Task Shifting to Community Health Workers for Home Based Early Detection of Cancers

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Research Article

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Abstract

Background

Breast, oral and cervical cancers constitute 32.8% of all cancers in India. The majority of these present at an advanced stage. Lack of trained healthcare providers, organized screening programs, and poor accessibility to diagnosis and treatment are the main barriers to early detection of cancers in India. We implemented organized home-based examinations and triaging program by task shifting to community health workers or Accredited Social Health Activists (ASHAs) to encourage people's participation and mitigate these barriers. The role of ASHAs as health educators and promoters was extended to provide examinations at people's homes by task shifting and training them extensively. This manuscript describes the methodology of establishing this program in the difficult hilly terrain in Cachar district of Assam.

Methods

ASHAs were trained for in theory, hands-on skills for examinations and communication. They were supervised by the trainers during their home visits for examinations. Individuals with abnormal findings were then referred to healthcare centers for further investigations and treatment.

Results

199/212 (93.8%) ASHAs participated and screened 46278, 70% of the eligible population at their homes. 95.3% of individuals accepted the screening at home. 77% of the individuals presented to nearby healthcare centers for further examination. 57% of these presented to the tertiary care center. We detected 55 cancers and 202 premalignant conditions through this program.

Conclusion

Task shifting of cancer early detection to ASHAs is feasible and acceptable to people, and examination of individuals can be done at their homes to increase participation and coverage of screening and early detection programs.

Introduction

India has a cancer burden of 1.3 million new cases and 8,51,678 cancer-related deaths per year. Breast, oral and cervical cancer constitute 33.2% of all cancers in India. (2) Poor survival of cancer patients in India is largely due to the lack of organized screening programs and accessible and affordable treatment (3). National Health Mission, in 2016, published framework for early detection and management of Common cancers (NHM). This framework mentioned that Auxiliary Nurse Midwives (ANMs) at Primary Health Centers (PHCs) should undertake cancer awareness and screening at their centers. (4) Despite intensive efforts and guidelines, the recent 5th round of the National Family Health Survey, which is a nationwide household survey in India, has shown that less than 2% of the women have undergone

cervical cancer screening or breast examination (5). Each ANM caters to 10000 individuals, making it difficult to screen eligible 3000 individuals by them in addition to their routine work. Additionally, there is poor cancer awareness and it is difficult for people from remote and rural locations to attend screening at PHCs.

We hence piloted screening and early detection of cancers at people's homes by shifting the tasks of ANMs to Accredited Social Health activists called ASHAs in Assam, India. ASAHAs belong to the community and hence we attempted to leverage their familiarity with the community Each ASHA caters to 1000 individuals in the community, amounting to 350 screen-eligible individuals, which was a smaller number compared to those catered to by the ANMs. This made it a feasible proposition. The home-based screening was designed to overcome barriers of distance to be traveled and loss of daily wages for availing screening. We undertook this cancer awareness, early detection, and screening program for breast cervix and oral cancers in the hilly district of Cachar in Assam, in the North East Region of India. The current manuscript describes the task shifting, training, and establishing home-based screening by task shifting to ASHAs

Methods

The study was conducted between March 2017 to September 2020. It was a collaborative project between Cachar Cancer Hospital and Research Centre (CCHRC), Silchar, Assam, and the National Institute of Cancer Prevention and Research (NICPR), Delhi, and funded by the Indian Council of Medical Research (ICMR). This study was approved by the institutional ethics committee at the CCHRC (2017/01 dated 14th March 2017).

Study setting:

This study was conducted in Dholai Public Health Block of Cachar District, situated in the southern part of Assam. It is the southernmost district of the state of Assam. **Figure 1**: Cachar is bound on the North by the Hills of North Cachar & Jaintia Hills district of Meghalaya. 37.92% of the total geographical area of the district is occupied by the forest. The district has large tea garden areas with approximately 15000–16000 tea garden workers who work for daily wages. Dholai block specifically is home to many tribals. The tribals include Meitei Manipuri, Khasi, Bishnupuriya Manipuri, Dimasa and Rongmei-Naga. There are also a few Mizo, and Kuki people who form very small minority. (https://cachar.gov.in/portlets/district-profile) The difficult terrain, culturally diverse community, lack of public transport, and poverty make this area a particularly challenging setting for creating population-based early detection programs.

Methodology

We included men aged 30–65 for oral examination and women in the same age group for oral, breast, and cervical abnormalities. (4) Additionally, we examined all tobacco chewers' oral cavities and head-neck areas regardless of age and sex.

Orientation programs

Scientists from NICPR and the specialists from CCHRC conducted a 4-day orientation and sensitization program in November 2017 at CCHRC and the project site in Dholai. They introduced the screening and early detection program and oriented all stakeholders including Auxiliary Nurse Midwives (ANMs), ASHAs, ASHA supervisors, medical doctors, nurses, community mobilizers, and social workers.

The ANMs at CCHRC were trained as master trainers (MT) and given detailed information about risk factors and early signs and symptoms of cancer. Additionally, they were given hands-on training about methods of early detection methods like Visual Inspection of the cervix by application of Acetic acid (VIA), Clinical breast Examination (CBE) and Oral cavity Visual Examination (OVE) by the specialists at CCHRC. Their training also covered using the Android-based mobile application for data collection developed by NICPR. They were trained to add demographic information and examination findings using the mobile-based application. Medical doctors of the project were given additional training to examine and identify the abnormalities and decide on further investigations for diagnosed abnormal lesions. **Supplementary Table 1** describes the modules used for training ASHAs MTs and doctors coordinating the project.

Training of ASHAs

MTs and medical officers of the project conducted training at sub-centers in a group of 10–15 ASHAs at a time for task shifting. The training for task shifting for examining individuals was conducted in 3 domains, including theory, practical skills, and practice sessions, and communication as described in detail in **Supplementary Table 2**; over 14 days for 4–5 hours per day. ASHAs created cancer awareness and completed a symptom checklist. The checklist included general symptoms of other cancers like weight loss, fatigue, change in voice, difficulty in swallowing. This helped in bringing to notice cancers of other areas of head neck. The skills sessions for ASHAs were aimed at differentiating between normal and abnormal findings. They were not expected to diagnose various conditions but simply triage abnormal form normal examination findings. This reduced the number needed to be screened and investigated further, by doctors. ASHAs were trained in performing Oral visual Examination for oral cavity. They examined all the subsites tongue, buccal mucosa, hard palate soft palate, lip, alveolus, and soft palate using wooden spatula and torch. They were also trained to conduct systematic CBE that included breasts, axillae, and supraclavicular regions first in sitting position and then supine position. For cervix examination, they were trained how to visualize cervix using speculum and prepare and apply acetic acid on the cervix. All the instrument were provided to ASHA. They were also trained in sterilizing these instruments. We followed all the primary screening guidelines by WHO for common cancer screening. ASHAs went door to door accompanied by another ASHA or master trainers for supervision in the initial phases. They used torch where the day light was poor in the households. ASHAs helped each other with the torch light. When the daylight or torch light were inadequate or the households did not

have beds or cots, the individuals were requested to visit nearest subcenter/gram panchayath office/Anganwadi centre. Average cot height was 60–65 cm and was found adequate for examination

They were also trained in the usage of an Android-based application. A communication module was introduced to create awareness, promote cancer screening, and motivate community members to come forward for screening.

We evaluated the performance and knowledge of ASHAs after completion of the training program to analyze their knowledge, practical, and communication skills. A multiple-choice questionnaire was prepared to analyze the basic knowledge of ASHAs about promoting a healthy lifestyle, risk factors for cancers, and early signs and symptoms. Skill assessment was done for each ASHA individually using a checklist to evaluate the step-wise procedures conducted by them for oral, breast, and cervical examinations. (National Health Mission, Ministry of Health and Family Welfare, 2016). MTs and doctors also supervised the examination skills of ASHAs as they carried out these procedures at people's homes. The communication skills of ASHAs were assessed during the area visits and by role plays.

The MTs and the project officer doctors also re-examined randomly selected 10% of individuals labeled 'normal' by the ASHAs after an initial examination for quality control. The individuals with abnormal findings were referred to CCHRC for further investigations and treatment

Study workflow

The ASHAs created cancer awareness and conducted oral, breast, and cervix examinations after taking consent from the people who agreed to participate in the screening. ASHAs conveyed the findings as 'normal' or 'abnormal' to the participants, and no attempt was made by them to further categorize the abnormalities or the diagnoses at this stage of triage. Individuals triaged abnormal were screened at the sub center by the medical officers and MTs from CCHRC. Further assessment and treatment of diagnosed cancers and precancers was carried out at CCHRC as needed. The ASHAs were given monetary incentives for participation in the training program and then additionally for every examination, screen-positive individual and subsequently for each diagnosed cancer or precancer. This was budgeted as cost for ASHA trainings and incentives separately.

Results

15 master trainers, 2 project medical officers, and 10 other supporting staff were trained before initiation. 199 out of 212 (93.8%) ASHAs participated in the training. All registered ASHAs completed the training course. ASHAs scored an average of 17.3 out of 20 (86.5%) in theory tests. Average scores on hands-on training and communication skills were 16.5 out of 20 (82.5%) and 7.6 out of 10 (76%), respectively.

The eligible population in Dholai block was 66000. The ASHAs screened 46278 (70%) women and men in the health block. 2188 (4.7%) women refused cervical/ breast cancer screening but none refused oral examination. 1952 out of 41839 (4.6%) of the individuals declared 'screen normal', were reexamined by the master trainers with ASHAs as observers. 330 men and 1622 women were rescreened. 15 of (0.7%) the rescreened individuals, tested positive for oral examination; 5 (0.3%) of the rescreened women were positive on VIA examination during the rescreening. None (0%) of the rescreened women tested positive for CBE.

4439 of the 46278 (9.5%) of the individuals had abnormalities when examined by ASHAs in the community. 3466 out of 4439 (78%) of these men and women who were referred to the sub-centers, presented for further investigations and screening by the doctors. 194 out of 327 (59.3%) of the men and 492 out of 852 (57.7%) of the women attended CCHRC when referred for further investigation and treatment. Figures 2, 3 and 4 **respectively describe the examination results of screening process for oral, breast and cervical cancer.** 22 oral cancers, 22 other head-neck cancers, 8 cervical cancers, and 3 breast cancers were detected at the CCHRC. 202 premalignant lesions were detected and treated in both men and women by the screening program

Discussion

This study demonstrates the first home-based examinations and early detection of breast cervix and oral cancers program by task shifting to trained community health workers (ASHAs) in India. 96% of individuals accepted the examination and 93.8% of the ASHAs completed the training. The majority of the ASHAs showed good proficiency in these modules. Quality control checks showed zero to 0.7% false negativity rates in the population screened by ASHAs.

CHWs have traditionally been recruited for health education, cancer awareness, patient navigation, and improving screening uptake by motivating the community to participate and report to screening centers. (6) (7)(8)(9). Systematic review of cervical cancer screening programs in India documented that most studies implemented early detection through ANMS or medical doctors (10) Examination of individuals by ASHAs at people's homes is not reported in a large-scale study like ours. A study from Nigeria documented training 35 CHWs for cervical cancer screening, which resulted in 88% concurrence with rescreening examinations by specialists. (11). A smaller study where self-sampling of HPV was done by women when educated by HCWs was carried out by Basu et al in Rajasthan state in India, but this study did not include screening and early detection for oral and breast cancers (12). Task shifting to ASHAs is feasible and makes a larger workforce available for cancer awareness and early detection in the community. Our results of 0.7% of false negatives in the population examined by the ASHAs correlate with the findings from Tanzania and Rajasthan. (11, 12). This demonstration project can inform policymakers to extend the role of ASHAs in cancer control programs, especially to large populations in rural and remote areas with limited resources.

We used the less commonly used approach by choosing a home setting for examinations for early detection. This home-based screening program for all three cancers, breast, cervical, and oral cancers; using community health workers (ASHAs) is the first of its kind in India. The population-based cancer early detection programs in LMICs, as documented by several studies and a systematic review by Driscoll et al, are usually conducted at the primary or the community health centers or the specially established centers or in camp settings. (13–15). We conducted the examinations at peoples' homes to make it more accessible to them and increase their participation. (15)

We developed an Android-based app and provided the CHWs with a tablet device each for creating awareness and data collection. More than 70% of the people have mobile subscriptions, yet mobile-based health applications or mHealth are in their infancy in India. This provides a unique setting for promoting Android or mobile phone-based interventions for improving access, implementation, and monitoring of health programs (16). A similar study to pilot mHealth was conducted at three sites in India to increase participation and follow up referrals of cancer screening by Bhatt et al. (14)

Our study has certain unique strengths. This demonstration project is the first one to document task shifting for cancer screening and its acceptability in the community. We also demonstrated the feasibility of home-based screening. A comprehensive training program for ASHAs is another strength of the project. Very few studies have described training modules and methods and duration of the training. Very few studies had training duration longer than our study as those included additional training to perform colposcopy. (10, 13) Our study has certain limitations. We did not evaluate the CHWs for their theory, practical skills, and communication skills before the training and hence we could not compare the pre-test scores with the post-test scores.

Conclusion and recommendations

Community health workers (ASHAs) can be trained and task shifting is feasible for cancer early detection programs. Home-based early detection and screening for oral, breast, and cervical cancers by ASHAs can be conducted on a large scale in remote rural populations and is well received by both ASHAs and communities in India. The description and methods of this project can pave the way for the replication of these programs on a larger scale in LMICs.

Abbreviations

ANMs - Auxiliary Nurse Midwives

ASHAs - Accredited Social Health Activists

CBE - Clinical Breast Examination

CHWs - Community Health Workers

CCHRC - Cachar Cancer Hospital and Research Centre

ECHO - Extension of Community Healthcare Outcomes

GOI - Government of India

HPV - Human Papillomavirus

MTs - Master Trainers

NICPR - National Institute of Cancer Prevention and Research

OVE - Oral Cavity Visual Examination

PHCs - Primary Health Centers

VIA - Visual Inspection of Cervix by Application of Acetic Acid

Declarations

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. The study was approved by the Bioethics Committee of the Cachar cancer Hospital and Research Center (No 2017/1 dated 14th March 2017).

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Informed consent was obtained from all individual participants included in the study for participation and publication of the manuscript.

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None of the authors have any conflict of interest.

Data will be available with corresponding author on request for research purposes

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Figures

Figure 1

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Figure 2

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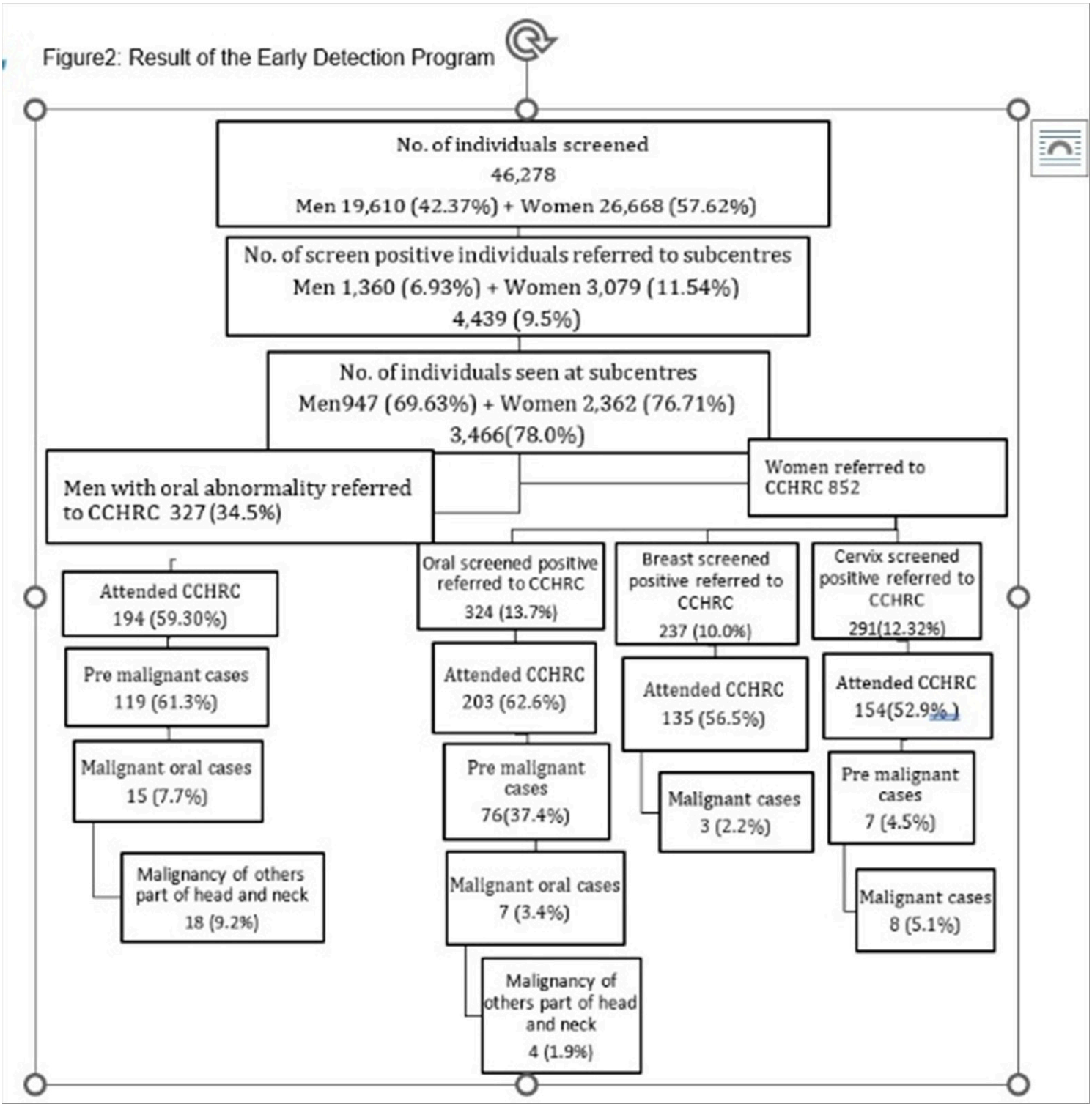

Figure 3

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Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Table1ListofTrainingModulesforMaster.docx
- Table2organizationoftrainingprogram.docx