Original Article

Parental Perceptions With Reference To Paediatric Covid-19 Vaccination: An Outpatient Department-Based Study In A Tertiary Care Hospital

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Abstract

Introduction: Vaccination has played a major role in preventing many deaths in children due to certain infections. Immunizing children always pose a challenge and India has overcome many barriers to vaccinate the children. Recently COVID 19 vaccination has played a key role in bringing the pandemic under control.

Material and Methods: A cross-sectional study, conducted among the parents of children attending the pediatrics outpatient department of a tertiary care hospital in Chengalpattu district, during the month of May 2022 to August 2022 (post omicron peak) after obtaining approval from the Institutional Human Ethics Committee. Parents of all children under 18 years attending pediatrics outpatient department during the study period were approached and explained about the nature and purpose of the study. Children who have been vaccinated with either one or both the doses of COVID-19 vaccine were excluded from the study.

Results: Majority of the children (59.1%) whose parents participated in the study were between the age of 1 month to 6 years. In our study father's education played a significant role in deciding the vaccine acceptancy (P-value – 0.03). 96.4% of parents had good belief towards childhood vaccination and 97.8% were found to be adherent to the national immunization schedule. Almost 81.3% of the participants parents were aware of the COVID-19 symptoms in children. 89.5% of the parents reported that all the family members have completed two doses of adult COVID-19 vaccination in their household. Around 75.2% of the parents were aware of the pediatric COVID-19 vaccine availability and nearly 67.5% were willing to vaccinate their children against COVID-19. The predominant reason cited by the parents who were not willing to vaccinate their children against COVID-19 was the fear of side-effects related to vaccination (54.8%). Majority of the parents preferred intramuscular injection (59.5%) rather than intranasal vaccination (17.1%).

Conclusion: This study concludes that there is a good awareness and acceptance amongst parents towards pediatric COVID-19 vaccination in our study population. This implies that the vaccination drive in children will be a huge success.

Keywords: Covid-19, Vaccination, Parenteral Perceptions, Barriers to vaccine, Pandemic.

INTRODUCTION

Vaccination has helped to prevent many deaths for the past 2 decades. India has overcome many challenges to immunize our children. Vaccination strategies against COVID-19 has been a breakthrough in achieving control of the pandemic [(1)]. Vaccination trials that focused on the adult population have been a big success. Globally Pfizer vaccine (BNT162b2) is an mRNA vaccine that has been approved for use among children of 6 months and above [(2)]. The WHO Strategic Advisory Group of Experts on Immunization (SAGE) recommends two doses of the vaccine, each 30 µg (0.3 ml) for people over 12 years old, and 10 µg (0.2 ml) for children between 5 and 11 years old, administered intramuscularly into the deltoid muscle four to eight weeks apart. SAGE suggests three doses for infants and kids between the ages of 6 months and 4 years (3g, 0.2 ml each): two doses spaced three weeks apart, then a third dose given at least eight weeks after the second, as instructed on the label.

Trials on children in our country on a large scale resulted in approval of two vaccines for children namely COVOVAX (NVX-CoV2373) and CORBEVAX.[(3)] Both Covovax and Corbevax are protein subunit vaccines, administered intramuscularly. Covovax was approved for emergency use in India during December 2021 among children aged 12 to 14 years.[(4)] Children of 15 years and above were administered Covaxin (BBV152), which is a whole inactivated vaccine, from January 2022 in India.[(5)]

Similarly, Corbevax was approved for usage among 12 to 14 years old children on March 2022 in India.[6]

So far, around 3.2 Crore of 12 to 14 years population have received two doses of COVID vaccine in India. Similarly, 5.3 Crore of 15 to 18 years old population has received two doses of COVID vaccine in India.[7] The paediatric population forms a vital part of the Indian society and vaccinating the children under 18 years is extremely important. The perception with regards to COVID-19 vaccine in children by their parents can affect the vaccine coverage in paediatric population. Hence understanding parental perception with reference to paediatric COVID vaccination is of utmost importance. So, this study was directed to understand the parental perception towards COVID vaccine among the parents of children aged 1 month to 18 years.

Aims and Objectives

1. To understand parental perceptions with reference to paediatric COVID-19 vaccination among parents of children who are attending the paediatric OPD of a tertiary care hospital.
2. To identify the barriers to COVID vaccine coverage in children at community level.

Materials and Methods

A cross-sectional study was conducted among the parents of children attending the pediatrics outpatient department of a tertiary care hospital in Chengalpattu district. The study was conducted during the month of May 2022 to August 2022 (post omicron peak) after obtaining approval from the Institutional Human Ethics Committee. Parents of all children under 18 years attending pediatrics outpatient department during the study period were approached and explained about the nature and purpose of the study. Children who have been vaccinated with either one or both the doses of COVID-19 vaccine were excluded from the study. The parents of children fulfilling the criteria and who were willing to give consent were then encouraged to participate in the interview.

The interview was carried out using a pre-validated semi structured questionnaire. The questionnaire had two segments, the first segment had questions on basic details pertaining to the participants and their parents and the second segment had questions pertaining to COVID - 19 protective strategies adapted and their perception towards pediatrics COVID - 19 vaccination. A total of 504 participants gave consent and participated in the study. The collected data was recorded in Microsoft Excel spreadsheet and analyzed using IBM SPSS 21. The qualitative variables were expressed as frequencies and percentages. Chi-square test was used for statistical analysis and P-value < 0.05 was considered statistically significant.

Results

Majority of the children (59.1%) whose parents participated in the study were between the age of 1 month to 6 years (Figure 1). Most of the participants mothers were educated up to high school (41.9%). Majority of the participants fathers had completed an undergraduate degree (42.9%). Socioeconomic status was assessed according to modified Kuppuswamy's classification, majority belonged to upper middle class (51%) and none of the participants were belonging to lower class. (Table 1).

Table 1: Age distribution of child and parental education status (n = 504)

Characteristics		Frequency (n)	Percentage (%)
Age (in years)	< 6	298	59.1
	7 – 12	141	28
	13 – 18	65	12.9
Educational status of mother	High school or less	211	41.9
	Undergraduate	210	41.7
	Postgraduate	74	14.7
	Illiterate	9	1.8
Educational status of father	High school or less	190	37.7
	Undergraduate	216	42.9
	Postgraduate	95	18.8
	Illiterate	3	0.6

Among the study participants 96.4% of parents had good belief towards childhood vaccination and 97.8% were found to be adherent to the national immunization schedule. Only 27.2% of the parents have reported vaccinating their kids with optional

vaccines. Only 26% of the children had taken flu vaccine. Almost 81.3% of the participants parents were aware of the COVID-19 symptoms in children. (Table 2).

Almost 89.5% of the parents reported that all the family members have completed two doses of adult COVID-19 vaccination in their household. (Table 2). Around 75.2% of the parents were aware of the pediatric COVID-19 vaccine availability and nearly 67.5% were willing to vaccinate their children against COVID-19. The predominant reason cited by the parents who were not willing to vaccinate their children against COVID-19 was the fear of side-effects related to vaccination (54.8 %). Majority of the parents preferred intramuscular injection (59.5%) rather than intranasal vaccination (17.1%). (Table 4).

Table 2: Parents preference on pediatric COVID-19 vaccination

Characteristics		Frequency (n)	Percentage (%)
Belief towards childhood vaccines	Good	486	96.4
Adhering to immunization schedule	Yes	493	97.8
Optional vaccines taken	No	314	68.3
	Not sure	15	3
	Willing to take	8	1.6
	Yes	137	27.2
Flu vaccine	No	329	65.3
	Not applicable	11	2.2
	Willing to take	33	6.5
	Yes	131	26
Aware of symptoms of COVID 19 in children	Yes	410	81.3
Completion of the COVID vaccine among adults in the family	Yes	433	85.9
Aware of COVID 19 vaccine being provided for children	Yes	379	75.2
Willingness to vaccinate children against COVID	No	41	8.1
	Not sure	123	24.4
	Yes	340	67.5
Reasons for not willing to vaccinate the child (n= 164)	The disease is only mild in the child	22	13.41
	Fear of side-effects	90	54.8
	Financial constraint	8	4.9
	Family opinion	3	1.83
	Will keep my child in a protected environment	28	17.07
	No belief	13	7.99
Preference for the route of vaccination	Intramuscular	300	59.5
	Intranasal	86	17.1
	Not sure	113	22.4
	Don't know	15	3
Belief in the effectiveness of the COVID vaccine to preventing covid in children	Maybe	7	1.4
	No	169	33.5
	Yes	313	62.1

Table 3: Association of age of the child and parental education with vaccine acceptancy

Characteristics		Willingness to vaccinate against COVID 19			*P*-value
		No	**Not sure**	**Yes**	
Age (in years)	< 6	22	80	196	0.12
	7 – 12	16	32	93	
	13 – 18	3	11	51	
Educational status of Mother	High school or less	13	60	138	0.21
	Undergraduate	18	43	149	
	Postgraduate	9	16	49	
	Illiterate	1	4	4	
Educational status of father	High school or less	12	60	118	**0.03***
	Undergraduate	16	44	155	
	Postgraduate	12	19	64	

	Illiterate	1	1	2	

*Statistically significant

Table 4: Association between factors determining the vaccination status and COVID-19 vaccination preference

Characteristics		Willingness to vaccinate against COVID 19			*P-value*
		No	Not sure	Yes	
Belief towards childhood vaccines	Good	38	115	333	**0.03***
	Poor	3	8	7	
Adhering to immunization schedule	Yes	38	119	336	**0.03***
	No	3	4	4	
Optional vaccines taken	No	26	88	230	0.8
	Not sure	1	4	10	
	Willing to take	0	1	7	
	Yes	14	30	93	
Flu vaccine	No	29	91	109	**0.001***
	Not applicable	1	7	4	
	Willing to take	5	3	25	
	Yes	7	22	101	
Aware of symptoms of COVID 19 in children	Yes	34	89	287	**0.012***
	No	7	34	54	
Completion of the COVID vaccine among adults in the family	Yes	29	101	303	**0.003***
	No	12	22	37	
Awareness of COVID 19 vaccine being provided for children	Yes	21	82	276	**0.001***
	No	20	41	64	
Preference for the route of vaccination	Don't know	2	2	1	**0.01***
	Intramuscular	21	73	206	
	Intranasal	5	14	67	
	Not sure	13	34	66	
Belief in the effectiveness of the COVID vaccine against COVID 19 infection in children	Don't know	6	7	2	**0.001***
	Maybe	1	4	2	
	No	23	85	61	
	Yes	11	27	275	

*Statistically significant

DISCUSSION

To our knowledge this is the first study that was conducted in South India by face to face interview of the parents. Previously done studies to assess the vaccine hesitancy in parents have been conducted online. Most of the studies were done while the vaccines against COVID 19 were in the trial or when they were not easily available. But vaccine hesitancy is influenced by many factors and it varies with time [8]. It is essential to evaluate vaccine hesitancy in regular intervals, since it can lead to under-immunization and threatens herd immunity, thereby increasing the risk of outbreaks.

In this cross-sectional study, majority of the children (59.1%) belonged to less than 6 years of age. Yilmaz M et al[9] and Zhang et al's[10] study had a similar age group with 49.8% and 46.6% respectively. Almost all other studies had the parents of older children as their major study population.

In our study almost all the participants were found to be adherent to the National immunization schedule (97.8%). Adherence to immunization schedule correlated significantly with vaccine acceptancy (*P-value*- 0.03).Yilmaz M et al[9] reported adherence rate of 97.1%, but Yilmazbas P et al[8] had reported only 41.9% adherence to the local immunization schedule, though both studies were done in Turkey. Goldman RD et al in his study which was done across 6 countries (USA, Canada, Japan, Spain, Switzerland and Israel) observed that parents who had vaccinated their children up to date were more willing to vaccinate their children against COVID 19 [11].

Willingness to vaccinate children against COVID-19 varied from 36.3%, 38.3%, 42.9%, 43.4%, 48.2% and 68.3% in the literatures by Yilmaz M et al[9], Zhang et al[10], Yoda et al[12], Yilmazbas P et al[8], Bell et al[13] and Scharff et al[14] respectively. In the present study, 67.5% were willing to vaccine their children against COVID-19. These differences in the parent's preference may be because of the geographical differences of the literatures, study period, educational and socio-economic status of the parents. All these studies have been done in 2020 and 2021 while these vaccines were novel and were being developed rapidly.

This could also be the reason for concern about safety. Concern regarding adverse effects was reported to be 17.9% in the current study. Studies by Yoda et al[12] reported similar concern regarding safety of vaccine to be 84.9% and Bell et al[13] reported 62% respectively. This plays an important role in determining the willingness of vaccination, hence appropriate health education regarding the same is required. The other causes cited by parents for hesitancy towards covid vaccination was their belief that they can keep the child in a protected environment (5.6%) and the disease is mild in children (4.4%). Yilmaz M et al [9], Bell et al[13] and Goldman RD[11] et al state that parents who did not consider their children to be at risk of being infected and who thought the illness was milder in children were more hesitant towards COVID vaccination.

We observed that parents who had good attitude towards childhood vaccination were more willing to vaccinate their children against COVID (*P-value*-0.03). Similar trend was also reported in other studies [8]. Around 115 parents (23 %) who had good attitude towards general vaccination had hesitancy towards COVID. Yoda et al also reports a similar scenario where parents were hesitant towards COVID vaccine [12].

The parents who had taken COVID 19 vaccination, were more willing to vaccinate the child (*P-value* – 0.003).

In our study father's education played a significant role in deciding the vaccine acceptancy (*P-value* – 0.03). Studies prove that lower the educational status of parents; more was the vaccine hesitancy [12,15,16]. Sallam et al had done an online survey in Jordan, which showed that male respondents and respondents with higher education had better COVID vaccine acceptancy [16]. Goldman RD et al state that in their survey they noticed an increased intention to vaccinate children against COVID 19 among the fathers who participated in the survey [11]. Other factors such as socio-economic factor did not play any role in vaccine hesitancy.

Apart from fear of potential side effects, novel delivery systems have been shown to be associated with increased vaccine hesitancy [17]. We observed that majority of the parents opted for intramuscular route of immunization, rather than intranasal route.

In the present study, 81.3 % of the parents were aware the symptoms of COVID 19 infection in children. This could have played a major role in the improvement in the COVID vaccine acceptance among parents (*P-value*- 0.012). Though we observed a good vaccine acceptance among parents, there are still some who are hesitant to immunize their children against COVID 19 (7.8 % rejected the vaccine and 23 % were hesitant). A study states that the higher exposure to negative information about COVID 19 vaccination is associated with increased hesitancy [10], and people tend to absorb more negative information than the positive information during a outbreak [18]. Hence it is the duty of our health care providers and media to spread awareness regarding the need for immunization.

CONCLUSION

The present study concludes that parents who were adherent to the routine immunization schedule and had good belief in vaccine preventable diseases were motivated to immunize their children against COVID. Educational status of parents plays a vital role towards wanting to vaccinate their children with COVID-19 vaccine. Most of the parents were aware of the pediatric symptoms and their vaccination status was complete. This study concludes that there is a good awareness and acceptance amongst parents towards pediatric COVID-19 vaccination in our study population. This implies that the vaccination drive in children will be a huge success**.**

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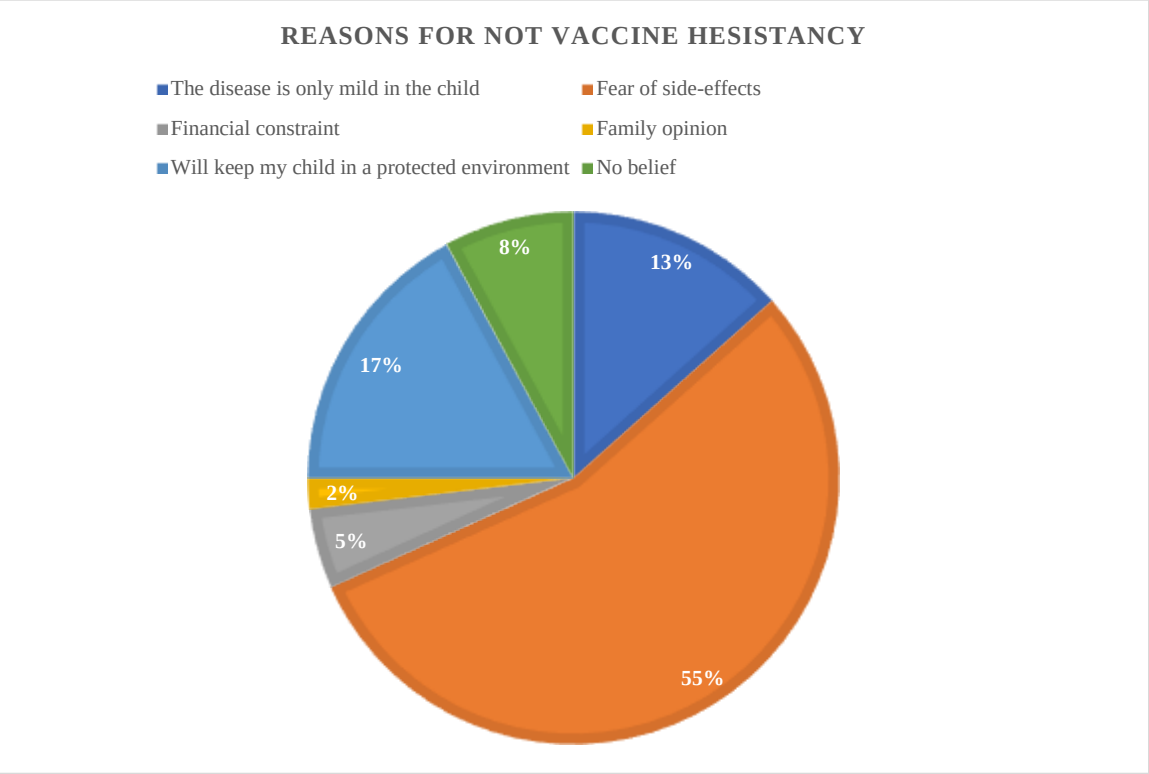
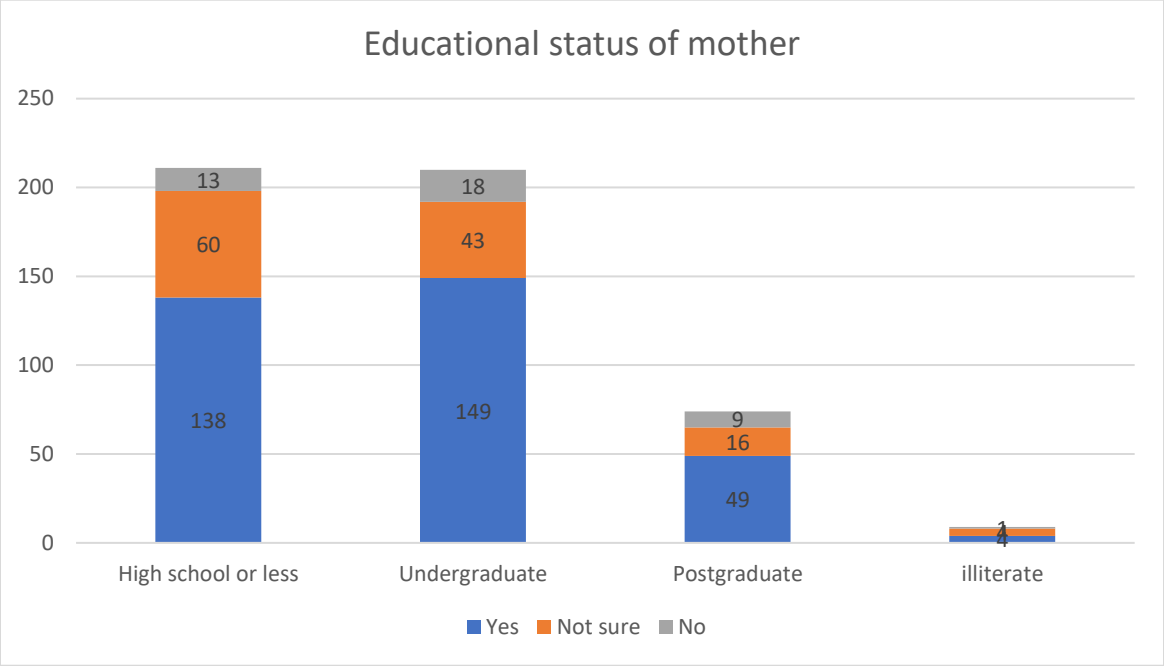
FIGURES

Figure 1: Reasons cited by the parents for not vaccinating their children against COVID 19




Educational status of mother
250
200
150
100
50
0
13
60
138
18
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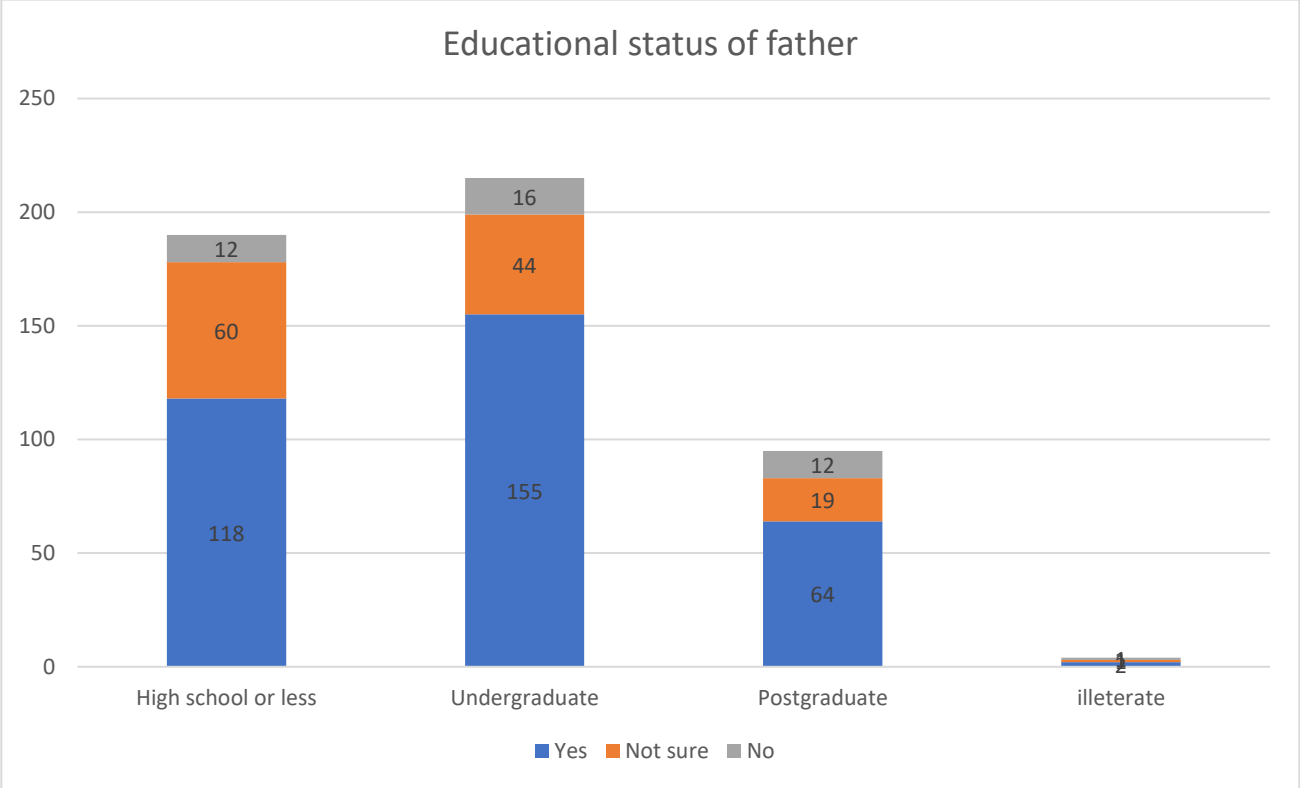
149
9
16
49
1
4
High school or less
Undergraduate
Postgraduate
illiterate
Yes
Not sure
No


Educational status of father
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150
100
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44
155
12
19
64
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1
High school or less
Undergraduate
Postgraduate
illeterate
Yes
Not sure
No