

## NARRATIVE REVIEW - PUBLIC HEALTH

## BRIDGING THE GAP: A NARRATIVE REVIEW OF BARRIERS TO CERVICAL CANCER SCREENING IN INDIA

Arjuhn R <sup>(1)</sup>, K Poonkodi <sup>(2)</sup>

(1) District Program Officer- Non Communicable Disease, Directorate of Public Health and Preventive Medicine, Namakkal

(2) District Health Officer, Directorate of Public Health and Preventive Medicine- Namakkal

**ABSTRACT**

**INTRODUCTION :** Very few women undergo cervical cancer screening, therefore this narrative review aims to identify barriers among women to screening in India which can in turn aid in better delivery of ongoing screening programs. The objective of this study is to understand the barriers faced by women to uptake cervical cancer screening in India.

**METHODS :** We did a narrative review, for which nine articles obtained after thorough search from database with appropriate search strategy and data extraction. Data are analysed in an inductive thematic analysis approach under two components

**RESULTS :** The barriers faced by women in cancer screening were grouped into two main themes. The first theme highlighted a lack of awareness about symptoms and disease and women not feeling at risk for the disease, the second theme included barriers such as loss of pay, lack of family support and social stigma, particularly in rural areas. However, most studies indicated that education positively correlates with increased cancer screening uptake.

**CONCLUSION :** Addressing barriers to cervical cancer screening requires a multi-pronged approach. Public health campaigns should raise awareness about cervical cancer, its symptoms, and the benefits of early detection, especially in rural and low-income communities. Culturally sensitive interventions can tackle social stigma and engage family members in preventive healthcare. Training healthcare providers to address fears and build trust is also crucial. Shifting to HPV-based screening from Visual Inspection with Acetic acid (VIA) can overcome many barriers as it is painless, encouraging participation, and self-sampling enhances compliance. HPV testing offers greater sensitivity and specificity, enabling accurate risk assessment and motivating regular screenings which is recommended by the World Health Organization.

**KEYWORDS :** Cervical cancer, Screening, Barriers, India

**INTRODUCTION**

Cervical cancer ranks eighth in terms of incidence and ranks ninth in terms of mortality globally.<sup>1</sup> In India, cervical cancer incidence is estimated to be 1,27,526 and mortality is estimated to be 79,906 which is approximately one fifth of global incidence and mortality from the disease.<sup>2</sup> Cervical cancer accounts for 17.7% of the total cancer burden in the country and contributing to 8.7% of the overall mortality burden in India (2). Moreover, India is projected to add 1.5 million Disability-Adjusted Life Years (DALYs) by 2025.<sup>3</sup> Therefore, detection of Cervical cancer at the earliest is of paramount importance especially in a country like India. Screening programs are underway in India from 2010 under National Programme for Prevention and Control of Non-Communicable Diseases [NP-NCD].<sup>4</sup> Three different modes of cancer screening are available like HPV based screening, Visual inspection using acetic acid/Lugol's iodine (VIA/VILI) and Pap based screening, even though some methods may be superior to others.<sup>5,6</sup> All methods are effective in reducing morbidity and mortality and India screening programs largely use VIA/VILI. Unfortunately, screening uptake is still poor with only 1.9% of women between the ages of 30 and

49 have ever had a cervical cancer screening. This is 2.2% in urban areas and 1.7% in rural areas.<sup>7</sup>

This narrative review seeks to synthesize existing literature on the barriers to cervical cancer screening in India, providing insights that could inform targeted interventions and appropriate changes to improve screening efforts and overall women's health outcomes in the country. Addressing these barriers is essential, as the consequences of inaction not only impose a significant financial strain on healthcare systems but also lead to considerable loss of life. The objective of this study is to understand the barriers faced by women to uptake cervical cancer screening in India.

**METHODS**

We conducted a narrative review to explore the evidence on barriers to cervical cancer screening in India. The



Please Scan this QR Code to

View this Article Online

Article ID: 2024:04:03:11

Corresponding Author: Arjuhn R

e-mail : mmcarju@gmail.com

available data were extracted through literature search and analysed using inductive thematic approach. This approach allowed us to identify the specific barriers to cervical cancer screening in India and highlight the gaps in existing research. This review is not registered, and protocol not prepared for this narrative review.

A systematic method was used to identify pertinent studies. We conducted an extensive literature search across PubMed and Google Scholar to find English-language studies related to cervical cancer screening in India from 2004 to 2024 with focus on south Indian articles. A variety of keywords and their synonyms were combined using 'OR' and 'AND' operators to fine-tune the search. The keyword combination that produced the most relevant results with minimal irrelevant hits was selected for the final search. Full details of the keywords used in the PubMed search with title/abstract filters are provided in Annexure 1.

The Population Intervention Comparison Outcome Strategy (PICOS) was applied to select the publications by both authors: (1) population: women and service providers; (2) intervention: cervical screening Pap smear or Papanicolaou test and visual inspection with acetic acid or HPV based screening. (3) comparator: this was not a specific inclusion criterion since studies with and without a comparator group were included; (4) outcomes: The available data were extracted and analysed using a Inductive Thematic analysis.; (5) study design: peer-reviewed English publications to ensure the quality of research; only publications based on research on India population in India and only articles published between 2004 and 2024 .

The same PICOS method was used to exclude the publications with the following characteristics: (1) population: studies on population groups in countries other than India or high-income economies. (2) intervention: unproven methods of cervical screenings (3) comparator: this study need not necessitate Comparator (4) outcomes: no barriers to access reported; (5) studies: editorials, letters and personal views and publications of languages other than English. Figure 1 presents the PRISMA 2020 flowchart for the database search of relevant studies. The selection process occurred in three stages. Initially, titles and abstracts were screened according to the predefined inclusion and exclusion criteria. This step was checked by K.P involved in the review to verify the selection. Next, studies that passed the first screening were subjected to a full-text review in the second stage. Papers excluded at this stage were shared with authors, who provided feedback on the exclusions. In the final stage, the references from the selected studies were reviewed to

identify any additional relevant publications that may have been missed in the original database search, applying same inclusion criteria.

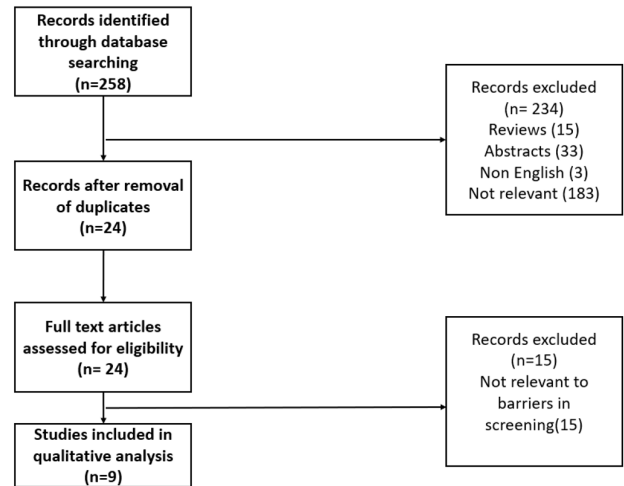


Figure 1: -Showing PRISMA Flowchart

Data extraction involved all the authors performing an Inductive thematic analysis of the selected publications independently. All authors reviewed the selected articles and different codes were generated.

These codes are then analysed by the authors for the possibility of categorization of codes for further analysis. No automated tools used for code generation. Risk of bias was assessed with mixed method appraisal tool by authors independently.

Qualitative study checklist was selected from the tool as it is relevant for this study. It contained two screening questions followed by five qualitative checklist questions with answer options of 'Yes', 'Can't tell' and 'No'. questions with answer 'yes' awarded 1 point, answer 'No' was awarded 0(zero) points and 'can't tell' answers received 0.5 points. Articles received strong score of 5 and some articles received score of 3.5 points whereas lowest score that articles received is 3 points.

## RESULTS

Upon searching for appropriate articles from PubMed, Google scholar and going through references in the relevant articles to capture the missed article from database. Nine articles were found that is focused on barriers of Cervical cancer screening in India.

Age group involved were as low as 18 years and as high as 85 years, from rural and urban parts of the country but predominantly rural. Seven out of nine studies used questionnaire/interview type of evaluation and remaining

two had focussed **group discussion** (Table 1)

Author with year	Setting	Type of population	Sample size	Age group	Information extraction
1. Dsouza JP et al, 2020 <sup>(8)</sup>	Community based	General population & service providers	45	30-59	FGD
2. Mahalakshmi S, 2020 <sup>(9)</sup>	Community based	General population & Service providers	19	NA	Questionnaire
3. Chandrika, K et al, 2020 <sup>(10)</sup>	Community based	General population	219	30-65	Questionnaire
4. Vidhubala E et al, 2020 <sup>(11)</sup>	Hospital based	Service providers	15	NA	Interview
5. Shrutiti R et al, 2019 <sup>(12)</sup>	Hospital based	Service providers	15	NA	Interview
6. Tripathi N, 2014 <sup>(13)</sup>	Community based	General population	281	35 and above	Questionnaire
7. S Aswathy et al, 2012 <sup>(14)</sup>	Community based	General population	809	15-50	Interview based
8. Singh S et al, 2012 <sup>(15)</sup>	Hospital based	Patients	812	18-85	Questionnaire
9. Basu P et al, 2006 <sup>(16)</sup>	Community based	General population	496	25-65	FGD

Upon examining the selected articles by the authors individually, different codes were generated based on the naming of the barriers mentioned by the authors of the selected articles. 13 such codes generated. These 13 codes are grouped into 4 categories as given in Table 2 such as 1) Awareness based barriers, 2) Anxiety based barriers, 3) Societal barriers and 4) Economic barriers. Based on the above-mentioned categories of barriers, two themes emerged as in Table 2 such as 1) Women who are not willing for cervical cancer screening comprising of awareness-based barriers and anxiety-based barriers and 2) Barriers to women who are willing for screening comprising of societal and economic barriers.

Table 2: Results of inductive thematic analysis

Theme 1: - Women who are not willing for cervical cancer screening	
Awareness based barriers	Anxiety based barriers
Lack of awareness of the disease	Fear of pain from screening procedure
Lack of awareness of symptoms	Fear of being diagnosed
Lack of awareness of screening programs	Embarrassment
Not feeling at risk	
Theme 2: - Barriers to women who are willing for screening	
Societal barriers	Economic barriers
Stigma	Loss of pay
Lack of support from family members	Worry about finances, if diagnosed

In the first theme, lack of awareness about the symptoms and disease is the predominant barrier in all studies and accounting for more than 80% in two studies (9,14,16) and second most predominant barrier is women not feeling at risk for disease more than the fear aspect. Whereas loss of pay, not having family approval remained major barriers in the second theme along with social stigma especially in the rural side. But most studies show education positively correlates with cancer screening uptake.

## DISCUSSION

In 2010, the Indian government initiated the

National Program for the Prevention and Control of Cancer, Diabetes, Cardiovascular Disease, and Stroke (NPCDCS). It started in 100 districts and expanded to 468 districts by 2012. The program aims to establish Non-Communicable disease clinics at the district level.<sup>17,18</sup> Even though the infrastructural framework is in place the screening uptake for cervical cancer is low. therefore, it is imperative to know different barriers that women face to further cater the program appropriately to the target population.

The findings of this narrative review highlight several key barriers to cervical cancer screening in India, particularly in rural areas. A significant lack of awareness about cervical cancer and its symptoms emerged as a predominant barrier, with many women either unaware of the need for screening or not perceiving themselves to be at risk, which limits their willingness to participate. This is further compounded by fear of pain during the procedure, distrust in medical processes, and a heightened fear of a cancer diagnosis, which is often associated with fatal outcomes in the minds of these women. Family dynamics, particularly lack of family approval, also play a crucial role, as many women lack the support of their husbands or family members to undergo screening. Social stigma, particularly the association of cervical cancer with sexually transmitted diseases, discourages many women from participating, as they fear being judged by their community. Financial constraints are another major barrier, with many women prioritizing daily income over preventive healthcare. The fear of losing income due to time off work, coupled with the inability to afford treatment if diagnosed, further discourages screening uptake. Despite these challenges, education is a crucial factor, as women with higher education levels tend to participate more in screening programs.

Addressing these barriers requires a multi-pronged approach. Public health campaigns should focus on raising awareness about cervical cancer, its symptoms, and the benefits of early detection, particularly targeting rural and low-income communities. Culturally sensitive interventions are needed to tackle social stigma and engage family members is of importance to preventive healthcare. Additionally, training healthcare providers to address fears and build trust can further improve screening uptake. Overall, comprehensive efforts are necessary to improve access to cervical cancer screening and reduce the morbidity and mortality associated with this preventable disease.

Apart from the above-mentioned measures, one of the most important changes that can be done to overcome most of the barriers is to shift to HPV based screening than VIA which is currently practiced in India. HPV-based

cancer screening is painless, reducing fears of discomfort and encouraging participation. Self-sampling allows women to collect samples privately, which enhances compliance. Moreover, HPV testing offers greater sensitivity and specificity than visual inspection with acetic acid (VIA)<sup>19</sup>, enabling more accurate risk assessment. Its high negative predictive value reassures women, motivating regular screenings. Additionally, introducing HPV testing supports targeted education about the virus, raising awareness and reducing stigma. It is also the recommended test by Apex bodies like World Health Organization.<sup>20</sup>

## LIMITATIONS

Limitations of the study includes that there is a temporal bias due to the inclusion of studies from various parts of the country. Additionally, some studies utilized service providers as proxies for the target population, which may not accurately reflect the barriers to screening uptake.

## DECLARATION OF INTEREST

The authors declare no conflict of interest

## REFERENCES

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin*. 2021 Feb 4. doi: 10.3322/caac.21660. Epub ahead of print. PMID: 33538338.
2. Global Cancer Observatory: Cancer Today. Lyon, France: International Agency for Research on Cancer. Available from: <https://gco.iarc.who.int/today>
3. Ramamoorthy, T., Kulothungan, V., Sathishkumar, K. et al. Burden of cervical cancer in India: estimates of years of life lost, years lived with disability and disability adjusted life years at national and subnational levels using the National Cancer Registry Programme data. *Reprod Health* 21, 111 (2024). <https://doi.org/10.1186/s12978-024-01837-7>
4. Banerjee B. National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS). In: DK Taneja's Health Policies and Programmes in India. Jaypee Brothers Medical Publishers (P) Ltd.; 2017. p. 429–429.
5. Mremi A, Mchome B, Mlay J, Schledermann D, Blaakær J, Rasch V. Performance of HPV testing, Pap smear and VIA in women attending cervical cancer screening in Kilimanjaro region, Northern Tanzania: a cross-sectional study nested in a cohort. *BMJ Open*. 2022 Oct 31;12(10):e064321.
6. Gravitt PE, Paul P, Katki HA, Vendantham H, Ramakrishna G, Sudula M, Kalpana B, Ronnett BM, Vijayaraghavan K, Shah KV; CATCH Study Team. Effectiveness of VIA, Pap, and HPV DNA testing in a cervical cancer screening program in a peri-urban community in Andhra Pradesh, India. *PLoS One*. 2010 Oct 28;5(10):e13711. doi: 10.1371/journal.pone.0013711. PMID: 21060889; PMCID: PMC2965656.
7. International Institute for Population Sciences (IIPS) and ICF. 2021. National Family Health Survey (NFHS-5), 2019–21: India: Volume 2022. Available from: <https://dhsprogram.com/pubs/pdf/FR375/FR375.pdf>.
8. Dsouza JP, Van den Broucke S, Pattanshetty S, Dhoore W. Exploring the barriers to cervical cancer screening through the lens of implementers and beneficiaries of the National Screening Program: A multi-contextual study. *Asian Pacific Journal of Cancer Prevention*. 2020 Aug 1;21(8):2209–15. doi:10.31557/apjcp.2020.21.8.2209
9. Mahalakshmi S, Suresh S. Barriers to cancer screening uptake in women: A qualitative study from Tamil Nadu, India. *Asian Pacific Journal of Cancer Prevention*. 2020 Apr 1;21(4):1081–7. doi:10.31557/apjcp.2020.21.4.1081
10. Chandrika, K.1; Naik, Bijaya Nanda2,; Kanungo, Srikanta3. Awareness on Cancer Cervix, Willingness, and Barriers for Screening of Cancer Cervix among Women: A Community-Based Cross-Sectional Study from Urban Pondicherry. *Indian Journal of Public Health* 64(4):p 374-380, Oct–Dec 2020. | DOI: 10.4103/ijph.IJPH\_
11. Vidhubala E, Shewade H, Niraimathi K, Dongre A, Gomathi R, Ramkumar S, et al. Loss to follow-up after initial screening for cervical cancer: A qualitative exploration of barriers in southern India. *Cancer Research, Statistics, and Treatment*. 2020;3(4):700. doi: 10.4103/crst.crst\_221\_20
12. Shuruti Rajasekhara et al. Exploratory analysis of barriers and facilitators to cervical cancer care in rural Tamil Nadu, India. *JCO* 37, 125-125(2019).
13. Tripathi N, Kadam YR, Dhobale RV, Gore AD. Barriers

for early detection of cancer amongst Indian Rural Women. *South Asian Journal of Cancer*. 2014 Apr;03(02):122-7. doi:10.4103/2278-330x.130449

14. Aswathy S, Quereshi MA, Kurian B, Leelamoni K. Cervical cancer screening: Current knowledge & practice among women in a rural population of Kerala, India. *Indian J Med Res*. 2012 Aug;136(2):205-10. PMID: 22960886; PMCID: PMC3461731.

15. Singh S, Badaya S. Factors influencing uptake of cervical cancer screening among women in India: A hospital-based pilot study. *Journal of Community Medicine & Health Education*. 2012; doi:10.4172/2161-0711.1000157

16. Basu P, Sarkar S, Mukherjee S, Ghoshal M, Mittal S, Biswas S, et al. Women's perceptions and social barriers determine compliance to cervical screening: Results from a population-based study in India. *Cancer Detection and Prevention*. 2006 Jan;30(4):369-74. doi: 10.1016/j.cdp.2006.07.004.

17. Mehrotra R, Yadav K. Cervical cancer: formulation and implementation of Govt of India guidelines for screening and management. *Indian J Gynecol Oncol*. 2022; 20(2): 4. <https://doi.org/10.1007/s40944-021-00602-z>

18. Sivaram S, Majumdar G, Perin D, Nessa A, Broeders M, Lyng E, Saraiya M, Segnan N, Sankaranarayanan R, Rajaraman P, Trimble E, Taplin S, Rath GK, Mehrotra R. Population-based cancer screening programmes in low-income and middle-income countries: Regional consultation of the International Cancer Screening Network in India. *The Lancet Oncol* 2018; 19: e113-e122.

19. Basu P, Mittal S, Banerjee D, Singh P, Panda C, Dutta S, Mandal R, Das P, Biswas J, Muwonge R, Sankaranarayanan R. Diagnostic accuracy of VIA and HPV detection as primary and sequential screening tests in a cervical cancer screening demonstration project in India. *Int J Cancer*. 2015 Aug 15;137(4):859-67. doi: 10.1002/ijc.29458. Epub 2015 Feb 12. PMID: 25631198.

20. WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention [Internet]. 2nd edition. Geneva: World Health Organization; 2021. Table 1, Screening and treatment recommendations and good practice statements for the general population of women and women living with HIV. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK572314/table/fm-ch2.tab1/>

### ANNEXURE 1 - Search Strategy

The final keywords chain used in the systematic literature search in PubMed were as follows:

#1 Cervical cancer

#2 Barriers to cervical cancer screening

#3 #1 AND #2

#4 India

#5 Rural

#6 Urban

#7 Tamil Nadu

#8 Andhra Pradesh

#9 Telangana

#10 Kerala

#11 Karnataka

#12 #4 AND #5 OR #6 OR #7 OR #8 OR #9 OR 10 OR #11

#13 #3 AND #12

#14 #13 AND English [Language] AND ("2014" [Date -