Original Article

Parental Attitudes About Childhood Vaccination: Factors And Trends In Rawalpindi

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Abstract

Objective: To determine the frequency of complete vaccination of children according to the EPI schedule and to assess the contributing factors for missing vaccines among parents of children under 12 years of age attending the Paediatric OPD of FFH, Rawalpindi.

Methods: This cross-sectional study was conducted at the Paediatric OPD of a tertiary care hospital by investigators from the Department of Community Medicine from March 2022 to May 2022, involving parents of children under 12 years of age. A total of 320 participants took part in the study. After obtaining approval from the institutional ethics review committee, data were collected using non-probability consecutive sampling. Parents' Attitudes towards Childhood Vaccinations, a pre-validated tool, was used as an instrument with permission from the developer. Data was analysed using SPSS version 26.

Results: Among total respondents, 83.8% had fully vaccinated children, and 72.8% never delayed their child's vaccination. 38.1 % of the parents were concerned about the side effects of the vaccine, while 56.3% had no hesitancy regarding childhood vaccines. 53.7% respondents agreed that the child's vaccination as per the EPI schedule was good. There was a statistically significant association with the level of education (p= 0.001) and ethnicity (p= 0.001) of the respondent with the delayed vaccination of the child.

Conclusion: Our study found that while most of the respondents' children were fully vaccinated according to the EPI schedule, several parents had concerns about the safety and efficacy of the vaccines. We also discovered that the education level of the child's parent or guardian and their ethnicity were significantly associated with delay in vaccinating the child. The public health implications point towards greater health education and health promotion in all areas of the country.

Keywords: Immunisation, Vaccination, Vaccination Hesitancy, Vaccine-Preventable Diseases.

Contributions:
FARM, NZ - Conception, Design
FARM, TN, SZ - Acquisition, Analysis, Interpretation
FARM, TN, SZ - Drafting
FARM, TN, NZ - 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
No. FF/FUMC/215-176-1 Phy/22
22-02-2022
Foundation University Medical College/Hospital

Review began 31/05/2025
Review ended 19/07/2025
Published 29/09/2025

How to cite this article: Mughal FAR, Naeem T, Zulfiqar S, Zaidi N. Parental Attitudes About Childhood Vaccination: Factors And Trends In Rawalpindi. JRMC. 2025 Sep. 29;29(3).

https://doi.org/10.37939/jrmc.v29i3.2939

Introduction

The inception of vaccines has greatly contributed to decreasing the burden of disease caused by communicable ailments worldwide.[1] From Edward Jenner's discovery of the smallpox vaccine in 1796,[2] vaccines have been produced against COVID-19 in recent times,[3] vaccines have played a pivotal role not only in diminishing the mortality and morbidity caused by communicable diseases, but also in preventing massive financial encumbrance in the treatment of these ailments.[4]

Despite this, vaccine acceptance remains low worldwide. Large-scale studies have shown less than ideal vaccine acceptance, mainly due to concerns about the safety and efficacy,[5] and a lack of knowledge about the potential benefits.[6] Behavioural models such as the Theory of Planned Behaviour and Theory of Responded Action have been known to impact attitudes towards compliance with an indicated vaccine or medication.[6]

Pakistan is a country fighting the triple burden of disease with very limited resources.[7] Even though hundreds of millions of dollars have been spent by the Government of Pakistan and the Global Polio Eradication Initiative, it remains one of the only two countries still battling polio.[8] Diseases such as pertussis, diphtheria, measles and tetanus also remain of concern, causing preventable morbidity and mortality.[9] Despite the availability of free-of-cost EPI vaccines, acceptance remains low, with vaccine refusal rates as high as 27.9%.[10] Surveys have shown that only about 30% children are fully vaccinated, while 23% were not vaccinated at all.[6] According to the WHO, Pakistan ranks third among countries with the most unvaccinated children.[10] Factors such as socioeconomic status, education level and number of children have been shown to contribute towards vaccine hesitancy or delay.[9,10] For these reasons, factors affecting parents' attitudes towards vaccinating their children are an issue of paramount importance.[10] We aimed to understand the frequency of complete vaccination in children coming to our set-up, and to assess factors affecting vaccine uptake.

The objective of the study was to determine the frequency of complete vaccination according to the EPI schedule in children 12 years or below coming to the Paediatric OPD of FFH, Rawalpind & to assess contributing factors for missing vaccine by parents of children under 12 years of age coming to the Paediatric OPD of FFH, Rawalpindi coming to the Paediatric OPD of FFH, Rawalpindi.

Operational Definitions:

Vaccine: In our study, the term vaccine included all vaccines included in the Expanded Program on Immunisation (EPI) program.

Missed vaccine: I our study, this refers to a delay in acceptance or refusal of vaccines despite availability of vaccine services and appropriate condition of the child.

Complete vaccination: We considered any child who had received all EPI vaccines for his or her age as being completely vaccinated.

Materials And Methods

This cross-sectional study was conducted using non-probability consecutive sampling as we collected data from an outpatient department where randomisation is not possible, over 03 months, from March 2022 to May 2022 by investigators from the Department of Community Medicine. Data was collected from parents and guardians of children under 12 years of age coming to the Paediatric OPD, after obtaining permission from the institutional Ethical Review Committee. We included all parents of children under 12 years of age coming to the paediatric OPD who were willing to participate in the study and excluded parents of children with known allergies to any vaccine in the EPI schedule and parents of children for whom EPI vaccines were contraindicated, including previous allergic reaction to vaccines and immunocompromise. With a Confidence Interval of 95% with a 5% margin of error, 50% response distribution and a 27.9% vaccine refusal prevalence.[11] Raosoft's sample size calculator gave us a sample size of 305. Accommodating for a non-response rate of 5%, our sample size came to 320.

The instrument we used was the Parents' Attitudes towards Childhood Vaccinations, which is a pre-validated tool, developed by the University of Washington School of Medicine and Seattle Children's Hospital and Research Foundation, with approval from the Trueman Katz Centre for Paediatric Bioethics.[12] We adapted certain items from the demographic section of the tool to suit our target demographic, including questions about ethnicity, education and monthly household income. The instrument was used with permission. Data entry and analysis were done using the Statistical Package for Social Science (SPSS) Version 26. Descriptive data were. Presented as frequencies and percentages, mean and SD. Chi-square was used to check for association between demographic variables and attitudes toward vaccination, including delay and refusal. Binary logistic regression was applied to check for predictors of complete vaccination.

Results

The mean age of our respondents was 35.93 years. One hundred and sixty-eight out of 320 (52.5%) fell in the age category of 30-40 years. Two hundred and ninety-nine (93.4%) out of 320 were currently married. Most of the respondents (n= 221, 69%) were mothers of the child coming to the OPD. Regarding the educational status of the respondents, 47 (14.7%) had no formal education, while 77 (24.2%) of the respondents had the education of Master's and above. The majority of respondents (n= 181, 54.5%) had 2-3 children. Regarding ethnicity, the majority of respondents (n= 141, 44%) were Punjabi. The Sociodemographic Profile of the Respondents can be seen in Table 1.

Among total respondents, two hundred and sixty-eight (83.8%) had their child fully vaccinated. Two hundred and thirty-three (72.8%) never delayed the vaccination of their child. Two hundred and seventy-two (85%) respondents agreed that they would get their other infant vaccinated according to EPI. (Table 2)

Regarding attitudes towards vaccination, 28.1% of the parents agreed that children get more vaccinations than required. Less than half (46.9%) of them agreed that vaccination can prevent many severe illnesses. The majority of respondents (72.4%) were well aware of the importance of vaccination, that it is far better to get their child vaccinated than to develop immunity by getting sick. Seventy-three point five per cent of the respondents agreed that the information they receive regarding vaccination is trustworthy, out of which 28.6% strongly agreed. (Table 3)

Regarding concerns about vaccination, 38.1 % of the parents were somewhat concerned about the side effects their child might experience from the vaccine. Less than half of the respondents were not concerned at all about the safety (43.8%) and efficacy (46.3%) of childhood vaccines, respectively. More than half (56.3%) of the parents did not have any hesitancy regarding childhood vaccines.

Table 1: Sociodemographic Profile of the Respondents

Sociodemographic Variable	Frequencies (n)	Percentages (%)
Age Categories of the Respondents		
Under 18 Years of age	0	0.0
18- 29 Years of age	61	19.1
30 -40 Years of age	168	52.5
Above 40 years of age	91	28.4
Marital Status of the Respondents		
Married	299	93.4
Widowed	15	4.7
Separated/Divorced	06	1.9
Educational Status of the Respondents		
No Formal Education	47	14.7
Matric or Under	78	24.3
F.A/F.Sc	57	17.8
B.A/B.Sc	61	19
Masters or Above	77	24.2
Respondent's Number of Children		
1	63	19.6
2	91	28.4
3	90	28
4 or More	76	24
Ethnicity of the Respondents		
Urdu Speaking	49	15.5
Sindhi	5	1.5
Punjabi	141	44.0
Pathan	80	25.0
Balochi	10	3.1
Other	35	10.9
Relationship of the respondents to the child		
Mother	221	69.0
Father	99	31

Table 2: Vaccination Status of the Child

Vaccination Status	Frequencies (n)	Percentages (%)
Full Vaccination		
Yes	268	83.8
No	52	16.2
Delay in vaccination (barring illness or allergy)		
Yes	73	22.8
No	233	72.8
Don't know	14	4.4
Refused the vaccination (barring illness or allergy)		
Yes	82	25.6
No	222	69.4
Don't know	16	5.0
Recommend EPI vaccination to other children.		
Yes	272	85
No	22	6.9
Don't know	26	8.1

More than half (n= 172, 53.7%) of the respondents were sure that vaccinating the child according to the EPI Schedule is a good idea.

Association between sociodemographic variables and vaccination delay can be seen in Table 4. Educational status (p= 0.001) and ethnicity (p= 0.001) of the respondent were found to be significantly associated with delayed vaccination of the child, while marital status (p=0.83) and total number of children (p=0.68) were not significantly associated with a delay in vaccination.

Table 3: Attitudes of the Respondents regarding Vaccination

Attitude regarding Vaccination	Strongly Disagree (%)	Disagree (%)	Not sure (%)	Agree (%)	Strongly Agree (%)
Children get more vaccinations than are required	26.5	15.1	19.3	28.1	11.0
Many of the illnesses that vaccines prevent are severe	1.8	7.9	13.9	46.9	29.5
Children should develop immunity by getting sick rather than by getting vaccinated	40.2	32.2	10.5	10.8	6.3
Children should get fewer vaccines at the same time	8.9	15.1	25.3	39.9	10.8
Information received about vaccines is trustworthy	4.5	8.1	13.9	44.9	28.6
One should openly discuss concerns about vaccines with the child's doctor	3.1	7.8	7.8	49.9	31.4

Table 4: Association between Sociodemographic Variables and Vaccination Delay (n=320)

Sociodemographic variable	Delaying child vaccination		
	Yes	No	p-value
Educational status of the respondent			
No Formal Education	13	33	
Matric or under	11	66	
F.A/F.Sc	14	42	**0.001***
B.A/B.Sc	20	40	
Masters or above	15	52	
Marital status of the respondent			
Married	68	217	
Widowed	3	12	0.832
Separated/Divorced	2	4	
Ethnicity of the respondent			
Muhajir	6	42	
Sindhi	5	0	
Punjabi	30	106	**0.001***
Pathan	22	50	
Balochi	4	5	
Other	6	29	
Total no. of children			
1	16	42	
2	20	67	0.648
3	18	70	
4 or More	19	53	

We applied binary logistic regression to check if respondents' level of education or ethnicity was a predictor for the complete vaccination status of the child. This showed that neither respondent's level of education (p 0.26, OR 1.1) nor ethnicity (p = 0.19, OR 1.1) is are predictor of complete vaccination status of children.

Discussion

Vaccines play a key role in preventing various communicable diseases and have demonstrably positive effects on quality of life.[13,14] It is a highly successful tool in public health, but is still considered unsafe by some people.[15]

Among the total respondents who participated in our survey, 83.8% had their child fully vaccinated. This percentage is higher than that of Ethiopia, where almost 64.3% children were fully vaccinated.[16] The contrast can be explained by the fact that the study in Ethiopia was carried out with a greater focus on nomadic people living in pastoral areas, whereas our population frame was a tertiary care hospital in a developed city of Pakistan.

According to our survey, the majority of the parents (72.4%) were well aware of the importance of vaccination, which is in line with a study from Pakistan, specifically related to the influenza vaccine, in which 76% of the parents agreed to the benefits of vaccines.[17] In our survey, 72.8% of the respondents have never delayed the vaccination of their child. This number was consistent with a study conducted in Saudi Arabia, where only 24% children received delayed vaccination.[18] Due to immense awareness

among the respondents, 83.1 % are willing to vaccinate their other infant as per the EPI schedule. A higher rate of willingness was seen in a similar study conducted in Riyadh, Saudi Arabia.[18]

Despite the significance of vaccination, 38.1 % of the parents are somewhat concerned about the post-vaccine side effects. This is consistent with a study from Finland, where a main reason for vaccine hesitancy was post-vaccination side effects.[19] Regarding attitude towards vaccination, slightly less than half, 46.9% of them, agree that vaccination can prevent many severe illnesses, which is a very small percentage as compared to a study conducted in California, where 92% of the parents believed that immunisation can save their children from illness, as compared to those who were not immunised.[20]

According to our study, 73.5% percent of the respondents trust the information they received regarding vaccines. Whereas in a recent study conducted in California, 91% of the respondents agreed that the information they received regarding vaccination was trustworthy.[20] The majority of the respondents in our survey (72.4%) are well aware that it is far better to get their child vaccinated than to develop immunity by getting sick. Almost similar results were seen in Saudi Arabia, where almost 22.8% parents thought that getting sick and developing immunity is far better than vaccination, citing lack of trust in vaccines and fear of side effects.[18]

No significant association was found to exist between the total number of children in a household (p=0.64) and vaccination status of the child. These results were comparable to a similar research conducted in Malaysia, where there was no association found between the two variables.[21]

Binary logistic regression showed that the educational status of the respondent was not a predictor of vaccine delay or refusal. This is in contrast with a systematic review from Canada,[22] where a higher educational status of the parent or guardian is a predictor of the child's up-to-date vaccination status. This difference can be explained by demographic, cultural and healthcare education differences between the two countries.

In addition to education level and ethnicity, as shown in our study, certain studies have shown accessibility and availability as barriers to the complete vaccination of children in Pakistan.[23] This raises concerns for public health specialists, healthcare administrators and the government alike. Health education, especially that addressing myths and fears of the public regarding vaccines, is essential, and not difficult in this era of social media. Accessibility and availability of the vaccine at a cost that the public can afford are essential if 100% coverage is to be achieved. Educating the public in general, involving religious and social leaders in rural areas, and targeting ethnicities where coverage is low are all essential if Pakistan is to fight vaccine-preventable diseases. The focus should not only be on the development of policies that encourage and enable better vaccination acceptance, but also on stricter policy implementation.

Conclusions

In conclusion, it can be said that while most respondents bringing their child to the paediatric OPD at FFH, Rawalpindi were aware of the importance of childhood vaccination against vaccine-preventable Diseases, some had concerns regarding the safety and efficacy of EPI vaccines. This illuminates the need for healthcare providers to discuss vaccines, their need and safety with parents of children so that any concerns the parents have are addressed. The strengths of our study included sampling from respondents belonging to a variety of education levels and ethnicities at one of the largest tertiary care hospitals in Rawalpindi. The main limitation was that no in-depth interviews were conducted to explain the reason for vaccine hesitancy, or respondents' lived experiences which could explain this hesitancy. This also paves the way forward, for further studies across the city as well as the country, both quantitative and qualitative

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