Using a Community-Based Outreach Program to Improve Breast Health Awareness Among Women in Hong Kong


ABSTRACT

Objective: To evaluate the effectiveness of a community-based health education program via a mobile van to promote the awareness of breast cancer and breast self-examination (BSE) practice among women in Hong Kong. Design: One group pretest/posttest design. Sample and measurements: Seven hundred and seventy-seven women in Hong Kong completed a self-administered questionnaire before and after a breast health education program from May 2002 to March 2003. Results: About half were aware of breast health and breast diseases (53.7%) and breast screening methods (48.6%) before the intervention. It was found that women who had received instruction on BSE practice, and those who were aware of breast screening methods, breast health, and breast diseases were more likely to have had prior BSE practice. Most indicated their willingness to practice BSE regularly (93.3%) and to pass on the BSE knowledge to their relatives and friends (92%) in the posttest. Conclusions: The outreach health education program has successfully reached women living in the 18 districts in Hong Kong. It appears to be useful in raising the awareness of breast health and BSE practice among the women, but longer term follow-up is required to ascertain its sustainability.

Key words: breast health, breast self-examination, health education, health promotion, health van.

Breast cancer is the most prevalent cancer in women (World Health Organization, 2005), with more than one million cases occurring worldwide annually (Minelli et al., 2004). In Hong Kong, breast cancer has surpassed lung cancer as the most prevalent female malignancy since the early 1990s (Hong Kong Department of Health, 2005), and 1 in 23 women develop breast cancer sometime in their life (Hong Kong Cancer Registry, 2005). The incidence has continued to increase recently, primarily among those aged 40–64 years, with its peak at the age of 65 and above. It is the second most common cause of cancer-related mortality among women in Hong Kong (Hong Kong Department of Health, 2002). Nevertheless,
there is a lack of knowledge among women of the risk of breast cancer and mammography screening, and the concept of preventive healthcare has a low priority among the Chinese population in Hong Kong (Chua, Mok, Kwan, Yeo, & Zee, 2005). In order to improve the women's awareness and knowledge, it is important to initiate interventions to provide health education and to encourage preventive health care behaviors. This study aims to evaluate the effectiveness of a community-based health education program via a mobile van to promote the awareness of breast cancer and breast self-examination (BSE) practice among women in Hong Kong.

The early stage of breast cancer is now curable with a better quality of life due to therapeutic intervention. According to the American Cancer Society (2005a), the 5-year survival rate approached 100% for localized breast cancer in stages 0 and I. Thus, early awareness of cancer, screening and detection, early diagnosis, and advances in treatment are of paramount importance in reducing mortality in breast cancer (American Cancer Society, 2005b; American College of Obstetricians and Gynecologists, 2003; Levi, Bosetti, Lucchini, Negri, & La Vecchia, 2005). Screening programs play a crucial role in its early detection; however, the efficacy of such programs depends on the women's participation rate. Attendance at screening programs seems to be influenced by the level of awareness of breast cancer incidence and risk factors among healthy women. Bhakta (1995) indicated that 90% of breast cancer is detected by the women themselves; therefore, it is important that women learn and practice BSE to detect early growth.

BSE is considered to be a simple, cost-free, non-invasive, and nonhazardous intervention (Koroltchouk, Stanley, & Stjernsward, 1990; Norman & Brain, 2005). The American Cancer Society (2005b) has recommended that women over 20 years of age perform it monthly. Although the argument over whether BSE practice can reduce deaths from breast cancer has remained controversial (Baxter & Canadian Task Force on Preventive Health Care, 2001; Harvey, Miller, Baines, & Corey, 1997; Thomas et al., 2002), there are definite advantages of women performing it regularly. Practicing BSE could provide an opportunity for women to know how their breasts normally feel and notice any changes in their breast tissue (American Cancer Society, 2005b). Breast cancers that are detected because of notable symptoms tend to be relatively severe and are more likely to have spread beyond the breast (American Cancer Society, 2005b). In contrast, BSE practice results in an earlier self-detection of signs of breast cancer such as palpable tumors (Chee, Rashidah, Shamsuddin, & Intan, 2003; Smith, 2003). Indeed, preventive practices such as BSE and mammograms are useful and effective ways to detect breast diseases at an early stage, facilitating the receipt of early treatments. Most of the national cancer organizations recommend regular BSE in conjunction with clinical breast examinations and mammograms. The American Cancer Society (2005b) suggests:

- Women aged 40 and older should have a screening mammogram every year, and should continue to do so for as long as they are in good health. . . . BSE is an option for women starting in their 20s. Women should be told about the benefits and limitations of BSE. Women should report any breast changes to their health professional right away.

Previous research has highlighted that self-care education related to breast health can positively influence outcomes such as increasing the awareness of breast cancer, practicing BSE, and seeking regular professional breast examinations (Ludwick & Gaczkowski, 2001; Öztürk, Engin, Kisioglu, & Yilmazer, 2000; Wood, 1996). Studies have also indicated the effectiveness of implementing intervention programs in local community centers, clinics, work sites, organizations, residences, and churches to increase breast cancer screening awareness (Forte, 1995; Worden et al., 1999). However, there are limited studies on the effectiveness of outreach community-based health education programs to promote breast health and breast cancer awareness in a Chinese community. Many women in Hong Kong are unaware of the risk factors of breast cancer, the importance of early screening by mammogram, and the knowledge and skills of BSE (Chua et al., 2005). In view of the need to promote women's health, the Zonta Club of Hong Kong, which is a charitable organization of executives in business and the professions working together to advance the status of women, generously donated a health van to provide breast health education to women in Hong Kong. This study aims to evaluate the effectiveness of a community-based outreach health education program to increase the awareness of breast cancer risk and various screening methods among women in Hong Kong.

**Methods**

**Design**

The study is a one-group pretest, posttest of program effectiveness.
**Settings and samples**

A health van with nurse volunteers on board visited each of the 18 districts in Hong Kong during the weekends of May 2002 to March 2003, and was stationed in the most densely populated area of the districts, recruiting participants through convenience sampling. Women aged 20 or above, living in the respective districts, and who were able to communicate in Cantonese, were invited to participate in the program. A total of 777 women participated.

**Procedure**

Health care professionals such as clinical nurses, nurse academics, and undergraduate nursing students were recruited as volunteers and trained to deliver the breast health education program. The health education intervention included a 10-min video-driven self-instruction program that covered the risk factors for breast cancer development, general knowledge on prevention of breast cancer, knowledge, skills, and benefits of BSE, professional examinations, and mammography screening. The content was designed in such a way that it is culturally appropriate, easy to understand, and—in order to reduce any barriers of learning—we also simplified the BSE by diagrams, which highlighted the area of breast to be covered; simple instructions on how to move the fingers over the breast; and which parts of the fingers should be used.

It was followed by a miniature lump model demonstration and practice in BSE (5–10 min), together with a question and answer session. Lastly, all participants were given a CD-ROM on breast health and breast cancer awareness, together with an action card as a reminder for BSE practice. The volunteer explained the objectives of the program and the participants signed a consent form to participate in the study. The subjects were invited to complete a self-administered questionnaire before and immediately after the breast health education program in the health van. In case they encountered difficulties in completing the questionnaire, the volunteers assisted by answering questions or reading the questions to the women. The study was approved by the Institutional Review Board of the Hong Kong Hospital Authority.

**Instrument**

A self-administered questionnaire with 22 items was used in this study. The first part of the questionnaire assessed the women’s perceptions of (1) breast health and breast diseases (e.g., breast cancer), and (2) breast screening (BSE practice, doctor consultation, and mammogram) before and after the health education; and established whether they (3) ever had BSE practice in their lifetime, (4) had a prior mammogram in the past 2 years, (5) had received previous instruction on how to practice BSE, (6) were willing to practice BSE regularly after the health education intervention, (7) were willing to consult a doctor if aware of any breast-related symptom, and (8) were willing to pass the knowledge to family members and friends. The items were measured in a dichotomized scale of “yes” or “no.” Some basic knowledge of the methods of BSE practice (using fingertips to practice BSE; practicing BSE at 2–3 days after menstruation; and practicing BSE during bathing) was also assessed.

The second part solicited basic demographic data including age, marital status, and educational attainment. The third part assessed the presence of breast cancer risk factors with reference to the guidelines of the American Cancer Society (2005c): (1) a family history of breast cancer; (2) a personal history of breast cancer; (3) previous abnormal breast biopsy (proliferative breast disease); (4) early age of menstruation (age 13 or before); (5) going through menopause at a late age (age 50 or after); (6) using hormone replacement therapy after menopause; (7) having no children; and (8) having the first child at age 35 or above. A question on high dietary fat intake was excluded in the data analysis as it had not been defined as a breast cancer risk factor (American Cancer Society, 2005c). The questionnaire was pre-evaluated for face and content validity by a panel of experts in breast cancer (physicians and nurses), and piloted for comprehensibility and feasibility before implementation. The investigation team met several times to discuss the content of the questionnaire and efforts were taken to strike a careful balance between avoiding an overlengthy questionnaire, but ensuring that it was comprehensive enough to encompass the study objectives and included the most up-to-date breast health information.

**Statistical analyses**

Data were managed and analyzed using SPSS Version 11.0. Descriptive statistics were used to summarize the demographic characteristics, awareness of breast health and breast diseases, awareness of breast screening methods, prior practice of BSE and breast screening, and proportion who received
instruction on how to practice BSE before the health education. Knowledge to practice BSE, willingness to practice it regularly, seeking medical advice upon discovery of abnormal symptoms, and proportion who were willing to pass the knowledge to family members and friends after the health education were also summarized. Multivariate logistic regression models were applied to measure the predictors of prior practice of BSE and mammogram, respectively, using a stepwise method with a likelihood ratio test. The following variables were selected to fit into both models: (1) awareness of breast health and breast diseases; (2) awareness of breast screening methods (including BSE, doctor consultation, and mammogram); (3) age group; (4) marital status; and (5) educational attainment. In addition, we included a variable “previous instruction on BSE practice” in the model to predict prior practice of BSE. The estimates were adjusted for all other significant variables in the model plus other potential risk factors of breast cancer that were shown to have an association with the dependent variables. The criterion for statistical significance was considered to be $p < .05$.

### Results

#### Pretest

Seven hundred and seventy-seven women aged 20 or above participated in the pretest and posttest surveys. The demographics are shown in Table 1. In the pretest, about half of the women responded that they were aware of breast health and breast diseases (53.7%) and breast screening methods (48.6%). It was found that 45.9% ever had BSE practice in their lifetime, and 39.1% had received prior instruction on the method of practicing BSE. About 12.6% of the participants aged 40 or above had undergone mammography screening in the previous 2 years (Table 1).

Table 2 shows the factors associated with prior BSE practice or prior mammogram before receiving the intervention. Those receiving advice on BSE (odds ratio [OR] = 3.57, 95% confidence interval [CI] = 2.4, 5.31) and those who were aware of breast screening methods (OR = 2.7; 95% CI = 1.73, 4.2) and breast health and breast diseases (OR = 2.09; 95% CI = 1.34, 3.24) were more likely to report prior BSE practice. Being single and having higher educational attainment also predicted a higher likelihood of prior BSE practice. Moreover, women aged between 40 and 59 (OR = 2.19, 95% CI = 1.2, 4.02) and being aware of breast screening methods (OR = 3.6, 95% CI = 2.08, 6.24) were more likely to have had a prior mammogram.

#### Posttest

After the intervention, the majority (77.7–93.7%) of participants were able to describe how and when to practice BSE. The majority responded that they were willing to seek medical advice upon discovery of abnormal symptoms (97.5%), practice BSE regularly in the future (93.3%), and pass on breast health knowledge to family members and friends (92%) (Table 3).

### Discussion

The findings of this study have provided important data about the status of breast health awareness of women in Hong Kong. About half of the women we reached were aware of breast health, diseases, BSE,
and screening mammography. However, only about 12% had undergone a mammogram in the previous 2 years, and 45% had practiced BSE. The results are compatible with other local studies (Abdullah & Leung, 2001; Chua et al., 2005), and studies in the region, such as those in Taiwan and Malaysia (Chee et al., 2003; Lu, 2001). Western nations where there are national guidelines about mammography screening such as the United States and Canada showed a higher uptake of screening. In a 2002 U.S. national survey, 76% of women aged 40 or above had undergone mammography in the past 2 years, and 84.1% reported a breast examination and/or a mammogram during their lifetime (National Center for Chronic

<table>
<thead>
<tr>
<th>TABLE 2. Predictors for Prior Practice of BSE and Mammogram (N = 777)</th>
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<tbody>
<tr>
<td>Have prior BSE</td>
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<tr>
<td>Adj. OR (95% CI)&lt;sup&gt;a&lt;/sup&gt;</td>
</tr>
<tr>
<td>Received prior BSE advice</td>
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<tr>
<td>Awareness of breast screening methods (BSE practice, doctor consultation, and mammogram)</td>
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<tr>
<td>Awareness of breast health and breast diseases</td>
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<tr>
<td>Age group (years)</td>
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<tr>
<td>20–39</td>
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<tr>
<td>40–59</td>
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<tr>
<td>60 or above</td>
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<tr>
<td>Marital status: single</td>
</tr>
<tr>
<td>Educational attainment</td>
</tr>
<tr>
<td>College or above</td>
</tr>
<tr>
<td>Junior high/high school (grade 7–12)</td>
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<tr>
<td>Elementary school (grade 1–6)</td>
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<tr>
<td>No formal education</td>
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</table>

Note. Adj. OR = adjusted odds ratio; BSE = breast self-examination; CI = confidence interval; na = not applicable; ns = not significant.

<sup>a</sup>Adjusted for personal history of proliferative breast diseases, early menarche before age 13, and all other variables in the model.

<sup>b</sup>Adjusted for personal history of breast cancer and all other variables in the model.

<sup>*</sup>p < .05, <sup>**</sup>p < .01, <sup>***</sup>p < .001.

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<tr>
<th>TABLE 3. Knowledge, Attitudes, and Willingness to Practice BSE After the Health Educational Intervention (n = 777)</th>
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</thead>
<tbody>
<tr>
<td>Knowledge of BSE practice</td>
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<tr>
<td>Using which part of the hand to practice BSE</td>
</tr>
<tr>
<td>Fingertips</td>
</tr>
<tr>
<td>Palm</td>
</tr>
<tr>
<td>Do not know</td>
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<tr>
<td>Most appropriate day to practice BSE</td>
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<tr>
<td>2–3 days postmenstruation</td>
</tr>
<tr>
<td>1–2 days premenstruation</td>
</tr>
<tr>
<td>Do not know</td>
</tr>
<tr>
<td>Most appropriate time to practice BSE</td>
</tr>
<tr>
<td>Bathing</td>
</tr>
<tr>
<td>Waking up in the morning</td>
</tr>
<tr>
<td>Do not know</td>
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<tr>
<td>Willingness to seek medical advice upon discovery of abnormal symptom</td>
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<tr>
<td>Willing to practice BSE regularly in the future</td>
</tr>
<tr>
<td>Willingness to pass on breast health knowledge to family members and friends</td>
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</table>

Note. BSE = breast self-examination.

Missing data were excluded in the percentage.
In Canada, 64.1% of women aged 50–69 had had a mammogram (Health Canada, 2003). Although Hong Kong has no standard guidelines to recommend routine mammography screening to asymptomatic women at the population level (the risk of breast cancer is lower in Hong Kong compared with western populations), a recent report from the Hong Kong Department of Health, Centre for Health Protection (2004) encouraged all women in the general population to be “breast aware,” to be alert to the early signs and symptoms of breast cancer, and to seek medical attention as soon as possible so as to reduce the interval between diagnosis and treatment to a minimum. Other studies have suggested that lack of awareness and screening uptake could be due to attitudinal barriers such as fear and embarrassment (Worden et al., 2002), but a recent local study indicated a lack of knowledge and awareness in the prevention and early detection of breast cancer among women in Hong Kong (Chua et al., 2005).

Although the trend was not statistically significant, women aged 20–39 years seemed to be more likely to have had a prior mammogram than those aged 60 or above. It is legitimate that the 40–59-year group has the highest OR, as there are government-funded (Department of Health) well-women clinics in Hong Kong whose target clients are women over 45 years of age that provide mammography service to their clients. According to Chinese cultural beliefs, the older generation may (1) be unaware of the importance of health promotion and disease prevention, and (2) feel embarrassed to expose their body parts (especially the breast) for examination, and hence may not embark on screening practices such as mammography unless medically indicated. On the other hand, the younger generation are generally better educated and more health conscious, and hence likely to accept the health education and promotion messages of the government and other nongovernment organizations and campaigns, such as The Hong Kong Cancer Fund’s breast cancer awareness campaign, the Pink Revolution, which have been working toward helping women to view breast screening in a more positive way in Hong Kong.

One of the strengths of this outreach community-based health education program was its mobile nature, which enables extensive coverage to provide health education about breast cancer screening and BSE skills to women in all districts in Hong Kong. We successfully recruited both single and married women with different educational levels. The education materials were designed in such a way that they are easy to understand, culturally appropriate, and provided opportunity for hands-on practice and dialogue. As Chinese women may feel embarrassed to touch their own bodies in detail, and they seldom look at their own bodies in the mirror even while bathing, we emphasized on “Looking,” “Feeling,” and “Looking for Change” in BSE in our health education CD. To increase the attractiveness of the health messages, two local actresses (celebrities) were invited to share their personal experiences on BSE in the CD.

Our findings indicated that women with higher education were more likely to have prior practice of BSE and to take care of their own health. Over half of our sample had no formal or elementary school education, and they might have lacked breast health knowledge and tended to underutilize health care services. The program provided an opportunity for them to clarify individualized questions, and hopefully resolved some barriers to BSE through a direct dialogue with health professionals. Furthermore, we also provided reminders in the form of a health promotion CD-ROM and action cards to improve the women’s practice of BSE, as forgetfulness was found to be a major barrier to performing it (Marinho, Costa-Gurgel, Cecatti, & Osis, 2003; Tang, Solomon, & McCracken, 2000).

Advice from health care professionals was effective in raising public awareness of the importance of BSE and mammography (Herreria, 1999; Lu, 2001), as well as a key predictor of BSE practice (Lu, 2001; Tang et al., 2000). Nurses comprise the largest group of health care professionals and have the most frequent contact with patients in a variety of health care settings. They are in a key position to encourage and influence women to take care of their breast health (Bailey, 2000; Chong, Krishnan, Hong, & Swah, 2002; Norman & Brain, 2005), and to educate patients and their families about the risk factors of breast cancer, primary and secondary preventive measures, genetic testing, and screening recommendations (Conto & Myers, 2002). During the health education intervention, the nurse encouraged the women to take responsibility for their own health and well-being, and to practice BSE and have mammograms as appropriate. After the intervention, most women could recognize the methods for practicing BSE. Almost all participants indicated their willingness to practice it, and to...
pass on the knowledge and techniques to their family, friends, and relatives. It appeared that the program has successfully motivated the women to be more aware of their breast health and spread the news to others, although follow-up is required to determine the long-term effectiveness of screening uptake.

**Limitations and Recommendations**

The study is an evaluation of a community-based outreach health education program with a focus on improving awareness of breast health and screening, and it has several limitations. First, the effectiveness in raising the awareness and promoting future practice of BSE was based on self-reported measures right after the program. Thus, the agreement to practice BSE could be overestimated, given the possibility of providing socially desirable answers. Furthermore, the results can only show immediate effects after the intervention, which may or may not be sustained. Second, in order to be inclusive, a convenience sampling approach was adopted and there could be sampling bias. Third, although some literature suggests associations of socioeconomic status with awareness of breast cancer and/or BSE practice (Grunfeld, Ramirez, Hunter, & Richards, 2002; Pillay, 2002), such comparisons were only partially assessed in this study. Marital status and the educational attainment of participants were recorded in the questionnaire, but family income, housing, and occupation were not included in the questionnaire due to the sensitive nature of such questions. Finally, it is recommended that process evaluation in areas such as the reach of the program and fidelity of the intervention should be included. In addition, follow-up surveys to measure the long-term outcome of the intervention such as uptake of screening and sustained practice of BSE are recommended in future studies.

**Conclusions**

This simple outreach breast health education program provided on a mobile health van has reached women of the 18 districts of Hong Kong, who may otherwise have no opportunity to receive such health education. Screening programs play a crucial role in the detection of breast cancer at an early stage but the efficacy of such programs depends on the women’s participation rate. It is crucial to reach healthy women in the society to influence their awareness of breast cancer incidence and its risk factors so as to increase the uptake of screening and be “breast aware.” Many women in Hong Kong are unaware of the risk factors of breast cancer development, the importance of early screening by mammogram, and the knowledge and skills of BSE. This program is an important first step to raise women’s awareness of breast screening and BSE. Early detection of breast cancer could reduce mortality and more lives could be saved if women were aware of practices of breast health awareness.

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