

Towards global elimination of cervical cancer in all groups of women

The excellent study by Kate Simms and colleagues¹ proposed a mathematical model to predict the future global incidence and burden of cervical cancer and suggested that successful elimination of the disease will be possible by the end of this century if two major primary prevention strategies—cervical screening and HPV vaccination programmes—are scaled-up to 80–100% coverage over the next 50 years.¹

The model might be feasible in high-income countries, but would be a herculean task for low-income and middle-income countries, such as those in southeast Asia, and particularly for a huge country like India, where neither adequate infrastructures, resources, and trained manpower, nor an organised cervical screening and human papillomavirus (HPV) vaccination programme are in place. The primary health-care and community health-care centres that could serve as nerve centres for cervical screening and HPV vaccination are mostly under-resourced, ill-equipped, and do not have proper electricity and water supply, which affects both screening and vaccine delivery in a country with more than 1.3 billion people. Despite incidence of cervical cancer and HPV infection in India being one of the highest in the world, the National Technical Advisory Group on Immunisation in India has yet to include the HPV vaccine in its universal immunisation programme. Instead, HPV vaccination has been withheld since 2009 by India's apex health research body, the Indian Council of Medical Research, because of the death of several adolescent girls during immunogenicity trials by the Program for Appropriate Technology in Health in Gujrat and Andhra Pradesh; the case is still being argued in the Supreme

Court. Moreover, because of the huge influence of religious beliefs, ethnicity, and customs in India, and since cervical cancer incidence is linked with sexually transmitted agents and promiscuity, the disease remains a taboo leading to women being stigmatised, ostracised, and prohibited from coming forward for cervical screening or HPV vaccination.^{2,3} Furthermore, almost 50% of the population in India, comprising Muslims (14.2%), tribal people (8.6%), and those below the poverty line (~25%), are very difficult to access for cervical screening and HPV vaccination.

It is intriguing that in 2012⁴ an annual incidence of 527 624 new cervical cancer cases and 265 672 cervical cancer-related deaths were reported worldwide, but the worldwide incidence (569 847 new cases) and mortality (311 365 deaths) of cervical cancer were substantially increased in 2018,⁵ despite regular scale-up of screening and HPV vaccination in high-income countries. By contrast, in India an annual incidence of 122 844 new cervical cancer cases and 67 477 cervical cancer-related deaths were reported in 2012,⁴ but there was a substantial reduction in incidence (96 922 new cases) and mortality (60 078 deaths) in 2018,⁵ despite no scale-up of screening and vaccination. Therefore, although the proposed model might be important in reducing cervical cancer incidence in high-income countries, scaling-up and implementing these programmes in low-income and middle-income countries is challenging and requires coordinated efforts from all stakeholders, including the government, non-governmental organisations, public health-care systems, and the population at large, for effective national screening and affordable and accessible HPV vaccination programmes. Such programmes need to be developed with a higher budget for successful control and management—if

not complete elimination—of cervical cancer in low-income and middle-income countries. Yet, as people worldwide are currently very sceptical about vaccinating their adolescent children, additional efforts, evidence, and scientific reasoning are needed to convince people to accept HPV vaccination.

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