Cervical Cancer Screening Experiences and Preferences for Midwives in Northern Ontario

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ABSTRACT

This study explored Northern Ontario women's preferences regarding cervical cancer screening to improve service provision. Women in Northern Ontario completed a survey about their reproductive healthcare experiences. Descriptive statistics and multivariate logistic regression models determined whether residency, language, education, income, family physician, and preferring females for cervical screening are associated with preferring a midwife for cervical cancer screening. A total of 173 survey responses were analysed. Most participants followed provincial cervical cancer screening guidelines, with 86.6% indicating that their last Pap test was within three years, compared with the Ontario provincial rate of 64.9%. Liking one's healthcare provider was the primary reason for complying with recommended guidelines. The most common reason for not complying was "too embarrassed or modest" to engage in this type of personal care. Most people access cervical cancer screening at their physician's office (61.5%), but many (29.4%) would prefer this screening at a midwifery clinic. People with lower family incomes and those residing rurally without a family physician will most likely prefer a midwife for screening. The findings demonstrate interest among consumers in accessing cervical cancer screening in midwifery clinics. Rural people without family physicians and those with lower incomes may particularly benefit.

RÉSUMÉ

Cette étude s'est penchée sur les préférences des femmes du Nord de l'Ontario en matière de dépistage du cancer du col de l'utérus, afin d'améliorer la prestation des services. Des femmes de cette région ont répondu à un sondage sur leur expérience des soins de santé génésique. Des statistiques descriptives et des modèles de régression logistique multivariée ont déterminé si le lieu de résidence, la langue, l'éducation, les revenus, le médecin de famille et la préférence pour la réalisation du dépistage du cancer du col de l'utérus sont associés au choix du recours à une sage-femme pour cette intervention. En tout, 173 réponses ont été analysées. La plupart des participantes avaient suivi les lignes directrices provinciales relatives au dépistage du cancer du col de l'utérus : 86,6 % des répondantes ont indiqué que leur dernier test Pap

datait de moins de trois ans, par rapport au taux provincial de 64,9 % en Ontario. La sympathie envers sa fournisseuse ou son fournisseur de soins constituait la principale raison du respect des recommandations des lignes directrices. Comme explication de leur non-respect des directives, les répondantes ont le plus souvent indiqué qu'elles étaient « trop gênées ou trop pudiques » pour ce type de soins personnels. La plupart des gens subissent le dépistage du cancer du col de l'utérus dans le cabinet de leur médecin (61,5 %), mais beaucoup (29,4 %) préféreraient la réalisation du test dans une clinique de sages-femmes. Les personnes au revenu familial plus faible et celles habitant des zones rurales sans médecin de famille sont les plus susceptibles de préférer une sage-femme pour le dépistage. Les constatations montrent que les consommatrices sont intéressées à subir le dépistage du cancer du col de l'utérus dans des cliniques de sages-femmes. En particulier, les personnes rurales sans médecin de famille et les gens au revenu plus faible pourraient bénéficier d'un tel service.

KEYWORDS

Reproductive healthcare, northern, healthcare providers, satisfaction, quality of care, cervical cancer, Pap screening

INTRODUCTION

Cervical cancer is the fourth most diagnosed cancer in women and one of the leading causes of mortality globally.[1] Cervical cancer screening effectively reduces the incidence and mortality associated with cervical cancer because it can detect abnormalities with high sensitivity and specificity when they are still in the pre-cancerous stage.[2] The Canadian Task Force on Preventive Health Care recommends that cervical cancer screening begins at age 25, continues until age 69, and occurs every three years.[3] In 2017, 74.0% of women aged 25 to 69 had a Pap test in the past three years.[4] Cancer Care Ontario, the Ontario government's principal cancer advisor, reports wide geographical variation in the percentage of people overdue for cervical screening throughout Ontario. A high percentage of those overdue for cervical screening reside in the Greater Toronto Area and sections of Northern Ontario.[5] Cancer Care Ontario states that given geographical differences in cervical cancer screening, developing locally relevant policies and programs in partnership with community service providers could improve access to services and reduce screening disparities.[5] For policies and programs to increase cervical cancer screening rates, they must appreciate the geographical, sociopolitical, economic, and personal factors that may hamper access to services.[6]

Geographical disparities in cervical cancer incidence are associated with varying participation rates in screening programs, with rurality recognised as a risk factor due to limited healthcare providers and the long distances required to travel for care.[7] Other factors that impact cervical cancer screening rates include the availability of providers, particularly female healthcare providers; convenient hours and locations; knowledge of the importance of screening for health; whether the person has any specific concerns; whether the provider offers screening services; liking one's provider; modesty/fear of embarrassment; fear of discomfort due to the 'procedure'; and fear of bad news.[8] Limiting barriers to cervical cancer screening in all settings could improve participation rates in cancer screening programs.

Earlier studies have investigated cervical screening in Canada, but issues of access and acceptance of cervical cancer screening in rural and northern environments are poorly studied. The larger study seeks improvements to the current reproductive healthcare system for women in Northern Ontario. This exploration into the perceptions of cervical cancer screening is motivated by a concern that women's voices have not been adequately considered when planning service delivery, especially women from northern environments. Knowledge gained from this study can guide improvements to the current delivery model to align with women's preferences while supporting public health initiatives to encourage cervical cancer screening compliance. This study provides a firm foundation for improving the current

cervical cancer screening system by acknowledging the consumer of care as the unit of analysis, thus involving consumers in service design to inform future health policy.

METHODS

This paper represents one component of a larger mixed-methods study examining women's perceptions of their reproductive healthcare in Northern Ontario. The larger study employed a mixed-method design and included an online survey followed by personal interviews with a subset of survey participants. This paper focuses on the portion of the survey data that addressed only the cervical cancer screening aspect of reproductive healthcare.

The tool adapted for this investigation is the Hierarchical Model of Health Service Quality (HMHSQ), an example of a conceptual framework representing a hypothesis about how health care is perceived and measured from the consumer viewpoint.[9,10] The HMHSQ survey consists of scales to indicate satisfaction with health services. Respondents are asked to rate their care on each scale item using a 7-point Likert scale. Additional questions were added to collect demographic information and to create a clearer picture of participants' experiences accessing reproductive healthcare specifically. Statistical analysis could clarify any significant relationships between cervical cancer screening and these demographic variables by collecting additional information such as ethnicity and culture, education, geographic location, and annual family income. Additional questions designed specifically for this portion of the study were intended to collect information about the participant's preferences for a female provider for cervical cancer screening, frequency of screening, location of most recent care, location preferences for future care, whether one has a family doctor and familiarity with midwifery care. The survey was administered online on a secure RedCap platform and was offered in French and English.

Respondents obtained information about the study via information packages distributed to all local health centres, public health offices, women's shelters, fitness centres, and parenting support drop-in centres in 24 of the largest towns or cities in Northern Ontario. The primary researcher was interviewed by CBC radio in Sudbury and Thunder Bay, and the study website address was provided. The survey link was in a newsletter the Ontario Women's Health Network sent out. The website address was displayed across the back window of a vintage trailer, inviting women to answer the survey. Eligible survey participants included anyone who self-identified as female, was 18 years or older, and resided in Northern Ontario at the study time. For this study, "woman/women" refers anatomically and physiologically to participants with female reproductive organs and corresponding hormonal and endocrine systems, recognising that their gender identity may differ from their anatomical, physiological, and genetic assignment.[10] The sample size calculation was based on a population estimate of 300,535 women over 18 years of age residing in Northern Ontario.[11] Of the completed surveys, 150–384 would maintain 95% statistical power.[12]

Quantitative data was exported into SPSS for analysis. Rural-northern and urban-northern participants were sorted using their postal codes, or Forward Sortation Areas. Postal codes starting with "P0" are rural, and those beginning with "P" followed by any other number are urban. Descriptive statistical analysis provided an overview of the study population. Pearson's chi-squared tests demonstrated how closely the survey participants matched the population of Northern Ontario for residency, language, education, and having a family doctor. Descriptive statistics were calculated for all questions associated with cervical cancer screening rates, reasons for adherence or lack of, and current and preferred screening locations. Chi-squared tests for independence looked for significant associations between the independent variables and cervical cancer screening frequency. Chi-squared tests for independence determined whether there was a significant relationship between "women who want a midwife for cervical cancer screening" and the variables of residency, language, education, income, and having a family physician. Logistic regression analysis examined the factors associated with the dependent variable of preferring a midwife as the provider of cervical cancer screening.

Two logistic regressions were calculated for the same dependent variable, independent variables, and model structures. The first included all women

in the sample, and the second focused only on those who had never been cared for by midwives. It is essential to examine this group independently to determine if cervical cancer screening by midwives is favoured outside of persons with midwives' experience. If expanding a provider's scope of practice improves care access for the population, the provider must first be an acceptable alternative for a broad spectrum of the population rather than just a selective group. Backward stepwise conditional entry was used in each model, whereby entry/exit criteria were $F \geq 0.05$ for entry and $F \leq 0.1$ for removal. Because family income was divided into three categories, a reference category had to be determined and the other two categories were 'dummy coded' for statistical robustness. The education category was collapsed into 'no post-secondary' and 'attended post-secondary.' Odds ratios (ORs) and 95% confidence intervals (CIs) were calculated for all significant predictors. All analyses were completed using IBM SPSS Standard Statistics 26.0. Ethics approval was obtained from the Laurentian University Ethics Board in May 2014 (REB File No. 2014-01-09).

RESULTS

A total of 191 Northern Ontario women responded to the online survey. Ten respondents were excluded due to non-northern postal codes. In comparison, eight respondents were excluded due to insufficient responses (less than 10% of questions answered), resulting in a final sample size of 173 sufficient to maintain 95% power. A comparison of the demographic information of the survey participants and the population in Northern Ontario revealed that more survey respondents identified as Francophone, were significantly more educated, and had fewer family doctors (Table 1). The proportion of urban to rural residents was comparable between the survey participants and the population of Northern Ontario.[11] Whether the survey participants differed for household income could not be determined because the survey and the comparator[12] did not share the same quintiles. Future analysis should attempt to match the nationally defined income quintiles.

The survey questions found in Table 2 were extracted from the larger survey to provide information specific to cervical screening experiences. Additional questions designed specifically for this portion of the study explored participants' preferences for a female provider for cervical cancer screening, frequency of screening, incentives or barriers to screening, location of most recent care, location preferences for future care, whether one has a family doctor and familiarity with midwifery care.

A backward stepwise logistical regression determined the effects of residency, language, education, income, having a family doctor, and

Table 1. Independent Demographic Variables

Independent Variables	Category	Survey Participants Number %		*Population of Northern Ontario (%)	Participants vs Population N. Ontario
Participants		173	100	N = 300535	
Residency	Rural Urban	50 123	28.9 71.1	34.0 66.0	$X^2 = 2.083$ $p = 0.149$
Language	Francophone Non-Francophone	54 119	31.2 68.8	18.0 82.0	$X^2 = 20.790$ $p < .001$
Education Level	High School College or University Graduate	28 97 48	16.2 56.1 + 27.7 = 83.8	29.1 70.9	$X^2 = 13.615$ $p < .001$
Family Doctor	Yes No	148 25	85.5 14.5	90.1 9.9	$X^2 = 4.175$ $p = 0.041$

*Statistics Canada (2012) Canadian Community Health Survey, 2012 [public-use microdata file]. Ottawa, Ontario: Statistics Canada. Health Statistics Division, Data Liberation Initiative [producer and distributor].

Table 2. Survey Questions with Responses about Cervical Cancer Screening Experiences

Survey Question	N	Responses to Categories (%)							
Is it important to you to have a female perform your gynecological exams (e.g. Pap testing)?	173	**Yes**			**No**			**Maybe**	
		80 (46.2%)			61 (35.3%)			32 (18.5%)	
When was the last time you had a Pap test? (Check mark the most accurate response.)	172	**Never**	**< 1 year**		**1-3 years**	**3-5 years**		**> 5 years**	
		4 (2.3%)	61 (35.5%)		89 (51.7%)	13 (7.6%)		5 (2.9%)	
If you have had a Pap test within the last 3 years, you are following recommended screening guidelines. How have you been encouraged to have your Pap? Note: The following options received zero (0) responses: female provider; convenient location; & 'I was worried about something'.	150	**Convenient hours**	**Important for my health**		**Provider offered**	**I like my provider**		**Other**	
		18 (12.0%)	12 (8.0%)		2 (1.3%)	100 (66.7 %)		18 (12.0%)	
If you have not had a Pap test in the last 3 years, why not? Note: The following options received zero (0) responses: Hours do not suit work/life & I did not know that I needed one.	20	**Embarrassed and/ or modest**	**I do not believe that it is necessary**		**No provider, uncomfortable, do not know what this is & do not want bad news**			**Other**	
		5 (25.0 %)	4 (20.0 %)		3 (5.0% each) = 15%			8 (40.0%)	
What is your experience with midwives? (Choose one only)	172	**Former client of a midwife**			**Current client of a midwife**			**Never cared for by midwives**	
		46 (26.7%)			14 (8.2%)			112 (65.1%)	
Where did your most recent Pap Screening take place? (Choose one only)	169	**Doctor Office**	**Walk-In Clinic**	**NP Clinic**	**CCHC**	**Sexual Health Centre**	**Public Health Office**	**Midwifery Clinic**	**Other**
		104 (61.5%)	4 (2.4%)	21 (12.4%)	9 (5.3%)	5 (3.0%)	7 (4.1%)	11 (6.5%)	8 (4.7%)
Where would you like your next Pap Screening to take place? (Choose one only)	168	**Doctor Office**	**Walk-In Clinic**	**NP Clinic**	**CCHC**	**Sexual Health Centre**	**Public Health Office**	**Midwifery Clinic**	**Other**
		72 (42.9 %)	4 (2.4%)	22 (13.1 %)	5 (3.0 %)	12 (7.1%)	2 (1.2%)	50 (29.8 %)	1 (0.6%)

preference for females for cervical cancer screening (six independent categorical variables) on all respondents' preference for midwives as screening providers (Table 3). The model was statistically significant [F = 19.347, p = 0.004]. The final model explained 10.9% (Cox and Snell R Square) and 15.5% (Nagelkerke R Square) of the variance in preferring midwives for cervical screening. As shown in Table 1 rurality, and not having a family doctor were statistically significant in the model with ORs of 2.352 and 0.327 (or inversely, 3.058). Thus, respondents who live rurally were over twice as likely to prefer a midwife for cervical cancer screening. Those without family doctors were more than three times as likely to choose a midwife for cervical cancer screening, controlling for all other factors in the model.

A second stepwise backward logistic regression was repeated, focusing on women who have never been cared for by midwives but indicated a preference for midwives for cervical cancer screening (Model 2). The same six independent categorical variables were contained in the model. For family income, $50,000 - $100,000 was chosen as the reference range because most respondents fell into this category. The second model was statistically significant [F = 17.090, p=0.009] and explained between 10.9% (Cox and Snell R Square) and 19.6% (Nagelkerke R Square) of the variance in preferring midwives for cervical cancer screening in this sub-group. As shown in Table 1, there were two significant independent variables in the model: rurality and family income. Low family income (<$50,000) had an odds ratio of 4.536, indicating that lower-income people are more than four times more likely to choose a midwife for cervical screening. Rural residency had an odds ratio of 3.354, indicating that women who reside rurally are more than three times more likely to choose a midwife for cervical screening.

DISCUSSION

Before now, we knew very little about the perceptions of women regarding their cervical cancer screening access and preferences in Northern Ontario. Although the survey participants were more likely to be Francophone and more educated than the population of Northern Ontario, some generalisations can be offered cautiously. In the last three years, people who engaged in cervical cancer screening adhered to recommended cervical screening intervals. This rate appears higher than the national and provincial averages (87.2% vs. 74%). Factors associated with improved screening rates include liking one's reproductive healthcare provider, convenient hours, recognised importance, and being offered.[13] Most respondents who were non-adherent to screening guidelines did not

Table 3. Logistic Regressions of Factors Influencing Preference for Midwife as Provider of Cervical Cancer Screening in All Respondents*

Model	Dependent Variables	Independent Variables Remaining in Final Step of Model	Odds Ratio (OR)	95% Confidence Interval (CI)	p-Value
Model 1	Preferring Midwife – All Respondents(N = 173)	Residency – Rural Family Doctor	2.352 0.327	1.413 – 3.917 0.127 – 0.842	0.001 0.021
Model 2	Preferring Midwife – Only Respondents who were Never a midwifery client (N = 112)	Residency – Rural Family Income $50,000 - $100,000 (ref.) <$50,000 (low) >$100,000 (high)	3.354 4.536 2.374	 1.176 – 9.566 1.051 – 19.569 0.471 – 11.975	 0.024 0.043 0.295

* Independent Variables – **residency** (rural/urban); **language** (Francophone/Anglophone); **education** (Post-secondary yes/no); **income** [$50,000 - $100,000 (ref.), <$50,000 (low), >$100,000 (high)]; **family doctor** (yes/ no), **Female provider** (yes/no)

provide a reason. Still, one-quarter did note that embarrassment and modesty were involved, and 20% stated that they did not think it was necessary. Some did not know what this was, did not have a provider, or were avoiding bad news. These findings agree with older studies, where women feel deterred from undergoing cervical cancer screening due to the provider's lack of availability, awareness of test indications or benefits, fear of embarrassment, or consider themselves to not be at risk.[13] Because two-thirds of the participants in this study adhered to recommended screening guidelines because they liked their provider, offering more provider choices could increase cancer screening rates.

In this study, it was important to ask participants where they are currently obtaining screening and where they would prefer to access it because the effectiveness of cervical cancer screening may be related to the place and provider.[13] Most survey participants access cervical cancer screening at their physician's office (61.5%), but fewer (42.9 %) state this as their first choice. Notably, while only 6.5% of respondents currently access cervical cancer screening at a midwife's office, nearly a third (29.8 %) would choose a midwife if available. In my study, preferring a midwife for cervical cancer screening is more likely among rural people earning lower incomes with no family physician. As previously outlined above, living rurally may compromise access to care, particularly access to francophone providers, and fewer people residing in rural and northern environments have a family physician.[14] Non-physician providers, including midwives, available to screen rural women and those without family doctors may improve cancer screening participation among underserved communities.[15,16] Having a choice of midwifery care may increase adherence to recommended screening intervals among these often difficult-to-reach populations.

This study found that lower-income women and women residing rurally who have never been cared for by a midwife were more likely than women with higher incomes or urban women to prefer a midwife for their cervical cancer screening. In agreement, the proportion of Canadians who followed the guidelines for Pap tests was lower among those who had a secondary school graduation or less compared to women with a post-secondary graduation, and women in the lowest income households were also less likely to meet the recommended guidelines, compared to women in higher income households.[4] These findings may also indicate biases among support staff and care providers against lower-earning people, leading to lower ratings. Studies from the US have found that those in the lowest income brackets often reported discrimination in healthcare.[17,18] A systematic review by Spadea and colleagues[19] of interventions to improve cervical and breast cancer screening among lower socioeconomic groups found that personal beliefs, fears and attitudes, and poor communication between patients and physicians hindered attendance to screening.[19] In their systematic review of implicit bias among healthcare professionals, FitzGerald, and Hurst[20] found that physicians and nurses shared the same SES bias levels as the wider population. These biases influenced diagnosis and treatment decisions, with persons of low socioeconomic status (SES) particularly vulnerable to receiving less thorough care. Low SES patients in the US were more likely than high SES patients to have a sexually transmitted infection or an unintended pregnancy and to be less knowledgeable due to their lower likelihood of having regular care providers.[20] As midwives appear to be an agreeable option for low-income women, adding midwives to the list of providers available to care for this under-screened population may represent an essential step toward health equity. These findings highlight the need for all healthcare professionals to address their biases and pledge to contribute to alleviating systemic disparities.

Participants showed a clear preference for females for cervical cancer screening. Socially constructed norms around modesty and privacy may contribute to the discomfort and embarrassment experienced by some women when a male practitioner collects samples.[7] Rurality may exacerbate these feelings, as there may be fewer opportunities to receive care from a female practitioner.[7] The preference for a female care provider for reproductive healthcare, particularly cervical cancer screening, by many women is clear. However, other enabling factors should also be appreciated, including providing a safe and welcoming space.

The COVID-19 pandemic has affected the provision of reproductive healthcare. While

medical care was available for essential services, sexual and reproductive health care services, and procedures were significantly disrupted.[21] There were substantial reductions in screening for breast cancer, cervical cancer, human papillomavirus, and other asymptomatic sexually transmitted infections (STIs).[22] We must recognise how adjustments to services and medications might increase disparities in access, leaving women residing in rural and northern locations with reduced access to preventative care. Changes to local and national policies may be required to minimize the impact of revised sexual and reproductive healthcare practices to support access, particularly for rural, remote, and northern populations.

In Ontario, the scope of midwifery practice is "… the assessment and monitoring of women during pregnancy, labour and the postpartum period and of their newborn babies, the provisions of care during normal pregnancy, labour and the postpartum period and the conducting of spontaneous normal vaginal deliveries."[23] This restrictive definition limits midwives' care to people during pregnancy, birth, and postpartum and does not include the full spectrum of reproductive healthcare. This omission can prevent midwives from offering screening for reproductive cancers outside of pregnancy.[24] The International Confederation of Midwives defines midwifery care as care that extends into gynecology, family planning, and childcare.[25] The knowledge and skills already possessed by Canadian midwives could allow for an easy transition to providing reproductive healthcare outside of pregnancy and childbirth. A broader scope of practice for midwives, including cervical cancer screening within the recommended age ranges, could increase uptake among female health consumers.

Changes by the government to the Midwifery Act could result in an expanded scope of practice for midwives with little additional training required. The healthcare system is ripe for innovation, other practitioners, for example, nurse practitioners, have been successful at breaking similar new ground, and although there is bound to be resistance from some physicians and their associations, many members of the healthcare system recognise that the status quo is unsustainable.[14] Midwives can ensure that the principles of person-centred care and informed choice are applied to the cervical cancer screening program. Changes are required if the current reproductive health workforce does not align with the population's needs. It is hoped that this study will inform those changes.

STUDY LIMITATIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Future inquiries of a similar nature would benefit from considering reflections on the shortcomings of this study design. The survey asked participants to indicate where they currently receive reproductive healthcare and where they would prefer to access this care. The interviews resulted in an awareness that people may choose care at their physician's office but may receive cervical cancer screening from a nurse or nurse practitioner within the physician's office. It would have been clearer to ask about current and preferred healthcare providers rather than locations. This study was unable to analyse the data based on the ages of the participants because this demographic information was not collected. This additional independent variable would have allowed examination for differences between younger and older women as they may have different experiences with screening and varying health priorities. The sample did not reflect the population as there were more Francophone respondents than the general population, and the respondents were more educated than those in Northern Ontario. Future research should include studies of men and persons who identify as non-binary and their experiences accessing reproductive healthcare, as this field is under-informed and neglected. Despite these limitations, the conclusions from my study can be cautiously applied to the population accessing reproductive healthcare across Canada.

CONCLUSION

This study investigated women's perspectives on their cervical cancer screening experiences and preferences in Northern Ontario. Most participants access screening at their physician's office, and nearly 2/3 of these respondents prefer this arrangement. Alternatively, many women in Northern Ontario want to access cervical cancer screening at a midwifery office. This number is nearly five times the number currently being served by

midwives. Because adherence depends on 'liking one's provider,' expanding midwives' scope to offer cervical cancer screening beyond pregnancy and postpartum should be considered, particularly for women with low household incomes and women living rurally without a family physician. Many participants favour female reproductive healthcare providers as this gender concordance is reported to reduce embarrassment. This study fills a significant knowledge gap about reproductive healthcare among Ontario's rural, remote, and northern women. Future healthcare human resource considerations must move beyond physicians and include non-physician providers in the health system and across sectors. The reproductive healthcare sector would benefit from midwives playing a more considerable role in providing reproductive healthcare.

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