

Rural physicians' perspectives on cervical and breast cancer screening: A gender-based analysis.

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ABSTRACT

Several studies highlight the role of physicians in determining cervical and breast cancer screening rates, and some urban studies report higher screening rates by female physicians. Rural women in North America remain underscreened for breast and cervical cancers. This survey was conducted to determine if there were significant gender differences in practices and perceptions of barriers to breast and cervical cancer screening among rural family physicians in Ontario, Canada. One hundred ninety-one family physicians (response rate 53.1%) who practiced in rural areas, small towns, or small cities completed a mail questionnaire. The physicians' mean age was 44.4 years (SD 9.9), and mean number of years in practice was 16.6 years (SD 10.3). Over 90% of physicians reported that they were very likely to conduct a Pap test and clinical breast examination (CBE) during a periodic health examination, and they had high levels of confidence and comfort in performing these procedures. Male (68%) and female (32%) physicians were similar in their likelihood to conduct screening, levels of confidence and comfort, and knowledge of breast and cervical cancer screening guidelines. However, the self-reported screening rates for Pap tests and CBE performed during last year were higher for female than male physicians ($p < 0.01$). Male physicians reported they were asked more frequently by patients for a referral to another physician to perform Pap tests and CBE ($p < 0.001$). Also, male physicians perceived patients' embarrassment as a stronger barrier to performing Pap tests ($p < 0.05$) and CBE ($p < 0.01$) than female physicians. No gender differences were observed in screening rates or related barriers to mammography referrals. These findings suggest that physicians' gender plays a role in sex-sensitive examination, such as Pap tests and CBE. There is a need to facilitate physician-patient interactions for sex-sensitive cancer screening examinations by health education initiatives targeting male physicians and women themselves. The feasibility of providing sex-sensitive cancer screening examinations by a same-sex health provider should also be explored.

INTRODUCTION

BREAST CANCER, the most frequently diagnosed cancer in women,¹ and cervical cancer, one of the most preventable cancers,² both have effective screening tests for early detection. Several

subpopulations, such as rural women, remain relatively underscreened for breast and cervical cancers.³⁻⁷ This is important for both Canada and the United States, where approximately 24% of the population live outside urban areas.⁸ Studies show that rural women in Canada are less likely

to have had a Pap test within the past 2 years⁵ and to participate in mammography, clinical breast examination (CBE), and breast self-examination compared with women living in urban areas, although both had similar access to and regular use of family physicians.^{6,7} Most of these differences remained statistically significant after controlling for age, education, income, and marital status, known determinants of women's screening behavior.⁴⁻⁶

Many studies highlight the role of physicians in determining cancer screening rates in women.⁹⁻¹¹ However, physicians encounter barriers to the provision of preventive health services. Limited information is available on barriers perceived by rural physicians, but studies conducted with physicians in urban settings¹²⁻¹⁴ identify these barriers as: patient is healthy and does not visit, patient dislikes or refuses test, no effective reminder systems, priority must be given to presenting problem, and physician lack of time. Some urban studies also suggest that gender differences exist in cervical and breast cancer screening rates and report higher rates for female compared with male physicians.¹⁵⁻²¹ Little is known about possible differences in practice and perceived barriers to breast and cervical cancer screening among rural family physicians.

This study was developed in response to an earlier unpublished pilot study conducted among rural women that found that physicians' recommendation and women's embarrassment were strongly associated with women's self-reported cervical and breast cancer screening status. The current cross-sectional study had three main objectives: (1) to assess current practices of family physicians, (2) to determine family physicians' perspectives on barriers to performing screening procedures, and (3) to investigate whether there were significant differences by sex of the family physicians. This paper focuses on similarities and differences among male and female physicians for knowledge of screening guidelines, likelihood or intention to screen, self-reported screening rates, and perceived barriers to screening.

MATERIALS AND METHODS

We conducted a mail survey of rural Ontario family physicians in five rural Public Health Units (PHU), four of which had high age-standardized incidence rate ratios of cervical cancer

compared with the incidence rate ratio of all Ontario.²² Only clinically active primary care physicians who reported seeing at least some women patients were eligible for the survey. In total, 375 family physicians were invited by letter to participate in the study. Nonrespondents were sent two reminder letters and questionnaires at 1-month intervals along with stamped return envelopes.

The survey instrument obtained information about physician sociodemographic characteristics, knowledge of screening guidelines, likelihood or intention to screen, the rate or percentage of performed screenings, and perceived barriers to screening. To operationalize the section on likelihood to perform Pap tests, CBE, and referral for screening mammography during a periodic health examination (PHE), a 5-point Likert scale was used, with 1 being "not likely" and 5 being "very likely." The cancer screening rates were assessed for the last year by asking the physicians to provide estimated percentages of female patients (in age groups 18-39, 40-49, 50-69, and over 70 years) screened by Pap tests, CBE, and mammography referrals. Physicians' perspectives on patient-related, physician-related, and systemic barriers were requested for Pap test, CBE, and referrals for mammography on a 0-3 scale (0, not at all; 1, somewhat; 2, quite a bit; 3, a lot).

Gender-based analyses consisted of investigating statistical differences between male and female physicians for sociodemographic characteristics, intention to perform cancer screening, reported rate of performed screenings, perceived barriers to screening, and knowledge of recommended guidelines. The Student's *t* test and chi-square tests were used with two-sided significance level of 0.05. Descriptive statistics included the prevalence of selected characteristics for the study population. ANOVA was applied to investigate differences between five PHUs. Likelihood or intention to screen women in specific age groups was calculated by taking the mean of 5-point scales. The rates of performed screenings were analyzed by averaging the percentages reported for different age groups. The physicians' perspectives on barriers for Pap tests, CBE, and mammography referrals were compared by sex of physician using item means of scale 0-3. The data were analyzed using Statistical Package for the Social Sciences (SPSS) version 9.

RESULTS

One hundred ninety-nine (response rate 53.1%) family physicians responded to the survey. No statistically significant differences were found between respondents and nonrespondents by physician gender, year of graduation, location of medical schools attended, and acceptance or nonacceptance of new patients. The response rate varied slightly between the five PHUs, ranging from 44% to 63.7% (SD 9.8). Eight physician surveys were excluded, as they did not meet the eligibility criteria. The results are based on 191 physicians consisting of 130 males (68%) and 61 (32%) females; the two groups had similar response rates.

Sociodemographics

The mean age of physicians was 44.4 years (SD 9.9), and the mean number of years in practice was 16.6 years (SD 10.3). Approximately 56% of physicians worked in group practice, 43% solo, and 1% primarily in a hospital practice. Twenty-nine percent of physicians practiced in small cities with populations of 10,001–100,000, 61% in towns with population of 500–10,000, and 10% in rural areas with populations of <500. On average, 80% of physicians reported that their patients lived in rural areas or small towns, and 61.4% of patients were female. An average of 132 patients were seen per week, and physicians spent 85.8% of their time providing primary care services. The

survey respondents of the five PHUs were similar in proportions of male and female physicians and did not differ significantly for responses to various sections. The five PHUs were treated as one group.

Examination of gender-based differences in sociodemographic characteristics revealed that female physicians were on average 5 years younger and had 5 fewer practice years ($p < 0.01$) than male physicians (Table 1). Female physicians reported fewer patients per week (mean 96, SD 41.6) compared with male physicians (mean 149, SD 56.5) ($p < 0.001$). Female physicians reported a greater percentage of female patients (73.4%) than male physicians (55.7%) ($p < 0.001$). No statistically significant differences were found between male and female physicians for practice location and type, patients' residence, or time spent on primary care.

Cancer screening: Intention to screen (likelihood) and performed screenings (percentage)

Over 90% of physicians reported that they were very likely to perform Pap tests and CBE, and make referrals for screening mammography during a PHE. There was no gender difference in their likelihood or intention to screen normal risk women. However, the reported percentages of Pap tests and CBE performed during last year were statistically higher for female physicians compared with male physicians for patients of all ages between 18 and 70 years of age ($p < 0.001$

TABLE 1. SOCIODEMOGRAPHICS BY SEX OF FAMILY PHYSICIANS

<i>Variables</i>	<i>Female physicians (n = 61)</i>	<i>Male physicians (n = 130)</i>
Age in years	40.9* (SD \pm 8.3)	46.1 (SD \pm 10.2)
Practice years	13.3* (SD \pm 9.8)	18.1 (SD \pm 10.2)
Practice location (%)		
Rural (<500)	8.2 (CI 13-15) ^a	10.8 (CI 6-16)
Town (500–10,000)	59.0 (CI 47-71)	61.5 (CI 57-66)
City (10,001–100,000)	32.8 (CI 27-39)	27.7 (CI 20-35)
Practice type (%)		
Group (including 2 from hospital)	67.2 (CI 55-79)	52.3 (CI 44-61)
Solo	32.8 (CI 21-45)	47.7 (CI 39-56)
No. of patients seen per week	96.1** (SD \pm 41.6)	149.1 (SD \pm 56.6)
% Female patients	73.4** (SD \pm 13.7)	55.7 (SD \pm 12.4)
% Rural patients	82.9 (SD \pm 31.8)	79.0 (SD \pm 32.2)
% Patients seen for primary care	88.1 (SD \pm 19)	84.7 (SD \pm 20.4)
% Patients seen for PHE ^a	40.1 (SD \pm 29.8)	39.2 (SD \pm 29.6)

* $p < 0.01$; ** $p < 0.001$; differences by sex of physician indicated by statistical significance.

^aCI, 95% confidence intervals; PHE, periodic health examination.

for ages 18–39 and 40–49, and $p < 0.01$ for ages 50–69 years) (Table 2). These results remained statistically significant after controlling for physician's age (data not shown). The patients most frequently screened were aged 18–39 years for Pap tests and 50–59 years for CBE. Mammography referrals did not differ statistically with physicians' sex. Women aged 50–69 years were referred most frequently for mammography.

Perceived barriers to cancer screening

For Pap test and CBE screening, statistically significant gender differences were found for some patient-related and systemic barriers but not for physician-related barriers (Table 3). For mammography referral, perceived barriers were rated similarly by male and female physicians on a scale of 0–3 (0, not at all; 1, somewhat; 2, quite a bit; 3, a lot).

Pap test. Among patient-related barriers, the item, patient asks for another doctor, was rated higher by male than female physicians (males: mean 1.0, SD 0.78; females: mean 0.3, SD 0.71; $p < 0.001$). Patient embarrassment was also perceived as a stronger barrier by male than by female physicians (males: mean 1.0, SD 0.78; females:

mean 0.7, SD 0.69; $p < 0.05$). Among systemic barriers, male physicians perceived inadequate reimbursement of Pap test to be more of a barrier than females (males: mean 0.3, SD 0.78; females: mean 0.1, SD 0.28; $p < 0.01$), although mean ratings were low for both. Male and female physicians were similar in their mean ratings of priority given to presenting problem (males: mean 1.1, SD 0.91; females: mean 1.1, SD 0.90) and lack of a reminder system (males: mean 0.9, SD 1.0; females: mean 0.08, SD 1.0) as barriers to perform Pap tests. Male and female physicians were also alike in their perceptions on patients' fear of Pap test (males: mean 0.8, SD 0.76; females: mean 0.7, SD 0.58), and patients' refusal due to lack of time (males: mean 0.7, SD 0.70; females: mean 0.7, SD 0.68). All physicians reported that they felt confident and comfortable to perform Pap tests and did not lack facilities or the presence of female staff during these procedures.

CBE. The male physician ratings of barriers to CBE were statistically higher for (1) patients' refusal due to embarrassment (males: mean 0.9, SD 0.75; females: mean 0.5, SD 0.74; $p < 0.01$), (2) patients' asking for another doctor to do CBE (males: mean 0.7, SD 0.74; females: mean 0.2, SD 0.64; $p < 0.001$), (3) patients' perception of low

TABLE 2. PERCENTAGE OF WOMEN SCREENED DURING LAST YEAR BY SEX OF FAMILY PHYSICIAN

<i>Variables</i>	<i>Female physicians (n = 61)</i>	<i>Male physicians (n = 130)</i>
Pap tests (mean %)		
Age		
18–39	83.7** (SD \pm 4.4)	66.2 (SD \pm 26.2)
40–49	78.4** (SD \pm 17.9)	64.5 (SD \pm 25.6)
50–69	73.8* (SD \pm 23.9)	59.6 (SD \pm 25.3)
>70	28.2 (SD \pm 29.2)	22.8 (SD \pm 23.2)
Clinical breast examination (mean %)		
Age		
18–39	71.8** (SD \pm 28.1)	49.4 (SD \pm 32.5)
40–49	78.4** (SD \pm 21.8)	62.1 (SD \pm 27.2)
50–69	80.6* (SD \pm 22.4)	68.6 (SD \pm 25.7)
>70	63.1 (SD \pm 33.9)	55.7 (SD \pm 31.9)
Mammography referral (mean %)		
Age		
18–39	3.6 (SD \pm 12.2)	6.0 (SD \pm 16.4)
40–49	18.8 (SD \pm 22.8)	23.2 (SD \pm 27.4)
50–69	79.9 (SD \pm 17.1)	73.2 (SD \pm 22.3)
>70	40.3 (SD \pm 29.6)	35.4 (SD \pm 29.7)

* $p < 0.01$; ** $p < 0.001$; differences by sex of physician indicated by statistical significance.

TABLE 3. PERCEIVED BARRIERS TO CANCER SCREENING: STATISTICALLY SIGNIFICANT DIFFERENCES BETWEEN FEMALE AND MALE FAMILY PHYSICIANS

Variables	Female physicians [†] (n = 61)	Male physicians [†] (n = 130)
Pap tests		
Patient refuses due to embarrassment*	0.73 (SD ± 0.69)	0.96 (SD ± 0.78)
Patient asks for test to be done by another doctor***	0.34 (SD ± 0.71)	1.00 (SD ± 0.78)
Pap test is not adequately reimbursed**	0.01 (SD ± 0.28)	0.33 (SD ± 0.78)
Clinical breast examination (CBE)		
Patients refuses due to embarrassment**	0.51 (SD ± 0.74)	0.90 (SD ± 0.75)
Patient asks for CBE to be done by another doctor***	0.23 (SD ± 0.64)	0.71 (SD ± 0.74)
Patient thinks her risk is low***	0.16 (SD ± 0.37)	0.49 (SD ± 0.64)
CBE is not adequately reimbursed**	0.05 (SD ± 0.22)	0.23 (SD ± 0.67)

[†]Mean of scale 0–3 (0, not at all; 1, somewhat; 2, quite a bit; 3, a lot).

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; differences by sex of physician indicated by statistical significance.

breast cancer risk (males: mean 0.5, SD 0.64; females: mean 0.2, SD 0.37; $p < 0.001$), and (4) inadequate reimbursement for CBE (males: mean 0.2, SD 0.67; females: mean 0.05, SD 0.22; $p < 0.01$). However, the last variable had low mean values for both sexes. Male and female physicians were alike in ratings of patients' lack of belief in test (males: mean 0.6, SD 0.76; females: mean 0.5, SD 0.75) and refusal due to lack of time (males: mean 0.5, SD 0.76; females: mean 0.4, SD 0.67). Physicians' perceptions about systemic and physician-related barriers were reported as less important than patient-related barriers. In spite of this, male physicians reported a greater barrier due to inadequate reimbursement for CBE than female physicians.

Mammography referral. Although no gender differences were found for mammography-related barriers, the top two physician-perceived barriers were patients' discomfort with mammography (mean 1.0, SD 0.71) and the lack of a reminder system (mean 0.7, SD 0.89). Other patient-related barriers were embarrassment, fear of radiation, and lack of time. Physician-related barriers were low risk of breast cancer for patient, not enough time, and disbelief in effectiveness of mammography. Systemic barriers included lack of reminder system and access to facilities.

Knowledge about cancer screening guidelines

There were no gender differences in physicians' knowledge of cervical and breast cancer screening guidelines (not actual performed practices) for Pap tests, CBE, and screening mammography referrals.

DISCUSSION

As in urban cancer screening studies, this rural area study highlights the significance of the gender of family physicians in sex-sensitive cancer screening examinations, such as CBE and Pap tests. The self-reported screening rates were higher for female physicians in conducting Pap tests and CBE. However, the lack of gender differences in the rate of mammography referrals is striking and differs from other urban-based screening studies. This study also finds gender differences for some physician-perceived barriers to Pap tests and CBE screening.

In our study, male and female physicians had similar knowledge about breast and cervical cancer screening guidelines and reported a similarly high likelihood (intention) of performing Pap tests and CBE, with overall excellent levels of confidence and comfort. In spite of this, the reported screening rates for Pap tests and CBE performed during last year were higher for female family physicians, which is consistent with studies in urban jurisdictions.^{15–21}

Studying the effect of physician gender on the provision of health services is complicated by a variety of possible confounding factors. For example, younger physicians may have higher screening rates as a result of the recent increase in emphasis on preventive healthcare in medical training. Although female physicians were on average 5 years younger in our study, their screening rates remained significantly higher even when age was controlled. Gender differences in screening rates could also arise either from different sociodemographic characteristics of patients visiting male and female physicians or dif-

ferences in physician-patient interaction style or barriers, the latter of which is addressed from physicians' perspectives in this study. Although we do not know whether there were systemic or personality differences between the patients of male and female physicians, we do know that both served patients from similar geographical areas in a universal healthcare system. Other studies^{16,19} also report that sociodemographic differences between patients of male and female physicians are unlikely to explain physician gender differences in screening rates, as the high screening rates for female physicians remained high after adjusting for patients' sociodemographic differences.

In our study, female physicians reported seeing a higher proportion of women patients with a smaller number of patients in their practices, findings supported by other studies.^{23–25} This may be due to different styles of male and female physicians in interacting with patients, female physicians working shorter hours, women's preferences for physicians of the same sex, or a combination of these factors. Other studies show that female family physicians work shorter hours under the age of 40 years,²³ provide more counseling,²⁶ have longer consultation time, spend more time listening to their patients, and give selective attention to preventive healthcare^{17,20} and female health issues²⁷ than male physicians. Women's preferences for physicians of the same gender, especially for sex-sensitive examinations, are also supported by urban studies.^{28,29} In our study, women's preference for same-sex physicians is reflected in male physicians reporting more frequent requests by women patients for another physician to do Pap tests and CBE. The male physicians had a greater challenge in screening women with Pap tests and CBE, as they also perceived patient's embarrassment as a stronger barrier. This interpretation of physicians' perception on patient-related barriers is also supported by results of our unpublished study with women residing in rural areas, which found statistically higher levels of perceived embarrassment for women who had not had a Pap smear test for 3 years or more compared with women who had the test within the last 3 years. The close-knit social structure of small rural communities may enhance women's modesty, embarrassment, and privacy concerns because of the high likelihood of encountering their physicians or clinic staff in everyday life, which may impede some women

from seeking sex-sensitive examination from male family physicians. These data should serve to increase awareness of the special challenge male physicians face in ensuring that their female patients obtain sex-sensitive preventive care. Further research would be helpful in establishing strategies to address this concern. Possible methods include physician education about ways to reduce embarrassment and discomfort, patient education, or same-sex providers.

Interestingly, in contrast to gender differences observed in screening rates and barriers for Pap tests and CBE, we did not find any gender differences in rates of referrals and barriers for screening mammography. This adds credibility to our interpretation that the sex of the physician plays a significant role in sex-sensitive examinations performed by the physicians themselves. For mammography, lack of gender differences may be because it is usually performed by female technologists and physicians do not perform the test themselves.

In accordance with other studies,^{12–14,30} physicians' identification of the presenting problem being a priority, lack of a reminder system, women's fear of the Pap test, and discomfort during mammography as barriers to cancer screening bring to the forefront the need for systemic restructuring and public health promotion efforts. For example, the time constraints of physicians and patients can be reduced by emphasizing the benefits of periodic health visits. Similarly, the implementation of physician-reminder and woman-recall systems would be helpful. Several studies report the significant impact of physician-reminder⁹ (e.g., computer-tracking) and patient-recall strategies³¹ (e.g., personalized letters from family physicians) in enhancing breast and cervical cancer screening rates of targeted women. Furthermore, the feasibility of well women clinics and mobile units and provision of sex-sensitive examinations by female health providers needs to be explored.

We acknowledge several limitations of our study. The study results should be interpreted with care because of our selection of four geographic areas with higher incidence rate ratios of cervical cancer. Nevertheless, the participants of these areas had no statistically significant differences in variable responses. The self-reported nature of the data warrants caution. The purpose of this study, however, was to compare male and female physicians, and there is no evidence in the

literature that the accuracy of self-reports differs with sex of physicians. Hence, in this study the variability between self-reports and actual performance is not expected to change with sex of physician. The response rate of 53.1% is less than optimal. However, the similarity between respondents and nonrespondents by gender, graduation year, location of medical school attended, and acceptance or nonacceptance of new patients excludes any systematic bias. Furthermore, studying the physician population is a challenge, and several recent studies show a relatively low response rate of physician surveys.^{12,17,32,33} This task becomes even harder for studies conducted in rural areas, where physicians are faced with multiple healthcare demands despite limited resources. Our study sample was similar in age and gender distribution to that of the Ontario family physician database (K. Clements, personal communication, 1999), which is reassuring. We intend to further explore similarities and differences between physicians and women patients for perceived barriers to breast and cervical cancer screening.

CONCLUSIONS

Reaching optimal cervical and breast cancer screening rates among women is a challenge to all family physicians, but male doctors face special challenges. Enhancement of health education initiatives for patients and male physicians may help to facilitate physician-patient interaction for sex-sensitive cancer screening examinations and overcome barriers such as embarrassment, fear, and the discomfort of tests. Health education messages for women should emphasize the importance of having a regular family physician and making specific appointments for periodic health examinations so the visit is not dedicated to the solution of an acute presenting problem. In addition to physician-related and patient-related initiatives, systemic changes including reminder systems for family physicians and recall systems for women are vital to ensure timely cancer screening. Further research could explore the role of same-sex nurse practitioners or female physicians in regional or mobile screening clinics to provide sex-sensitive services for those women who prefer female health providers. The integration of physician-oriented and patient-oriented initiatives and policy changes will be necessary

to improve screening rates for breast and cervical cancers.

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