Uptake and performance of clinical breast exam screening by trained laywomen in Malawi

Lily Gutnik, Vanessa Msosa, Agnes Moses, Christopher Stanley, Suzgo Mzumara, Bal Dhungel, George Liomba, Clara Lee, Satish Gopal

Background

• Breast cancer burden is high in low-income countries
• Inadequate early detection contributes to late diagnosis and increased mortality
• We describe the results of Malawi’s first clinical breast exam (CBE) screening program

• Four laywomen were recruited as Breast Health Workers (BHW) by engaging local staff and breast cancer advocates
• After training, screening and breast cancer educational talks were implemented in five urban health clinics (general medicine, colposcopy, STI, antenatal/family planning)
• Women attending clinics were eligible to undergo CBE if ≥30 years, with no prior breast cancer or breast surgery, and clinic attendance for reasons other than a breast concern
• Women with abnormal CBE were referred to a study surgeon
• All palpable masses confirmed by surgeon exam were pathologically assessed
• Patients with abnormal CBE but normal surgeon exam underwent breast ultrasound to confirm normal findings
• 50 randomly selected women with normal CBE also underwent breast ultrasound
• 45 different women with normal CBE were randomly assigned to surgeon exam

175 educational talks were delivered to 4295 people in waiting rooms at the five clinics

1,000 (49%) women accepted CBE and study participation
• Acceptance varied across clinics from 73-89% (p=0.005)
• Educational talk attendance was associated with higher CBE participation (83% vs. 77%, p=0.033)

1120 (53%) of women eligible
• 1048 (47%) of women not eligible
• 117% CBE of women of age
• 7% clinic attendance for breast concern
• 2% history of breast surgery
• 2% abnormal not eligible by study staff
• 5% other reasons

220 (18%) women declined CBE and study participation

Figure 1: Malawi Breast Health Workers

Table 1: Characteristics of study participants

<table>
<thead>
<tr>
<th></th>
<th>All women (n=100)</th>
<th>CBE normal (n=75)</th>
<th>CBE abnormal (n=25)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean age, years (SD)</td>
<td>32.9 (8.0)</td>
<td>32.2 (8.0)</td>
<td>33.6 (8.1)</td>
<td>0.447</td>
</tr>
<tr>
<td>Family history of breast cancer, n (%)</td>
<td>23 (2.2)</td>
<td>16 (1.9)</td>
<td>7 (1.7)</td>
<td>0.058</td>
</tr>
<tr>
<td>Has children, n (%)</td>
<td>96 (9.6)</td>
<td>96 (9.6)</td>
<td>0 (0.0)</td>
<td>0.000</td>
</tr>
<tr>
<td>Postmenopausal, n (%)</td>
<td>114 (11.1)</td>
<td>99 (10.6)</td>
<td>15 (1.7)</td>
<td>0.042</td>
</tr>
<tr>
<td>Current breastfeeding, n (%)</td>
<td>118 (11.8)</td>
<td>139 (13.8)</td>
<td>20 (2.0)</td>
<td>0.048</td>
</tr>
<tr>
<td>Currently using contraception, n (%)</td>
<td>118 (11.8)</td>
<td>139 (13.8)</td>
<td>20 (2.0)</td>
<td>0.048</td>
</tr>
<tr>
<td>Had breast cancer in past 10 years, n (%)</td>
<td>10 (1.2)</td>
<td>31 (3.2)</td>
<td>2 (0.3)</td>
<td>0.061</td>
</tr>
<tr>
<td>Breast lump</td>
<td>6 (0.8)</td>
<td>9 (0.8)</td>
<td>9 (0.8)</td>
<td>0.088</td>
</tr>
<tr>
<td>Nipple discharge</td>
<td>13 (3.2)</td>
<td>15 (1.9)</td>
<td>16 (2.1)</td>
<td>0.000</td>
</tr>
<tr>
<td>Breast pain</td>
<td>95 (1.3)</td>
<td>91 (1.2)</td>
<td>24 (1.2)</td>
<td>0.080</td>
</tr>
<tr>
<td>Breast lump</td>
<td>117 (11.9)</td>
<td>139 (13.8)</td>
<td>20 (2.0)</td>
<td>0.048</td>
</tr>
<tr>
<td>Mean age at onset of menarche, years (SD)</td>
<td>13.1 (1.8)</td>
<td>13.0 (1.8)</td>
<td>13.2 (1.8)</td>
<td>0.93</td>
</tr>
<tr>
<td>Mean age at birth of first child, years (SD)</td>
<td>23.7 (3.7)</td>
<td>22.9 (3.3)</td>
<td>20.4 (3.0)</td>
<td>0.02</td>
</tr>
<tr>
<td>Mean age at menopause, years (SD)</td>
<td>54 (6.1)</td>
<td>51 (6.1)</td>
<td>56 (6.2)</td>
<td>0.03</td>
</tr>
</tbody>
</table>

CBE=clinical breast exam, SD=standard deviation, 978 women (42 CBE normal, 58 CBE abnormal) reported age at onset of menarche. 949 women (88 CBE normal, 66 CBE abnormal) reported age at birth of their first child. 92 women (75 CBE normal, 9 CBE abnormal) reported age at menopause.

Table 2: Comparison of breast health worker clinical breast exam to physician exam

<table>
<thead>
<tr>
<th></th>
<th>CBE normal</th>
<th>CBE abnormal</th>
<th>Physician exam normal</th>
<th>Physician exam abnormal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal (n=45)</td>
<td>43 (95.5%)</td>
<td>2 (4.4%)</td>
<td>31 (51.7%)</td>
<td>29 (48.3%)</td>
</tr>
<tr>
<td>Abnormal (n=60)</td>
<td>29 (48.3%)</td>
<td>31 (51.7%)</td>
<td>43 (95.5%)</td>
<td>2 (4.4%)</td>
</tr>
</tbody>
</table>

Performance characteristics for CBE by laywomen compared to surgeon exam:
• Sensitivity 94% (CI 79-99%)
• Specificity 58% (CI 46-70%)
• Positive predictive value 48% (CI 35-62%)
• Negative predictive value 96% (CI 85-100%)

• 29 women with abnormal screening CBE had concurrent abnormal physician exam
  • Most final pathology was benign

• All 50 women with normal CBE randomized to ultrasound had normal findings

Figure 2: Study Recruitment

Figure 3: Follow-up of referred women with abnormal physician exam

• Uptake of CBE in Lilongwe clinics was high
• CBE can be effectively bundled with other health services
• CBE by laywomen compared favorably with surgeon exam, and follow-up was good
• Task shifting breast cancer screening to trained laywomen can be an effective strategy for early detection

Figure 1: Malawi Breast Health Workers

Table 2: Comparison of breast health worker clinical breast exam to physician exam

• 19 recommended to have pathologic sampling
  • 4 axillary lesions — 2 axillary lesions <1 cm

• 10 not recommended to have pathologic sampling
  • 8 breast lesions — 5 breast pain — 2 breast infection — 1 breast asymmetry