

The HPV Vaccine Affordability Paradox: A Critical Analysis of Global Willingness-to-Pay Data

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Abstract

Background: The human papillomavirus (HPV) vaccine is a cornerstone of cervical cancer prevention. However, global access is hampered by affordability, particularly in low-income countries (LICs) where the burden is highest. “Willingness to pay” (WTP) studies are frequently used to inform pricing and policy, but their interpretation can be complex. This mini-review synthesizes evidence from a comprehensive systematic review to analyse a critical paradox in global WTP data for the HPV vaccine. **Methods:** This review is based on a synthesis of findings from a recent systematic review that analysed 33 WTP studies for the HPV vaccine across World Bank income classifications. We extracted and re-interpreted the key data points on WTP proportions and absolute monetary values (standardized to 2023 USD) to delineate the relationship between demand and purchasing power. **Results:** A striking paradox was identified. LICs demonstrated the highest proportion of the population willing to pay (65.38%), yet the lowest absolute mean WTP (\$48.16). In contrast, high-income countries (HICs) showed a similar proportion (64.75%) but a mean WTP of \$84.18, and upper-middle-income countries showed a mean WTP of \$628.70. This disconnect is driven by methodological differences in survey design (e.g., lower price anchors in LICs) and the high perceived value of the vaccine in high-burden settings. **Conclusion:** A superficial interpretation of WTP data risks creating a false narrative of market readiness in LICs, potentially delaying critical subsidies and public-sector programs. Global health stakeholders must shift from interpreting “willingness to pay” to establishing evidence-based “affordability thresholds” to ensure equitable access and prevent the entrenchment of health inequities.

Keywords: HPV Vaccine- Global Willingness-to-Pay Data- affordability thresholds

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Introduction

The prophylactic human papillomavirus (HPV) vaccine represents one of the most significant advances in preventive medicine in recent decades. While its clinical efficacy is indisputable, the primary barrier to its global life-saving potential is access, which is inextricably linked to affordability, particularly in low- and middle-income countries (LMICs) that shoulder the vast majority of the cervical cancer burden. To inform pricing and policy decisions, researchers have widely employed

“willingness to pay” (WTP) studies to gauge consumer demand. However, a new comprehensive systematic review of this literature reveals a troubling paradox that, if misinterpreted, could severely undermine global vaccination efforts. This mini-review synthesizes that evidence to argue that a superficial reading of WTP data creates a dangerous disconnect between perceived demand and actual purchasing power, threatening to entrench the very health inequities the vaccine is designed to eliminate.

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The Paradox of High Demand and Low Ability

The central finding from the source systematic review, which analysed data from 33 studies across diverse economic settings, is a stark and counter-intuitive paradox. When measured as the simple proportion of respondents who express a positive WTP, LICs report the highest level of demand globally at 65.38% [1]. This figure surpasses that of high-income countries (HICs) at 64.75% and is notably higher than the 52.68% found in lower-middle-income countries [1]. On the surface, this could be interpreted as a strong signal of a ready and willing market in the world's poorest nations.

This conclusion, however, collapses upon examining the absolute monetary values participants are able to offer. After standardizing all values to 2023 US dollars, the mean WTP in LICs is a mere \$48.16 [1]. In contrast, the mean WTP in upper-middle-income countries is \$628.70, and even in HICs, it stands at \$84.18 [1]. This is not a minor discrepancy; it is a profound chasm. The "willingness" captured in LICs is for a price point that is a fraction of the vaccine's actual market cost. The paradox is therefore unequivocal: the populations with the greatest need and the highest proportional demand have the least ability to translate that willingness into a purchase.

Origins of the Paradox: Methodology and Perceived Value

This paradox is not an anomaly but a predictable outcome of the methodological and contextual factors inherent in WTP research, as detailed in the source review. First, the price points presented to respondents in surveys are typically calibrated to local economic realities to avoid eliciting "protest zeros." In LICs, studies often use low, hypothetical price points; for instance, research in Nigeria offered prices ranging from \$5 to \$20, resulting in a high WTP proportion that reflects strong demand at an affordable price, not at the prevailing global market cost [1-4]. Second, the perceived value of the HPV vaccine is magnified in high-burden, low-resource settings. Where cervical cancer is a leading cause of cancer death and access to screening is limited, the vaccine is viewed as a potential lifesaver, inflating the desire to acquire it a sentiment captured in WTP proportions that is entirely disconnected from household economic capacity [1].

The Danger of Misinterpretation for Global Health Policy

The uncritical use of high WTP proportions from LICs poses a significant threat to effective policy. If manufacturers or governments interpret a 65% WTP as evidence of a viable commercial market, they may delay or deprioritize the negotiations and subsidies necessary for public-sector implementation. This creates a policy limbo where the vaccine is technically available but practically inaccessible. It can lead to the flawed promotion of out-of-pocket models, which are known to exacerbate inequity and fail to achieve the coverage rates required for herd immunity. The data, when misread, provides a convenient justification for inaction, allowing stakeholders to point to "high demand" while ignoring the "low ability" that makes it irrelevant.

In Conclusion, A Call for an Affordability Paradigm Shift. The HPV vaccine affordability paradox, as illuminated by this mini-review, is a critical warning sign for global health policy. The high proportional WTP observed in low-income countries is a testament to the vaccine's value and the profound need for it, but it is not an indicator of market viability. Interpreting it as such perpetuates a dangerous fiction that undermines efforts to achieve equitable access. It is incumbent upon the global health community specifically Gavi, the Vaccine Alliance, the World Health Organization, and vaccine manufacturers to look beyond the headline WTP statistics and grapple with the underlying economic realities. Only by shifting our focus from a simplistic "willingness to pay" to a rigorous, equity-centered assessment of "ability to pay" can we ensure that the promise of the HPV vaccine becomes a reality for the millions of women who need it most.

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Statement of Transparency and Principles

- The authors declare no conflict of interest.
- The study was approved by the Research Ethics Committee of the authors' affiliated institution.
- The study data are available upon reasonable request.
- All authors contributed to the implementation of this research.

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