impacting HIV/AIDS Knowledge and Sentiment

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Abstract

Despite constant media coverage and public interest in current epidemics, the prevalence and lack of awareness of HIV/AIDS is often overlooked on campuses and communities associated with colleges and universities. Several interrelated factors, such as LGBTQ+ status, being a college student, gender, coming from a rural area, ethnicity, and educational attainment are known to contribute to behaviors regarding sexual health, especially non-curable diseases such as HIV/AIDS. Consequently, it is imperative to explore trends in both the HIV/AIDS knowledge and sentiments towards individuals with HIV/AIDS in college environments.

Current work utilizes a nonprobability sample recruited through media platforms, representing individuals that have some association to a college campus community. Participants completed a demographic questionnaire, the 18-item HIV Knowledge Questionnaire (HIV-K-Q18), and a 12-item subscale extracted from the 42-item Stigmatizing Attitudes Towards People Living with HIV/AIDS scale (SAT-PLWHA-S).

Differences in item functionality for the 18 HIV-K-Q18 items and the 12 SAT-PLWHA-S items as well as differences in overall knowledge level and overall sentiment, as measured by the average response on the full set of respective scale items, were explored.

Correlational analyses and Analysis of Variance (ANOVA) methods were conducted to determine existent relationships between demographics, HIV/AIDS knowledge, and sentiment towards individuals living with HIV/AIDS. These methods revealed individual and regional characteristics of participants that did impact overall HIV/AIDS knowledge level and sentiment.

These findings reveal features that contribute differentially to levels of HIV/AIDS knowledge and sentiment, specifically among LGBTQ+ participants. These participants scored higher on knowledge questions and felt more positive about people living with HIV/AIDS. The results can be utilized to create targeted community interventions and educational programming to improve sexual health of college and university campus communities.

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Introduction

We often see that sexual health affects individuals at varying degrees due to a multitude of factors. One of the largest public health issues is HIV/AIDS transmission. There were 37.7 million individuals infected with HIV in 2020, with Sub-Saharan Africa being home to roughly two-thirds of individuals infected with HIV/AIDS (UNAIDS, 2021). The reasons for HIV/AIDS transmission are numerous. This study focuses on key factors regarding HIV/AIDS. Factors of interest for this study include educational levels, coming from a rural area, gender, being a member of the LGBTQ+ community, being a college student, and ethnicity/race as they relate to HIV/AIDS. This data will come from a survey administrated with these factors in mind. They will be analyzed utilizing statistical methods such as linear correlation and ANOVA (Analysis of Variance). As such, these statistical methods aim to provide insight on correlations between these factors and/or HIV/AIDS knowledge and sentiment.

Motivation of Study

The motivation for this study comes from the lack of awareness and accurate knowledge regarding HIV/AIDS in several southern, rural, and college environments. Within these environments, interrelated factors help create a larger understanding of knowledge and sentiment displayed by individuals regarding certain aspects of health. With a disproportionate number of individuals infected with HIV/AIDS in the southeast United States, this study aims to examine potential areas of concern for health educators and healthcare workers in their fight against HIV/AIDS by utilizing linear correlation and ANOVA (AIDSVu, 2018).

Purpose of Study

The purpose of this study is to statistically examine factors that may be interrelated with knowledge and sentiment towards HIV/AIDS.

Literature Review

Educational Levels

With HIV/AIDS rates so high in Africa, we find valuable insight into the education needed to combat transmission and stigma surrounding HIV/AIDS. In Kenya, where a study on the effects of education was conducted, areas of the world with little to no education about HIV seemed to have several advantageous outcomes when education was implemented (Tuntufye, 2014). Studies found that when some form of education occurred in Kenya, the rate of infection in young women in their late teens and early 20s decreased by 50% (Tuntufye, 2014). This is corroborated by higher levels of schooling in areas of the world leading to lower rates of HIV infection (Tuntufye, 2014). Because of this, education has been said to be a "social vaccine against HIV" (Tuntufye, 2014). Education can have the effect of making individuals feel invincible against HIV, but overall, more education has proven to drastically help individuals protect themselves against HIV/AIDS (Ravert & Zimet, 2009).

Rural Status

In rural areas, HIV is a large issue due to attitudes surrounding HIV/AIDS and access to healthcare. Healthcare providers report that there tend to be much more stigmatized views in rural areas compared to their more urban counterparts (Brems et al., 2010). There seems to be an elevated stigma surrounding HIV/AIDS as well due to the association made with the methods of transmission (Brems et al., 2010). Attempts have been made to decrease stigma, but have proven difficult (Brems et al., 2010). We also see difficulty when individuals report that they do not have access to care at their local, rural clinics and must drive to cities outside of their homes (Sowell & Christensen, 1996). The lack of healthcare also leads to a lack of knowledge, further deepening the stigma (Sowell & Christensen, 1996). Some individuals that had to travel to

different cities reported leaving before the sun rose, covered under a blanket in the back seat, and returning when the sun set, still under the blanket to avoid detection from those in the community (Sowell & Christensen, 1996).

Ethnicity

In 2016, 12% of the United States population was African Americans, yet 45% of HIV diagnoses in the United States were among African Americans (Payne-Foster et al., 2017). African American men diagnosed with HIV were vocal about the stigma and lack of healthcare that affects them (Blake et al., 2016). As part of a qualitative study, Blake and colleagues interviewed 35 African American men living with HIV in Georgia. Those interviewed believed that the stigma was just so impactful due to the lack of education in the communities they were a part of (in this case, rural) and wanted to help focus education on men who were diagnosed with HIV (Blake et al., 2016). The interviews also revealed attitudes not typically associated with HIV, as some men were thankful for the diagnosis as it helped them get out of situations that made their lives harder (Blake et al., 2016). This, coupled with the level of openness that loved ones displayed, helped these men accept their diagnosis (Blake et al., 2016). This was seemingly an uncommon experience, globally, for people of color, as some individuals expressed how difficult having their diagnosis was. Several African and Caribbean individuals that were diagnosed with HIV/AIDS expressed that their home communities were different from the communities they found themselves in when emigrating (Logie et al., 2016). Though some of them felt an aversion to seeking help with ethno-specific programs, many found that they had left scornful environments and felt freer among peers (Logie et al., 2016). It was apparent that it was not a perfect solution, but these individuals found sources of education and support in the more progressive areas they moved to (Logie et al., 2016).

Gender

Many studies revolve around differences in male and female attitudes and feelings regarding HIV/AIDS when discussing gender. Women typically have less control over the options they have for their safety regarding sexual health (Gupta, 2000). Many cultures believe that "good" women are silent and unknowledgeable about matters pertaining to sex, and this has been correlated with women having reduced access to information about risk reduction and/or self-advocation during sex (Gupta, 2000). Because of their lack of understanding about sexual diseases and the way they transmit, as well as beliefs that virgins can cure sexual ailments, many women are greatly disadvantaged in the fight against HIV/AIDS (Gupta, 2000). Women are prone to infection and the negative outcomes associated with being a person diagnosed with HIV/AIDS (Gupta, 2000). Men, on the other hand, are often seen as sexual conquerors and in need of several partners to stay dominant in society (Gupta, 2000). This often leads to greater transmission. Men do, however, deal with massive stigmatization regarding positive diagnoses of HIV/AIDS, due to the association with gay individuals. These men will often experience homophobia and engage in more risk-taking behaviors (Gupta, 2000).

College Students

College students present a unique perspective on the perceived risks associated with HIV/AIDS. Several studies have shown that cognitive development for adolescents typically leads to a type of egocentrism (Ravert & Zimet, 2009). This egocentrism leads to feelings of invincibility and invulnerability (Ravert & Zimet, 2009). A high danger invulnerability score led to individuals having a high degree of invulnerability, leading to a higher chance of engaging in risky behaviors (Ravert & Zimet, 2009). Therefore, college students, though educated and likely knowledgeable on the transmission of HIV/AIDS, might feel as though they are not susceptible to contracting

HIV. This may lead to an overall sense of satisfaction with current knowledge levels and may indicate that college students may be more likely to engage in unsafe sex practices and increase their chance of HIV transmission. This is supported by past surveys indicating that 40% of college individuals may use condoms while less than 25% of students indicated that they would always use a condom during intercourse (Lance, 1970).

LGBTQ+

The aids epidemic had its beginnings among individuals of the LGBTQ+ community. HIV/AIDS remains a prominent disease in this community, specifically among men who have sex with men (MSM) (Kahle et al., 2018). Of almost 40,000 new HIV diagnoses in the United States, over two-thirds of those diagnosed were MSM (Kahle et al., 2018). Reports of inconsistent condom usage during anal sex seem to also be increasing among MSM as well as individuals not receiving proper testing to know their status (Kahle et al., 2018). Much like other groups, members of the LGBTQ+ community can underestimate their risk of HIV. Perceived risk and "treatment optimism" stemming from large awareness of antiretroviral treatments and PrEP (Pre-Exposure Prophylaxis) seem to support why men are choosing to practice safe sex less often (Kahle et al., 2018). This may stem from biases in the education for HIV/AIDS prevention, as it largely targets individuals in the LGBTQ+ community. Intersectionality has often also played a significant role within this group, as many individuals in the LGBTQ+ community rate other social concerns as more concerning that HIV/AIDS (Kahle et al., 2018). The targeted information towards this group and perceived lack of justice or social support may indicate why HIV/AIDS is transmitting at high rates in this community.

Methods

Participants and Recruitment

For recruitment, a survey was created and distributed. The survey featured a combination of key demographic questions, the HIV Knowledge Questionnaire, short 18 response version (HIV-K-Q18), and 12 preselected statements from the 42 question SAT-PLWHA-S scale (stigmatizing attitudes towards people living with HIV/AIDS scale), created by Berger, Ferrens, and Lashley (Carey & Schroder, 2002; Beaulieu et al., 2014). The survey was approved by the Institutional Review Board (IRB). The survey was sent through various personal media apps and through word-of-mouth recruitment once more participants became aware of the survey.

HIV-K-Q18

The HIV Knowledge Questionnaire, short 18 response version is a scale that aims to tap into other constructs that the original 45-item scale did not address (Carey & Schroder, 2002). It also serves the benefit of providing a more concise and well-established measure of knowledge regarding HIV. The 18 items (Table 1) have forced-choice statements for their answers, including ‘true’, ‘false’, and ‘don’t know’ (Carey & Schroder, 2002). Higher scores from this questionnaire indicate greater HIV-related knowledge (Carey & Schroder, 2002). For data collection, any response of ‘don’t know’ or an incorrect answer (whether incorrectly answering true or false) was deemed an incorrect answer. This served to aid in data interpretation and due to errors with the survey, the option of ‘don’t know’ was not displayed for every possible question. By coding the answers this way, the researchers attempted to correct any issues that may have arisen due to the survey error. If the respondent answered the question correctly, their response was input as a “1”. If their answer was incorrect, it was input as a “0”. A higher score indicated a

greater knowledge level regarding HIV/AIDS and the transmission of HIV. A sum of the individual scores was also collected for later analyses.

Table 1. HIV-K-Q18 Questions 1

Statement	**Correct Answer**
1. Coughing and sneezing DO NOT spread HIV.	True
2. A person can get HIV by sharing a glass of water with someone who has HIV.	False
3. Pulling out the penis before a man climaxes/cums keeps a woman from getting HIV during sex.	False
4. A woman can get HIV if she has anal sex with a man.	True
5. Showering, or washing one's genitals/private parts, after sex keeps a person from getting HIV.	False
6. All pregnant women infected with HIV will have babies born with AIDS.	False
7. People who have been infected with HIV quickly show serious signs of being infected.	False
8. There is a vaccine that can stop adults from getting HIV.	False
9. People are likely to get HIV by deep kissing, putting their tongue in their partner's mouth if their partner has HIV.	False
10. A woman cannot get HIV if she has sex during her period.	False
11. There is a female condom that can help decrease a woman's chance of getting HIV.	True
12. A natural skin condom works better against HIV than does a latex condom.	False
13. A person will NOT get HIV if she or he is taking antibiotics.	False

14. Having sex with more than one partner can increase a person's chance of being infected with HIV.	True
15. Taking a test for HIV one week after having sex will tell a person if she or he has HIV.	False
16. A person can get HIV by sitting in a hot tub or a swimming pool with a person who has HIV.	False
17. A person can get HIV from oral sex.	True
18. Using Vaseline or baby oil with condoms lowers the chance of getting HIV.	False

SAT-PLWHA-S Scale

The SAT-PLWHA-S is a scale of stigmatizing attitudes towards people living with HIV (Beaulieu et al., 2014). It is a 42-item scale with seven factors including 1- concerns about occasional encounters; 2- avoidance of personal contact; 3- responsibility and blame; 4- liberalism; 5- non-discrimination; 7- criminalization of HIV transmission (Beaulieu et al., 2014). Satisfactory internal consistency was displayed in the creation of the scale ad homophobia and HIV transmission knowledge are significant determinants of stigmatizing attitudes towards people living with HIV/AIDS (PLWHA) (Beaulieu et al., 2014). For the purpose of the current study, only 12 of the original 42 items were used (Table 2). These specific questions were chosen based on their factor categorization. The three factors were 1- concerns about occasional encounters, with 3 questions; 2- avoidance of person contact, with 3 questions; 3- responsibility and blame, with 6 questions. The main reason for choosing these factors/questions is that they were more concise for the purpose of the survey. The options for the individuals to answer were a Likert-scale with options of strongly agree, somewhat agree, neither agree nor disagree, somewhat disagree, and strongly disagree. For questions such as 1, 2, and 3, strongly agree was

coded as a “5”, somewhat agree a “4”, neither agree nor disagree a “3”, somewhat disagree a “2”, and strongly disagree a “1”. For the remaining questions, strongly agree was coded as a “1”, somewhat agree a “2”, neither agree nor disagree a “3”, somewhat disagree a “4”, and strongly disagree a “5”. For questions 1, 2, and 3, the interpretation is that someone that strongly agrees would feel positive about an individual with HIV/AIDS. Therefore, they receive a higher score. For the other questions, a response of strongly agree would indicate that the person feels negative about an individual with HIV/AIDS. Therefore, they receive a lower score. With this input in mind, a higher score for sentiment indicated that the individual felt very positively about individuals with HIV/AIDS while a lower score indicated that the person felt very negatively about a person with HIV/AIDS. Sums of scores were recorded as well for data analyses.

Table 2. SAT-PLWHA-S scale, 12 items

F1: Concerns about occasional encounters, 3 questions

1. Being around someone who has AIDS does not bother me.

2. I would not be worried for my health if a co-worker had AIDS.

3. It would not bother me if there was a boarding house for people with AIDS on my street.

F2: Avoidance of personal contact, 3 questions

4. I could not be friends with someone who has AIDS.

5. I would limit my contact with a person whom I know is infected with AIDS.

6. I would not hug someone with AIDS.

F3: Responsibility and blame, 6 questions

7.People who use injectable drugs deserve to have AIDS.

8. My support for a person living with AIDS depends on how the person was infected.

9. I am disgusted by persons who were infected during homosexual relations.

17. People who are infected with the AIDS virus because they have not used a condom deserve what they get.

29. People with AIDS have only themselves to blame.

39. Most people with AIDS are responsible for having their illness.

Analytic Approach

The purpose of the current study is to explore the relationships that exist between HIV/AIDS knowledge/sentiment and educational levels, rural status, ethnicity, gender, college students, and LGBTQ+ status. To explore these relationships, analyses of variance (ANOVAs) were conducted as well as Pearson linear correlation coefficient tests. Bonferroni correction testing also occurred for certain ANOVAs. More detail for these methods will be provided below.

Pearson Correlation Coefficient Test

The Pearson correlation coefficient is a way to measure the strength of a linear association between two different variables (Laerd). For the purposes of the current study, those two variables were totals for knowledge and sentiment (Laerd). To interpret the Pearson correlation coefficient, there is a range from -1 to +1. A value less than 0 indicates a negative correlation and a value greater than 0 indicates a positive correlation. A value of 0 indicates there is no linear correlation between the variables (Laerd). The coefficient is represented with *r*.

ANOVAs

Analysis of variance, or ANOVA, is a statistical technique utilized to analyze measurements with several distinct kinds of effects that are operating simultaneously (Scheffé, 2010). ANOVAs help determine which effects are important and to estimate those effects (Scheffé, 2010). This is achieved by using a ratio of all the means to see whether the means differ or not (Iversen & Norpoth, 1988). ANOVAs are related to statistical methods that are known as regression analyses and involve two or more groups of observations of a dependent variable to determine the difference of the mean for the dependent variable (Iversen & Norpoth, 1988). Analyses of variance contain information regarding the degrees of freedom, the sum of squares, the mean squared values, F values, and P values. Degrees of freedom can be summed as the values of the smallest number of terms in sums that we need to know to find the remaining terms and compute the sum, where the sum of squares is helpful in determining the variance of the data, F values are the values of F distributions and help determine significance, and P values help validate our hypotheses when performing tests (Iversen & Norpoth, 1988).

Bonferroni Correction

Bonferroni correction occurs in a variety of statistical circumstances but is most used to correct the family-wise error rate following ANOVAs as a post-hoc procedure (Armstrong, 2014). This correction adjusts probability values because of an increased risk of type I error (rejecting the null hypothesis when you should not) when making multiple statistical tests with the same dependent variable (Armstrong, 2014). Bonferroni correction follows this formula: $\boldsymbol{\alpha_2 = \alpha_1 / n}$ where $\boldsymbol{\alpha_2}$ is the new alpha value to use and $\boldsymbol{\alpha_1}$ is the original alpha value and n is the total number of comparisons or tests being performed (Zach). Bonferroni correction will allow for further

testing to see if there truly is a statistically significant mean difference for certain groups and to help identify what group(s) differ(s).

Results

Demographic Information

In Table 3, the demographics of the participants of the current study are displayed.

Table 3. Participant demographics

Demographic Categories	Frequency	N=100
Age		
18-24	70	
25-33	11	
34-40	8	
41-50	6	
51+	5	
Rural		
Yes	39	
No	61	
Ethnicity		
Non-White/Caucasian	17	
White/Caucasian	83	
Education		
High School or GED Equivalent	8	
Some College	54	
Associate Degree	5	
Bachelor's Degree	43	
Master's Degree	12	
Ph.D. or Higher	8	
College Student		
Yes	74	
No	26	
Gender		
Female	74	
Male	22	
Non-Binary/Third Gender	4	

LGBTQ+	
Yes	35
No	65
HIV	
Yes	0
No	100

Once the data collection was complete, there were 107 responses. Of those 107 responses, only 100 were valid, complete responses. As displayed in Table 3, 70% of participants were between the ages of 18-24, with 30% being 25 years old or older. 39% of individuals came from a rural area and 83% of respondents were white/Caucasian with the other 17% being non-white/Caucasian. More than half of the individuals that responded had an education level of 'Some College' with 54% indicating such, and 74% of the respondents were college students at the time of taking the survey. 74% of participants were female, 22% male, and 4% were non-binary or a third gender, with 35% of the participants indicating they were part of the LGBTQ+ community. All (100%) of the respondents indicated that, at the time of the survey, they had not received a positive diagnosis for HIV/AIDS.

Pearson Correlation Coefficient Test

Table 4. Pearson's Correlation

Alternative hypothesis:	True correlation is not 0	
t = 2.9899	df = 98	p-value = .003529
95% Confidence Interval	.098	.459
Correlation	.289	

For the correlation output, there was a p-value of .003529. The correlation value of .289. Additionally, the t value, or the value of differences relative to variation, was 2.9899 and the degrees of freedom is 98. The 95% confidence interval has values between .098 and .459.

ANOVAs and Bonferroni Correction

Table 5. Knowledge Level of LGBTQ+

	DF	Sum of Squares	Means Squared	F-value	P-value
LGBTQ+	1	32.8	32.76	4.12	.0451
Residuals	98	779.2	7.95		

In Table 5, the ANOVA for the knowledge level of the LGBTQ+ group is displayed. From these results, we find that the mean squared value is 32.76 and the p-value is .0451 as compared to the alpha value of .05. This was the only significant finding for knowledge levels, with individuals identifying as LGBTQ+ members having a higher mean knowledge level compared to those not in the LGBTQ+ community (13.8 vs. 12.6).

Table 6. Sentiment Level of LGBTQ+

	DF	Sum of Squares	Means Squared	F-value	P-value
LGBTQ+	1	198	197.9	4.031	.0474
Residuals	98	4812	49.1		

In Table 6, the ANOVA for the sentiment level of the LGBTQ+ group is displayed. From these results, we find that the mean squared value is 197.9 and the p-value is .0474 as compared to the alpha value of .05. This was the only significant finding for sentiment levels, with individuals identifying as LGBTQ+ members having a higher mean sentiment level compared to those not in the LGBTQ+ community (56.9 vs. 53.9).

Table 7. Table of Mean Values

Factor	Mean	Standard Deviation
Knowledge Levels		
Rural		

Yes	13.000	2.810
No	13.033	2.921
Education		
HS	12.750	2.915
Some College	12.759	2.874
Associate's Degree	12.600	5.505
Bachelor's Degree	14.000	2.000
Master's Degree	12.583	2.539
PhD or Higher	14.375	2.387
College		
Yes	12.932	3.017
No	13.269	2.409
Gender		
Male	13.500	2.220
Female	12.743	3.025
Non-binary	15.500	1.290
LGBTQ+		
Yes	13.8	2.816
No	12.6	2.826
Ethnicity		
White	13.012	2.961
Nonwhite	13.059	2.410
Sentiment Levels		
Rural		
Yes	54.744	7.140
No	55.066	7.153
Education		
HS	54.125	8.951
Some College	54.648	7.214
Associate's Degree	52.400	9.915
Bachelor's Degree	54.308	8.518
Master's Degree	55.916	4.399
PhD or Higher	58.875	2.100
College		
Yes	54.432	7.266
No	56.385	6.579
Gender		

Male	56.045	7.227
Female	54.432	7.220
Non-binary	58.250	2.363
LGBTQ+		
Yes	56.857	4.760
No	53.908	7.947
Ethnicity		
White	55.096	6.971
Nonwhite	54.176	7.955

Table 7 displays the mean values and the standard deviations for each of the categories that were differentiated.

Table 8. Bonferroni P-values

Knowledge for LGBTQ+	.045
Sentiment for LBGTQ+	.047

Table 8 displays the information for the p-values after Bonferroni correction was applied. After the correction, the p-value for knowledge levels of the LGBTQ+ group was .045 and the sentiment levels of the LGBTQ+ group was .047.

Discussion

Summary of Results

The preliminary data regarding correlation yielded a linear correlation coefficient of .289 (Table 4). This indicates that there was a small to moderate positive correlation between knowledge and sentiment for the participants. This meant that as knowledge increased, so too did positive feelings about people with HIV. Once this was decided, it became important to perform ANOVA

testing. ANOVA testing for knowledge levels and sentiment levels were performed for groups including gender, rural status, college status, educational attainment levels, ethnicity, and LGBTQ+ status.

Of all the ANOVAs, the only ANOVAs that yielded significant results were for LGBTQ+ individuals for both knowledge and sentiment. The p-value for knowledge levels when looking at LGBTQ+ individuals was .0451 (Table 5). The p-value for sentiment levels when looking at LGBTQ+ individuals was .0474 (Table 6). Using an alpha value of .05 for comparison, these two values were the only ones below .05, and thus were the only ones warranting a rejection of the null hypothesis (i.e., that there was no difference in means). There was evidence of mean differences, and when Bonferroni correction was applied, the knowledge p-value remained .045 and sentiment p-value remained .047 (Table 8).

As seen previously, knowledge and sentiment scores were significantly associated with being a part of the LGBTQ+ community. Members of the LGBTQ+ community had higher knowledge and sentiment scores on average. There was also substantially less variability in sentiment scores among self-identified LGBTQ+ individuals, suggesting that members of the LGBTQ+ community are more consistent and unified in their sentiment towards individuals with HIV/AIDS.

Despite the insignificant findings for other demographic variables, knowledge and sentiment generally increased with increased levels of education. It was also notable that females actually had the lowest levels of both knowledge and sentiment when compared to males and those that

identified as non-binary, although this was not statistically significant. Moreover, albeit slight and not statistically significant, those individuals that identified as rural had lower levels of both knowledge and sentiment.

This indicated that individuals in the LGBTQ+ community knew more about HIV/AIDS. They knew more about transmission methods and how to decrease the risk of transmission. They also felt more positive about individuals that have a positive diagnosis of HIV/AIDS. LGBTQ+ individuals were more likely to submit answers that aligned with being less fearful and less condemning of individuals with HIV/AIDS.

Comparison with Literature Review

Individuals that are part of the LGBTQ+ community might not find these results surprising. There are common myths about individuals in the LGBTQ+ community regarding HIV/AIDS. It is often thought to be a "gay" or "LGBTQ+" disease, despite people of heteronormative backgrounds being at risk for contracting HIV/AIDS (HRC). There are also thoughts of promiscuity within the LGBTQ+ community that may make individuals think that LGBTQ+ individuals are at a higher risk and should worry more. While members of that community are at risk, there are several methods of remaining negative such as testing, medications to prevent HIV such as PrEP (Pre-Exposure Prophylaxis), or needle exchange programs for syringe/injectable drugs (HRC). These myths and misinformation are likely due to the stigma that surrounded the LGBTQ+ community when the AIDS epidemic first took place.

Many homosexuals were affected by AIDS in the 1980s. It was often highly associated with gay men, and AIDS was ignorantly called GRID, or Gay Related Immune Deficiency. Many members of the LGBTQ+ community feel the backlash all these years later due to the homophobia and stigma that became associated with HIV/AIDS (Ruel & Campbell, 2006). There is still rampant homo/bi/trans-phobia, with 20% of all hate crimes being committed based on sexual orientation discrimination (Hate Crime Statistics). This shows that there is still a large amount of intolerance for the LGBTQ+ community and, by proxy, HIV/AIDS will continue to be a stigmatized disease. Marketing could also aid in this stigmatization, as much of the marketing for stopping the spread of HIV/AIDS is currently directed towards individuals of the LGBTQ+ community.

Campaigns such as “Let’s Stop HIV Together” by the CDC, are heavily targeted towards members of the LGBTQ+ community (CDC, 2022). Many social media websites that have a large user population of individuals in the LGBTQ+ community or entertainment that revolves around LGBTQ+ individuals typically have some ad about HIV and/or PrEP to help those in this community. Studies that have looked at the effectiveness of such campaigns show that there is a substantial amount of targeting to MSM, and there are mixed results, with studies showing that some interventions are helpful, yet others are not (McDaid et al., 2019).

However, there seems to be a trend that these interventions do help with knowledge and testing, which ultimately decreases stigma (McDaid et al., 2019). Contact based and educational interventions are some of the best methods for decreasing stigma (Approaches to Reducing Stigma). By these methods, the marketing aims to normalize the stigmatized behavior/disease by

providing knowledge and humanizing the conditions. As shown in the current study, with LGBTQ+ individuals knowing more and feeling more positive than their counterparts, this campaigning to LGBTQ+ individuals seems to have been successful. However, as stated, LGBTQ+ individuals are not the sole group that needs HIV/AIDS education, with 23% of new HIV diagnoses being in heterosexuals in 2019 (CDC, 2021). It is important that informative campaigns be done with all groups that may be at risk, rather than groups that have been historically stigmatized by HIV/AIDS.

Limitations and Future Research

As with all studies, the current study is not without its limitation. The sample size of the participants is small with only 100 participants. With this, 83% were white, 74% were female, and 74% were college students with 92% having an education level of some college or higher. These statistics are not representative of the global population. Additionally, there was human error and bias in the survey. The responses to knowledge questions were not completely accurate in the options available for all questions due to the survey not displaying "Don't Know" as an option for all knowledge questions. This may have caused some individuals to answer in a way they may not have normally answered. At the same time, there could have been bias for how the answers were chosen or confusion in interpretation of questions and answers. The participants are also prone to bias, based on several factors such as providing socially desirable answers to questions and responding is a way they feel they should due to societal pressures and norms.

For future research, the current study could lend itself to providing knowledge on HIV/AIDS knowledge levels and hesitancy for vaccines. In recent years, due to the COVID-19 pandemic,

vaccine hesitancy has been a highly debated topic. Trials for an HIV vaccine began in early 2022, and with the stigma associated with HIV/AIDS, as well as vaccines, data such as that displayed in this study could help decrease hesitancy and stigma (Ellis, 2022). Additionally, marketing and information related to individuals outside of the LGBTQ+ community could benefit from this study. The trends indicate that the marketing for HIV/AIDS prevention has proved to have been successful in infiltrating the LGBTQ+ community, so public health initiatives might benefit from catering material to other groups as well. The fight against HIV/AIDS, and the stigma and misinformation associated with it, will involve several groups from numerous backgrounds.

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