Original Article

Awareness, Willingness, and Concerns Regarding the HPV Vaccine in Rawalpindi District and Islamabad Capital Territory

Yumna Hafeez[1], Ilsa Hafeez[2], Shazia Zeb[3], Raana Sattar[4], Sadia Rubab[5], Farzana Fatima[6]

Abstract

Objective: To evaluate awareness, willingness, and concerns regarding the HPV vaccine among parents and guardians in Rawalpindi and Islamabad.

Methods: A cross-sectional survey was conducted among 1,007 respondents. Data on demographics, HPV awareness, willingness to vaccinate daughters, and concerns were analyzed using descriptive statistics. Comparative analysis was performed by stratifying responses based on education level and HCW status.

Results: Awareness of the HPV vaccine was reported by 66.2% of respondents, while 42.3% were willing to vaccinate their daughters. Safety perceptions were mixed: 40.6% considered the vaccine safe, 37.2% were unsure, and 22.1% believed it was unsafe. The most common concerns were side effects (43.1%), infertility (28.8%), vaccine effectiveness (21.5%), and quality (21.4%). HCWs demonstrated significantly higher awareness (88.3% vs. 48.3% for Non-HCWs) and willingness (63.9% vs. 24.7%). A direct, positive correlation was observed between higher education and both awareness (from 38.1% in the Low education group to 89.2% in the Postgraduate group) and willingness (from 20.5% to 59.7%). Despite these concerns, 42.1% supported inclusion of the HPV vaccine in Pakistan's Expanded Programme on Immunization (EPI).

Conclusion: A substantial gap exists between HPV vaccine awareness and definitive acceptance in the twin cities of Rawalpindi and Islamabad. Misconceptions regarding side effects and infertility represent significant barriers. While HCW status and higher education strongly predict acceptance, targeted public health campaigns are urgently needed to dispel misinformation, specifically addressing the safety and effectiveness of the vaccine, to ensure the success of the newly launched national HPV immunization program.

Keywords: Cervical cancer, HPV, health concern, Immunization, Public Awareness.

Introduction

Cervical cancer is the fourth most frequently reported malignancy globally in females.[3] It ranks as the fourth most common cancer, accounting for the majority of cancer-related deaths. Approximately 348,709 cervical cancer-related deaths were reported globally in year 2022.[4.] Cervical cancer is the third most prevalent cancer in Asia, accounting for 315,346 newly diagnosed cases and 168,411 deaths in 2020.[5,6.] According to the International agency on Cancer, in Pakistan, ~5 thousand new cervical cancer cases and around three thousand deaths were reported in the year 2020. It is the most frequently diagnosed cancer in the younger age group of females (15-45 years) and is overall ranked as the third most frequently diagnosed cancer.[7]

The Human Papillomavirus (HPV) is the major causative agent associated with cervical cancer risk. Prophylactic HPV vaccination is commonly used for early prevention of cervical cancer. It is a cost-effective option for preventing the onset of cervical cancer. The world health organization (WHO) HPV prevention strategy named as 90-70-90 strategy is aimed to reduce the global burden of the disease by 2030 aimed to get 90% of girls get vaccinated at the age 15 years or early and 70% of the women age between 35-45 years get screened for HPV and 90% of the pre cancer women's get treated to minimize the invasive cancer risk .[8]

The HPV vaccination started globally as an early preventive barrier to reduce the cervical cancer burden. In line with global recommended standards, the vaccination drive started in different schools across Pakistan, including Rawalpindi and Islamabad city, since September, 2025. The HPV vaccine is administered to girls aged 9-14 years with the prior consent of the parents/guardians. Lack of awareness and low education, social and cultural issues, and rumors were the major hurdles observed in getting consent from the parents. The current study focuses on evaluating the factors acting as barriers and major health concerns during the vaccination drive, either on the part of health care workers or the community involved.

Materials And Methods

The present study was conducted in the twin cities, Rawalpindi district of Punjab, and the federal capital, Islamabad, Pakistan. A cross-sectional, quantitative study design was used.

The parents or guardians of the school-going 9-14-year-old female student residents of the twin cities, Rawalpindi district of Punjab, and the federal capital Islamabad, Pakistan, were included in this study.

The parents or guardians of the school-going female students above the age of 15 years, student residents of twin cities, and those who refused to give consent or the necessary data questionnaire were excluded from the present study.

Contributions:
YH, IH, SZ, RS, SR, FF - Conception, Design
YH, IH, SZ, RS, SR, FF - Acquisition, Analysis, Interpretation
YH, IH, SZ, RS, SR, FF - Drafting
YH, IH, SZ, RS, SR, FF - Critical Review

All authors approved the final version to be published & agreed to be accountable for all aspects of the work.

Conflicts of Interest: None
Financial Support: None to report
Potential Competing Interests: None to report

Institutional Review Board Approval
/IREF/RMU/2025
22-11-2025
Rawalpindi Medical University

Review began 06/06/2025
Review ended 23/12/2025
Published 30/12/2025

How to cite this article: Hafeez Y, Hafeez I, Zeb S, Sattar R, Rubab S, Fatima F. Awareness, Willingness, and Concerns Regarding the HPV Vaccine in Rawalpindi District and Islamabad Capital Territory. JRMC. 2025 Dec. 31;29(4).

https://doi.org/10.37939/jrmc.v29i4.3106

Original Article

A total of one thousand seven parents or guardians of the school-going female student residents of the twin cities were recruited. Various socioeconomic and educational factors were taken into consideration. A sample size of 1007 participants was enrolled in the study by using the WHO sample size calculator, taking 90%[4] of the pre-cancer women who get treated to minimize the invasive cancer risk, confidence level 95%, absolute precision required 2%

A designed study questionnaire based on the study objective was utilized for data collection. It includes key demographic and educational details such as knowledge of vaccine (awareness), willingness, concerns, and health care professional expertise.

Statistical Package for Social Sciences (version 26.0) was used for data analysis. The descriptive variable was calculated as frequency, and the level of awareness, willingness to participate, and parental concerns were calculated as percentages. Stratified analysis was also done for subgroup evaluation of these variables, such as awareness, willingness to participate, parental concerns, and education status. The overall findings were represented as a bar graph or a pie chart.

Results

The results of the current study analysis of 1,007 parents included in the study. The results are illustrated as follows. The analysis shows that the majority (~66.24%) of the parents were already aware of the HPV vaccine benefit and willing to get their daughter vaccinated.

The analysis showed that despite having awareness majority of the parents hesitate in giving consent. Only half of the total subjects gave consent (~42.3%), which easily shows willingness to get their daughter vaccinated. Whereas, ~32.2% directly refused to get their daughter vaccinated, and 25.2% did not show any response, as shown in Figure 2.

There are multiple concerns raised by the parents that make them reluctant to participate in the vaccine drive. The major concerns are as follow, majority of the parents were concerned about side effects of the HPV vaccine (~43.1%), ~28.8% shows concerns about issues of infertility. Whereas, some parents (21.6%) doubt the efficacy of the vaccine, whether it is effective or not.

The analysis was also done between healthcare workers and non-healthcare professional workers for comparison. The analysis revealed a huge difference of opinion regarding the vaccine and its effectiveness. The HCWs were almost twice as aware of and willing to get their daughter vaccinated. The level of concerns related to different side effects also varies in non-HCWs. The concerns of Side effects (47.12%) due to the vaccine were highest among non-HCWs, followed by Infertility (31.35%), quality of the vaccine (30.09%), and effectiveness (28.1%).

The difference in education is also a major hurdle in getting consent. Getting consent from educated parents was easier, though it varies. Those parents who are well qualified (higher level) easily give consent, almost ~3times higher in postgraduate (59.69) qualified parents, those having low level education were reluctant to give consent (20.50%) as shown in figures 5 & 6, respectively.

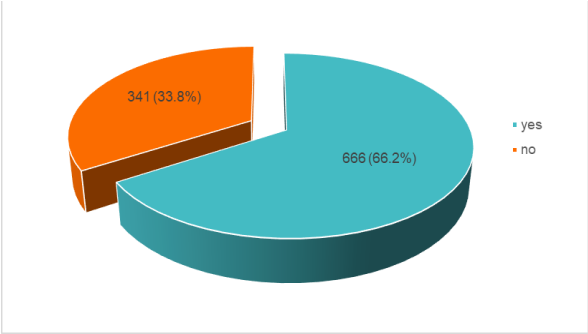

Figure 1: Overall HPV Vaccine Awarfeness (n=1,007)

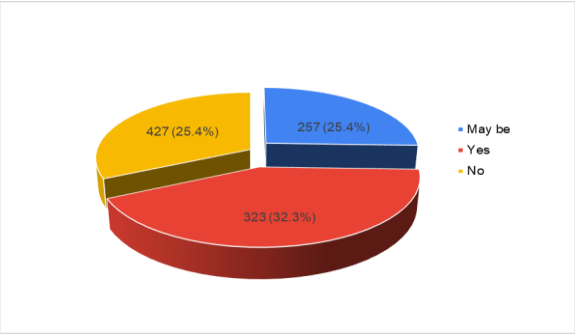

Figure 2: Overall Willingness for HPV Vaccination (n=1007)

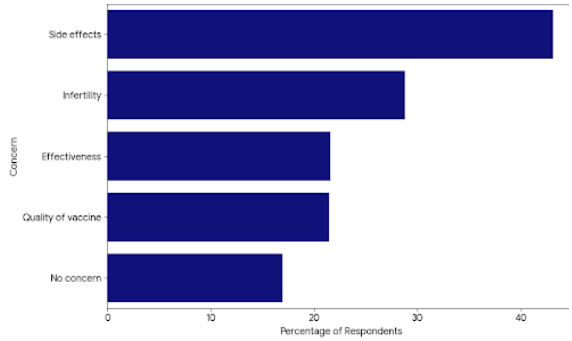

Figure 3: Top 5 Stated Concerns Regarding the HPV Vaccine

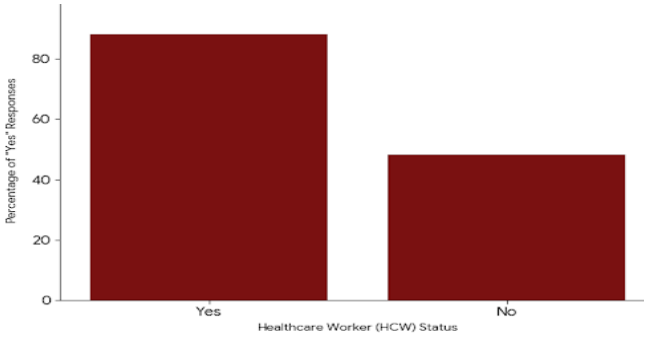

Figure 4: HPV Vaccine Awareness by Healthcare Worker Status

Discussion

The present study aims to evaluate the factors associated with HPV vaccination.[10] It highlights that there are multiple factors, such as lack of education, awareness regarding the vaccine, and social constraints, that inhibit parents' willingness to get their daughter vaccinated against HPV

to reduce the burden of cervical cancer.[11] The study showed that there is a lack of knowledge and education, due to which misunderstanding arises, which make parent reluctant to get their daughters vaccinated. Our results are inconsistent with the previously published data.[12,13] The majority of participants were either unaware of HPV infection and its association with cervical cancer.[14] This also impacts their willingness to give consent. Apart from that majority of participate shows concerns about side effects of the HPV vaccine (~43.1%), ~28.8% shows concerns about issues of infertility. Whereas, some parents (21.6%) doubt the efficacy of the vaccine, whether it is effective or not.

Education for healthcare workers is also a limiting factor. The HCW must be well-trained and educated about the vaccine to convince the community to get vaccinated. The professional attitude also matters a lot, and there is a need of conducting special training program for the healthcare workers as well. These must be monitored and evaluated, and strict action must be taken at the administration level to make policies for the immunization program for its long-term sustainability and effectiveness.

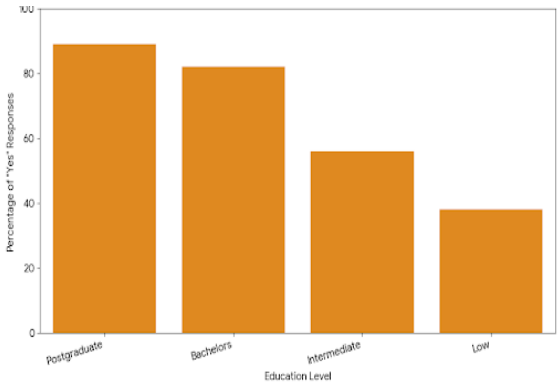

Figure 5: HPV Vaccine Awareness by Education Level

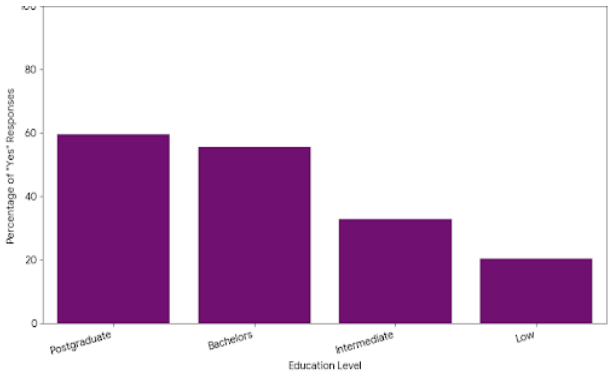

Figure 6: Willingness to vaccinate by Education Level

Recommendations:

The current study findings elaborate key recommendations.

1. Public awareness and education regarding HPV vaccination.
2. A training program must be conducted for HCWs regarding HPV vaccination
3. Health Policies must be formulated by the government, which can make vaccination easy and insure use of administrative machinery for this purpose.
4. Community activities such as seminars and awareness walks should be planned in different schools, colleges, and local areas for public awareness.
5. There must be a body nominated to evaluate the program from time to time.
6. Ensure full integration of the HPV vaccine into the Expanded Program on Immunization (EPI) with clear federal–provincial roles after the initial GAVI-supported phase
7. Establish a national HPV coordination task force under MoNHSRC to harmonize policies, timelines, and reporting across provinces.
8. Utilize Lady Health Workers and community midwives to identify, counsel, and follow up eligible girls.
9. Establish a rapid misinformation response cell involving health authorities and media regulators.
10. Include HPV vaccination modules in medical, nursing, and public health curricula.
11. Improve AEFI (Adverse Events Following Immunization) surveillance with transparent reporting mechanisms.
12. Plan for future introduction of HPV screening and early detection services at primary healthcare levels.

Conclusions

The study shows that there is a significant gap between public awareness and willingness to participate and get their daughters vaccinated. Misconceptions regarding side effects and infertility represent significant barriers. While HCW status and higher education strongly predict acceptance. Targeted public health campaigns are urgently needed to dispel misinformation, specifically addressing the safety and effectiveness of the vaccine.

Author Information

1. Final Year Medical Student, Shifa College of Medicine 2. 3rd Year Medical Student, IMDC 3,4. Additional Medical Superintendent, Holy Family Hospital, Rawalpindi 5. Assistant Nursing Instructor, Holy Family Hospital 6. Assistant Professor, Rawalpindi Medical University
Corresponding author: Dr. Yumna Hafeez hafeezyumna2001@gmail.com

References

1. Nott JP, Bonney EA, Pickering JD, Simpson NA. The structure and function of the cervix during pregnancy. Translational Research in Anatomy. 2016 Mar 1;2:1-7. https://doi.org/10.1016/j.tria.2016.02.001
2. Batool SA, Sajjad S, Malik H. Cervical cancer in Pakistan: A review. J Pak Med Assoc. 2017 Jul 1;67(7):1074-7. https://doi.org/10.47391/jpma.4410

3. Balasubramaniam SD, Balakrishnan V, Oon CE, Kaur G. Key molecular events in cervical cancer development. Medicina. 2019 Jul 17;55(7):384. https://doi.org/10.3390/medicina55070384
4. Wu J, Jin Q, Zhang Y, Ji Y, Li J, Liu X, Duan H, Feng Z, Liu Y, Zhang Y, Lyu Z. Global burden of cervical cancer: current estimates, temporal trend and future projections based on the GLOBOCAN 2022. Journal of the National Cancer Center. 2025 Jan 23. https://doi.org/10.1016/j.jncc.2024.11.006
5. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA: a cancer journal for clinicians. 2021 May;71(3):209-49. https://doi.org/10.3322/caac.21660
6. Lim YX, Lim ZL, Ho PJ, Li J. Breast Cancer in Asia: Incidence, Mortality, Early Detection, Mammography Programs, and Risk-Based Screening Initiatives. Cancers, 2022; 14: 4218 [Internet]. 2022. https://doi.org/10.3390/cancers14174218
7. Bruni L, Serrano B, Roura E, Alemany L, Cowan M, Herrero R, Poljak M, Murillo R, Broutet N, Riley LM, de Sanjose S. Cervical cancer screening programmes and age-specific coverage estimates for 202 countries and territories worldwide: a review and synthetic analysis. The Lancet Global Health. 2022 Aug 1;10(8):e1115-27. https://doi.org/10.1016/s2214-109x(22)00241-8
8. Mustafa M, Naim M, Alam M, Abbas K, Ahmad W, Tufail N, Qadir I, Tantry SI, Khan H, Ahmad R, Usmani N. Addressing the Global Challenge: Strategies for Cervical Prevention and Early Detection within WHO's 90-70-90 Framework. https://doi.org/10.31254/phyto.2024.13403
9. Scott-Wittenborn N, Fakhry C. Epidemiology of HPV related malignancies. InSeminars in radiation oncology 2021 Oct 1 (Vol. 31, No. 4, pp. 286-296). WB Saunders. https://doi.org/10.1016/j.semradonc.2021.04.001
10. Williamson AL. Recent developments in human papillomavirus (HPV) vaccinology. Viruses. 2023 Jun 26;15(7):1440. https://doi.org/10.3390/v15071440
11. Memon SH, Tariq BS. HPV vaccination knowledge, attitude, and practices among physicians in a teaching hospital, Karachi. Journal of Family Medicine and Primary Care. 2025 Jan 1;14(1):132-8. https://doi.org/10.4103/jfmpc.jfmpc_761_24
12. Letafati A, Marvi SS, Nikzad A, Soltani M, Zafarian N, Baghaei Z, Hosseini TM, Sarrafzadeh S, Pirkooh AA, Jazayeri SM. Assessing HPV awareness and Knowledge in Future Health Professionals: A Survey of Health Science Students in Iran. Journal of Community Health. 2025 Jun 22:1-0. https://doi.org/10.1007/s10900-025-01486-2
13. Jeremić Stojković V, Mandić-Rajčević S, Vuković D, Paunić M, Stojanović Ristić S, Obradović M, Cvjetković S. Mind the Gap: Sex-Specific Drivers of Human Papillomavirus Vaccination Uptake in Serbian University Students. European Journal of Investigation in Health, Psychology and Education. 2025 Sep 19;15(9):189. https://doi.org/10.3390/ejihpe15090189
14. Kisa S, Kisa A. Religious beliefs and practices toward HPV vaccine acceptance in Islamic countries: A scoping review. PLoS One. 2024 Aug 29;19(8):e0309597. https://doi.org/10.1371/journal.pone.0309597