

RESEARCH ARTICLE

Translating Evidence into Practice in Low Resource Settings: Cervical Cancer Screening Tests are Only Part of the Solution in Rural India

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Abstract

Background: The majority of women in rural India have poor or no access to cervical cancer screening services, although one-quarter of all cervical cancers in the world occur there. Several large trials have proven the efficacy of low-tech cervical cancer screening methods in the Indian context but none have documented the necessary components and processes of implementing this evidence in a low-resource setting. **Methods:** This paper discusses a feasible model of implementation of cervical cancer screening programme in low-resource settings developed through a pilot research project carried out in rural Tamilnadu, India. The programme used visual inspection of cervix after acetic acid application (VIA) as a screening tool, nurses in the primary care centres as the primary screeners and peer educators within Self-Help Women groups to raise community awareness. **Results:** The uptake of screening was initially low despite the access to a screening programme. However, the programme witnessed an incremental increase in the number of women accessing screening with increasing community awareness. **Conclusions:** The investigators recommend 4 key components to programme implementation in low-resource setting: 1) Evidence-based, cost-effective test and treatment available within the reach of the community; 2) Appropriate referral pathways; 3) Skilled health workers and necessary equipment; and 4) Optimisation of health literacy, beliefs, attitudes of the community.

Keywords: Cancer cervix - screening - community awareness - VIA screening test - low resource setting

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Introduction

About one-quarter of cervical cancer worldwide and 90% of the estimated 149,000 cervical cancers in the Indian sub-continent occur in India. (Sankaranarayanan et al., 2008; Chhabra et al., 2010) Worldwide cervical cancer is considered to be the second commonest cancer by mortality and incidence. (Chhabra et al., 2010) It has been estimated that over 70,000 women die from this largely preventable cancer in India every year, (Sankaranarayanan R et al., 2008; IARC. GLOBOCAN, 2008) with an age-standardised incidence rate of 27 per 100,000 women and age standardized mortality 15.2 per 100,000 (IARC. GLOBOCAN, 2008). Over a 25-year period, the number of cases of cervical cancer has steadily increased in India, with over 80% of cases occurring amongst rural women (Chhabra et al., 2010). Swaminathan et al. recently investigated cancer trends in Chennai city and in the State of Tamilnadu, using data on 89,357 incident cancers from the Chennai registry during 1982–2006 and published incidence rates from the Dindigul Ambilikkai

Cancer Registry during 2003–06 and reported that breast and cervical cancers together constitute almost half of the total cancer burden among women in Chennai and Dindigul districts and there is an urgent need to look into population intervention strategies to prevent the burden of these cancers (Swaminathan et al., 2011). Chhabra's recent analysis has also revealed that almost half of the cervical cancer cases occur in women less than 50 years of age, making this a significant social as well as health issue (Chhabra et al., 2010). Furthermore, women with only primary level education or illiteracy were seven times more likely to develop cervical cancer than those with secondary education. Rural women also have much poorer survival rates than their urban counterparts. (Nandakumar et al., 1995; Dinshaw et al., 2007; Kaku et al., 2008, Swaminathan et al., 2009).

There is more than sufficient evidence to show that early detection and screening for cervical cancer reduces morbidity and mortality, even in low-resource settings (Garland et al., 2007; Juneja et al., 2007; Christe et al., 2008; Cuzick et al., 2008; Sankaranarayanan et al., 2008).

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One-time screening with VIA reduces the lifetime risk of invasive cervical cancer by 25-30% and this would cost less than 0.5% of GDP if introduced in India (Sankaranarayanan et al., 2007; 2012).

This is a 'classic case' of a cost-effective intervention not being implemented into practice. Yet, even if the Government of India decide to fund such a program, little is known about the relevant components and processes that would be feasible for implementation in the rural Indian setting. A number of public health advocates in India and abroad have called for a greater understanding of effective implementation solutions to enable this evidence to be put into practice, particularly on how the evidence can be integrated within the primary healthcare system (Sankaranarayanan et al., 2008b; Kerner et al., 2009; Singh, 2009; Sankaranarayanan and Boffetta, 2010).

Most of the research on this topic has been concerned with the accuracy of various low-tech screening tools options (Bhatla et al., 2009; Sankaranarayanan et al., 2009; Patra and Panda, 2010) and feasibility studies of training primary care health workers to perform these activities. (Sankaranarayanan et al., 2007; Nene et al., 2008; Rema et al., 2008) In other words, the focus has been on the screening method and documenting incidence trends but not on the development and implementation of an integrated program. Despite the strong evidence that rurality and literacy levels are consistently strong determinants of late stage presentation and poor survival, only one study so far has evaluated a program which partly addresses these important factors alongside the provision of a screening service at the community level (Mittra et al., 2010). Specifically, Mittra et al's program in Mumbai included a deliberate component of community engagement and some education of women through audiovisual packages delivered by trial nurses. They showed that this community engagement and minimal education alone had an effect on screening rates in the control arm of the trial even without the provision of community-based screening (Mittra et al., 2010). However, this program was in an urban setting and whilst it targeted slum communities with low literacy levels, the distance required to travel to services was not the same as in many rural communities. The situation is quite different in rural settings where most cervical cancer and the worst survival outcomes exist.

This paper proposes an evidence based model of Cervical screening programme for low-resource setting based on a pilot research program with 20,000 eligible women in a rural development block in Tamil Nadu, India between January 2009 and December 2011

Materials and Methods

Program Setting

For over 30 years, the Rural Unit for Health and Social Affairs (RUHSA), Christian Medical College, Vellore, has been providing primary health care services to an estimated 120,000 population in a rural development block (a block is an administrative unit of a district), Tamil Nadu, India (Figure 1). RUHSA consists of a 75-bed community health centre with 18 sub-centres. The community health

centre has the facilities to treat the common medical and paediatric illnesses, perform uncomplicated general surgical procedures, manage obstetric patients and perform Caesarean sections. A team including a doctor (once-a-month), public health nurse, rural community officers, health aides and family care volunteers provides care in the community at the subcenters, mainly providing antenatal care and managing chronic diseases. All those who require a consult at the RUHSA community health centre or at the Christian Medical College tertiary care centre are given appropriate referrals

Access to screening

Women between the ages of 30 and 50 years were invited to participate in the screening program, through their peers and the outreach education sessions. The cervical cancer screening program provided a single-visit approach for cervical cancer screening using the VIA test with follow-up cryotherapy at RUHSA, the secondary level Community Health Centre. Over the 2 years, screening was made available at all 18 sub-centres, thereby integrating the screening program within existing primary health care services. Screening is performed by trained nurses in the subcenters. Women who were found to have VIA-positive results were referred for cryotherapy at RUHSA community health center. Those who require more advanced treatment are referred to Christian Medical College & Hospital tertiary care center.

The public health nurses and the research team were trained by the principle investigator using the interactive education materials developed by International Agency for Research on Cancer (IARC) and Jhpiego, an international health organization affiliated with The Johns Hopkins University, USA.

Creating awareness in the community

Since the screening program is a new concept for the women in these rural areas, our initial strategy was to provide community education and rely on the well-organized women self-help groups where women would be trained as local peer educators. Similar self-help groups exist across India, particularly in rural communities and were mainly established through micro-finance scheme initiatives. Enlisting the support of these local women groups was viewed as an essential first-step in gaining acceptance and support of the screening program. Further, gaining the support of the male local leaders, too, was important in an effort to encourage women to be screened. The team at RUHSA organised meetings with local panchayat (local government) leaders and other key male members in the village to motivate their women to accept screening.

Peer education has been successful in promoting condom use for HIV prevention in African youth as well as breast screening and cardiovascular disease prevention in a number of countries and has potential for application in other health issues (Karwalajits et al., 2009; Gozum et al., 2010; Maticka-Tyndale, 2010).

Selected self-help women group leaders and members were invited to be trained as peer educators, from January to April 2009. These women attended an intensive education program focussing on the signs and symptoms

of cervical cancer as well as on treatment modalities available. The benefits of routine screening were stressed. During this four month period approximately 1,000 self-help group members were trained to be peer educators through sixteen educational programs.

Whilst the peer educators were the main focus of community engagement, their role was supplemented by the inclusion of evening community education sessions using hand-puppet DVD shows with folk songs which were integrated into the regular health promotion evenings organised and sponsored by RUHSA.

Results and Discussion

The RUHSA Health information system recorded 92 cases of advanced cervical cancer reporting to the community health centre during the period of 2005 to 2011. Of them, one was stage IV, 48 were stage IIIB, 2 were IIIA, 20 were IIB, 2 were IIA, 1 was IB and 1 was IA stage and the remaining patients stage at diagnosis was not documented. The need to implement a population-based screening program was deemed important in an effort to identify women at early stages of disease.

From April 2009 to October 2011, of the estimated 20,000 eligible women, 3,182 were screened (16%). Naturally it took time to gain trust and acceptance among the target population. Of the 3,182 women, 36 (1.1%) were VIA positive and all were referred to RUHSA Community Health Centre for further diagnostic work up. Nine were treated with cryotherapy and five for reproductive tract

infection only. Unfortunately, twenty two women failed to keep their appointment for further testing and treatment. The reasons for the non-attendance of women who were willing to have the screening test but refused to accept cryotherapy are listed in Table 1.

The commonest reason for women not willing to undergo cryotherapy was apprehension and fear of treatment and lack of symptoms. In order to make sure that every woman who tests positive returns to receive the appropriate medical care, we must rethink how to convey the importance of follow up testing.

A model for translating evidence into practice in a low-resource setting

This implementation pilot for VIA and cryotherapy screening for cervical cancer in rural India highlights the need for new methodologies in implementation research. Moving evidence beyond the publication of efficacy studies must become a priority for the research community. Our pilot study suggests that implementation in low resource settings is likely to need the following components and that each will need to be evaluated as part of a 'complex intervention' (Craig et al., 2008). 1) Evidence-based, cost-effective test or treatment identified and available. 2) Access to the test and/or treatment at the community level with appropriate referral pathways (includes reducing financial barriers). 3) Outreach health workers with appropriate skills and equipment. 4) Optimisation of patient and community factors including increased health literacy, appropriate beliefs and attitudes.

Table 1. Responses of the VIA Positive Women Refusing Cryotherapy

Reasons for refusal	Frequency (n=22)
- I am scared of the treatment, I have to look after my children	5 (22.7%)
- I have no symptoms, do not want treatment	5 (22.7%)
- I have some family problems and not able to go to hospital	1 (4.5%)
- My husband did not allow me to go for treatment	2 (9.0%)
- I have consulted a gynaecologist who said I don't have a problem	1 (4.5%)
- A health worker told me that I have no problem	1 (4.5%)
- Could not trace patient, out of block	6 (27.2%)
- Became pregnant, not recommended for cryotherapy	1 (4.5%)

Challenges

While encouraged by the gradual acceptance of screening, challenges remain. The difficulty of developing a culture of trust among local women remains as does the issue of stressing the importance of screening despite the lack of symptoms. Further, we need to design a program to encourage women who test positive to seek further testing. Of the 36 women who were found to be VIA positive, 22 could not be convinced to undergo cryotherapy primarily because of lack of symptoms.

Cervical cancer can be prevented. Since it is a disease of the young and healthy (those in their prime childbearing years), it is imperative to set up affordable screening programs through the network of primary health care service centres and also make the treatment facilities available for advanced cancers at an affordable cost in the district hospitals. However this study highlights the fact that without creating community awareness regarding the benefits of early screening, without gaining the trust of the local women, without educating the community about the disease, offering screening, particularly in the rural areas, will more likely than not be unsuccessful.

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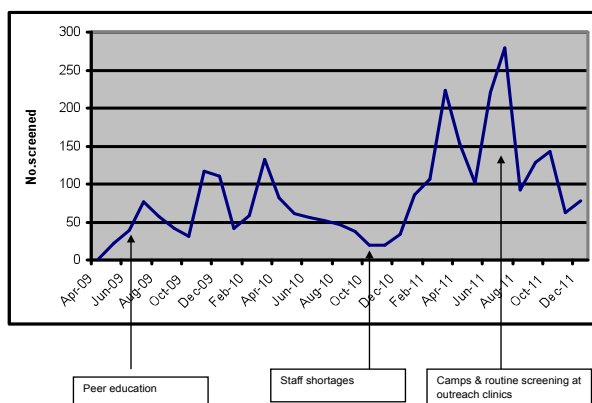


Figure 1. Screening Uptake Following Peer Education

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