OBJECTIVE: To determine if medical students’ attendance at specialized prenatal clinics for Southwest Native American women would impact their awareness of and comfort in discussing traditional and unique values during pregnancy.

STUDY DESIGN: In this unblinded, randomized trial, all 154 third-year students rotating consecutively on our obstetrics-gynecology clerkship consented to enrolling in this study. Participants were randomly assigned either to attend a high-risk prenatal clinic (rural or urban locations) for Native American women or to not attend (control group). Each anonymously answered a 20-question survey at the beginning and end of the clerkship about their comfort level and their awareness of patients’ beliefs. A mixed model ANOVA was used to compare differences in scores between the groups while accounting for cluster effects in the study design.

RESULTS: Regardless of whether the clinic was rural or urban, students became much more comfortable than controls in talking with Native American women about their pregnancy (p < 0.005). This applied especially to discussions about patients’ spiritual beliefs, taboos that may affect pregnancy, participation in tribal ceremonies and belief in traditional medicine. As compared with the control group, students assigned to either clinic became more aware of how spirituality played an integral role in pregnancy (p < 0.05).

CONCLUSION: Attendance at these specialized prenatal clinics enhanced medical students’ comfort in talking with pregnant Native American women about the integrative roles of spiritual beliefs, tribal ceremonies and complementary medicine in their pregnancy outcome. (J Reprod Med 2009;54:603–608)

Keywords: medical students, Native Americans, prenatal care.

Awareness of cultural practices of patients can help the physician deliver more appropriate care, which presumably could increase patient satisfaction and...
potentially reduce health disparities in minority populations. To enhance physician comfort with increasingly diverse patient populations, medical schools have developed cultural competency curricula and integrated patient-centered approaches to health care. A specific clinical experience may be helpful to medical students by increasing their comfort levels as they learn to care for minority patients.

Our department has supported a variety of racially and ethnically diverse clinics designed for women with special health needs. We reported on the positive learning experience for medical students who attended a specialized clinic for pregnant women with alcohol and other substance use disorders. Students who attended the clinic became more comfortable in inquiring about a patient’s alcohol consumption and about social problems such as domestic violence. Medical students’ experience engendered more sympathy toward women with substance use disorders in general but not necessarily during pregnancy. This reaction from a single clinical experience was subject to change with more clinical exposure.

Based on this experience, we examined medical students’ comfort levels and awareness of values possessed by underrepresented women who are unique to our region. Our department provides a high-risk pregnancy consultation service at 2 Indian Health Service (IHS) clinics. The objective of this randomized, controlled investigation was to determine if medical students’ attendance at these clinics would heighten their awareness of traditional Southwest Native American values regarding pregnancy. Our hypothesis was that this clinical experience would add to our students’ knowledge. If so, incorporating this training into the school’s curriculum would be appropriate.

Materials and Methods

Eligible participants were all third-year medical students rotating on our 8-week clerkship. The students were informed that enrollment in this trial was optional and that their grade would be unaffected by their participation in this anonymous survey. No written materials about Native American values were distributed. Students who provided written consent completed a survey in our department classroom. The clerkship coordinator was solely responsible for administering the written survey and retained the responses until completion of the study. The investigators did not have direct contact with the students except for the maternal-fetal medicine specialist (W. F. R.) attending the specific prenatal clinics.

The survey contained 20 statements (Figure 1) that dealt with 2 primary outcome measures: (1) the students’ comfort levels in talking with pregnant Native Americans, and (2) students’ attitudes toward understanding traditional Southwest Native American values in general and during pregnancy. The number and format of this instrument were similar to that validated previously. The topics, as selected by a focus group of Native American women, pertained to complementary medicine, spiritual beliefs, tribal ceremonies and taboos. Statements dealt with cultural awareness, balance in life, spirituality, and the need for prenatal care. Minor rewordings of the statements occurred after a review with a group of fourth-year students. Stu-

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I feel comfortable about:
- Talking to pregnant women who are Southwest Native American
- Talking to patients who use complementary medicine
- Identifying social problems associated with a lack of prenatal care
- Asking patients about their spiritual beliefs
- Asking if patients believe in the traditional medicine of their tribes
- Asking patients if they participate in tribal ceremonies
- Asking about taboos that may affect the pregnancy
- Asking if there are medical procedures that cannot be performed because of their beliefs
- Asking about use of traditional medicines/herbs during pregnancy
- Waiting for long periods of silence

The following statements relate to your awareness of Southwest Native American traditions:

Traditional Medicine in General
- Cultural awareness is important in providing good healthcare
- Little or no eye contact by the patient is associated with disrespect
- Disease and illness are due to a lack of balance in a person’s life
- Mind, body, and spirit contribute to the well-being of a patient
- Direct questions are intrusive

Traditional Medicine during Pregnancy
- Patients’ spiritual beliefs are important during pregnancy management
- Spirituality plays an integral role in the pregnancy
- Traditional ceremonies have a negative impact on receiving prenatal care
- Incomplete prenatal care is common in Native American populations
- Attitudes toward traditional values during pregnancy differ in rural and urban settings

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Figure 1 Statements in the survey that dealt with the students’ comfort levels and awareness of Southwest Native American traditions.
dent’s responses to the survey were circled on a Likert scale from 1 to 5, with 1 signifying “strongly disagree” and 5 signifying “strongly agree.”

Upon completion of the baseline survey, half of our consenting students were randomly assigned by computer generation to attend one of two IHS clinics (urban: Albuquerque, NM; rural: Gallup, NM), while the other half were assigned to no IHS clinic (control group). The allocation sequence was concealed until receipt of the survey. This sequence was used by our medical student coordinator to assign each participant to a clinic or not. Those assigned to a clinic were to spend either one half day at the urban clinic (1 student) or 1 full day at the rural clinic (usually 2 students). The number of students randomized, also by computer generation, to either clinic reflected the anticipated distribution of site visits such that each student was to see 4 or more patients with the same maternal-fetal medicine faculty member and to inquire about their traditional values. Students assigned to the “no clinic” group had contact with our Native American population only at our hospital labor and delivery unit or nearby obstetric triage area.

Survey data from the beginning of the first block of students were used to calculate the sample size. We chose a 25% increase or decrease in the mean overall baseline score of the students’ comfort level in order to reach educational significance, at a power of 90% and at a significance level of 5%. Using data from the first block of students, we anticipated that at least 60 students would be necessary for the clinic and no clinic (control) groups. The same survey was readministered in the classroom to all students during the final week of the clerkship.

We analyzed the data after enrollment was complete (12 blocks) and after surveys were collected. For reasons of confidentiality as recommended by our institutional review board, the survey did not contain a unique student identifier. Identification

![Figure 2](image_url) Flow of student participants through the randomized trial.
was instead by block only, so exact matching of each student’s baseline and postattendance responses was not possible. This condition warranted the use of mixed (hierarchic) models fitting two clustering effects, a random block effect and a random block X clinic effect. The modeling was done in PROC MIXED in SAS 9.1.3 (Cary, North Carolina). The clinic was fit as a fixed effect, and block effects were controlled by fitting the block mean at baseline as a covariate. Postclinic least squares means and SEs were calculated (means adjusted for baseline mean). Tests of clinic differences were t-tests in PROC MIXED. Statistical significance was established at a p value < 0.05.

Results
Between May 2006 and April 2008, all medical students consented to completing the baseline survey. Our students consisted of non-Hispanic Caucasians (n = 100), Hispanic Caucasians (n = 29), Native Americans (n = 9) and other (n = 6). The distribution of student gender was 78 females and 66 males, and their hometown location was either urban (n = 87) or rural (n = 57).

Figure 2 displays the flow of participants through the trial. The initial survey was answered completely by all 144 students, with the participants then being randomized equally to the clinic group and no clinic group. Responses from 10 (6.9%) students were not completed or returned at the end of the block.

Scores for each of the comfort statements are shown in Table I. The preclinic baseline scores averaged between 3.1 and 3.9 and did not reflect any strong agreement or disagreement. Scores of awareness statements reflected that students tended to already agree that cultural awareness is important in providing good health care; that mind, body and spirit contribute to the well-being of a patient; and that patient spiritual beliefs are important during pregnancy management. In addition, students tended to already disagree with the statements that little or no eye contact by the patient is associated with disrespect and that traditional ceremonies have a negative impact on receiving prenatal care.

Post-clinic mean scores for each comfort statement are shown in Table I. Significantly higher scores for 8 of the 10 comfort level statements were observed only after the clinic experience. More comfort was evident in talking directly with patients about their traditional values and in waiting for frequently delayed responses from them. After the clinic experience, students became more comfortable (p < 0.005) in talking with patients about complementary medicine, spiritual beliefs, belief in traditional medicine, tribal ceremonies and taboos that may affect pregnancy.

Our students were already aware of Southwest Native American traditional values in general (Table I). Their attitudes about Native American traditional values during pregnancy did change by attending the prenatal clinic. Those who attended the urban clinic developed a better appreciation of spiritual beliefs that related specifically to pregnan-

<table>
<thead>
<tr>
<th>Comfort statement</th>
<th>Preclinic baseline (n = 144)</th>
<th>Urban clinic (n = 29)</th>
<th>Rural clinic (n = 42)</th>
<th>No clinic (n = 63)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talking to pregnant women who are Southwest Native American</td>
<td>3.9 ± 0.1</td>
<td>4.5 ± 0.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.7 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.0 ± 0.1</td>
</tr>
<tr>
<td>Talking to patients who use complementary medicine</td>
<td>3.9 ± 0.1</td>
<td>4.4 ± 0.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.3 ± 0.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.8 ± 0.1</td>
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<tr>
<td>Identifying social problems associated with a lack of prenatal care</td>
<td>3.7 ± 0.1</td>
<td>4.1 ± 0.1</td>
<td>4.2 ± 0.1</td>
<td>3.9 ± 0.1</td>
</tr>
<tr>
<td>Asking patients about their spiritual beliefs</td>
<td>3.4 ± 0.1</td>
<td>4.2 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.0 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.4 ± 0.1</td>
</tr>
<tr>
<td>Asking if patients believe in the traditional medicine of their tribes</td>
<td>3.3 ± 0.1</td>
<td>4.1 ± 0.1</td>
<td>4.0 ± 0.1</td>
<td>3.3 ± 0.1</td>
</tr>
<tr>
<td>Asking patients if they participate in tribal ceremonies</td>
<td>3.3 ± 0.1</td>
<td>4.1 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.1 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.3 ± 0.1</td>
</tr>
<tr>
<td>Asking about taboos that may affect the pregnancy</td>
<td>3.12 ± 0.1</td>
<td>4.3 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.9 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.2 ± 0.1</td>
</tr>
<tr>
<td>Asking if there are medical procedures that cannot be performed because of their beliefs</td>
<td>3.5 ± 0.1</td>
<td>4.7 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>4.1 ± 0.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3.6 ± 0.1</td>
</tr>
<tr>
<td>Asking about use of traditional medicines/herbs during pregnancy</td>
<td>3.2 ± 0.1</td>
<td>3.9 ± 0.2&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.0 ± 0.1&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.6 ± 0.1</td>
</tr>
<tr>
<td>Waiting with long periods of silence</td>
<td>3.9 ± 0.1</td>
<td>4.3 ± 0.1&lt;sup&gt;a&lt;/sup&gt;</td>
<td>4.5 ± 0.1</td>
<td>3.9 ± 0.1</td>
</tr>
</tbody>
</table>

<sup>a</sup>p < 0.05 and <sup>b</sup>p < 0.005 as compared with “no clinic” group.

There were no significant differences in mean response scores to each statement between students who attended either clinic. Response scores ranged from 1 (strongly disagree) to 5 (strongly agree).
Students who attended the urban clinic became more aware of how patients’ spiritual beliefs were important during pregnancy management (4.5 vs. 4.1; p < 0.05). Those who attended the rural clinic, rather than no clinic, gave a higher affirmative score to the statement pertaining to whether spirituality played an integral role in the outcome of pregnancy (4.0 vs. 3.6; p < 0.05).

Discussion

Findings from this randomized trial demonstrate that a single specialized clinic experience enhanced medical students’ comfort levels in talking with Southwest Native American women about their spiritual beliefs, tribal ceremonies and complementary medicine during pregnancy. We observed our patients to be receptive to questions. The patient volume did not overwhelm our students, and they had time to inquire about patients’ traditional values. Furthermore, the statements did not seem to be too personal to prevent patients from responding.

Experience with Native American patients led many students to write on the survey about particular “do’s” and “don’ts” of prenatal care. Certain aspects are universal to many cultures (e.g., eating foods good for the baby, getting up early and walking). We observed that many women had a “blessing” ceremony for a safe delivery as part of childbirth preparation. Among the more common “don’ts,” as instructed by healers or older family members, were attending funerals, being with sick people, attending chant way rites for sick people, looking at dead animals or persons, tying knots and lifting heavy objects. Nearly all patients were well aware of these cultural norms, even though many residing in urban areas stated that they did not follow these beliefs, especially if the father of the baby was not Native American.

With few exceptions, we found that attending the prenatal clinics did not enhance students’ knowledge of traditional Native American values. With few exceptions, our students were raised in New Mexico and were generally aware of some traditional Native American values. Survey responses, therefore, were less likely to be affected by geographic distribution. The primary benefit to attending the clinics related to a better understanding of Native American values during pregnancy. We thought that students’ responses to statements would vary according to differences in tribal groups in the rural (Navajo, Zuni) and urban (Pueblo, Navajo, Apache) clinics. Patients at the urban clinic came from tribes usually within 1 hour of our city, while those seen at rural clinics were more likely to travel farther distances and travel with family members who occasionally spoke the Navajo language.

Our study contained certain limitations. We were
unable to compare the survey responses for each student at the beginning and end of the clerkship. Nevertheless, the clustering of responses at the end of each block allowed for a valid, although less precise, comparison. Nine of the students who did not complete the survey at the end did not attend the clinic and perhaps did not feel compelled to fill out the survey. Another limitation of this prenatal investigation was that we did not focus on traditions during labor and delivery, such as pulling on a sash belt during labor, keeping the umbilical cord and placenta for proper ceremonial handling and consuming traditional teas, herbs or foods after delivery for cleansing and recovery.7,8

Findings from this randomized, controlled trial support the need for our medical school curriculum to incorporate experiential learning about pregnancy with this unique population in our region. Attendance at these local prenatal clinics improved our students’ comfort in talking with Native Americans.4 Of interest was the finding that the clinic site, rural vs. urban, did not seem to strongly influence the students’ comfort level. It was unclear whether the students’ general knowledge increased with this intervention because they may have already been familiar with general beliefs or there was insufficient time during this single intervention to inquire in detail about beliefs. Participants did gain an improved awareness of spirituality and its integrative role in the outcome of pregnancy. We now intend to randomly investigate medical students’ awareness of traditional Southwest Native American values during childbirth, when “the voice of the child is first heard” and when “the beautiful one comes into your hands.”

References