

Breast cancer – early detection and screening in South African women from the Bonteheuwel township in the Western Cape: Knowledge, attitudes and practices

Krombein IW, MB, ChB, MFamMed (Stell)

Part-time lecturer: Dept. of Family Medicine and Primary Care, Stellenbosch University

De Villiers PJT, MBChB, DOM, HonsBScMedSci (Epid), MFamMed, PhD

Professor and Head: Family Medicine and Primary Care, Faculty of Health Sciences, Stellenbosch University

Correspondence: Dr IW Krombein, E-mail: bont@iafrica.com

Abstract

Background

Breast cancer is one of the most common cancers, rating among the most frequent causes of mortality in women worldwide, including in South Africa. Although curative treatment is increasingly successful, early detection and intervention are critical in reducing mortality rates. Early diagnosis is facilitated via breast self-examination (BSE), clinical breast examination (CBE), and mammography. Breast cancer presentation shows an apparent racial variation, with black, coloured and Indian patients presenting at a younger age than whites. In addition, whites tend to present at earlier stages of disease severity, coloureds and Indians at more intermediate stages and blacks at later stages. Socio-economic variables impact on screening practices. One American/Canadian study showed women with higher education and incomes were more likely to receive screening. In South Africa, there is scant research on breast cancer screening. In 2001, Prof. Karl Peltzer of the University of the North did a small telephonic comparative study between black and white women that identified low frequencies of BSE in both groups. Further research is necessary. While several international studies exist, little research is available on the screening behaviour of South African women. The aim of this study, therefore, was to evaluate the knowledge, attitudes, and actual screening practices regarding breast cancer among women in the Bonteheuwel township in the Western Cape.

Methods

A random sample of 100 women completed a questionnaire administered by a research assistant. A separate, selected group of nine women participated in a focus group discussion.

Results

The results indicate that the majority of the participants were aware of the dangers of breast cancer, perceived as a common (87%; 95% CI: 80%-94%) and serious (88%; 95% CI: 82%-94%) disease, which, if treated early, could be cured in most cases (82%; 95% CI: 74%-90%). Most had previously examined their breasts (65%; 95% CI: 56%-74%) and/or had been examined by their doctors (62%; 95% CI: 52%-72%). Only a minority, however, practised regular BSE (24%; 95% CI: 16%-32%) or had received a CBE in the last year (29%; 95% CI: 20%-38%). Fear of diagnosis was identified as the main barrier to screening (87%; 95% CI: 80%-94%). Despite their fears, the participants were keen to improve their knowledge and participate in the further education of their community. However, only 40% (95% CI: 30%-50%) had ever been taught BSE by a healthcare professional. Moreover, only 34% (95% CI: 25%-43%) of women who had consulted a GP in the preceding year had received a CBE during this period. A total of 38% (95% CI: 28%-48%) had never had a CBE in their lives.

Conclusion

The participants were better informed and more engaged in screening than had been anticipated. Still, healthcare professionals need to play a more proactive role in breast cancer screening and education.

SA Fam Pract 2006;48(5): 14

The full version of this article is available at: www.safpj.co.za

 This article has been peer reviewed

Introduction

Breast cancer is one of the most common cancers, rating among the most frequent causes of mortality in women worldwide, including in South Africa.^{1,2} Although curative treatment is increasingly successful, early detection and intervention are critical in reducing mortality rates.^{1,3} Early diagnosis is facilitated via breast self-examination (BSE), clinical breast examination (CBE), and mammography.⁴

Breast cancer, comprising 16% of all cancers in women, is now the most common cancer in South African women. Prior to 1993, cervical cancer had ranked foremost, but by 1995 it had been overtaken by breast cancer.¹

According to a study in the Western Cape (1994-1997), the overall incidence rate of breast cancer was 23.1 per 100 000 per year. The incidence in coloured women (25.6 per 100 000) was about twice that of black women (14.7 per 100 000). The incidence rate in urban areas was 26.6 per 100 000, almost twice that in rural areas (16.3 per 100 000).⁵

Breast cancer presentation shows an apparent racial variation, with black, coloured and Indian patients presenting at a younger age than whites. In addition, whites tend to present at earlier stages of disease severity, coloureds and Indians at more intermediate stages, and blacks at later stages.⁶

Various studies in the USA have examined women's knowledge, attitudes and practices concerning breast cancer screening. Although these studies show some variation among American subgroups, the most notable observation is that all women, regardless of ethnicity or age, tend to neglect regular BSE.^{7,8,9,10,11,12,13}

Socio-economic variables impact on screening practices. One American/Canadian study showed women with higher education and incomes were more likely to receive

screening.¹⁴

In South Africa, there is scant research on breast cancer screening. In 2001, Prof. Karl Peltzer of the University of the North did a small telephonic comparative study between black and white women that identified low frequencies of BSE in both groups.¹⁵ Further research is necessary.

Accordingly, an exploratory descriptive study was undertaken in the Bonteheuwel township, an urban, predominantly coloured community near Cape Town with a population of 27 949.¹⁶ The area was settled in 1961 to accommodate those left homeless by the forced evictions under apartheid. The socio-economic milieu is predominantly working class, with widespread unemployment and poverty.

The study objectives were to identify and assess:

1. Awareness of breast cancer, including diagnosis, treatment, and prognosis;
2. Influence on screening behaviour of the health belief model variables and previous contact with breast cancer;
3. How many practise regular BSE;
4. How many receive regular CBE;
5. Barriers to performing regular BSE;
6. Sources of information and education on breast cancer and BSE;
7. Openness to receiving further guidance and willingness to share this knowledge with others in the community.

Methods

Both quantitative and qualitative approaches were used.

Questionnaire

A questionnaire, based on the health belief model and Champion's BSE tool,^{17,18,19,20,21} was administered by a trained research assistant to a random sample of 100 women, drawn from a list, supplied by the

local authorities, of Bonteheuwel home-owners, which had been randomised to 6 979 households. The sample size was reached after considering the financial and logistical constraints of interviewing each participant at home.

After a preliminary pilot study on a separate sample of 15 women to assess the questionnaire's applicability, the research assistant had to proceed systematically through the randomised list, until 100 women had been interviewed. If more than one woman was present in the house at the time of the visit, the most senior female (aged 20-75) of the household would be interviewed. All participants were requested to sign a consent form after a full explanation of the project had been provided. If unable to conduct the requisite interview, the interviewer would move on to the next address on the list.

The data were analysed using the Statistica 6 program. The statistical technique used was contingency table analysis using the Chi-square test for analysing categorical variables. Confidence intervals of 95% were calculated for proportions.

Focus group discussion

A one-hour focus group discussion was conducted with nine selected women. Sample selection was based on the principle of purposeful sampling.^{22,23} Selection also considered employment and other social circumstances to optimally represent the population. Those selected were associated with the author's Bonteheuwel surgery, i.e. patients, staff, and their relatives or friends. All signed an informed consent form.

The discussion was held at the surgery of the author, who took care to remain in the background. Free discussion was encouraged, with intervention only when necessary to stimulate debate.

The data were recorded via audiotape and video, transcribed verbatim, and then examined for any striking trends.

Results

Questionnaire

Background characteristics

The ages of the women ranged from 22 to 71, with a mean of 47 years (SD = 12). The majority (71%) were over 40; 48% were over 50. About half were married (55%) and most (71%) lacked employment outside home. The majority (72%) had not completed grade 10, only 9% had completed matric, while none had any higher education. Religious affiliation given was Christian (65%) and Moslem (35%).

Sixty-two per cent had a family history or past history of breast cancer or other breast disease and 44% had some association with someone so afflicted. Seventy-three per cent had consulted a general practitioner (GP) in the preceding year, while only 12% had seen a gynaecologist.

Knowledge of breast cancer

The majority of women (76%), when asked how breast cancer is detected, mentioned finding a lump, while 21% were unable to indicate any presenting features. Other signs of breast cancer indicated were painful breasts, enlarged painful glands, skin dimpling or puckering, nipple changes or discharge, change in breast size, weight loss, arm swelling, and nausea. Most (74%) thought that women could have breast cancer without necessarily feeling ill.

The majority (84%) were aware of the concept of breast self-examination, but only 32% had ever heard of mammography. The age of presentation of breast cancer that was thought most likely was under 30, whereas that considered least likely was over 50 years of age. The

incidence was deemed common or very common by 87% (95% CI: 80-94), with only 13% considering it an uncommon affliction.

Attitudes to breast cancer

The majority of women (66%) felt that health was not just a matter of luck or faith, but was partly self-determined. More than half (52%) admitted worrying a lot about their health.

The vast majority (99%) regarded breast cancer as either a very serious (88%; 95% CI: 82%-94%) or fairly serious (11%) disease, and 82% felt they were personally vulnerable, i.e. "somewhat likely" (69%) or "very likely" (13%) to someday get breast cancer, although the vast majority (92%) felt they were only equally likely (72%) or less likely (20%) than other women to develop breast cancer themselves.

Only 45% felt that screening helped detect disease early, but 86% believed that the chances of recovery were good/very good with early diagnosis and intervention, and 82% (95% CI: 74%-90%) believed that most cases could be cured.

The main barriers to screening identified were a fear of being diagnosed with breast cancer (87%; 95% CI: 80%-94%) and insufficient knowledge (20%). Others included the pain of the procedure (12%), cost (4%), "unnecessary unless there are symptoms" (4%), "nothing can be done anyway" (4%), forgetfulness (3%), lack of time (2%) and time-consuming (1%).

Breast cancer screening practices

Only 32% had ever heard of mammography, while 11% had ever had one, with merely 3% having had one in the preceding 12 months.

Clinical breast examination was more common, with 62% (95% CI:

52%-72%) having had one before, but only 29% (95% CI: 20%-38%) having one in the preceding year, compared with the 73% who had consulted a doctor during the same period. Of the women who had consulted a GP in the preceding year, only 34% (95% CI: 25%-43%) reported receiving a CBE, as had just over half of those who had consulted a gynaecologist. A total of 38% (95% CI: 28%-48%) had never had a CBE. Only 12% reported feeling embarrassed at having their breasts examined by a doctor.

Sixty-five percent (95% CI: 56%-74%) of the women had ever performed breast self-examination, with 44% having done so in the past year, but only 24% (95% CI: 16%-32%) were actually practising routine BSE each month. Only 6% reported being embarrassed at examining their own breasts.

Methods of learning BSE included pamphlets (33%), magazines (27%), and television (32%). Significantly, only 40% (95% CI: 30%-50%) had ever been taught by a healthcare professional: 24% reported being taught by doctors and 18% by nursing sisters.

In general, however, 62% felt fairly confident (27%) to very confident (35%) in their ability to perform BSE, while 55% felt that their knowledge of breast cancer and BSE was fairly adequate (45%) to very good (10%).

Health belief model and association

Questions used to assess attitudes to breast cancer were based on the health belief model.^{17,18,20} This model presumes that five conditions must be present for individuals to initiate a health-related action:

1. Awareness that a health threat of importance exists
2. Belief that they are personally vulnerable
3. Belief that taking a particular

- action could effectively reduce the chance of incurring harm
4. Belief that the benefits of the health-promotion action outweigh the consequences of not taking the action
 5. Repeated cuing increases the probability of actually taking the action

The following groups were assessed for improved rates of CBE within the

past year, BSE within the past year, and regular monthly BSE:

1. Worry a lot about their health
2. Believe breast cancer is a very serious disease
3. Believe it is likely they will someday get breast cancer
4. Believe their own chances of getting breast cancer are the same or higher than other women
5. Believe screening helps detect breast cancer early

6. Believe the chances of being cured if diagnosed early are very good
7. Believe most women with breast cancer could be cured

Each of these groups showed a trend towards improved rates of CBE and BSE, but this was not statistically significant.

Those combining all these health beliefs showed a positive trend

Table I: Participants selected for group discussion on breast cancer and screening

INITIALS	AGE	EMPLOYMENT	FAMILY STATUS
JD	36	Manager at a clothing factory	Mother of 4
MH	44	Machinist in the clothing industry	Mother of 4
WG	38	Secretary	Mother of 3
MM	37	Neurology sister at Groote Schuur Hospital	Mother of 2
JL	37	Receptionist	Mother of 3
DL	31	Manager of a coffee shop	Mother of 1
LR	36	Principal of a crèche	Mother of 3
MA	66	Domestic worker	Mother of 4
JS	39	Doctor's receptionist	Mother of 3

towards increased rates of BSE and CBE, with the latter reaching statistical significance, with 54% (95% CI: 44%-64%) of the 'all health beliefs positive' group having received a breast examination within the past year, compared with only 25% (95% CI: 17%-33%) of the 'other' group ($p = .043$).

The majority of interviewees had a positive association, i.e. either a family history or past history or personal knowledge of someone, with breast cancer or disease. Although those with a positive association showed an improved rate of yearly and monthly BSE, this was not statistically significant. In fact, CBE occurred less often during the preceding year in the 'positive association' group.

Focus group discussion
General open discussion

Several of the women stated that the subject of cancer was not openly discussed when they were children. They felt that a cancer diagnosis carried a stigma and therefore had to be kept secret. They explained that this cultural

taboo had been passed on to their own generation, reinforcing breast cancer ignorance.

Several misconceptions surfaced, including the belief that trauma to the breast could trigger cancer, and that the disease often occurred in young women.

The advantages of early diagnosis were discussed, with several participants relating success stories of acquaintances who had survived many years after having received appropriate treatment. Some spoke of the deleterious consequences of not presenting timeously after finding a breast lump.

What are the barriers to BSE and CBE?

1. Fear of diagnosis

Most indicated the fear of being diagnosed with breast cancer as the most important factor affecting their screening practices. They felt that the mere knowledge of the diagnosis, and the ensuing anxiety, were sufficient to cause inevitable deterioration, "emotionally and

physically you go backwards ... Just knowing you have cancer, you go down" (DL). "We are dying of stressing and people think we died of cancer" (MM). The diagnosis of cancer would be translated as an automatic death sentence from which there could be no reprieve: "I go to the doctor and he tells me that I have cancer and I only have two months to live; then I will die. So why know I have cancer? The whole time when I know I didn't have cancer, I was okay" (DL). Therefore, it was better not to know; some even felt it would be better not to screen: "If I am the one who examines my breasts or has them examined by a doctor then I may be the one in this company to have breast cancer. Those of you that don't do it are fine" (MH).

2. Other barriers to screening:

a. Insufficient knowledge and training to perform BSE confidently: "People don't know how to feel and what to feel" (JD). "People who are thin feel a lot of lumps. You don't know if it is a lump or what you feel. You then ignore it" (MM).

b. Feeling personally invulnerable and the notion that the disease was more likely to occur in others:

“Only in cases where we know of someone close to us that we start to worry and ask questions” (JD).

c. Time constraints:

“By the time when you get in the bath or shower you feel tired and only want to go to bed” (WG).

d. Embarrassment or discomfort associated with requesting – not receiving – a CBE from the doctor, especially when attending for an unrelated problem:

“I have a female doctor. I never feel comfortable to ask her to examine my breasts. I go for my high blood and I feel by asking her she will tell me that is not what I came for. You don't really know if you can ask them” (MH).

e. The cost of a private doctor (where CBE itself might be perceived as an unnecessary, additional cost), or the time and money spent travelling to the day

hospital and spending the whole day there:

“...the private patient will think twice to ask the doctor to examine their breasts. Reason being, they'll think they have to pay for that separately” (MM).

Should doctors perform routine CBE on all their female patients? Should women request their doctors to do CBE?

Most women expected their doctor to examine their breasts, irrespective of the reason for the visit, and without waiting for the patient's request.

What is the best venue for CBE:

private doctor, birth control clinics or day hospitals?

GPs and/or local family planning clinics were both considered acceptable venues.

How should the community be further educated about breast cancer?

Numerous suggestions included

posters, pamphlets, leaflets, dedicated days, workshops, and mass media campaigns.

Most of the women were receptive to learn more and several were motivated to reach out to the community: “The saying goes: ‘Teaching one woman is to teach a nation’” (LR).

Discussion

The main limitations of this study are limited generalisability due to a small sample size, a single session of a discussion group, and interpretation by one observer. Nevertheless, the sample is compatible with the expected demographic profile of Bonteheuwel according to national census data.¹⁶

Since many in this community do not have higher levels of education nor work outside the home, it is less likely that they have access to the relevant information. The participants, however, were better informed than had been anticipated. Most appreciated the

Table II: Comparative rates of breast cancer screening

Study	Bonteheuwel	Saint Germain and Longman ¹³		American Cancer Society ²⁴	Richardson et al. ²⁵	Zapka et al. ²⁶
Year	2004	1989		1987	1985	1987
Site	Cape Town.	Tucson		USA	Los Angeles	Massachusetts
Population	Mixed race	Hispanic	Anglo	All Women (American)	Hispanic	Hispanic
Never heard of mammograms	68	23	14	15	-	17
Ever had a mammogram	11	51	55	64	26	59
Mammogram in past year	3	32	36	40	13	38
Ever had a breast exam	62	84	94	81	85	96
Had breast exam in last year	29	56	54	67	50	75
Breast exam is embarrassing	12	33	20	-	45	-
Ever done breast self-exam	65	72	79	86	67	-
Has done BSE in past year	44	61	71	74	59	-

importance of breast cancer, and most were familiar with the concepts BSE and CBE and had previously examined their own breasts (nearly half having done so within the preceding year, although most

did not perform regular monthly BSE) and/or been examined by a healthcare provider. It follows that only a minority had heard of mammography, as the absence of a state screening programme in

South Africa prevents this modality from being widely available. Those who had had a mammogram were probably undergoing investigation for suspected cancer or being screened in the private sector.

As the majority were from lower income levels, they would probably have limited health care, having to rely on overburdened, under-funded state health facilities. Consequently, BSE is probably the main method for early breast cancer detection for these women. Indeed, many had never had their breasts examined by a healthcare provider, and only a minority had had a CBE in the preceding year.

Compared with the findings of similar studies, including various

ethnic minority groups in the USA, the screening practices of the present group were significantly lower (see Table II). Notably, the present group reported finding clinical breast examination less embarrassing than did the American groups.

Regular, monthly BSE was reportedly performed by only 24%, in accordance with the results of other studies. In South Africa, a telephonic survey of 150 white women showed that only 9.7% of

those who indicated knowing how to perform BSE actually did so each month.¹⁵ In general, estimates of BSE among American women range from 28% to 47.4%.^{27,28,29} In numerous American studies, the rates of regular, monthly BSE were low and comparatively similar to the findings of the present study (see Table III). One study revealed a low rate (21%) even among female American physicians. Overall, studies consistently show that the majority of women neglect routine breast self-examinations.

Table III: Monthly performance of BSE: various studies

BSE%	Population	Author	Year
24	Mixed race	Bonteheuwel	2004
41	Asian Indian American	Sadler et al ⁹	2001
8	Vietnamese American	Sadler et al ¹⁰	2000
21	American women physicians	Frank et al ³⁰	2000
15	Chinese American	Zxy-yann ³¹	1995
15	Chinese American	Lu ¹¹	1995
10	Asian (Pakistani and Indian)	Bakta et al ³²	1995
8	Taiwanese	Wei-Chu et al ³³	1993
28	Northern Irish	Murray and McMillan ³⁴	1993
25	White American	Grady ¹²	1988

Given the low rate of compliance, it becomes vital to identify potential barriers to screening. The vast majority highlighted fear. In particular, they felt they would be helpless against the overwhelming stress of having to cope with such a damning diagnosis. The anxiety itself, rather than the cancer, would cause the most suffering. Some even explained their reluctance to screen on the basis that the screening itself would increase the likelihood of developing cancer. A qualitative study of women's anxieties about cancer in Northern Ireland had similar findings.³⁵

Despite their fears, the participants expressed a willingness to both receive and disseminate further knowledge. Regrettably, women were more likely to have received information about breast

cancer from lay sources. Only 40% had ever been taught BSE by a healthcare professional. Of the women who had consulted a GP in the preceding year, only 34% reported receiving a CBE during this period, as had just over half of those who had consulted a gynaecologist. A total of 38% had never had a CBE. Generally, women expected their doctors or clinic nursing sisters to examine their breasts as a matter of course.

Thus, the role of healthcare professionals in educating the public about breast awareness and performing basic clinical breast screening should be reinforced. GPs must be encouraged to be more proactive in opportunistic health promotion and disease prevention.

The actual benefit of all forms

of breast cancer screening in terms of reducing mortality remains controversial. Large clinical trials have not demonstrated any survival benefits of BSE.^{36,37} To date there have been no scientific trials comparing cancer detection in women undergoing regular CBE and those who are not.³⁸ A firm evidence base might be inconclusive; nevertheless, we should not conclude that this constitutes grounds to abandon screening.

Acknowledgements

We are grateful to the personnel of the Department of Family Medicine of Stellenbosch University for all their help. We would also like to thank Dr M Kidd of the Centre for Statistical Consultation at Stellenbosch University for his assistance.

Conflict of interest:

None declared.

References

- Vorobiof DA, Sitas F, Vorobiof G. Breast cancer incidence in South Africa. *J of Clin Oncol* 2001;19(18):125-7.
- American Cancer Society. *Cancer facts and figures*. New York: ACS; 1999.
- Boring C, Squires T, Tong T, Montgomery S. *Cancer statistics*. *CA Cancer J Clin* 1994;44:7-26.
- Koroltchouk V, Stanley K, Stjernsward J. The control of breast cancer. A WHO perspective. *Cancer* 1990;65:2803-10.
- Hoffman M, De Pinho H, Cooper D et al. Breast cancer incidence and determinants of cancer stage in the Western Cape. *S Afr Med J* 2000;90(12):1212-16.
- Pegoraro RJ, Nirmul D, Bryer JV, Jordaan JP, Joubert SM. Clinical patterns of presentation of breast cancer in women of different racial groups in South Africa. *S Afr Med J* 1985;68:808-10.
- Barroso J, McMillan S, Casey L, Gibson W, Kaminsky G, Meyer J. Comparison between African-American and white women in their beliefs about breast cancer and their health locus of control. *Cancer Nurs* 2000;23(4):268-76.
- Rashidi A, Rajaram S. Middle Eastern Asian Islamic women and breast self-examination. *Cancer Nurs* 2000;23(1):64-70.
- Sadler GR, Dhanjal SK, Shah NB, et al. Asian Indian women: knowledge, attitudes and behaviours towards breast cancer early detection. *Public Health Nurs* 2001;18(5):357-63.
- Sadler GR, Dong HS, Ko CM, Luu TT, Nguyen HP. Vietnamese American women: breast cancer knowledge, attitudes and screening adherence. *Am J Health Promot* 2001;15(4):211-4.
- Lu ZJ. Variables associated with breast self-examination among Chinese women. *Cancer Nurs* 1995;18(1):29-34.
- Grady KE. Older women and the practice of breast self-examination. *Psychol Women Q* 1988;12:473-87.
- Saint-Germain MA, Longman AJ. Breast cancer screening among older Hispanic women: knowledge, attitudes and practices. *Health Educ Q* 1993;20(4):539-53.
- Katz SJ, Zemencuk JK, Hofer TP. Breast cancer screening in the United States and Canada, 1994: Socioeconomic gradients persist. *American J Public Health* 2000;90(5):799-803.
- Peltzer K. Breast self-examination and cervical (PAP) smear test: Attitudes and self reported practices among South African women. *Psychological Reports* 2001;89:27-32.
- South African National Population Census, 2001. Pretoria.
- Rosenstock IM. Why people use health services. *Milbank Mem Fund Q* 1966;44:94-121.
- Becker MH, editor. *The health belief model and personal health behaviour*. *Health Educ Monogr* 1974;2:324-437.
- Champion VL. Instrument development for health belief model constructs. *ANS Adv in Nurs Sci* 1984;6(3):73-85.
- Champion VL. The relationship of breast self-examination to health belief model variables. *Res Nurs Health* 1987;10:375-82.
- Champion VL. Instrument refinement for breast cancer screening behaviours. *Nurs Res* 1993;42:139-43.
- Bailey DM. *Research for the health professional. A practical guide*. 2nd ed. Philadelphia: FA Davis Company; 1997. p. 146.
- Pope C, Mays N, editors. *Qualitative research in health care*. 2nd ed. London: BMJ Books; 2000. p. 94-7.
- American Cancer Society. *The 1987 survey of public awareness and use of cancer tests*. Conducted by the Gallup Organization, analysed by Lieberman Research, Inc.
- Richardson JL, Marks G, Solis JM, Collins LM, Birba L, Hisserich JC. Frequency and adequacy of breast cancer screening among elderly Hispanic women. *Prev Med* 1987;16:761-74.
- Zapka JG, Stoddard A, Barth R, Costanza ME, Mas E. Breast cancer screening utilization by Latina community health centre clients. *Health Educ Res* 1989;4:461-8.
- McMillan SC. Nurses' compliance with American Cancer Society guidelines for cancer prevention and detection. *Oncol Nurs Forum* 1990;17:721-7.
- Benedict S, Williams RD, Baron J. Recalled anxiety: from discovery to diagnosis of a benign breast mass. *Oncol Nurs Forum* 1994;21:1467-75.
- Sortet JP, Banks SR. Health beliefs of rural Appalachian women and the practice of breast self examination. *Cancer Nurs* 1997;153:231-5.
- Frank E, Rimer BK, Brogan D, Elon L. U.S. women physicians' personal and clinical breast cancer screening practices. *J Women's Health Gend Based Med* 2000;9(7):791-801.
- Zxy-yann JL. Variables associated with breast self-examination among Chinese women. *Cancer Nurs* 1995;18(1):29-34.
- Bhakta P, Donnelly P, Mayberry J. Management of breast disease in Asian women. *Prof Nurs* 1995;11:187-9.
- Wei-Chu C, Kwei-Wen C, Chun-Hua F, Lee-Lan Y. A study on women's practice of breast self-examination in Taiwan. *Prev Medicine* 1993;22:316-24.
- Murray M, McMillan C. Social and behavioural predictors of women's cancer screening practices in Northern Ireland. *J Public Health Med* 1993;15(2):147-53.
- Murray M, McMillan C. Working class women's views of cancer. Belfast: Ulster Cancer Foundation; 1987.
- Semiglazov VF, Moiseyenko VM, Bavli JL, et al. The role of self breast examination in early breast cancer detection (results of the 5-year USSR/WHO randomised study in Leningrad). *Eur J Epidemiol* 1992;8:498-502.
- Thomas DB, Gao DL, Ray RM, et al. Randomised trial of breast self examination in Shanghai: final results. *J Natl Cancer Inst Cancer Spectrum* 2002;94:1445-57.
- Dent DM. Screening for breast cancer – finding a place between common sense and evidence base. *S Afr Med J* 2004;94(5):354-5.