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Exploring the Landscape of HPV Vaccine Acceptability in Pakistan: A Systematic Review

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Abstract

The FDA-approved vaccination against the Human Papillomavirus (HPV) was introduced in 2006, and since then, many countries have successfully implemented various HPV immunization programs. However, Pakistan, with approximately 73.8 million women at risk of cervical cancer, significantly lags behind, and currently, the HPV vaccination is not included in any immunization programs. This could be attributable to a dearth of awareness and knowledge amongst the masses regarding the HPV vaccine. The primary aim of this review was to evaluate public awareness and acceptance of the HPV vaccine in Pakistan. A literature search was conducted using electronic databases, including PubMed, Google Scholar, and ScienceDirect. Of the 222 studies in total, 15 were finalized, which met the review's criteria and objectives. The review assessed the population's awareness of the HPV vaccine's availability, their current vaccination status against HPV, and their willingness to get vaccinated against HPV. The analysis revealed that the current immunization status remains alarmingly low, which could be in line with low awareness regarding the availability of the HPV vaccine in Pakistan. There is a pressing need to introduce the HPV vaccination into the national immunization schedules and simultaneously strengthen regulatory frameworks surrounding the HPV vaccination in Pakistan.

Key words: Human Papillomavirus; HPV vaccine; Immunization programs; EPI; Pakistan

Introduction

In the year 2006, the world was first introduced to the FDA-approved vaccination against the Human Papillomavirus (HPV).[1] It is believed that HPV – a sexually transmitted infection responsible for causing several cancers, including cervical cancer – is so prevalent that the majority of the unvaccinated, sexually active people, both males and females, will acquire the infection at some point throughout their lives.[2] Many developed countries have significantly reduced their burden of cervical cancer owing to numerous HPV vaccination programs.[3,4] Countries like the United States, the United Kingdom, Australia, and Canada were some of the first ones to include the vaccine in their national immunization drives and initiatives.[1] Australia is reported to be the first nation to eliminate cervical cancer by 2035.[5] Encouragingly, many low-and middle-income countries (LMICs), including those in South Asia, have effectively implemented various HPV immunization programs at the national level as well.[6] In the Eastern Mediterranean region, Libya and the United Arab Emirates have successfully rolled out the HPV vaccine.[7] However, the same cannot be said about Pakistan, a country harboring a population of approximately 73.8 million women, who are susceptible to cervical cancer, where 5008 women are diagnosed with cervical cancer, and 3197 succumb to it every year.[8]

In 2025, the HPV vaccine is planned to be introduced in Pakistan under the Expanded Program on Immunization (EPI); however, it is not yet included in any national immunization program, which remains a serious concern.[9] As per the recommendations of the World Health Organization (WHO), girls who are in between the ages of 9-14 years must be the key target of the HPV immunization programs, with a one to two-dose schedule recommended for girls and women aged 9-20 years,[10] and reports indicate that developing countries, including Pakistan, suffer the most, with significantly high morbidity and mortality rates, owing to HPV-related cervical cancer, primarily due to the HPV vaccine inaccessibility.[11] A study was conducted in South Asia to explore the barriers surrounding the HPV vaccination, which revealed that the people in Pakistan are hesitant to get vaccinated on account of the vaccine's inflated cost and demand financial sponsorship from the government to receive the vaccination.[12] Furthermore, Batool et al. reported that the high cervical cancer mortality rate in Pakistan is largely attributable to inadequate awareness, and the same is widely reported for the HPV vaccine as well,[13] with Shamaun et al. highlighting that this scarcity of understanding and knowledge is prevalent across not just some, but almost all segments of Pakistan.[14]

Hence, owing to a dearth of awareness and knowledge amongst the masses regarding not just HPV itself, but also the availability of the HPV vaccines, Pakistan is silently sweeping this significant issue under the rug. This systematic review was conducted to assess the awareness of the Pakistani society concerning the knowledge of the existence of the HPV vaccine and its acceptability in Pakistan. The aim of this review was to shed light on the importance of the immediate introduction of the HPV vaccines into the national immunization schedules and ultimately inform stringent regulations surrounding the HPV vaccination in Pakistan.

Materials And Methods

The core objective of this systematic review was to assess the awareness of the Pakistani society regarding the HPV vaccine in Pakistan. The major areas that were identified under this objective were:

a) Awareness regarding the availability of the HPV vaccine

b) Current vaccine status against HPV

Contributions:
PAA, SNK, AM, SK, KN, MAT - Conception, Design
PAA, SNK, AM, SK, KN, MAT - Acquisition, Analysis, Interpretation
PAA, SNK, AM, SK, KN, MAT - Drafting
PAA, SNK, AM, SK, KN, MAT - Critical Review

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c) Willingness to get vaccinated against HPV

For this systematic review, a literature search surrounding the HPV vaccination in Pakistan was conducted using electronic databases, including PubMed, Google Scholar, and ScienceDirect. Search terms included "human papillomavirus vaccination" OR "HPV vaccine" AND "HPV Pakistan," and Boolean operators were incorporated into the search strategy. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram was used for the identification, screening, and final inclusion of the relevant articles (Figure 1).[15]

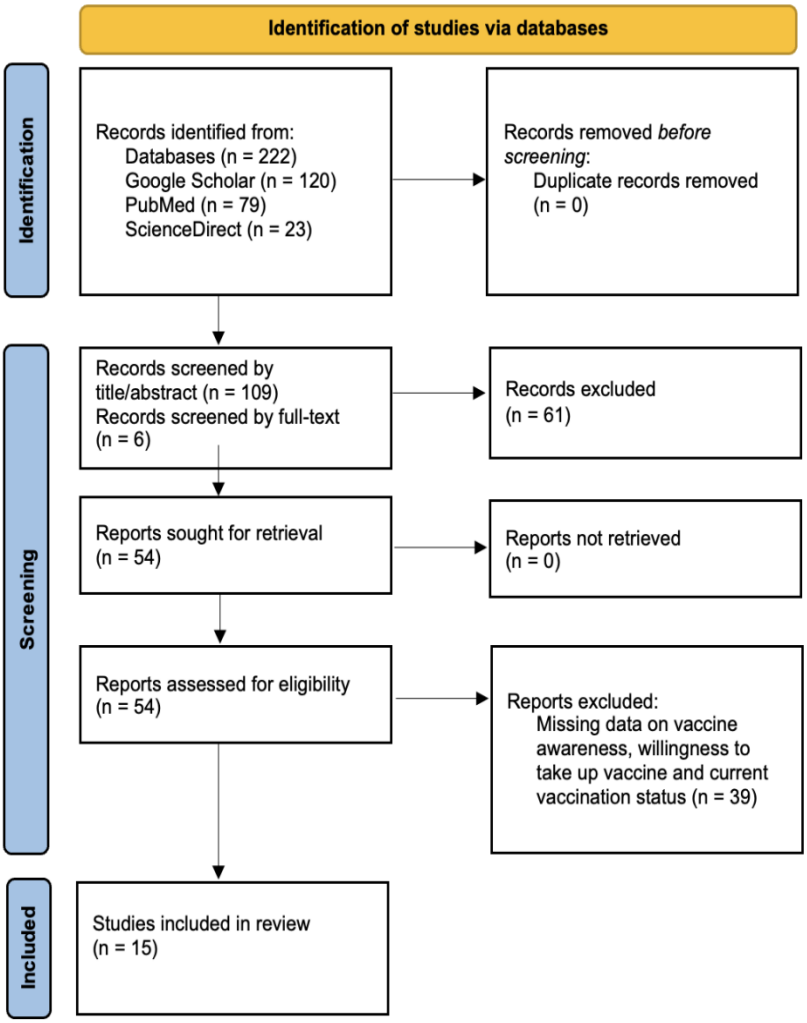

Figure 1: PRISMA flow diagram for the identification of studies for the systematic review

The articles reporting on the HPV vaccine from 2015 to 2024 in Pakistan were selected for this review. Keeping in view the research question and objectives, the articles were then thoroughly reviewed, and those failing to align with the research objectives were excluded. Furthermore, the risk of bias of the included studies was assessed using the JBI critical appraisal checklist for cross-sectional studies, and the overall risk was determined based on domain ratings.

Results

A total of 222 studies were identified from three databases, and after detailed screening and assessment, 15 studies were included in this systematic review. The studies selected are summarized in Table 1, showing the author, year of publication, along with the reported percentages of willingness to accept the HPV vaccine, current immunization status against HPV, and HPV vaccine awareness. After extensively reviewing the full text of these studies, the data were analyzed with the help of the R Project for Statistical Computing, version 4.4.3, and the values were reported (Table 2). Regarding the risk of bias, out of 15 studies, 3 were rated as low risk, 10 as moderate risk, and 2 as high risk.

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Table 1: Studies selected for the systematic review with their authors, years, and reported percentages of HPV vaccine willingness, current immunization status, and vaccine awareness

Author	Year	Willingness to get vaccinated against HPV (%)	Current immunization status against HPV (%)	Awareness regarding the availability of the HPV vaccine (%)
Shamsi[16]	2024	66.7%	3.1%	-
Kumari[17]	2022	-	-	10.5%
Ejaz[18]	2022	-	-	0%
Ali[19]	2022	54%	-	29%
Khan[20]	2021	77.1%	19.3%	70%
Zaidi[21]	2021	-	9.8%	25.5%
Safdar[22]	2021	46.3%	0%	-
Minhas[23]	2020	84%	-	1%
Riaz[24]	2020	37.4%	1.8%	40.2%
Ghayas[25]	2018	-	-	-
Sohail[26]	2018	93.7%	-	71.4%
Ismail[27]	2017	38%	-	-
Zaheer[28]	2017	56.4%	1.3%	19.3%
Khan[29]	2016	-	-	47%
Gul[30]	2015	95.4%	-	10.8%

Table 2: Calculated values for Pakistan with data from the 15 articles

Research Objectives	Calculated Percentages (100%)
Willingness to get vaccinated against HPV (n = 10)	64.9%
Current immunization status against HPV (n = 6)	5.8%
Awareness regarding the availability of the HPV vaccine (n=11)	29.5%

Discussion

The findings of this systematic review highlight a critical gap between intention and action in Pakistan, as although the majority of people express willingness to receive the HPV vaccine, immunization coverage remains alarmingly low. This disconnect suggests the presence of barriers that prevent positive vaccination intent from translating into actual uptake. One such barrier, which has been identified in this study, might be the lack of awareness regarding the availability of the HPV vaccine in Pakistan. Presently, two vaccines – a quadrivalent vaccine, Gardasil, and a bivalent vaccine, Cervarix,[31] are available in Pakistan, but these are neither accessible nor affordable to the general public, which explains the negligible immunization numbers (5.8%) and could be one of the major reasons behind the current immunization status. Similarly, the results of this review report awareness in just 29.5% of the population. In comparison, studies from Iraq, Saudi Arabia, and Oman report awareness rates of 23.2%, 32.3%, and 5.9%, respectively.[32-34] This highlights low awareness in numerous Muslim countries, which creates a vacuum and leads to low immunization rates. Considering that HPV comprises several subtypes, including but not limited to subtypes 16, 18, 31, and 45,[33] it is crucial to examine how vaccination addresses these variants. The findings of a study done in Pakistan on HPV genotypes revealed the prevalence of other serotypes besides 16 and 18 in Pakistan and concluded that the two vaccines that are presently available here are insufficient to provide immunity against the rest of the subtypes.[34] This underscores the urgent need to procure the 9-valent vaccine in Pakistan, as this sufficiently protects against a number of types, and is widely available in various countries worldwide.[35]

This review also reports extremely low HPV immunization coverage (5.8%). Such rates may be attributed to a range of societal and behavioral factors, including but not limited to cost, healthcare infrastructure, education, and cultural acceptance,[36] with Shaikh et al. highlighting cost as one of the major barriers concerning low HPV vaccination coverage rates in Pakistan.[37] HPV, a virus associated with sexual transmission, is highly stigmatized in Pakistan, with shame and social victimization surrounding HPV preventive measures, including getting screened and vaccinated, deeply rooted in our cultural norms.[38] Khan et al. state that a lack of sexual health education is one of the hurdles to sexually transmitted disease awareness.[39] Furthermore, a study conducted on vaccine knowledge and awareness in Malaysia reported that higher education rates were directly linked with lower vaccine hesitancy and better immunization.[40] Hence, low awareness and knowledge about the HPV vaccine in Pakistan may be viewed as a window of opportunity for increased education and awareness strategies.[41] Simultaneously, Pakistan promptly needs community-based interventions, training of healthcare providers, and sensitization programs to not only promote the uptake of the HPV vaccine but also enhance people's knowledge and change their perceptions about the vaccine.[41] These have been proven to mitigate concerns regarding the safety and efficacy of the HPV vaccine and dispel any myths and controversies.[42] Moreover, studies have highlighted the positive role of social media in promoting knowledge and awareness of the HPV vaccine, with positive content linked to higher vaccine acceptance, an approach that could also be applied in Pakistan.[43] It has also been recommended in the literature to advocate for the inclusion of information about HPV and its vaccine in the undergraduate-level medicine and pharmacy curricula,[44] as this will not only improve HPV sensitivity amongst the students, but also ensure that the future doctors and pharmacists have sufficient and correct knowledge, which will ultimately improve vaccination rates in Pakistan.

Keeping in view the high HPV vaccine acceptability rate (64.9%), this review recommends introducing the HPV vaccine into the Expanded Program on Immunization (EPI).[31] EPI has been immensely successful in protecting children by immunizing them against several diseases, including poliomyelitis and integrating the HPV vaccine into this program will contribute to meeting the WHO target of vaccinating girls from age 9.[45] Recently, promising news has emerged from Punjab, with the province gearing up to introduce the vaccine in its routine immunization schedule in 2025, which is a step in the right direction.[46] The rest of the provinces must also follow suit and make proactive efforts to guarantee the availability and accessibility of the HPV vaccines across Pakistan. This review has several limitations, one being limited generalizability, as the findings may only be relevant to the Pakistani context, along with potential biases, as only three databases were utilized for the literature review. Lastly, as only three studies reported complete data on vaccination willingness, current status, and awareness, the interpretation of the overall findings may be limited. Despite these limitations, this review underscores the urgent need to improve HPV vaccination rates in Pakistan and provides a strong foundation for policy, regulatory measures, and stakeholder action.[47]

Conclusions

Based on the review's findings, Pakistan significantly lags behind in HPV vaccination coverage and awareness. Future research should prioritize strategies to improve HPV immunization rates and achieve the WHO's target of vaccinating 90% of girls by age 15. Comprehensive efforts are needed to address vaccine hesitancy, improve immunization uptake, and ensure the availability, affordability, and accessibility of the HPV vaccine across Pakistan.

Author Information

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