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ABSTRACT

First-year students (n=255) at Kutztown University of Pennsylvania completed a survey instrument concerning human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), during the initial meetings of a general health course. Ninety-four percent of respondents had received information about HIV/AIDS at the secondary school level. The most frequently allocated amount of instructional time devoted to HIV/AIDS was 0 to 6 hours. The three most common venues for presenting HIV/AIDS information were health class (83 percent of respondents), other gatherings such as assemblies, and physical education class. Multiple instructional strategies were employed, with lecture, use of pamphlets, and films/videos most frequent. The sample, as a whole, exhibited qualitative and quantitative characteristics that were consistent with or exceeded previously reported instructional data. HIV/AIDS knowledge was influenced by age, gender, place of residence, class rank, method of presentation, quantity of instructional time devoted to the topic, comprehensiveness of content, and other variables. Class rank and presentation of information in an instructional unit (series of lessons) appeared to be the best predictors of HIV/AIDS knowledge retention. (Contains 22 references.) (JDD)

SCOPE AND EFFICIENCY OF HIV/AIDS INSTRUCTION IN SECONDARY EDUCATION

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Acquired immunodeficiency syndrome (AIDS) and its precursor human immunodeficiency virus (HIV) continue to create significant health concerns as their seroprevelance expands in scope and magnitude (Centers for Disease Control, 1992). While the impact of these diseases is felt in all segments of society, the infections, well established among youth (Cox, 1993), contribute significantly to morbidity and mortality among adolescents and young adults (Holtzman, et al., 1991). Of the 242,146 cases of AIDS reported through October, 1992, 0.4% occurred in teens age 13 to 19 years and 20.0% in young adults age 20 to 29 years (Centers for Disease Control, 1992). Exacerbating this health problem is the recognition that the incubation period between HIV infection and AIDS onset may be up to 10 years with many young adults having been infected during adolescence (Cox, 1993).

Addressing this growing health issue among youth has required a multifaceted approach, a major component of which has been school based education (National Association of State Boards of Education, 1991). The effectiveness of these efforts have yielded divergent results with data suggesting both a cognitively informed adolescent population (Holtzman, et al., 1991) and a population holding misconceptions about basic information, transmission and preventive methodologies (Kann, et al., 1991). In an effort to further enhance the effectiveness of HIV/AIDS instruction, it may be advantageous to examine the types of methodology utilized and the amount of instruction received in the secondary classroom.

This investigation was undertaken to survey the scope and efficiency of HIV/AIDS education received, by students, at the secondary educational level.

Specific objectives included assessment of HIV/AIDS knowledge of recent high school graduates; identification and quantification of "instructional methodology" utilized in school based HIV/AIDS education; a determination of influences affecting the outcome efficacy of HIV/AIDS instruction received during the secondary experience; and identification of predictors of HIV/AIDS learning outcomes.

METHODOLOGY

Participants were voluntarily recruited from "traditional" and "non-traditional," first year students enrolled in the general health curriculum at Kutztown University of Pennsylvania. Subjects were asked to anonymously complete a 43 item, self-administered survey instrument designed to assess demographic variables, basic knowledge of HIV/AIDS transmission and prevention as well as the scope and magnitude of instruction received during their secondary education experience. The instrument developed was a modification of a subject specific questionnaire, utilized by the Commonwealth of Pennsylvania's Department of Health (McKenna & Young, 1990) and included 11 questions focusing on demographic variables; 13 inquiries relating to scope of instruction; 10 questions dealing with basic disease information and 9 relating to misconceptions. Data was collected during the initial meetings of the course, well in advance of any instruction or discussion about sexually transmitted diseases, infections or other curricular topics dealing with or related to HIV or AIDS. Items not answered by subjects were scored as "no response" rather than as an "error."

RESULTS and DISCUSSION

Measures of central tendency, indicated a predominantly white, non-Hispanic, female, young adult sample (n=255) who resided in suburban areas of the Commonwealth of Pennsylvania and were educated in public schools. The majority of respondents self-reported their academic rank as "the middle or above" and graduated in classes ranging in size from 100 to 300 students. Ninety-four percent received information about HIV/AIDS at the secondary level with 35% receiving information during the eleventh grade. Further, 62% had HIV/AIDS information presented as part of an instructional unit (series of lessons). The most frequently allocated amount of instructional time devoted to HIV/AIDS was 0-6 hours. The three most common venues for presenting HIV/AIDS information were health class, other gatherings (assemblies) and physical education class, with 83% receiving instruction during health class. Multiple instructional strategies were employed to disseminate information with lecture, use of pamphlets/brochures, and films/videos appearing to be the most frequently utilized methodologies. Lecture, identified by 69% of respondents, was the most frequently employed approach. Of the multiple personnel providing instruction on HIV/AIDS in the school environment, the three most frequent were health teacher, school nurse and other classroom teacher with 65% indicating the health teacher as most effective. Eighty-three percent reported that most emphasis was placed on one of three content areas: basic facts, methods of transmission and prevention. The quality of instruction was rated " average" or "good" by 67% of respondents. Thirty-five percent of participants acknowledged that television provided their best source of HIV/AIDS information. Overall

performance on the 19 items focusing on HIV/AIDS knowledge was 91.10 ± 0.724 (mean ± s.e.m.).

The sample, as a whole, exhibited qualitative and quantitative characteristics that were consistent with or exceeded previously reported HIV/AIDS instructional data (Holtzman, et al., 1992; DuRant, Ashworth, Newman, & Gaillard, 1992; Nowak, 1994). Ninety-four percent of respondents, in this current study, received school-based HIV/AIDS instruction substantially exceeding the national mean of 67% (Holtzman, et al., 1992) and slightly less than the 95% level of inclusion targeted as a national objective by the year 2000 (U. S. Department of Health and Human Services, 1991). Additionally, the pervasiveness of instruction, identified in this investigation, far exceeded the 75% found at a similar University within the Commonwealth's State System of Higher Education (Nowak, 1994). Causality for this occurrence may lie with local school districts' understanding of the prevelance of the disease, the finality of its prognosis, its increasing incidence among young adults (Cox, 1993), and the recognition that HIV/AIDS instruction is associated with HIV/AIDS knowledge acquisition and risk reduction (Walter & Vaughan, 1993; DiClemente, 1993). Though the health educator was the primary professional disseminating information, school districts used a variety of teaching professionals for HIV/AIDS instruction. This finding differs from data which suggests upper grade instruction comes from other professionals such as home economics, social studies and science teachers (Ellis & Torabi, 1992). A paucity of data makes conclusive explanation of this finding difficult. However, the use of teachers, other

than health educators, may result from factors such as individual knowledge, willingness to develop a course of study, subject "comfort level" as well as the elective content of upper grade curricula. Methods of instruction were similarly diverse though relied heavily on the "lecture" format. Though instructional style is often a function of personal choice, there is data suggesting that a lecture/discussion format can lead to high levels of student achievement (Seifert & Beck, 1984). Also consistent with the findings of this investigation were data noting that mass media was the most frequent source of information for this age group (Jones, 1993). Considering that adolescents may view television up to 77 hours per week (Juzang, 1994) and that television and radio are used for public education, this relationship is easily established. An apparent lack of data pertaining to quantity of instructional time devoted to the topic as well as perceived quality of instruction precludes discussion and may need to be the focus of additional investigation.

Preparation for additional statistical assessment included the identification of four subsets of data based on response accuracy to two categories of questions. One category of eleven questions dealt with information that if not "learned" could be life threatening (example: Can a person who has the HIV/AIDS virus infect someone else during sexual intercourse). These were labeled "required" information. A second category of eight questions, labeled "nonrequired" information, while holding the potential to create anxiety if not "learned", were not considered life threatening (example: Can a person get HIV/AIDS infection from using public toilets). The four groups created, on the basis of response, included: All

Correct Information (n=82,, Error-Required Information (n=42), Error-Nonrequired Information (n=70) and Error-Both Required/Nonrequired Information (n=61). Group characteristics and response patterns are recorded in Table 1. Statistical evaluation of these groups included the use of one-way analysis of variance and Scheffe's test of multiple comparisons to identify between group differences, Pearson Product-Moment correlation to determine the extent of relationships between group membership and "demographic" variables and multiple regression analysis to identify variables with group membership predictive capabilities. All results were considered statistically significant at a probability equal to or less than 0.01.

The results of a one-way analysis of variance indicated seven, statistically significant, between group differences ($p \leq 0.01$). These included age, ethnic origin, presentation of HIV/AIDS information as an instructional unit, grade, quantity of instruction, quality of instruction and the students' best source for acquiring HIV/AIDS information. Scheffe's Test for multiple comparisons was then undertaken to further define where group differences occurred. Variations in distribution, most frequently occurring within the group erring in both the required and nonrequired information, appear to be responsible for these identified differences.

Calculation of Pearson Product-Moment Correlation Coefficients were utilized to determine the extent of relationships between "demographic" variables and group membership. Showing a tentative relationship to group membership were the variables age, gender, residential area, class rank,

receipt of HIV/AIDS information as an instructional unit, method of presentation, quantity of instruction and comprehensiveness of content. Causality for these weak relationships may lie in multiple areas. The interaction between age and group membership indicated that the older students in the sample were less likely to answer questions correctly than were younger students. Intuitively this makes sense, for older students, delaying their entry into post-secondary education, may have been graduates from high school prior to the 1987 federally mandated inclusion of HIV/AIDS instruction in the curriculum or before local school districts chose to implement a course of study. Gender also appeared related to group membership, with females more likely to answer correctly than males. Data suggests this correlation might result from an increase in sexual activity among adolescent females (Waldrop, 1991) and the traditional view that sexual knowledge is a female responsibility (Werner, 1988). Acquiring HIV/AIDS knowledge may be the result of "anticipatory socialization into adult gender roles" (Carroll, 1990) thus more important to females than males. Respondents living in urban areas tended to err more frequently than participants residing in other areas. Causality for this relationship can not be satisfactorily explained. Class rank can be a predictor of academic performance, indicating both motivation and ability (Krockover, 1987). Those respondents self-reporting a high class rank should reflect more effective "learning" than those reporting a lower rating. The relationship evident in the remaining variables, that is, information presented as an instructional unit, quantity of instruction, content, and methods of presentation all appear related to "time on task" factors (Seifert & Beck, 1984; Wilson,

1987).

The findings of a multiple regression analysis, undertaken to determine variables with the capacity to predict group membership, identified class rank ($F=16.53$, $p \leq 0.01$) and instructional unit ($F=11.11$, $p \leq 0.01$) as having predictive capabilities. Consistent with data predicting performance (Krockover, 1987), academic capabilities, as defined by class ranking, appear to be a valid method of anticipating outcomes. Information presented as an instructional unit (series of lessons) holds the capacity to predict performance on a test of HIV/AIDS knowledge due to the well documented relationship between "time on task" and learning (Seifert & Beck, 1984; Wilson, 1987).

CONCLUSION

Although limited by a small, ethnically non-diverse sample, the following conclusions appear justified. Though quantitative and qualitative aspects of "instructional methodology," professional personnel involved in school-based instruction and format of presentation vary, overall HIV/AIDS knowledge retained by high school graduates appears high. HIV/AIDS knowledge, as determined by response outcomes, appears to be influenced by numerous variables including age, gender, residential area of respondent, class rank, method of presentation, quantity of instructional time devoted to the topic, comprehensiveness of content and presentation of HIV/AIDS information in an instructional unit. Additionally, class rank and presentation of information in an instructional unit appear to be the best

predictors of HIV/AIDS knowledge retention.

Table 1
HIV/AIDS GROUP CHARACTERISTICS
MOST FREQUENT RESPONSE
(%)

	ALL CORRECT INFORMATION	ERROR-REQUIRED INFORMATION	ERROR-NONREQUIRED INFORMATION	ERROR-BOTH REQUIRED/ NONREQUIRED INFORMATION
n	82	42	70	61
Age	18 yrs. (67.1)	18 yrs. (73.8)	18 yrs. (65.7)	18 yrs. (54.1)
Gender	Female (67.1)	Female (60.0)	Female (71.6)	Male (62.1)
Ethnic Origin	White-non Hispanic (96.3)	White-non Hispanic (97.6)	White-non Hispanic (90.0)	White-non Hispanic (82.0)
State	PA (91.5)	PA (88.1)	PA (87.1)	PA (91.2)
Residential Area	Suburban (43.9)	Suburban (47.6)	Suburban (34.3)	Suburban (37.7)
School Type	Public (98.8)	Public (97.6)	Public (91.4)	Public (95.1)
Class Size	101-200 (31.7)	101-200 (35.7)	101-200 (35.3)	201-300 (26.3)
Class Rank	Far Above Middle (41.5)	A Little Above Middle (57.1)	A Little Above Middle (32.9)	A Little Above Middle (32.8)
HIV/AIDS Instruction	Yes (96.3)	Yes (97.6)	Yes (95.7)	Yes (86.9)
Instructional Unit	Yes (75.6)	Yes (66.7)	Yes (60.0)	Yes (42.6)
Grade	10 (40.7)	11 (32.5)	11 (35.3)	11 (45.0)

Class Presented	Health (88.8)	Health (82.5)	Health (82.4)	Health (74.6)
Method of Presentation	Lecture (71.6)	Lecture (70.7)	Lecture (70.6)	Lecture (63.3)
Most Effective Teacher	Health (71.8)	Health (63.4)	Health (62.7)	Health (60.3)
Instructional Time	4-6 hrs. (37.8)	0-3 hrs. (39.0)	4-6 hrs. (40.3)	0-3 hrs. (56.7)
Content Emphasized	Methods of Transmission (31.3)	Prevention (41.5)	Prevention (37.3)	High Risk Activities/ Populations (33.3)
Quality of Instruction	Good (50.0)	Average (34.2)	Good (51.5)	Average (31.7)
Best Information Source	School (28.1)	Television (38.1)	Television (34.3)	Television (47.5)
Total % (mean ± s.e.m.)	100.00 ± 0.00	92.50 ± 0.79	91.66 ± 0.53	77.54 ± 1.94
Required % (mean ± s.e.m.)	100.00 ± 0.00	86.93 ± 1.31	100.00 ± 0.00	82.84 ± 1.78
Nonrequired % (mean ± s.e.m.)	100.00 ± 0.00	100.00 ± 0.00	80.59 ± 1.25	71.18 ± 2.62

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