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Cervical cancer screening status and implementation challenges: Report from selected states of India

Jyoshma Preema Dsouza[1] | **Stephan Van den Broucke**[2] | **Sanjay Pattanshetty**[3] | **William Dhoore**[4]

[1]Psychological Sciences Research Institute (IPSY), School of Public Health, Université Catholique de Louvain, Louvain-la-Neuve, Belgium

[2]Psychological Sciences Research Institute (IPSY), Université Catholique de Louvain, Louvain-la-Neuve, Belgium

[3]School of Public Health, Manipal Academy of Higher Education, Manipal University, Manipal, India

[4]School of Public Health, Université Catholique de Louvain, Woluwe, Brussels, Belgium

Correspondence

Jyoshma Preema Dsouza, Psychological Sciences Research Institute (IPSY), School of Public Health, Université Catholique de Louvain, 24 Rue des Neuvilles 002, 1348 Ottignies, Louvain-la-Neuve, Belgium.
Email: jyoshmadsouza11@gmail.com

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Abstract

Background: Cervical cancer contributes to 6%–29% of the cancers in India. Although the Government of India in 2010 integrated cancer screening within the National Programme for the prevention of Non-communicable Diseases, only 22% of women aged 15–45 years had undergone examination of the cervix by 2016. This prompts the question regarding the organisation of the program's implementation and service delivery and regarding challenges that may explain poor screening uptake.

Methods: Semi-structured interviews were held with program managers and implementers in seven districts of three selected States of India. The data analysis looked at program content, the organisation of screening delivery, and the challenges to the implementation of the program, considering six theoretically derived dimensions of public health capacity: leadership and governance, organisational structure, financial resources, workforce, partnerships, and knowledge development.

Results: Participants perceive the existing capacities across the six domains as insufficient to implement the CCS program nationwide. A context specific implementation, a better coordination between the program and district health facilities, timely remuneration, better maintenance of data and a strong monitoring system are possible solutions to remove health system related barriers.

Conclusion: The study provides evidence on the practical challenges and provides recommendations for strengthening the capacities of the health system.

KEYWORDS
capacity mapping, cervical cancer screening, health system challenges, low resource settings, program implementation

1 | INTRODUCTION

Cervical cancer contributed to 6.6% of all female cancers across the globe in 2018. Approximately 90% of the deaths due to the disease occur in low-middle-income countries[1] with India having the highest age standardised incidence of cervical cancer in western Asia.[2] Annually about 60,000 Indian women lose their lives due to cervical cancer,[3] which in 2016 contributed to 7.8% of the total lost DALYs.[4] While the age adjusted incidence rate varies across the States of India,[5] the condition poses a heavy burden on the country's economy.

Although HPV vaccination is generally recommended as the choice of prevention, low- and middle-income economies face various challenges to its implementation, mainly due to economic and socio-cultural issues.[6] Therefore, for resource poor settings, secondary prevention of cervical cancer via screening procedures like Visual Inspection with acetic acid and Visual inspection with Lugol's Iodine (VIA/VILLI) are suggested as an alternative,[7] with several studies attesting to its efficacy and accuracy.[8] However, for cervical cancer screening to be effective, it is important that women participate in the screening. In India, screening is not organised nationwide. Opportunistic screening services are available throughout the country, yet most of the cases are diagnosed at later stages, which results in poor prognosis.[9]

India has decentralised health care system. At grass-root level, Primary Health Centres (PHC) serve a population of 20,000 to 30,000, with sub-centres serving 3000 to 4000 persons. For every 80,000–120,000 citizens there is a Community Health Centre (CHC), and every district has a tertiary care district hospital and speciality hospitals. These decentralised services are responsible for the implementation of actions for cancer prevention, in accordance with the *National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke* (NPCDCS) program initiated by the Government of India in 2010. Health promotion and behaviour change, counselling, and identification of warning signs are conducted at PHCs, while primary screening takes place at CHCs, and confirmatory diagnosis and treatment at district hospitals.

However, only a small number of districts have standard guidelines for the prevention of cervical cancer in place,[10] and pilot tests in selected districts show various challenges to the implementation of the national plan.[11-14] For instance, while cervical cancer screening can take place in both public and private health care facilities,[15] the latter are mainly used by women from middle- or high-income families. On the other hand, the services that are available in public health facilities are underutilised. Hence, it is not surprising that among women aged 15–45 years, only 22% have undergone examination of the cervix, as shown by a recent survey.[16]

Participation in screening programs is determined by a range of factors. Next to economic status, education level, cultural and religious factors, psycho-social characteristics, beliefs, and motivation of the woman in the target group, the organisation of the health system, and of screening services in particular, can also facilitate or hinder uptake.[15,17,18] Specifically, the affordability, availability, accessibility, accommodation, and acceptability of health services are important determinants of health care use.[19] In turn, these characteristics depend on the degree to which the health system has the organisational capacity to offer high quality, accessible services. As such, the capacity of the health system at the decentralised level to organise screening services can be considered a condition for the implementation of the national guidelines for cervical cancer prevention.

This study aimed to explore the challenges encountered by program managers and health workers at district level when implementing the NPCDCS program, looking specifically at the perceived capacity of the health system to offer accessible screening services. Involving program managers and implementers to identify and map the problems that are encountered upon implementing a program is a method that is often used in implementation research, as it helps to understand the real world challenges of implementing a program.[20] Since the NPCDCS program implementation strategies vary across States, the study took place in three different States of India, thus allowing to consider the impact of different approaches to program organisation, service delivery and promotion of cervical cancer screening.

2 | METHODS

To address the research questions, the study made use of field observations combined with a key informant approach. For the latter, semi-structured interviews were conducted with program managers and implementers.

2.1 | Study setting and sampling

The study took place in three States of India: Himachal Pradesh, Meghalaya, and Karnataka. These States were purposively selected, and permission of the State health authorities was obtained. Within each State, seven districts were selected based on the access obtained. Within these districts, two types of participants were contacted based on their availability for the study: (1) program managers and implementers engaged in NPCDCS program; and (2) public health care staff in CHCs and PHCs. Participants suffering from any form of physical or mental illness or unwilling to participate in the study were excluded. In total, three state program managers or coordinating staff, eleven district program managers or coordinators, seven district hospital gynaecologists or superintendents, one taluk gynaecologist, one district oncologist, seven NPCDCS staff, seven CHC and PHC medical officers, a staff nurse, and five ANMs and ASHAs were included in the study. The ANM or Auxiliary nurse midwife is a village-level female health worker, first contact person between the community and the health services, usually a multi-purpose health worker supported by 4-5 ASHAs or the Accredited Social Health Activists. Their role is to help communities achieve the targets of national health programmes. The ASHA is a community health worker, usually a female resident of the village, qualified up to the tenth grade, aged between 25 and 45 accountable to local government. Her role is to create awareness on health and its social determinants and mobilize the community towards local health planning and increase utilization and accountability of the existing health services.

2.2 | Data collection

Appointments were made via telephone, after which participants were contacted in person. Following the provision of written consent, data was collected through in-depth semi-structured interviews by the primary investigator. The interviews were held in English, Kannada or Hindi depending on the language preferred by the participant, and were audio recorded. In case participants did not provide consent for audio recording, the main views expressed during the interviews were recorded in writing. Field observations were used to verify the availability of program services, and practical challenges observed were noted down and confirmed during interviews. Copies or images of health information materials were collected and taken as supporting material. Interviews were continued until data saturation was obtained.

2.3 | Interview guide

The interviews were guided by a semi-structured interview protocol consisting of open-ended questions related to the CCS program organisation, implementation, and context. Participants were allowed to freely express the challenges they faced during program implementation and the barriers they perceived regarding service delivery. The structure of the interview protocol was based on the capacity mapping framework proposed by Aluttis et al.[21] This framework identifies six dimensions of public health capacity, defined as *the organisational, human, financial and other resources which enable actions to be taken by responsible authorities to improve health and reduce health inequalities*: leadership and governance, organisational structures, financial resources, workforce, partnerships, and knowledge development. The framework has been used to measure public health capacities across European Member States, and is sufficiently generic to suit the assessment of public health capacities in the Indian context.

2.4 | Data management and analysis

The interviews were transcribed by the primary investigator (Jyoshma Preema D Souza), confirmed by language experts, and checked for accuracy by one of the co-investigators (Sanjay Pattanshetty). Following the transcription of the recorded interviews, a directed content analysis[22] was performed using Atlas.ti 8 software to form codes, which were grouped into three categories: (a) Program organisation and services available for cervical cancer screening; (b) External and internal challenges to the implementation of the cervical cancer screening program (i.e., challenges due to the nature of the program or to the context); and (c) Challenges to the implementation of the program related to health system capacities. The codes for the latter category were based on the dimensions of public health capacity defined in Aluttis et al.'s[21] framework to identify strengths and weaknesses of the State's health system's capacities to implement the program. Data collected from program managers and health staff at different levels was triangulated to ensure a balanced assessment. Data collection and analysis was conducted by the primary investigator (Jyoshma Preema D Souza). Two randomly selected interviews were checked for transcription by Sanjay Pattanshetty. The codes identified and categorised were further confirmed by Stephan Van den Broucke, Sanjay Pattanshetty and William Dhoore.

2.5 | Data credibility

The quality criteria checked were based on the definitions by Lincoln.[23] To ensure credibility of data collected, member checks were done during or at the end of the interview. A good rapport was maintained, and confidentiality was assured to collect genuine data. The interviewer asked open ended questions and context specific clarifications to avoid any kind of interviewer bias and to assure reflexivity. The translated data was checked and confirmed with language experts. Confirmability was assured by involving two researchers to assess data analysis. Thick descriptions and direct quotations were presented with context specifications to make it available for use in other settings, thus assuring transferability of findings.

2.6 | Ethical considerations

Ethical approval was obtained from the KMC ethics committee. Permission was obtained from Mission directors of National Health Mission of three states. Individual consent was obtained from all participants after study details were explained to the participant.

3 | RESULTS

3.1 | Program organisation and service delivery

As appears from the interviews, the program content and the services that are available for cervical cancer screening are different for the three States.

In the State of *Himachal Pradesh*, various strategies have been tested to find the best suitable way to implement the cervical cancer screening plan state-wide. For instance, in one pilot project opportunistic screening is offered by trained doctors at selected health facilities, with an active mobilisation by the ASHAs. In another, screening is conducted by trained health workers at a selected sub-centre, with good cooperation from health staff. Population enumeration was also conducted. Furthermore, ASHAs are given incentives to verbally assess the presence of foul-smelling discharge, pain or vaginal bleeding in between menstrual cycles or irregular menstrual cycles, and printed information, education, and communication materials (IEC) are made available for distribution.

In *Meghalaya*, individuals are actively screened for hypertension and diabetes mellitus through the recruited NPCDCS staff in selected district hospitals and CHCs. Within these screenings, NPCDCS nurses also look out for warning signs of cervical cancer, so that suspected patients can be referred to the medical officer of the facility, and then onwards to the district hospital. However, active screening remains limited to hypertension and diabetes.

> 'Screening for cervical cancer has not begun. Nurses do IEC basically. (shows IEC materials printed in a pamphlet) is given to nurses and is expected to be distributed to everyone in PHCs' – DistrictLogisticsconsultant4.

Program managers reported that training of NPCDCS staff nurses and the provision of logistics to conduct screening are planned. In terms of IEC material, printed handouts on cervical cancer in the local language are made available to the NPCDCS staff for distribution among women visiting the health centres.

In *Karnataka*, the implementation of cervical cancer screening under the NPCDCS program is in its planning phase, with pilot projects to screen individuals between 30 and 59 years for hypertension, diabetes and cervical cancer being implemented in some districts. In one of these districts, it is foreseen to train health staff and health workers to conduct the VIA/VILLI test at selected health facilities with the necessary logistics. The program is implemented by a NPCDCS cell, with a medical officer, a staff nurse, a counsellor, a lab technician, and a physiotherapist in a district hospital's clinic. Individuals visiting the NPCDCS clinic are asked for warning signs of cervical cancer, and suspected patients are referred to the hospital gynaecologist for screening and diagnosis. IEC materials such as informative charts and notice boards are put on display in health facilities to educate the public on NCDs including cervical cancer, and pamphlets in the local language with pictorial information on cervical cancer, warning signs and methods of prevention are distributed.

In sum, apart from pilot projects testing different ways to implement cervical cancer screening in a planned manner as part of the NPCDCS, cervical cancer screening across the three States is mostly available in the form of opportunistic screening at district hospitals within the public health system. In situ observations during the visits further revealed that one out of seven district hospitals do not have screening and diagnostic services for cervical cancer. Some hospitals also outsource pathology services, which means that individuals have to pay extra for screening. On the other hand, the screening that is offered by private hospitals, is mostly located in urban areas and less accessible, apart from being more costly (approximately 600 to 800 Indian Rupees).

3.2 | External and internal challenges to implementation

The following challenges to the implementation of the program were mentioned by the interviewees.

3.2.1 | Target groups

While cervical cancer screening in each of the three States is mainly opportunistic and not targeted to specific groups, the implementers felt that there is a need to target screening more towards women from hard-to-reach areas and high-risk groups, like female sex workers. They also thought that males or adolescents should be involved in awareness raising about cervical cancer, and that the stigma related to cancer makes it difficult for women to take up screening. It was also noted that beneficiaries themselves are not involved in the planning of the screening program, and that no feedback is obtained from them about the way the implementation is organised.

3.2.2 | Costs

The costs of cervical cancer screening ranges from 100 to 600 Indian rupees, which for many women is not affordable.

3.2.3 | Transport and referral system

For women living in remote areas or who have a poor socio-economic background it is often difficult to access the screening facilities that are available at the district hospitals, due to the difficulty and costs involved in travelling long distances. An additional de-motivator to travel for screening purposes is the poor follow-up of patients who are referred from health facilities. The same hurdle is also mentioned by program implementers, who find it difficult to do field visits for monitoring the program due to lack of transport facilities.

3.2.4 | Program protocol and responsibilities

The specific responsibilities for the program implementation have been given to the NPCDCS team, but not to other members of the health system. Medical officers and district hospital staff complain that no specific orders have been given to promote or conduct cervical cancer screening. There is a need for a detailed program protocol at district level, which also outlines the responsibilities of the different implementers.

3.2.5 | Implementer attitudes

While all the interviewees knew the NPCDCS program and agreed that was useful and provided a good platform for implementation, they felt that population-based screening by services at district hospitals only was not feasible. Some questioned the need for population-based screening.

> 'I think screening should be done for high-risk groups. if there is no high risk there is no need…Because instead of spending the resources there, if we divert it to symptomatic cases, it will be helpful. We will get more cases' – DistrictProgramManager2.

Also, most interviewees had not undergone cervical cancer screening themselves:

> 'I have not undergone screening because I am sure I will not get cervical cancer' – TalukGynaecologist1.

As such, their personal beliefs might be a barrier to active promotion of cervical cancer screening.

3.2.6 | Program promotion

Several interviewees noted that the low uptake of cervical cancer screening was due to the lack of visibility of the program. Many women in the target group did not know about the program or services. Most participants stressed the need for a nationwide campaign to promote the cervical cancer program and services.

> 'Do you know why [the prevention of] measles and rubella is working? Because they are pushing the staff, they are like forcing them, "you have to do it, it's a 'must' there is no other way"'. – NPCDCSLabTechnician1.

3.3 | Challenges related to health system capacities

Challenges to the delivery of the cancer screening program due to the health system's capacities, as identified by State and district program managers and program implementers, can be summarised as follows.

3.3.1 | Leadership and governance

In each of the three states, the NPCDCS program is led by a State program manager. At district level a district program manager is appointed, as well as district surveillance officers who monitor the NPCDCS program, and district co-ordinators for the cancer screening program. These program managers at different levels share a feeling of enthusiasm and ownership about the project and felt that the implementers are well oriented towards the program plan. However, not all States have appointed a State program coordinator, and at districts level the post of data entry operators is often vacant. Most of the district program managers explained that their main focus is on monitoring and controlling communicable diseases, and not on cervical cancer.

> 'The multiple responsibilities for [the District program manager] could lead an overburden, because at present, H1N1 is severe in this area and most of our attention is going to that' – DistrictProgramcoordinator3.

Participants also agreed that there is a need to improve expertise among the program managers. A majority of the implementers thought that they did not receive enough guidance and support from the managers to effectively implement the strategy. For instance, none of the district hospitals report to the program officers, as they have not received a reporting protocol or guidelines from the district health authorities.

3.3.2 | Financial resources

The implementation of the NPCDCS program is financed under the NCD Flexi-Pool through the PIPs of each State, thus ensuring that district hospitals, Taluk hospitals and health facilities (CHCs/PHC) can access funds. However, these funds were considered as insufficient or too irregular to plan and implement strategies.

> 'Every year the budget comes in bulk … Just one quarter of the budget is released… and the year is coming to an end' – DistrictLogisticsConsultant4.

Medical officers claimed that untied funds were insufficient, and health workers did not seem to be aware of the utilisation if these funds. Sometimes untied funds that are available at community health centres are not utilised for some reason, for instance:

> 'ANMs are afraid to spend money as they have to give an explanation during the audit.' – DistrictProgramManager2

Moreover, the budget is not specifically allocated to cervical cancer screening activities, which makes it difficult for program implementers to plan cervical cancer prevention or health promotion interventions.

3.3.3 | Workforce

To implement cervical cancer screening, the program is expected to rely on well trained health professionals in the existing public health care centres, who are also involved in actions to prevent diabetes, hypertension, and other cancers. Thus, the staff of the district hospitals may perform screening, and community health workers may give health education, alert for warning signs, and refer to district hospitals. However, according to the interviewees, the nurses and health workers within the health system are often not involved in the implementation of the cervical cancer screening program, as they have not been trained for that.

> 'They told about swiping and looking for colour change. We don't do this. We were just told about it. I don't know to conduct it. But maybe if I do it once or twice, I will be able to do it properly' – Healthworker6

> 'The person who holds the post should be Public Health professionals…like the DSO, RCHO. They should know to do Public Health intervention. timely intervention… that is not happening' – DistrictProgramManager1

The DSO or the District Surveillance Officer mentioned by the participant is a Qualified individual appointed to manage the Integrated disease surveillance project (IDSP) for epidemic prone diseases to monitor disease trends and to detect and respond to outbreaks in the early rising phase through a trained Rapid Response Team. The RCHO or the Reproductive Child Health Officer is a Qualified individual appointed to manage the Reproductive Child Health Programme (RCH) to promote maternal and child health and reproductive health related national programs like family planning, maternal health, immunization and child health and antenatal-postnatal care check-ups.

The health workers also claim to not have received enough instructions on how to promote screening among women. They are mostly engaged in maternal and child health and infectious disease related activities and received no guidelines for health promotion. Training on behaviour change techniques could help them promote screening uptake more effectively. In a similar vein, it was revealed in the interviews that there are not enough gynaecologists at district hospitals to perform population-based screening.

> 'We need gynaecologists. We are only two, two people can't do all work, we come here at 9, we have to see OPD…. 40–50 pregnant women in line at OPD here. We can't call them tomorrow. They need to be attended' – DistrictGynaecologist2.

Very few CHCs have gynaecologists, and most of the health facilities that do have them do not have a pathologist to process the tests, so that this service must be outsourced to private laboratories. Furthermore, according to the

interviewees, some specialists' posts were left vacant because the recruitment was too complex, and candidates did not like to work in rural areas.

3.3.4 | Organisation and infrastructure

Whereas the program managers reported that they have access to adequate infrastructure to do their work, and health care facilities like district hospitals are sufficiently equipped to conduct opportunistic screening, implementers in CHC/PHC complained about a lack of infrastructure and logistics.

> 'This patient of 37 years had white discharge PV. If we had [the facilities to do a] pap smear, we would do it. But here there is no facility, we must just treat her with medicine and all, then leave her. After some time, she may come back with cancer, who knows' – MedicalOfficer3.

Many district hospitals do not have pathology services because the resources to store, examine and interpret Pap smears are not available. On the other hand, the facilities that are available in CHCs are often not utilised, because they have broken down or due to insufficient supplies or lack of training to use them. In health facilities in remote areas interruptions of the electricity supply was also mentioned as a problem.

3.3.5 | Partnerships

While a partnership with private hospitals was sometimes mentioned by the interviewees as an effective way to overcome the shortage of human resources at district hospitals, in some districts the NPCDCS team found it difficult to establish such collaborations. In one district it proved impossible to find a room for an NCD clinic in a hospital, or to exchange reports of screened women, due to non-supportive attitude of the administrators as they did not receive any protocol from the District health authorities. It was recommended that the district hospital team and district medical college should work in coordination with the NPCDCS team to implement cervical cancer screening. It was also suggested that partnership with private medical colleges could be useful

> 'if they can follow our protocol, as for case definition and treatment, then perhaps they could be involved when there is uniformity' – DistrictProgramManager2.

Some participants suggested that private practitioners could be provided with PAP kits, but most of them believed that this would not be practical, and were more in favour of screening in public health facilities only, or in private health centres through health schemes.

Interviewees also found that more collaboration with local NGOs could be a way to increase the capacity for health education on NCDs. They mentioned that NGOs have the resources, the 'trust of people', a 'good rapport with the public', and the capacity to 'reach the remote areas', although some believed they are not always reliable. Some interviewees also suggested that medical college students could be involved in education on cervical cancer screening. On the other hand, an active involvement of the educational sector, the media, or other health related programs seems to be missing, as this form of cooperation was not included in the implementation plans at State level.

3.3.6 | Knowledge development

According to the interviewees, there is a reasonable capacity for knowledge exchange. Reports on diagnosed cases and treatment records are kept by tertiary hospitals in the cancer registry; and medical officers monitor the screening activities in health centres. However, there is no system to track the individuals that have been screened or to actively track referred cases for cervical cancer. Also, while diagnosis and treatment records are kept by tertiary hospitals, the information cannot be communicated to referral sites except through the ASHAs. One program manager explained that, generally, the reliability of reports is not given much importance, and that this needs supervision. No reports on the number of women screened for cervical cancer are available from district hospitals, diagnostic centres, or private health facilities to the NPCDCS team, as there is no guideline or protocol provided for that purpose. Since screening for cervical cancer has not begun on a large scale, reports are not yet generated, and monitoring and evaluation is not yet conducted. Similarly, district gynaecologists are not able to monitor or supervise when performing cervical cancer screening, as they do not have a protocol to report such screening. Health care facilities are monitored by medical officers, but this system is reportedly 'weak', as ANMs claim that the medical officer is mostly busy with patients.

4 | DISCUSSION

Cervical cancer is a major reason for morbidity and mortality among Indian women. This problem is recognised by the Indian health authorities, who have integrated cervical cancer screening within the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke, thus providing a framework for the nationwide implementation of cancer screening within the decentralised health system. However, observations from the field and pilot tests in selected settings show that the implementation of this national plan meets with a number of challenges, resulting in a suboptimal level of screening uptake by women in the targeted age groups. While other studies have looked at the socio-economic, cultural and psychological factors that play a role in the low participation of Indian women in organised cervical cancer screening,[24] this study focused on the organisation of the health care system. More particularly, we investigated to what degree the health system at decentralised levels possesses the organisational capacity to offer high quality, accessible cancer screening services, as a condition for the implementation of the national guidelines for cervical cancer prevention. For that purpose, it relied on the public health capacity framework proposed by Aluttis et al.,[21] which considers leadership and governance, organisational structures, financial and human resources, workforce, partnerships, and knowledge development as main conditions to enable actions by responsible authorities to improve health.

The interviews with program managers and local implementers allowed us, first of all, to appraise the program content and the services that are available for cervical cancer screening in the States of Himachal Pradesh, Meghalaya, and Karnataka. While differences were observed between the three States, our findings showed that apart from pilot projects testing ways to implement cervical cancer screening as part of the NPCDCS, across the three States cervical cancer screening is mostly available in the form of opportunistic screening at district hospitals within the public health system.

Secondly, the interviews allowed us to identify a number of challenges for the implementation of the cervical cancer screening program. Some of these are related to external factors, such as the unaffordability of participating in screening due to poverty and a lack of accessibility due to problems with transportation. The low accessibility of district hospitals due to travel distance and long waiting hours have been mentioned as barriers to screening uptake in previous studies,[18,25] but can be overcome by making quality services available at local public health facilities,[26,27] through mobile camps,[28] or by using mobile telemedicine to confirm the results.[29] Other challenges, however, are inherent to the program, such the fact that it does not target specific high-risk or hard-to-reach groups, does not recognise the role of male partners, and does not involve beneficiaries themselves in the planning of the screening. This is at odds with recommendations by the World Health Organisation suggesting that a targeted approach and the inclusion

of male partners of women in the target groups can improve cervical cancer screening uptake,[24,30,31] and that engaging communities facilitates the development of more culture-sensitive screening strategies,[32] which can also improve participation.[33] Moreover, the attitudes of health workers regarding cervical screening, the lack of visibility and media support for the program, and the absence of a detailed program protocol at district level were also identified as inherent challenges of the program. Indeed, the implementation of an intervention requires systematic planning, monitoring and evaluation at all levels, which makes detailed guidelines essential for program implementers.[34]

Thirdly, our study provided insight in the organisational capacity of the health system in the three participating States, as a necessary condition to implement the national guidelines for cervical cancer prevention and screening. While for each of the capacity dimensions considered a certain level of capacity was in place, our study helped to identify those capacities that were considered as missing or insufficiently present by the program managers and implementers.

One of the issues noted was that despite the appointment of State and district program managers, surveillance officers, and co-ordinators for the NPCDCS, more guidance and management support was needed to effectively implement the cancer screening strategy. An example of such guidance was seen in Bolivia, where program managers, planners, and supervisors received orientation and training about issues associated with planning and implementing cervical cancer prevention programs. This empowered them to develop action plans that could overcome barriers, find solutions and facilitate context-specific implementation of CCS.[35]

Leadership and governance can be improved by offering clear guidelines and by attributing specific roles and responsibilities to local actors. Although a national guideline for the whole of India is available, State specific guidelines with targets and progress indicators for implementers have not been formulated. The need for specific guidelines and supervision of the implementation process in CCS have also been noted elsewhere. For instance, a study in Malawi found that the implementation team was not aware of any guidelines, and as a result was not actively involved in CCS promotion.[36] In a similar vein, Binka et al. identified a lack of policy guidance as a vital barrier to implement CCS in Ghana.[37]

Finance, workforce, and organisational structures are also vital components of the health system's capacity for screening. While sufficient financial support is required to make screening available for individuals and affects all other components and the overall quality of the program,[38] our study showed that no specific budget was available for the promotion of CCS at health facilities. Similar findings were reported by others for other states of the country.[39] Although the health care facilities can use untied funds for screening, the health workers in facilities were apprehensive to use such funds, as adequate guidelines for their use are not readily available.[40] In addition, there is a need to have timely remuneration for health staff with sufficient regular funding for the implementation of the program.

In terms of workforce, there was a general perception that the existing human resources in the health facilities are insufficient to implement a population-based cervical cancer screening program. This concurs with findings from other studies in India,[39] revealing a need for more program managers, gynaecologists, pathologists and nurses to meet Indian Public Health Standards (IHPS) guidelines,[41] especially in rural areas.[42,43] Gynaecologists are often too busy with maternal care and related procedures, while nurses are overloaded with tasks related to outpatient treatment and documentation, which makes them less available for cervical screening and reduces their motivation and efficiency.[44] Several studies have shown that task shifting from doctors to trained nurses or health workers could provide an effective way to improve cervical cancer screening,[45] whereby teaching primary screening procedures to health workers can reduce the patient overload at tertiary care centres as well as the burden placed on gynaecologists at district hospitals.[46] Yet although health workers and nurses in the local health centres are expected to enquire about warning signs of cervical cancer, they are not sufficiently trained to perform screening or health promotion.

In terms of (infra)structural resources, it was mentioned that most district hospitals and health centres have the necessary logistics and supplies to conduct cervical cancer screening. However, in some cases screening in primary care facilities is hindered by a lack of a room or other basic resources such as electricity. A lack of basic equipment and stock-outs are common problems of health systems in LMICs.[36] In other cases, screening equipment is available but

there is no trained staff to use it, which illustrates that the capacity dimensions of infrastructure and workforce are interlinked.

Partnerships and engagement with other stakeholders is another capacity dimension that can improve program coverage. In several districts, surveillance officers had to manage both the NPCDCS program and the prevention and control of communicable diseases and epidemics. Concerns about the LMIC's difficulty to address the double burden of infectious and non-communicable diseases while fighting against cervical cancer have also been voiced by others.[47] This burden can be eased through collaboration with actors within the health system, resulting in an improvement of CCS coverage and facilitation of the use of available resources. Examples of this were seen in rural Ghana, where community health nurses integrated cervical screening activities into their existing child welfare clinic activities,[35] in Rwanda, where CCS was integrated into a comprehensive women health program,[48] and in Uganda where CCS could be increased through collaboration with medical universities.[49]

In addition to partnerships with other health actors, collaboration can also be established with actors outside the health, like media, education, or insurance companies. This potential is often neglected, as was also seen in a study conducted in Sub-Saharan Africa.[50] Our study revealed that in India efforts to promote screening under other existing health programs, via media or through the involvement of local NGOs is generally absent, although it would be an effective way to promote awareness about cervical cancer.[51] Collaborations with programs for school health, reproductive health, and family planning could also be envisaged to promote cervical cancer screening. The same applies to the broader education sector and local self-help groups, where village leaders can help to increase the credibility of the program.[52] In addition, students at medical colleges could be engaged to help promote the program.[53]

Finally, it is important to maintain resources to ensure the sustainability and quality of the program. In this way a well-developed program implementation plan, regular training, upgrading resources, adequate technology, monitoring and evaluation, and engaging all the implementers and stakeholders can help to plan and implement context specific strategies in the future.

5 | CONCLUSION

Cervical cancer is preventable, and promoting the participation of women in cervical cancer screening may reduce the burden of the disease in the future. But in order to achieve that goal, it is important to consider the factors that encourage, facilitate, or hinder the participation in screening. In this study, we focused on the organisation of the health care system in India and identified the capacities of the system at decentralised levels to implement cervical cancer screening within the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke. Strengthening the capacity of the health system as a condition to improve quality health care services has been advocated elsewhere, especially with regard to developing economies.[54] Thus, identifying the capacities of the health system that are suboptimal allows to make suggestions to improve the implementation of the cervical cancer screening program in India.

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CONFLICT OF INTEREST

No conflict of interest declared.

ETHICS STATEMENTS

The study was conducted after obtaining ethical clearance from the institutional ethics committee of Kasturba Medical College, Manipal.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Jyoshma Preema Dsouza https://orcid.org/0000-0001-5613-6634

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