

RESEARCH COMMUNICATION

Transfer of Clinical Breast Examination Skills to Female Community Health Volunteers in Nepal

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Abstract

Objective: To observe skill transfer for detection of clinical abnormalities in the breast by determining kappa agreement, sensitivity, specificity, positive predictive value and negative predictive value of clinical breast examination by female community health workers (FCHVs) considering surgeon findings as the gold standard. **Method:** This cross-sectional study was conducted in Dharan Municipality, Eastern Nepal for period of one year from June 2008 to May 2009. A total of 1,238 women were examined by both a FCHV and the surgeon. **Result:** The interobserver kappa agreement for the detection of clinical abnormalities in breast was 67% indicating a good agreement. Sensitivity, specificity, positive predictive value and negative predictive values of "FCHVs' clinical breast examination" to detect clinical abnormalities in breast in comparison to the surgeon's were 70%, 95%, 74% and 94% respectively. **Conclusion:** In view of good clinical breast examination skill transfer to FCHVs for detection of clinical abnormalities in breast, we conclude effective training of FCHVs may be a feasible approach for diagnosis of breast abnormalities in rural Nepal.

Keywords: Clinical breast examination - female community health volunteers - surgeon - clinical abnormalities

Asian Pacific J Cancer Prev, 12, 3353-3356

Introduction

Breast cancer remains a major public health problem across the globe. The incidence of breast cancer is increasing worldwide. Based on current estimates of an average annual increase in incidence ranging from 0.5% to 3% per year the number of new cases projected to be diagnosed in 2010 is 1.4-1.5 million (Parkin et al., 2002). In Nepal, breast cancer is the second most common cancer among females (Vaidya et al., 1983; Sayami et al., 2001) and most of them present in an advanced stage (Bhattacharya et al., 2006). Lack of awareness, poverty, social stigmata, adverse geographical location, late presentation to the hospital; hesitation to express in front of male doctor are various reasons for them to present in the hospital in an advanced stage.

Women whose breast cancer was diagnosed at an advanced stage had a lower 5-year survival rate (American Cancer Society, 1999). The 5-year survival rate for women whose breast cancer was detected before it had metastasized was 93% and for women with distant metastases was 18% (Horton, 1995). The growing burden of breast cancer in low resource countries demands adaptive strategies like to increase the basic facilities, which can improve upon presentation of the disease in the stage when the prognosis is very good (Smith et al., 2006).

Screening of breast cancer can usually detect the breast

cancers at an earlier stages (Mittra, 1995; Aubard et al., 2002; Miller, 2003).

Most international organizations such as American Cancer Society recommend mammography as a basic method and clinical breast examination (CBE) as the complementary technique in breast cancer screening (Smith et al., 2003). The recommendations of Global summit Conference for countries with limited resources countries are as follows: effective training of relevant staff in CBE both for symptomatic and asymptomatic women; opportunistic screening with CBE; demonstration projects or trials of organized screening using CBE or breast self-examination; and finally, feasibility studies of mammographic screening (Smith et al., 2006). However, in countries with limited resources, mammography is unlikely to be a cost-effective approach for early detection of breast cancer and CBE may be the only practical means of population based cancer screening in many parts of the world (Mittra, 1995). Low expenses, simplicity in technique and possibility of training health workers in a short period have made CBE useful in the early diagnosis of disease where mammographic screening is unavailable. Although CBE may not be able to detect the very small tumors that can be seen only on mammography, it has the potential to improve the situation wherein the majority of tumors diagnosed are at stage III or IV (Barton, 1999; Saslow et al., 2004; Walker et al., 2004). Duffy et al have found that screening with CBE alone would to a 13%

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reduction in node positive tumors and a 12% reduction in breast cancer deaths (Boyle, 2003). CBE can also detect some cancers that do not show up on mammograms and as a result can decrease false negatives of mammography (Barton et al., 1999; Miller et al., 2000; Engel et al., 2001). However, the insufficient number of the surgeons and their inclination to work in the city areas make it impossible for screening of breast cancer by CBE by surgeons. In addition to educating the public, it is important to educate health care providers with whom women are most likely to have contact because of the trust the community people places in their advice (Anderson et al., 2003).

There are about 50,000 FCHVs mobilized all over the country for conducting different health related programs in Nepal. FCHVs are easily available to the community and are well known in their localities so that potential target group would feel free to express their problems and pay enough attention to hear FCHVs than to the third person (surgeons, nurses). Taking into account of all these facts, FCHVs are considered as the best candidates to train with CBE skills for detection of clinical abnormalities in breast.

Materials and Methods

It is a cross-sectional study conducted in Dharan Municipality, Eastern Nepal for period of one year from June 2008 to May 2009.

Training of FCHVs

One or two FCHVs who were able to read, write and speak Nepali language and have served the community for at least 2 years irrespective of age and education background from each ward of Dharan Municipality were invited for CBE training. Initially 90 FCHVs participated in one day CBE training conducted in the department of Surgery, BPKIHS under the supervision of faculties of the department. The training consists of lecture in native language (Nepali) for one hour with Microsoft Power Point presentation. This lecture covered basic anatomy of breast, risk factors and characteristic features of benign and malignant breast disease. This was followed by fifteen minutes question and answer session to clarify doubts of FCHVs, one hour presentation of slides using LCD projector showing pictures of fifty clinical breast abnormalities suggestive of benign and malignant breast disease and one hour audiovisual demonstration of clinical breast examination. Finally, one hour live demonstration of CBE on women with clinical abnormalities in breast was conducted and manual on CBE explained in Nepali language was distributed to each participant.

Evaluation of CBE training

All 90 FCHVs participated in CBE training were given post training test in which each participant had to examine 2 women with clinical abnormalities in breast during 15mins CBE in each woman. The post-training test was mainly designed to detect following clinical abnormalities in breast: (1) Asymmetry of breasts; (2) Skin changes; (3) Nipple discharge; (4) Nipple retraction; (5) Breast lump; (6) Lump fixed to skin; (7) Lump fixed to chest wall; (8) Enlargement of axillary lymph nodes.

Two senior surgeons assessed the results of post training test independently after CBE on same women. Among 90 FCHVs participated in CBE training, 14 FCHVs gained equal to or more than 80% kappa agreement with two senior surgeons of the department in post training test. These 14 FCHVs were selected to participate in the study and were oriented about the method of filling the Performa.

CBE by FCHVs

The selected 14 FCHVs performed CBE after taking consent on 1,340 women of age equal to or more than 25 years for detection of clinical abnormalities in breast in seven different "breast cancer early detection health camps" organized in prefixed date and location in Dharan Municipality, Eastern Nepal from June 2008 to May 2009. The results of CBE by the FCHVs were entered in the Performa (in Nepali language) as: (1) Normal if no above mentioned clinical abnormalities were detected in breast. (2) Abnormal if above mentioned clinical abnormalities were detected in breast. Soon after the CBE by the FCHVs each women was then referred to the Surgeon for repeat CBE by the Surgeon in the same camp.

Clinical Breast Examination by the Surgeon

The surgeon performed the CBE after taking consent on women referred by the FCHVs in the health camps and filled the Performa as: (1) Normal if no above mentioned clinical abnormalities were detected in breast. (2) Abnormal if above mentioned clinical abnormalities were detected in breast.

Both the FCHV and the Surgeon were blinded to each other's findings. FNAC was done on those women who had abnormalities detected on CBE by the Surgeon for confirmation of diagnosis. If FNAC was inconclusive and there was high suspicious of breast cancer then for the final diagnosis true cut or excision biopsy was done.

Data analysis

Those women who were examined by both FCHVs and the Surgeon were selected for analysis. Those women who were examined by only one of them or with incomplete Performa or doubtful entries were excluded from the study. The data from the Performa of FCHVs and the Surgeon were entered twice in the computer and descriptive analysis was done manually and tabulated accordingly. SPSS Version 16 software was used and interobserver "kappa agreement" for each clinical abnormality was calculated separately among the study population for statistical inference of the study. Sensitivity, specificity, positive predictive value and negative predictive values were calculated. Value of kappa greater than 0.80 was considered very good agreements beyond chance, value below 0.2 was considered poor agreements and value between 0.2 and 0.4, 0.4 and 0.6 and 0.6 and 0.8 were considered fair, moderate and good agreement beyond chance respectively.

Results

Out of 1,340 women initially recruited in the study for

Table 1. Interobserver Agreement for Detection of Clinical Abnormalities in Breast Between Surgeon and FCHVs

Abnormalities By Surgeon	By FCHVs			Kappa	P value
	Present	Absent	Total		
Asymmetry of breast					
Present	3	0	3	100%	<0.0001
Absent	0	1235	1235		
Total	3	1235	1238		
Skin changes					
Present	6	0	6	86%	<0.0001
Absent	2	1230	1232		
Total	8	1230	1238		
Nipple discharge					
Present	10	0	10	86%	<0.0001
Absent	3	1225	1228		
Total	13	1225	1238		
Nipple retraction					
Present	13	1	14	71%	<0.0001
Absent	9	1215	1224		
Total	22	1216	1238		
Breast Lump					
Present	114	58	172	64%	<0.0001
Absent	49	1017	1066		
Total	163	1075	1238		
Axillary Lymphnodes					
Present	9	1	10	63%	<0.001
Absent	9	1219	1228		

CBE by the FCHVs, 102 women were excluded from the study for various reasons like doubtful entries, incomplete entries, giving consent to only one examiner. Finally total 1,238 women were included in the study. The range of the women included in the study was between 25 yrs and 89 years with mean age of 40.8 years.

Complaints of breast symptoms were present in 18% (225 out of 1,238) of women and the rest were asymptomatic (see Table 1). Among 225 women with complaints of breast symptoms, 106 (47%) women had complaints of breast pain (cyclical/non cyclical), 86 (38%) women had complaints of breast lump (unilateral/bilateral) (see Table 2), 15(7%) had complaints of skin changes, 13(6%) had complaints of nipple discharge and 5(2%) had complaints of nipple retraction (unilateral/bilateral).

Out of 1238 women included in the study, 225 had complaints of breast symptoms among which breast pain and breast lumps were the most common presenting complaints. The inter-observer agreement (kappa) for lump detection was 64% (95% CI = 59% to 69%) which indicates that a "good" agreement exists between the FCHVs and the Surgeon's CBE (see Table 3).

Discussion

World Health Organization has presented guidelines for early detection of breast cancer in countries with limited resources. In addition to educating the public, it is also important to educate health care providers, especially those with whom women are most likely to have contact. The health care providers may be physicians, nurses, midwives, traditional healers or others. Evidence suggests, for example, the nurses can play a key role in breast health care programs in countries with limited resources. What

Table 2. Interobserver Agreement for Characteristic of Detected Lump in Breast Between Surgeon and FCHVs

Abnormalities By Surgeon	By FCHVs				Kappa	P Value
	Fixed	NA	Not fixed	Total		
Lump fixed to skin						
Fixed	10	0	0	10	62%	<0.0001
NA	6	1021	38	1065		
Not Fixed	5	60	98	163		
Total	21	1081	136	1238		
Lump fixed to chest Wall						
Fixed	1	0	0	1	63%	<0.0001
NA	4	1022	40	1066		
Not Fixed	1	59	111	171		

Table 3. Interobserver Agreement in Clinical Suspicious/non Suspicious of Breast Cancer

Surgeon	Sc	FCHVs		Total	Kappa	p value
		NA	Nsc			
Sc	10	0	2	12	64%	<0.0001
NA	5	996	42	1043		
Nsc	10	57	116	183		
Total	25	1053	160	1238		

Sc, suspicious of breast cancer; Nsc, non suspicious of breast cancer; NA, normal

these providers share in common across countries and regions is the trust that the community or people places in their advice (Benjamin et al., 2003). In many countries, health care providers do not routinely provide CBE. Therefore, in addition to general education about breast health, health care providers should be given instructions in CBE (Benjamin et al., 2003)

This cross sectional study was carried out to see whether FCHVs could detect breast lumps along with other breast abnormalities like skin changes, nipple discharge, nipple retraction. The study showed FCHVs could diagnose the breast problems and refers hospital early if properly trained in CBE with established protocol.

Good agreement ($k=0.64$) was found between the surgeon and FCHVs in detection of breast lump. Agreement between the Surgeon and FCHVs in detection of other breast abnormalities like skin changes, nipple discharge and nipple retraction was also good ($k>0.6$). There was also good agreement ($k=0.67$) between the Surgeon and FCHVs in reporting CBE as abnormal. Out of 1238 cases, 57 (4.6%) cases which FCHVs had reported as normal were actually reported as abnormal by the Surgeon. Out of 1238 cases, 47 (3.9%) cases which FCHVs had reported as abnormal were actually reported as normal by the Surgeon.

The results of this study differ from the study of Miller et al (1991) in which nurses performed physical examination of breast to screen 67,740 women aged 50 to 59 and the sensitivity was 77 to 83%. The observed difference may be due to the different ages of the population of the two studies and the different gold standards used. However, there was similarity between two studies being conducted in healthy population.

The results of this study was very much similar to the study of Kaviani et al. (2006). There was fair agreement

36% for mass detection between the midwife's and the surgeon physical examination. Sensitivity, specificity, positive and negative predictive values of midwife's physical examination to detect abnormal breast masses in comparison to "surgeon's physical examination" as the gold standard were 75, 67, 48 and 87 percent respectively. However, there is different in methodology, Surgeon examined only referred cases from midwives whereas in this study Surgeon and FCHVs examined all women participating in the program.

In another study performed by Naderi et al. (2003) in Iran 2000 women aged 20 and more were examined by Behvarzes (health care provider) and gynecologists and the results of physical examination by gynecologists were considered as gold standard. The sensitivity and the specificity of the physical examination by Behvarzes were 95.8% and 99.5% respectively. The results of Naderi's study (2003) is quite different from our study in term of principle examiner (Gynecologist Vs Surgeon).

This is mainly done to see whether existing taskforce in grassroots level can be utilized to detect breast cancer patient in early stage in limited countries like Nepal, which ultimately reduces financial and social burden for early detection program. With established Protocol CBE Trained FCHVs are able to detect breast abnormalities produced by breast cancer and are able to made clinical impression of abnormal findings thus refer patient to hospital early to the clinician and this may be included in health policy of country for breast cancer awareness and early detection program.

This study was designed to know the impact of case finding by transferring CBE skills to FCHVs and to develop module for early detection of carcinoma breast in our context especially in remote part of country where women are not aware of breast cancer, and specialists are not available.

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