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## Physician-related determinants of cervical cancer screening among Caribbean women in Toronto

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## PHYSICIAN-RELATED DETERMINANTS OF CERVICAL CANCER SCREENING AMONG CARIBBEAN WOMEN IN TORONTO

**Background:** Minority women in Canada are less likely to be screened for cervical cancer than their counterparts in the general population, despite the fact that the proportion of these women who consult a general practitioner about their health each year is similar to minority women. This study examined the physician and practice characteristics associated with Pap testing and perceived barriers to Pap testing of family physicians serving the Caribbean community of Toronto. (*Ethn Dis.* 2002;12:268-275)

**Methods:** A mail-back questionnaire was sent to Toronto family physicians practicing in neighborhoods with a high proportion of Caribbean Canadians.

**Results:** Although 79.7% of the 64 participating physicians reported that they were "very likely" to include Pap testing during an annual check-up, nearly half did not believe that the majority of Caribbean patients were actually screened. The amount of time a physician spent on patient education was significantly associated with his/her likelihood of screening. Male physicians who reported a high proportion of Caribbean female patients in their practices were significantly less likely to screen for cervical cancer than those who saw fewer Caribbean patients.

**Results:** These findings suggest that an increased emphasis on patient education is important to increase screening practice and that physician gender may be of major importance to the Caribbean community. (*Ethn Dis.* 2002;12:268-275)

**Key Words:** Cervical Cancer Screening, Physician-Patient Relations, Minority Health, Women's Health, Patient Education

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### INTRODUCTION

There has been a dramatic decline in the incidence of invasive cervical cancer in Canada over the last 30 years, largely attributable to early detection efforts.<sup>1,2</sup> However, national and provincial surveys suggest that immigrant and minority women in Canada are less likely to be screened for cervical cancer than are their Canadian-born and majority culture counterparts,<sup>3,4</sup> despite the fact that similar proportions of these women consult a general practitioner about their health each year.<sup>5</sup> Other studies attest to the fact that Caribbean women, especially those women over 50 years of age, are less likely to be screened for both breast and cervical cancer compared to the general population.<sup>6-12</sup>

Cultural differences have been proposed as a major barrier to medical care for immigrant and minority women.<sup>13-15</sup> Other studies maintain that economic, informational, linguistic, and systemic barriers, partic-

ularly access to care, hold greater promise for predicting and explaining differences in cancer screening behavior between ethnic groups.<sup>16-18</sup> Among access barriers, having a physician recommend the procedure is considered to be a critical determinant of both Pap testing and mammography.<sup>17-18,20-22</sup> It is unlikely that these findings are unique to the majority population.<sup>23</sup>

Physician characteristics associated with cancer screening include age, gender,<sup>24-27</sup> knowledge and attitudes toward screening,<sup>28</sup> whether the physician is the regular source of patient care or not,<sup>17,19,29</sup> communication patterns<sup>30-32</sup> and practice characteristics such as number of patients, reminder systems, priority given to presenting problem.<sup>33</sup> However, few studies have examined whether and how these characteristics influence the likelihood of physicians performing cervical cancer screening in the Caribbean community.

In 1996, the Caribbean community of Toronto numbered 242,850. Approximately 57% of this community were immigrants, mostly from Jamaica, who arrived between 1971 and 1980. Accessibility, cultural insensitivity, and perceived discrimination/distrust have

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*... national and provincial surveys suggest that immigrant and minority women in Canada are less likely to be screened for cervical cancer than are their Canadian-born and majority culture counterparts ...*<sup>3,4</sup>

been identified as major barriers to health care for this group.<sup>34</sup> The specific objectives of the study reported in this publication were to determine: 1) physician and practice characteristics associated with cervical cancer screening; and 2) factors that promoted or acted as barriers to cervical cancer screening, among family physicians serving the Caribbean community of Toronto, the largest and most multicultural urban center in Canada.

## METHODS

### Design

A mail-back questionnaire was designed to collect information on physician characteristics, practice factors, and perceived barriers to cervical cancer screening. This instrument was modeled on other survey instruments used with physicians to assess cancer screening attitudes and behaviors, and qualitative interviews

with researchers and physicians helped to ensure that the information collected was relevant and methodologically sound. The questionnaire also underwent several revisions during pretesting for clarity, comprehensiveness, cultural sensitivity, and length.

### Subjects and Recruitment

Census data was used to identify postal codes in the city in which a high density of individuals declaring Black or Caribbean ethnic origins resided. All physicians practicing in areas of the greater Toronto region with a high proportion of Caribbean residents were invited to participate. This information was used to generate a physician mailing list using the online database of the College of Physicians and Surgeons of Ontario.

### Measures and Statistical Methods

Physician characteristics included demographic information, such as age, gender, years in practice, country of birth, first language, and location of medical training; knowledge of screening guidelines, and perceived risk of cervical cancer risk among Caribbean women. Practice variables included the estimated number of patients seen per week, percentage of caseload who were of Caribbean origin, type of practice setting (eg, solo, group), percentage of time spent providing primary care, percentage of patients seen for a regular (annual) visit, and number of minutes spent on patient education during a regular (annual) check-up.

Physicians were also asked to rate on a 4-point scale the extent to which practice and patient-related

factors, drawn from the literature, were barriers to cervical screening for their Caribbean patients: 1) not at all; 2) sometimes; 3) quite a bit; and 4) a lot. Examples of practice factors included: giving priority to the presenting problem, inadequate reimbursement for screening, lack of a reminder system, lack of skill performing Pap test, and lack of comfort discussing cervical cancer screening. Patient-related factors included patient refusal due to modesty or inconvenience, intervention being against patient cultural beliefs, intervention causing patient discomfort. Space was provided on the questionnaire for physicians to add other perceived barriers to screening.

The physician's reported likelihood of including a Pap test during a regular check-up was considered the main outcome of interest. It was coded from one (not likely) to 7 (very likely). Physicians were also asked to estimate the proportion of their Caribbean patient population between the ages of 20–69 who were screened for cervical cancer as: 1) <25%; 2) 25%–50%; 3) 51%–75%; 4) 76%–100%.

Descriptive information was compiled on the physician study population. Statistical analysis employed standard applications of the *t* test, ANOVA, and Pearson correlation coefficient. In order to examine the predictors of Pap testing while controlling for other variables in the model, multiple regression analysis was used.

## RESULTS

Two mailouts and follow-up phone calls helped to ensure an ad-

equate response rate of 33%. A review of the literature on response rates to physician surveys found that while rates range from 22%–78%, the majority were in the low range.<sup>35–42</sup> In order to ascertain the most common reasons for non-participation, a physician response form was included with the survey package. Among the 48 physicians who completed this form, 68% indicated that they were 'not interested' in participating, 15% had no Caribbean patients, 8% were not providing primary care and the remainder (4) were 'away' or 'retired'. As the main reasons for non-response using this sampling methodology related to practice factors rather than physician factors, the risk of selection bias was minimal.

Of the 64 family physicians who responded to the survey, 40.6% were female. The age range of respondents was from 29–71 years (mean = 42.16, SD = 8.74). The number of years in practice ranged from 1–45 (mean = 14.03, SD = 8.65). Most of the respondents were born in Canada (55.6%). Of the remainder, 12.7% were born in Asia (mainly Hong Kong), 11.1% in Europe (mainly the United Kingdom), 11.1% in Caribbean countries, and 4.8% each in Africa and the United States, respectively. The majority of respondents reported English as their first language (88.9%), followed by Chinese languages (6.4%). Most of the physicians received all or some of their medical training in Canada; 6 physicians had trained in the United Kingdom, 2 in Jamaica, and one in Hong Kong.

The majority of physicians reported that they were 'very likely' to include Pap testing during a regular

Table 1. Physician variables associated with Pap testing

Variable	% of Study Population	Mean (Standard Deviation)	Statistical Test	P Value
Age group				
<35	22.6	6.43 (.76)	F=2.02	.14
35–49	56.5	6.77 (.73)		
50 and over	21.0	6.92 (.28)		
Gender				
Male	59.4	6.61 (.82)	t=–1.49	.14
Female	40.6	6.85 (.46)		
Years in practice				
<10	35.9	6.61 (.66)	F=1.01	.37
10–19	34.4	6.64 (.95)		
20 or more	29.7	6.89 (.32)		
Country of birth				
Canada	54.7	6.86 (.69)	t=–1.96	.05
Other	45.3	6.52 (.69)		
First language				
English	88.9	6.71 (.71)	t=.50	.62
Other	11.1	6.57 (.79)		
Perceived risk of cancer among Caribbean females				
Higher	21.9	6.79 (.43)	F=2.97	.04
Same	4.7	5.67 (2.31)		
Lower	26.6	6.59 (.71)		
Don't know	46.9	6.83 (.46)		

preventive check-up (79.7%). Scores ranged from 3 to 7 with a mean score of 6.7 and a standard deviation of 0.71. However, only half the physicians surveyed estimated that the majority (76%–100%) of their Caribbean patients (20–49 years of age) were actually screened for cervical cancer. An even smaller proportion (39.3%), estimated that their Caribbean patients aged 50–69 years were screened.

Descriptive information and bivariate relationships between physician characteristics and Pap testing rates are presented in Table 1. Age, gender, years in practice, and first language (English vs other) were not associated with the likelihood of Pap screening. Physicians who were born outside of Canada were slightly less likely to report screening.

Physicians were also unaware that the risk of cervical cancer is

higher among Caribbean women compared to the population as a whole. Paradoxically, physicians who answered 'don't know' to this question were among the most likely to screen. This variable was excluded from further analysis because the categories did not follow an ordinal pattern.

Information on physician's reported recommended frequency of cervical screening (after 3 normal tests) for women over 20 years of age is presented in Table 2. Most of the physicians surveyed recommended screening every year or every 2 years for women aged 20–39 years and 40–69 years. More than half the physicians surveyed did not know that cervical screening is not recommended for women over 70 years of age. The question "which cancer screening guidelines do you use?" produced a variety of responses in-

Table 2. Physician's recommended frequency of cervical screening (after 3 normal tests) by age group

Age Group	Every Year	Every 2 Years	Every 3 Years	Not Recommended
20-39 years	74.2%	16.1%	9.7%	—
40-49 years	54.8%	30.3%	14.5%	—
50-69 years	20.0%	46.7%	33.3%	—
≥70 years	1.6%	16.4%	32.8%	49.2%

cluding, 'Canadian' (8), 'Ontario' (2), Canadian Cancer Society (2), Canadian Task Force (2), College of Obstetrics and Gynecology (2), and 'own guidelines' (6). However, the majority of physicians (64.1%) did not respond to this question. There was no statistical relationship between physician's knowledge of cervical screening guidelines and his/her likelihood of screening.

Practice variables associated with cervical screening are presented in Table 3. Most of the physicians surveyed were seeing between 125-175 patients a week. Although all the physicians surveyed had their practices in areas of the city with a high proportion of Caribbean residents, approximately 72% of the physicians estimated that less than a quarter of their practice population was

Table 3. Practice variables associated with Pap testing

Variable	% of Study Population	Mean (Standard Deviation)	Statistical Test	P Value
Number of patients/week				
≤75	18.5	6.5 (1.27)	F=1.02	.39
76-125	21.0	6.64 (.74)		
125-175	33.4	6.94 (.24)		
>175	22.2	6.58 (.67)		
% of patients who are Caribbean				
≤25%	71.4	6.84 (.42)	F=22.38	.00
26%-50%	24.8	6.67 (.62)		
>50%	4.8	4.67 (1.53)		
Practice setting				
Solo	14.1	6.44 (.88)	t=-1.19	.24
Other	85.9	6.75 (.67)		
% of time spent in primary care				
≤50%	6.3	6.0 (2.0)	F=2.86	.07
51%-75%	12.5	6.5 (.76)		
>75%	81.3	6.79 (.50)		
% of patients seen for a regular (annual) check-up				
≤25%	11.1	6.43 (.79)	F=.67	.57
26%-50%	36.5	6.78 (.52)		
51%-75%	38.1	6.71 (.86)		
>75%	14.3	6.89 (.33)		
Number of minutes spent on patient education*				
<5	10.9	6.0 (.82)	F=4.3	.02
5-10	64.1	6.78 (.69)		
>10	25.0	6.81 (.54)		

\* Collapsed to eliminate cells with expected count &lt;5.

composed of Caribbean women. Only 14.1% of the physicians who responded to the survey were solo practitioners, and the majority (81.35%) spent 75%-100% of their time on primary care. Nearly 50% of physicians reported that less than half of their patients were seen regularly. During a regular (annual) visit, most physicians spent 5-10 minutes (64.1%) and 11-20 minutes (23.4%) on patient education.

In terms of the outcome variable, the number of patients seen per week, type of practice setting, and the proportion of patients who were regular patients, were not associated with screening behavior. However, physicians who reported a higher proportion of Caribbean patients were significantly less likely to screen, and physicians who spent a higher proportion of time in primary care and on patient education were significantly more likely to screen during a regular visit.

Perceived barriers to Pap testing, ranked by mean score, and their association with Pap screening are presented in Table 4. The highest ranked barriers were for 'patient prefers a female physician' (1.9) and 'patient refusal due to modesty' (1.83). These variables, as well as, 'no reminder system', 'intervention is not adequately reimbursed' and 'lack of comfort discussing cervical cancer' were significantly correlated with the outcome variable. In other words, when physicians perceived patient refusal, lack of a reminder system, intervention not being reimbursed, and discomfort discussing cervical cancer screening to be barriers, they were less likely to perform screening.

Results of the multivariate anal-

Table 4. Barriers associated with Pap testing frequency

Variable	Mean Score (Standard Deviation)	Pearson Correla- tion Coefficient	P Value
Patient prefers female doctor	1.90 (.89)	-.37	.02
Patient refuses due to modesty	1.83 (.84)	-.39	.01
Priority must be given to presenting problem	1.77 (.80)	-.09	.48
Patient refuses due to lack of time	1.72 (.80)	-.19	.20
Patient refuses—test not effective	1.66 (.79)	-.12	.44
Intervention against patient's cultural beliefs	1.61 (.84)	-.07	.59
No reminder system	1.60 (.80)	-.34	.03
Not enough time during visit	1.52 (.72)	-.18	.17
Intervention not adequately reimbursed	1.23 (.62)	-.59	.00
Not comfortable discussing cervical cancer screening	1.03 (.18)	-.26	.04

yses are presented in Table 5. In these models, the dependent variable was the mean likelihood of screening. Gender and age were entered first as control variables, since many physician and practice variables vary by age and gender. After testing for interactions, only the significant results from the bivariate analyses were included in the final model. The final model had an adjusted  $R^2$  of .39. In this model, the amount of time a physician spent on patient education was significantly associated with his/her likelihood of screening. Furthermore, a significant interaction was observed between gender and ethnicity of practice. This is presented graphically in Figure 1. Male physi-

cians who reported a high proportion of Caribbean female patients in their practices were significantly less likely to screen for cervical cancer than were those who saw fewer Caribbean patients. Female physicians were consistently more likely to report screening, and screening did not significantly vary with practice ethnicity.

## DISCUSSION

This study attempted to explore physician and practice characteristics accounting for the low rates of cervical screening among Caribbean females in Ontario. Although the ma-

jority of physicians surveyed reported that they were very likely to perform Pap testing during a regular (annual) check-up, when asked to estimate the proportion of their Caribbean patients who were screened, these estimates were generally low.

Some of the physician characteristics associated with screening behavior in our study population were similar to those reported in the literature. For example, it has repeatedly been shown that physicians who are more prevention oriented and spend more time on patient education are more likely to perform or recommend screening.<sup>33,43,44</sup>

Although many studies have reported that female physicians conduct more screening than do male physicians for breast, cervical, and ovarian cancer,<sup>24,25</sup> even after controlling for demographic and attitudinal differences between patients, this study found that gender had no direct effect. Rather, our finding that the higher the proportion of Caribbean patients a male physician reported having in his practice the less likely that the physician was to screen confirmed the fact that physician gender had an indirect effect on the relationship between the ethnic composition of the practice and cervical screening behavior. Similar results have been reported elsewhere. Bakemeier et al<sup>28</sup> found that physician-reported screening rates were lower among physicians who had a high proportion of Hispanic patients in their practices compared to those who had fewer Hispanic patients. However, a survey of Chinese and Vietnamese physicians and their patients also found that physician gender mediated the relationship between practice ethnicity and screen-

Table 5. Physician factors associated with Pap testing frequency

Variable	Standardized Coefficients		
	Beta	T	Sig.
Age	.18	1.28	.21
Gender	.24	1.30	.21
Gender $\times$ ethnicity of practice (interaction)	-.40	-2.16	.04
Proportion of time spent in primary care	.01	.06	.10
Patient prefers female physician	-.14	-.89	.38
Patient refuses due to modesty	.01	.05	.96
Not comfortable discussing cervical cancer screening	.05	.35	.73
No reminder system	-.22	-1.61	.12
Intervention not adequately reimbursed	-.30	-1.97	.06
Number of minutes spent on patient education	.42	3.01	.01
Adjusted $R^2$		.39	

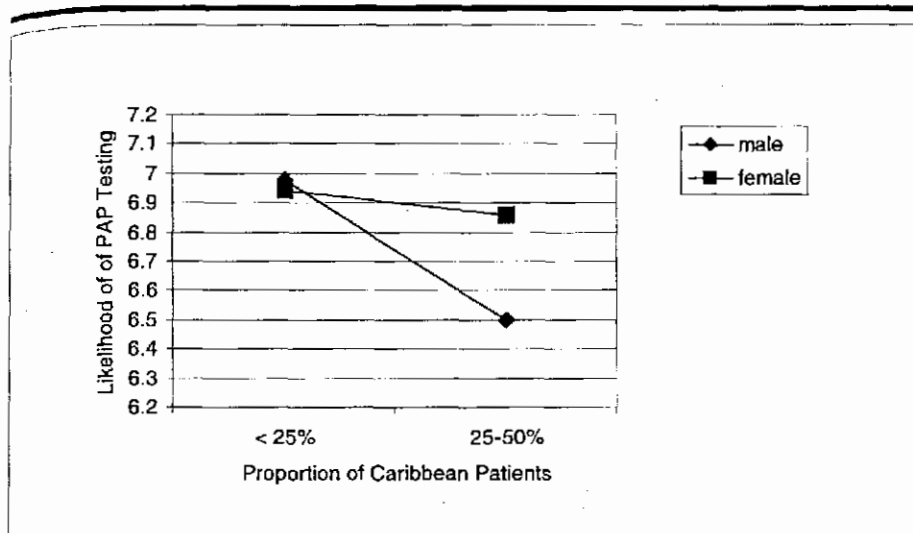


Fig 1. The effect of gender and practice ethnicity on Pap testing

ing.<sup>5</sup> These findings suggest that physicians, particularly those who are male, experience definite barriers to cervical screening in minority populations.

Our finding that gender-specific cultural factors, such as preferences for a female physician and modesty, were the most frequently reported barriers to screening has been reported in other studies.<sup>16,45</sup> However, our findings also suggested that the lack of adequate reimbursement for screening was another major determinant. Other studies have suggested that administrative factors may be more significant than women's cultural beliefs or attitudes towards screening in determining physician behavior.<sup>16</sup>

Our research findings have important implications for physician education. Although our study did not find a significant relationship between knowledge of screening guidelines and physician behavior, it was clear that physicians were largely unaware of current screening recommendations. This may not be surprising given the variation in

guidelines across Canada and worldwide.<sup>46</sup> As most physicians tended to 'overscreen,' continuing education regarding cervical cancer screening might reduce the inappropriate use of health resources.

It was also clear that the majority of physicians did not know that Caribbean women in Canada may be at an increased risk of cervical cancer. According to 1990 World Health Organization statistics, the incidence of cervical cancer is 3-4 times higher and its mortality rate is 4-5 times greater in Caribbean countries compared to Canada.<sup>47</sup> Although there are no Canadian statistics on cancer incidence among Caribbean immigrants to Canada, cervical cancer mortality among Caribbean women in the United Kingdom is higher than among women in the general population.<sup>9</sup> The incidence of invasive cervical cancer among Black women in the United States is 11.8/100,000 compared to 8.5/100,000 among White women;<sup>6</sup> however, these figures do not take into account ethnic origin (ie, Caribbean, American) or region-

*Although our study did not find a significant relationship between knowledge of screening guidelines and physician behavior, it was clear that physicians were largely unaware of current screening recommendations.*

al variations. It has also been reported that Black women in the United Kingdom, as well as in the United States, more frequently present with later-stage diagnoses.<sup>48</sup>

Several study limitations need to be acknowledged. First, there are biases associated with voluntary physician surveys. Studies suggest that physicians usually overestimate their screening rates<sup>49</sup> and the representativeness of our physician respondents could not be established. With respect to its validity, the instrument was modeled on other survey instruments used with physicians to assess cancer screening attitudes and behaviors. Test-retest reliability was impossible to assess since participating physicians were assured of their anonymity. Other associations between physician variables identified in the literature, eg, physician self-efficacy, and screening behavior, may not have been found due to small sample sizes.

Second, although having a regu-



lar source of medical care has consistently been associated with higher cancer screening rates,<sup>17,28</sup> this association could not be fully explored with our data. Although no association was found in our study between the proportion of regular patients a physician reported and screening frequency, further research is necessary to determine whether an individual patient who has a regular physician is more likely to be screened.

Third, we could not explore the effect of ethnic match on screening behavior. Other studies attest to the fact that minority patients are more likely than majority culture patients to have a minority physician as their regular doctor.<sup>50</sup> In our study, physicians who were born in Caribbean countries were more likely to see patients from the Caribbean than were Canadian or other foreign-born physicians. Although differences in the likelihood of screening showed variation by physician's country of birth and practice ethnicity, the sample size was too small to generate conclusions.

In summary, findings from this study suggest that physicians need to be better informed about screening guidelines and the risk of cervical cancer among Caribbean women. Targeting interventions toward physicians have been shown to increase rates of cancer screening in the general population.<sup>51</sup> An increased emphasis on patient education has also been shown to be associated with greater patient satisfaction and an increased likelihood of returning to the healthcare provider.<sup>52</sup>

This study raised several important questions about the effect of gender and ethnicity on screening

behavior. The finding that male physicians with a relatively higher proportion of Caribbean women in their practices were less likely to perform Pap testing suggests that the gender of the physician is of major importance to the Caribbean community. However, we could not conclude whether Caribbean women were more likely to refuse cervical screening offered by a male physician or whether male physicians were less likely to perform cervical screening on women who are of Caribbean origin. Further research is necessary to explore the effect of physician gender and ethnicity on cancer screening practices.

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Children and family. The cycle of life is portrayed in this issue's cover art, donated to ISHIB by renowned artist Sally Israili. Mother and child, as well as family and child, are the first lines of protection and nourishment for a child's long-term health. Thank you, Mrs. Israili, for offering an image that speaks to the importance of caring for our young and the future of minority populations.