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PUBLIC HEALTH STUDENTS' KNOWLEDGE OF AIDS: IMPLICATIONS FOR HIV-RELATED TRAINING NEEDS

Gary A. Richwald, MD, MPH, Joan C. Sekler, PA, MPH, David W. Kitimbo, MD, MPH, Joan M. Friedland, PhD, MPH

INTRODUCTION

The epidemic of AIDS and other human immunodeficiency virus (HIV) infections poses a significant challenge for health professionals now and in the future. In the period from 1986 through 1991, it is estimated that AIDS will account for between 0.5% ($15.4 billion) and 3.3% ($112.6 billion) of total national health care spending with Medicaid carrying from 15% to 42% of these costs (Pascal, 1987; Scitovsky & Rice, 1987).

Public health professionals will be increasingly involved in the education, prevention, policy and health delivery aspects of AIDS, as well as surveillance and biomedical research. Traditionally, they have formed the basic pool from which federal, state, and local health agencies, and community-based organizations have filled their manpower needs for disease prevention and health promotion. Public health education and training in the United States takes place in 24 schools of public health and in over 300 other public health graduate programs with an annual enrollment of approximately 9,500 and 11,600 students, respectively (Holmstrom, 1982; Magee, 1987).

In an effort to respond to the AIDS epidemic, public health schools and programs have begun to initiate curricular changes, although only a few have developed an HIV-specific course (Dunham, 1988; Healton, 1987). An assessment of public health students' level of knowledge about HIV and AIDS and attitudes about HIV-related public policy are an essential element in determining the need for curricular changes. No survey on AIDS knowledge among public health students has been published to date, although a number of studies address knowledge and attitudes about AIDS among students in high school, college, medical school, and

Address reprint requests to Gary A. Richwald, MD, MPH, UCLA School of Public Health, Los Angeles, CA 90024-1772.

Dr. Richwald, Dr. Kitimbo, and Ms. Sekler are with the Division of Population and Family Health, UCLA School of Public Health, and Dr. Friedland, the National Institute of Occupational Safety and Health.

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postgraduate medical training programs, as well as health professionals such as nurses and dentists (Blumenfield, Smith, Milazzo, Scropian, & Wormser, 1987; Centers for Disease Control [CDC], 1988; Cooke & Koenig, 1987; Gerbert, 1987; Gottlieb, Vacalis, Palmer, & Conlon, 1988; Kelly, St. Laurence, Smith, Hood, & Cook, 1987).

The following study had three principal objectives: to assess public health students' knowledge about HIV and AIDS; to determine students' attitudes toward two HIV-related public policies; and to describe student characteristics associated with an increased level of knowledge about HIV and attitudes toward these public policies.

METHODS

In May 1987, all 521 graduate students enrolled in the UCLA School of Public Health and residing in Los Angeles received a 60-item AIDS questionnaire. The questionnaire included information on sociodemographic and educational characteristics, and 26 "True/False" questions on knowledge about HIV and AIDS in five areas: prevalence, testing and reporting, minorities and AIDS, prevention, and international issues.* These questions were selected from information on HIV available in the scientific literature or through the print and electronic media. Questions were reviewed by content area experts. Additional questions focused on two public policy issues: mandatory HIV antibody testing and disclosure of test results.

Questionnaires were distributed to each student's school mailbox and were completed anonymously. They were returned to a central location within a 6-week period ending the first week of June 1987, during which time students received two reminders in the mail. Four hundred and seven questionnaires (78%) were returned of which 388 (74%) were analyzed and comprise the study population. Questionnaires with less than half of the knowledge questions completed were not considered useable. Confidence intervals were calculated using the method described by Dixon and Massey (1983).

RESULTS

Characteristics of the study population are presented in Table 1. Respondents and nonrespondents (including those who returned unuseable questionnaires) were similar except for sex, where a higher proportion of men were nonrespondents (45% vs. 33%). Respondents were primarily white, female and less than 30 years of age. Students were enrolled in the MPH (55%), MS/MSPH (16%) or the PhD/DrPH (29%) degree programs; 46% were about to complete their first year of school while a quarter had completed two years or more. Three quarters of the students were enrolled in one of the four largest academic programs: Epidemiology, Population and Family Health, Health Services or Behavioral Sciences and Health Education. Seven percent of students reported having taken an elective course about AIDS at the School of Public Health taught by a senior member of the epidemiology faculty in 1986 or 1987, and 31% reported having at least one lecture on AIDS in their other public health classes. Equal numbers (21%) of students reported that

*A copy of the questionnaire may be obtained from the authors.

TABLE 1. Selected Sociodemographic and Educational Characteristics of Respondents

CHARACTERISTIC	PERCENT (n = 388)
Age	
20–29	55.0
30–39	36.8
≥40	8.2
Sex	
Male	33.0
Female	67.0
Race/Ethnicity	
White, non-Hispanic	62.3
Hispanic	9.2
Black	6.5
Asian	22.0
U.S. Minority Status*	
Minority	12.9
Nonminority	87.1
Legal Residence	
United States	82.7
Foreign	17.3
Degree Program	
Master's	71.1
Doctoral	28.9

*Includes underrepresented minorities at UCLA (blacks and Hispanics) who are U.S. residents

their principal source of information on AIDS was either newspapers or professional journals, followed by television (10%), magazines (9%), brochures on AIDS (8%), and public health courses (5%).

In evaluating students' responses to the 26 knowledge questions, most were able to correctly answer questions relating to HIV testing and AIDS reporting, while considerably fewer could do so for questions concerning HIV transmission and AIDS in intravenous (IV) drug users, women, prostitutes and children (Table 2). The overall mean number of correct responses (n) for those surveyed was 14.2 (SD = 3.0). There was no apparent association between the number of correct responses and students' age, sex, degree program, length of enrollment or having had at least one lecture on AIDS. Students who completed an elective course on AIDS (n = 16.0, 95% CI = 14.2–17.8) or who reported professional journals as their principal source of AIDS information (n = 15.1, 95% CI = 14.4–15.9) had somewhat higher scores than those without such exposures (n = 14.1, 95% CI = 13.8–14.4 and n = 13.9, 95% CI = 13.6–14.3, respectively). A strong relationship existed between higher scores and legal residence in the United States (n = 14.7, 95% CI = 14.4–15.0), compared to foreign residence (n = 12.0, 95% CI = 11.3–12.7). Controlling for legal residence did not change the relationship between the number of correct responses and having participated in an AIDS course or having reported journals as the principal source of AIDS information.

In terms of AIDS policy, half of the students supported mandatory HIV antibody testing for marriage certificate applicants, while smaller numbers supported mandatory testing for hospital and clinic patients (Table 3A). Although California law

TABLE 2. Percentage of correct responses for questions measuring knowledge of HIV/AIDS

AREA OF HIV/AIDS KNOWLEDGE	CORRECT RESPONSE (n = 388)
Prevalence	
1. Change in proportion of women who got AIDS from male sex partners during the last 4 years	81
2. Seropositivity rate for male military applicants	64
3. Seropositivity rate for prostitutes who are not IV drug users	36
4. Estimated number of ARC cases relative to AIDS cases	28
5. Public Health Service estimate of cumulative presence of AIDS in 1991	22
6. Proportion of women with AIDS who contracted it from bisexual men	22
7. Number of AIDS cases in Los Angeles as a percent of total U.S. cases	22
8. Change in relative proportion of new AIDS cases due to IV drug use in New York and California	15
Testing and reporting	
1. Length of time between infection with HIV and appearance of symptoms	93
2. Meaning of seropositivity in relationship to severity of infection	93
3. Relationship between seronegativity and presence of virus in body fluids	76
4. Individuals responsible for mandatory AIDS reporting in California	64
5. Length of time between exposure to HIV and development of antibodies	57
6. Proportion of positive ELISA tests not confirmed by Western Blot in blood donors	56
7. Number of anonymous HIV antibody testing sites in Los Angeles County	36
Minorities and AIDS	
1. Proportion of minority women with AIDS who are IV drug users	67
2. Proportion of all women with AIDS who are minorities	63
3. Knowledge of lawsuit against Los Angeles County for inadequate educational efforts in minority communities	61
4. Cumulative incidence of AIDS in minority versus Caucasian women	58
5. Proportion of children with AIDS who are minorities	42
Prevention	
1. Dispensing disposable needles as a solution for preventing AIDS transmission in IV drug users	78
2. Differences in position of the Surgeon General and Secretary of Education on AIDS prevention	62
3. Knowledge of programs for IV drug users involving cleaning needles with bleach	56
International Issues	
1. Mode of AIDS transmission in Africa	74
2. Role of WHO in establishing an AIDS control program worldwide	50
3. Countries in Africa where AIDS occurs most frequently	45

TABLE 3. Student opinion on HIV antibody testing and the disclosure of antibody test results

STUDENT POSITION	OPINION (n = 388) IN FAVOR (%)	OPPOSED (%)	NO POSITION (%)
A. Support mandatory HIV antibody testing for.			
Marriage certificate applicants	51	46	3
Prenatal clinic patients	39	58	2
Hospitalized patients	34	64	2
Family planning clinic patients	25	71	4
B. Support involuntary disclosure of HIV antibody test results to:			
Public health officials	62	36	3
Sexual partners	53	44	3
All physicians treating patient	45	51	4
Health/Life insurance companies	14	83	3

required written consent to disclose test results to any individual at the time the questionnaire was administered (Lewis, 1987), over half of the students supported unrestricted disclosure of HIV antibody status to public health officials, and sexual partners, although only 14% supported disclosure to health or life insurance companies (Table 3B). Students who favored mandatory testing for all groups had a somewhat lower score on the AIDS knowledge test (n = 13.2, 95% CI = 12.4–14.1), compared to those who opposed mandatory testing (n = 14.4, 95% CI = 14.1–14.7). Similarly, students who supported the involuntary disclosure of HIV antibody test results to the first three groups in Table 3B, had lower scores (n = 13.4, 95% CI = 12.8–14.0), compared to those who opposed disclosure (n = 14.5, 95% CI = 14.1–14.9).

DISCUSSION

Although these findings are not necessarily generalizable to students attending other schools or graduate programs in public health, they nonetheless raise serious concern about the level of knowledge about HIV and AIDS. UCLA has the fourth largest school of public health (6% of U.S. enrollment), and its student profile is similar to other schools of public health with the exception of having a greater proportion of Asian students (Magee, 1987). Although it would be helpful to be able to compare the correct response rate (55%) for the knowledge questions to results from other studies of public health students, such data is not currently available.

The higher number of correct responses for students with journal and AIDS course exposure also needs to be interpreted with caution. Although the differences were significant, the absolute differences were relatively small (e.g., one or two correct answers), and may be a reflection of other characteristics of the students in these subgroups. The somewhat larger difference in test results for foreign students, three quarters of whom are from Asia, may be confounded by difficulties with English, stigmatization associated with AIDS transmission-related behaviors (e.g., homosexuality and IV drug use) and the relatively low priority that AIDS occupies on most Asian national agendas.

The position of a large number of students in favor of mandatory HIV antibody testing for hospitalized patients, prenatal and family planning clinic attendees, and marriage certificate applicants is in conflict with the recommendations of major national and international health organizations (CDC, 1987a; CDC, 1987b; Institute of Medicine, 1987; World Health Organization, 1987). Similarly, a majority of students supported involuntary disclosure of test results to public health officials, a policy considered by most public health experts to be counterproductive to controlling HIV transmission (Institute of Medicine, 1987).

The results of this study support the findings and recommendations made recently by two Health Resources and Services Administration (HRSA)-sponsored task forces (Dunham, 1988; Healton, 1987). The HRSA Task Force on HIV/AIDS and Education in Public Health concluded that "extraordinarily high unmet training needs in the area of HIV/AIDS exist among health professionals in schools of public health." The reports' recommendations included:

1. Development of multidisciplinary HIV-specific courses;
2. Integration of HIV-related materials into divisional courses through the use of case studies in epidemiology, health education, health policy, social sciences, and other related fields;
3. Establishment of "recommended minimum standards for HIV-related information" to be covered in the curriculum;
4. Education of faculty members about HIV, so that public health schools can play a leadership role in the development of interdisciplinary university-based initiatives in teaching and research.

The accomplishment of these goals, however, will require considerable effort. In a recent study of the U.S. public health system by the Institute of Medicine (1988), a lack of ties between education programs and the practice of public health (e.g., in governmental and nongovernmental agencies) was identified. In addition, the HRSA report (Healton, 1987) noted a recent isolation of some schools of public health from other health professions schools and related disciplines on campus. These two problems may make it more difficult to examine the AIDS epidemic in the broad social context that it requires. Furthermore, the commitment of scarce educational resources and faculty release time necessary for the development of HIV-related case studies and multidisciplinary courses may be difficult in an era of competing priorities. Recommendations to integrate training in ethics, law, and behavioral sciences may not be easily implemented in academic settings where interdisciplinary cooperation is often difficult to achieve (Dalton & Burris, 1987; Pierce & VanDeVeer, 1988). It is critical to overcome these and other barriers to improved AIDS education if we are to be successful in meeting the unprecedented challenge created by this epidemic.

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