

Knowledge, Attitude and Practices on Childhood Immunisation among Parents Attending Paediatric OPD at a Tertiary Care Centre, Kanchipuram District, Tamil Nadu, India

PARVATHY DEVI¹, SOWJAN MANOHAR², R LAVANYA³, SEKAR PASUPATHY⁴

ABSTRACT

Introduction: Vaccine-preventable diseases (VPD) are considered one of the leading causes of sicknesses and deaths among children worldwide. Parents' knowledge and attitude towards immunisation are likely to influence uptake. Vaccination is one of the most cost-effective public health tools, to prevent infectious diseases.

Aim: The present study assessed parents' knowledge, attitudes, and practice towards their children's vaccination.

Materials and Methods: A cross-sectional study was conducted in the Department of Paediatrics, at Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India from April 2019 to June 2019. Two hundred and sixty-six parents of 0 to 12-year-old children, attending the Paediatric Outpatient Department (OPD), were recruited for the study. A prestructured questionnaire on knowledge, attitude, and practices regarding immunisation was administered, and other socio-demographic details were collected. Descriptive

analysis was done by frequency and percentage. Data entry and analysis were performed in Microsoft Excel.

Results: Among the 266 parents studied, a majority 129 (48.5%) of the mothers were 26-30 years old, and fathers were in the age group of 31-35 years 98 (36.8%). The majority 89 (33.5%) of the fathers were semi-skilled workers, and mothers were unskilled workers 180 (67.7%). Overall, 36.5% of children were 6-10 years old, and 53.4% were male children. Among the parents, 98.1% stated vaccines were safe, 95.1% knew that vaccine would prevent their children from diseases. A total of 99.2% agreed that, all children should be vaccinated, 96.2% maintained a vaccination card, 81.2% were aware of the following vaccination date for their children.

Conclusion: According to the present study findings, there is generally good knowledge, attitude, and practices regarding vaccination of children among their parents. Knowledge regarding optional vaccinations needs to be improved through creating awareness.

Keywords: Optional vaccines, Outpatient department, Vaccine acceptance, Vaccine preventable diseases

INTRODUCTION

The process by which a person is made immune or resistant to an infectious disease, typically by administering a vaccine, is called immunisation. Vaccines help stimulate the body's own immune system to protect the person against subsequent infection or disease; it describes the body's ability to develop immunity [1]. Immunisation is a successful and cost-effective public health intervention. It has prevented more deaths in the past years than any other health intervention has done globally [2]. A latest study done in the year 2020 showed that, after the occurrence of COVID-19 pandemic the concerns about the potential risk of vaccination increased among the population studied [3]. Childhood immunisation is vital, as it guarantees protection from various significant diseases. Worldwide, millions of deaths are prevented by immunisation, and the scientific community widely considers it "overwhelmingly good" [4]. However, nearly 2.5 million deaths a year are caused by diseases that may have been prevented by proper vaccination, mainly in Africa and Asia, among children less than five years of age [4]. Hence, there is an urgent need to increase vaccination coverage and encourage parents to have their children vaccinated [5]. Although global vaccination coverage is steady, an estimated 22 million infants worldwide are still missing out, on essential vaccines [1]. World

Health Organisation (WHO) reports that 115 million infants worldwide receive Diphtheria-Tetanus and Pertussis vaccines. In addition, about 85% of the world's children receive one dose of measles vaccine and polio vaccine; however, two countries remain polio-endemic (Afghanistan and Pakistan) [6]. WHO and UNICEF estimate that national immunisation coverage is about 99% in India, and it has been very high since 2005 [7]. In contrast, immunisation prevents an estimated two to three million deaths each year from Diphtheria, Tetanus, Pertussis (whooping cough), and Measles [8].

In India, after the launch of mission Indradhanush, there was an overall increase in 6.7% full immunisation coverage [7]. This shows that even with a major national wide program launch there is only a small increase in the full immunisation coverage. The need of the hour is exploring the vaccination status due to the impact created by the pandemic and the hesitancy towards vaccination. There has been change in the mindset of people against vaccination in the recent past [3]. The present study aimed to assess parents' knowledge, attitude, and practice toward children's immunisation.

MATERIALS AND METHODS

A cross-sectional study was conducted in the Department of Paediatrics, at Karpaga Vinayaga Institute of Medical Sciences

and Research Centre, Chengalpattu, Tamil Nadu, India from April 2019-June 2019. Institutional ethical clearance was obtained (KIMS/F/2019/03) and informed written consent was signed by all study participants. Convenience sampling was followed. During the study period all the consenting participants were taken (universal sampling).

Inclusion criteria: Parents of children from 0 to 12 years of age, who attended the paediatric OPD were recruited for the study.

Exclusion criteria: Children who did not get their routine vaccination due to any pre-existing condition, immunocompromised children, HIV-infected children, and those on drugs like steroids.

Study Procedure

A prestructured questionnaire was used for data collection. The questionnaire was developed based on previous literature and validated by subject experts [5,8]. The questionnaire had sections on the following parameters knowledge, attitude, and practice (KAP) of parents regarding immunisation, socio-demographic profile such as the age of the mother, qualification of the parent, birth order of the child, the income of the parent, delivery place and questions on the advice of vaccination was given by doctors/paramedical, whether immunisation done on the correct date and whether optional vaccines were given.

The questionnaire was administered in the local language (Tamil). Three independent researchers assessed the content validity of the questionnaire, and the questionnaire was back-translated to English to ensure language validity. The questionnaire was a pilot study, done on 20 parents, and minor modifications were done based on the responses.

Information regarding the vaccination status was obtained from the immunisation card and on a recall basis by the respondents, in case of non availability of the card. Fully immunised children, who had received all the recommended vaccine doses for their age according to the Universal Immunisation Programme (UIP) schedule. Partially immunised were those who had received one or more doses of these vaccines, but not all doses and unimmunised were those who had not received a single dose of any vaccine.

STATISTICAL ANALYSIS

Descriptive analysis was carried out by frequency and percentage. Data entry and analysis were done in Microsoft Excel. The data has been represented in tables and graphs.

RESULTS

Among the 266 parents studied, a majority 129 (48.5%) of the mothers were 26 to 30 years old, and fathers were in the age group of 31-35 years 98 (36.8%). The majority (33.5%) of the fathers were semi-skilled workers, and mothers were unskilled workers 180 (67.7%). Overall, 34.6% of the family belonged to the upper-middle class. Total 38% of the children were 1 to 5 years of age, 53.4% were males, 78.2% were of average weight. Among 266 mothers, 197 took two doses of vaccines during their pregnancy [Table/Fig-1]. Among the study population, 65% of them received medical services from a government hospital. Among the 266 children, 115 had elder siblings. Among the siblings, 111 were fully immunised, and four were partially immunised [Table/Fig-2].

S. No.	Parameters	Sample characteristics	Frequency and percentage n (%)
Children characteristics			
1	Age (years)	<1	40 (15%)
		1-5	101 (38%)
		6-10	97 (36.5%)
		11-12	28 (10.5%)
2	Gender	Male	142 (53.4%)
		Female	124 (46.6%)
3	Weight [#]	Underweight	48 (18%)
		Normal	208 (78.2%)
		Overweight	10 (3.8%)
4	Height [§]	Normal	209 (78.6%)
		Stunning	57 (21.4%)
Respondent characteristics			
5	Mother's age (years)	<20	02 (0.8%)
		20-25	44 (16.5%)
		26-30	129 (48.5%)
		31-35	68 (25.6%)
		>35	23 (8.7%)
6	Father's age (years)	<20	0
		20-25	5 (1.9%)
		26-30	70 (26.3%)
		31-35	98 (36.8%)
		>35	93 (35%)
7	Father's occupation	Unskilled worker	26 (9.8%)
		Semi-skilled	89 (33.5%)
		Skilled	64 (24.1%)
		Clerical/farm	49 (18.4%)
		Semi-professional	27 (10.2%)
		Professional	10 (3.8%)
		Unemployed	01 (0.4%)
8	Mother's occupation	Unskilled worker	180 (67.7%)
		Semi-skilled	15 (5.6%)
		Skilled	89 (33.5%)
		Clerical/farm	19 (7.1%)
		Semi-professional	8 (3%)
		Professional	8 (3%)
		Unemployed	8 (3%)
9	Father's education	Illiterate	17 (6.4%)
		Primary school	12 (4.5%)
		Middle school	45 (16.9%)
		Secondary school	68 (25.6%)
		Higher secondary school	34 (12.8%)
		Degree	79 (29.7%)
		Postgraduate/Professional	10 (3.8%)
10	Mother's education	Illiterate	16 (6%)
		Primary school	16 (6%)
		Middle school	30 (11.3%)
		Secondary school	84 (31.6%)
		HSC	61 (22.9%)
		Degree	50 (18.8%)
		Postgraduate/Professional	9 (3.4%)

11	Socio-economic status (as per BG Prasad classification)	Upper class		54 (20.3%)
		Upper middle		92 (34.6%)
		Middle class		81 (30.5%)
		Lower middle		38 (14.3%)
		Lower class		1 (0.4%)
12.	How many doses of vaccine did the mother get during pregnancy? (n=266)	2 doses 197 (74.1%)	1 dose 40 (15.0%)	Did not get any dose 29 (10.9%)
13.	Can you name any three diseases prevented by vaccinating your child? (N=266)	One correct		51 (19.2)
		Two correct		56 (21.1)
		Three correct		39 (14.6)
		Don't know		120 (45.1)
14.	Children with elder sibling (n=266)	Yes (115)	No (151)	

[Table/Fig-1]: Baseline characteristics of the study population (N=266). # -Underweight- weight below -2SD. Normal weight between -2SD to +2SD. Overweight- weight above +2SD (as per WHO/IAP growth charts); \$-Normal height between -2SD to +2SD; Stunting- height below -2SD (as per WHO /IAP growth charts); HSC: Higher secondary school; PG: Postgraduate

Parameters	Sample characteristics	Frequency and percentage
Birthplace	Home	1 (0.4%)
	KIMS\$/Private	79 (29.7%)
	Government hospital	173 (65%)
	Primary health centre	13 (4.9%)
Birth weight	<2 kg	8 (3%)
	2-2.5 kg	71 (26.7%)
	>2.5 kg	187 (70.3%)
Birth order	1	151 (56.8%)
	2	101 (38%)
	3	14 (5.3%)
Immunisation status of previous children	Not applicable	151 (55.6%)
	Fully immunised through national immunisation program	111 (42.9%)
	Partially immunised	4 (1.5%)

[Table/Fig-2]: Birth characteristics of the children (N=266). \$: Study hospital

Knowledge among parents: Among the parents, 98.1% said the vaccines were safe, 57.1% said they don't know a child with a severe disease/disability which was caused due to not vaccinating the child, 95.1% agreed that think vaccination would prevent their child from diseases, and 53.8% were not aware of optional vaccines availability. Among parents, 82.3% said the reason for vaccination is prevention. Among 266, 248 answered correctly for the correct age to start immunisation [Table/Fig-3].

Attitude towards vaccination among parents: Among the study population, 99.2% agreed that all children should be vaccinated, 97.4% agreed that the schedule should be followed, and 82.7% agreed that they should vaccinate the child during OPV campaigns, even though the child is fully vaccinated [Table/Fig-4].

Practices towards immunisation among parents: Among the study population, 96.2% maintain a vaccination card, 81.2% were aware of the following vaccination date for their child, 80.1% have recommended vaccination to others, and 52.3% were not willing to pay for optional vaccines. Reasons for not giving optional vaccines were 36% cost, 11% thought they were harmful, and 10% thought no need [Table/Fig-5].

Questions	Yes n (%)	No n (%)	Don't know n (%)
Are vaccines safe?	261 (98.1)	1 (0.4)	4 (1.5)
Do you know of a child with a severe disease/disability which was caused due to unvaccinated status of the child?	85 (32)	152 (57.1)	29 (10.9)
Do you think vaccination will prevent your child from diseases?	253 (95.1)	5 (1.9)	8 (3)
Do vaccination cause side effects?	110 (41.4)	136 (51.1)	20 (7.5)
Do you know about optional vaccines?	71 (26.7)	143 (53.8)	52 (19.5)
Why do you think children should be vaccinated?	Immunity 25 (09.4%)	Prevention 219 (82.3%)	Don't know 22 (08.3%)
What is the correct age of starting immunisation?	Correct 248 (93.3%)	Incorrect 18 (06.7%)	

[Table/Fig-3]: Knowledge regarding immunisation among study participants (N=266).

Questions	Yes n (%)	No n (%)	Don't know n (%)
Do you think all children should be vaccinated?	264 (99.2)	0	2 (0.8)
Is it essential to follow the vaccination schedule?	259 (97.4)	4 (1.5)	3 (1.1)
Is it required to vaccinate the child during OPV campaigns even though child is fully vaccinated?	220 (82.7)	40 (15)	6 (2.3)

[Table/Fig-4]: Attitude of parents towards immunisation (N=266).

Questions	Yes n (%)	No n (%)	Don't know n (%)
Are you maintaining a document for vaccination?	256 (96.2)	8 (3)	2 (0.8)
Do you know when the next vaccination date for your child is?	216 (81.2)	41 (15.4)	9 (3.4)
Have you recommended vaccines to others?	213 (80.1)	46 (17.3)	7 (2.6)
Will you advise your relatives and family to immunise their children?	239 (89.8)	21 (7.9)	6 (2.3)
I wouldn't mind taking time off from work to ensure my child gets vaccinated.	234 (88)	25 (9.4)	7 (2.7)
Can a child with a cold/fever be vaccinated?	51 (19.2)	179 (67.3)	36 (13.5)
Do you trust your healthcare worker to safely administer the vaccine to your child?	232 (87.2)	21 (7.9)	13 (4.9)
Where do you prefer to receive vaccination? ((Government-227 (85.3%), Private 37 (14%))	264 (99.2)	0	2 (0.8)
Are you been informed by the doctor/healthcare worker about the side effects after vaccination?	193 (72.6)	58 (21.8)	15 (5.6)
Did you manage fever pain by giving analgesics?	172 (64.7)	75 (28.2)	19 (7.1)
Did you ever search for other available vaccines? (Optional vaccines)	36 (13.5)	210 (78.9)	20 (7.5)
Would you be willing to pay for a vaccine privately? (Optional vaccination)	109 (41)	139 (52.3)	18 (6.8)

[Table/Fig-5]: Practices regarding immunisation (N=266).

DISCUSSION

The present study findings describe a snapshot of parents' opinions from a cohort of 266 families. The overall knowledge and attitude were good among the study participants, whereas there was gap in their practices. The overall knowledge, attitude and practices of the parents might depend on their socio-demographic conditions. Some studies reported no influence of demographic background on the parents' perception of a vaccine [8,9].

The results show that >90% had good knowledge toward children's vaccination; very few had little knowledge, and no one said that children should not be vaccinated. This is in line with the study by Herath NC et al., where they have reported that 90.1% thought that, vaccinating their children is very important, did not delay or plan to delay a vaccine, and 3.5% stated that, they were not in favor of vaccination [10].

Previous research reports a higher level of education with more knowledge about vaccination [11]. The reason attributed to this is that, being more educated allows better communication with healthcare providers and fewer chances of acquiring wrong beliefs about vaccines [12]. Same can be said about the income level of the family-studies conclude that having a higher income provides increased access to healthcare providers and physicians and more information regarding vaccines-as families with higher income have better access to good healthcare and feel secure and assured by vaccination programs without further investigation about the topic [13,14]. Some studies also suggest that a higher level of education was associated with negative vaccination practices [15]. However, in the present study, parents had a positive attitude toward vaccination. This can be due to the penetration of government-provided free vaccination services and its awareness throughout India. The same is proven that the majority preferred to get vaccines from the government 227 (85.3%) than from private sources 37 (14%).

The majority of the parents are of the opinion that vaccines are safe 261 (98.1%) and think that vaccines will prevent their children from diseases 253 (95.1%); they also think that all children should be vaccinated 264 (99.2%). These results go well with the literature that, a positive attitude among parents towards vaccination will increase vaccination rates [11,16]. A previously published study showed that most parents report receiving immunisation information from a physician [17]. The present study also shows that doctors and healthcare workers were vital in providing information regarding vaccination to parents.

The majority of the parents trust the healthcare worker to safely administer the vaccine to their child 232 (87.2%) and are informed by the doctor/healthcare worker about the side effects after vaccination 193 (72.6%). While it may not be possible for the physicians themselves, who have little time to communicate with parents, including informing parents of the benefits and risks of immunisations and answering questions, healthcare workers play a significant role [18], a pilot study showed that implementation of an educational intervention for physicians and nurses increased immunisation discussion with parents during the visit, with only a slight increase in time [19]. This kind of direct presentation of information provides an opportunity to establish trust and improve the physician-patient relationship.

Limitation(s)

The limitation of the current study is its quantitative nature. This limited the exploration into finding the in depth reasons for

hesitancy. Future qualitative studies exploring the behavioural and perceptions among parents of unvaccinated children will enable better understanding.

CONCLUSION(S)

The study concludes that, there is an overall good knowledge, positive attitude towards vaccination among the participants and few gaps in the practices. However, knowledge, attitude, and practices regarding optional vaccination need to improve. A particular initiative strategy for increasing awareness among parents concerning optional vaccination is needed. Health education about vaccination during minor ailments, can be emphasised through health professionals.

REFERENCES

- [1] World Health Organization. Immunization. World Health Organization: 2015. Available from: <http://www.who.int/mediacentre/factsheets/fs360/en/>.
- [2] Awosika D. Access to immunization and other public health interventions through the pharmacist. *West African J Pharm.* 2012;23:03-11.
- [3] Gallant AJ, Nicholls LA, Rasmussen S, Cogan N, Young D, Williams L, et al. Changes in attitudes to vaccination as a result of the COVID-19 pandemic: A longitudinal study of older adults in the UK. *PLoS One.* 2021;16(12):e0261844.
- [4] Global Immunization: Vision and strategy. WHO/UNICEF, Geneva.
- [5] Bofarraj MAM. Knowledge, attitude and practices of mothers regarding immunization of infants and preschool children at Al-Beida City, Libya 2008. *Egypt J Pediatr Allergy Immunol.* 2011;9(1):29-34.
- [6] World Health Organization. World Immunization Week 2016: Close the immunization gap. WHO. Published online 2016. Available from: <https://www.who.int/news/item/21-04-2016-world-immunization-week-2016-immunization-game-changers-should-be-the-norm-worldwide>.
- [7] WHO (2017) UNICEF, Estimation of National Immunization Coverage. Available from: <https://www.who.int/teams/immunization-vaccines-and-biologicals/immunization-analysis-and-insights/global-monitoring/immunization-coverage/who-unicef-estimates-of-national-immunization-coverage>.
- [8] Mereena SR, Sujatha R. A study on knowledge and attitude regarding vaccines among mothers of under five children attending pediatric OPD in a selected hospital at Mangalore. *IOSRJNHS.* 2014;3(5):39-46.
- [9] Marshall H, Ryan P, Robertson D. Uptake of varicella vaccine-a cross sectional survey of parental attitudes to nationally recommended but unfunded varicella immunisation. *Vaccine.* 2005;23(46-47):5389-97.
- [10] Herath NC, Kudagammana T, Sanathchandra TT, Gamage HK, Razik IM, Liynapathirana V, et al. Brief report: Parental attitudes and knowledge on routine childhood immunization: An experience from Central Sri Lanka. *BMC Res Notes.* 2018;11(1):01-05.
- [11] Niederhauser VP, Baruffi G, Heck R. Parental decision-making for the varicella vaccine. *J Pediatr Health Care.* 2001;15(5):236-43.
- [12] Krishna D, Mohd Zulkefli NA, Md Said S, Mahmud A. Sociodemographic and health care factors in determining immunization defaulters among preschool children in Petaling District, Selangor: A cross-sectional study in Malaysia. *BMC Public Health.* 2019;19(1):1275. Doi: 10.1186/s12889-019-7561-z.
- [13] Kara SS, Polat M, Yayla BC, Demirdag TB, Tapisiz A, Tezer H, et al. Parental vaccine knowledge and behaviours: A survey of Turkish families. *East Mediterr Health J.* 2018;24(5):451-58.
- [14] Tauli M de C, Sato APS, Waldman EA. Factors associated with incomplete or delayed vaccination across countries: A systematic review. *Vaccine.* 2016;34(24):2635-43. Doi: 10.1016/j.vaccine.2016.04.016.
- [15] Ahmad Hamidi A, Gelmez Taş B, Gündüz A, Nur Çelebi S, Esen ES, Toprak D, et al. Immunization rates of pneumococcal, influenza and tetanus vaccines and knowledge and attitudes of adult patients who receive inpatient treatment at hospital: Point prevalence study. *Hum Vaccin Immunother.* 2018;14(11):2649-53.
- [16] Smith PJ, Chu SY, Barker LE. Children who have received no vaccines: Who are they and where do they live? *Pediatrics.* 2004;114(1):187-95. Doi: 10.1542/peds.114.1.187.
- [17] Gilligan T, Raffin TA. Physician virtues and communicating with patients. *New Horizons Sci Pract Acute Med.* 1997;5(1):06-14.

[18] LeBaron CW, Rodewald L, Humiston S. How much time is spent on well-child care and vaccinations? *Arch Pediatr Adolesc Med.* 1999;153(11):1154-59. Doi: 10.1001/archpedi.153.11.1154.

[19] Davis TC, Fredrickson DD, Bocchini C, Arnold CL, Green KW, Humiston SG, et al. Improving vaccine risk/benefit communication with an immunization education package: A pilot study. *Ambul Pediatr.* 2002;2(3):193-200.

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Paediatrics, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India.
2. Associate Professor, Department of Paediatrics, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India.
3. Senior Resident, Department of Paediatrics, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India.
4. Head, Department of Paediatrics, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sowjan Manohar,

Associate Professor, Department of Paediatrics, Karpaga Vinayaga Institute of Medical Sciences and Research Centre, Chengalpattu, Tamil Nadu, India.

E-mail: sowjan86@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: May 09, 2022
- Manual Googling: Jul 04, 2022
- iThenticate Software: Aug 31, 2022 (19%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **May 06, 2022**

Date of Peer Review: **Jun 04, 2022**

Date of Acceptance: **Jul 04, 2022**

Date of Publishing: **Dec 31, 2022**