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# A systematic review of randomised controlled trials examining the effectiveness of breast and cervical cancer screening interventions for ethnic minority women

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## A B S T R A C T

**Keywords:**

Breast cancer  
Cervical cancer  
Screening  
Intervention  
Ethnic group  
Review

**Purpose:** To examine the effect that breast and/or cervical cancer screening programmes for ethnic minority women have on their knowledge of and beliefs about breast or cervical cancer and screening, and on their screening intentions and uptake rates. Recommendations are also made for the format and content of such programmes, based on existing evidence.

**Methods:** A comprehensive literature search was carried out both manually and by means of five electronic databases. The findings are summarised and synthesised in narrative fashion.

**Results:** The ten RCTs included here were conducted among ethnic minority women in the United States or Canada, where breast or cervical cancer screening programmes have led to improvements in screening intentions, knowledge of cervical cancer and pap test uptake. The Breast Cancer Screening Belief Scale and self-reporting were the methods commonly used to measure outcomes. The shared characteristics of both countries' programmes were that they were theory- and language-based, the instruction took place in a community setting, the materials were culturally relevant, the content highlighted key messages about breast or cervical cancer and screening measures, and there were multiple intervention strategies.

**Conclusion:** Breast or cervical cancer screening programmes in Western countries have demonstrated improvements in knowledge of the disease, screening intentions and pap test uptake, although evidence on the effectiveness of the interventions has been limited. The common characteristics of programmes are identified, but a comprehensive model is still needed to link these characteristics with other factors and mediators influencing outcomes.

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## Introduction

Breast and cervical cancer has consistently been the commonest gender-specific cancer affecting woman over the past few decades, accounting for 33.1% of all cancers among women (International Agency for Research on Cancer [IARC], 2014). Effective screening (mammogram, pap test) is available to detect pre-cancerous lesions or early-stage cancers (Center for Health Protection, 2004) and significantly lowers the incidence rate, especially in the case of cervical cancer (IARC, 2014). Early detection allows more treatment options with better health-related outcomes, improves survival

rates and lowers healthcare costs (Bardwell et al., 2004; Carles et al., 2011; National Cancer Institute, 2014c; Woo et al., 2007).

Despite the effectiveness of breast and cervical cancer screening and the efforts that have been put into its promotion, the utilisation rate is still low among ethnic minority women (Downs et al., 2008; Miranda et al., 2012). As a result, the incidence and mortality rates for cervical cancer are still high among black and Hispanic women in comparison with those of white people in the United States (National Cancer Institute, 2014b). Although the incidence rate of breast cancer is approximately the same among all races/ethnicities, the mortality rate is higher among black women than other races (National Cancer Institute, 2014a). Research conducted in Western countries reveals that ethnic minority women are less likely to access cancer screening services and that they encounter more barriers than others: traditional customs, values and beliefs, perceptions of screening and vulnerability, physicians' attitudes, lack of cancer-related knowledge, language constraints, financial

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considerations, education levels, and familiarity with the local healthcare system (Ackerson and Gretebeck, 2007; Remennick, 2006; Young et al., 2011).

In view of the low utilisation of effective screening that detects pre-cancerous lesions or early signs of cancer, and in the face of the various impediments to the use of cancer screening, various breast and/or cervical cancer screening programmes have been organised in Western countries for ethnic minority women to promote the use of cancer screening (Deavenport et al., 2011; Taylor et al., 2002). Previous reviews exploring such programmes' effectiveness have shown that screening uptake rates are improved when there are found to be access-enhancing strategies, community education, individually directed approaches, and theory-based and culturally tailored interventions (Han et al., 2009, 2011; Legler et al., 2002; Masi et al., 2007). However, these reviews include studies with participants who are not all from ethnic minorities and the results are not separated out specifically for such women (Han et al., 2009, 2011; Legler et al., 2002). Reviews focusing on a specific ethnic minority group in the United States (Corcoran et al., 2010, 2012; Lee-Lin and Menon, 2005; Masi et al., 2007) do not provide an international view of the intervention applicable to ethnic minorities worldwide. Also, participants' breast and cervical cancer histories are not clearly stated (Corcoran et al., 2010, 2012; Han et al., 2009, 2011; Lee-Lin and Menon, 2005; Legler et al., 2002; Masi et al., 2007) though a personal history of cancer may affect a woman's intentions and actions in respect of screening (Andersen and Urban, 1998). Attitudes and perceptions of screening will be different among women with or without previous breast cancer experience, in the area of screening or early detection of primary cancer, or of its recurrence. The approaches to promoting the use of mammogram or pap testing will be different according to current cancer status, as far as screening or follow-up cancer recurrence is concerned. Mammogram or pap test uptake rates are the only outcomes explored (Corcoran et al., 2010, 2012; Han et al., 2009, 2011; Lee-Lin and Menon, 2005; Legler et al., 2002; Masi et al., 2007). Knowledge of and beliefs about breast or cervical cancer and screening are not explored in these reviews. Characteristics of this kind work at the individual level and improvement in such areas serves as the mediator for enhancing behavioural change (National Cancer Institute, 2005; Rauscher et al., 2004). Previous work has found that positive changes in attitude and perception about the risks and benefits of mammograms are associated with a greater uptake rate, although such an outcome is not observed in the case of changing attitudes towards breast cancer risk (Rauscher et al., 2004). This information influences the adequacy and relevance of intervention design and the education focus that could help in enhancing screening uptake. Apart from an individual's attitude and perception providing information about behavioural change, the intention to engage in screening is an even more powerful indicator than attitudes (Ajzen, 1991). When a person declares an intention to do something, the likelihood of that behaviour taking place is high. Although one previous study maintains that there are differences in the meaning of a declared intention among different cultures and that having an intention does not necessarily entail the action being performed (Pasick et al., 2009), others believe that the intention is still chosen as an outcome when an actual screening cannot be measured (Ham, 2005; Levy-Storms and Wallace, 2003).

A series of planning, designing and developing intervention content and data collection methods should be carefully carried out before the intervention is implemented (Polit and Beck, 2012). The tools used in measuring outcomes affect the quality of findings. Using standardised, valid and reliable instruments is the basis for high quality data and facilitates the interpretation of findings. Little is known about the instruments used in assessing the outcomes in previous reviews. In addition, the extent to which cultural

characteristics have been incorporated into the programmes has not been extensively examined. A clear understanding of such areas would help in developing a tailor-made breast and cervical cancer screening programme for ethnic minority women.

There is lack of reviews examining an intervention for the promotion of both breast and cervical cancer screening. The study by Gonzalez et al. (2012) explores the factors associated with adherence to breast or cervical cancer screening in past years. The study finds that, during logistic regression examining the factors associated with cervical cancer screening adherence, when all variables were simultaneously added to the model, breast cancer screening adherence remained significant in past years. Similar results are obtained in examining breast cancer screening adherence. Exploring interventions for both cancer types may provide information on the intervention characteristics that are effective and can be adopted in future designs to address both cancer types. This would in turn help to save resources in promoting screening uptake for gender-specific cancer.

The aims of the present systematic review are to examine the effects that breast and/or cervical cancer screening programmes targeting ethnic minority women without a history of cancer have on their knowledge and beliefs about breast or cervical cancer and screening, screening intentions or uptake. It also aims to provide recommendations on the format and content of such programmes according to existing evidence. It is hoped that participation in these programmes will improve screening uptake and lead to decreased morbidity and mortality from breast or cervical cancer in the long run.

## Methods

### *Literature search*

A literature search was conducted in October 2014 using five electronic databases: Ovid Medline (since 1946), Cumulative Index to Nursing and Allied Health Literature Plus (CINAHL Plus, since 1937), Scopus (since 1823), PsycINFO (since 1806) and Pubmed. A combination of keywords was used to identify relevant articles (Fig. 1). The articles identified were assessed against inclusion and exclusion criteria (Table 1). A secondary search was made by reviewing included studies' reference lists. Two reviewers independently extracted the data from the studies, whose quality was assessed by the critical appraisal tools for randomised controlled trials of The Joanna Briggs Institute (2011) (Table 2). Two reviewers independently rated the articles. Any disagreement arising over the rating was resolved through discussion and final consensus. The quality rating ranged from five to seven out of ten (Table 3).

### *Data synthesis*

Given the heterogeneity of the data (ethnicity, types of intervention, data collection periods, outcome measures), the study characteristics and results are summarised in both tabular and narrative form.

## Results

### *Search results*

The five databases and secondary searches yielded articles in total. Of these, 5686 were removed after the titles and abstracts were reviewed. 86 full-text articles were left for further review. With the application of the inclusion criteria, 75 articles were rejected, leaving a total of 11. However, two came from the same

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