Exploring Students' Attitudes and Insight toward the Changing Face of AIDS

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Abstract:
The purpose of this undertaking is to gauge how students at a two-year college view HIV infection/AIDS, given that much has changed regarding this disease in the past decade. We have conducted a research study to discover where misinformation, discrimination, and stigma might exist in this community. A presentation, delivered by a guest speaker using his personal life experience and knowledge, was used to educate students in selected classes. We then administered a survey in order to research students' attitudes and insights regarding this important topic using the cluster method. The survey also included data from students in the classes who were exposed to the presentation and its insight before they took the survey. The preliminary analysis of this data reveals that there is a disconnect between the facts/science regarding HIV/AIDS and students' attitudes and perceptions. In order for today's students to be able to intelligently handle the responsibility of this highly important civic reality, it is essential that the HIV/AIDS curriculum is "reinvented" for all disciplines and presented to all college students so that they are armed with facts. We are in an era where treatment can equal prevention, yet our data is showing this is not understood. Having an understanding of the current science and social aspects of HIV/AIDS will spark debate, increase awareness, and ultimately reduce stigma and social discrimination that currently exists. It is important to give students the opportunity to become deep learners by engaging in active civic learning, which leads to a better understanding of, as well as long-term retention of, learned concepts.

Key Words:
HIV/AIDS infectious diseases, treatment and prevention, civic engagement, Heath Education, Retrovirus, Antiretroviral therapy (ART), Disease and Homeostasis

Introduction:

The acquired immune deficiency syndrome, known as AIDS, is a viral disease of the immune system caused by the human immunodeficiency virus (HIV). It is a serious human disease that can destroy the body's natural defense system (T-cells responsible for cell-mediated immunity) and causes death when the body becomes immunocompromised. Specifically, the HIV virus causes infected cells to lyse, or rupture, when infected and reproduces with T cells. It is the "resultant T-cell deficiency which leads to the immunodeficiency in AIDS." (Zelman et al. 2015, p.40).

The HIV virus is a retrovirus that carries its genetic information as RNA. Two types of the virus have been found, HIV-1 and HIV-2. HIV infects nearly 7,000 people daily and about 300 people hourly. HIV infection leads to the development of AIDS. The HIV epidemic began about 30 years ago, and since then over 60 million people have become infected with HIV and about 30 million have died from developing AIDS. While it is a fact that currently infected individuals are living longer, there are 34 million people worldwide infected with HIV/AIDS. In 2011, AIDS affected nearly 1.7 million people. The factors that place individuals at risk for developing HIV/AIDS are having unprotected sex, multiple sex partners, having another sexually transmitted infection, IV drug abuse, being uncircumcised, and breast feeding to children born to an infected mother (Zelman et al. 2015).

While not everyone who carries the virus develops AIDS, *"all infected individuals can pass it on, by two main methods: (a) through sexual intercourse and (b) by transfer of blood cells, as when drug users share needles*" (Hale and Marghan 1991, p.19). Furthermore, as a "*retrovirus, it can remain inactive in its host for years without causing symptoms, but asymptomatic carriers may still transmit the disease*" (Rudin 1997, p.8). Lack of an effective vaccine contributes to the issue. Vaccine development "is complicated by the great genetic variation among strains of HIV and the virus's ability to quickly mutate. Vaccines to date have not been successful in stimulating HIV prevention" (Zelman et al. 2015). Table 1 below shows what the World Health Organization (WHO) suggests for HIV prevention.

Table 1: World Health Organization (WHO) suggestions for HIV prevention (Zelman, et al. 2015, p.27)

	HIV prevention as suggested by the WHO
1	*Abstinence*
2	*Monogamy*
3	*Condom use*
4	*Testing and counseling for HIV*
5	*Male circumcision*
6	*Sterile needles and syringes for each injection for IV drug use*
7	*ART therapy* • *Pre-exposure prophylaxis for an HIV-negative partner* • *Post-exposure prophylaxis for accidental exposure* • *To prevent mother-to-child transmission."*

Furthermore, the recommended treatment for HIV infection is Antiretroviral Therapy (ART). It is important that ART is given early on after acquiring HIV. ART is not a cure for the HIV infection; the treatment simply controls the replication of the virus, slowing down its progression. The fact that half of all new HIV infections occur in individuals who are 25 years of age or younger is alarming because it means that there is a gap in information in this young population. It is imperative that college instructors intervene in helping to combat the HIV/AIDS pandemic occurring in the college age population and alleviate the gap of information among their age group. This is very important especially when we consider the issue of comorbidity of HIV with other illnesses such as HCV infection and mental illnesses, as they affect access and adherence to HIV treatment and care.

This study gauges students' views on HIV/AIDS at a two-year college, specifically on the questions "Does

exposing students to essential basic information about HIV/AIDS and related matters affect students' attitudes about HIV/AIDS and those who might be affected by it?" and "Are the students who are exposed to updated information about HIV/AIDS and related issues more likely to accept those who have HIV but who are under treatment (undetectable)?" There is an indication that the attention to the informational content on HIV/AIDS has been significantly reduced in cross curriculum coverage in the last few years. The goal is to find out whether students' attitudes are different among those who were recently exposed to essential basic information about HIV/AIDS and those who were not exposed to the same information.

Methodology

To test the proposed inquiry questions, we conducted a study among two-year college students and compared two groups of students: those who were exposed to essential basic knowledge about HIV/AIDS treatment with those who were not. As seen in figure I, the Research Methodology Concept Map, two groups of surveyed students were identified to participate in the study. One group was exposed to essential, basic HIV/AIDS information, the "informed group," and the second group was not exposed to the same information and was given the label the "uninformed group." The essential basic of HIV/AIDS information was delivered through guest speakers to the members of the "informed Group."

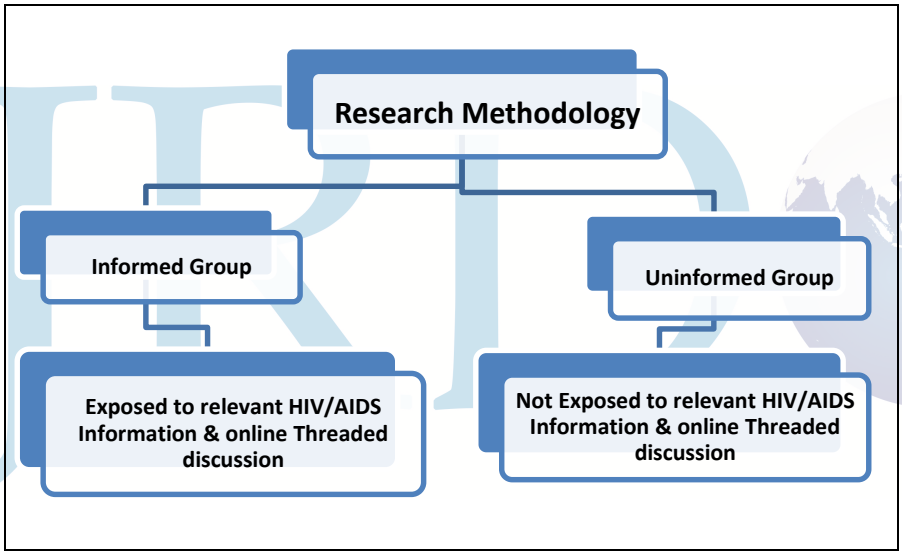


Figure 1: shows the Research Methodology Concept Map

The Presentation:

Using his research and personal relevant life experience, the guest speaker (presenter) created a PowerPoint presentation containing the needed essential basics of HIV/AIDS information, which was reviewed by the professor who teaches microbiology. The PowerPoint presentation was delivered in several sections of an introductory Microbiology, a Biology 114 and English 102 as the "informed group" of the study in a community college located in a large metropolitan area. In addition, a threaded online discussion on the topic of HIV/AIDS, moderated by the presenter and the instructor of those classes, was followed for each class.

The PowerPoint presentation of the essential basic information included:

- History of HIV infection, including discovery of the HIV virus.
- Outlooks for those infected and how that has changed over time.
- The mechanism of HIV viral infection and how the virus attacks the immune system.
- Viral replication and the enzymes the virus uses to accomplish this.
- The development of antiretroviral drugs, the different classes of drugs, and how they interfere with

viral replication.
- The concept of HAART (Highly Active Antiretroviral Therapy).
- The different types of serological tests performed to assess an HIV infected individual's response to treatment, and the significance of those tests.
- How positive attitude can benefit one's health.

Since the study took place in the early weeks of the semester, we made the assumption that all the students who participated in the study from the informed and uninformed group, prior to being exposed to the PowerPoint presentation, had either no content, or had outdated content about HIV that would not influence the study results.

The Survey:
A survey consisting of 14 questions was developed based on relevant statements and information from the Swiss National AIDS Commission with the intent of providing an educational benefit to all who took the survey. The included questions were written in succinct statements to be easily understood. The 14 questions are grouped into three main categories: Personal Profile (PP), HIV/AIDS Information (HAI), and Behavioral Questions (PQ) (figure 2, table 2 &3).

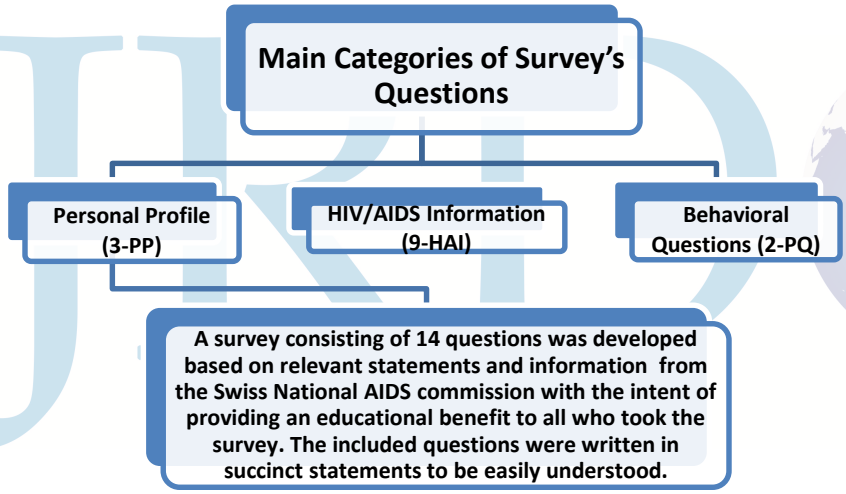


Figure 2: shows the main categories of survey's questions

Table 2: The main categories and the number of questions in each category used in the study

	Main Categories	Number of Questions
I	Personal Profile (PP),	3
II	HIV/AIDS Information (HAI),	9
III	Behavioral Questions (PQ).	2
Total question		14

Table 3: Survey's Questions

	Main Categories	Questions in Each Category
I	**Personal Profile (PP),**	Which category below includes your age?
		Which best describes your gender?
		Which best describes your level of education?
		What is your HIV status?
		How well educated do you feel you are about HIV / AIDS?

II	**HIV/AIDS Information (HAI),**	Do you think you can tell if someone has HIV/AIDS just by looking at them?
		Would you consider dating someone who is HIV positive?
		If a friend who is HIV positive told you that their viral load is undetectable, how well do you feel you would understand what your friend said?
		How likely would you be to consider dating a person who is HIV positive but has an undetectable viral load?
		How likely do you feel you would contract (or transmit) HIV to or from a committed partner who's HIV status was different from yours in attempting to conceive a child, provided the HIV positive person met the criteria of the Swiss Statement above?
		How likely would you be to consider having unprotected sex with a partner who verbally assured you that they were "clean" and "drug and disease free"?
		How often do you get tested for HIV?
III*	**Behavioral Questions (PQ).**	Which best describes your sexual orientation?
		Which statement best describes your sexual activity?

**After the fact, we did realize that the following question could have been added to the study under the Behavioral Questions category: "If you have been given a list of individuals who tested positive for HIV, which statement best describes your understanding from which group in the society this list might come from? Rich people, Poor people, Minority people, Well educated people, Uneducated people, HIV/AIDS is not associated with a certain group of people."*

Administering the Survey:

The survey was administered to the classes exposed to the presentation. These were named the "informed group." Additionally, the survey was circulated to a cluster of other classes, named the "uninformed group," to compare the results. As shown in table 4, the uninformed group consisted of both science and non-science classes offered in the morning, afternoon, and evening as well as a weekend class. These classes included a Psychology class, an Accounting class, two Math classes, a Chemistry class, and a Microbiology class.

The survey was administrated to students in both groups in the classrooms during class hours. A total of 74 surveys were completed by the informed group and 157 were completed by uninformed group for a total of 231 surveys. The average number of completed surveys per class in the informed group was 27, and in the uninformed group, the average number was 31 surveys.

Table 4: shows informed and uninformed groups consisted of both science and non-science classes

	Selected Classes	Informed Group	Uninformed Group
1	Accounting		X
2	General Biology	X	
3	Chemistry		
4	English	X	X
5	Math		X
6	Microbiology	X	X
7	Psychology		X

Finally, after each presentation and before administering the survey, the participating students in each given class were given the choice to complete the survey.

Results:

I - Personal Profile:

1. Age

Table 5 shows the average age of the participants in both the informed and uninformed groups. While the majority of the students (70%) who participated in the informed group were between 21-29 of age, there were almost an equal number of students between the age of 20 or under (52%) and students between 21-29 of age (44%) who participated in the unformed group.

Table 5

The average age of the participants in both the informed and uninformed groups						Total
	20 or under	21-29	30-39	40-49	50-59	
Informed Group (n=74)	10%	70%	16%	4%	0%	100%
Uninformed Group (n=157)	42%	44%	10%	2%	2%	100%

2. Gender:

Table 6 shows the majority of the participants in both the informed (69%) and uninformed (58%) groups were female students. While there were more female students in the informed groups (69%), there were more male students in the uninformed groups (42%).

Table 6

The gender of the participants in the study				Total
	Female	Male	No Answer	
Informed Group (n=74)	69%	31%		100%
Uninformed Group (n=157)	58%	42%	0%	100%

3. Education:

Table 7 shows the participants in both the informed (45%) and the uninformed (75%) had high school diplomas and had completed some college courses. However, about 32% of the informed group already had a Bachelors Degree; they most likely had returned to college to learn specific types of information and/or skills.

Table 7

The level of education of the participants in the study						Total
	Some College Courses	Associate Degree	Bachelors Degree	Master Degree	Doctorate Degree	
Informed Group (n=74)	45%	19%	32%	4%	0%	100%
Uninformed Group (n=157)	75%	10%	12%	3%	%	100%

II- HIV/AIDS Information:

1. HIV Status:

Table 8 shows that while the majority of the participants in both the informed (74%) and the uninformed (89%) stated that they were negative for HIV, more participants in the informed group (24%) than in the uninformed group (9%), stated that they did not really know their HIV status. Only 1% of the uninformed group members stated that they do not wish to know. Equally, 1% of both groups stated they had tested

positive.

Table 8

The HIV Status of the participants in the study					Total
	Negative	Positive	Don't Know	Don't Wish to Know	
Informed Group (n=74)	74%	1%	24%	0%	100%
Uninformed Group (n=157)	89%	1%	9%	1%	100%

2. How well educated do you feel you are about HIV/AIDS?

Table 9 shows the level of education about HIV/AIDS among the participants. While the majority of the informed group (34%) stated their HIV/AIDS education level was above average, the majority of the uninformed group (52%) stated their education on the same topic was average. Furthermore, while 23% of the informed group members stated that they were very well educated on the topic, 19% of the uninformed group stated the same. Finally, while only 1% of the informed group stated they were poorly educated about the topic, a total of 6% of the uninformed group were either poorly (5%) or not at all (1%) educated about HIV/AIDS.

Table 9

The level of participants' knowledge about HIV/AIDS in the study						Total
	Not at all	Poorly	Average	Above Average	Very well	
Informed Group (n=74)	0%	1%	34%	42%	23%	100%
Uninformed Group (n=157)	1%	5%	52%	23%	19%	100%

3. Do you think you can tell if someone has HIV/AIDS just by looking at them?

Table 10 shows that only 3% of the participants from the uninformed group members thought they could tell whether or not someone has HIV/AIDS just by looking at him or her. The entire informed group (100%) and almost all the uninformed group (97%) understood that this is not the case.

Table 10: Participants' responds on whether they can tell someone has HIV/AIDS just by looking at them

Participants' responds			Total
Participants	Yes	No	
Informed Group (n=74)	0%	100%	100%
Uninformed Group (n=157)	3%	97%	100%

4. Would you consider dating someone who is HIV positive?

Table 11 shows the participants' response to the possibility of considering dating someone who has tested HIV positive. The majority in both the informed group (58%) and uninformed group (64%) stated that this is not an acceptable possibility in their mind. However, 38% of the informed group and 31 % of the uninformed group stated that this could be a possibility. However, in both cases, more of the informed group (38%) than uninformed group (31%) might consider dating someone who is HIV positive. By the same token, more of the uninformed group (64%) than informed group (58%) would not consider dating someone who is HIV positive. However, almost an equal number of both the informed group (4%) and the uninformed group (5%) were willing to date someone who is HIV positive without any reservation.

Table 11: Participants' responds on the possibility of consider dating someone who is HIV positive

Participants' responds				Total
Participants	Yes	Maybe	No	
Informed Group (n=74)	4%	38%	58%	100%
Uninformed Group (n=157)	5%	31%	64%	100%

5. If a friend who is HIV positive told you that their viral load is undetectable, how well do you feel you would understand what your friend said?

Table 12 shows the level of participants' understanding of what we mean by a viral load is undetectable in a friend who is HIV positive. While a total of 76% of the informed group stated they understood pretty well (31%), very well (18%), and completely (27%), only a total of 34% stated the same level of understanding among the uninformed group. By the same token, while a total of 67% of the uninformed group stated that they did not at all (31%), and somewhat understood (36%), a total of 24% of the informed group stated the same level of understanding.

Table 12: Participants' response on understanding when a viral load is undetectable in a friend who is HIV positive

Participants' response						Total
Participants	Not at all	Somewhat	Pretty well	Very well	Completely	
Informed Group (n=74)	5%	19%	31%	18%	27%	100%
Uninformed Group (n=157)	31%	36%	19%	8%	7%	100%

6. How likely would you be to consider dating a person who is HIV positive but has an undetectable viral load?

Table 13 shows the participants' consideration of dating a person who is HIV positive but has an undetectable viral load (meaning having fewer than 50 copies of the virus per milliliter of blood). The participants' thought on whether or not to date a HIV positive person was almost identical between both groups. A total of 43% of the informed group stated pretty well (37%), very well (5%), and completely (1%). A total of 41% stated the same level of willingness between the uninformed group: 28% pretty well, 10% very well, and 3% completely. By the same token, a total of 59% of the uninformed group stated that they were not at all (25%), and somewhat willing (34%), and a total of 57% of the informed group stated almost the same level of willingness: 20% not at all willing and 47% somewhat willing.

However, when looking at each category of answers, between both groups, we can see differences between the two groups. For example, there was a higher percentage among those who were somewhat willing and those who were pretty well willing between the informed group (a total of 74%) than those who were in the uninformed group (a total of 62%). But there was a higher percentage between those who were not willing at all in the uninformed group (25%) than in the informed group (20%).

Table 13: Participants' response on considering dating a person who is HIV positive but has an undetectable viral load

Participants' response						Total
Participants	Not at all	Somewhat	Pretty well	Very well	Completely	
Informed Group (n=74)	20%	37%	37%	5%	1%	100%
Uninformed Group	25%	34%	28%	10%	3%	100%

(n=157)						

7. How likely do you feel you would contract (or transmit) HIV to or from a committed partner who's HIV status was different from yours in attempting to conceive a child, provided the HIV positive person met the criteria of the Swiss Statement above?

Table 14 shows the participants' thought of contracting (or transmitting) HIV to or from a committed partner whose HIV status is different from theirs in attempting to conceive a child, provided the HIV positive person met the criteria of the Swiss Statement above. A majority of both the informed group (90%) and the uninformed group (71%) clearly stated not likely at all or not very likely to contracting (or transmitting) HIV to or from a committed partner whose HIV status is different from their own in attempting to conceive a child. By the same token, a total of 29% of the uninformed group and a total of 10% of the informed group held the belief that it was somewhat likely, very likely, and/or definitely likely that they would contract (or transmit) HIV to or from a committed partner whose HIV status is different from their own in attempting to conceive a child.

Table 14: Participants' responds on feeling of contracting (or transmitting) HIV to or from a committed partner whose HIV status is different from them in attempting to conceive a child

Participants' responds						Total
Participants	Not likely at all	Not very likely	Somewhat likely	Very likely	Definitely	
Informed Group (n=74)	20%	70%	5%	4%	1%	100%
Uninformed Group (n=157)	48%	23%	22%	5%	3%	100%

However, when looking at each category of answers, between both groups, we can see significant differences between the two groups. For example, there was a higher percentage who believed they were not very likely to contract (or transmit) HIV to or from a committed partner whose HIV status is different from theirs in attempting to conceive a child, among the informed group (70%) than among the uninformed group (23%). But there was a higher percentage among those who believed this was somewhat likely between the uninformed group (22%) than the informed group (5%).

8. How likely would you be to consider having unprotected sex with a partner who verbally assured you that they were "clean" and "drug and disease free"?

Table 15 shows the participants' response to the possibility of considering having unprotected sex with a partner who verbally assured them they are "clean" and "drug and disease free." A total majority of both the informed group (81%) and the uninformed group (71%) clearly stated that it was not likely at all or/and not very likely that they would consider having unprotected sex with a partner who verbally assured them they are "clean" and "drug and disease free." By the same token, a total of 29% of the uninformed group and a total of 19% of the informed held the belief that it was somewhat likely, very likely, and/or definitely would consider having unprotected sex with a partner who verbally assured them they were "clean" and "drug and disease free."

Table 15: Participants' responds of the possibility of considering having unprotected sex with a partner who verbally assured them they are "clean" and "drug and disease free"

Participants' responds						Total
Participants	Not likely at all	Not very likely	Somewhat likely	Very likely	Definitely	
Informed Group (n=74)	54%	27%	19%	0%	0%	100%

Uninformed Group (n=157)	48%	23%	22%	5%	3%	100%

However, when looking at each category of answers between both groups, we can see the difference between the two groups. For example, there was a 6% difference of those who stated not likely at all between the informed group (54%) and the uninformed group (48%). But there was also a 5% difference of those who stated very likely between the uninformed group (5%) and the informed group (0%).

9. How often do you get tested for HIV?

Table 16 shows the participants' response to how often they get tested for HIV. Almost the majority from both the informed group (65%) and the uninformed group (62%) have never tested for HIV and/or tested less than once a year. By the same token, a total of 38% of the uninformed group and a total of 35% of the informed group stated that they tested for HIV once a year, twice a year, or more than a twice a year.

However, when looking at each category of answers between both groups, we can see a significant difference between the two groups. For example, there was a 12% difference between those who stated they never tested between the informed group (28%) and the uninformed group (40%). Also, there was a 15% difference between those who stated they tested less than once a year between the uninformed group (22%) and the informed group (37%). Finally, there was a 6% difference between those who stated they tested once a year between the informed group (34%) and the uninformed group (28%).

Table 16: Participants' responds on how often they get tested for HIV

Participants' responds						Total
Participants	Never	Less than once a year	Once a year	Twice a year	More than a twice a year	
Informed Group (n=74)	28%	37%	34%	4%	0%	100%
Uninformed Group (n=157)	40%	22%	28%	7%	3%	100%

III- Behavioral Questions (PQ)

1. Which best describes your sexual orientation?

Table 17 shows the participants' responses to which statement best describes their own sexual activity. The majority of participants in both the informed group (82%) and the uninformed group (83%) stated they were heterosexual. On the other hand, an equal small number of both groups (5% of each) stated that they were homosexual.

Table 17: Participants' responds on which statement best describes their sexual activity

Behavioral Category	Informed Group (n=74)	Uninformed Group (n=157)
Heterosexual	82%	83%
Heterosexual, with Bi-sexual tendencies	5%	4%
Bi-sexual	5%	3%
Homosexual with Bi-sexual tendencies	1%	1%
Homosexual	5%	5%

2. Which statement best describes your sexual activity?

Table 18 shows the participants' responses to which statement best describes their sexual orientation. A total of 75% of the informed group stated they were sexually active having a sex frequently at least once a moth (43%) or at least one a week (32%). On the other hand, 59% of the uninformed group stated they were sexually active in having sex at least once a month (26%) or at least once a week (33%). However, there

was a 17% difference between those who were having sex at least one a month between the informed group (43%) and the uninformed group (26). By the same token, there was an 8% difference in being celibate (never have or have not had sex yet) between the informed group (3%) and the uninformed group (12%).

Table 18: Participants' responds on which statement best describes their sexual orientation

Behavioral Category	Informed Group (n=74)	Uninformed Group (n=157)
Celibate / never have sex (or haven't had sex yet)	3%	12%
Rarely have sex (less than 6 times a year)	8%	10%
Occasionally have sex (6-12 times a year)	14%	19%
Frequently have sex (at least once a month)	43%	26%
Very sexually active (at least once a week)	32%	33%

Analysis and Discussion

In this study we tried to examine college students' attitudes toward HIV/AIDS to see whether or not after all these years, significant change has been taking place as a result of public awareness and education. The Acquired Immune Deficiency Syndrome, known as AIDS, is a viral disease of the immune system caused by the human immunodeficiency virus (HIV). It is a serious disease that can destroy the body's natural defense system (T-cells responsible for cell-mediated immunity) and that causes death when the body becomes unable to fight any infection. While not everyone who carries the virus develops AIDS, all infected individuals can pass it on by sexual intercourse and/or by blood transfusions (Hale and Margham 1991). Furthermore, as a "retrovirus, it can remain inactive in its host for years without causing symptoms, but asymptomatic carriers may still transmit the disease" (Rudin 1997, p.8). In addition, as Newman (2016) explained, "people who maintain undetectable viral loads not only improve their own health but decrease the likelihood of transmitting HIV to sex partners" (¶. 1). But that fact remains that even those who are "adherent to their medication regimens may experience occasional "blips" in their viral loads, experience viral rebound or maintain a steady, if low, viral load above undetectable levels." This of course a big source of emotional and psychological confusing and fair among many who "suddenly experienced their viral load unexpectedly climb from undetectable up into the 400s, then returned to levels just above detectable" (¶.1-2). It is because of these types of facts that students' attitudes and awareness about HIV/AIDS are still essential for the health and wellbeing of every individual and society. In this analysis, we will focus more on the two HIV/AIDS Information and Behavioral Questions categories.

When the participants were asked to indicate their level of education about HIV/IDAS, a 23% increase in "above average" and "very well" responses was observed from the informed group—42% uninformed vs. 65% informed.

In addition, when the participants were asked if a friend who is HIV positive told them that their viral load is undetectable, how well do they feel they would understand what their friend said to them, a 42% increase in "pretty well", "very well", and "completely" responses were observed from the informed group—34% uninformed vs. 76% informed.

Furthermore, when the participants were asked how likely do they feel they would contract (or transmit) HIV to or from a committed partner whose HIV status was different from theirs in attempting to conceive a child, provided the HIV positive person met the criteria of the Swiss Statement, a 19% increase in "not very likely" and "not likely at all" responses were observed from the informed group—71% uninformed vs. 90% informed.

When the participants were asked whether or not they would consider having unprotected sex with a partner

who verbally assured them that they were "clean" and "drug and disease free", a 10% increase in “not very likely” or “not likely at all” responses was observed from the informed group— 71% uninformed vs. 81% informed.

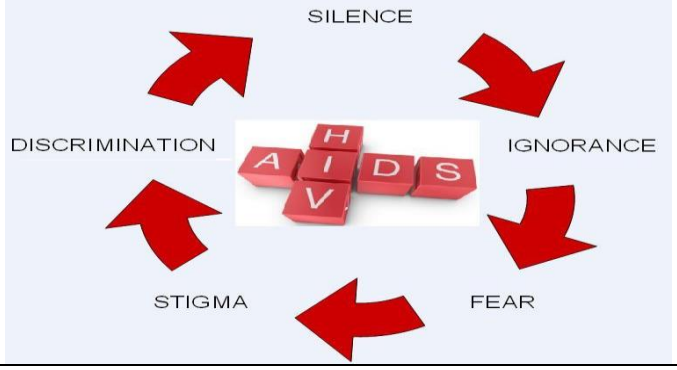
When the participants were asked to objectively indicate their own HIV status and how often they get tested for HIV, an 84% report that they are HIV negative, yet 35% have never been tested. This disparity could be influenced by stigma. The message about the importance of HIV testing needs to be reinforced through “reinvented” education approaches.

When the participants were asked whether or not they would consider dating someone who is HIV positive, but has an undetectable viral load, both the informed (58%) and uninformed groups (64%) report a similar view about dating an HIV positive person even if that person had an undetectable viral load. However, while this might be more of a surprise by the informed group than the uninformed group, in general, many factors may influence this response, but stigma and discrimination are likely key factors. If this is the case, then integrating information about relationship between ignorance, fear, stigma, and AIDS in school curriculum might be important in educating people about HIV/AIDS.

As shown in figure 3, silence leads to ignorance, which in turn leads to fear. Fear leads to stigma, which in turn, often leads to discrimination in the society. In this study, of the 231 respondents 74% of the informed group and 89% of the uninformed group report that they are HIV negative, yet they (24% of the informed group and 10% of the uninformed group) have never been tested. Of those who reported negative for HIV, 42% of the informed group and 46% of the uninformed group would be “somewhat likely”, “very likely,” or “definitely” likely to consider having unprotected sex with someone who verbally assured them that they were “clean” and “drug and disease free”— the terms “clean” and “drug and disease free” or DDF for short are discriminatory and fuel stigma.

Silence, ignorance, fear, stigma, and discrimination represent a dangerous combination of a vicious cycle that can only be broken by targeted educational programs and activities that are designed specifically to counteract these cognitive elements in humans’ thoughts and perspectives toward the unknown. The good news is that education in general and **t**he education offered at the college level has the power to break this cycle. Introducing dynamic enhancements to the curriculum to address misinformation and spark healthy dialogues will position our future leaders to fight fear with facts.

Figure 3 - The Dangerous Combination!



Source: © 2011 *Wake Up Pune*.
http://www.wakeuppune.org/hiv-in-india/hiv-in-pune

Figure 3 - The Dangerous Combination! Silence leads to ignorance, which in turn leads to fear. Fear leads to stigma, which in turn, often leads to discrimination in the society.

WHY THE SWISS:

The 2008 Swiss Statement is not without controversy, but it was used in this study because of its simplicity in communicating the relevance of an undetectable viral load (see appendix 2). Since then, similar findings have been reported, most notably the findings of the HPTN 052 study. These results were reported at the 2011 IAS conference in Rome by Dr. Myron Cohen in a presentation titled "Treatment is Prevention: The Proof is Here" (Vazquez, et al. 2011). These results are indeed exciting, but explaining this study in a paragraph for the purpose of this survey was impractical. We were looking for evidence of stigma and discrimination through this survey and appreciated the way the Swiss defended their statement in 2010 before the UN, stating that their goal was to reduce stigma and discrimination. We believe this ultimately will serve to encourage people to get tested and, if diagnosed, be treated and adhere to therapy to reach the goal of undetectability. Currently worldwide, only 19% of those on antiretroviral therapy have attained undetectable status. Indeed, education is the key, not only for prevention, but for those taking medications to understand the paramount importance of strict adherence to their regimen.

Conclusion:

The data presented here does indicate that students' comprehension of some important concepts regarding HIV infection was improved as a result of being exposed to a presentation given by an enthusiastic expert on the subject. The data also shows that there are students taking risks that could lead to HIV infection. What exactly is the cause of this behavior cannot be determined from this data. Stigma and discrimination, while difficult to quantify, does exist in this group as it does in the rest of society. Continued research and ingenuity is necessary to find a way to include this vital education in the college curriculum. After all, "viral infections – from influenza and common cold to the more serious ones like herpes infections and AIDS – account for about 60% of illnesses, contrasted with about 15% for bacterial infections" (Hart et. al 2012, p.544). While the medical community and the pharmaceutical companies have been successful in developing effective antibiotics against most bacterial infections, the development of antiviral agents has shown to be more difficult. Therefore, education and awareness of the factors placing individuals at risk of infection by HIV become essential for everyone, especially among the college student population. The fact is not only HIV/AIDS is still here, but it also has become intertwined with other emerging problems in infectious diseases. For example, Tambo, Ernest, et.al. (2016) and his research team have been conducting research to understand Ebola Virus Disease (EVD) in the context of the HIV epidemic. They explain that despite the challenges in developing an effective vaccine against HIV and EVD, both are closely intertwined and remain a persistent public health threat and global challenge that make them still in urgent need of a rapid response policy and evidence-based implementation strategies.

Future Work and Recommendations:

At the research Level: Work needs to be continued to find ways to promote HIV education and reduce stigma and discrimination. This information should be re-introduced to students at the college level as part of a required curriculum. Additionally, we feel the presentation would benefit a wider audience.

At the Education Level: With the fact that the HIV/AIDS epidemic is still gripping our college population, with half of all new infections occurring in people 25 years of age or younger, the junior college instructors have not only a significant role to play in combating the HIV/AIDS pandemic and contributing to a comprehensive national response, but they also have a moral responsibility and obligation to educate their students and make sure that the students are aware of it. To help mitigate the silence surrounding the topic and to increase awareness, colleges and universities should adopt:

1. Cross disciplines and curricular topics to open discussion.
2. A more engaging, educational and attractive AIDS Awareness Week event to encourage attendance and to educate students and the HWC community regarding AIDS awareness and prevention. An HIV/AIDS Education Journal Club as an educational platform for faculty and students could provide presentations in several areas related to HIV/AIDS education.
3. A health ambassador program. It would prepare college students to present informed talks in their communities (such as churches, high schools, dormitories, and other community colleges), to help

educate them on the topic, focusing on HIV/AIDS as a health care issue, not a political issue. Here is where the faculty members and students are challenged to base their knowledge on facts and scientific evidence and not personal opinions.

4. The use of the HIV/AIDS topic as a vehicle and platform to promote openness and diversity. This requires colleges and universities to responsibly create college and learning environments for developing knowledgeable, engaged, and empathetic citizens by:

    a. *Providing co-curricular opportunities such as these journal club presentations to allow students to develop a set of scientific skills, while becoming familiar with ongoing active research, interpreting research data, and public speaking.*
    b. *Engaging in a critical review of HIV/AIDS scientific literature.*
    c. *Remaining updated with current HIV/AIDS knowledge and information.*
    d. *Encouraging JC participants in quality reading.*
    e. *Challenging each other scientifically in a safe, respectful environment.*

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Appendix 1

The Question Used in the Study

Survey Questions and Highlighted Results

Q. Which category below includes your age?
Q. Which best describes your gender?
Q. Which best describes your sexual orientation?
Q. What is your HIV status?
Q. Which statement best describes your sexual activity?
Q. Which best describes your level of education?
Q. How well educated do you feel you are about HIV / AIDS?
Q. Do you think you can tell if someone has HIV/AIDS just by looking at them?

Q. Would you consider dating someone who is HIV positive?
Q. If a friend who is HIV positive told you that their viral load is undetectable, how well do you feel you would understand what your friend said?

- Now, consider the following statement from The Swiss National AIDS commission Bernasconi et al. 2008) and after reading it, answer the questions that follow:
- *An HIV-infected individual without additional STD and on an anti-retroviral therapy (ART) with completely suppressed viremia (in the following: "effective ART")*
- ***is sexually non-infectious, i.e. he/her cannot pass on the HI-Virus through sexual contact as long as the following conditions are fulfilled:***
- *The HIV-infected individual complies with the anti-retroviral therapy (ART), the effects of which must be evaluated regularly by the treating physician;*
- *The viral load (VL) has been non-detectable since at least six months (i.e.viremia is suppressed);*
- *There are no additional sexually transmitted diseases (STD) present.*

Q. How likely would you be to consider dating a person who is HIV positive but has an undetectable viral load?
Q. How likely do you feel you would contract (or transmit) HIV to or from a committed partner who's HIV status was different from yours in attempting to conceive a child, provided the HIV positive person met the criteria of the Swiss Statement above?
Q. How likely would you be to consider having unprotected sex with a partner who verbally assured you that they were "clean" and "drug and disease free"?
Q. How often do you get tested for HIV?

Appendix 2

The Swiss National AIDS Commission

The Swiss National AIDS Commission (or Federal Commission for Aids-related Issues (FCAI)) was founded in 1988. It is an extra-parliamentary commission composed of interdisciplinary professionals tasked with advising the Swiss Federal Council, Federal Department of Home Affairs and the Federal Office of Public Health on HIV/AIDS specific issues and is the central or "one" national coordinating authority on HIV/AIDS related issues. The commission serves as a "clearing house" of all things HIV/AIDS related, including developing and analyzing new research protocols as new information and discoveries present themselves. The commission also prepares statements regarding HIV/AIDS such as the 2008 "Swiss Statement" In 2011 the Commission was changed to the Federal Commission of Sexual Health (FCSH) giving it an even larger scope to include all STI's not just HIV/AIDS

It should be noted that the "Swiss Statement" was intended for Swiss medical professionals and provided a way to decriminalize sero-discordant couples having traditional intercourse to conceive a child. Prior to the "Swiss Statement" if a couple were to have traditional intercourse, although mutually consensual, the HIV infected person would be guilty of a crime under Swiss law The commission also stressed that it did not intend to suggest that the risk of transmission under the statement's guidelines was 0 but rather that it was in order with ordinary daily risks of 1:100000

For more information about The Swiss National AIDS Commission see the following:
http://www.bag.admin.ch/hiv_aids/05464/12494/12821/index.html?lang=en
http://www.aidsmap.com/Expert-statements-and-guidance-for-individuals/page/1322904/
http://www.bag.admin.ch/hiv_aids/05464/12494/12821/index.html?lang=en&download=NHzLpZeg7t,lnp6I0NTU042l2Z6ln1ad1IZn4Z2qZpnO2Yuq2Z6gpJCKeXx6g2ym162epYbg2c_JjKbNoKSn6A--