Royal College of Obstetricians & Gynaecologists

Barriers to the uptake and Effectiveness of Interventions to Increase the Uptake of Cervical Cancer Screening Methods in LMIC- A Mixed-Methods Systematic Review

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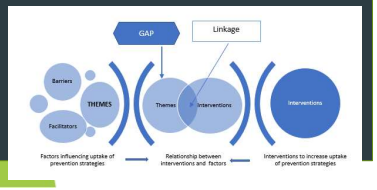
ABSTRACT

This study aimed to explore the factors and interventions influencing the uptake of cervical cancer screening in women of developing countries using a Mixed methods Review design.

Quantitative data were extracted, and meta-analyses of the randomised trials on the effectiveness of interventions. Qualitative data were extracted and deductively coded to Theoretical Domains Framework domains and inductively coded into emerging themes.

22 studies were included in quantitative analysis, and 17 in qualitative analysis.

Educational interventions were the most common approach, and a low certainty of evidence supported their use. The study findings support the use of HPV self-sampling and educational interventions to increase the uptake of cervical screening. Educational interventions involving culturally sensitive materials and telephonic follow-up were the most effective



WHY DO IT?

Cervical cancer is one of the few preventable cancers which can be cured if detected early. A wide window exists for it to be detected and treated by removing the diseased tissue. But a lack of good coverage of secondary prevention strategies is a significant barrier to reducing cancer-related mortality and morbidity, and cervical cancer remains the most common type of cancer in the developing world.

Despite significant scale efforts to improve screening in some countries, their success is minimal. Several barriers, such as lack of awareness and social stigma, have been recognized but are yet to be resolved. Given the complexity of socio-cultural and organizational factors influencing the implementation of public health programmes, a deeper understanding of the apparent gap between evidence and practice is needed. Therefore, conceptual models using mixed-method research have gained importance in implementation research to understand and overcome barriers to implementation.

METHODS AND MATERIALS

Objectives

1) To summarise and understand the barriers to the uptake of cervical cancer screening in LMIC.
2) To summarise the evidence on the effectiveness of interventions used to enhance/promote uptake of cervical screening programmes in LMIC.
3) To link the barriers and facilitators identified from Question 1 with the evidence of effectiveness from Question 2 using a synthesis matrix to understand how best these interventions can be integrated within the LMIC context.

Quantitative and qualitative studies exploring barriers and interventions towards cervical cancer screening uptake were searched from multiple databases.

Quantitative data were extracted, and meta-analyses of the randomised trials on the effectiveness of interventions were conducted using a random effects model. Non-randomised trials were narratively synthesised.

The risk of bias was assessed using the EPHPP(Effective Public Health Practice Project) tool. Qualitative data were extracted and deductively coded to Theoretical Domains Framework domains and inductively coded into emerging themes .

Cross-study synthesis was conducted using a synthesis matrix to integrate qualitative and quantitative findings.

Software used – Revman and Nvivo.

RESULTS

This mixed methods systematic review included 22 quantitative and 17 qualitative studies. PRISMA Figure 3 .

Qualitative findings exhaustive however, Knowledge, beliefs about consequences, social influences, social roles and emotions were among the key domains of barriers affecting screening uptake. The synthesis matrix identified areas of divergence between the reported interventions and the targeted barriers Table 1.

The interventions identified in quantitative studies were compared with standard or routine care and metanalysis was conducted where possible. Two prominent comparisons were as follows:

HPV Self Sampling vs Routine care at clinic visit

Comparisons were drawn across all identifiable interventions. Meta-analysis of two RCTs with 2485 participants comparing HPV Self Sampling with routine care to increase screening uptake found that women offered self-sampling were more likely to undergo screening than women who received standard care with either VA or pap smear at a clinic (RR 1.67 95% CI 1.58-1.77). Figure 1

Health education vs standard care

Meta-analysis of three RCTs comparing educational interventions with standard care showed that education interventions were more likely to increase cancer screening uptake (RR 0.35. 95%CI 0.02-0.68 I2 98%) Figure 2

Complex interventions, which included other efforts such as transport assistance, had a larger impact (RR 32).HPV self-sampling as an intervention was also effective (RR 1.67) by reducing the barriers such as embarrassment and physical barriers to access screening centres. Health promotional messages had no significant increase in uptake.



Figure 1 HPV Self Sampling vs Routine care at clinic visit

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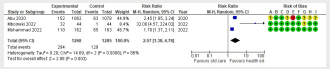


Figure 2 Health education vs standard care

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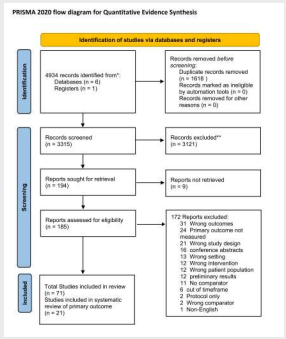


Figure 3 PRISMA chart quantitative.

Views on identified barriers to screening uptake	Interventions identified to be effective in quantitative review
Misconceptions prevailed locally, and beliefs were shared among community members, preventing the acceptance of modern health education. Misconceptions intertwined with supernatural and religious beliefs.	Interventions by Abiodun et al(O.A., O. O. and J. O., 2014), Interis et al(E.C., C.,P. and M., 2015) included culturally sensitive methods to increase awareness.
Women had low awareness of cervical screening as well as cervical screening.	All educational interventions aimed at improving awareness of screening.
Women were not confident in self-sampling and felt self-testing to be inferior to clinical tests.	No interventions specifically trained women for self-sampling. Interventions by Arrossi et al (S. et al., 2015) and Castle et al(L. S. et al., 2021) offered community health workers for collection of HPV self-samples.
Access to health information was mainly from peers, and mistrust in health care professionals prevailed. Women placed greater trust in traditional healers and alternative medicine.	Studies focusing on peer health educators and lay health workers would influence mother's awareness as well as community awareness. No studies facilitated teaming up with local healers and traditional medicine to encourage community awareness without clashing with local beliefs and practices.
Lack of health records and a recall system prevented behavioural regulation.	No interventions in LMIC assessed the effect of invitations or recall system, except for Adomi et al(i., j. and D., 2017) which compared the framing of different types of health messages. Some studies offered motivational messages plus reminders targeting behavioural regulation(K. S. et al., 2021; H. et al., 2021).
Poor health facilities, distressing hospital environment with inhumane HCP behaviour and long waiting times discouraged women from visiting screening centres.	These barriers were only partially addressed by LHW approaches and house to house visits. Only one study addressed this barrier through social marketing approach by making services accessible and cost free with limited bureaucracy, female providers and good client service(T. et al., 2022).
Women strongly held fear and anxiety about cancer and women felt counselling at screening centres was substandard.	No studies addressed this barrier at the level of prescreening counselling at screening centres.
Fear of information getting out and being outcasted by family and society.	Interventions where services were offered outside of usual screening centres or by community members allow women to be discrete. No studies specifically explored this, however Ndikom et al(C.M. et al., 2019) provided educational interventions at antenatal clinics.
Physical barriers prevented access to services.	Interventions offering house to house visits and compensation with travel vouchers addressed this barrier
Lack of compensation for travel, lost work and childcare to help women.	Interventions offering financial incentives, travel vouchers and escorting to screening centres address this barrier (K. et al., 2020; H.R., 2022; J.F. et al., 2022)

Table 1. Synthesis matrix.

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DISCUSSION

- Among interventions identified, educational interventions were the most common type in LMIC, while knowledge was the most coded TDF domain among qualitative studies.
- Lack of awareness and misconceptions were commonly identified within knowledge, and a strong interlinking of misconceptions with cultural and religious values was noted.
- Conflicting views from healthcare professionals do not align with cultural values and add to mistrust in healthcare. Culturally sensitive educational interventions effectively addressed this barrier.
- Educational interventions were effective overall, and the meta-analysis of three RCTs comparing educational interventions to standard care showed a positive effect with increased screening uptake.
- Complex interventions, which included other efforts such as transport assistance, had a larger impact (RR 32) (J.F. et al., 2022).
- HPV self-sampling as an intervention was also effective (RR 1.67) by reducing the barriers such as embarrassment and physical barriers to access screening centres.
- Health promotional messages had no significant increase in uptake compared to standard care on meta-analysis (RR 1.98 95% CI 0.93-4.21). However, this comparison had significant statistical heterogeneity and as significant overlap between promotional messaging and education can be construed, a supposition couldn't be drawn without bias.

CONCLUSIONS

The study findings support the use of HPV self-sampling and educational interventions to increase the uptake of cervical screening. Educational interventions involving culturally sensitive materials and telephonic follow-up were the most effective. Cross-study synthesis using a synthesis matrix revealed gaps with potential for future interventions.

This systematic review highlighted the lack of high-quality studies on interventions to increase cervical screening uptake. Future randomised trials could be planned with interventions designed based on the findings of this study. Researchers can also benefit from the methods described in this study for future MMRS in implementation science

Contact

For more information on study or information on mixed methods study design in health care research

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