
Improving the Preparation of Preclinical Students for Taking Sexual Histories

SHIRAH VOLLMER, M.D., KENNETH WELLS, M.D., M.P.H.,
KAY H. BLACKER, M.D., and GORDON ULREY, Ph.D.

Abstract—The authors evaluated human sexuality training programs at two California medical schools. In one program, students had no experience taking a sexual history. In the other, students were randomly assigned either to conduct or to observe a brief sexual history interview with a community volunteer. The students who conducted an interview showed more significant improvements in knowledge of human sexuality, perceived appro-

priateness of taking a sexual history and perceived personal skill in taking a sexual history than did the students who neither observed nor took a sexual history and also developed more critical views of practicing physicians' skills in taking such histories. The students who observed an interview improved more in knowledge and perceived personal skill than did the students who had no interview experience. *Acad. Med.* 64(1989):474-479.

The recent epidemics of acquired immune deficiency syndrome (AIDS) and other sexually transmitted diseases, as well as an increasing rate of teenage pregnancy, have greatly increased the importance of training health care professionals to take adequate sexual histories. While physicians are frequently consulted regarding sexual problems,¹ their competence in handling such matters has been seriously questioned.² In addition, recent studies^{3,4} suggest that many physicians and medical students have adopted a defensive or even hostile attitude toward AIDS patients and those at high risk of acquiring AIDS. Thus, medical educators are now challenged to instill in their students positive attitudes toward assessing and managing patients with sexual concerns and sexually transmitted diseases, and to increase students' competence in sexual history-taking.

To what extent do current training

programs in human sexuality accomplish these tasks? Which program elements are most effective in preparing students to take sexual histories? Unfortunately, there are few data available to answer these questions. Most studies of these issues were conducted in the late 1960s and early 1970s, prior to the AIDS crisis.⁵⁻¹² These studies evaluated the effects of general medical education (in the absence of specific sex education) or of sexuality programs consisting largely of small group discussions on medical students' knowledge of and attitudes toward human sexuality.⁵⁻¹² Most studies concluded that courses in human sexuality increase either knowledge of sexuality or the permissiveness of attitudes towards variations in sexuality.¹⁰⁻¹²

These studies each had one or more design flaws that limit their usefulness for answering the questions posed in the previous paragraph. First, most studies evaluated the impact of a single course taught at one medical school, limiting generalizability. Second, in most studies, there was no comparison of alternative approaches to teaching human sexuality, and no study employed a true experimental design. Third, these studies focused on the impacts of programs on students' general attitudes and knowledge of human sexuality rather than on preparation for the specific task of conducting sexual history interviews. Fourth, some studies

did not control for students' baseline characteristics in examining the effect of programs. As a result, it has been hard to know how much of the observed changes in knowledge or attitudes can be attributed to the human sexuality training programs that were studied and how much to the students' background characteristics, such as previous interviewing experience.

We designed this study to overcome some of these flaws. The evaluation was prospective and included a randomized design. The major focus of the evaluation was to determine how much experience in taking sexual histories is necessary to prepare preclinical students for their future role in performing this function. This focus was selected because providing students with direct experience in taking sexual histories is one of the most labor-intensive and thus expensive aspects of any training program in human sexuality, in that it requires faculty supervision on a one-to-one or small-group basis and the recruitment of subjects for the interviews.

The present study focused on the effects of taking and of observing the taking of brief sexual histories on the level of preparation of preclinical medical students for their future role in taking sexual histories from patients. The study relied on a formulation of the concept of preparation for sexual history taking that was developed and tested specifically for it.^{13,14}

Dr. Vollmer is a fellow in child psychiatry, and Dr. Wells is associate professor of psychiatry and biobehavioral sciences, University of California, Los Angeles, Neuropsychiatric Institute and Hospital; Dr. Wells is also a senior researcher at the RAND Corporation, Santa Monica. Dr. Blacker is professor and chairman, and Dr. Ulrey is associate clinical professor, Department of Psychiatry, University of California, Davis.

Correspondence and requests for reprints should be addressed to Dr. Wells, 760 Westwood Plaza, Los Angeles, CA 90024.

Method

Our sample consisted of 153 first-year medical students from two California medical schools. The details of the study design, course structure, explanatory variables, preparation for taking sexual histories, and statistical analysis are discussed in the following paragraphs.

Evaluation Design

In 1985, all first-year medical students at the University of California at Los Angeles (UCLA) and at the University of California at Davis (UC Davis) were asked to complete self-administered questionnaires at the beginning (pretest) and at the end (posttest) of their introductory course in human sexuality. The pretest questionnaire was designed to obtain baseline information; the posttest questionnaire was used to examine change over time in the students' level of preparation for taking sexual histories. Participation in this evaluation was voluntary.

Of the 144 UCLA students, 133 (92.4%) completed the pretest; of these, 104 (78.2%) completed the posttest, making an overall completion rate of 72.2%. Of the 89 UC Davis students, 70 (78.7%) completed the pretest; of these, 49 (70%) completed the posttest, making an overall completion rate of 55.1%. The evaluation sample consisted of 153 students from both schools (65.7% of all the 1985 first-year students). Because one student had some missing responses, some analyses used a sample of 152 students.

Course Structure

Each course included lectures, readings, small-group discussions, and a written examination. At UCLA the course was one module of the required Introduction to Human Behavior, offered by the Department of Psychiatry and Biobehavioral Sciences. Five hours of lecture reviewed the importance to medical practice of sexual problems and concerns, techniques for taking a sexual history, and common sexual problems and their treat-

ment. Students participated in three two-hour small-group discussion sections. Each group consisted of eight students and one faculty member. In the first session, students discussed the importance of sexual concerns in medicine and participated in brief role-play exercises in which students assumed the roles of interviewer and patient and practiced taking sexual histories. Over the remaining two sessions, within each small group, half (four) of the students were randomly selected to conduct a 15-minute sexual history (interview group). The other students observed the interviews (observation-only group).

At UC Davis, the human sexuality course was a separate required course, taught shortly after the completion of the introductory course in human behavior. The course included nine hours of lecture and nine one-hour small-group discussion sessions. For about one-third of the students, the small-group sessions included role-play exercises in which students and faculty practiced taking sexual histories. The remainder of the groups did not conduct such exercises. None of the Davis students conducted actual interviews with patients or volunteers as part of the course. The readings and lectures at the two institutions were similar in academic content, except that the Davis program was somewhat more rigorous in describing the range of human sexual behaviors and dysfunctions.

Explanatory Variables

The main explanatory variable compared the UCLA interview group, the UCLA observation-only group, and the Davis students, who neither conducted nor observed sexual history interviews. Information on participation in role-playing exercises and taking sexual histories was obtained from items on the posttest questionnaire. We included a variable that indicated whether the student had participated in role-playing exercises. To control for differences by site in the role-playing experience, we included a variable representing the interaction between interview-group status and role-playing status.

We assessed other explanatory variables by items from the pretest questionnaire. Each respondent's prior personal sexual experience was measured by five items adapted from Lief.⁷ These items assess perceived level of sexual knowledge, experience, and adjustment in relation to peers, sexual permissiveness, and overall sexual satisfaction. A personal sexual experience scale, formed by averaging scores for the five items, had acceptable reliability for group comparisons. Prior experience in taking a sexual history, age, father's level of education, sex, and ethnic background were each assessed by a single item, for a total of five additional items. We developed variables representing whether the student had ever taken a sexual history from a patient; whether the student was 28 years old or older; whether the student's father had more than a college education; and whether the student was a non-Hispanic white (versus all other ethnic groups).

Preparation for Taking Sexual Histories

The measures of preparation for sexual history taking, which were based in part on previously used measures, are described in detail elsewhere.^{13,14} Using 43 items in both the pretest and posttest questionnaires, six dimensions of preparation were assessed (Table 1).

1. Knowledge of human sexuality was assessed by 20 true-or-false items (for example, psychiatrists consider homosexuality a mental illness).

2. Perceived appropriateness of taking a sexual history and treating sexual problems was assessed by six items, worded as statements (for example, a sexual history should be part of every comprehensive medical history). Students indicated agreement or disagreement on a five-point Likert-type scale.

3. Perceived skill of physicians in taking a sexual history was assessed by three items worded as statements (for example, physicians in general know how to treat the sexual problems of their patients); students indi-

Table 1

Mean Scores and Other Information Regarding 153 First-Year Medical Students' Responses to Questions Assessing Six Dimensions of Preparation for Taking Sexual Histories, University of California, Los Angeles, and University of California, Davis, 1985*

Dimension	Score			Meaning of High Scores	No. of Items
	Mean	SD	Possible Range		
Knowledge of human sexuality	15.2	2.3	0-20	Greater knowledge of sexuality	20
Appropriateness of taking a sexual history	4.05	0.68	1-5	Taking a history is an important part of the physician's role	3
Assessment of physician skill	2.52	0.69	1-5	Physicians are skillful in taking sexual histories	3
Likelihood of physician's encountering specific types of patients	3.72	0.30	1-4	Physicians are likely to encounter patients with sexual concerns	6
Degree of student comfort expected in taking sexual histories from specific types of patients	3.21	0.46	1-4	The student is comfortable in taking a sexual history	12
Self-assessment of skill in taking sexual histories	2.40	1.0	1-5	The student is skilled in taking a sexual history	1

*These questions were administered to the students before and after their course on human sexuality. The data given are from pretest scores. Examples of the questionnaire items for each dimension and a full description of how each was scored may be found in the text.

cated agreement or disagreement on a five-point Likert-type scale.

4. Students indicated the likelihoods (on a four-point Likert-type scale) that a primary care physician would encounter six patients with sexually-related problems (for example, a homosexual patient with a medical problem).

5. Students rated how comfortable (on a four-point Likert-type scale) they expected to feel taking a sexual history from each of 11 patients described in brief vignettes (for example, a 22-year-old man complaining of impotence). The patients were selected to include at least two older and two younger patients, to be balanced in man-woman ratios and in the percentages of these with medical versus psychological problems, and to represent both homosexuals and heterosexuals.

6. Perceived personal skill in taking a sexual history was assessed by a single item, worded as a statement (for example, I know how to take a sexual history).

Scales (unrelated to the Likert-type scales) were formed to represent

the six dimensions of preparation. The knowledge scale is a sum of all correct responses. Each attitude scale represents the average of the item scores in that scale. Using data from the pretest questionnaire for the analytic sample ($n = 153$), Table 1 provides information on the distribution and meaning of high scores for each scale. Correlations between pairs of the scales were moderate to low, indicating that the individual scales assessed unique dimensions of preparation.

The pretest scores on each preparation scale were used as explanatory variables. Change in each dimension of preparation was assessed by subtracting the pretest score from the posttest score. These change scores were used as the main dependent variables. For each change score, a positive score indicates improvement (that is, greater knowledge or a more favorable attitude).

Statistical Analysis

We conducted analyses of covariance (ANCOVA) using the general linear model to determine the association of

change in each dimension of preparation with level of interview experience (that is, comparing the UCLA interview, UCLA observation-only, and UC Davis no-observation groups). The covariates for each analysis were the indicator for participation in role-playing exercises, the interaction between role playing and interview status, the pretest score on that preparation variable, student sociodemographic characteristics (sex, age, ethnicity, father's education), prior personal sexual experience, and prior experience in taking a sexual history. In our final ANCOVA models, we removed the interaction term because it did not contribute significantly to the explained variance. To illustrate results, we generated actual (unadjusted) and least-square (adjusted) means for change in preparation for each of the three interview-status groups.

By using change scores as the dependent variables, we used each person as his or her own control, largely removing any imbalance across programs in student characteristics. This was necessary because the students at the two sites were different in several

measured characteristics and because assignment to observation versus no-observation was not randomized. The inclusion of the covariates (sociodemographic factors, prior experiences, and pretest score on each preparation variable) further removes confounding of student characteristics and interview group.

Results

Below, we describe the characteristics of students and how changes in preparation differed by interviewing status and by other factors.

Respondent Characteristics

While at the time of this evaluation, 34% of the Davis students were 28 years old or older, only 6% of the UCLA students were in this age category ($t = 3.24$, $df = 152$, $p < .001$). There were no significant differences at the .05 level by site in the percentages of women, mean levels of fathers' education, mean levels of personal sexual experience, and percentages of students who previously had taken a sexual history from a patient. For example, across the two sites, 33-40% of the students were women ($t = 0.66$, $df = 152$, $p < .10$) and 42%-56% of

the students' fathers had more than a college education ($t = 1.15$, $df = 152$, $p > .10$).

Change in Preparation and Interviewing Status

Table 2 shows the unadjusted and adjusted (least-square) mean differences in change in preparation for all comparisons among the three student groups (UCLA interview, UCLA observation, and UC Davis no-observation). The adjusted means remove any confounding between interview status and other respondent characteristics. In addition, Table 2 provides the F -statistic from the ANCOVA model for the overall effect of the interview status variable. This statistic indicates whether there is an overall difference among the three interview groups in change in preparation.

As shown in Table 2, for three of the dimensions of preparation (knowledge, perceived personal skill, and perceived skill of physicians) there are significant overall effects of interview status on change in preparation (for each F statistic, $p < .05$). The adjusted mean differences in Table 2 indicate that, other factors being equal, both the UCLA interview group and the UCLA observation-

only group showed significantly more improvement in knowledge of human sexuality and in perceived personal skill in taking a sexual history than did the Davis no-observation group. The two UCLA groups were not significantly different from each other on either of these dimensions of preparation.

The UCLA interview group had a more critical (negative) view, over time, of the skill of practicing physicians in taking a sexual history, compared with the Davis no-observation group. The magnitude of this difference is about half a standard deviation. The result is similar whether or not we adjust for student characteristics (such as age and sex). The UCLA observation-only group also developed a more negative perception of physician skill over time relative to the Davis no-observation group, but the difference is at a borderline level of significance ($p = .10$).

In addition, the UCLA interview group demonstrated significantly more improvement in perceived appropriateness of the physician's role in treating sexual problems than did the Davis no-observation group. The overall F -statistic is not significant for this dimension, however.

There were no differences among

Table 2

Mean Differences, Adjusted and Unadjusted, for the Levels of Preparation of 153 First-Year Medical Students to Take Sexual Histories, Based on Their Responses to a Questionnaire before and after Their Course on Human Sexuality, University of California, Los Angeles (UCLA), and University of California, Davis (UC Davis), 1985*

Student Group	Dimension of Preparation					
	Knowledge	Appropriateness	Likelihood	Personal Skill	Physician Skill	Expected Comfort
Unadjusted						
UCLA interview—UCLA observation	-0.15	0.11	-0.04	-0.15	-0.15	0.05
UCLA observation—UC Davis no-observation	2.11‡	0.34‡	0.03	0.87‡	-0.29	0.11
UCLA interview—UC Davis no-observation	1.96‡	0.45‡	-0.01	0.71‡	-0.45‡	0.16‡
Adjusted†						
UCLA interview—UCLA observation	-0.06	0.05	-0.05	0.54	-0.20	0.01
UCLA observation—UC Davis no-observation	1.36‡	0.13	0.02	0.45‡	-0.24	0.08
UCLA interview—UC Davis no-observation	1.30‡	0.18‡	-0.03	0.40‡	-0.44‡	0.07
Overall F test ($df = 2,151$)	8.79‡	1.83	0.36	4.11‡	5.87‡	0.55

153 students participated in the study, but some data were missing for one student. The mean differences are for comparisons among three student groups: one group at UCLA ($n = 60$) conducted a sexual history; another UCLA group ($n = 44$) observed a sexual history taken by another student; and students at UC Davis ($n = 49$) neither conducted nor observed sexual history interviews.

†Adjusted for baseline values of the preparation variable, age, sex, level of father's education, previous experience in taking a sexual history, sexual experience, and participation in role-playing exercises.

‡ $p < .05$.

the UCLA interview, UCLA no-interview, and Davis no-observation groups in change in perceived likelihood of encountering patients with sexual concerns or in expected comfort in interviewing, once other factors were controlled. Similar conclusions were reached for separate analyses of expected comfort with heterosexual men, heterosexual women, homosexuals, and an AIDS patient.

Change in Preparation and Other Factors

In each ANCOVA model, the baseline level of preparation is associated with high significance with change in that dimension of preparation over time. Across all six models, there is only one significant association (at the .05 level) between a student baseline characteristic and change in preparation, and one association would be expected to be significant by chance alone. Thus, the students' background characteristics (such as age and sex) exert their effects on change in preparation entirely through the baseline level of preparation. For example, differences between men and women in change in preparation are attributable to differences in their initial levels of preparation, rather than to gender per se.

There are no significant associations of role playing with change in preparation; nor are any of the interactions between role playing and interview status significant.

The percentage of variance in change in preparation over time explained by the ANCOVA models ranges from 26 for perceived likelihood to 60 for perceived appropriateness. This is a moderate-to-high amount of explained variance for multivariate models of change in attitudes.

Discussion

We have evaluated the effects of the human sexuality courses at two University of California medical schools on students' levels of preparation for taking sexual histories from patients. Specifically, at one school, an experi-

mental design was used to examine the effects of conducting a sexual history interview versus simply observing other students conduct such an interview; a nonexperimental design was used to compare both of these student groups with students at another school who neither conducted nor observed sexual history interviews but were exposed to an otherwise similar educational program.

We found several significant associations between interview status and change in preparation to take sexual histories. Specifically, the students who conducted a sexual history improved more in knowledge, their perceptions of their skill in taking a history, and their perceptions of how appropriately physicians manage sexual concerns of patients than did the students who neither conducted nor observed sexual history interviews. In addition, the students who observed, but did not conduct, a sexual history interview improved more in knowledge and perceived skill than did the students who did not so observe. We think that change in these particular components of preparation is one of the most important goals of human sexuality training programs for pre-clinical medical students.

Nevertheless, it was somewhat surprising that exposure to a brief experimental learning exercise would be associated with changes in both attitudes and knowledge. We think that these particular exercises may have been especially effective, however, because of the careful faculty supervision and the reliance on actual community volunteers (rather than use of videotapes or actors). Possible explanations for the association between interviewing experience and change in knowledge is that the students selected for interviewing may either have been more motivated to study the readings in order to prepare for the interviews or have felt more motivated to read after conducting an interview.

The students who conducted an interview became more skeptical of the skills of practicing physicians in taking a sexual history than did the students with no observation or interviewing experience. This was not

necessarily a target outcome of the sexuality training programs. However, it is consistent with the finding that this group improved in knowledge, because previous studies indicate that physicians tend to have poor attitudes or skills, or both, in this area. Another explanation for this finding is that exposure to actual interviewing may have increased students' awareness of the complexity of the skills required for taking a sexual history.

There were no significant differences between the interview and observation groups in change in any dimension of preparation for taking a sexual history. For at least one dimension of preparation (perceived physician skill), the magnitude of the difference between these groups was similar to that between the observation-only and no-observation groups — indicating that the interview experience might have an effect on preparation over and above that of observation alone. This study did not have the precision to detect the difference, however. Nevertheless, the results do indicate that some exposure of students to sexual history taking is associated with changes in preparation for conducting sexual history interviews of patients.

Because the study design was only partially randomized (students were not randomly assigned to UCLA versus UC Davis), some of the associations reported here between interview status and change in preparation could be due to factors other than exposure to interviewing. It is unlikely that baseline differences in student characteristics accounted for the associations, because the analysis controlled for a large number of student background characteristics, including baseline level of preparation. It is possible that aspects of the training programs other than the variation in interviewing experience accounted for some of the reported differences. This explanation seems unlikely, however, given that the structures and contents of the programs were quite similar, and that the one known difference (stronger didactic focus at UC Davis) is inconsistent with the results (greater increase in knowledge at

UCLA). Thus, we think that the differences between interview groups can be largely attributed to exposure to interviews.

In many interview training programs, role-playing exercises are often used as a substitute for actual interviewing experiences. Yet, in this study, participation in role playing did not have a significant effect on preparation for taking a sexual history. One possible explanation for the lack of an effect at UC Davis is that only about a third of the students had any role-playing experience, so we had low statistical power for observing an effect of role playing. Another explanation that applies to all the interview groups is that these were relatively informal learning experiences, that is, there was no set protocol for the role playing at either site. It is possible that such unstructured learning experiences are relatively ineffective. By contrast, the interview experiences were carefully structured and supervised, both for the interviewers and for the observers.

The study conclusions apply to students at the two California medical schools studied and may not generalize to students elsewhere. Another study limitation is the confounding between site and the comparison of observation versus no observation. This confounding was necessary because it was not feasible to withhold observation of interviewing at a school that already had this as an established and popular component of the curriculum. The strengths are the inclusion of students at more than one school, the partially randomized design, the prospective data-collection strategy, and the use of measures

of preparation that have acceptable psychometric properties.

In sum, the findings indicate that some degree of exposure of medical students to the actual taking of sexual histories, in the context of a broader educational training program in human sexuality, is associated with a greater increase in knowledge of human sexuality, greater perceived personal skill in taking a sexual history, and more negative assessments of practicing physicians' skill in taking sexual histories, relative to the absence of such experience. In addition, direct experience in interviewing may enhance perceived appropriateness of the physician's role in assessing and managing sexual concerns. We suggest that future studies compare alternate forms of observation (for example, videotape, or in-person observation) and different intensities of supervision (one-to-one, small group, and large group). Ultimately, it will be important to determine which educational experiences for preclinical students enhance their subsequent skills in taking sexual histories from their patients.

This work was supported by a grant from the UCLA-Neuropsychiatric Institute and Hospital, Department of Psychiatry and Biobehavioral Sciences.

The authors thank Susan Price, Ph.D., and Anna Heinrich, Ph.D., for directing the human sexuality medical student education evaluation program evaluated at UCLA.

References

1. Ende, J., Rockwell, S., and Glasgow, M. The Sexual History in General Medical Practice. *Arch. Intern. Med.* 144(1984): 558-561.
2. Vincent, C. E. *Human Sexuality in Medical Education and Freshman Medical Students: Their Sexual Knowledge and Attitudes* Springfield, Illinois: Charles C. Thomas, 1968.
3. Lewis, C. E., Freeman, H. E., and Corey, C. R. AIDS-Related Competence of California's Primary Care Physicians. *Am. J. Public Health* 77(1987):795-799.
4. Keely, J. A., Lawrence, J. S., Smith, Jr., S., Hood, H. V., and Cook, D. J. Medical Students' Attitudes Towards AIDS and Homosexual Patients. *J. Med. Educ.* 62(1987): 549-556.
5. Sheppe, W., and Hain, J. Sex and the Medical Student. *J. Med. Educ.* 41(1966):457-464.
6. James, B., and Lord, D. J. Human Sexuality and Medical Education. *Lancet* 2(1976):560-563.
7. Lief, H. I. Sex Education of Medical Students and Doctors. *Pacific Med. Surg.* 73(1965):52-58.
8. Lief, H. I. Sexual Attitudes and Behavior of Medical Students: Implications for Medical Practice. In *Marriage Counseling in Medical Practice*, E. M. Nash, L. Jessner, and D. W. Abse, eds, pp. 301-318. Chapel Hill, North Carolina: University of North Carolina Press, 1964.
9. Pauly, I. B., and Goldstein, S. F. Physicians' Perception of Their Education in Human Sexuality. *J. Med. Educ.* 45(1970): 745-753.
10. Golden, J. S., and Liston, E. H. Medical Sex Education: The World and Illusion and the Practical Realities. *J. Med. Educ.* 47(1972):763-771.
11. Garrard, J., Vaitkus, A., and Chilgren, R. A. Evaluation of a Course in Human Sexuality. *J. Med. Educ.* 47(1972):772-778.
12. Woods, J., and Natterson, J. Sexual Attitudes of Medical Students: Some Implications for Medical Education. *Am. J. Psychiatry* 124(1967):323-332.
13. Vollmer, S., and Wells, K. How Prepared are Freshman Medical Students to Take Sexual Histories? *Arch. Sex. Behav.* (in press).
14. Vollmer, S., and Wells, K. How Comfortable Do Freshman Medical Students Expect to Be When Taking Sexual Histories? *Med. Educ.* 22(1988):418-425.