KNOWLEDGE OF STUDENTS TRAINING TO BE HEALTH CARE PROFESSIONALS ABOUT AIDS TRANSMISSION

Z., Roupa[1], E., Mylona[2], P., Sotiropoulou[3], E., Faros[4], V., Raftopoulos[2], S., Kotrotsiou[5], M., Nikas[6], M., Gourni[7], P., Arsenos[8], N., Salakos.[9]

1. TEI of Larissa (Technical University)
2. Hellenic Center for Infections Diseases Control
3. Bank of Greece, Health Insurance Fund
4. Whipscross University Hospital, London
5. General Hospital of Larissa
6. TEI of Larissa
7. TEI of Athens
8. TEI of Piraeus
9. Obstetrician- Gynecologist at the 2nd Clinic for Obstetrics and Gynecology, Aretaieion Hospital

Abstract: Background: Knowledge of how the HIV virus is transmitted and how we can protect ourselves against it will lead individuals to adopt appropriate sexual behavior, thus preventing transmission of HIV. An evaluation of this knowledge in a young population of reproductive age is fundamental when drawing up and assessing health education programs.

Goal: Assessing the knowledge of students at the health care departments of the Athens HTEI on AIDS transmission and prevention.

Material and Method: 249 students of health care professions at the Athens HTEI participated in the study, their average age being 21.1±2.45 years. An anonymous, structured questionnaire comprising 61 questions was used, which subjects filled out themselves.

Results: 96.1% of the population stated that they had been informed about AIDS and the overwhelming majority (94.2%) was aware of the hematogenous transmission of AIDS, while a large percentage answered that there is no cure, though this reply was influenced by how many years the respondents had studied. 90% of sexually active students thought that those afflicted should say so openly, and they were also better informed about the lack of a cure for the disease.

Conclusions: The population studied seemed to be aware of quite a few details concerning AIDS. The quantity and accuracy of this knowledge was influenced by various parameters, i.e. how many years respondents had studied and whether they were sexually active. In general, the sample population seemed open to information, as respondents' attitudes changed progressively in the course of their studies as a result of the knowledge imparted to them.

We believe that by drawing up and implementing appropriate Health Education Programs we can contribute to the adoption of more conscious attitudes and safer behavior.

Keywords: AIDS, aids knowledge, aids transmission, infection, health education, health promotion, sexually transmitted diseases, prevention.

INTRODUCTION

Over 20 years have elapsed since the first cases of occasional infections and neoplasms in groups of the US population were recorded, which in 1982 led to the introduction of the term Acquired Immune Deficiency Syndrome (AIDS), as well as subsequently to the identification of a new virus causing the syndrome, HIV – RNA (Human Immunodeficiency Virus).

AIDS caused increased morbidity and fatality, while also resulting in social stigmatism and exclusion.

Today, approximately 39 million people have contracted AIDS, 25 million of whom live on the Sub-Saharan African continent. The most common form of transmission is unprotected sexual intercourse. (1)

Recent statistical data from the United Kingdom, published in May 2005, shows that 83% of diagnoses concerned patients aged 20-45, i.e. persons of reproductive age.

Various efforts have been made to convey a definition of safe vs. dangerous sexual behavior to young persons, as well as to assess intervention programs. It would seem that psychosocial, behavioral and demographic factors as well as behavioral intentions play a significant role when choosing whether or not to take preventive measures. (2)

This is why it was interesting and beneficial to study the factors determining sexual behavior, with the goal of planning and assessing measures seeking to change dangerous conduct.

In 2005, 522 new cases were reported to the Hellenic Center for Disease Control and Prevention; 388 (74.3%) were male and 131 (25.1%) female patients. 39.46% of these cases have been defined as "undetermined" with reference to how the disease was transmitted, 29.5% were men who had sexual intercourse with other men (or 48.7%, if the cases of "undetermined" transmission are disregarded) and 27.2% were heterosexual men and women (or 44.9%, if the cases of "undetermined" transmission are disregarded).

The total number of HIV seropositive persons (including AIDS patients) in Greece who had reported their condition by 8 December 2005 was 7643. Of these, 6105 (79.9%) were men and 1495 (19.6%) women, while for a very small proportion patients' gender was not recorded. (3)

Over time, this epidemic has been on the rise, in men and women alike. In 2000, however, the number of new infections reported dropped, a trend that continued until 2002. In 2003 and 2004, a small increase in new infections reported by comparison to 2002 occurred. In 2005, the number of new infections reported per million persons/population was 47.1. An increase was recorded in 2005, for men and women alike. The percentage reference for women in 2005 reached 25.1%, this being the highest value since the beginning of the epidemic. In Greece, prevalence of AIDS is higher in homosexual men, while in other countries this is true of heterosexual relations, perhaps because health education and information for homosexual men have led to sexual conduct which reduces transmission of the infection (4, 5).

Sample and Method

The population under consideration is the students of health sciences of HTEI of Athens. The students of the first and last semester of their studies were approached and asked to participate the study. The students who filled the questionnaire is our sample and it is considered as convenient sampling.

In order to assess the extent of the knowledge of students at the Health Care Departments of Athens HTEI regarding the transmission of AIDS, a sample of 249 students enrolled at the Health Visitors Department (HVD), the Medical Laboratory Department (MLD) and the Nursing Department (ND) at the Athens Higher Technological Education Institute (HTEI) was taken. In all cases, informed consent was obtained. The Institute's Scientific Ethics Committee approved the study protocol and all students signed an informed consent form, according to the declaration of Helsinki. Collection of data was carried out based on a questionnaire comprising 61 questions, of which seven concerned demographic factors, and another seven knowledge pertaining to sexually transmissible diseases (STD).

Respondents' average age was 21.1±2.45 years, and 84.9% of them were women. The overwhelming majority, 94%, were of Greek nationality, while 96% stated that they were "Orthodox Christians". The sample was made up of students from the Health Visitors Department (HVD) - 38.9% -, the Medical Laboratory Department - 32.9% - and the First Nursing Department - 28.8% - of the School of Health Care Professions (SHCP) at Athens HTEI.

Statistical Analysis

For the purpose of controlling the distribution comparison of replies, Pearson's chi-squared test was used primarily, and where this proved unfeasible (where there were empty cells in the reference table), Fisher's exact test was applied. The level of significance was p=0.05.

Results

The majority of students, 96.1%, reported that they had been informed about sexually transmissible diseases and 87.5% stated that they knew how they are transmitted. 71.5% replied that no cure has yet been found for AIDS, and 87% believed that a person infected with AIDS may well not realize this and continue to feel healthy for a long period of time. Furthermore, 90% of the students knew that AIDS cannot be transmitted by a handshake and a percentage of 80% knew that consistent use of condoms provides protection from sexually transmissible diseases. Almost all students (94.2%) were aware of the hematogenous transmission of

AIDS. The question as to higher probability of transmission of AIDS in persons afflicted by an STD gave rise to the greatest number of incorrect answers, with 42% replying "yes", 33.3% "no" and 24.3% "don't know".

Table 1 Opinion of responding population on the existence of a cure for AIDS in relation to department of study

	HVD	MLD	ND
Yes	8.2%	14.8%	**31%**
No	80.4%	69.1%	**63.4%**
Don't know	11.3%	16%	**5.6%**
Total	**100%**	**100%**	**100%**

(p=0.001)

Table 1 show that the overwhelming majority of students in all three departments gave a negative reply to the question pertaining to the existence of a cure for AIDS. It is interesting to see the relatively high percentage of Nursing Department students who gave an affirmative reply and the 16% from the Medical Laboratory Dept. who stated that they "didn't know". The answers are statistically significant with reference to respondents' department of study (p= 0.001).

Table 2 Respondents' opinion regarding higher probability of transmission of AIDS in persons afflicted by an STD according to department of study

	HVD	MLD	ND
Yes	49%	44.3%	**31%**
No	23.5%	32.9%	**49.3%**
Don't know	27.6%	22.8%	**19.7%**
Total	**100%**	**100%**	**100%**

(p=0.014)

At the ND, as we can see, the majority - 49.3% - of students stated that individuals afflicted with STDs are not at greater risk of contracting AIDS by comparison to the rest of the population. In contrast, 49% of students at the HVD and 44.3% of those at the MLD stated that the risk of transmission for STD patients was greater.

With a view to exploring the effect of length of study on students' knowledge of AIDS, we compared students in their first year to degree students.

Table 3 Students' opinion on the existence of a cure for AIDS based on length of studies

	First Year	Degree
Yes	16.1%	**17.8%**
No	64.0%	**77.1%**
Don't know	19.9%	**5.1%**
Total	**100%**	**100%**

(p=0.001)

Table 3 shows that the percentage of students who stated that they "didn't know" dropped over the course of their studies, from 19.9% to 5.1%, and there is an additional proportional difference in students about to complete their degree, 77.1% of whom answered no to the question regarding the existence of a cure for AIDS.

Table 4 Respondents' opinion on the danger of infection with AIDS by handshake according to year of study

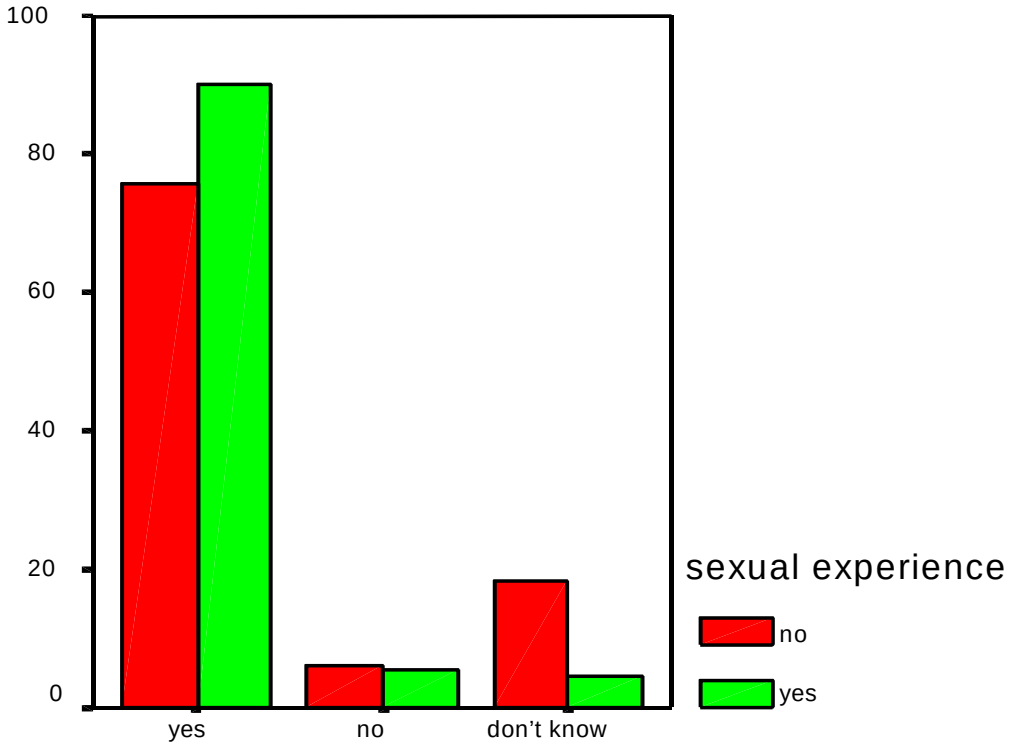
	First Year	Degree
Yes	82.9%	**95.8%**
No	6.3%	**2.5%**
Don't know	10.8%	**1.7%**
Total	**100%**	**100%**

(p=0.004)

Answers to the question as to whether or not it is safe to shake hands with a person who has AIDS are diverse (p=0.004). The vast majority of the population, as can be seen in Table 4, who are preparing to complete their degree - 95.8% - answered in the affirmative, while the drop in negative answers over time and with the knowledge acquired from the first year of study up to degree-level studies is obvious.

In order to understand the probable influence of sexual experience on the knowledge of our population pertaining to AIDS, we compared students who had had at least one sexual encounter to those who had had none at all.

Diagram 1: Respondents' opinion on the need to publicly declare the disease according to sexual experience



(p=0.01)

The main difference between students who had had at least one sexual encounter and those who had none at all can be found on the diagram in the percentage which is in favor of public reporting on the part of those afflicted with AIDS. Hence the high percentage of those with experience - 90% - who insist that those infected should file a public report. A relatively high proportion of those with no sexual experience - 18.2% - replied that they did not know whether a public declaration was necessary.

Discussion

Based on the fact that AIDS is a scourge for the developing countries, as well as for certain developed countries in our world, and primarily afflicts the age group between 20 and 29 (6), we decided to explore the knowledge and attitudes of Greek students regarding this issue. When a study on AIDS-related knowledge was conducted in Atlanta on a population of middle-aged women, the ratio of the number of correct answers to questions was a mere 3.7 to 9 (7). The sample we used stated that they were informed on matters pertaining to AIDS with a percentage of 96.1%, the majority believed that they were aware of how STDs are transmitted and also held that there was no cure for AIDS. Nevertheless, as shown by data from the area of the Sociology of Health, students tend to underestimate the severity of the disease and think that they themselves are less likely to be infected than their peers (8).

A study carried out in Oman on students at medical and non-medical schools found that 94% knew that AIDS is a long-term disease and that preventive measures are available, but no vaccine (9). Of all students included in our study, 80% replied that using condoms is a form of protection, and that there is no danger of contracting the disease by handshake. 94.2% answered in the affirmative to the question concerning the hematogenous transmission of AIDS.

It is interesting to look at the percentage of incorrect answers we received to the question of whether a person suffering from an STD is more likely to contract AIDS. In Brasil, it was found that women infected with AIDS are at greater risk of contracting HPV. (10). 42% of our population answered in the affirmative to the above question, a fact that leads us to believe that STDs might be deemed a predisposing factor. This opinion should be further studied, in order to explore awareness of the most common STDs and how they are related to each other.

Subsequently, we looked at the correlation between area of study, length of study and sexual experience on the one hand and students' knowledge of AIDS on the other. Regarding the area of study, in table 1, the percentage of ND-students who answered in the affirmative to the question on the existence of a cure for AIDS was quite high. This finding is puzzling, as we would have expected a smaller percentage from this department, due to the nature of its subject matter. Nevertheless, in general the replies from our population were encouraging.

Table 2 shows that there is also confusion about the probability of AIDS-transmission to STD-patients among students at the HVD and MLD departments. The position of ND-students on this is slightly clearer, 49.3% of whom gave a negative reply, a result confirmed by other studies as well (11). In any case, it seems that the wellknown of all STDs is AIDS. Based on a similar study carried out in Turkey with medical students, the responsibility for prevention was deemed to be a personal matter, even though the behavior reported was high-risk (12).

A study conducted with students in Istanbul shows that the proportion of correct answers is positively correlated to the progression of their studies and their parents' level of education (13), and the second point has been confirmed by other studies as well (14). In the present study, as it is shown in table 3, the proportion of students who said that they did not know whether there was a cure for AIDS in their first semester of studies would seem likely to answer no by the time they were approaching their degree. As to the possibility of transmitting AIDS by handshake, in 1991, all students at two dental universities in Finland and Tanzania knew that AIDS cannot be transmitted in this way (15). In table 4, 95.8% of our degree-level population replied in the affirmative to the same question, while the drop in negative answers with the passing of time and deepening of knowledge from the first to the last year of studies is apparent. At the same time, we believe that the fact that sexual activity begins within this four-year period also plays a significant role.

Students who had had even a single sexual encounter seemed to be more aware of whether or not there is a cure for AIDS, compared to those who had no sexual experience. For example –Diagram 1-, of the students who were not sexually active, the total of those who answered yes (28.6%) and those who said they didn't know (17.1%) shows that approximately half of them were not aware that there is no cure. Hence, the proportion of sexually active students - 90% - who feel that those infected should be obliged to file a public report, would seem quite high. A relatively large percentage of those without sexual experience, 18.2%, answered that they didn't know whether it was necessary to require a public declaration. This is clearly because those who are sexually active wish to know whether their partner is infected. 18.2% of the population who were not sexually active had no trouble with this question. It would certainly seem that a person who personally knows someone who had been infected with AIDS will tend to be more sensitive to the issue and seek to be informed (16), and if this individual has a high level of education, then he or she is in a better position to deal with the issue (17). At the same time, it could be useful to learn more about the symptoms of early HIV infected patients (18).

All in all, two issues arise from the present study. The first concerns partially insufficient knowledge of the subject and the second has to do with incorrect information about certain parameters. Thus, the problem here is a lack of information from reliable sources (19, 20). It would therefore be expedient to draw up specific health education programs for the purpose of having specialized health care professionals provide extensive information about AIDS to a target group of secondary school pupils and focusing on preventive measures. It should be pointed out that a large proportion of sexual partners fail to use condoms during their first sexual encounter (21, 22, 23, 24). Provided they are adapted appropriately, these programs could also be systematically introduced into tertiary education on a pre-degree level, thus becoming part of the curriculum of all higher institutions of learning (20, 25), since this is the age when individuals begin to become sexually active.

Such programs must always be adapted to the prevailing socio-economic features of the target group they are designed for in each individual case (26, 27, 28, 29). It would also be of interest to explore the extent of knowledge of special groups within our population, such as persons with a disability, gypsies or migrant populations, as to the related problems they must deal with in terms of sexual activity and protection against AIDS, with the goal of creating similar programs designed to cover these people's special needs. Let us stress that health authorities, not only in Greece but world-wide, are not particularly aware of this issue (30, 31).

In conclusion, the population studied seems to know quite a bit about AIDS. The quantity and accuracy of this knowledge are influenced by various parameters, such as length of study and sexual activeness. In general, our population proved to be open to information, since opinions seemed to change based on length of studies and the knowledge thereby acquired. We believe that planning and implementing appropriate Health

Education Programs will help us contribute to achieving our goal of ensuring increasingly aware attitudes and safer conduct.

REFERENCES

1. Nikolopoulos G, Chatzakis A.HIV/AIDS. The role of Hellenic Center for Disease Control and Prevention. New Health, 48:4,2005
2. Thanou N. AIDS and children:Assessment of the problem. New Health, 48:6,2005
3. Hellenic Center for Disease Control and Prevention. HIV/AIDS Surveillance Report in Greece, 30-6-2005 (Issue 20). Athens 2005.
4. Hogg RS, Weber AE, Chan K, Martindale S, Darrel C, Miller ML, et al. Increasing incidence of HIV infections among young gay and bisexual men in Vancouver. *AIDS* 2001; 15: 1321-2.
5. CDC HIV/AIDS Fact Sheet. HIV/AIDS among Men Who Have Sex with Men. July 2005
6. www.eurohiv.org
7. Henderson SJ, Bernstein LB, George DM, Doyle JP, Paranjape AS, Corbie-Smith G. Older women and HIV: how much do they know and where are they getting their information? J Am Geriatr Soc. 2004 Sep; 52(9): 1549-53
8. www.esdy.gr
9. AL-Jabri AA, Al-Abri JH. Knowledge and attitudes of undergraduate medical and non-medical students in Sultan Qaboos University toward acquired immune deficiency syndrome. Saudi Med. J. 2003 Mar; 24(3): 273-7
10. Pinto AP, Baggio HC, Guedes GB. Sexually – transmitted viral diseases in women: clinical and epidemiological aspects and advances in laboratory diagnosis, Braz J Infect Dis. 2005 Jun; 9(3): 241-50
11. Atulomah NO, Oladepo O. Knowledge, perception and practice with regards to occupational risks of HIV/AIDS among nursing and midwifery students in Ibadan, Nigeria, Afr J Med Sci, 2002, Sep 31 (3): 223-7
12. Gokengin D, Yamazhan T, Ozkaya D, Aytug S, Ertem E, Arda B, Serter D. Sexual knowledge, attitudes, and risk behaviors of students in Turkey. J Sch Health. 2003 Sep;73(7); 258-63
13. Savaser S. Knowledge and attitudes of high school students about AIDS: a Turkish perspective, Public Health Nurs. 2003 Jan-Feb; 20(1): 71-9
14. Adewole DA, Lawoyin TO. Characteristics of volunteers and non-volunteers for voluntary counseling and HIV testing among unmarried male undergraduates, Afr J Med Sci. 2004 Jun; 33(2); 165-70
15. Ranta K, Tuominen R. Dental students' knowledge of AIDS and HIV infection in Helsinki, Filand, and in Dar es Salaam, Tanzania. Acta Odontol Scand. 1991 Apr; 49(2): 79-83
16. Norman LR, Gebre Y. Prevalence and Correlates of HIV Testing: An Analysis of University Students in Jamaica. MedGenMed. 2005 Mar 2; 7(1): 70
17. Macek M, Mathovic V. Attitudes of school environment towards integration of HIV – positive pupils into regular classes and knowledge about HIV/AIDS: cross – sectional study, Croat Med J. 2005 Aug; 46(4): 697-8
18. Fernandez DM, Gomez Mde L, Figueroa W, Velazquez M, Baez DV, Rios – Olivares E, Hunter RF. A comparison of the sociodemographic, risk – behavior, and substance – abuse profile of young vs older HIV – infected Puerto Rican patients . Ethn Dis. 005 Autumn; 15(4 Suppl 5): S5 – 25 – 9
19. Brook U. AIDS knowledge and attitudes of pupils attending urban high schools in Israel, Patient Educ Couns. 1999 Mar; 36(3): 271-8
20. Ungan M, Yaman H. AIDS knowledge and educational needs of technical university students in Turkey. Patients Educ Couns. 2003 Oct; 51(2): 163-7
21. Tappia – Aguirre V, Arillo – Santillan E, Allen B, Angeles – Llerenas A, Gruz – Valdez A, Lanzano – Ponce E. Associations among condom use, sexual behavior, and knowledge about HIV/AIDS. A study of 13,293 public school students. Arch Med Res. 2004 Jul – Aug; 35(4): 334-43
22. Grunbaum JA, Kann L, Kinhen S, Ross J, Hawkins J, Lowry R, Harris WA, McManus T, Chyen D, Collins J. Youth risk behavior surveillance –United States, 2003 MMWR Surveill Summ. 2004 May 21; 53(2): 1-96
23. Sapountzi-Krepia D, Dimitriadou A, Maras D, Roupa-Darivaki Z, Zante E, Theodoulidou Th, Rapti N. The TEI of Athens students' knowledge about AIDS, Nosileutiki, 2000, 4, 345-353

24. Sapountzi-Krepia D, Roupa-Darivaki Z, Dimitriadou A, Zante E, Theodoulidou Th, Rapti N, Tobrou E, Vogiatzakis E.Attitudes and intended behavior towards HIV/AIDS patients , Hellen Arch AIDS, 2000, 8,1,21-29
25. Al-Mazrou YY, Abouzied MS, Al-Jeffri MH. Impact of health education on knowledge and attitudes of Saudi paramedical students toward HIV/AIDS, Saudi Med J. 2005 Nov; 26(11): 1788-95
26. Myrick R. In Search of Cultural Sensitivity and Inclusiveness: Communication Strategies Used in Rular HIV Prevention Campaigns Designed for African Americans. Health Commun, 1998; 10(1): 65-85
27. Li XP, Xiao 52, Wan QQ, Song SL, Teng YX. Effects of drugs relief hospital – based AIDS educational methods on drug users. Cell Res. 2005 Nov – Dec; 15(11-12): 89, 1-4
28. Belenko SR, Shedlin M, Chaple M. HIV risk behaviors, knowledge, and prevention service experiences among African and other offenders. J Health Care Poor Underserved. 2005 Nov; 16(4 Suppl B): 108 – 29
29. Kotrotsiou E, Papathanasiou I, Roupa Z, Lahana E, Kotrotsiou S, Paralikas Th. Sexual education. Necessity of the implementation in the undergraduate program of TEI. Vema of Asklipios, 3(3):137-141
30. Yousafzai AK, Edwards K, D'Allesandro C, Lindstrom L. HIV information and services: the situation experienced by adolescents with disabilities in Rwanda and Uganda. Disabil Rehabil. 2005 Nov 30;27(22): 1357-63
31. Sapountzi-Krepia D, Roupa Z, Maras D, Koukiou K, Ziakou A, Kazantzidou G, Vogiatzakis E. AIDS, social solidarity και voluntarism: the perceptions of the primary health care professionals of Attica. Hellenic Archives AIDS, 1999, 7, 2, 128-137

Corresponding Author:
Roupa Zoi
86, Aigosthenon Str
111 46 Galatsi, Athens, Greece
tel. 210 2924940
fax: 2102931022