

Breast cancer screening

First Nations communities in New Brunswick

Sue Tatemichi, MD, MSC, CCFP Baukje Miedema, MA, PHD Shelley Leighton, RN

ABSTRACT

OBJECTIVE To determine use of breast cancer screening and barriers to screening among women in First Nations communities (FNCs).

DESIGN Structured, administered survey.

SETTING Five FNCs in New Brunswick.

PARTICIPANTS One hundred thirty-three (96%) of 138 eligible women between the ages of 50 and 69 years.

INTERVENTIONS After project objectives, methods, and expected outcomes were discussed with community health representatives, we administered a 32-item questionnaire on many aspects of breast cancer screening.

MAIN OUTCOME MEASURES Rate of use of mammography and other breast cancer screening methods, and barriers to screening.

RESULTS Some 65% of participants had had mammography screening within the previous 2 years. Having mammography at recommended intervals and clinical breast examinations (CBEs) yearly were significantly associated with having had a physician recommend the procedures ($P < .001$). A family history of breast cancer increased the odds of having a mammogram 2.6-fold ($P < .05$, 95% confidence interval [CI] 1.03 to 6.54). Rates of screening differed sharply by whether a family physician was physically practising in the community or not ($P < .05$, odds ratio 2.68, 95% CI 1.14 to 6.29).

CONCLUSION Women in FNCs in one health region in New Brunswick have mammography with the same frequency as off-reserve women. A family physician practising part time in the FNCs was instrumental in encouraging women to participate in breast cancer screening.

RÉSUMÉ

OBJECTIF Déterminer le recours au dépistage du cancer du sein et les obstacles à ce dépistage chez les femmes dans des collectivités des Premières nations.

CONCEPTION L'administration d'un sondage structuré.

CONTEXTE Cinq collectivités des Premières nations au Nouveau-Brunswick.

PARTICIPANTS Un total de 133 (96%) parmi les 138 femmes admissibles de 50 à 69 ans.

INTERVENTIONS Après avoir discuté des objectifs, des méthodes et des résultats escomptés avec les représentants locaux de la santé, un questionnaire a été administré comportant 32 éléments sur plusieurs aspects du dépistage du cancer du sein.

PRINCIPALES MESURES DES RÉSULTATS Le taux d'utilisation de la mammographie et d'autres méthodes de dépistage du cancer du sein, ainsi que les obstacles au dépistage.

RÉSULTATS Quelque 65% des participantes avaient subi une mammographie au cours des deux années précédentes. Le fait d'avoir subi une mammographie aux intervalles recommandés et un examen clinique annuel des seins (ECS) était associé de manière significative à la recommandation de la procédure par un médecin ($p < ,001$). Des antécédents familiaux de cancer du sein augmentaient de deux à six fois la probabilité de subir une mammographie ($p < ,05$, intervalle de confiance à 95% [IC] 1,03 à 6,54). Les taux de dépistage variaient considérablement selon qu'un médecin pratiquait ou non personnellement dans la collectivité ($p < ,05$, rapport de cotes 2,68, IC 1,14 à 6,29).

CONCLUSION Les femmes dans les collectivités des Premières nations d'une région sanitaire au Nouveau-Brunswick subissent des mammographies à la même fréquence que les femmes ne vivant pas dans une réserve. Un médecin de famille qui pratiquait à temps partiel dans les collectivités des Premières nations a joué un rôle dans l'encouragement des femmes à participer au dépistage du cancer du sein.

This article has been peer reviewed.

Cet article a fait l'objet d'une évaluation externe.

Can Fam Physician 2002;48:1084-1089.

In 1997, an informal study of local women's health issues provided anecdotal evidence that women living in First Nation communities* (FNCs) in New Brunswick did not use the mammography screening program. In 1995, New Brunswick initiated a mammography self-referral program for women aged 50 to 69. Because two members of our research team had a particular interest in Aboriginal† health, we were challenged to verify this claim and to rectify the situation if the claim proved accurate.

One team member (S.T.) is a physician who works in an FNC in New Brunswick's Health Region 3, a region with five FNCs. New Brunswick is divided into seven health regions; region 3, the largest geographically, is located in the northwest of the province and has a population of 166 000, half of whom are considered rural. Five of the 15 FNCs in New Brunswick are located in region 3.

The communities are relatively small, with populations ranging from 173 to 1289. The two largest communities are rural; the remainder are relatively urban. Three of the communities have a family physician practising part time on the reserve. No specific information is available on the overall health of Aboriginal women in region 3, but Canadian data, based on age-standardized mortality rates, indicate that Aboriginal women's life expectancy is much shorter than that of non-Aboriginal women (76 and 82 years, respectively).¹

Breast cancer is the most common form of cancer among Canadian women.² Information about Canadian women is drawn from data in cancer registries; information about FNC women is unavailable because Canadian cancer statistics are not compiled by ethnic background. United States data on Aboriginal populations could inform us about breast cancer patterns in Canada. American Indian women were reported to have lower breast cancer rates overall than white women, Aboriginal Hawaiian women, and African-American women.^{3,5}

*First Nations community is used in this paper to designate all people living in a geographic area specified as a reserve by the Canadian government on behalf of Indian bands.

†Aboriginal and Indian are used throughout this article to refer to the indigenous people of Canada and their descendents.

.....
Dr Tatemichi and Dr Miedema work in the Family Medicine Teaching Unit of the Department of Family Medicine at Dalhousie University in Fredericton, NB. Ms Leighton is a nurse with the Union of New Brunswick Indians in Fredericton.

More recent evidence from the United States indicates, however, that breast cancer rates among Aboriginal women are changing. Rates vary greatly among various Indian health service areas and the nine major tribal groups.⁶ Some studies have shown that cancer prevalence rates among certain American Indian women are virtually the same as among non-Aboriginal women.⁷

Evidence suggests that proportionately more Aboriginal women than non-Aboriginal women present with breast cancer at an advanced stage.^{8,9} Late-stage diagnosis could be a result of poor compliance with recommendations for screening; poor compliance is commonly found among poor and uneducated women.^{10,11} Studies of American Indian populations indicate poor use of mammography screening among women living both on reserves and in urban areas.¹²⁻¹⁴

The literature supports the benefits of mammography screening for women 50 years and older.¹⁵⁻¹⁷ Researchers have estimated that screening mammography programs in FNCs can result in a 28% reduction in breast cancer deaths over 5 years.¹⁸ Given the higher mortality rates and greater frequency of late-stage diagnosis of breast cancer among Aboriginal women, FNC women would be expected to benefit from increased breast cancer screening.

This study was designed to ascertain use of breast cancer screening, specifically mammography, clinical breast examination (CBE), and breast self-examination (BSE), among FNC women living in Health Region 3. If mammography was found to be underused, then a further purpose of the study was to determine why and to propose ways of encouraging women to be screened.

METHOD

In June 1999, community nurses and health centre coordinators of the FNCs in the Region 3 Hospital Corporation area were invited to attend a meeting to discuss project objectives, methods, and expected outcomes. All those attending offered support and recommendations for the project. There was great interest in the study because breast cancer is perceived to be a serious health problem in FNCs.

The study included all women between the ages of 50 and 69 living in FNCs. While we understood that this would include women of non-Aboriginal ancestry, we were also aware that the community feared breast cancer and were concerned about the inherent risk to present and future generations of on-reserve women.

RESEARCH

Breast cancer screening

Study participants were not asked to designate their "status."

Ethical approval for the study was received from the Region 3 Hospital Corporation Research Ethics Committee.

Survey questionnaire

A 32-item questionnaire was designed to examine many aspects of breast cancer screening, including knowledge of breast-cancer screening methods (mammography, CBE, and BSE), the degree to which women were participating in screening, factors that influenced participation, and personal or family history of breast cancer.

The questionnaire was reviewed with FNC nurses and health administrators and pilot tested. Though several clarifications were made to the language of the questions, no questions were added, deleted, or substantially altered.

With the aid of community nurses, all eligible women were approached to participate in the study. Written consent was obtained before the questionnaire was administered. Two female Aboriginal research assistants administered the questionnaires. Survey results were confidential. Participants were given a compensation fee.

Verification of reported use of mammography was obtained through the mammography screening program. For women who indicated a diagnosis of breast cancer, separate consent was obtained for confirmation of the diagnosis.

Data analysis

Following tabulation of the initial descriptive statistics of each survey item, cross-tabulations (χ^2 tests) were done to determine factors associated with use of mammography. Multivariate logistic regression, incorporating factors identified as significantly associated with mammography screening, was used. When appropriate, a Mantel-Haenszel odds ratio (OR) estimate with 95% confidence intervals (CIs) was calculated.

RESULTS

Of 138 eligible women, 133 consented to take part in the study. One woman refused, and four could not be contacted, resulting in a participation rate of >96%. **Table 1** shows characteristics of participants: age, Aboriginal descent, and family history of breast cancer. Data from two women who had been diagnosed with breast cancer were removed from further analysis.

Table 1. Characteristics of participants

CHARACTERISTIC	PARTICIPANTS
Age	50-69, mean age 58
Native ancestry	107/129 (83%)
Family history of breast cancer	34/131 (26%)
Personal history of breast cancer	2/133 (2%)

Most of the women (79%) reported having had at least one mammogram in their lives; 65% reported having had a mammogram within the previous 2 years (for either diagnostic or screening purposes). The screening program was able to confirm mammography reports for 61% of participants.

Women were divided into two age groups (50 to 59 years and 60 to 69 years); results showed that age had no influence on compliance with mammography screening. Most women (82%) reported not encountering any barriers to obtaining mammograms. **Table 2** lists the women's beliefs about mammography screening and treatment of breast cancer. Only 29% of the women were aware of the provincial self-referral program; most believed they were obliged to see a family physician for a referral for mammography.

Table 2. Attitudes to mammography and treatment for breast cancer

BELIEFS	NO. WHO ANSWERED YES (%)
Mammography is useful for early detection of breast cancer	91/129 (71)
Breast cancer treatments are effective	64/128 (50)
Fear of mammogram detecting cancer	5/111 (5)
Seriously concerned that mammogram will be painful	9/127 (7)
Very concerned about the embarrassment of having a mammogram	6/129 (5)

About 62% of the women reported seeing their physicians for yearly CBEs. Most of the women (76%) reported performing BSE, 29% indicated they examined themselves weekly, and 42% were aware of the recommendation for monthly BSE. **Table 3** outlines reported reasons for not doing BSE.

Factors that we thought strongly influenced women to seek breast cancer screening are shown in **Table 4**. The single most important factor was the advice of a

Table 3. Reasons for not doing breast self-examination

REASON	NO. GIVING REASON
Thinks doctor should do it	1
Thinks mammogram alone is adequate	1
Does not know what to look for	2
Is not feeling any pain (therefore, not necessary)	4
No problems (therefore, not necessary)	4
Afraid to find a lump	5
Embarrassment	5
Just does not do it	7
Does not know how to do it	8

family physician. Women who had been advised to have mammograms by their family physicians were 4.5 times more likely to comply than those who had not ($P < .001$, CI 2.09 to 9.67). Rates of compliance with screening were noted to be influenced by whether there was a family physician in the FNC. Aggregate data revealed a mammography compliance rate of 70% for communities with a physician and 46% for communities without one (OR 2.68, $P < .05$, 95% CI 1.14 to 6.29).

A family history of breast cancer also increased the likelihood of compliance with mammography screening (OR 2.59, $P < .05$, 95% CI 1.03 to 6.54). Most (79%) women with family histories of breast cancer were found to be compliant with recommendations, but only 60% of women without a family history were. Fear that a mammogram would detect cancer was also positively associated with compliance with mammography, but not with BSE or CBE.

DISCUSSION

Contrary to the anecdotal information that breast-cancer screening is underused in FNCs, our study revealed that 65% of women in our area are undergoing mammography and CBE at close to provincial recommended frequencies. These rates compare favourably with those for off-reserve women in New Brunswick. While our study population was relatively small, its validity is supported by the fact that 96% of all eligible women were surveyed, and that confirmation was obtained for 94% of the women who claimed to have had mammography screening. The discrepancy between the self-reported rate and the rate supplied by the screening program might, in part, be

Table 4. Factors that influenced women to seek screening

INVESTIGATIONS AND INFLUENCES	ODDS RATIO (95% CONFIDENCE INTERVAL)	P
MAMMOGRAPHY		
Physician's referral	4.50 (2.09-9.67)	.001
Family history of breast cancer	2.59 (1.03-6.54)	.05
Belief in effectiveness of breast cancer treatment		NS
Belief in usefulness of mammogram		NS
Fear of finding cancer	2.65 (1.04-6.77)	.05
Embarrassment of test		NS
Pain of test		NS
Physician practising in community	2.68 (1.14-6.29)	.05
BREAST SELF-EXAMINATION		
Physician's referral		NS
Family history of breast cancer		NS
Belief in effectiveness of breast cancer treatment		NS
Fear of finding cancer		NS
Physician practising in community		NS
CLINICAL BREAST EXAMINATION		
Physician's referral	4.16 (1.97-8.82)	.001
Family history of breast cancer		NS
Belief in effectiveness of breast cancer treatment		NS
Fear of finding cancer		NS
Physician practising in community		NS

because screening took place before the start of the program or outside the health region.

Data derived from the 1998-1999 National Population Health Survey¹⁹ indicate that women aged 50 to 69 in New Brunswick reported a mammography rate of 77%. While it seems that the rate in our study of FNC women is lower than that of women generally in New Brunswick, it is important to note that the national survey was based on responses from only 129 women in the entire province. Actual screening rates reported by our local authorities are about 50%. Our findings also differ significantly from those for American Indian women both on and off reserves whose mammography screening rates were found to be 28.1% and 35.7%, respectively.^{12,13} No great barriers to screening were identified in our study. The initial assumption that mammography screening was underused by FNC women might have meant that time and resources were spent correcting a problem that appeared larger than it actually was.

RESEARCH

.....

Breast cancer screening

There is, however, an important difference in rates of screening among women in communities with a family physician physically present, even on a part-time basis, and those without one. This could be for many reasons: subtle influences might prevail upon community members to be more accepting of screening when physicians are seen to make themselves more accessible by working on reserve; patients might have easier access to physicians on-site; and patients might have more regular health examinations that include discussions of preventive procedures.

Our study reinforces the importance of discussing with women the value of mammography for early detection of breast cancer. Studies have found that women were almost three times as likely to comply with biannual screening if their physicians recommended it.²⁰⁻²³ The lack of family physicians in FNCs and in Canada generally might negatively affect breast health.

At the time of our study, the Canadian Task Force on Preventive Health Care concluded that there was insufficient evidence to recommend including BSE in periodic health examinations (grade C recommendation).²⁴ Current evidence of the ineffectiveness of BSE for screening for breast cancer and of the harm of BSE in leading to an increased number of follow-up investigations and anxiety and worry associated with false-positive findings led to BSE being downgraded to a D recommendation.²⁵ Hence, our finding of low BSE rates in our area is now of little importance.

One limitation of this study is the small size of the communities involved. A follow-up study of the 10 remaining FNCs in New Brunswick is under way to investigate the influence of having a family physician actually present in the community on women's decisions to participate in breast cancer screening.

Women living in FNCs in New Brunswick complied well with recommended mammography screening and CBE for breast cancer. The influence of a family physician who suggests mammography cannot be overemphasized. Practitioners should be reminded of the importance of this task that takes little time to accomplish and that could result in a significant decrease in morbidity and mortality from breast cancer. There appears to be an important association between compliance with preventive procedures and having a physician actually present in FNCs. ❖

Acknowledgment

This project was funded by the Regional Research Development Program of the National Cancer Institute of Canada. We thank

Editor's key points

- This unique survey of mammography and clinical breast examination rates in First Nations communities in New Brunswick showed that 65% of women had had mammograms within the last 2 years, and 62% had had clinical breast examinations. These figures compare favourably with those for other women in the province.
- Having even a part-time family physician visiting the community increased mammography rates, as did having a family history of breast cancer.

Points de repère du rédacteur

- Ce sondage unique sur les taux de mammographie et d'examen clinique des seins dans des collectivités des Premières nations au Nouveau-Brunswick a démontré que 65% des femmes avaient subi une mammographie au cours des deux années précédentes et 62% avaient eu un examen clinique des seins. Ces chiffres se comparent favorablement à ceux enregistrés chez les autres femmes de la province.
- Le fait d'avoir un médecin de famille à temps partiel qui visitait les collectivités augmentait les taux de mammographie tout comme celui d'avoir des antécédents familiaux de cancer du sein.

Beverley Lawson for assistance with the statistical analysis and Dr Frederick Burge for his review of the study proposal and manuscript.

Contributors

Dr Tatemichi, Dr Miedema, and Ms Leighton contributed substantially to conception and design of the project and to acquisition, analysis, and interpretation of data. **Dr Tatemichi** was responsible for drafting the article; **Dr Miedema and Ms Leighton** were involved in editing and revision of the article; and all the authors gave final approval of the version to be published.

Competing interests

None declared

Correspondence to: Dr S.R. Tatemichi, Unit Director, Family Medicine Teaching Unit, Dr Everett Chalmers Regional Hospital, PO Box 9000, Priestman St, Fredericton, NB E3B 5N5

References

1. Dion Stout M, Kiplin GD, Stout R. *Aboriginal women's health research: synthesis project*. Ottawa, Ont: Centres of Excellence in Women's Health, Health Canada; 2001.
2. Gaudette LA, Silberberger C, Altmayer CA, Gao R. Trends in breast cancer incidence and mortality. *Health Rep* 1996;8(2):29-37.
3. Miller BA, Kolonel LN, Bernstein L, Young JL Jr, Swanson GM, West D, et al, editors. *Racial/ethnic patterns of cancer in the United States 1988-1992*. NIH

RESEARCH



- publication No. 96-4104. Bethesda, Md: National Cancer Institute; 1966.
4. Welty TK, Zepher N, Schweigman K, Blake B, Leonardson G. Cancer risk factors in three Sioux tribes. *Alaska Med* 1993;35(4):265-72.
 5. Eidson M, Becker TM, Wiggins CL, Key CR, Samet JM. Breast cancer among Hispanics, American Indians and non-Hispanic whites in New Mexico. *Int J Epidemiol* 1994;23(2):231-7.
 6. National Cancer Institute. *Native American monograph no. 1: documentation of the cancer research needs of American Indians and Alaska Natives*. NIH Publication No. 93-3603. Bethesda, Md: US Public Health Service; 1994.
 7. Nutting PA, Freeman WL, Risser DR, Helgerson SD, Paisano R, Hisnanick J, et al. Cancer incidence among American Indians and Alaska Natives, 1980 through 1987. *Am J Public Health* 1993;83(11):1589-8.
 8. Samet JM, Key CR, Hunt WC, Goodwin JS. Survival of American Indian and Hispanic cancer patients in New Mexico and Arizona, 1969-1982. *J Natl Cancer Inst* 1987;79(3):457-63.
 9. Valway S, Kileen M, Paisano R, Ortiz E. *Mortality among Native Americans in the United States: regional differences in Indian health, 1984-1988 and trends over time*. Rockville, Md: Indian Health Service; 1992.
 10. Davis TC, Arnold C, Berkel HJ, Nandy I, Jackson RH, Glass J. Knowledge and attitude on screening mammography among low-literate, low-income women. *Cancer* 1996;78:1912-20.
 11. NCI Breast Cancer Consortium. Screening mammography: a missed clinical opportunity? *JAMA* 1990;264:54-8.
 12. Burhansstipanov L, Dignan MB, Wound DB, Tenney M, Vigil G. Native American recruitment into breast cancer screening: the NAWWA project. *J Cancer Educ* 2000;15:28-32.
 13. Giuliano A, Papenfuss M, de Guernsey de Zapien J, Tilousi S, Nuvayestewa L. Breast cancer screening among southwest American Indian women living on-reservation. *Prev Med* 1998;27:135-43.
 14. Risendal B, Roe D, DeZapian J, Papenfuss M, Giuliano A. Influence of health care, cost, and culture on breast cancer screening: issues facing urban American Indian women. *Prev Med* 1999;29:501-9.
 15. Andersson I, Aspegren K, Janzon L, Landberg T, Lindholm K, Linell F, et al. Mammographic screening and mortality from breast cancer: the Malmö mammographic screening trial. *BMJ* 1988;297:943-8.
 16. Nyström L, Rutqvist LE, Wall S, Lindgren A, Lindqvist M, Ryden S, et al. Breast cancer screening with mammography; overview of Swedish randomised trials. *Lancet* 1993;341:973-8.
 17. Tabar L, Fagerberg G, Chen H, Duffy SW, Smart CR, Gad A, et al. Efficacy of breast cancer screening by age. New results from the Swedish two-county trial. *Cancer* 1995;75:2507-17.
 18. Nutting PA, Calonge BN, Iverson DC, Green LA. The danger of applying uniform clinical policies across populations: the case of breast cancer in American Indians. *Am J Public Health* 1994;84:1631-6.
 19. Statistics Canada. *National Population Health Survey 1998-1999: health component*. Ottawa, Ont: Statistics Canada; 1999.
 20. Maxwell CJ, Kozak JF, Desjardins-Denault SD, Parboosingh J. Factors important in promoting mammography screening among Canadian women. *Can J Public Health* 1997;88(5):346-50.
 21. Grady KE, Lemkau JP, McVay J, Reisine ST. The importance of physician encouragement in breast cancer screening of older women. *Prev Med* 1992;21:766-80.
 22. Ross NA, Rosenberg MW, Pross DC, Bass B. Contradictions in women's health care provision: a case study of attendance for breast cancer screening. *Soc Sci Med* 1994;39(8):1015-25.
 23. Worden JK, Mickey RM, Flynn BS, Costanza MC, Vacek PM, Skelly JM, et al. Development of a community breast screening promotion program using baseline data. *Prev Med* 1994;23:267-75.
 24. Morrison B. Screening for breast cancer. In: Canadian Task Force on Preventive Health Care. *Canadian guide to clinical preventive health care*. Ottawa, Ont: Canada Communications Group; 1994. p. 787-95.
 25. Baxter N. Preventive health care 2001 update: should women be routinely taught breast self-examination to screen for breast cancer? *Can Med Assoc J* 2001;164(13):1837-46.

•••