

Human Papillomavirus Vaccination: Overcoming Barriers to Hesitancy in the GCC Countries

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Cervical cancer remains an important cause of morbidity and mortality among women worldwide, despite being a largely preventable disease through screening and timely treatment of precancerous lesions.¹ In 2022, about 660 000 women were diagnosed with cervical cancer and 350 000 died, representing 8% of female cancer deaths globally. Nearly 88% of cases occur in low- and middle-income countries, where cervical cancer can constitute up to 17% of female cancers versus 2–3% in high-income countries.¹

The six Gulf Cooperation Council (GCC) countries comprising Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE are high-income states with advanced health systems. Although the recorded cervical cancer burden in the GCC is lower than the global average,² country-level differences and prevention gaps persist.³ In 2022, the crude incidence of cervical cancer per 100 000 population was highest in Oman (5.07), followed by the UAE (4.03), Bahrain (3.49), Qatar (3.21), Kuwait (3.20), and Saudi Arabia (2.44). Crude mortality rates also followed a similar order: Oman (2.88), Bahrain (2.0), the UAE (1.93), Kuwait (1.69), Qatar (1.4), and Saudi Arabia (1.22).³ In Oman, cervical cancer ranks among the top five cancers affecting women.⁴

Persistent infection with HPV is the central causal pathway for cervical cancer. Progression from HPV infection to precancer and invasive cancer usually takes years; so the current burden of cervical cancer largely reflects past exposure, limited screening uptake, and delays in diagnosis and treatment.¹

Oman, for example, has an estimated overall HPV prevalence of 17.8%, rising to 37.5% among women with abnormal cervical cytology, with at least 15 high-risk HPV genotypes, including regionally common types 82 and 68.⁵ A Saudi Arabian study found HPV 16 and HPV 18/45 to be the most common types among women with cervical atypical squamous cells of undetermined significance.⁶

The arrival of HPV vaccination in 2006 changed the landscape of cervical cancer prevention: the disease could now be intercepted before the causal infection became established, rather than only detected after cellular damage had begun.⁷ HPV vaccines are non-infectious recombinant virus-like particle vaccines; they contain no viral DNA and cannot cause HPV infection.⁷ More than 15 years of evidence from early-adopter countries shows that licensed HPV vaccines are safe, immunogenic, and effective.⁸ The UK began to vaccinate adolescent girls in 2008, which eventually led to about a 75% reduction in cervical cancer diagnoses.⁸ Population-level studies from Australia, Sweden, and England have shown near-elimination of vaccine-targeted HPV types (6/11/16/18) and 80–90% reductions in high-grade cervical lesions among vaccinated cohorts.^{9,10} Scottish data have reported no cervical cancer cases among women who were completely vaccinated and had their first dose at the ages of 12 and 13 years.¹⁰ Emerging data also demonstrate protection against oral and anal HPV infections and associated neoplasia.¹¹

In 2020, the World Health Assembly endorsed the global strategy to accelerate the elimination of cervical cancer as a public health problem.¹² The

strategy is built around the “90-70-90” 2030 targets: vaccinating 90% of girls by age 15; screening 70% of women with a high-performance test at least twice, at ages 35 and 45; and ensuring treatment for 90% of women with cervical precancer or cancer. Achieving these targets is expected to lower age-standardized incidence of cervical cancer to ≤ 4 per 100 000 women over time.¹²

As of November 2025, all six GCC countries have incorporated HPV vaccination into their national immunization programs, primarily targeting girls aged 12–13 years; Bahrain, Qatar, and the UAE also offer vaccination to boys. However, published coverage data remain limited, and screening uptake is highly variable across and within GCC countries.³ This matters because vaccination alone will not reduce the current burden of cancer in adults. Its major effect will be seen in future cohorts. Therefore, screening and timely treatment remain essential for women who are past the optimal age for vaccination and are already at risk.

Despite strong evidence for vaccine effectiveness and the region’s well-developed health infrastructure, four major barriers continue to constrain optimal coverage of HPV vaccination in GCC countries:

1. Knowledge gaps: Systematic reviews report substantial gaps in parental awareness of HPV, its link to cervical cancer, and the purpose of HPV vaccination. In GCC studies, awareness of the link between HPV and cervical cancer has been reported as low as 11%,¹² while a broader Middle East and North Africa review reported pooled HPV vaccine acceptance of around 46%.¹³
2. Cultural sensitivities: Concerns that vaccination may be interpreted as tacit endorsement of premarital sexual activity remain a powerful deterrent for some parents, particularly when the vaccine is framed mainly as protection against a sexually transmitted infection.^{14,15}
3. Healthcare provider factors: Healthcare workers are among the most influential drivers of vaccine uptake, but many GCC physicians, nurses, and medical students have reported insufficient knowledge, training, and low confidence in discussing HPV vaccination with conservative families.¹⁴ A recent Saudi study of female medical students found low vaccine-specific knowledge and uptake.¹⁷
4. Structural and logistical issues: Suboptimal integration of HPV vaccination program into

GCC school health services, limited weekend and evening clinics, and incomplete immunization registries hinder reach, follow-up, and coverage monitoring.

These barriers are modifiable in GCC countries, due to their strong health infrastructure, high school enrolment, and capacity for coordinated public-health delivery. Following recommendations are presented below.

First, public misunderstanding and social-media-based misinformation must be addressed. Public communication should frame HPV vaccination primarily as cancer prevention rather than protection against a sexually transmitted infection, while providing accurate, age-appropriate information on HPV transmission when needed. Such reframing has been shown to substantially improve acceptability. Messages should be culturally appropriate and supported by trusted figures such as religious leaders, teachers, and community health workers. Indeed, religious scholars across the region have repeatedly endorsed vaccination as consistent with Islamic teachings on preserving life and health.

Second, healthcare workers should be better equipped to support HPV vaccination through improved knowledge, communication skills, counseling confidence, and ensuring on-site access to vaccination. During vaccine rollouts, their responsibilities extend beyond service delivery to include patient education, community engagement, proactively addressing misinformation, and the stigma associated with HPV-related diseases. The recent multi-institutional study of female medical students in Saudi Arabia offers a useful warning: despite high general awareness of HPV and its vaccine, these future health providers reported low vaccine-specific knowledge and personal uptake of only 23%.¹⁶ Thus, healthcare-worker education should build their confidence in the vaccine towards a willingness to vaccinating themselves and family members.

Third, HPV vaccination in GCC countries should be integrated into existing school health programs, with clear consent procedures and follow-up for missed doses. Comprehensive data systems are also essential for monitoring vaccination coverage, overseeing adverse events following immunization, and evaluating program performance. Global monitoring systems, such as the Vaccine Confidence Project, emphasize the importance of early detection

and rapid response to misinformation to maintain public trust.¹⁷ School-based campaigns elsewhere have led to high uptake when vaccination was delivered through organized systems and supported by community engagement.¹⁸ The near universal school enrollment in GCC countries provides a practical platform for high vaccine uptake.⁵

Beyond these operational considerations, HPV vaccination also raises ethical questions. Issues such as mandatory vaccination, parental consent, equitable access for migrant workers, and male vaccination debates arise at the intersection of public health objectives, individual autonomy, cultural principles, and social justice. Addressing these issues transparently is essential to ensure that vaccination programs are perceived as fair, acceptable, and trustworthy by communities and parents.

The GCC countries possess the robust financial resources, infrastructure, political will, and cultural assets required to become global exemplars in the elimination of cervical cancer. By coupling high-quality vaccination with screening and timely treatment, the region can reduce incidence to elimination levels within a generation and prevent virtually all future cervical cancer deaths among girls vaccinated today. Tools are available, the evidence is unequivocal, and the moral imperative is clear. Sustained, coordinated action across health, education, regulatory, and community sectors may allow us to venture into an era where cervical cancer is a disease of the past in the GCC.

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