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Vaccination Acceptance Attitude regarding HPV Vaccination of Young girls among their Parents: A Cross Sectional Study

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ABSTRACT

Background: *Human papilloma virus (HPV) is the major cause of cervical cancer which is a global public health problem. Although some vaccines are effective against cervical cancer, HPV vaccination coverage is low in LMICs like Pakistan, and a number of factors like lack of awareness and misconceptions are to blame. Parental attitude towards HPV vaccination of young girls is a critical determinant of their acceptance for such vaccination.* ***Objectives:*** *To examine the attitude of parents towards HPV vaccination acceptance and to find the factors which are associated with misconception among the parents in a rural community of Bahlar, Lahore.* ***Methodology:*** *The methodology used in the current cross sectional study was that 359 mothers of female children aged 9-14 years were selected. Non-random sampling method was used to select the study participants. Variables such as socio-demographic data and health behavior related factors (perceived susceptibility and severity, health benefits and barriers, cue to action, and self-efficacy) were measured by a validated and structured, self-administered questionnaire, which was based on the constructs of the Health Belief Model. Data analysis was carried out using SPSS (version 27).* ***Results:*** *72.1% of the parents of the study had a positive attitude towards HPV vaccination while 27.9% had a negative attitude. However, parents' neutral responses in the questionnaire showed that there was a lack of information and awareness of the vaccination. The participants' reasons for not vaccinating their children included misconceptions about the safety and efficacy of the vaccine. On the other hand, increased awareness and recommendation by health care providers were identified as the strongest determinants for acceptance of the HPV vaccination.* ***Conclusion:*** *While largely HPV vaccine is welcomed by parents, there is low awareness on some key points of HPV vaccine that requires health education. Common misconceptions as well as gaps in knowledge. It would be helpful if the parents in rural settings could access more health information and for healthcare providers and staff to be more involved in educating parents about vaccine.*

Introduction

A sexually transmitted infection is a common infection caused by human papilloma virus (HPV). Nearly everyone who has been sexually active will at some time in their lives have contracted the infection, usually with no symptoms. (WHO, 2024). There are over 200 different types of HPV. Low risk HPV types are associated with 90% of genital warts, while high risk HPV types 16 and 18 are associated with 70% of cervical cancer cases. With an expected 660 000 new cases and 350 000 deaths in 2022, cervical cancer is the fourth most common malignancy among women globally. Virtually all cancers are caused by HPV. In addition, cancers of the head, neck, anus and genital tract (penile, vaginal and vulvar cancer) are associated with HPV. Primary (HPV vaccine) and secondary (screening) preventive measures for cervical cancer are very effective and this cancer is almost completely preventable (Heyde, Osmani, Schauberger, Cooney, & Klug, 2024).

Almost all cases of cervical cancer are caused by infection with oncogenic types of human papilloma virus (HPV). Human papilloma virus (HPV), is a frequent sexually transmitted infection that can impact the skin, genital area, anal area and throat. Nearly everyone who has sexually activity will get it at some time, frequently with no symptoms. Most of the time the immune system takes care of itself and eliminates the virus. For some types of HPV that are linked to cancer, spreads over time can result in abnormal cells that can grow into cancer (WHO, 2025).

Cervical cancer is the fourth most common cancer in women globally, and is estimated to have caused 660,000 new cases in 2022. In that same year, approximately 350,000 people died of cervical cancer, with almost 94% of those deaths occurring in LMICs. Eight HPV vaccines will be licensed, five of which have been pre-qualified by WHO and available globally by 2025. These vaccines all protect against the most dangerous types of HPV (16 and 18) that cause about 76% of cervical cancers. There is a special priority for girls in the 9 to 14 year age group to be vaccinated, before they become sexually active. The vaccine is given in either 1 or 2 doses per country depending on each country's vaccination schedule. Two or three doses should be preferred for those with compromised immune systems, such as people living with HIV. In some countries, boys have also been incorporated into vaccination programmes to continue to reduce the prevalence of HPV in the community, and to prevent HPV-related cancers in men (WHO, 2025).

The World Health Organization (WHO) and estimates from the International. Agency for Research on Cancer (IARC) in 2022, there are around 660,000 new cases of cervical cancer diagnosed each year.73.8 million women in Pakistan who are 15 years of age or older are at risk of having cervical cancer. The current estimates are that 3197 women die of cervical cancer each year, and 5008 women are diagnosed with cervical cancer each year. Cervical cancer is the 2nd most common cancer in women ages 15-44 in Pakistan and 3rd in overall cancer cases. In general population, the prevalence of cervical HPV-16/18 infection is estimated to be 0.5% of females; HPV 16 or 18 is believed to cause 88.1% of invasive cervical malignancies (ICO/IARC HPV Information Centre, 2023).

HPV vaccination rates are still low in many countries, and parents' decisions to vaccinate their children are still debatable despite the vaccine's proven high efficiency against persistent HPV16 and 18 infections. The rates of HPV vaccination for girls, however, rose from 20% in 2022 to 27% in 2023, indicating some progress in vaccination activities. The majority of the research conducted on HPV vaccine acceptability has focused on mothers and their daughters, parents and their sons have been less studied. Globally, the uptake of HPV vaccines is greatly influenced by parental attitudes and information. Adoption rates are positively correlated with attitudes towards vaccines in general and specific trust in HPV vaccines. Also, parents' acceptance of the vaccine is higher if they are able to learn about HPV and its relation to cervical cancer (Heyde, Osmani, Schauberger, Cooney, & Klug, 2024).

Vaccines are available, but only 13% of people worldwide have been vaccinated against HPV. The International Vaccine Institute has partnered with the London School of Hygiene & Tropical Medicine and Karolinska Institute to generate primary data on HPV prevalence in South Asian countries (Bangladesh, Nepal, and Pakistan) and some sub-Saharan African countries (the Democratic Republic of the Congo, Ghana, Sierra Leone, Tanzania, and Zambia) to support countries in making evidence-based decisions on vaccines introduction. The Global Burden Estimation of Human Papilloma virus (GLOBE-HPV) project aims to learn about the gender-related dynamics that could hinder girls and women from accessing HPV prevention, screening, and treatment services (International Vaccine Institute, 2025).

The objective of the Pakistan's first 12 days of the inaugural campaign from 15th – 27th September was to reach 13 million teenage girls (9-14 years old) in Islamabad, Punjab, Sindh and Azad Jammu and Kashmir region. Five million more girls in other regions of the nation will be protected when the second and third programs begin in 2026 and 2027. Unfamiliarity caused anxiety. According to Dr. Muzzafar Saeed, Program Lead for the Rural Education and Economic Development Society (REEDS) on HPV, parental hesitancy towards HPV vaccine was anticipated, as myths and misinformation went viral on social media even before launch of the immunization campaign, creating widespread fear and confusion among people (Saeed, 2025).

The theoretical frameworks, like the Health Belief Model (HBM) can be helpful to understand the complex factors that relate to behaviors, like vaccination. The HBM suggests that there are various constructs that predict engagement in preventive health behaviors. Perceived benefits is a construct in the HBM that can be defined as the belief that a behavior is effective at preventing a threat e.g., the perception that a vaccine prevents infection (Frietze, Padilla, Cordero, Gosselink, & Moya, 2023).

Hence, it is crucial to explore parents' attitudes towards HPV vaccine uptake. We want to assess parents' opinions about their child's decision to participate in the newly introduced, free, gender neutral school-based HPV vaccination. The survey feedback will be very useful at this early stage of the programme to gauge parents' attitudes to successful vaccine coverage.

Problem statement:

Even many educated people don't know about HPV, its connection to cervical cancer and the existence of an HPV vaccine. HPV can cause bunch of health problems included cancer, genital warts. It can also lead to stress and anxiety in the community and financial strain. Studies have shown that over half of the population might not realize there is an HPV vaccine! Misconceptions like the belief that the immunization is responsible for infertility or is unnecessary for single girls are responsible for such high level of doubts. Negative attitudes are worsened by misinformation; some people are concerned about the side effects or in some cases, believe false claims that the vaccine is dangerous. The aim of this study is to investigate community perceptions about HPV vaccination, the factors affecting uptake, the myths and the impact on uptake.

Significance: This study is important since it examines Pakistani parent’s opinions about the HPV vaccine. But, there is a strong influence of parents' opinions on young girls' acceptance and uptake of HPV vaccine. The findings of this study will help identify key factors, including cultural, religious, social and informational, that may influence parent attitudes, beliefs, and concerns about HPV vaccine.

Objectives:

- To establish parent's attitude towards HPV vaccine in young girls.

Research Questions:

- What are the parent's attitude regarding HPV vaccine in young girls?

Key Terms Definitions:

HPV: A group of more than 200 common viruses. There are also some human papilloma viruses that can be spread by casual contact with the skin and can cause common skin warts, known as cutaneous human papilloma viruses. Other HPV viruses are called mucosal HPVs because they can infect the wet lining or surfaces of some organs and body cavities, including the cervix, vagina, vulva, penis, anus, mouth and throat (NCI, 2026).

Immunization: A vaccine is a pharmacologic compound that boosts an individual's resistance to a particular disease. If pathogenic bacteria or viruses invade the body, the immune system recognizes the protein parts of the bacteria or viruses as foreign, or antigens. Vaccines contain either a weakened or inactivated version of the disease-causing agent, such as a microbe, a neutralized toxin, or protein from the surface of the pathogen (NIH, 2025).

HPV Vaccine: In the United States, there is a second-generation, noninfectious HPV vaccine (9vHPV) that is indicated for the management and prevention of infections, diseases, or cancers caused by low-risk and high-risk HPV vaccine strains (6, 11, 16, 18, 31, 33, 45, 52, and 58). HPVs are the most common STD viruses that cause precancerous and cancerous lesions. The 9vHPV is a licensed vaccine by the US Food and Drug Administration (FDA) since 2014 and is considered a preventative vaccine (NIH 2024). he 9-valent human.

Literature Review

Literature review: Brief summary and evaluation of past studies on a topic; serves as a basis for a new study; summarizing, comparing and critically analyzing the literature; the goal is to gather the relevant information, to evaluate varying perspectives of different authors, to provide justification for a study and to shape the direction of research. The literature reviewed has been studies done at various locations and time periods. We searched the sitse Google Scholar, PubMed, ResearchGate using the key terms such as Human papilloma virus, Human papilloma virus vaccine, acceptance parental attitude.

This was a cross-sectional study that used an anonymous questionnaire to examine participants' knowledge, attitudes and practices with respect to HPV vaccination and cervical cancer. The study involved all Bhaikaka University students aged between 17–24 years enrolled in MBBS, Physiotherapy and Nursing courses irrespective of gender. The difference is statistically significant between MBBS students and non-MBBS students. Although more than 80% of people have positive opinions about vaccination for HPV, only 7.72% of them are vaccinated. 42.7% of the population gave lack of understanding as their reason for not getting vaccinated (Patel, Parikh, Jasrai, Mewada, & Raithatha, 2024).

This Study was performed in china. The purpose of this study was to investigate and characterize the factors impacting mainland Chinese women's acceptance of the HPV vaccine, a systematic review was carried out. Overall, this research analysis shows that the HPV vaccine was not well received by women in mainland China. Knowledge of the HPV vaccination, hearing about it, family history of infection-related illnesses, cost, hearing about HPV/HPV vaccine/cervical cancer, vaccine safety, sex life, and sex education were all factors that influenced this acceptance (Dapari et al., 2024)

This cross-sectional quantitative study was used convenience sampling to find male and female participants from all 11 govern-orates of Oman who were at least 18 years old and willing to fill out

an online, validated self-administered questionnaire in Arabic. The results showed that healthcare professionals have limited knowledge of HPV infection and HPV vaccines. Most people (under 25%) heard about HPV infection online. Awareness of HPV was significantly positively associated with being a female, working in a medical profession, and higher education status ($p < 0.001$). Most of the respondents (62%, 71.5% and 84.6%) were not aware of the safety of vaccines, were concerned with the adverse effects of vaccines, and wished to be assured that the HPV vaccine would not cause HPV infection, respectively (Al Alawi et al., 2023).

A cross-sectional survey was conducted in March–May 2022, which recruited parents of 9 to 18-year-old children from 73 cities in 23 provinces of mainland China using an anonymous questionnaire. Parents' demographics, their attitudes and knowledge regarding HPV and vaccine, and the factors that affect teenage HPV vaccination were all evaluated. The reasons for parents' unwillingness to vaccinate teenagers may be related to the vaccine awareness of teens, sex of their children, parental HPV vaccination, and vaccine costs under different brands (Xie, Zhu, Jiang & Yin, 2023).

In one study informed consent was gained prior to making telephone interviews and compiling a closed-ended questionnaire. To identify the factors that affect the decision of parents to vaccinate their daughters and explore the knowledge, attitudes and practices of Greek parents of girls aged 11-18 about HPV vaccination. Of the 1,000 parents who participated in the survey, 99.4% knew what HPV is and 98.8% knew there is a vaccine available for HPV. Additionally, 47% of the parents reported that their daughters had received an HPV vaccination; however, additional analysis showed that only 35% had received all necessary doses (Naoum et al., 2022).

In Mexico, mixed-method study was conducted, to assess obstacles to HPV vaccination acceptance. There were 1,787 participants in all. So, children born in Mexico were more likely to complete the immunization series, but not so much as was the case for young adults compared with 9- to 15-year-olds. Structural barriers and several health-related factors (Hernandez, Calderón-Mora, Lara, Drury, & Molokwu, 2024) were mostly identified in terms of access and quality of healthcare.

A descriptive cross sectional study was carried out in Pakistan in 2025. This study aimed to evaluate the knowledge, awareness, attitude and belief of university students about HPV and HPV vaccine uptake. 1056 of the 1200 students that were contacted replied (response rate: 88.0%). 16.4% knew the vaccine was available and 2.3% had been vaccinated with the HPV vaccine. The attitudes of the students were positive regarding HPV vaccination although vaccination uptake was low and knowledge was inadequate. There should be more awareness regarding HPV through social media, curriculum and community outreach (Atif et al., 2025) .

Another study in Pakistan, from December 2022 to May 2023, this study used social media and snowball sampling to study anal cancer KAP. Six practice questions, twelve attitudes, sixteen knowledge questions, and socio-demographic information were included in the questionnaire. There is a need for additional health services, programs, education and awareness for HPV and anal cancer among Pakistani young adults due to their low awareness, high stigma and sociocultural barriers. Furthermore, more studies and laws should be conducted to address sociocultural issues and increase awareness of anal pap (Awan et al., 2023) to prevent anal cancer.

Theoretical Framework of Health Belief Model:

It was primarily created in the 1950s at the U. by social psychologists.S Public Health Service particularly Irwin M. Rosenstock, Godfrey Hochbaum, Stephen Kegeles and Howard Leventhal. They developed HBM to help them understand the reasons behind the low uptake of disease prevention services like TB screening and vaccination. The Health Belief Model is used to explain

and predict health behaviors because it is helpful. It examines the impact of one's beliefs on their behavior in health matters.

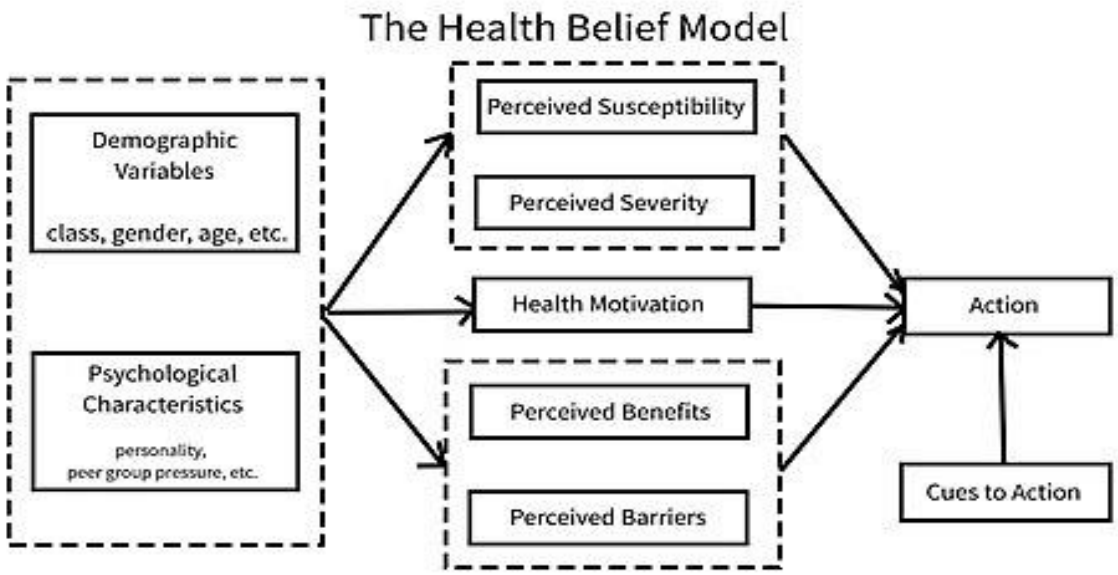


Figure 2.1 Health Belief Model

Materials and Methodology

The present study, methodology for research is described in this chapter. It describes the specific tools and techniques that were used to collect the data, and discusses the research setting, design, sample size and data collection procedures.

Study Design:

In this research, descriptive cross-sectional research design is used. Descriptive cross-sectional study is one of the types of observational study which aims to describe the prevalence or characteristics of a phenomenon, behavior, or condition in a population at one moment of time without determining the causal relationship (Thomas, 2023; Simkus, 2023).

STUDY POPULATION:

Study population is the total number of people, objects or events that are of interest, and from which a sample is drawn (Burns and Grove, 2007). This research was performed on the parents of young girls (9-14/y).

Study Setting:

This is the setting where the research/study is carried out. It involves location, time, population and the associated factors (Burns & Grove 2007). The study was carried out in Bahlar, an area of rural Lahore.

Duration:

This study lasted from the Nov 2025 to March 2026. Approximately 6 months after synopsis is approved.

Sample Size:

The population of the Bahlar Community, which is included in the PHC center, is known. Since the size of the total population was known, Slovin's formula is used.

Slovin's Formula:

$n= N/1+Ne^2$

$n= 3500/1+3500(0.05)^2$

n= 3500/1+3500(0.0025)

=3500/1+8.75

= 3500/9.75

=358.9 = 359

Sample Technique:

This study uses non random sampling technique (Convenience). In this sampling technique, the researcher chooses the participants based on a certain criteria or certain characteristics. Convenience sampling is a type of non-probability sampling in which the researcher selects the participants who are easily available and accessible (Simkus, 2023).

Sample Selection Criteria:

Inclusion Criteria:

- Parents, guardian(s)
- One or more of your daughters is eligible for HPV vaccination
- Can read and comprehend the study language(s)
- Are keen to get involved, accepting suggestions and ideas from others

Exclusion Criteria:

- Have language barrier
- Having any psychiatric illness
- Health care professional

Data Collection Procedure:

A cross sectional study was conducted and the data was gathered from a structured, self-administered questionnaire with seven sections. These are: demography, perceived susceptibility, perceived severity, perceived benefits, cues to action, self-efficacy, perceived barriers. A Likert scale instrument was employed, which has been standardized. Permission was given by the relevant PHC centre (MO) of Bahlar Community, then the door to door data collection was done and informed consent was taken from all participants in the community before the data collection.

Data Collection Tool:

The data were collected from the participants by using an adapted questionnaire (Ghosh et al., 2024). This tool (questionnaire) was translated to Urdu language. The 27 questions were used to create this questionnaire tool. It consists of:

- Socio-demographic, behavioral characteristics of the study participants.

- Perceptions regarding cervical cancer and HPV vaccination were assessed using the Health Belief Model construct on the Likert scale which are scored on the Agree=3, Neutral=2, Disagree=1 (Ghosh et al., 2024).
- The range of mean score is 20 to 60 (Min to Max) and cut off value of mean score is 35 (Negative attitude: <35, Positive attitude: >35).

Ethical Consideration:

- The principles of the World Medical Association (WMA) were used as ethical guidelines in this study.
- The privacy and confidentiality of participants was maintained.
- Voluntary written informed consent for induction was taken prior to the data collection.
- Ethical Review Committee (ERC) of FMH system approved the study.
- Any harm to the participants was avoided.

Data Analysis:

For this study, statistical software, IBM SPSS (Statistical Package for the Social Sciences) version 27 was employed. Different variables were calculated with percentage; graphs created to check perceptions; attitude of the parents/guardian to accept the HPV vaccination of young girls.

Results

According to the study's findings, 72.1% of parents are in support of HPV vaccination for young girls and most of shows negative attitude (27.9%) towards HPV vaccination acceptance. But a large proportion of them still hold negative views and many are not in harmony with the benefits, severity, and susceptibility of the vaccine. The study also recognizes low understanding familial influence and misconceptions regarding the safety, efficacy and cost of vaccines as significant obstacles to vaccine acceptance. Parents' attitudes towards the vaccine are overall positive but more needs to be done to increase knowledge and remove myths in order to encourage their acceptance of the HPV vaccine.

Table 4.1 Demographic characteristics of participants (N=359).

Age	**Frequency**	**Percentage**
21-35	117	32.6%
36-50	208	57.9%
51-65	34	9.5%
Mean ±SD	39.68±8.13	
Gender		
Male	83	23.1%
Female	276	76.9%
Marital status		
Married	340	94.7%
Divorced	4	1.1%
Widowed	15	4.2%
Perceived Social Status		
Low Social Status	236	65.7%
Middle Social Status	123	34.3%
High Social Status	0	0
Educational level		

Illiterate	127	35.4%
Elementary	145	40.4%
Intermediate	65	18.1%
Graduate	22	6.1%

Table 4.1 shows the demographic characteristics of the participants in which majority of participants 208(57.9%) falls between the age group of 36-50 years. Most of the participants 276(76.9%) were females. Among them 340 (94.7%) were married. Similarly, 145 (40.4%) participants had elementary level of education and 236 (65.7%) participants' perceived low social status.

Table 4.2 Vaccination Acceptance attitude regarding HPV vaccination of young girls among parents (N=359).

Cervical cancer is the common cancer of women of your age.	**Frequency**	**Percentage**
Disagree	110	30.6%
Neutral	82	22.8%
Agree	167	46.5%
You feel you will get HPV infection or cervical cancer at some time in your lifetime.		
Disagree	115	32.0%
Neutral	172	47.9%
Agree	72	20.1%
You feel that by not taking HPV vaccine you will become more prone to getting HPV infections and cervical cancer.		
Disagree	132	36.8%
Neutral	163	45.4%
Agree	64	17.8%
Cervical cancer is a serious life-threatening health problem among women.		
Disagree	67	18.7%
Neutral	171	47.6%
Agree	121	33.7%
Your financial security would be endangered if you get cervical cancer.		
Disagree	89	24.8%
Neutral	183	51.0%
Agree	87	24.2%
Cervical cancer involves complicated and prolonged treatment such as chemotherapy and radiotherapy and also hysterectomy.		
Disagree	106	29.5%
Neutral	110	30.6%
Agree	143	39.8%
HPV vaccination can save life of women of your age from cervical cancer and cervical infections.		
Disagree	139	38.7%
Neutral	156	43.5%
Agree	64	17.8%

If you receive the HPV vaccine, you would not worry as much about cervical cancer.		
Disagree	154	42.9%
Neutral	153	42.6%
Agree	52	14.5%
Getting vaccinated can save you from pain of complicated treatment.		
Disagree	132	36.8%
Neutral	164	45.7%
Agree	63	17.5%
You will take vaccine if you are more aware of the cervical diseases.		
Disagree	75	20.9%
Neutral	164	45.7%
Agree	120	33.4%
You will take vaccine if a doctor asked to.		
Disagree	81	22.6%
Neutral	159	44.3%
Agree	119	33.1%
You will take vaccine if your family asks you to take.		
Disagree	108	30.1%
Neutral	145	40.4%
Agree	106	29.5%
You can talk to a professional about your concerns.		
Disagree	71	19.8%
Neutral	130	36.2%
Agree	158	44.0%
You can find a place to get the HPV vaccination.		
Disagree	97	27.0%
Neutral	170	47.4%
Agree	92	25.6%
You know for sure you can get the HPV vaccination if you really want to.		
Disagree	107	29.8%
Neutral	148	41.2%
Agree	104	29.0%
Your family/husband does not permit you.		
Disagree	81	22.9%
Neutral	109	30.4%
Agree	169	47.1%
You do not know where to take the vaccine.		
Disagree	80	22.3%
Neutral	164	45.7%
Agree	115	32.0%
You feel that the vaccine is not safe and can cause reactions.		
Disagree	74	20.6%
Neutral	155	43.2%
Agree	130	36.2%

You feel that vaccine is costly.		
Disagree	99	27.6%
Neutral	128	35.7%
Agree	132	36.8%
You feel that the vaccine is not effective.		
Disagree	67	18.7%
Neutral	89	24.8%
Agree	203	56.5%

Table 4.2 illustrates the Vaccination Acceptance attitude towards HPV vaccination of young girls among parents with majority of the participants 167(46.5%) agree that Cervical cancer is the common cancer among women. Likewise, 172(47.9%) participant's neutral over HPV infection or cervical cancer at some time during lifetime. Most respondents were neutral 163 (45.4%). Likewise, majority of the respondents (171, 47.6%) were neutral to the question of whether or not cervical cancer is life threatening and 183 (51.0%) were neutral to the question of the impact on them financially. Additionally, 143 (33.8%) participants that agree they shows awareness towards vaccine. 64 (17.8%) parents concur that they are very aware of the benefits of vaccines. Furthermore, majority of the participants 154(42.9%) disagree towards low confidence in vaccine effectiveness. Likewise, the majority (164, 45.7%) are indifferent with regard to not knowing about the preventive benefits. Furthermore, 164(45.7%) are neutral about awareness which can boost acceptance. Majority, 159(44.3%) are neutral that doctor's advice plays an important role. The majority of the respondents are neutral 145(40.4) with moderate but not decisive family influence. furthermore, 158/44% agree with good willingness to look for professional advice. The majority (170, 47.4%) are neutral on access to vaccination centers, with an uncertainty of access. Similarly, 148(41.2%) that lack of confidence in accessibility. Nearly, half of the respondents 169(47.1%) agree showing that family doesn't allow for vaccination. Majority, respondents are neutral 164(45.7%) indicating a lack of awareness about vaccination center. Furthermore, 155(43.2%) neutral, indicating safety concerns are important barriers. Likewise, 132(36.8%) are agree on the statement, 'Vaccine is expensive'. More than half of the respondents 203(56.5%) agree, showing that vaccine is not effective.

Table 4.3 Mean score of attitude towards vaccination acceptance regarding HPV vaccination of young girls among parents.

	N	**Mean ± SD**	**Minimum**	**Maximum**
Attitude score	359	40.82±6.73	20	60

Table 4.3 illustrates the mean score of HPV vaccination attitude among parents in which parents' mean score was 40.82±6.73 and the range of their score was between 20 and 100.

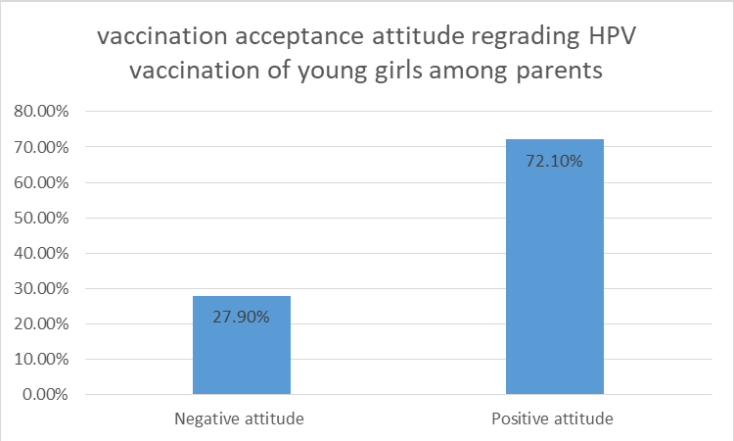
Table 4.4 Scoring of attitude towards vaccination acceptance regarding HPV vaccination of young girls among parents.

Attitude score	**Mean score cutoff**
Negative attitude	<35
Positive attitude	>35

Table 4.4 indicates that the mean score < 35 indicates parents have a negative attitude with regard to HPV vaccination of young girls, while a mean score > 35 indicates a positive attitude.

Table 4.5 Bar chart of attitude towards vaccination acceptance regarding HPV vaccination of young girls among parents.

Attitude	Frequency	Percentage
Negative attitude	100	27.9%
Positive attitude	259	72.1%



The bar chart of attitude towards vaccination acceptance regarding HPV vaccination of young girls among parents is shown in the table 4.5 where 27.90% of the participants has negative attitude and 72.10% of the participants has positive attitude.

Discussion

This chapter gives an in-depth analysis of the results of the present study titled "Vaccination Acceptance Attitude Regarding HPV Vaccination of Young Girls among their Parents in Rural Area of Bahlar Community in Lahore". The chapter covers the characteristics of the study population, the results for each of the study's variables, results, recommendations, implications for further research, limitations, and strengths of the study.

The aim of the current study was to assess the attitudes of parents of the rural community of the Bahlar, Lahore towards HPV vaccination of young girls. It is known that human papilloma virus vaccination is one of the most effective measures to prevent cervical cancer and other diseases caused by HPV worldwide (Heyde, Osmani, Schauberger, Cooney, & Klug, 2024). However, parental acceptance has also been shown to be a contributing factor that has a significant impact on the vaccination of young girls. The findings from this study are significant to comprehend the perceptions, awareness and barriers of parents against HPV vaccination in a rural Pakistani context (Chan et al., 2023).

The demographic analysis revealed that the majority of the population (57.9) was between 36 and 50 years old and the mean age of the people was 39.68 with a standard deviation of 8.13 years. The majority of the respondents were married (94.7) and female (76.9). Moreover, a high percentage of participants were of low perceived social status (65.7) and had low levels of education with 35.4% illiterate and 40.4% having only elementary education (Dereje et al., 2021). These sociodemographic variables suggest that many of the parents in the study population will be less socio-economically and less educationally advanced. The impact of education and socioeconomic status has been well known as having a significant impact on health awareness and vaccine acceptance (Zhao, Liu, Qu, He, & Campy, 2021). Past studies have also emphasized the fact that decreased levels of education are commonly linked to decreased awareness of HPV and its vaccine that can lead to misconceptions

and vaccine skepticism. For example, parents with higher education levels were shown to be significantly more likely to get their children to receive HPV vaccines (Dapari et al., 2024). Hence, one of the possible explanations for the ambivalent attitude towards HPV vaccination, may be attributed to the age structure of the modern study group.

Overall, results of this study indicated that the majority of parents (72.1%) had positive attitudes toward HPV vaccination while the minority (27.9%) had negative attitudes. This suggests that although the majority of parents have a positive attitude towards the HPV vaccine, there is a substantial number of parents with reservations or negative attitudes. The reason of showing the positive attitude of most parents regarding the acceptance of HPV vaccination was attending the health education programs in schools, PHC centers. The findings are consistent with the findings of (Dapari et al., 2024) who concluded that there is a relatively high acceptance of HPV vaccination among the parents, however, there was still a significant portion of the parents with negative attitudes and no knowledge about cervical cancer and HPV prevention. The attitude toward HPV vaccination was largely favorable with approximately 75% of mothers saying they would have their daughters vaccinated, though there was also some doubt among parents (Negesse Simegn et al., 2024).

The impact of family was another important determinant in choosing to vaccinate. 47.1 per cent agreed that a contributing factor to their decision for vaccination was the consent of their family or husband. In most of the developing countries and Pakistan in particular it has been proved that culture and family influences health decisions to a great extent. The literature already available also has indicated that social and cultural norms can have a very potent impact on vaccine uptake. Frietze et al. (2023) reported that trust in social networks and family support is important in the uptake of HPV vaccines.

Similarly, the findings from the present study illustrate some barriers to HPV vaccination that may be perceived. In general, the most prevalent problems were safety problems, vaccine costs, lack of information about vaccination centers and vaccine efficacy problems. In particular, 36.2% of the respondents felt that the vaccine could lead to adverse reactions, and 36.8% felt that the vaccine was costly. Also, over fifty percent of the respondents (56.5%), considered that the vaccine may not be effective. These myths are significant barriers to uptake of vaccination. This is not an unprecedented concern, as other studies have been reported. Hernandez et al. (2024) found structural barriers, such as cost and access to healthcare services, to be significant in influencing the rates of HPV vaccine completion. Likewise, Awan et al. (2023) found that social cultural stigma, lack of knowledge and misinformation are the root causes of negative attitudes towards the health interventions of HPV in Pakistan.

The high percentage of the neutral responses to many questionnaire items is another valuable finding of the current study. This trend indicates that a significant number of parents are not sure enough or have not obtained enough information to make definite decisions regarding HPV vaccination. (Alshehri, Fahim, Alsaigh, Alshehri & Faheem, 2023)

On the whole, the results of this research suggest that despite the fact that most parents express a positive attitude towards HPV vaccination, there are still a number of knowledge gaps, misconceptions and barriers based on sociocultural aspects. These barriers may hinder HPV vaccination implementation particularly in rural areas. It is therefore essential to focus on health education, better access to accurate information and direct involvement of health care providers to ensure increased uptake and coverage of the vaccines(Chen et al., 2025).

Conclusion

Overall, the findings of the present research are aligned with past cross-national and national studies that identified that parental attitudes towards HPV vaccination depend on a variety of factors such as awareness, perceived risk, cultural beliefs, access to healthcare, and trust in medical recommendations. Education, community involvement and policy intervention will be essential to address these factors and ultimately decrease the burden of cervical cancer in Pakistan.

Outcomes:

Approximately 72.1% of parents had a positive attitude toward HPV vaccination. This indicates that majority of parents will agree to have their daughters vaccinated. There is a considerable negative attitude toward it. Some 27.9% of parents had a negative attitude. This means that there is still some resistance and hesitation in the community. Many parents expressed a neutral or uncertain attitude towards risks of HPV infection, severity of cervical cancer, benefits of HPV vaccine. This is an indicator of low awareness and understanding. Wrong information about vaccine safety and effectiveness, cost of vaccine, and the whereabouts of vaccination. Limited family autonomy in decision making. The study emphasises the importance of, Health education programmes and awareness campaigns, and Healthcare professionals' involvement.

Recommendations

The recommendations for this study is as given below:

- Structured awareness campaigns should be conducted in rural areas by health authorities to educate parents about HPV and its association with cervical cancer and the importance of HPV vaccination. This will help to decrease the amount of neutral responses and misinformation found in the study.
- Parents should be actively encouraged to receive counselling by doctors, nurses and lady health workers about HPV vaccination as the study revealed that many parents are impacted by medical advice.
- Public health education campaigns should highlight specific misconceptions, like vaccine safety concerns, infertility myths, and effectiveness.

Implications for Future Research:

- A larger sample size and more regions (urban and rural) should be included in future studies to increase the generalizability of the findings.
- Long-term research is required to evaluate time trends in parental attitudes and uptake of vaccines.
- Research should be done to determine the impact of education and awareness programmes on HPV vaccine uptake.

Strengths of the Study

- The study aims to discuss HPV vaccination which is very significant in the fight against cervical cancer particularly in low vaccine uptake and awareness Pakistan.
- The study involved 359 respondents that gives strength to reliability and validity of the study.
- Questionnaire Model. The standardized and structured questionnaire was used for the collection of the data in the research of Health Belief.

Weaknesses / Limitations of the Study:

- The study was carried out in one rural community (Bahlar, Lahore) and the results can't be repeated in other rural communities or city.

- Qualitative methods (such as interviews and focus groups) were not used to gain deeper insights into beliefs, cultural influences and personal experiences and are therefore not included in the study.

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