

A national survey of Canadian women: Breast health practices, influences, and satisfaction

By Lynnette Leeseberg Stamler, Kathryn Lafreniere,
Barbara Thomas, and Jennifer Out

Abstract

In an earlier survey of over 900 women in the local automobile industry, several influences and preferences for breast screening were identified. The purpose of the current study was to extend the survey population to women across Canada, as well as to ascertain women's satisfaction with organized (governmental) screening programs within their geographic areas. Using random-digit-dialing, 1,224 women 25 years and older were interviewed in French or English and their responses entered in a CATI system. The interviewers used a modified version of Health Care Practices: A Worksite Survey. Results were analyzed by age and geographic region. Results indicated support for earlier local findings, as well as high satisfaction, but low knowledge and usage of organized breast screening clinics.

Breast cancer remains one of the leading causes of death in Canadian women and the foremost cause of person-years of life lost (Law, Morris, & Wald, 1999). Until recent recommendations (Baxter, 2001), a comprehensive program of breast screening for adult women included breast self-examination (BSE), clinical breast examination (CBE), and mammography for selected populations, although there is continuing controversy on the efficacy of each of the screening modalities (Ku, 2001; Nekhlyudov & Fletcher, 2001; Ringash, 2001). These strategies have been available for many years, however, participation by women in breast screening programs remains less than optimal (Maxwell, Kozak, Desjardins-Denault, & Parboosingh, 1997). In an earlier survey of over 900 women in the local automobile industry, several influences and preferences for breast screening were identified (Stamler, Thomas, & Lafreniere, 2000). The purpose of the current study was to extend the survey population to women across Canada, as well as to ascertain women's satisfaction with organized (governmental) screening programs within their geographic areas.

Review of the literature

A significant body of health literature exists that addresses various aspects of breast cancer screening. However, breast cancer screening for an individual begins with the decision to participate. Thus, the literature review was limited to recent research that examined factors and interventions influencing participation in any of the screening modalities. Researchers have studied varying age groups and their rates of participation (Clark, Sauter, & Kotecki, 2000; DeGrasse, O'Connor, Perrault, Aitken, & Joannise, 1996; Foxall, Barron, & Houfek, 2001; Yarbrough & Braden, 2001). In addition to studying individual ethnic groups (e.g., Abdullah & Leung, 2001; Akrigg, 2001; Giuliano, Papenfuss, deZapien, Tilousi, & Nuvayestewa, 1998; Han, Williams, & Harrison, 2000; Phillips, Cohen, & Tarzian, 2001), comparisons among some groups have been completed (e.g., Foxall et al., 2001; Ramirez et al., 2000).

George (2000) identified specific influences identified in the literature from 1989-1996 for each of the screening modalities.

Primary influences included presence or absence of health provider (physician) referral (mammography), knowledge and attitudes (mammography and BSE), age, poverty, and race (mammography and CBE), and social influences (BSE). More recent research supports those findings. In particular, beliefs, attitudes, and values of the target group (Choudhry, Srivastava, & Fitch, 1998; Dibble, Vanoni, & Miaskowski, 1997; Rashidi & Rajaram, 2000; Sortet & Banks, 1997), as well as basic determinants of health (Facione & Katapodi, 2000; Maxwell et al., 1997) were found to be very important. Further, Ahmad, Stewart, Cameron, and Hyman (2001) found that gender of the health professional influenced self-reported screening rates for pap smears and CBE done by rural physicians. Strategies to increase participation have included use of lay health advisors (Burhansstipanov, Dignan, Bad Wound, Tenney, & Vigil, 2000), basing education in grocery stores (Sadler et al., 2000), and interactive soap operas (Jibaja et al., 2000).

No study was found that combined a randomized national sample, use of a questionnaire targeted to breast health across the screening modalities, comparison of ages and geographic settings, and inclusion of questions examining women's perceptions of availability of and satisfaction with organized screening programs. Thus, this study builds on previous work and the results are more generalizable.

Methodology

The 10 provinces of Canada were divided into five weighted regions - British Columbia, the Prairies (Alberta, Saskatchewan, and Manitoba), Ontario, Quebec, and the Atlantic region (Nova Scotia, New Brunswick, Prince Edward Island, and Newfoundland). Women were reached through random-digit dialing generated by area code. One woman in each household was invited to participate and was interviewed by a female interviewer in English or French.

Almost half (49.5%) answered with one or two calls and 19.6% were interviewed in French. Responses were entered directly into a computer-assisted telephone interview (CATI) program that also prompted the interviewer with new questions, limiting data entry error.

An age limitation of 25 years+ was imposed since some questions asked the women to comment on any changes to breast screening opportunities in their geographic area within the last five years. Women who had been diagnosed with breast cancer were excluded for two reasons: 1) the diagnosis could impact these women's perceptions, and 2) in Canada, women who have been diagnosed with breast cancer

Lynnette Leeseberg Stamler, RN, PhD, is Associate Professor and Director, Collaborative BScN Program, at Nipissing University in North Bay, Ontario.

Barbara Thomas, RN, EdD, is a Professor in the Faculty of Nursing, University of Windsor, Windsor, Ontario.

Kathryn Lafreniere, PhD, is an Associate Professor in the Department of Psychology, University of Windsor.

Jennifer Out, MA, is also with the Department of Psychology, University of Windsor.

tend to have further diagnostic screening through cancer treatment centres rather than organized public screening. The population of Canadian women 25 years of age and older in the 10 Canadian provinces (not including the territories) who spoke English or French as one of their home languages was between nine and 10 million in 1997, when the survey was conducted (Statistics Canada, 2000). For a population of 10 million, a sample of 1,100 yields a 3% confidence interval at the 95% confidence level, while a sample of 1,500 yields a 2.5% confidence interval at the 95% confidence level. Thus, the target sample size was 1,100 to 1,500 women, for a 95% confidence level that respondents' answers will be accurate within + or - 3%.

Sample

The sample of 1,224 women included 10% from British Columbia, 28% from the Prairies, 25% from Ontario, 20% from Quebec, and 17% from the Atlantic region, and was sufficiently large to represent the target population with an accuracy rate within 2.8 percentage points, 95 times out of 100. The distribution was congruent with population density patterns, but did not include women from the Yukon, Nunavut or Northwest Territories, women who did not speak either English or French, or women who could not be reached by telephone. Within the total age range of 26-94, 41% were 50 years of age or older, and 49 (4%) were 80 years of age and older. Four per cent reported elementary education or less, and 21% had a baccalaureate or greater education. Sixty-five percent of the sample were married, and 41.4% indicated that they worked full-time. Thirteen per cent described themselves as homemakers, 90% described themselves as white. Fifty-eight per cent reported a family income. Of those, 22.4% reported a family income greater than \$20,000, and 9.9% reported income less than \$90,000. Modal income was in the \$20,000 to \$30,000 range.

Almost one-quarter (24.9%) reported that a family member had been diagnosed with breast cancer [mother (24.3%), aunt (32.3%), grandmother (20.3%), and sister (13.3%)]. Of those, 30.3% had more than one family member diagnosed. Almost 10% of the sample had had a breast biopsy themselves.

Instrumentation

The instrument used was a modification of the **Health Care Practices: A Worksite Survey** (Kurtz, Given, Given, & Kurtz, 1993) used in a study with women in several types of workplaces. For the auto industry study, modifications made with the authors' permission included changing the format of the questions and making a few of the questions more reflective of Canadian context (e.g., the ethnicity question was changed to reflect the Canadian cultural mix). For this study, the questions were rescripted to accommodate audio (telephone) usage. Further, 10 questions that related to women's knowledge, usage, and satisfaction with organized breast screening in their geographic area were added.

Data analysis

Questions on the survey were primarily categorical, yielding nominal level data for most variables. Age was collected as a continuous variable, but later collapsed into "under 50" and "50 and over." Province of residence was collected for the 10 provinces and then collapsed into the following categories: British Columbia, Prairies, Ontario, Quebec, and the Atlantic provinces. Descriptive statistics on the demographic and health variables consisted of frequencies and percentages. Survey questions were compared on the basis of the two age categories and the five regional categories by means of chi-square analyses.

Results

General Health Responses

In terms of general health, 32% of the women indicated that they had smoked at some point in their lives, and 24.7% indicated that they

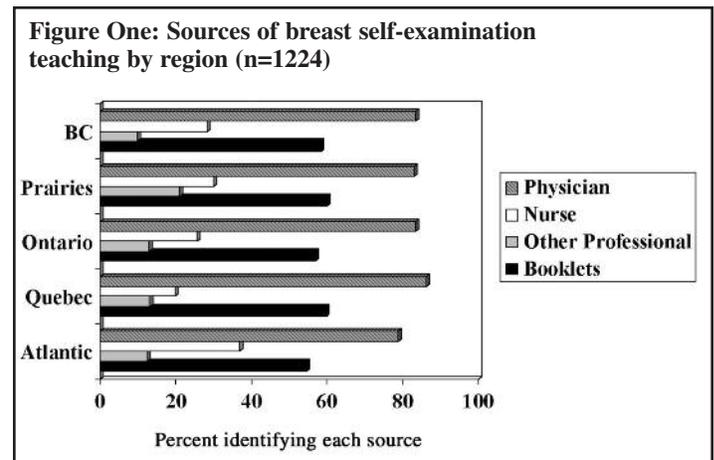
were current smokers. Sixty-two per cent identified that they drank alcohol at most only on special occasions. Fifty per cent had four or more complete physical examinations in the last five years. While 52% reported four or more pap smears in the last five years, 10.3% reported having had three, 12.8% reported two, 11.4% reported one and 13.6% reported having no pap smears during the last five years. Greater than annual dental visits were reported by 37%. Well-balanced meals were eaten by 79% of the women almost every day, while 53.6% participated in physical activity almost daily.

Influences on participation in breast cancer screening

In the survey, women were told that "the next questions are about family and friends and factors that might influence your decisions with respect to breast cancer screening." Within that section of the survey were questions that asked, "Please tell me if any of the following people encouraged or discouraged you to (perform regular BSE, ask for CBE, etc.)."

One-fourth (24.4%) indicated that they believed their risk of breast cancer to be extremely serious, and 16.7% identified their risk as higher or much higher than the rest of the population. When asked about the relationship of age to risk of breast cancer, 55.8% believed that age makes no difference. The results related to breast cancer screening were analyzed by age (<50/younger, 50+/older) and region. Nearly three-quarters of the sample (72.3%) indicated that they had been taught about BSE, but this number dropped to 70.4% when only older women were sampled. Younger women (86.9%) were significantly more likely to report that a physician taught them BSE, relative to women 50 and over (77.4%), $\chi^2 (1, N = 857) = 13.13, p < .001$. While women reported a physician as the most common source of BSE teaching, self-instruction booklets were the second most common source reported. Nurses were a distant third source for BSE education, although older women (36.6%) were significantly more likely to report that a nurse had taught them BSE, as compared to women under 50, $\chi^2 (1, N = 844) = 19.97, p < .0001$. Regional results can be found in Figure One, where it can be noted that reported physician teaching was significantly lower in the Atlantic region, $\chi^2 (4, N = 1190) = 19.33, p < .001$, and nursing teaching was the highest in the same region.

Relative to current practices regarding BSE, 72% of the younger and 74.5% of the older women reported doing BSE at least occasionally. Of these, 62% of each group said that they did BSE at least once a month. As mentioned previously, women were asked who encouraged, discouraged, or did not discuss each of the screening modalities. For this and prior studies, encouragement was viewed by the researchers as a source of influence in making a decision to participate in the screening modality in question. For the screening modality of BSE, the physician was the strongest source of influence (74% said physicians encouraged). Friends (46.6% encouraged) and



family members (38.8% encouraged) were also sources of influence. Older women (37.7%) were significantly more likely to report co-workers as encouraging (younger women = 31.4%), χ^2 (1, N = 931) = 3.80, $p=.05$. Regional reporting can be found in Figure Two, noting the low reporting of nurse encouragement.

Almost 84% of the women reported having a CBE, with 66.2% reporting a yearly CBE. Over 90% of the CBEs were conducted by physicians, and 54% were conducted by males. Thirty-eight per cent of the women had a preference about the gender of the individual who performed their CBE, and of those, almost 95% preferred a woman. When asked whether they would prefer a physician, nurse, or expert in breast health, 81% asked for an expert in breast health. The physician (71% said they encouraged) remained the greatest source of influence for the practice of CBE, while friends (42%) were the next greatest source of encouragement. For older women (35.2%), co-workers again were perceived as more encouraging than for younger women (27.5%), χ^2 (1, N = 893) = 5.64, $p<.05$. Figure Three illustrates that nurses were reported as the least encouraging across all geographic regions.

The last screening modality that was examined was mammography. Just over half (51%) indicated that they had had a mammogram, with 40.4% having one each year, and 37.7% reporting a biennial mammogram. The physician was reported as strongly encouraging (75% of women over 50). Regarding getting a mammogram, women 50 and over received greater encouragement from physicians [χ^2 (1, N = 1084) = 196.26, $p<.00001$], nurses [χ^2 (1, N = 1096) = 51.53, $p<.00001$], family [χ^2 (1, N = 1071) = 16.52, $p<.0001$], friends [χ^2 (1, N = 1058) = 38.63, $p<.0001$], and co-workers [χ^2 (1, N = 868) = 25.66, $p<.0001$]. When mammography influences were examined regionally, the physician was reported as most encouraging by women in BC when compared to other regions, χ^2 (1, N = 1106) = 15.00, $p<.01$, (Figure Four). In all, 81.4% of the women expressed satisfaction with the screening offered by their physician. Only 4.7% felt their physician did not provide any screening.

Organized screening programs

Women were asked about their knowledge of organized screening programs in their geographic area. Forty-nine per cent of the women indicated knowledge of an organized screening program, 35.7% did not know of such a program, and 15.1% said there was no program in their area. Regionally, the women in BC (58.5%) were more aware than women in other areas, χ^2 (8, N = 1220) = 24.86, $p<.01$. Atlantic region women were more likely to report "no breast screening program" (19.5%) while the highest number of "don't know" responses were from women in Ontario (41.1%).

A random subsample (N=601) was asked questions related to organized screening programs. Of these, 36.6% indicated that the program in their area served all age groups, while 28.9% said that the

program only served women over 50 years of age. Only 19.4% indicated that they had ever used the program, while 25.7% indicated that they knew of a family member or friend who had participated. Reported usage was highest in BC (28.6%) and the Prairies (27.4%) while Quebec was the lowest at 9.5%. Women were asked, "On a scale from one to 10, where one is not at all satisfied, and 10 is extremely satisfied, how satisfied were you with this program?" Of those who had used it, 85% rated it as eight or higher.

Women were given a series of factors that might serve as barriers to participation in an organized screening program. The barriers were: availability of child care, age restrictions, transportation, hours of operations, and location. All choices except transportation were perceived as significantly greater barriers by younger women (Figure Five). A series of factors that might encourage a woman to participate in an organized screening program was also suggested. They were: expertise of the staff, sensitivity of staff to health needs and cultural differences, convenience of all screening completed in one place, and the fact that teaching would be included in the screening. All these factors were identified as "very important" by over 80% of women in both age groups. Availability of teaching was rated as very important by a significantly greater percentage of the younger women (91.2%), as compared to the women who were 50 and over (84.8%), χ^2 (2, N = 577) = 7.66, $p<.05$. The convenience of one-stop services was rated as very important by a greater percentage of younger (86.8%) than older women (81.1%), χ^2 (2, N = 576) = 8.96, $p<.05$. The expertise of the examiners was seen as more encouraging only by older women (Figure Six).

Finally, all the women (N=1224) were asked about their perceptions of the ease of changing their personal breast health practices. Women over 50 and those from Quebec anticipated the most difficulty with changing their behaviours.

Discussion and future implications

It must be remembered that these data were gathered prior to the much-publicized findings that BSE was not only non-efficacious, but harmful (Baxter, 2001). BSE alone is not a breast cancer screening program. However, given the sensitivity of the topic, any assessment of the present findings cannot ignore Baxter's recommendations and their effect on women and their health professionals. It is not yet clear if the data underpinning these recommendations regarding routine teaching of BSE will remain consistent over the long term. Nekhlyudov and Fletcher (2001) suggested that the recommendations were premature. They also indicate support for a well-done CBE augmented by mammography for appropriate age groups. The recommendations may or may not change the current teaching mandate of organized screening programs. Baxter indicated that one of the detriments to regular teaching of BSE is the anxiety relative to the psychological effect of finding a lump that proves to be benign. However, more research is required to demonstrate whether the

Figure Two: Persons who encouraged women to practise breast self-examination by region (n=1224)

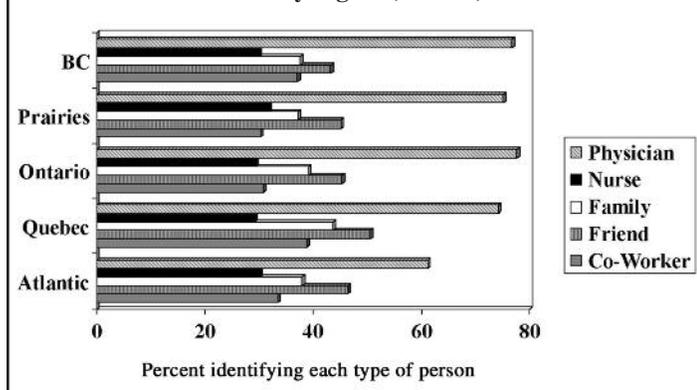
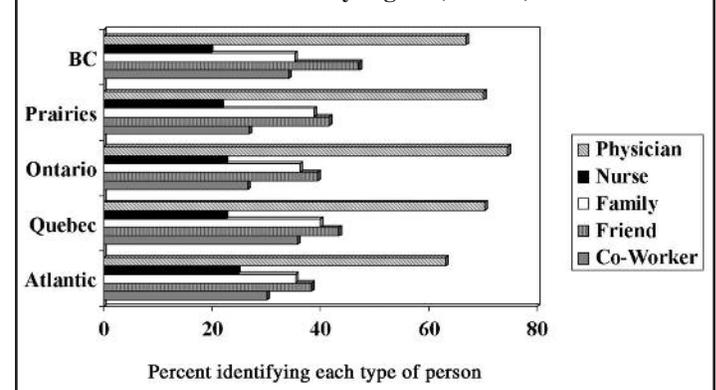


Figure Three: Persons who encouraged women to have a clinical breast examination by region (n=1224)



greater psychological harm is in finding a non-malignant lump or in not finding the malignant one. Nekhlyudov and Fletcher asked, "How will women react to a sudden reversal in medical advice about BSE? How will it affect their reaction to medical advice about other screening methods for breast cancer?" (p. 1852). While they were directing their discussion to physicians, nurses would do well to also consider those questions.

While most women indicated satisfaction with physician practices, the presence of teaching was the greatest single encouragement factor for participation in an organized breast screening program. When coupled with the strong desire (81%) for a clinical expert in breast health to complete the CBE, it is clear women desire both information and expertise in their breast health screening. Baxter (2001) suggested that "although the evidence does not support routinely teaching BSE, women should be instructed to promptly report any breast changes or concerns" (p. 1843). Baxter made no suggestion on how women might acquire the knowledge to identify such changes. As the individual most identified as encouraging participation in breast screening, the physician remained a strong influence on use of all of the screening modalities. However, it was disappointing to note that almost one-quarter of the women perceived no encouragement from their physician for each of the modalities. Nurses may not feel equipped to teach about breast health on a regular basis (Devine & Frank, 2000). Budden (1998) found that 81% of nurses believed that teaching BSE was not relevant to their area of practice, and therefore did not participate in such teaching. Nurses need strong encouragement from educators and administrators to include questions about breast health and other screening activities as part of routine health assessments. Such assessments must be followed by information, or at the very least, suggestions on where to find the information. In this way, nurses can raise their profile as a credible

source of information as well as complementing physician encouragement.

Co-workers remain a significant source of influence for older women, making worksites or work groups a potentially strong source for dissemination of breast health education to the higher risk group. This study supported earlier findings (Stamler et al., 2000) that self-instruction booklets are an important source of information for some segments of the population, and reinforced that different age groups consult different sources. Thus, it is important both that printed materials incorporate new recommendations and that a variety of marketing strategies are targeted at specific age groups.

Health Canada (2000) indicated that, at the time of data collection, there were organized screening programs in all 10 provinces. While the low utilization rate for organized screening programs might lead one to question their usefulness, there was a ringing endorsement for the programs from those who participated. Further, responses to the questions of encouragement with a variety of persons suggest that breast screening is a topic where knowledge is sought and experiences are shared. The quest for knowledge is in contrast to the continuing perception that breast cancer risk does not change with age. The survey did not ask about regular contact with nurses, where information could have been sought or offered. As primary care reform moves forward, and primary care nurse practitioners are more visible, women may find more opportunities for client-nurse interactions. However, as indicated in Budden (1998), nurses need to be convinced that knowledge of age-related risks and participation in screening activities are always appropriate topics of conversation with clients.

As with any research study, this one had some limitations. The random-digit-dialing technique reduced selection bias, however, that threat to external validity cannot be totally eliminated. The virtuously high monthly BSE rate (45%) would seem to suggest that there might have been some over-reporting of positive health behaviours for social desirability reasons (George, 2000; Stamler et al., 2000). Similar to other non-targeted studies, the lack of ethnic diversity remains a limitation.

Conclusion

It is clear that breast cancer screening is important to many women and health professionals. The findings from this national study have supported earlier work, with a methodology that makes these findings generalizable. Breast health messages must be targeted at specific populations and augmented by multiple knowledge delivery methods, and women should receive ongoing encouragement from a variety of sources to participate in screening. Screening opportunities that combine action with teaching must be expanded. While professionals may not agree on the efficacy of all screening modalities, all agree that early detection and treatment are necessary for decreased mortality. Further research with under-represented and under-resourced populations must be continued. In a country with a mandate

Figure Four: Persons who encouraged women to have a mammogram by region (n=1224)

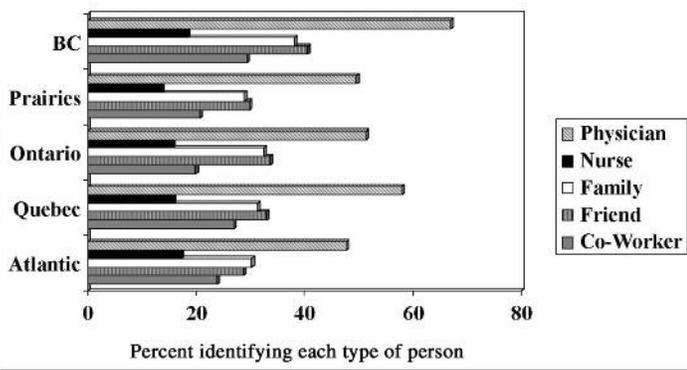


Figure Five: Barriers to use of organized breast screening programs (N=601)

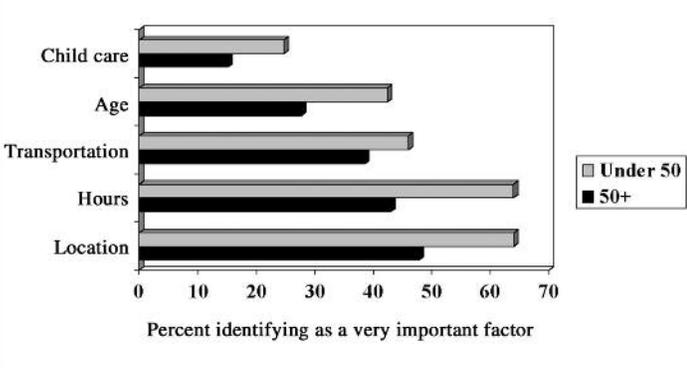
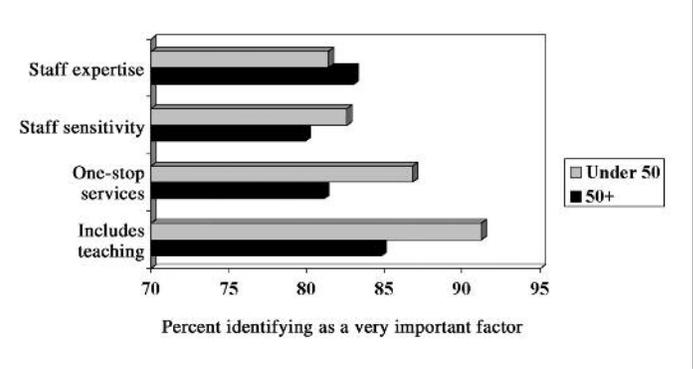


Figure Six: Factors that encourage the use of organized breast screening programs (n=601)



for multiculturalism, and with the majority of the population condensed into a small fraction of the total landmass, the potentially marginalized must not be ignored by research or practice. As nurses' opportunities in primary practice increase, nursing's role in influencing the practice and participation in breast screening will only increase. Using available evidence to support our practice will be our strongest ally in reaching women and encouraging participation. ♣

References

- Abdullah, A.S., & Leung, T.Y. (2001). Factors associated with the use of breast and cervical cancer screening services among Chinese women in Hong Kong. **Public Health, 115**, 212-217.
- Ahmad, F., Stewart, D.E., Cameron, J.I., & Hyman, I. (2001). Rural physicians' perspectives on cervical and breast cancer screening: A gender-based analysis. **Journal of Women's Health and Gender Based Medicine, 10**, 201-208.
- Akrigg, H.Y. (2001). An evaluation of the breast self-exam (BSE) practices of Asian women. **Canadian Oncology Nursing Journal, 11**, 82-83.
- Baxter, N., with the Canadian Task Force on Preventive Health Care. (2001). Preventive health care, 2001 update: Should women be routinely taught breast self-examination to screen for breast cancer? **CMAJ, 164**, 1837-46.
- Budden, L. (1998). Registered nurses' breast self-examination practice and teaching to female clients. **Journal of Community Health Nursing, 15**, 101-112.
- Burhansstipanov, L., Dignan, M.B., Bad Wound, D., Tenney, M., & Vigil, G. (2000). Native American recruitment into breast cancer screening: The NAWWA project. **Journal of Cancer Education, 15**, 28-32.
- Choudhry, U.K., Srivastava, R., & Fitch, M.I. (1998). Breast cancer detection practices of South Asian women: Knowledge, attitudes and beliefs. **Oncology Nursing Forum, 25**, 1693-1701.
- Clark, J.K., Sauter, M., & Kotecki, J.E. (2000). Adolescent girls' knowledge of and attitudes toward breast self-examination: Evaluating an outreach education program. **Journal of Cancer Education, 15**, 228-231.
- DeGrasse, C.E., O'Connor, A.M., Perrault, D.J., Aitken, S.E., & Joannisse S. (1996). Changes in women's breast cancer screening practices, knowledge, and attitudes in Ottawa-Carleton since 1991. **Canadian Journal of Public Health, 87**, 333-8.
- Devine, S.K., & Frank, D.I. (2000). Nurses' self-performing and teaching others breast self-examination: Implications for advanced practice nurses. **Clinical Excellence for Nurse Practitioners, 4**, 216-223.
- Dibble, S.L., Vanoni, J.M., & Miaskowski, C. (1997). Women's attitudes towards breast cancer screening procedures: Differences by ethnicity. **Women's Health Issues, 7**, 47-54.
- Facione, N.C., & Katapodi, M. (2000). Culture as an influence on breast cancer screening and early detection. **Seminars in Oncology Nursing, 16**, 238-247.
- Foxall, M.J., Barron, C.R., & Houfek, J.F. (2001). Ethnic influences on body awareness, trait anxiety, perceived risk and breast and gynecologic cancer screening practices. **Oncology Nursing Forum, 28**, 727-738.
- George, S.A. (2000). Barriers to breast cancer screening: An integrative review. **Health Care for Women International, 21**, 53-65.
- Giuliano, A., Papenfuss, M., deZapien, J.D., Tilousi, S., & Nuvayestewa, L. (1998). Breast cancer screening among Southwest American Indian women living on-reservation. **Preventive Medicine, 27**, 135-43.
- Han, Y., Williams, R.D., & Harrison, R.A. (2000). Breast cancer screening knowledge, attitudes and practices among Korean American women. **Oncology Nursing Forum, 27**, 1585-1591.
- Health Canada. (2000). **Organized breast cancer screening programs in Canada: 1996 report**. Retrieved April 30, 2002, from http://www.hc-sc.gc.ca/hpb/lcdc/publicat/obcsp-podcs/obcspr_e.html
- Jibaja, M.L., Kingery, P., Neff, N.E., Smith, Q., Bowman, J., & Holcomb, J.D. (2000). Tailored, interactive soap operas for breast cancer education of high-risk Hispanic women. **Journal of Cancer Education, 15**, 237-242.
- Ku, Y. (2001). The value of breast self-examination: Meta-analysis of the research literature. **Oncology Nursing Forum, 28**, 815-822.
- Kurtz, M.E., Given, B., Given, C.W., & Kurtz, J.C. (1993). Relationships to barriers and facilitators to breast self-examination, mammography, and clinical breast examination in a worksite population. **Cancer Nursing, 16**, 251-9.
- Law, M.R., Morris, J.K., & Wald, N.J. (1999). The importance of age in screening for cancer. **Journal of Medical Screening, 6**, 16-20.
- Maxwell, C.J., Kozak, J.F., Desjardins-Denault, S.D., & Parboosingh, J. (1997). Factors important in promoting mammography screening among Canadian women. **Canadian Journal of Public Health, 88**, 346-350.
- Nekhlyudov, L., & Fletcher, S.W. (2001). Is it time to stop teaching breast self-examination? **CMAJ, 164**, 1851-1852.
- Phillips, J.M., Cohen, M.Z., & Tarzian, A.J. (2001). African American women's experiences with breast cancer screening. **Journal of Nursing Scholarship, 33**, 135-140.
- Ramirez, A.G., Talavera, G.A., Villarreal, R., Suarez, L., McAlister, A., Trapido, E., Perez-Stable, E., & Marti, J. (2000). Breast cancer screening in regional Hispanic populations. **Health Education Research, 15**, 559-568.
- Rashidi, A., & Rajaram, S.S. (2000). Middle Eastern Asian Islamic women and breast self-examination: Needs assessment. **Cancer Nursing, 23**, 64-70.
- Ringash, J., with the Canadian Task Force on Preventive Health Care. (2001). Preventive health care, 2001 update: Screening mammography among women aged 40-49 years at average risk for breast cancer. **CMAJ, 164**, 469-76.
- Sadler, G.R., Thomas, A.G., Yen, J.Y., Dhanjal, S.K., Ko, C.M., Tran, H.Q., & Wang, K. (2000). Breast cancer education program based in Asian grocery stores. **Journal of Cancer Education, 15**, 173-177.
- Sortet, J.P., & Banks, S.R. (1997). Health beliefs of rural Appalachian women and the practice of breast self-examination. **Cancer Nursing, 20**, 231-5.
- Stamler, L.L., Thomas, B., & Lafreniere, K. (2000). Working women identify influences and obstacles to breast health practices. **Oncology Nursing Forum, 27**, 835-842.
- Statistics Canada. (2000). **Population by sex and age, Canada, the provinces and territories**. Retrieved April 6, 2002, from <http://www.statcan.ca>
- Yarbrough, S.S., & Braden, C.J. (2001). Utility of health belief model as a guide for explaining or predicting breast cancer screening behaviours. **Journal of Advanced Nursing, 33**, 677-688.

Acknowledgements

This study was funded by the Canadian Breast Cancer Foundation, Ontario Chapter, and the CAW Social Justice Fund. The CATI data collection was completed by the Social Science Research Unit at York University.