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Reforming HPV policy in South Africa: Ethics, evidence and equity in gender-neutral vaccination

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South Africa's human papillomavirus (HPV) vaccination programme currently excludes boys, offering free vaccination only to school-attending girls. This paper argues that this exclusion is ethically unjustifiable, legally problematic and scientifically outdated. Drawing on Kantian deontology and rule utilitarianism, it shows that gender-neutral vaccination promotes moral equality and public health. The legal analysis reveals that the current policy may conflict with constitutional rights to health and equality. Scientific and economic evidence further supports the vaccination of boys, including through improved herd immunity and greater cost-effectiveness. Addressing concerns regarding cost and feasibility, the paper recommends practical steps to support a transition to an equitable and inclusive HPV prevention strategy.

Keywords. South Africa, gender-neutral HPV vaccination, HPV, justice, Kantian ethics, utilitarianism

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Human papillomavirus (HPV) is among the most prevalent sexually transmitted infections (STIs) worldwide. It is associated with genital warts and various cancers, including cervical, anal, penile and oropharyngeal cancers.[1,2] While many HPV infections are asymptomatic and resolve spontaneously, persistent infection with high-risk types – particularly HPV 16 and 18 – may lead to cancer. By contrast, low-risk types such as HPV 6 and 11 cause genital warts in both sexes.[1,2]

Globally, the prevalence of HPV among women is estimated at 12%, with the highest rates observed in sub-Saharan Africa (24%), followed by Latin America (16%), Eastern Europe (14%) and South-East Asia (14%).[1] Among heterosexual men, prevalence varies by anatomical site, with the anal region showing the highest rates. Overall prevalence is 21% at any site, with site-specific rates of 19% at the penis, 13% at the scrotum and 8% in the perineal region.[1] Although cervical cancer is the most widely recognised HPV-related disease, a significant proportion of anal and penile cancers is also attributable to HPV.[3] Men are often asymptomatic carriers, thereby contributing to ongoing transmission.[3,4]

In South Africa (SA), cervical cancer remains the most common HPV-related malignancy, with an incidence of 30.4 per 100 000 person-years.[5] However, the burden of other anogenital cancers is also increasing, particularly anal and penile cancers, which have increased annually by 8.5% and 6.9%, respectively.[5] These trends indicate that HPV is not confined to one sex and that both sexes bear a foreseeable and preventable risk of disease. In public health, when a preventable risk is distributed across populations, prevention strategies should not be limited to a single group unless there is a strong justification for doing so. The absence of national data on men who have sex with men (MSM) and transgender populations – groups at heightened risk – further compounds this issue by limiting targeted interventions and perpetuating exclusion from national vaccination strategies.[6,7]

HPV vaccination is highly effective in preventing infection and its associated diseases.[1,3] Despite this, SA continues to provide publicly funded vaccination only to girls. By contrast, several countries, including Australia, Brazil, Canada, Germany and the United Kingdom, have adopted gender-neutral HPV vaccination programmes.[8] Vaccinating both girls and boys provides direct protection and enhances population-level immunity by reducing transmission.[8] Although preventive measures such as male circumcision reduce HPV acquisition, their protective effect is incomplete, making vaccination the most comprehensive preventive intervention currently available.[3,9]

This paper argues that SA's girls-only HPV vaccination policy is ethically, legally and scientifically difficult to justify in light of current evidence. Drawing on Kantian deontology, rule utilitarianism and public health ethics, it advances a normative argument for a gender-neutral policy grounded in equity, risk distribution and population health maximisation. The paper outlines the current policy, presents the ethical rationale for gender-neutral vaccination, examines the legal framework, discusses the scientific and economic evidence, addresses common objections and offers policy recommendations.

HPV vaccination status in SA

SA's HPV vaccination programme, launched in 2014, has made notable progress in reaching adolescent girls. However, it continues to reflect a policy design that restricts access on the basis of sex. The programme targets girls aged 9 - 14 years in public schools and was expanded to include eligible girls in private schools in 2024, achieving substantial coverage.[10] While this represents an important public health achievement, the programme remains structured around a single-sex prevention model.

The exclusion of boys is typically justified by the programme's original aim of reducing cervical cancer. However, this justification becomes increasingly difficult to sustain as evidence demonstrates

that HPV imposes a broader disease burden across both sexes and that vaccination provides benefits beyond the prevention of cervical cancer. Although girls-only vaccination contributes to herd immunity, this protection is partial, unevenly distributed and less effective for populations such as MSM, who do not benefit fully from female vaccination.[11,12]

As a result, the current policy creates two forms of disparity: unequal access to direct protection and unequal reliance on indirect protection. In public health ethics, such disparities require justification, particularly when a safe and effective preventive intervention is available to one group but withheld from another facing a comparable risk of exposure. Moreover, the rationale for maintaining a girls-only HPV vaccination programme has progressively weakened as scientific evidence has expanded, and public health objectives have evolved beyond the prevention of cervical cancer toward comprehensive HPV disease prevention and equitable population protection.

Ethical arguments for gender-neutral HPV vaccination

SA's exclusion of boys from its publicly funded HPV vaccination programme warrants ethical scrutiny. While the programme has successfully expanded protection against cervical cancer among girls, it continues to deny boys access to a preventive intervention that protects against multiple HPV-related diseases. Ethical evaluation of this policy requires consideration of both individual rights and collective public health outcomes. Kantian deontology and rule utilitarianism provide complementary frameworks for assessing whether a girls-only vaccination strategy remains ethically justifiable in light of contemporary scientific evidence.[13,14]

Kantian ethics: Equal moral worth and universalisability

Kantian ethics is grounded in the principles of equal moral worth, respect for persons and universalisability.[15,16] Individuals should be treated as ends in themselves, not merely as means to broader societal goals. Public health policies should therefore demonstrate equal respect for all persons who face reasonably foreseeable and preventable health risks.

Although girls derive significant direct benefit from HPV vaccination, the current policy assigns primary responsibility for population-level HPV prevention to one sex while restricting the other to indirect protection. Boys may benefit from herd immunity, but this benefit is contingent, incomplete and not equivalent to direct protection.[13] This creates an asymmetry in how individuals are protected against a shared health risk. The ethical concern is not that boys and girls experience identical disease burdens, but that both are exposed to a foreseeable and preventable risk of harm. From a Kantian perspective, denying one group access to a preventive intervention that is available to another without sufficient justification may fail to respect their equal moral status. A policy that systematically withholds direct protection from one group risks treating its members as a means to achieving population-level outcomes rather than as individuals entitled to protection.

Kant's principle of universalisability further supports this argument. The maxim underlying the current policy, 'Provide free HPV vaccination only to girls', is difficult to universalise in a context where both sexes face preventable risks.[3,5,13] If applied universally, such a principle could legitimise excluding groups from preventive interventions despite clear evidence of benefit, leading to persistent and unjustified disparities.[2,3] A gender-neutral policy better aligns with Kantian ethics by ensuring that all individuals facing preventable risks are afforded equal consideration.

Rule utilitarianism and population health maximisation

While Kantian ethics emphasises duties of fairness and equal respect, rule utilitarianism evaluates whether vaccination policies maximise overall societal wellbeing.[16] From this perspective, the ethical question is whether a general rule, such as vaccinating all eligible children, produces better outcomes than alternative approaches.

Gender-neutral HPV vaccination improves population health by reducing HPV transmission, lowering disease burden across both sexes and strengthening herd immunity.[2-4,6,7,11,12] These benefits extend beyond vaccinated individuals to the broader population, including those who remain unvaccinated.[7,12] In this sense, a gender-neutral policy produces greater aggregate benefit than a girls-only approach.[4,6,13,14] A potential objection is that expanding vaccination requires additional resources that could be allocated elsewhere. However, utilitarian analysis requires consideration of long-term outcomes rather than immediate costs alone. Evidence suggests that long-term reductions in cancer incidence, healthcare expenditure and productivity losses outweigh the short-term costs of programme expansion.[17] Moreover, in a setting where HPV imposes a substantial yet preventable burden, investment in vaccination represents an efficient allocation of healthcare resources compared with the costs of treatment.

Although HPV vaccination involves minor immediate burdens, such as temporary discomfort and mild adverse effects,[1] these are outweighed by the significant long-term benefits accruing to individuals and society through reduced HPV-related disease, lower healthcare costs and improved population health.[17] A general rule of vaccinating all eligible children therefore has the potential to maximise overall wellbeing more effectively than a selective approach. Both Kantian and utilitarian frameworks support a gender-neutral HPV vaccination programme, which respects individuals as equals while promoting improved population health outcomes.

Legal arguments for gender-neutral vaccination

The previous section assessed SA's HPV vaccination policy through Kantian and utilitarian ethics, highlighting its ethical shortcomings. This section examines the legal case for gender-neutral vaccination, focusing on potential inconsistencies with constitutional rights to health and equality and obligations under international human rights law. It argues that excluding boys raises significant constitutional concerns.

Constitutional rights to health and equality

The Constitution of South Africa guarantees both access to healthcare services and protection from unfair discrimination.[18] Section 27 recognises the right of everyone to have access to healthcare services, while section 9 guarantees equality before the law and prohibits unfair discrimination on specified grounds, including sex and gender. The current HPV vaccination programme provides publicly funded

protection to girls while excluding boys, despite evidence that both sexes face preventable HPV-related diseases.

This differential access raises constitutional concerns. Although section 27 recognises that the right of access to healthcare services is subject to progressive realisation within available resources, differential treatment must nevertheless remain reasonable, evidence-based and consistent with the constitutional right to equality. As scientific evidence demonstrates that HPV affects both sexes and that vaccination benefits both, the justification for excluding boys becomes increasingly difficult to sustain.[1-7]

Although not all differentiation constitutes unfair discrimination, differentiation that systemically denies one group access to a preventive health intervention without sufficient justification risks undermining constitutional commitments to equality and access to healthcare. A gender-neutral vaccination programme would better align with these commitments by distributing preventive protection more equitably.

Children's rights and international human rights obligations

The best-interests-of-the-child principle requires that decisions affecting children prioritise their health and wellbeing.[19] HPV vaccination is administered during childhood precisely because its benefits are realised later in life. Excluding boys from vaccination denies them protection against foreseeable and preventable disease.[11]

International human rights frameworks similarly emphasise non-discriminatory access to preventive healthcare.[20,21] While states retain discretion in implementing these obligations, policies that exclude certain groups from effective preventive interventions must be carefully justified. In the absence of strong justification, such exclusions risk being inconsistent with broader human rights commitments.

Scientific and economic arguments for gender-neutral HPV vaccination

The preceding ethical and legal analyses show that excluding boys from SA's HPV vaccination programme is increasingly difficult to justify. Scientific and economic evidence further reinforces this conclusion, showing that HPV affects both sexes, that girls-only vaccination leaves important gaps in protection and that extending vaccination to boys could provide substantial long-term public health and economic benefits.

Scientific evidence

Accumulating epidemiological evidence demonstrates that HPV imposes a significant disease burden across both sexes. Although cervical cancer accounts for the greatest proportion of HPV-attributable disease, persistent infection also causes a substantial proportion of anal, penile and oropharyngeal cancers, particularly among men.[1,5] Consequently, restricting vaccination to girls leaves an important proportion of preventable HPV-related disease unaddressed. This epidemiological burden is reflected in vaccine effectiveness studies.

Recent systematic reviews and post-implementation evaluations demonstrate that vaccinating boys significantly reduces persistent vaccine-type HPV infection, anogenital warts and HPV-related precancerous lesions, while contributing to reductions in HPV transmission within vaccinated populations.[7,11,12,22,23] Existing preventive strategies, including male circumcision, reduce but do not eliminate HPV transmission, while HIV infection increases susceptibility to persistent HPV infection and HPV-related malignancies among men.[9] Rather than representing alternative strategies, male circumcision, HIV prevention and HPV vaccination should be regarded as complementary interventions that collectively reduce HPV transmission and disease burden. From a scientific perspective, a gender-neutral approach provides more comprehensive and effective population protection than a single-sex strategy.

Economic evidence

Although expanding HPV vaccination requires additional short-term investment in vaccine procurement and programme delivery, these direct implementation costs must be evaluated against the long-term economic burden of HPV-related disease. Preventing HPV-related cancers and genital warts can reduce healthcare costs, productivity losses and broader societal effects.[6]

Available economic modelling generally indicates that gender-neutral HPV vaccination is cost-effective, particularly when both direct and indirect benefits are considered.[6,24] In the SA context, factors such as the World Health Organization (WHO)-endorsed single-dose schedule and existing school-based delivery systems may further improve feasibility and affordability.[24]

Implications for policy

Scientific and economic evidence strengthens the ethical and legal arguments presented earlier by demonstrating that gender-neutral vaccination is not only more equitable but also an effective and sustainable public health intervention. These findings suggest that the continued exclusion of boys is increasingly difficult to justify on ethical, legal, scientific and economic grounds. Rather than requiring a fundamental redesign of the national vaccination programme, extending vaccination to boys would build on SA's existing school-based delivery platform and WHO-endorsed single-dose schedule. A gender-neutral programme would provide direct protection to boys, strengthen indirect protection for girls through reduced transmission, improve protection for populations that derive limited benefit from herd immunity and contribute to long-term reductions in HPV-related disease across the population. The evidence indicates that expanding eligibility represents an evidence-based refinement of the current policy rather than a departure from established public health practice.

Addressing potential objections

Several objections are commonly raised against expanding HPV vaccination to boys. While these concerns warrant careful consideration, the available evidence suggests that they do not outweigh the case for expansion.

The most common objection is that resources should be prioritised toward groups with the highest disease burden, namely girls at risk of cervical cancer. Although this argument has merit in resource-constrained settings, it becomes less persuasive when an intervention provides significant benefits across multiple groups and enhances overall population health. A gender-neutral approach

does not undermine cervical cancer prevention but strengthens it by improving herd immunity and reducing transmission.[8,11,12]

Concerns about cost and implementation are also frequently raised. While expansion requires additional investment, existing infrastructure can be leveraged and long-term savings offset initial costs.[13,14,25] Implementation challenges are therefore practical rather than necessarily prohibitive.

Finally, prioritising girls alone assumes that indirect protection for boys is sufficient. However, reliance on herd immunity is inherently unequal and less effective for certain populations. Direct protection offers a more reliable and equitable approach.

Policy recommendations

First, the National Department of Health should progressively extend eligibility for publicly funded HPV vaccination to boys aged 9 - 14 years through the existing school-based programme, thereby building on established delivery systems while limiting additional implementation costs.

Second, implementation should be accompanied by strengthened epidemiological surveillance of HPV infection and HPV-related cancers in both sexes, alongside ongoing monitoring of vaccine coverage, programme effectiveness, safety and cost-effectiveness to inform future policy refinement.

Finally, public communication strategies should emphasise that HPV affects both boys and girls, as well as men and women throughout their lifespan, and that vaccination protects against multiple HPV-related diseases rather than cervical cancer alone.

Conclusion

SA's girls-only HPV vaccination programme reflects the evidence base and public health priorities that informed its introduction. However, the justification for maintaining this policy has progressively weakened as scientific evidence and public health objectives have evolved. The continued exclusion of boys from publicly funded HPV vaccination is therefore increasingly difficult to justify. HPV is a shared public health challenge, and effective prevention requires inclusive strategies that reflect the distribution of risk. A gender-neutral HPV vaccination programme would better promote equality, improve population health outcomes and represent a sound long-term investment. It is therefore not merely a policy expansion but an important step toward a more equitable and effective public health system.

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