Primary Care Residents' Characteristics and Motives for Providing Differential Medical Treatment of Cervical Cancer Screening

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Background: Cervical cancer screening rates in the United States are sub-optimal. Physician factors likely contribute to these lower rates. Previous studies provide inconclusive evidence about the association between physician characteristics and the likelihood of addressing cervical cancer. This report assesses potential mechanisms that explain why certain providers do not address cervical cancer screening.

Methods: One hundred primary care residents from various specialties were asked to indicate the preventive topics they would address with a hypothetical white female in her early 20s, who was portrayed as living a "high risk" lifestyle, and visiting her provider only for acute care reasons.

Results: Among the provider characteristics assessed, only residents' ethnicity was associated with the likelihood of and time spent addressing cervical cancer screening. In particular, Asian-American residents were least likely to address cervical cancer, while African-American residents were most likely. A mediation analyses revealed that perceived barriers for addressing cervical cancer accounted for this difference.

Conclusions: Study results suggest that there may be cultural factors among health care providers that may account for differential referral and treatment practices. Findings from this study may help identify factors that explain why cervical cancer screening rates are not higher. (*J Natl Med Assoc.* 2003;95:577-584.)

Key words: cervical cancer ◆ primary-care residents ◆ provider characteristics

The incidence of cervical cancer has been substantially reduced by the availability of cervi-

cal cytological screening, which detects precancerous cellular abnormalities and allows early treatment. At least half of cervical cancer cases in the US are attributable to lack of screening, or failure to be screened within the past five years.[1] Although many barriers to screening exist at the patient level, there is evidence indicating that many health care providers do not routinely screen for cervical cancer,[2] despite widely disseminated guidelines on screening from organizations such as the American College of Obstetricians and Gynecologists[3] and the American Cancer Society.[4] An examination of the factors that inhibit providers' adherence to

screening guidelines would shed light on the variability of referral practices among providers.

Several investigators have examined whether certain providers are less likely to address cervical cancer. With a few exceptions,[5,6] research suggests that female providers are more likely to perform, or refer patients for cervical cancer screening than their male counterparts.[2,7] These gender differences may be related to provider specialty.[8] For instance, Lurie, Margolis, McGovern, et al.[10] found that gender differences exist when comparing male and female family physicians and internists, but not when comparing male and female obstetrician-gynecologists.[8,9] However, since many of these studies relied on patients' reports, gender differences in provider information sharing styles may have biased patients' recall.[10,11,12] Also, patients of female doctors may differ in certain characteristics (e.g., health-seeking behavior) from those of male doctors.[9] Moreover, because most studies do not assess the reasons for a gender bias in medical treatment, they may be limited in explaining gender differences in referral practices.

Physicians' ethnicity is another important provider characteristic that might influence the type of medical treatment offered to their patients.[13,14] The small body of research that examines the effects of providers' ethnicity on preventive care suggests that white providers are more likely to offer screening referrals than their ethnic minority counterparts. Roetzheim, Fox, and Leake[15] interviewed physicians (25% African American, 10% Hispanic, and 65% Caucasian) and found that, after controlling for providers' age and certification status, African American and Hispanic physicians were 10% less likely to recommend mammograms to patients than were Caucasian providers. However, it is not clear from this study whether providers' ethnicity independently contributed to the differential care because ethnic minority providers were more likely to treat ethnic minority patients, and that in itself can influence the medical practices of providers.[16] Moreover,

other patient or provider demographic characteristics (e.g., gender) were not controlled for and that may have contributed to the lack of referral.[17] Further, because the reasons for biased referrals were not assessed, it is difficult to understand why these ethnic differences in referral rates were evident.

Studies that evaluate the motives behind providers' medical practices suggest that assessing external barriers and other constructs such as self-efficacy and outcome expectancies explain adherence to clinical guidelines.[18] According to Bandura's social cognitive theory,[19] individuals who have high self-efficacy believe that they can perform a behavior resulting in greater probability of engaging in it. Similarly, individuals who have high outcome expectancies believe that their behavior is linked to positive outcomes.[20] Thus, providers who believe that they can address a health topic such as cervical cancer screening and believe that addressing it likely results in lower rates of cervical cancer may be more inclined to address cervical cancer. Moreover, people who perceive few external barriers (e.g., time constraints) for achieving a targeted outcome are more likely to engage in an activity than those who perceive a greater number of barriers.[21] To date, it is not well understood whether gender or ethnic differences exist in providers' self-efficacy, outcome expectancies, and perceived barriers for addressing cervical cancer.

The first objective of the current report was to examine the relationship of providers' characteristics on their likelihood of and time spent addressing cervical cancer screening, while holding potential confounds such as patient demographic variables constant. Previous research suggests that providers' characteristics such as gender, ethnicity, and medical specialty can influence the type of medical treatment recommended to patients. Another aim, contingent on finding provider differences, was to examine the mechanisms that explain differences in addressing cervical cancer issues and time spent with the

patient. These mechanisms are self-efficacy, outcome expectancies, and perceived barriers.

METHODS

Participants and Recruitment

Chief residents provided the e-mail addresses of primary care residents (family practices, internal medicine, and obstetrics/gynecology) to the study staff. One hundred residents from a large academic medical center completed the 45-minute survey during noontime conference time-slots. Residents were offered lunch and $65 for their participation in the study.

Procedure and Stimulus Materials

Participants were told that the purpose of the study was to examine medical practices among providers. Following consent, participants were given a description of a patient and asked to complete a survey assessing preventive health topics they would offer to that particular patient. The description was as follows:

"Please imagine that a white female in her early 20s has come in for an acute visit (such as a cold or an injury). By looking at her patient history, you note that she has never come in for a preventive health visit but merely comes in when she has a specific health problem. You can safely assume that she is the type of patient who will come back only when she has another health problem, and will not come back if you schedule her for a preventive health care visit.

"You note from her patient chart that she tends to lead a high-risk lifestyle. Imagine that you have an hour to spend with her where you may need 15 minutes to address the reason for her visit, but then have 45 minutes remaining to deal with other health issues."

This amount of time was given to residents because, according to residents who participated in two focus groups (n=8), they are usually allowed a similar time frame for patient care, particularly those in early training. Another reason why residents were allowed more time than the usual med-

ical visit time (usually about 12 minutes per patient) was to give them ample time to address preventive health care issues. No detailed definition of "high risk lifestyle" was given to the residents to allow them each to interpret "high risk."

The first part of the survey consisted of six open-ended questions asking providers to list and rank the health topics they would address with the patient. They were required to submit this part of the survey before they received the second part. The primary objective of the first part (unprompted topics) was to assess which providers' preventive health topics the residents would address when they were not prompted to think about any specific topics. The second part of the survey (prompted topics) contained questions about 12 health-related topics believed to be appropriate by two practicing clinicians (a family care physician and an obstetrician/gynecologist) for a young woman in her early 20s. The health topics were separated into general health areas (alcohol use, smoking, drug/substance use, domestic violence, STD prevention, pregnancy prevention, cervical cancer, breast cancer, physical activity, eating, calcium intake, and rubella immunity). All of these preventive topics were included in the study to avoid focus on cervical cancer alone. For each topic: (1) the likelihood that they would discuss the topic, (2) amount of time they would spend addressing the topic, (3) outcome expectancies that the patient would follow their recommendations, (4) perceived self efficacy that they could address cervical cancer, and (5) perceived barriers for addressing cervical cancer were considered.

Measures

Listing cervical cancer screening (unprompted). Residents were asked in an open-ended or unprompted format to list (maximum of six) topics they would address with the patient. Those who listed "pap smear," "pap test," or "cervical cancer screening" were coded as addressing cervical cancer screening.

Likelihood of addressing cervical cancer (prompted). Residents were asked, "How likely

are you to address [insert preventive health topic] with this patient?" Their response options were in a 5-point Likert scale (1="Not at all likely", 5="Extremely likely").

Amount of time talking about cervical cancer. Providers were asked to provide the amount of time they would spend talking to their patients about cervical cancer screening and the other 11 topics (maximum for all topics was 45 minutes).

Outcome expectancies. Residents were asked, "How confident are you that this patient will: listen to your advice, follow-up with medical recommendation, resist treatment, miss a future appointment (if applicable), and become upset due to recommendation about [each preventive topic]." Items were rated on a 5-point scale (1= "Not at all confident," 5="Extremely confident"). The internal consistency of this scale was adequate (α =.75).

Self-efficacy. This four-item scale measures

providers' confidence in addressing [each preventive topic] and were mostly based on the Clinical Practice Guideline-recommended 4 As for tobacco counseling.[21] However, one item ("Assist") was omitted because it could not be easily translated to all of the 12 behaviors used in the survey (e.g., rubella immunizations). Specifically, providers were asked, "How confident are you that you can: discuss this health issue with this patient, advise this patient to change her behavior about her health issue, follow-up with this patient on this topic in future visits, and persuade this patient to follow your advice." Participants rated these items on a 5-point scale (1= "Not at all confident" to 5= "Extremely confident") (α =.73).

Barriers. Residents were asked about the barriers they perceived that might keep them from addressing [each preventive topic]. The items were based on a study assessing physi-

Table 1. PHYSICIAN CHARACTERISTICS (N=98)*

Characteristic	Black (%)	White (%)	Asian (%)	P-value
No. of physicians	10	64	24	
Sex				
Male (n=54)	4	39	11	.27
Female (n=44)	6	25	13	
Specialty				
Family medicine (n=18)	1	13	4	.52
Internal medicine (n=68)	8	41	19	
Ob/Gyn (n=12)	1	10	1	
Year in training				
Intern (n=35)	1	24	10	.18
2nd year (n=26)	2	16	8	
3rd year (n=29)	6	17	6	
4th year (n=8)	1	7	0	

* 2 had missing data on ethnicity

cians' barriers to addressing smoking cessation.[21] Specifically, residents were asked to respond to whether, "I would not address [each preventive topic] with this patient because: too much time is required; this patient may not be interested in discussing this health issue; I do not feel adequately trained to discuss this issue; other health problems require attention; cultural or language barriers pose difficulties for discussing this health issue; and this health topic may be too embarrassing for this patient to discuss." Participants responded to these six items on a 5-point scale where 1="Strongly disagree" to 5="Strongly agree" (α =.72).

Data Analysis

Multiple regression analysis was used to examine associations among outcome variables (likelihood of addressing cervical cancer—prompted; and addressing cervical cancer screening—unprompted), provider characteristics (gender, medical specialty, and ethnicity), and mediating variables (outcome expectancies, perceived barriers, and self-efficacy). Additionally, the mediational role of perceived barriers, outcome expectancies, and self-efficacy between providersrs' characteristics (independent variable) and likelihood of addressing cervical cancer screening (dependent variable) was examined. If the relation between the independent and dependent variable were found to be attenuated when the mediator was entered into the model, then mediation was assumed to be evident.[23] All predictors and criteria variables were examined for violations of normality. An alpha of .05 was used in all statistical tests. All analyses were conducted in SAS 6.12 (SAS, Cary).

RESULTS

Sample Characteristics

Approximately one-half of the residents were male (Table 1). The majority of the residents were white (64%), 24% were Asian, and 10% were black. Most of the participants were internal medicine residents. Furthermore, about one-third of the residents

were in their first year of residency. There were no significant gender, specialty or training differences between providers of different ethnic backgrounds. Also, there were no significant gender differences among providers from different years or specialties. There were more first-year residents from the family medicine specialty compared to other specialties. Most of the residents who were not part of the study either had been part of the study's focus group or were out of town.

Addressing Cervical Cancer Screening and Amount of Discussion Time

Fifty-three percent of providers reported that they would discuss pap tests (unprompted) with the patient. Those who listed pap smear (unprompted) were more likely to report that they would address cervical cancer when prompted ($_M$overall= 4.24, SD=.92; $_M$listed=4.47, SD=.69; $_M$did not list=3.97, SD=1.07; t(86), p<.009). Only the prompted responses were included in the analyses because sample size was too small to examine differences. Table 2 shows means and standard deviations of the likelihood of addressing cervical cancer by provider characteristics.

No significant interactions between any of the provider characteristics were found for the likelihood of time spent addressing cervical cancer. Males and females did not differ on the likelihood of addressing cervical cancer screening (F (1, 96)=1.07, p<.30) or time discussing it (F(1, 98)=.24, p<.63). Women providers reported spending as much time talking about cervical cancer as males (t (98)=.49, p<.61). In contrast, black providers were significantly more likely to report spending more time talking about cervical cancer with the patient than Asian and white providers (F (2, 95)=4.00, p<.02). There were no significant differences among providers from different specialties (F (2,97)=1.71, p<.18).

To test for specialty and ethnic differences, we created two orthogonal vectors to examine the three-level variables in multiple regression. Providers from different specialties did not differ

in addressing cervical cancer or in the time discussing it. Also, no ethnic differences in providers' responses resulted. Different combinations of ethnic contrasts were used and entered into one regression model simultaneously. When compared to Asian providers, black providers were significantly more likely to address cervical cancer screening with the patient (β=.38, p<.05) and spend more time discussing it (β=1.19, p<.004). White providers did not differ from black and Asian providers. The pattern of results was the same even when providers' gender and specialty were held constant [data not shown].

Mediational Path Analyses (Addressing Cervical Cancer and Time Spent Addressing Topic)

Because the only provider characteristic associated with the likelihood of addressing cervical cancer screening and time spent addressing it was providers' ethnicity, associations were examined between this characteristic and mediators (perceived barriers, outcome expectancies, and self-efficacy). Only perceived barriers were associated

with the ethnicity (blacks compared to Asians) of the provider (see Figure 1; =.22, p<.05).

To test the mediational model, four multiple regression analyses were performed with each of the dependent variables (addressing cervical cancer and time spent addressing it.[23] In the first step, the likelihood of addressing cervical cancer screening and time spent addressing it were regressed on the ethnicity of the resident independently. As noted above, only the comparison between black and Asian was significantly related to the likelihood of addressing cervical cancer screening and time spent addressing it. In the second step, the relations between the likelihood of addressing cervical cancer and time spent addressing it and perceived barriers were examined. Providers who endorsed the barriers were significantly less likely to address cervical cancer (β=-.76, p<.001) and spend time addressing it (β= 1.02, p<.001). In the third step, the relation between the ethnicity of the provider and barriers was examined. Asian residents were more likely to endorse perceived barriers than black residents (β= -.22, p<.05; Black providers were coded 1 and Asian

Table 2. MEAN AND STANDARD DEVIATIONS OF THE LIKELIHOOD OF CERVICAL CANCER SCREENING BY PROVIDER CHARACTERISTICS

|	Likelihood M (SD)	Minutes spent M (SD)
Gender		
Male	4.15 (.92)	4.09 (2.79)
Female	4.35 (.92)	3.85 (2.79)
Ethnicity		
Black	4.67 (.71)	6.00 (3.40)
White	4.28 (.81)	3.77 (1.93)
Asian	3.90 (1.21)	3.63 (3.06)
Specialty		
Internal medicine	4.53 (.74)	4.25 (2.81)
Family medicine	4.14 (.96)	3.72 (1.18)
Ob/Gyn	4.44 (.88)	2.92 (1.32)

providers were coded 0). The final model of mediation tested whether the effect of the independent variable on the dependent variable was through the mediation. Perceived barriers did not mediate the relation between providers' ethnicity and minutes spent talking about it ($_\beta$ethnicity-time spent=.99, p<.02). In contrast, barriers mediated the relation between providers' ethnicity (black vs. Asian) and the likelihood of addressing cervical cancer when entered into the model ($_\beta$ethnicity-addressing Pap=.21, p<.20). The mediation accounted for 26% of the variance in likelihood of addressing cervical cancer screening.

DISCUSSION

The findings from this pilot study suggest that African-American providers were more likely to address the need for cervical cancer screening with the simulated patient than were Asian-American providers. Consistent with these results, black providers were more likely to report spending more time addressing cervical cancer in comparison to both white and Asian providers. These results differ with previous research indicating that providers from specific ethnic groups (black and Hispanic) are less likely to address screening services with their patients than their white counterparts.[9] However, the results of this study in which providers were asked to provide the type of treatment they would offer to a white female patient in her early 20s may not be comparable to previous research involving ethnic minority patients. Previous research suggests that ethnic minority providers are more likely to treat ethnic minority patients and that it may be that ethnic minority patients are contributing to low referral rates.[13] Because patients' ethnicity was held constant in the pres-

Figure 1. EFFECTS OF RESIDENT ETHNICITY (BLACK VS. ASIAN) AND PERCEIVED BARRIERS ON THE LIKELIHOOD OF ADDRESSING PAP SMEAR
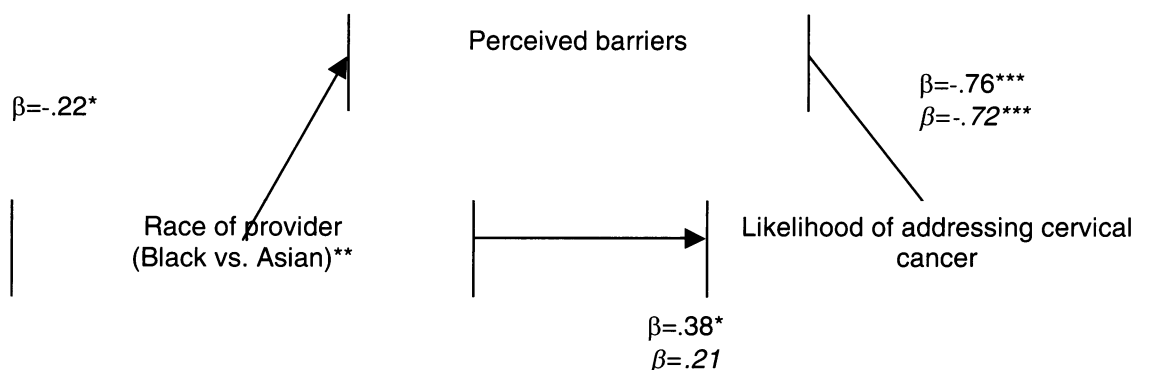
Based on Baron and Kenny's (1986) test of mediation
*p<.05; **p<.01; ***p<.001

**Black was coded as 1
Italicized Betas are the values of the mediation test

ent study, one could infer that patient characteristics likely contribute to the low referral rates.

When examining the motives behind differential medical care, study results suggest that Asian providers were more likely to endorse barriers in addressing cervical cancer screening in comparison to black providers. Thus, perceived barriers accounted, at least in part, for ethnic differences. Through post hoc analyses, we examined the means of the individual items of the barriers construct [data not shown] and found that the endorsement of the item "other problems require attention" significantly differed between black and Asian providers. Because this was the only item that significantly differed between providers from different ethnicity, it may be that black and Asian providers are likely consider other problems associated with living a "high risk" lifestyle differently. However, this explanation is only speculative and future research should examine this hypothesis directly. When considering self-efficacy or outcome expectancies, study results suggest no differences in self-efficacy or outcome expectancies among providers from different ethnic backgrounds and suggest that providers from all backgrounds felt confident in their ability to address cervical cancer screening and in the fact that their effort would yield positive results.

Consistent with Borum's[5] findings, the results of this study suggest no relation between providers' gender and the likelihood of their addressing cervical cancer screening or the time spent in the process of addressing it. Some investigators argue that this relation may vary according to specialty.[11] The results from the current study do not confirm this pattern. Study findings indicate no relation between the specialty of the provider and their likelihood of addressing cervical cancer screening or the time they spent addressing it, which is inconsistent with the findings of other researchers.[7,12] This may be due partially to the small sample size in this pilot study. Differences in results across studies may be due to the diversity of methodologies used in

the various studies and/or level of providers' medical training. It may be that providers who are in training are more cognizant of the guidelines due to their higher exposure to recent information on the importance of screening in comparison to providers who have had completed their training.

Strengths and limitations. This study has some limitations that warrant attention. Because providers read a description rather than interacting with an actual patient, it is unclear whether they would behave the same way in a real patient encounter. The simulated patient was described as a white patient in her early 20s and was portrayed as leading a "high-risk" lifestyle; therefore, study findings may only be generalizable to patients with similar characteristics. Furthermore, because our participants were residents from Duke University Medical Center, our findings cannot be generalized to the practices of providers in different health care settings (e.g., non-academic), or residents who were at or approaching the end of training, or physicians who completed their training a long time ago. Participants were given more time than is typically allotted to address preventive health topics. This additional time may have fostered the tendency to provide socially desirable answers, or to consider a wide range of potential answers. Another concern is that the relatively small sample size of our study affected statistical power to detect differences. We were powered to detect a .5 [power=.8] difference between means when the variables had a standard deviation of .5. However, the high variability in the measures significantly decreased the power to detect differences.

Despite these limitations, there were several strengths. In the current study, the relation between provider characteristics and medical intention was assessed while minimizing the influence of other potential confounders, such as patient report. Also, by keeping the target patient constant, the current study controlled for patient demographic variables (e.g., ethnicity) that may influence medical intention.[9,23] Future studies

should evaluate how and why provider practices and expectations may vary based on differences in patient characteristics. One of the most notable strengths of the current study is that the findings suggest some of the motives underlying the differential likelihood of addressing cervical cancer screening.

Implications

The current findings, if confirmed and extended, could have important implications for primary care training programs. It is clear from our results that physicians feel confident in their ability to have their patients pursue cervical cancer screening, but some believe that external barriers may decrease their likelihood to address this topic with their patients. It seems that one reason for this pattern is differences in perceived barriers among providers of different ethnicity. Medical training programs might help providers become aware of their own assumptions (especially those that may be culturally mediated) when treating patients and help them overcome those barriers. Understanding and addressing the specific barriers that providers encounter is likely to improve adherence to medical guidelines. In our case, challenging providers' assumptions about their perceived external barriers might serve to increase the frequency with which women are offered screening for cervical cancer.

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