

## Abstract

# Out of Adversity Comes Opportunity: Smart-Colpo National Program for the Elimination of Carcinoma Cervix in a Post-COVID-19 World

Anjali R<sup>1</sup>, MBBS, MS, DNB; Naveen R Gowda<sup>1</sup>, MBBS, DPM, MD; Vikas H<sup>1</sup>, MD; Meghana Prabhu<sup>2</sup>, DNB, DM; Jai Bhagwan Sharma<sup>1</sup>, MD, DNB, PhD; Khyati Vakharia<sup>3</sup>, MBBS; Atul Kumar<sup>4</sup>, MD; Akhila M V<sup>5</sup>, MS; Shilpa Gatta<sup>6</sup>, DGO, DNB; Madhuri Sareddy<sup>7</sup>, MS; Sowmya K P<sup>8</sup>, MD; Divya T K<sup>9</sup>, MD; Devashish Desai<sup>1</sup>, MD; Bharath Gopinath<sup>1</sup>, MD; Somanath Viswanath<sup>10</sup>, BE; Ananth Kini<sup>11</sup>, MD, DNB

<sup>1</sup>All India Institute of Medical Sciences, New Delhi, India

<sup>2</sup>Institute of Liver and Biliary Sciences, New Delhi, India

<sup>3</sup>Vardhaman Mahavir Medical College and Safdarjung Hospital, New Delhi, India

<sup>4</sup>Employees' State Insurance Corporation, New Delhi, India

<sup>5</sup>Gunasheela Fertility Center, Bengaluru, India

<sup>6</sup>SLG Hospitals, Hyderabad, India

<sup>7</sup>Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, India

<sup>8</sup>Siddhartha Institute of Medical Sciences and Research Institute, Bengaluru, India

<sup>9</sup>Sapthagiri Institute of Medical Sciences and Research Institute, Bengaluru, India

<sup>10</sup>ATOS India, Bengaluru, India

<sup>11</sup>Military Hospital Kamptee, Armed Forces Medical Services, Kamptee, India

## Corresponding Author:

Naveen R Gowda, MBBS, DPM, MD  
All India Institute of Medical Sciences  
Ansari nagar  
New Delhi, 110029  
India  
Phone: 91 9663502239  
Email: [drnaveen.nimhans@gmail.com](mailto:drnaveen.nimhans@gmail.com)

## Abstract

**Background:** Carcinoma cervix is one of the leading causes of death among women worldwide. The World Health Organization has put forth the 90-70-90 global strategy for the elimination of cervical cancer as a public health problem. It calls for 70% women to be screened at least once in their lifetime. However, this rate is as low as 1.9% for India and even lower for many other countries, making the target insurmountable, especially in resource-constrained settings. The COVID-19 pandemic made this even more challenging.

**Objective:** This study aimed to identify bottlenecks and high leverage points and propose a technology-driven, national-level program for improving the screening of carcinoma cervix.

**Methods:** Detailed process mapping was done to identify potential bottlenecks. A counterfactual approach was used to identify high leverage points for impact using "What if" scenarios. These findings were used to build program theory-based logic models to propose a national-level program for carcinoma cervix prevention.

**Results:** Availability, accessibility, affordability, skewed distribution of infrastructure, cost implications, and limited specialist workforce were identified as bottlenecks. The COVID-19 pandemic put a strain on existing resources and worsened the situation. The existing network of primary health care workers, changes in health-seeking behavior due to COVID-19 with the increasing role of tele-health, conducive political milieu with initiatives such as Digital India Mission, and a booming start-up ecosystem were identified as high leverage points through the counterfactual approach. Using these findings, a national program was designed with program theory-based logic modeling.

**Conclusions:** The journey from <2% of women screened at least once in their lifetime all the way to 70% would need a drastic increase in funding and resource allocation, which is unlikely considering the current conditions. COVID-19 has not only been

an adversity but also opened new thinking and opportunities. Artificial intelligence–driven, cost-effective, easy-to-use, and widely acceptable solutions such as “Smart-Colpo” can be a game changer to achieve the World Health Organization targets.

**Conflicts of Interest:** None declared.

(*iproc* 2023;9:e41571) doi: [10.2196/41571](https://doi.org/10.2196/41571)

## KEYWORDS

Smart-Colpo; cervical cancer; screening; artificial intelligence; low-resource setting

*Edited by B Dinesen; this is a non-peer-reviewed article. Submitted 31.07.22; accepted 28.02.23; published 13.03.23.*

*Please cite as:*

R A, Gowda NR, H V, Prabhu M, Sharma JB, Vakharia K, Kumar A, M V A, Gatta S, Sareddy M, K P S, T K D, Desai D, Gopinath B, Viswanath S, Kini A

*Out of Adversity Comes Opportunity: Smart-Colpo National Program for the Elimination of Carcinoma Cervix in a Post-COVID-19 World*

*iproc* 2023;9:e41571

URL: <https://www.iproc.org/2023/1/e41571>

doi: [10.2196/41571](https://doi.org/10.2196/41571)

PMID:

©Anjali R, Naveen R Gowda, Vikas H, Meghana Prabhu, Jai Bhagwan Sharma, Khyati Vakharia, Atul Kumar, Akhila M V, Shilpa Gatta, Madhuri Sareddy, Sowmya K P, Divya T K, Devashish Desai, Bharath Gopinath, Somanath Viswanath, Ananth Kini. Originally published in *Iproceedings* (<https://www.iproc.org>), 13.03.2023. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work, first published in *Iproceedings*, is properly cited. The complete bibliographic information, a link to the original publication on <https://www.iproc.org/>, as well as this copyright and license information must be included.