

Influencing the Attitudes of Medical Students Toward Diabetes

Results of a controlled study

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OBJECTIVE— To determine the effect of two educational interventions on the diabetes-related attitudes of medical students.

RESEARCH DESIGN AND METHODS— We studied 67 junior and senior medical students who were participating in the University of Michigan Medical School's Family Practice elective clerkship. Students were assigned to one of two interventions. The first was a 1-wk living-with-diabetes behavioral simulation that involved injections, blood glucose monitoring, diet, exercise, and record keeping. The second intervention involved reading an autobiography about living with diabetes and viewing a videotape about the psychosocial impact of diabetes.

RESULTS— No differential impact was found between the two interventions. However, both interventions were followed by a modest positive change in the attitudes of the medical students (which were very positive to begin with) toward the importance of patient autonomy and the value of the team approach to diabetes care. The attitude gains persisted at follow-up for patient autonomy but returned to baseline for team care.

CONCLUSIONS— This study suggests that these two educational interventions resulted in modest increases in the already positive attitudes of medical students toward the importance of patient autonomy and team care in diabetes. However, because the study did not include a group that received no treatment, we cannot be certain on this point. The attitude gain related to team care did not persist at follow-up. These findings are consistent with classical attitude research, which suggests that attitudes are sensitive to influences such as these interventions, but that attitude changes may not persist when those influences are changed or withdrawn. We were not able to find a differential impact between the two interventions and suspect that the general nature of the DAS used as the dependent measure may not have been sensitive enough to capture such a differential impact.

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DAS, DIABETES ATTITUDE SCALE; ANOVA, ANALYSIS OF VARIANCE; IDDM, INSULIN-DEPENDENT DIABETES MELLITUS.

Modern diabetes care calls for a team approach with the patient functioning as an autonomous member of the team (1–4). However, research has indicated that physicians are less likely to express support for team care and patient autonomy than nurses and dietitians (5–6). In a recent study, although physicians made up only 16% of the entire sample of 1651 health-care professionals, they made up 54% of the subsample that disagreed most with a national panel of diabetes experts in their attitudes toward diabetes care (7). Given the central role that physicians play in the care of individuals with diabetes and the importance of their attitudes toward diabetes care, we decided to study the attitudes of third- and fourth-yr medical students. The following research was conducted to determine the effect of two educational interventions on the diabetes-related attitudes of a sample of medical students participating in a family practice clerkship elective.

RESEARCH DESIGN AND METHODS

We invited 75 junior and senior medical students to participate in this study over the course of 2 yr; 67 (89%) students accepted. Study subjects were drawn from the University of Michigan Medical School's Family Practice elective clerkship. This 4-wk elective averaged 3–5 students per clerkship period. Students who agreed to participate in the study were assigned to one of two educational interventions. Assignment was random by clerkship period rather than by student.

Interventions

The first educational intervention was a living-with-diabetes behavioral simulation. This simulation involved having medical students ($n = 38$) follow an insulin-based diabetes self-care regimen for 1 wk. The regimen involved the following: 1) taking two mixed doses of insulin (sterile saline solution) injections per day; 2) monitoring blood glucose

levels 4 times/day; 3) following a standard exchange system diet with calorie levels determined by calculated need; 4) exercising for 30 min/day; and 5) keeping records of blood glucose test results and food consumption. In addition, students were asked to keep records regarding their level of compliance and any particular problems they had. After following the simulated regimen for 1 wk, students participated in a nondirective 90-min discussion focusing on what the experience was like for them and what they had learned while living with diabetes.

The second educational intervention focused on cognitive learning. Students ($n = 29$) in this intervention read a book entitled *Journey of a Diabetic* (8), an autobiographical account of growing up with IDDM. After reading the book, the students watched a 24-min videotape, *Diabetes: Focus on Feelings*, in which patients discuss various emotional, psychological, and behavioral issues related to living with diabetes. After reading the book and viewing the videotape, students participated in a nondirective 90-min discussion focusing on what they had learned about living with diabetes. The student discussions in both interventions were usually facilitated by a medical educator, one of the investigators.

Both educational interventions were intended to provide the students with insight about what it is like to live with and care for diabetes. We hoped that both interventions would cause students to become more sensitive to the difficulties and demands of living with diabetes and decrease negative attitudes toward patients who are unable or unwilling to comply with recommended treatments. We hypothesized that the behavioral simulation, because it was more closely related to the actuality of daily diabetes self-care, would have more effect on the attitudes of the students than the cognitive intervention. We also hypothesized that students who had indicated their intention to be primary-care

physicians would demonstrate more positive attitudes toward diabetes care than students who indicated an intention to enter non-primary-care specialties (e.g., surgery, radiology).

Attitude measurement

The attitudes of the medical students were measured just before the intervention, just after the intervention (1 wk later), and at the end of the elective, 4 wk after baseline. Attitudes were measured with the DAS (5,6), a 50-item questionnaire designed to measure a variety of attitudes concerning diabetes, diabetes treatment, diabetic patients, and professional education in diabetes. Although the entire instrument was administered to students, changes were predicted for only three of the subscales. Specifically, we hypothesized that positive changes would occur on the subscales for patient autonomy, compliance, and team care.

Statistical methods

To assess the effects of the educational intervention (condition) and primary-care classification (specialty) on the attitude subscales, a repeated measures ANOVA was conducted. Preliminary analyses indicated that the internal consistency of the compliance subscale was unacceptably low, and therefore, this subscale was dropped from further analysis. The design for this analysis included two between-group factors: condition (simulation versus cognitive) and specialty (primary care versus other emphasis); and two within-group factors: attitude ratings (team and autonomy scales) and time (premeasurement, postmeasurement, and follow-up measurement periods). The last two factors were repeated measures.

RESULTS

Attitude scales and treatment effects

The results of the ANOVA showed no significant effects of the experimental treatment, i.e., simulation versus cogni-

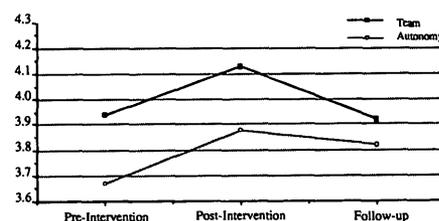


Figure 1—Attitude ratings across time.

tive interventions ($P = 0.36$). Further, no significant interaction was noted between interventions and time ($P = 0.36$). However, a significant main effect of specialty occurred $F(1,50) = 6.54$, $P < 0.02$, with medical students with an interest in primary care showing significantly more favorable diabetes attitudes overall than students emphasizing other specialties. For within-group effects, significant effects were found for attitude ratings $F(1,50) = 4.02$, $P < 0.05$, and time $F(1,49) = 6.05$, $P < 0.01$. The medical students rated the team scale more favorably than the patient autonomy scale (means = 4.0 and 3.79, respectively). A marginally significant interaction was revealed between attitude ratings and time $F(2,49) = 2.95$, $P = 0.06$. The internal consistency (Cronbach α) of the team (0.63, 0.82, 0.76) and autonomy (0.64, 0.62, 0.72) scales at each of the three measurement periods was comparable with the levels achieved in the earlier DAS studies (5,6).

As shown in Fig. 1, least squares means tests revealed a significant pre to postincrease for the team and autonomy scales ($P < 0.01$), with a subsequent post to follow-up decrease for the team scale ($P < 0.01$). Conversely, the autonomy scale remained stable from post to follow-up.

CONCLUSIONS— A relative paucity of literature exists regarding diabetes self-care simulations as a training exercise. One study in Australia (9) and another in Wisconsin (10) appear to have well-thought-out simulations but used

weak study designs; neither used comparison groups, pre-post measures, statistical tests, nor valid and reliable measures. The results in these studies were gleaned from compliance diaries and postcourse self-reports. Subjects in these studies reported an increased appreciation for the complexity and difficulty of following a diabetic regimen. A third study, conducted at Washington University (11), involving 65 health-care professionals (no physicians), reported good compliance (69–90%) the 1st day of the regimen, with a decline to moderate compliance by the 4th day. These results were consistent with the self-reported deterioration in compliance of the medical students in our study (12). Participants in the Washington University study predicted that they would be less judgmental about patient noncompliance in the future. Questionnaires completed 7–16 mo after that simulation revealed that they still valued their perceived improved sensitivity to diabetic patients.

The results of our study suggest that both the behavioral simulation and the cognitive learning experience had a modest positive impact on the student's attitudes as measured by the DAS. However, we cannot be certain that the interventions caused the change because the study did not include a no treatment control group. We suspect that the relatively modest overall change in attitudes was largely a result of the fact that the students entered the study with very positive attitudes toward team care and patient autonomy. In fact, their diabetes attitudes were generally more positive at pretest than the attitudes of both specialists and nonspecialist physicians (6). The movement of the attitude scores toward baseline values is consistent with the classic decay of persuasion effect (13), which postulates that attitudes are re-

sponsive to situational or environmental stimuli, but that changes brought about by these stimuli are not likely to persist when the stimuli are withdrawn. One can question whether it was necessary or even desirable to conduct these interventions, given the positive attitudes of the medical students to begin with. We feel the interventions were worthwhile because the students reported that the educational interventions produced learning that had value for them. However, for the students to act fully on the insights they gained during the educational interventions, they will probably have to practice medicine in an environment that supports patient autonomy and a team approach to diabetes care.

We expected, but did not find, a differential impact between the two interventions. We suspect that because of its general nature, the DAS was not sensitive enough to differentiate between these two interventions. We have concluded that, in studies such as this, the use of measures that are as sensitive as possible to the particular character of the intervention is important. This can pose a bit of a dilemma for investigators who on one hand wish to use a tested and psychometrically sound measure, but on the other hand wish to use a set of evaluation questions designed specifically for the study at hand. If we were to repeat this study, we would do both.

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