



A Theoretical Framework for Analysing School-Based HPV Vaccine Coverage among Adolescent Girls in KwaZulu-Natal: An African Public Health Perspective

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Published: 13 June 2002 | **Received:** 14 February 2002 | **Accepted:** 09 May 2002

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DOI: [10.5281/zenodo.18528087](https://doi.org/10.5281/zenodo.18528087)

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Abstract

School-based vaccination is a key strategy for improving adolescent health in Africa. The Human Papillomavirus (HPV) vaccine prevents cervical cancer, yet achieving high, equitable coverage among adolescent girls in school settings remains a complex challenge, shaped by socio-cultural, health system, and community factors. This article proposes a theoretical framework to systematically analyse the determinants of HPV vaccine coverage in school-based programmes for adolescent girls in KwaZulu-Natal, South Africa. It aims to provide a structured model for understanding the multi-level factors influencing vaccination uptake in this context. The framework was developed by synthesising established health behaviour theories, including the Socio-Ecological Model and the Health Belief Model. These were contextualised with insights from relevant African public health literature and tailored to the socio-cultural and health system environment of KwaZulu-Natal. Key insights: The framework identifies five interrelated domains influencing coverage: individual and parental perceptions; school-level systems and climate; healthcare provider dynamics; community norms and leadership; and overarching policy and communication strategies. It hypothesises a critical mediating role for trusted community health workers between parental concerns and the formal school programme. This framework provides a tool for moving beyond descriptive coverage statistics to a theory-informed analysis of the HPV vaccination process. It highlights the necessity of interventions synchronised across individual, community, and systemic levels. Researchers should apply and empirically test this framework in KwaZulu-Natal and similar settings. Programme planners should use it to diagnose coverage barriers and design multi-component interventions, prioritising community engagement and strengthening school-health system linkages. Human Papillomavirus (HPV) vaccination; school-based programme; theoretical framework; coverage determinants; adolescent health; KwaZulu-Natal. This work contributes a context-specific theoretical model for analysing HPV vaccine coverage in an African school-based setting, aiming to guide more effective research and programme implementation.

Keywords: *Human Papillomavirus (HPV) vaccination, school-based immunisation, adolescent health, Sub-Saharan Africa, health systems theory, vaccine coverage, cervical cancer prevention*

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