

## Cervical Cancer

## Cervical Cancer in SAARC Countries

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## Abstract



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In the year 2020, a total of 342 000 women were estimated to die of cervical cancer, of which 90% were expected amongst low- and middle-income countries (LMIC). Globally incidence of cervical cancer has reduced as a result of improved personal hygiene, better living conditions and higher application of opportunistic screening programs. Yet GLOBOCAN shows that absolute number of cases are still increasing.

We therefore conducted a 21 question multiple choice questionnaire online survey in Jan 2023 amongst 9 SAARC countries. A total of 367 replies were received and the representative answers for each country are being reported in this manuscript.

A good possibility of achieving World Health Assembly target (Nov 17, 2020) was felt only by Bhutan and Nepal. For screening, most countries (Bhutan, India, Myanmar, Nepal, Pakistan and Sri Lanka) recommend for all asymptomatic eligible patients. Public health experts have suggested VIA / VILI as the best solution for LMICs. However, a dual screening strategy (HPV DNA plus) cytology was preferred by doctors in Afghanistan, Bhutan, India, Myanmar, Pakistan and Sri Lanka.

Screening, triage and then treatment was the preferred by Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.

HPV vaccination was recommended in all girls between ages 10 to 26 years in Bangladesh, India, Myanmar, Nepal, Pakistan and Sri Lanka. All the 9 countries would use HPV vaccination to all eligible patients if the cost of the vaccine was reasonably low. Our survey clearly outlines challenges faced in tackling cervical cancer in SAARC countries. We also provide consensus regarding several potential solutions that can be used in both public and private cervical cancer control programs.

## Keywords

- ▶ HPV
- ▶ vaccination
- ▶ screening
- ▶ LMIC

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## Introduction

Cervical cancer was estimated to account for 604,000 new cases in 2020 (number 4 in women cancer worldwide). The projected deaths due to cervical cancer were 342,000 in the same year (age-standardized rate of 13.3 per 1 lakh women). Most of these deaths (90%) were estimated to be in low- and middle-income countries (LMICs). Human immunodeficiency virus (HIV) infection increases risk of cervical cancer by six times.<sup>1</sup> Fortunately, cervical cancer trends are showing a consistent reduction all over the world. Among high-income countries (HICs), incidence and mortality have halved over the past 30 years.<sup>2</sup> But the scenario is slightly different in LMIC. For instance, in India, cervical cancer incidence has declined by 21% from 1990 to 2019. Its mortality has also reduced by 32% in the same period.<sup>3</sup>

Interestingly, the highest rate of decline in both incidence (95% confidence interval [CI]:  $-3.83$  to  $-2.59$ ;  $p < 0.05$ ) as well as mortality (95% CI:  $-4.17$  to  $-2.86$ ;  $p < 0.05$ ) occurred between 1998 and 2005. Among Indian states, maximum reduction was documented in the states of Jharkhand (incidence: 50.22%; mortality: 56.16%) and Himachal Pradesh (incidence: 48.34%; mortality: 53.37%). At the two extremes remained Tamil Nadu (highest cases) and Ladakh (lowest figures) for the period between 1990 and 2019. This overall reduction in numbers is thought to be due to better personal hygiene, cleaner living conditions, and increasing use of opportunistic screening programs. Other factors could include increase in age at marriage, delayed first pregnancy, and family planning to reduce parity (these factors reduce the risk of human papillomavirus [HPV] exposure). Vaccination could also have contributed in some areas (e.g., Sikkim; vide infra).

Unfortunately, GLOBOCAN data also show that absolute number of cervical cancer cases are increasing (471,000 in 2000; 529,000 in 2008; and 570,000 in 2018).<sup>2</sup> Current challenges include limited access to preventive measures, lack of systematic national screening programs, delay in seeking diagnosis when symptomatic, and failure to follow the standard treatment protocols. As a result, cervical cancer-related mortality rates also remain a challenge. Thus, cervical cancer continues to be a major public health problem globally, in India, SAARC countries (Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka), as well as other LMICs.

## Materials and Methods

We conducted an online survey among health care professionals from the SAARC countries. It was aimed at those health care professionals involved in control and management of cervical cancer in their respective countries. A 21-question multiple choice questionnaire ([Table 1](#)) was designed using google docs (<https://docs.google.com>) as previously reported by us.<sup>2</sup> The survey links were shared through WhatsApp groups and e-mail links of various national professional bodies in the SAARC countries. Responses were collected from January 12–15, 2023. Any duplicate, incomplete or

redundant replies were deleted before commencing the analysis. Remaining eligible responses were then tabulated and analyzed. For each SAARC country, the average of all the responses was taken as representative answer and the results are being presented later.

## Results

A total of 367 replies were received from the nine SAARC countries. The representative answers for each country for each of the questions is shown in [Table 1](#).

The possibility of being able to achieve target set by World Health Assembly as announced on November 17, 2020, was felt to be highest (76–100%) by only Bhutan and Nepal. Indian colleagues felt that this chance was 51 to 75%, whereas Bangladesh, Myanmar, and Sri Lanka believed this chance to be 26 to 50%. The least chances were perceived from Afghanistan, Maldives, and Pakistan. Reduction in incidence and mortality of cervical cancer were seen in their real-world practice by Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka. On the other hand, health professionals from Afghanistan, Maldives, and Myanmar did not see such a reduction.

However, reason for decline in cervical cancer rates was attributed to increased awareness and screening by all health workers from the nine SAARC nations. When asked about the most important factor to prevent cervical cancer, the views were divergent. Health professionals from Afghanistan thought it was due to screening of all females, whereas those from Nepal, Pakistan, and Sri Lanka attributed it to HPV vaccination of all girls. Those from Bangladesh, Bhutan, India, Maldives, and Myanmar opined that it could be achieved by screening of all mothers and vaccination of their daughters.

Recommended screening for cervical cancer was also done differently in different nations. The majority (Bhutan, India, Myanmar, Nepal, Pakistan, and Sri Lanka) recommend it for all asymptomatic eligible patients. Representatives from Bangladesh and Maldives wanted to restrict it to symptomatic eligible patients and Afghanistan was in favor of doing screening only for high-risk women. Screening by dual HPV DNA and cytology was preferred by the majority of participants (Afghanistan, Bhutan, India, Myanmar, Pakistan, and Sri Lanka). Participants from Nepal were in favor of cytology alone, whereas those from Bangladesh and Maldives wanted to do it by visual inspection with acetic acid (VIA)/visual inspection with Lugol's iodine (VILI).

Since VIA/VILI is recommended by Health Technology Assessment report of Department of Health Research, a specific question was asked regarding the applicability of the same. Participants from Bhutan and Nepal did not believe this was the right strategy, whereas those from Afghanistan, Maldives, Pakistan, and Sri Lanka would implement after adequate training. Expert clinicians in India and Myanmar were well versed with the VIA/VILI technology but did not use it routinely in patients. Only Bangladesh was in favor of using it routinely without any change. The most important barrier (from doctor's point of view) in recommending cervical cancer screening was lack of awareness among

**Table 1** Cervical cancer survey—SAARC real-world status

Q1. On November 17, 2020, the World Health Assembly announced its target by 2030 of screening 70% of women using a high-performance test by the age of 35 years, and again by the age of 45 years. Current screening rate is less than 30%. In your opinion, what are the chances of achieving this in your country?	
76–100%	Bhutan, Nepal
51–75%	India
26–50%	Bangladesh, Myanmar, Sri Lanka
25% or less	Afghanistan, Maldives, Pakistan
Q2. The Global Burden of Disease 2019 study shows that incidence of cervical cancer has declined by 21% from 1990 to 2019. Also, the mortality due to cervical cancer has reduced by 32% in the same period. Do you see a similar reduction in incidence and mortality in your practice?	
Yes	Bangladesh, Bhutan, India, Nepal, Pakistan, Sri Lanka
No	Afghanistan, Maldives, Myanmar
Q3. What do you think is the cause for decline in cervical cancer rates?	
Increased awareness and screening	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Q4. What do you think is most important to prevent cervical cancer?	
Screening for all females	Afghanistan
Vaccination for all girls	Nepal, Pakistan, Sri Lanka
Screening all mothers and vaccination of their daughters	Bangladesh, Bhutan, India, Maldives, Myanmar
Q5. When do you recommend cervical cancer screening to eligible women in your OPD?	
To all asymptomatic eligible patients	Bhutan, India, Myanmar, Nepal, Pakistan, Sri Lanka
To all symptomatic eligible patients	Bangladesh, Maldives
Only to high-risk women	Afghanistan
Q6. Which test do you recommend for cervical cancer screening in eligible patients?	
HPV DNA and cytology	Afghanistan, Bhutan, India, Myanmar, Pakistan, Sri Lanka
Cytology alone	Nepal
VIA/VILI	Bangladesh, Maldives
Q7. Department of Health Research released a Health Technology Assessment for early diagnosis of cervical cancer. It concluded that among various screening strategies, VIA every 5 years is the most cost-effective screening method. As a clinician how confident are you in performing VIA/VILI for your patients routinely.	
I am not interested in it since I do not believe in it	Bhutan, Nepal
I would like to undergo training and then will implement it	Afghanistan, Maldives, Pakistan, Sri Lanka
Well versed with technique but do not do it routinely for my patients	India, Myanmar
Well versed with technique and do it routinely	Bangladesh
Q8. What do you think is the most important barrier (from the doctors' point of view) in the real-world practice in recommending cervical cancer screening test?	
Lack of awareness among clinicians about need of test/who are eligible women	Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Cost of the test	Afghanistan
Q9. When the test is recommended, how receptive are your eligible patients in getting the test done?	
76–100%	Bhutan, Maldives, Myanmar, Nepal
51–75%	Bangladesh, India
26–50%	Sri Lanka
25% or less	Afghanistan, Pakistan
Q10. What do you think is the most important barrier (from patients' point of view) in getting the test done?	
Asymptomatic, so do not want to get tested	Bangladesh, Bhutan, India, Myanmar, Pakistan
Feeling shy/embarrassed, so not willing for examination	Afghanistan, Sri Lanka

(Continued)

Table 1 (Continued)

Fear about being diagnosed with cancer	Maldives
Lack of easy availability of test	Nepal
Q11. As a doctor how do you think you can help in removing patient-related barriers? How to increase awareness among general public for cervical cancer screening (select as many as applicable)?	
Creating awareness about myths and facts in schools/teenagers	Afghanistan, Bangladesh, Bhutan, India, Pakistan, Sri Lanka
Creating awareness about myths and facts among parents	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Social media promotion	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Appropriate counseling to individuals	Bhutan, India, Maldives, Myanmar, Pakistan, Sri Lanka
Q12. Do you think our country has enough facilities in public and private sectors offering cervical cancer screening tests?	
Yes	Bangladesh, Bhutan
No	Afghanistan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Q13. What steps should government take to improve screening rates in our country (select all that apply)?	
Promote National Cervical Cancer Screening Program	Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan, Sri Lanka
Strengthen infrastructure for existing screening programs	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Pakistan, Sri Lanka
Train primary health workers	Afghanistan, India, Maldives, Myanmar, Pakistan, Sri Lanka
Enhance focus on schools/colleges	Afghanistan, India, Maldives, Pakistan, Sri Lanka
Q14. Along with screening, treatment of screen-detected lesions is equally important. What method do you follow after screening?	
Screen-triage and treat (treatment based on second test after first screen positive)	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka
Based on patient profile and willingness to follow	Myanmar
Based on infrastructure available	Afghanistan, Pakistan
Q15. WHO 2030 calls for elimination of cervical cancers targets fully vaccinating 90% of girls by 15 years of age with two doses of HPV vaccine. In your opinion, what are the chances of achieving this in your country?	
76–100%	Bhutan, Myanmar
51–75%	Bangladesh, India, Maldives, Nepal, Sri Lanka
26–50%	Pakistan
25% or less	Afghanistan
Q16. In your practice, how often do you recommend HPV vaccine?	
Offer to all females irrespective of age	Bhutan
All females between 10 and 26 years	Bangladesh, India, Myanmar, Nepal, Pakistan, Sri Lanka
All females between 10 and 45 years	Afghanistan
I am not much in favor, so discourage	Maldives
Q17. Do you think boys should also be vaccinated for HPV?	
Not required	Nepal
Required to increase herd immunity	Myanmar
Required to protect boys from HPV-related diseases	Bangladesh, Bhutan, India, Maldives, Pakistan, Sri Lanka
No, as it will decrease vaccination rates in females as in our society, priority will be given to males	Afghanistan
Q18. Do you think cervical cancer vaccination should be included in national immunization schedule?	
Yes	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka

Table 1 (Continued)

Q19. State of Sikkim, India has completely vaccinated (with HPV vaccine) all their girls in the age group of 9 to 14 years. What do you think are the barriers in replicating this in your country?	
High vaccine cost	Bangladesh, Bhutan, India, Myanmar, Nepal
Sociocultural challenges	Afghanistan, Sri Lanka
Lack of health care infrastructure	Maldives, Pakistan
Q20. If HPV vaccine is made available in your country at the cost of INR 250 per dose, would you recommend to all eligible patients?	
Yes	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, Sri Lanka
Q21. Do you think if we are able to vaccinate majority of the girls with HPV vaccine, we can avoid screening strategies in future?	
Yes	Nepal, Pakistan
No	Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Sri Lanka

Abbreviations: HPV, human papillomavirus; OPD, outpatient department; VIA, visual inspection with acetic acid; VILI, visual inspection with Lugol's iodine; WHO, World Health Organization.

clinicians regarding its need and eligibility criteria (all nations except doctors from Afghanistan selected this). Participants from Afghanistan was the sole country that felt cost of screening was the major obstacle.

When the appropriate test was recommended, not all eligible patients underwent the testing. Highest compliance was seen in Bhutan, Maldives, Myanmar, and Nepal (76–100%). In Bangladesh and India, this was seen in 51 to 75% instances. In Sri Lanka, it was 26 to 50%, and it was less than 25% in Afghanistan and Pakistan. From the patients' viewpoint, in the survey participants opinion, the most important stumbling block was reluctance to do test because the person was asymptomatic (Bangladesh, Bhutan, India, Myanmar, and Pakistan). In Afghanistan and Sri Lanka, it was because of being shy or embarrassed about the examination of private parts. Other rarer reasons included fear of being diagnosed with cancer (Maldives) and lack of easy availability of test (Nepal).

Removal of patient-related barriers needed a multi-pronged approach—including creating awareness and dispelling myths among students/teenagers (Afghanistan, Bangladesh, Bhutan, India, Pakistan, and Sri Lanka), among parents (Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka), use of social media promotion (Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka), and appropriate counseling of individuals (Bhutan, India, Maldives, Myanmar, Pakistan, and Sri Lanka).

While doctors from Bangladesh and Bhutan were satisfied with the cervical cancer screening facilities in their country, participants from other countries did not find availability of facilities sufficient (Afghanistan, India, Maldives, Myanmar, Nepal, Pakistan, and Sri Lanka). Regarding the survey questions about advise to the respective governments to improve screening rates, the responses included promoting their national programs (Afghanistan, Bangladesh, India, Myanmar, Nepal, Pakistan, and Sri Lanka), strengthening infrastructure for existing screening programs (Afghanistan,

Bangladesh, Bhutan, India, Maldives, Myanmar, Pakistan, and Sri Lanka), training of primary health workers (Afghanistan, India, Maldives, Myanmar, Pakistan, and Sri Lanka), and enhanced focus on schools and colleges (Afghanistan, India, Maldives, Pakistan, and Sri Lanka).

Screening and triage followed by treatment was the preferred strategy in most countries (Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka). Participants from Myanmar were in favor of a customized solution based on patient profile and their willingness, whereas those from Afghanistan and Pakistan wanted to decide the plan based on infrastructure available. When asked about likelihood of achieving World Health Organization (WHO) elimination targets by 2030, doctors from Bhutan and Myanmar were confident (possibility of achieving was felt to be 76–100%). The majority participants thought the chance was between 51 and 75% (Bangladesh, India, Maldives, Nepal, and Sri Lanka). Doctors from Pakistan expected the chance to be between 26 and 50%, whereas those from Afghanistan believed such a possibility was less than 25%.

HPV vaccination was practiced for all females between the age of 10 and 26 years in most countries (Bangladesh, India, Myanmar, Nepal, Pakistan, and Sri Lanka). In Afghanistan, the aim is to vaccinate all females between the age of 10 and 45 years. Participants from Bhutan proposed to vaccinate all females irrespective of age, whereas those from Maldives were not in favor of the same.

The reason to vaccinate boys against HPV was to protect them from HPV-related diseases as per participants from in Bangladesh, Bhutan, India, Maldives, Pakistan, and Sri Lanka. Participants from Myanmar opted HPV immunization for boys to improve herd immunity. Doctors from Nepal and Afghanistan wanted to reserve the HPV vaccination for females only. Participants from all the nine countries wanted HPV vaccination to be included in their national immunization schedule.

As per the survey, the success of Sikkim, India in completing HPV vaccination for all girls between the age of 8 and

14 years was unlikely to be replicated due to high vaccine cost (Bangladesh, Bhutan, India, Myanmar, and Nepal), sociocultural challenges (Afghanistan and Sri Lanka), or lack of health care infrastructure (Maldives and Pakistan). Doctors from all the nine countries would recommend HPV vaccination to all eligible patients if the cost of the vaccine was equivalent of INR 250 per dose. Most participants felt that HPV vaccination would not eliminate the need for screening in the future (Afghanistan, Bangladesh, Bhutan, India, Maldives, Myanmar, and Sri Lanka). Those from Nepal and Pakistan were of the opposite opinion.

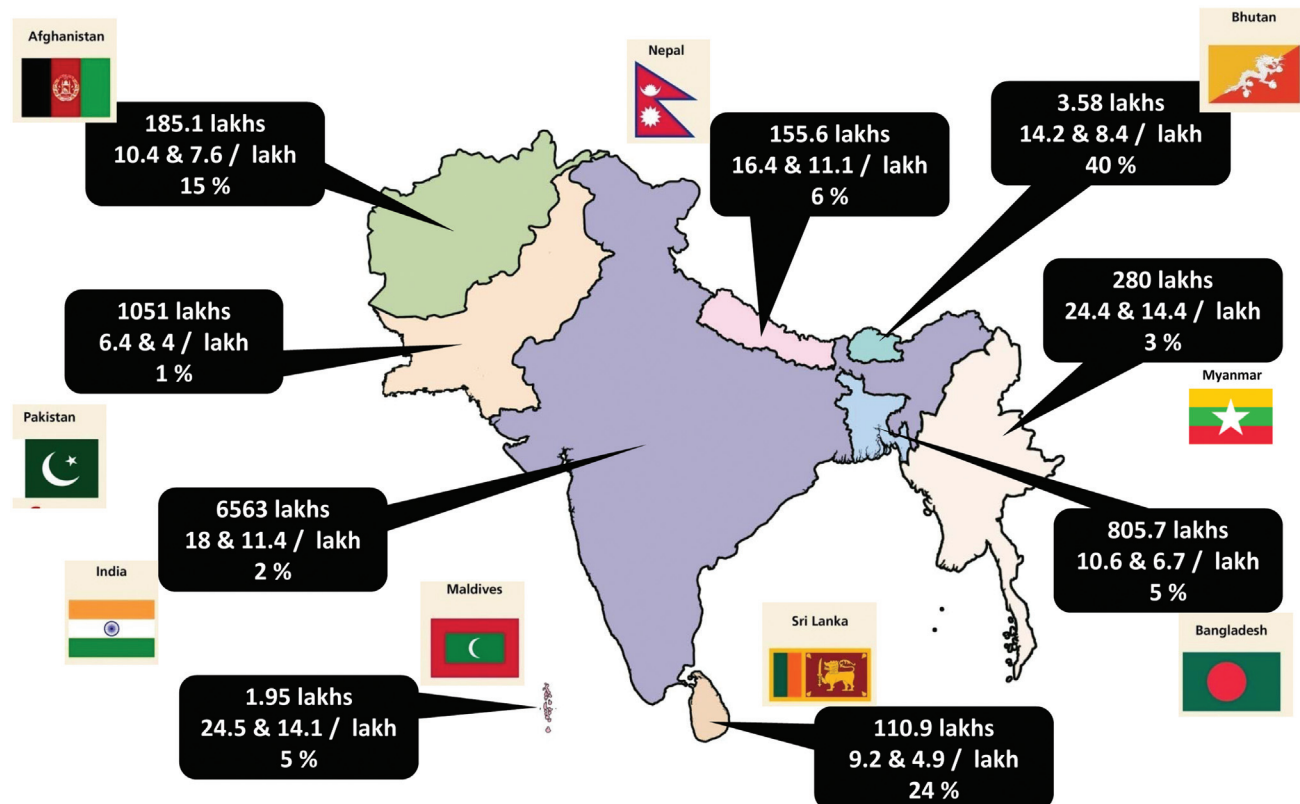
## Discussion

While incidence and mortality of cervical cancer might be showing a downward trend globally (as confirmed by this survey results from Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka), the war against it is far from over. Absolute numbers are increasing and the bulk of the burden remains high in LMIC, such as the SAARC countries (→Fig. 1). Hence, there is urgent need for strengthening effort instead of falling into complacency. Early diagnosis of cervical cancer (e.g., as outlined in the Operational Guidelines from India) remains a herculean task.<sup>4</sup> But current strategies are on the right path, with all eight SAARC nations attributing the declining rates to increasing awareness and screening.<sup>5</sup> A multidimensional approach against cervical cancer in LMIC has proposed the ideal strategy to tackle cervical cancer including HPV vaccination, cervical cancer screening with more inclusion of HPV-directed screening, better diagnosis

facilities, and treatment as per the standard guidelines as per the countries where patients belong.<sup>6</sup> The medical community involved in tackling cervical cancer has taken up their responsibilities very well, as is evident from the large number of publications in PubMed indexed journals from the SAARC countries (→Table 2).

There was also a substantial endorsement of commonly known factors thought to strengthen cervical cancer screening—promoting respective national programs, improving infrastructure, regular training of primary health workers, and the policy of catch them young at schools and colleges. For instance, the Ayushman Bharat Scheme includes 70,000+ wellness centers catered to 413.5 million people plus 917 hospitals available for screening and cancer care.<sup>7,8</sup>

Health Technology Assessment report of Department of Health Research proposes that VIA/VILI is the best solution for LMICs. A cluster randomized case-control study with 16 years follow-up was done in Mumbai from 1998 onward.<sup>9</sup> It included four screening and four monitoring rounds. A massive 75,360 women from 10 clusters formed the screening group and another 76,178 women also from 10 comparable clusters belonged to the control group. After a 12-year follow-up, invasive cervical cancer was 26.74 per 100,000 in the screening group and 27.49 per 100,000 in the control group.<sup>9</sup> In another study, 57 clusters were randomized to one round of VIA and a similar number of clusters formed the control group.<sup>10</sup> A total of 49,311 women were in the screening arm. Only 31,343 (63.6%) of them were actually screened, and 3,088 (9.85%) turned out to be positive. Of the 1,874 women with premalignant lesions in the intervention



**Fig. 1** Population and cervical cancer (incidence, mortality, and screening) in SAARC countries (2019–2021).

**Table 2** PubMed articles from SAARC countries (searched using “cervical cancer” followed by name of country)

Sl. No.	Country	Total	Published in 2022	Largest no. in single year	Largest no. in which year
1	India	4,298	456	456	2022
2	Pakistan	287	31	42	2021
3	Bangladesh	149	16	26	2021
4	Nepal	117	10	16	2021
5	Sri Lanka	51	6	6	2021
6	Bhutan	30	2	8	2020
7	Myanmar	18	2	3	2021
8	Afghanistan	14	1	4	2021
9	Maldives	4	1	1	2021

group, only 72% actually received treatment. Finally, 167 cervical cancer cases and 83 cervical cancer deaths were documented in the screening group as compared with 158 cases and 92 deaths among the control group.<sup>10</sup> Our survey showed that only one country (Bangladesh) was in favor of using VIA/VILI screening.

Just offering services, conducting camps and providing skilled personnel is far from enough to conduct a successful screening program.<sup>11</sup> Pap smear has a good specificity and sensitivity and has been considered the gold standard for long.<sup>12</sup> However, it suffers from several limitations, especially the need for a highly qualified and experienced technician as well as the special chemicals and stains required. Digital cytology and artificial intelligence algorithms through machine learning have the potential to address some of these roadblocks.<sup>13</sup> However, availability of noncytological tests such as VIA and HPV DNA test, there is a paradigm shift in cervical cancer screening methods. In fact, HPV testing is the current WHO recommendation for screening of cervical cancer. The target was to achieve coverage of > 70% of the population at risk, and not testing more than once. The ultimate objective was to have access to point-of-care HPV testing (especially for SAARC and other LMICs) coupled with HPV vaccination in tandem.<sup>14</sup>

In fact, dual screening strategy using HPV DNA and cytology was preferred by doctors in Afghanistan, Bhutan, India, Myanmar, Pakistan, and Sri Lanka. Since more than 95% of all cervical cancers are due to HPV, this is a logical approach. WHO's updated guidelines are in alignment, recommending HPV tests for cervical cancer screening (HPV DNA ± HPV mRNA testing).<sup>15</sup> Screening should commence from 30 years onward in the general population and from 25 years for women with HIV.<sup>16</sup> Fortunately, patients are able to provide good-quality samples by themselves and freeing scarce health care personnel for other tasks.<sup>17,18</sup> Development of reliable low-cost self-sampling HPV kits for screening will further help in decreasing patient-related barriers and strengthening screening process.

Since 2020, the global elimination strategy aims to achieve the following by 2030—90% girls fully vaccinated

with two doses by the age of 15 years. In our survey, this was considered achievable in the 76+ % of their populations only by Bhutan. Four other countries expected to cover 51 to 75% of their eligible women (Bangladesh, India, Maldives, Nepal, and Sri Lanka). The remaining countries (Pakistan, Afghanistan, and Myanmar) expected to make this possible in less than half of their people. All nine countries were unanimous in their opinion that for global elimination strategy to be successful, HPV vaccination must be included in their respective national immunization schedules.

The success of Sikkim, India in being the first (in 2018) to completely vaccinate all their girls aged 9 to 14 years is laudable. This included 25,284 girls in 1,166 schools.<sup>19</sup> To replicate this in the SAARC countries at national levels, the roadblocks that need to be overcome include high vaccine cost (Bangladesh, Bhutan, India, Myanmar, and Nepal), sociocultural challenges (Afghanistan and Sri Lanka), and lack of sufficient health care infrastructure (Maldives and Pakistan). Sikkim had procured the HPV vaccine through Gavi at landed price of 5.8 USD per dose (approximately INR 475, including taxes). The good news is that Serum Institute of India (in collaboration with Department of Biotechnology, Government of India) has developed a tetravalent HPV vaccine (covering serotypes 6, 11, 16, 18—approximately 90% of HPV found in LMIC) that will be available at 250 INR per dose or less.<sup>20</sup> This will solve the cost problem as concerned by the doctors in five SAARC countries—Bangladesh, Bhutan, India, Myanmar, and Nepal.

## Conclusion

Cervical cancer remains a major public health challenge globally, and especially in LMIC like the SAARC countries. Better understanding of the role of HPV and availability of its vaccine has added a new armament in the war against cervical cancer. Our survey provides insights into the landscape of challenges faced by SAARC countries. It also provides some consensus and several potential solutions that will strengthen public and private initiatives to control cervical cancer. This issue of the *South Asian Journal of Cancer* also

includes other articles from individual SAARC countries, which will provide additional details. We hope that policy makers can give due importance to these publications and modify their national programs appropriately.

#### Conflict of Interest

None declared.

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