

A Clinical and Ethical Investigation of Pre-medical and Medical Students' Attitudes, Knowledge, and Understanding of HIV

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Abstract: Ninety-five students participated in a qualitative study examining pre-medical and first-year medical students' knowledge, understanding, and attitudes surrounding HIV. Participants were given a questionnaire to assess general knowledge and to assess students' ability to identify and discern psychosocial and ethical dilemmas using 2 case studies about fictionalized HIV patients and the issues they face in disclosing their diagnosis of HIV and adhering to prescribed treatment regimens. A content analysis was used to examine the students' responses for themes. Results suggested that most students have a general understanding of HIV. Many students, however, are unable to identify and differentiate psychosocial factors from ethical factors when presented with HIV case studies. Answers reflecting students' attitudes of HIV varied and contained identifiable biases and prejudices, such as placing blame on individuals who acquire the disease through "risky" behaviors. Pedagogical strategies for improving HIV education and developing students' professional and moral growth as future healthcare providers are identified.

Keywords: HIV, Medical education, Ethics, Psychosocial

Several studies reveal that pre-medical and medical students have deficient knowledge of HIV and its biopsychosocial and ethical dimensions, which has prompted negative attitudes and misguided biases and perceptions on patient care and personal responsibility in preventing the spread of the disease.¹⁻⁷ One study showed, as students progressed through medical school, they became "more restrictive in their attitudes toward HIV positive patients, felt less personal obligation toward caring for these patients, and were less likely to use appropriate infection-control methods to ensure their own safety."^{8(p. 237)}

Many healthcare professionals and students acknowledge the duty to treat HIV-infected patients, as well as their personal obligation to avoid infectious risk, which should not exceed the risks associated with practicing medicine.⁹ However, many students do not know why they have a duty to treat HIV-infected patients and lack the ability to reason through ethical issues surrounding the diagnosis and treatment of patients with HIV. Likewise for the behavioral and social sciences, medical students are taught about the biopsychosocial model but may not understand how it relates to patient care. For people with HIV, there are a host of psychosocial issues with which

they are confronted, and it is important for medical students—as future physicians—to understand the complex psychological and social aspects of HIV. Understanding these issues is critical to providing quality care.

Upon findings reported in these studies, recommendations were made to couple didactic instruction with educators' modeling of non-prejudicial attitudes,^{3,10} to provide further information regarding patient and personal care to reduce the high anxiety levels and biases held by students,⁹ to re-design or alter curricula in order to account for deficiencies in general knowledge about HIV,¹¹ and to ensure that medical students have exposure to patients with HIV and to cases with multidimensional problems and solutions.

To assess the level of understanding about HIV among pre-medical students and first-year medical students at a Midwestern medical school, we designed a study to determine students' general knowledge, attitudes and beliefs about HIV and patient care, their ability to identify, deliberate, and resolve ethical dilemmas as healthcare professionals, and their ability to understand

psychosocial conflict as experienced by patients with HIV. Unlike most studies, which mainly focus on assessing students' general knowledge of HIV, we included components to understand what students would do if they were in a position to resolve psychosocial and ethical conflicts as healthcare professionals and as patients. Placing the student in the role of physician or patient gives the student-participant a context through which he or she can begin to understand how having a basic knowledge of HIV, including the psychosocial and ethical dimensions of HIV diagnosis, treatment, and patient care, affects personal, negative and positive attitudes and behaviors. From this study we hope to acknowledge deficient areas in HIV education and moral and professional development in the pre-medical years; we believe this information will be useful for medical educators and researchers whose focus is on infectious diseases, professionalism, community health, ethics, and other related areas. It is highly likely that our medical students will be exposed to patients who have been diagnosed with HIV during their clinical training years, and, therefore, as medical educators, we believe the results of this study will inform our teaching and help us to better prepare medical students for caring for patients with HIV.

Our overall objectives for this study include 1) assessing students' general knowledge, attitudes, and beliefs about HIV and persons with HIV, including how they would respond to complex and/or controversial situations as if they were the HIV patient and 2) examining how students identify, understand, and resolve ethical and psychosocial dilemmas involving HIV. In investigating how attitudes are conceptualized and measured, we focus on the cognitive component, which can be measured by assessing knowledge of a specific topic and self-reports of beliefs.¹²

Methodology

Participants - A total of ninety-five students voluntarily participated in this study. The sample comprised thirty-three first-year medical students at a Midwestern medical college (30% of the class) and sixty-two pre-medical students (first and second year) from a consortium university affiliated with the medical school, where students enroll in a six-year medical school curriculum (two pre-medical and four medical years). Response rates were 30% for the medical students and 100% for the pre-medical students. For the remainder of this study, we will refer to the first-year medical student group as "M1 students," the first year pre-medical group as "C1 students," and the second year pre-medical group as "C2 students." The ages of our students ranged from 18 to 26 years. Given that these students were entering the field

of medicine, they had completed academic preparatory courses in health and biology in their post-secondary education. HIV education and information about other sexually transmitted diseases was a standard topic in their secondary education. Additionally, students on average had taken 1-2 courses in medical ethics in their accelerated undergraduate program. Participants had not taken an advanced infectious disease course at the graduate level, a course offered to the medical students in their second year of medical school. Regarding their clinical exposure and experiences, students who participated in this study had little to no formal clinical experience, as this begins in the latter part of their first year of medical school. Many students did, however, participate in shadowing experiences with physicians prior to entering medical school, but these experiences were often benign and contributed little to understanding the patient's health problems or sorting out ethical or psychosocial dilemmas.

Procedures - After receiving approval from the medical school's institutional review board, we invited students to participate in our qualitative study by advertising the study in their classes. For the M1 group of participants, all students were invited and eligible to participate. We introduced the study and distributed the questionnaire within the first week of the fall semester toward the end of one of their regularly scheduled classes. Given that we approached students at the beginning of the medical school year, attendance in classes hovers around 100%. Students were given time to complete the survey in the classroom, but some students chose to complete the survey on their own time and then returned it to the investigators' campus mailbox.

For the C1 and C2 students, all data were collected in a classroom located at their respective campus. All C1 and C2 students from the consortium university were invited and eligible to participate. We arranged to administer the questionnaire during the regularly scheduled lectures during the fall semester. The questionnaire was administered throughout the second half of the lecture hour and collected after the students completed it. For both administrations of the questionnaire, data collection took about 20 minutes of participants' time. To ensure students' privacy and confidentiality, no names or identifying information were used in this questionnaire or in the collection of data.

Questionnaire - The questionnaire given to participants contained 20 questions (the majority of which were open-ended) and 2 case studies about fictionalized HIV patients and the psychosocial dilemmas they face in disclosing their diagnosis of HIV and adhering to prescribed treatment regimens (see Appendix 1). The questions were

open-ended, in most cases, which allowed participants to craft their own response and hopefully respond in a manner that captured the true meaning or essence of their remarks. Based on the purpose of this study, we felt that this data collection approach was preferable to having participants choose from a list of predetermined responses that would provide less descriptive information. Part 1 of the questionnaire included questions designed to assess students' general knowledge of HIV, whereas Part 2 of the questionnaire included questions to assess students' ability to identify and discern psychosocial and ethical dilemmas in HIV related case studies and to resolve these cases, if possible, taking on the role of healthcare professional and patient. There was only one question in Part 1, which pertained to comfort in caring for patients with HIV, where we provided responses from which participants could choose. In developing the questionnaire, we pilot-tested it with a group of 10 medical students who were finishing their first year of medical school. Given that our data collection occurred the following fall, these students had moved on to their second year of medical school and thus were not participants in the current study. Based on the feedback from the pilot questionnaire, we revised the instrument by asking students to explain their answers for those questions that had a more closed-ended flavor to them. In doing so, one-word answers could be avoided. We also added a question asking if the student knew anyone with HIV.

Data Analysis - Students' responses were compiled and typed onto a spreadsheet so that data could be comprehensively sorted and analyzed. Given that this study was qualitative in nature, we then used content analysis to examine the students' responses for themes and trends. We independently reviewed the students' responses using a thematic analysis. The themes and trends independently identified by the investigators were corroborated and, once we resolved any discrepancies from the thematic analyses, we again reviewed the students' responses and counted the number of times a topic was discussed. An added benefit to using content analysis is this quantitative aspect which permitted us to determine a frequency count of students' responses. These frequency counts were corroborated by the investigators and any discrepancies resolved. As is common in qualitative studies, we then extracted students' written responses used in the thematic analyses and included quotes in the results section (see below), where appropriate, to assist the reader in grasping the breadth and depth of students' responses. We did not perform any statistical analysis to determine significant differences between groups of participants (e.g., M1, C1, or C2) because of the qualitative nature of this study and because the study was not hypothesis-driven.

Results Part I: Basic Knowledge Questions

HIV Disease and Treatment - The first set of questions was designed to determine what pre-medical and medical students know about HIV and to assess whether the first two years of the BS/MD program, i.e., the undergraduate curriculum, is adequately preparing students for understanding the biological, psychological, and social dimensions of HIV. To begin this questionnaire, the first few questions included, "What is HIV?" and "How is HIV different from AIDS? Please explain."

Though this question may encompass a variety of answers, we expected our students to know what the acronym "HIV" stood for, i.e., Human Immunodeficiency Virus, but more importantly that HIV is a virus which progressively damages or kills cells of the body's immune system. Only 12 out of 95 undergraduate and graduate medical students had a difficult time remembering what the acronym "HIV" stood for, did not give an answer, or just stated that it was a virus of some sort. Also, a total of 21% of medical students and 15% of pre-medical students could not accurately differentiate HIV from AIDS. One M1 student stated, "I'm not exactly sure of the technical differences." Another replied that "HIV is the virus - AIDS is when the symptoms begin." While most students gave short answers such as "HIV is the virus that causes AIDS," half of our students (50%) indicated that the term AIDS applies to the more advanced stages of HIV infection.

Questions 3-6 on the questionnaire were purposively designed to be more specific, given that some students, even when asked, do not always give complete, descriptive answers to more general questions. In response to a more specific question, "How does HIV affect the human body?," only 7 out of the 95 participants (7%) had difficulty answering this question; these were "not sure" or believed "HIV does not directly affect the body." When asked, "What are some of the symptoms HIV patients may experience?," nearly all of our student-participants (96%) accurately reported at least one symptom patients with HIV may experience. Symptoms students reported included fever, fatigue, headache, enlarged lymph nodes, night sweats, and skin rashes. Two C2 students noted that patients might experience depression or psychological/emotional problems. Students who answered the questions, "Is HIV treatable? What treatments are available for patients with HIV?," reported that HIV can be treated, i.e., prolonging its effects on the human body through the use of pharmaceuticals. An M1 stated, "HIV is treatable with various "cocktails" that build the amount and strength of WBC [white blood cells] and thereby prevent the virus from invading. No cure." Another M1 student

explained, "You can treat the virus with drugs such as AZT but you cannot get rid of it." One C1 student reported there were no treatments available, while another C1 student suggested support groups and medical management as a way to help treat patients.

HIV Transmission - In addition to asking students about the treatment of patients with HIV, we also asked our student-participants, "In general, how can you protect yourself from contracting HIV?" Our main objective in asking this question was to determine which methods of protection were most likely to be addressed, even advocated. More than 2/3 of the first year medical student-subjects (70%) reported that protection involves having protected sex. About 9% of M1 students advocated abstinence in their responses. About 76% of M1 student

responses also suggested avoiding contact with bodily fluids, especially blood, as a way to protect themselves from HIV contraction. Less than half of M1 student responses (45%) indicated that the avoidance of drugs and contaminated needles would be an important measure of protection. A total of 21% of M1 responses indicated that awareness and the use of standard precautions was critical for protection.

In sorting through the responses given by the C1 and C2 student groups, we found that students focused less on the avoidance of bodily fluids as a method of protection and more on having protected sex (80.6% of C1 students, 71% of C2 students), with abstinence being an important step toward protection (29% of C1 students, 58% of C2 students). Similar to the responses given by the M1

Table 1. Number of student responses indicating which group(s) were most susceptible to HIV

Groups Most Susceptible to HIV	M1 (%)	C2	C1
Those who have unprotected sex	10 (30.3)	9 (29)	3 (9.7)
Drug abusers	16 (48.5)	5 (16.1)	3 (9.7)
Clinical Personnel	1 (3.3)	0	1 (3.2)
Prostitutes and those who are promiscuous	5 (15.2)	8 (25.8)	13 (41.9)
Homosexuals	11 (33.3)	3 (9.7)	6 (19.4)
People living within 3 rd world countries/ African countries	4 (12.2)	1 (3.2)	1 (3.2)
Those exposed to contaminated fluids through no fault of their own, e.g., blood transfusion	5 (15.2)	1 (3.2)	0
The uneducated	8 (24.2)	6 (19.4)	4 (12.9)
Unborn children	1 (3.3)	1 (3.2)	0
African Americans	2 (6.1)	3 (9.7)	2 (6.5)
Teenagers living in the United States	0	2 (6.5)	0
The poor	0	1 (3.2)	1 (3.2)
Females	1 (3.3)	4 (12.9)	0
No answer	0	0	1 (3.2)

students, less than half of the pre-medical students indicated that protection involves the avoidance of drugs and contaminated needles (29% of C1 students, 45% of C2 students). Unlike the M1 students, very few pre-medical students reported that awareness and the use of standard precautions were significant measures to take (3% of C1 students, 6% of C2 students). Some C1 and C2 students reported that routine testing is an additional significant measure to take in protecting oneself from HIV (26% of C1 students, 10% of C2 students), a response not given by any one of the M1 student-participants.

Susceptibility to HIV - In questions 8 and 9 we asked our student-participants who they believed to be most susceptible to HIV and whether they knew someone with HIV. There were a variety of groups of people students felt were most susceptible to contract HIV (see Table 1 for the number of responses given by each of the three student groups - M1, C2, and C1).

While many of the M1 students indicated that those who engaged in risky behaviors such as unsafe sex (30.3% of responses) and the use of intravenous drugs (48.5% of responses) were susceptible, 33.3% of M1 student responses identified homosexuals as the most susceptible group to contract HIV. One M1 student stated there were two groups who were the most susceptible; "Gay persons [and] young women who are sexually active with multiple partners. These groups are most likely to be promiscuous." In the premedical groups, there were fewer responses pointing to drug abusers as the most susceptible group; instead, the majority of the responses focused on those who engage in unsafe sex, including but not limited to prostitutes and those who are promiscuous.

Many of the responses given by C1 and C2 students revealed particular beliefs surrounding those who were most susceptible and why. For example a C1 reported, "Black males, because that is what I always heard on TV." A C2 student believed that women were most susceptible "by nature of their sexual organs. Fluids can much more easily enter their body." Another C2 believed "the one who is most sexually active with the most number of people" was the most susceptible for contracting HIV. Only 9% of first year medical student-participants and 5% of all premedical student-participants knew someone who has/had HIV.

Risk Associated with Providing Care - Question 10, "As a student-physician, do you believe you are at risk for contracting HIV from a patient", received several mixed responses from both medical and pre-medical students. We found the first-year medical students to be more indecisive with 17 out of 33 (51.5%) replying with both "yes"

and "no" or "maybe". Only 14 M1 students (42.4%) replied with a firm "yes" and two (6%) replied with a firm "no." Those who replied with a firm "no" were confident that being careful would protect them from the risk of contracting HIV from a patient. One M1 student stated, "Yes and No. Technically, there's a small chance that I could contract it from a patient, but if I'm wearing gloves, wash after, I should be fine." The premedical groups, both C1 and C2 student-groups, were less indecisive and replied either "yes" or "no" while giving several reasons why they believed they were or were not at risk. Thirty-six (58%) premedical students believed they are at risk and 25 (40%) believed they were not at risk.

Comfort Associated with Providing Care - In posing question 11, "As a student-physician, how comfortable are you (or will you be) in caring for HIV patients?," we asked students to select one of four levels to assess the frequency of their answers: very comfortable, comfortable, somewhat comfortable, or not comfortable. We also wanted to determine if students felt any different caring for a patient with AIDS so we asked the same question but substituted patients with AIDS for patients with HIV. We found that 51.5% of M1 students felt comfortable treating patients with HIV, while 33.3% felt somewhat comfortable. There was little change in responses when asking students whether they felt comfortable treating patients with AIDS.

Duty and Responsibility - For understanding students' attitudes regarding their role in treating patients with HIV, we asked, "Do you believe medical students have a duty to treat HIV patients?" Thirty-two out of the 33 first-year medical students in our study (96.9%) replied "yes," they do have a duty to treat patients with HIV. The one student who did not reply "yes" stated, "Not necessarily a duty so to say; some people just won't feel comfortable treating HIV patients. You'd probably have to though regardless of your apprehension." The majority of the premedical students (83.8%) believed that they have a duty to treat patients with HIV. However, 8 out of the 62 in the C1 and C2 groups (12.9%) replied that they do not have a duty and one C2 student replied, "I'm not sure."

HIV Testing for Providers - In seeking to identify their personal attitudes and beliefs surrounding HIV and whether medical students should be tested, we posed the question, "Do you believe medical students should be tested for HIV? Why or why not?" Our objective was to not only get a sense of what medical and pre-medical students think about being tested for HIV as medical students, but to understand the reasoning behind their answers. In the M1 group, 14 students, (42.4%) replied

“no” and 19 students (57.6%) replied “yes.” One M1 student who responded “yes” considered the implications of being tested for the good of the patient but suggested that being tested would cause him/her stress. In the C1 and C2 premedical groups, 18 students (29%) replied “no,” 37 students (59.6%) replied “yes,” and 5 students (8%) replied “not sure.” One C1 student wrote, “I’m not sure. On the one hand it would be a violation of their [student’s] privacy and as long as they take the proper precautions the risk to patients is miniscule. On the other, the risk to patients does exist and most people would want to know if their doctor was HIV positive.”

In all three groups (M1, C1 and C2) those who responded “no” were concerned with their privacy and believed that being tested for HIV was an invasion of their privacy and not important in providing care to patients. Those who responded “yes” or “not sure” generally believed that being tested is another way to prevent the spread of HIV and AIDS in the clinical setting and believed that clinicians and students could just as easily pass the virus on to patients as an infected patient could pass it on to clinical personnel.

Results - Part II: Ethical and Psychosocial Knowledge Questions

The second part of our study involve having students assess two case studies (see Appendix for the full description of each case study) and identify the ethical and psychosocial dilemmas in each. Students were also asked to imagine themselves as the primary caregiver in the first case and the patient in the second case and to determine what they would do to resolve the dilemmas presented.

Case 1 - In the first case about Mr. A, a married man, who had but denies having a homosexual relationship with his co-worker Mr. X, we asked students to first identify the psychosocial factors and/or dilemmas of the case. The majority of student responses identify homosexuality as a psychosocial issue, while few responses focus on the contraction of HIV, i.e., students fail to place themselves in the position of Mr. A and examine what he must be thinking and feeling having been recently diagnosed with HIV and confronted with an important decision – whether to inform his partner, wife, and family. Less than 15% of all responses reflect consideration for Mr. X; more responses focused on the effects of Mr. A’s disclosing his sexual affair to his wife and family. Students failed to look at the possible psychosocial consequences Mr. A would face in disclosing his HIV status and homosexual affair to his wife beyond the one possible consequence of divorce.

As a result of our content analysis, we determined

that student responses fell into 6 different categories including effects of disclosing homosexuality and an adulterous affair, Mr. A’s possible confusion with his sexuality, psychological effects of disclosing HIV status to family and partner, Mr. A’s acceptance of his diagnosis, issues of blame and responsibility for contracting and disclosing HIV, and the possible emotional repercussions (fear, abandonment, isolation) Mr. A experiences, knowing he is HIV positive. These 6 categories are discussed below along with a frequency count of students’ responses and quotes from students.

Twenty responses (61%) from M1 students focused on homosexuality as a psychosocial dilemma. Ten responses (30%) from M1 students revealed considerations for the psychosocial factors surrounding HIV, including the physical and emotional effects of HIV on Mr. A and his family. Eight M1 responses (24%) revealed students’ disapproval for Mr. A’s adulterous actions. For instance, one M1 student stated, “Knowledge of infidelity may lead to divorce. Children’s view of Mr. A would change. He most likely was infected by Mr. X, but perhaps his wife is also unfaithful.” Another M1 student replied, “Mr. A has no idea about his sexual orientation – he may be in denial. He needs to tell his wife and Mr. X because they could also have HIV.” About half of C1 responses (45%) and C2 responses (48%) focused on homosexuality as the primary psychosocial dilemma. Nineteen percent of C1 responses and 16% of C2 responses looked at the psychosocial factors surrounding the effects of HIV on Mr. A and his family. Twenty-nine percent of C1 responses and 16% of C2 responses focused on adultery as the primary dilemma in this case. Some students out of each of the three groups (M1, C2, and C1) looked at the emotions they expected one would experience from being in the situation Mr. A was in (12% of M1 students, 19% of C2 students, and 29% of C1 students responded by listing a set of emotions they expected Mr. A would feel). Within all of our student groups, we found some students (6%) were unable to accurately identify the psychosocial factors within this case; one student even asked the question, “What does psychosocial mean?”

When asked, “Identify, if any, the ethical dilemma(s) in case 1,” the majority of M1 students (52%) focused on the physical harms associated with HIV and HIV transmission. Twenty-one percent of M1, 61% of C2, and 45% of C1 students identified the true ethical dilemmas as telling versus not telling, i.e., whether Mr. A has a moral duty to tell his family and his partner about his disease. Forty-five percent of C1 students indicated it was the clinician’s responsibility to inform Mrs. A and Mr. X, but none of these students indicated if there were any conflicting moral issues, e.g., respecting autonomy

Table 2. Number of student responses describing what they would do as Mr. A's physician

Resolutions	M1 (%)	C2	C1
Persuade Mr. A to tell his wife and/or Mr. X about his situation	28 (84.8)	15 (48.4)	17 (54.8)
Help with marriage	4 (12.1)	0	1 (3.2)
Inform Mr. A about risks, prognosis, and treatments available	8 (24.2)	12 (38.7)	15 (48.4)
Report to proper authorities	4 (12.1)	3 (9.7)	1 (3.2)
Provide psychological treatment (e.g., counseling)	10 (33.3)	8 (25.8)	4 (12.9)
Provide physical treatment (drugs)	3 (9)	1 (3.2)	4 (12.9)

of Mr. A versus physician's responsibility to report Mr. A's HIV status to health authorities. Responses from M1 and C2 student groups revealed that being a homosexual or engaging in homosexual relationships was an ethical issue. One student stated that it was an ethical dilemma to "lead a double life." Only 9% of M1, 3% of C1 and 3% of C2 students indicated that patient confidentiality is an important issue in this case which may conflict with the duty "to do no harm." Less than half of each student group accurately identified ethical issues or dilemmas in this case. Many were confused as to what "ethical" means. One C2 student even asked, "What is the difference between ethical and psychosocial?"

To understand how students would treat and care for a patient with HIV who is confronted with difficult emotional, cognitive, and ethical issues and whose life-style and experiences may be different than their own, we asked our student participants to describe what they would do as Mr. A's physician. Table 2 provides a comparison of frequency of responses for the C1, C2 and M1 students. A significant number of M1 (84.8%), C2 (48.4%), and C1 (54.8%) student responses indicated that they would, as Mr. A's physician, persuade him to tell his wife and/or Mr. X about his situation, i.e., his HIV status and how he may have contracted HIV from a homosexual relationship.

Case 2 - In case 2, Ms. M, a college student diagnosed with HIV from a contaminated blood transfusion, has not been adhering to her treatment regimen in order to protect her privacy while living with roommates who are

unaware of her disease. In asking our students to identify the psychosocial factors/dilemmas in this case, 58% of M1 students and 47% of C2 students indicated there is a stigma associated with HIV that Ms. M is trying to avoid. About a third of the M1 group believed the physical and emotional consequences for not adhering to treatment is an important psychosocial factor. Over a third of the C2 group (37%) indicated that one psychosocial factor to consider is Ms. M's fear of her friends knowing that she has HIV. Sixty percent of C1 students believed there is an important psychosocial dilemma to be resolved: concealing her HIV is important for avoiding embarrassment, but Ms. M needs to adhere to her medication for her physical and mental well being. For example, one M1 student replied, "Her unawareness of the consequences of not taking her medications. She is too afraid to be open and honest with her roommates which may be hurting her health." A second M1 student indicated, "Ms. M fears her medical condition will jeopardize her friendship with her roommates. She is neglecting her well-being due to social pressure."

From our content analysis, we found the ethical factors identified by medical and premedical students included: the possible risks or harms to Ms. M by not adhering to recommended treatments, harms Ms. M may inflict upon her roommates by not disclosing her HIV status, issues of lying and deception more broadly, her right to protect her privacy and keep her medical condition confidential, and the physician's responsibility to inform and protect his/her patient. These ethical factors are discussed below along with a frequency count of students'

Table 3. Number of responses indicating what students would do if they were Ms. M.

Options	M1 (%)	C2 (%)	C1 (%)
Maintain privacy	18 (54.5)	12 (38.7)	12 (38.7)
Adhere to medicine	16 (48.5)	16 (51.6)	23 (74.2)
Be honest with roommates	13 (39.4)	11 (35.5)	13 (41.9)
Ignore roommates	1 (3)	0	0
Find 3 rd -party support including physician)	1 (3)	3 (9.7)	0

responses, where appropriate, and quotes from students.

Regarding Ms. M's privacy, one M1 student stated, "I believe her privacy should be her right. Her roomies don't need to know unless she decides to engage in harmful or high risk behaviors with them that could put them at risk for HIV." Another M1 student reported that "not taking/adhering to doctor's orders" was unethical. However, a third M1 student reported "Wouldn't say ethical dilemmas are present. It is the duty of the physician to inform her of consequences of not taking the medicine and maybe devising a way to keep her medications private from her roommates." A C1 student believed there were no ethical issues because "she didn't do anything wrong by getting HIV in a blood transfusion."

The last set of questions we posed to our student-participants was "Should Ms. M protect her privacy in this way? If you were Ms. M what would you do?" Table 3 provides a comparison of frequency of responses for C1, C2, and M1 students regarding the latter question.

Providing a more detailed answer, an M1 student replied, "No. Ms M should not continue protecting her privacy in this way. If I were Ms. M I would hide my medications in a small lock box and would leave and take it in a bathroom away from my roommates so that they would not find out." This sentiment was common among all three groups. For instance, a C1 student replied, "If I were Ms. M I would probably explain the whole story to my roommates and ask them to keep it confidential. Obviously Ms. M was never at fault in contracting the HIV and she had done everything she could to help herself out. The roommates aren't going to contract it just by sleeping in the same room as her. But I suppose I might see things a little differently if I was in that situation." A C2 student reported, "No she shouldn't. I would let my friends know and explain how it happened because a transfusion is nothing to be ashamed of and I would want

to protect my health and my friends."

In summary, the results of this study suggest that answers to questions assessing students' general knowledge of HIV were consistent with what students should know at their level of education. Answers reflecting students' attitudes about HIV varied, especially

when asked who they believed to be most susceptible to contracting HIV. When students were asked to identify the psychosocial and ethical dilemmas in each of the two HIV case studies, though many of their answers were similar, most failed to identify more than one dilemma and often confused psychosocial factors with ethical ones.

Discussion

We begin this discussion by addressing our student-participants' general knowledge about HIV as a multidimensional disease, including how they understand corresponding ethical and psychosocial issues/dilemmas. Throughout our discussion we identify some possible pedagogical strategies for improving HIV education and developing students' professional and moral growth as future healthcare providers. We conclude by examining the limitations of this study, as well as general limitations for improving students' attitudes, beliefs, and understanding of HIV as a multidimensional disease.

Part I: Basic Knowledge - In general, most students were able to identify what HIV is, including how it affects the human body and how it was different from AIDS. However, very few students acknowledged the psychosocial problems associated with HIV, especially when asked what symptoms a patient with HIV might experience. At this stage in their medical education, all students should have a basic understanding of HIV, including the psychosocial dimensions of HIV, and an awareness of a disease that may compromise their own lives and the lives of their future patients if proper precautions are not taken.

HIV Disease and Treatment - Responses from questions about HIV diagnosis and treatment, revealed that while the majority of student-participants knew how HIV was diagnosed and treated, much of their knowledge was based on antiquated information, e.g., AZT treats HIV.

Therefore, we must keep students informed with current information about HIV diagnosis and treatment. Although medical students receive this information in the second and third years at our medical school, this is the type of information that should be shared much earlier with both medical and pre-medical students. Students should know how HIV is treated (not cured) and the types of treatments available. Without having this knowledge, further unwarranted fear, loss of hope, and social stigma may be generated, especially if individuals believe there are no effective diagnostic tests or treatments available.

Susceptibility to HIV - Based on the data we gathered, it was also evident C1, C2, and M1 students expressed personal prejudices and biases about who they believed was most susceptible to contract the virus. The majority of M1 students identified drug abusers, homosexuals, and those who have unprotected sex as those groups who were most susceptible. The majority of C1 and C2 students believed those who engage in unprotected sex or who are promiscuous, e.g., prostitutes, are the most susceptible for contracting HIV. At first we associated this response with their biology and sex education classes, i.e., assuming they have been taught they can acquire HIV unless they abstain from sex or use proper protection when sexually active. However, we do not believe all of their responses can be attributed to acquired knowledge from early HIV education, since some of the responses indicated a lack of knowledge about HIV transmission, e.g., believing women are more promiscuous or can acquire HIV because of the nature of their sex organs. Furthermore, many of the students in all three groups (M1, C2, and C1) narrowly focused on susceptibility in their own communities or within the U.S.; very few considered other nations and those groups susceptible because of their cultural and societal lifestyles. We speculate that, students at this level may not have thought about the world outside of their own communities; thus it is imperative that educators expose students to different people and cultures and to acknowledge HIV as a global problem with patients' needs varying based on the uniqueness of persons' lifestyles and backgrounds.

Knowing Someone with HIV - We had asked our student-participants whether they know anyone with HIV. Carter, Lantos and Hughes¹³ (p. 1252) reported that only 37% of the 297 matriculating medical students who responded in their study knew someone personally who was HIV-infected. Although we believed the number of students who would respond "yes" would be low, we thought that if students responded "yes," their understanding of HIV would be more informed. However, this was not the case. The students who know/knew someone with HIV had similar responses to those who did not. Further investigation is

needed to determine the nature of the relationship(s) students had with the persons inflicted with HIV, i.e., whether students gained further information about HIV because of knowing someone who had the virus. We believe that by knowing someone with HIV, students begin to understand HIV and its various dimensions; more importantly, students are one step closer to what it must be like to be the person with HIV, an invaluable experience that can only improve future patient care.

Risk Associated with Providing Care - When asked, "As a student-physician, do you believe you are at risk for contracting HIV (from a patient)", we found the first-year medical students to be more indecisive than the pre-medical group. Although premedical students were less indecisive in their responses, some students possessed inaccurate knowledge about personal risk in the clinical setting. While the premedical students were thoughtful in their responses, there was evidence of naïveté that was not evident among the M1 students. For example, three C2 students believed that there was only a risk if one were to have sex with his or her patient. We believe that a well-developed orientation program for M1 students that explains what standard precautions are and how to use them in the laboratory and clinical environment is partly responsible for M1 students' advanced knowledge about personal risks of HIV and their lack of naïveté surrounding those risks.

Duty and Responsibility - When student-participants were asked, "Do you believe medical students have a duty to treat HIV patients?," almost all of the first-year medical students in our study replied "yes," they do have a duty to treat patients with HIV, which is reflective of what we, as educators, have focused on within our own courses – caring for all patients regardless of their gender, race, cultural backgrounds, religious and moral beliefs, and medical needs. Those who believe they do not have a duty based their responses on the fact that medical students are not yet physicians so they should not have to have all the responsibilities a physician has. One C2 student replied, "No- it is their [medical students'] choice, however, they do have a moral and legal obligation to report patients with HIV and AIDS." To quote another C2 student, "No, some may feel that HIV is unmoral [sic] to deal with."

Over a decade ago, in 1990, national questionnaire showed that half of primary care physicians would not treat patients with HIV, although 68% indicated that they had a duty to do so (Gerbert et. al.,¹⁴ cited in Radecki et. al.⁶). Concerned about this discrepancy, we needed to identify and assess not only students' understanding of HIV but also their attitudes involving patient care in the

presence of personal risk in the clinical setting. Furthermore, we needed to determine how students felt about caring for patients with HIV and whether or not their feelings were tied to their ethical and professional obligations, i.e., their duty to care for HIV patients. By determining students' perspectives on susceptibility, comfortability, and the duty to treat, we can better assess their needs and how those needs can be met through curricular and faculty development.

As students progress through the first few years of their BS/MD program, our evidence shows that, overall, students become less comfortable caring for patients with HIV even though they are more aware of the personal risks (and the standard precautions to take) when treating and caring for patients. Collectively, the data we gathered suggests that social stigmas and stereotypes are not necessarily responsible for the majority of students who only feel comfortable or somewhat comfortable caring for patients with HIV. Students feel less than "very comfortable" because they have a better understanding of the personal risks involved in caring for HIV patients, though minimal, and the need for standard precautions. At the same time most students believe they have a duty to treat and care for patients with HIV, not necessarily because that is what they are told, but because they recognize that patients are persons no matter what their health status, sexuality, race, ethnicity, or gender.

Part II: Ethical and Psychosocial Knowledge The results from the second part of the questionnaire, lead us to believe that students could not relate to the patient in the first case study (i.e., placing themselves in the position of the patient), and thus had the most difficulty answering the set of questions associated with this case. In the second case, however, students were able to relate to the college student, Ms. M, and could give deeper insights into her psychological well being and the ethical dilemmas she personally faced. However, it was evident that many students carried hidden biases in both cases. For example, several students reported that because Ms. M acquired HIV "through no fault of her own" it was acceptable for her to disclose her disease to her roommates, since they would not judge her. If Ms. M had acquired HIV through risky behaviors, e.g., unprotected sex, just as Mr. A had, we can predict that more students would conceal their HIV status if they were Ms. M. In short, most students were unable to identify multiple psychosocial and ethical issues/dilemmas or focus on the welfare of one individual (Mrs. A in case 1 and Ms. M in case 2), especially when placing themselves in the position of physician or patient. Based on the data, we also infer that

our students carry hidden biases and prejudices involving persons who acquire HIV by engaging in risky behaviors.

Pre-medical and medical students are training in the age of HIV, but arguably, they have a poor understanding of the psychosocial and ethical relevance of HIV. Although students are typically assessed on their general clinical knowledge of HIV, it is difficult to determine whether students have complete knowledge of HIV, which has an impact on the psychological, social, ethical, and biological dimensions of the patient and his or her relationships with others. Although our student-participants in all 3 groups have some background in ethics (1-2 courses in their undergraduate training), about half of our student-subjects had much difficulty in identifying ethical issues and dilemmas involving HIV and the person afflicted with this life-challenging disease.

For example, all 3 groups were unable to see beyond the immediate ethical issues involving the possible transmission of HIV from Mr. A to his wife. The majority of student participants did not consider the ethical issues Mr. A and his physician may be struggling with, e.g., protecting privacy while protecting others from the physical and psychological harms associated with HIV. Furthermore, less than a third of all student participants did not consider Mr. X as a significant character, thus suggesting students at this level do not identify ethical issues and conflicts from a variety of perspectives and tend to consider their own values, prejudices, and biases. That is, several students believed the adulterous, homosexual relationship between Mr. A and Mr. X was morally wrong; they focused on the victim of the affair, Mrs. A, rather than on the psychosocial effects and ethical conflicts both Mr. A and Mr. X may experience. We found students at this level of medical education did generally understand and respect patient autonomy, as indicated by their desire to persuade Mr. A to directly tell his family and/or report his HIV status to proper health authorities.

To guide students toward more reflective psychosocial and ethical analysis, educators need to present students with difficult cases, such as those presented in the questionnaire used in this study. Berglund¹⁵ suggests educators need to present philosophical material so students develop ethical knowledge and critical thinking skills when confronted with real-life problems. Educators should also "start with practical problems and solve them by applying philosophical principles or ethical principles."^{15(p. 360)} Furthermore, as we have done by giving students this questionnaire, Carter writes, "The technique [using attitudinal questionnaires] can stimulate students to better understand their own attitudes and

hopefully motivate them to overcome resistance to more ethical but perhaps less desirable behaviors. However, the technique also serves as the basis for empirical ethical research.¹² (p. 121) In educating students about caring for patients with HIV, students could also benefit from learning about provider responsibility as discussed by Noring and colleagues.¹⁶

In collecting the data from both parts of this questionnaire, it was evident that students began to think about HIV as a complicated disease that affects the person biologically, psychologically, socially, and ethically. Although some students were confused when asked to identify psychosocial and ethical factors in both cases, we presented them with a medium through which they could begin to think about real life problems. Our suggestion for improving HIV education is to introduce real life case studies into the curriculum, especially cases to which students can relate, such as the case of Ms. M. Furthermore, additional training in ethics and the behavioral sciences need to be implemented into medical school curricula to develop students' critical thinking and imaginative skills as well as their understanding of psychosocial issues. By developing these skills, students can begin to consider multiple perspectives and solutions when confronted with real life dilemmas, rather than focusing only on the individual or the physician-patient relationship.

To conclude, the lack of knowledge and understanding of HIV, together with students' negative attitudes and personal biases and prejudices, is a concern that has recently been examined in medical education.^{3,4,9,12,17-19} The results from this study reflect a growing need to educate students and others about the psychosocial and ethical dilemmas surrounding HIV patients and their families. The results of our study suggest that we have a lot of work to do with our pre-medical and medical students to help them achieve competency in these areas when providing care to people with HIV. To get students to understand the multiple dimensions of diseases and how they affect persons, we suggest they should be exposed to persons with HIV; when this is not possible, they should learn through case studies such as the ones we provided in our questionnaire. Alternatively, standardized patients portraying someone with HIV could be used to help bring to light the biological, psychological, social, and ethical issues surrounding caring for patients with HIV.

Regarding the limitations of this study, its results must be interpreted with caution, given that the participants represent only one medical school and one of its consortium universities. Additionally, participants in this study were early in their medical education and, thus, the findings of this study may not generalize to medical stu-

dents further along in their education (e.g., beyond the pre-medical or first-year of medical school). Furthermore, while the C1 and C2 students participated at a rate of 100%, the M1 students' response rates were roughly 30%, which will also influence the generalizability of this study's findings. Given that this study used a set of primarily open-ended questions, we do not report reliability and validity analyses associated with other types of measures for assessing students' knowledge of HIV.

Though we feel this study has revealed important deficiencies in the way pre-medical and first-year medical students understand HIV, our future aim is to extend this study to include first- year through fourth-year medical students from our institution, as well as students from other medical schools, to determine if there are any significant changes in knowledge, understanding, and attitudes surrounding HIV over the course of students' medical school training and what overt or hidden curricular factors contribute to their moral and professional growth. In order to better understand the students' responses, it may be beneficial to conduct focus groups rather than administer a questionnaire. This approach would help us delve deeper into the meaning behind the students' responses and gain insight into whether their responses reflect the questions, the curriculum, or the students.

References

1. Bernstein CA, Rabkin JG, Wolland H. Medical and dental students' attitudes about the AIDS epidemic. *Acad Med.* 1990;65(7):458-460.
2. Ficarroto TJ, Grade M, Bliwise N, Irish T. Predictors of medical and nursing students' levels of HIV-AIDS knowledge and their resistance to working with AIDS patients. *Acad Med.* 1990;65(7): 470-1.
3. Kopacz D, Grossman LS, Klamen DL. Medical students and AIDS, knowledge, attitudes, and implications for education. *Health Education Research.* 1999;14(1):1-6.
4. McDaniel JS, Carlson LM, Thompson NJ, Purcell, DW. A questionnaire of knowledge and attitudes about HIV and AIDS among medical students. *Journal of American College Health.* 1995; 44(1):11-4.
5. Palma T, Iannelli R. Therapeutic reactivity to confidentiality with HIV positive clients, bias or epidemiology. *Ethics and Behavior.*

2002;12(4):353-370.

6. Radecki S, Shapiro J, Thrupp LD, Gandhi SM, Sangha SS, Miller RB. Willingness to treat HIV-positive patients at different stages of medical education and experience. *AIDS Patient Care and STDs*. 1999;13(7):403-414.
7. Simon MS, Weyant RJ, Asabigi, KN, Zucker L, Koopman JS. Medical student attitudes toward the treatment of HIV-infected patients. *AIDS Education and Prevention*. 1991;3(2):124-32.
8. Weyant R.J, Simon MS, Bennett ME. Changes in students' attitudes toward HIV-infected patients as the students progress through medical school. *Acad Med*. 1993;68(5):377-9.
9. Post SG, Botkin JR, Headrick LA. Medical students in a time of HIV, education and the duty to treat. *Med Educ*. 1995;29(2):128-32.
10. Strunin L, Culbert A, Crane S. First year medical students' attitudes and knowledge about AIDS. *AIDS Care*. 1989;1(1):105-10.
11. Wickramasuriya TV. Attitudes of medical students toward the acquired immune deficiency syndrome. *West Indian Medical Journal*. 1995;44(1):7-10.
12. Carter D. Using attitude questionnaires in medical ethics research and teaching: the example of undergraduate willingness to treat HIV-infected patients. *Med Educ*. 1998;32:121-26.
13. Carter D, Lantos J, Hughes J. Reassessing medical students' willingness to treat HIV-infected patients. *Acad Med*. 1996;71:1250-2.
14. Gerbert B, Maguire B, Bleeker T, Coates T, McPhee S. Primary care physicians and AIDS: Attitudinal and structural barriers to care. *JAMA*. 1999;266: 2837-2842.
15. Berglund CA. Mandatory HIV testing of patients and professionals: bringing ethics into practice. *Med Educ*. 1995;29:360-3.
16. Noring S, Dubler, N., Birkhead, G., Agins, B. A new paradigm for HIV care, ethical and clinical considerations. *American Journal of Public Health*. 2001;91(5):690-4.
17. Klewer J, Seelbach H, Kugler J. Poor assessment of HIV epidemiology and occupational HIV transmission risk by medical students. *Journal of Hospital Infection*. 2001; 47(4): 328-31.
18. Tesch BJ, Simpson, DE, Kirby BD. Knowledge of AIDS among healthcare students. *Wisconsin Medical Journal*. 1989;88(10):16-8.
19. Tesch BJ, Simpson, DE, Kirby BD. Medical and nursing students' attitudes about AIDS issues. *Acad Med*. 1990;65(7):467-9.

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Appendix 1: Questions and Cases used in questionnaire

Part I: General Knowledge

1. What is HIV?
2. How is HIV different from AIDS? Please Explain
3. How does HIV affect the human body?
4. What are some of the symptoms HIV patients may experience?
5. How is HIV diagnosed?
6. Is HIV treatable? What treatments are available for patients with HIV?
7. In general, how can you protect yourself from contracting HIV?
8. Who do you believe is most susceptible to HIV? Explain your answer.
9. Do you know anyone who has HIV?
10. 10. As a student-physician, do you believe you are at risk for contracting HIV from a patient? Explain your answer.
11. As a student-physician how comfortable are you (or will be) in caring for patients with HIV? AIDS?
12. As a student-physician how comfortable are you (or will be) in caring for patients with AIDS?
13. Do you believe medical students have a duty to treat HIV patients? Explain your answer.
14. Do you believe medical students should be tested for HIV? Why or why not?

Part II: Psychosocial/Ethical Knowledge

Case 1: Mr. A

A 53 year old male, Mr. A, was recently diagnosed with HIV. He has been married for thirty-one years and has two children. However, he suspects he contracted HIV by having sexual relations with his co-worker, Mr. X. Even though he had sexual relations with Mr. X for over a year, Mr. A claims he is not homosexual and that he still loves his wife. Mr. A has not and does not want to tell his wife or Mr. X that he has been diagnosed with HIV.

15. Identify, if any, the psychosocial factors/dilemmas in case 1?
16. Identify, if any, the ethical dilemma(s) in case 1.
17. If you were Mr. A's physician, describe what you would do to resolve these dilemmas.

Case 2: Ms. M

Ms. M is an eighteen-year old college student who was diagnosed with HIV five years ago. Ms. M contracted HIV from a contaminated blood transfusion when she was 13 years old. For the past five years Ms. M has been taking her medications faithfully and has been taking every precaution to prevent the spread of HIV- that is, until now. Since Ms. M entered college two months ago, she fears that her four, very curious roommates will find out that she is HIV positive. In order to protect her privacy, Ms. M has either changed or removed her prescription labels and only takes her medications when her roommates are not around. As a result of wanting to protect her privacy, she has neglected taking her medications on a regular basis and claims that she "feels just fine".

18. Identify, if any, the psychosocial factors/dilemmas in case 2?
19. Identify, if any, the ethical dilemma(s) in case 2.
20. Should Ms. M continue protecting her privacy in this way? If you were Ms. M, what would you do?