

Original Research Article

Attitude towards childhood vaccination among parents in a rural area of Trivandrum district

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ABSTRACT

Background: Vaccines are simple and widely accepted as one of the most important medical strategy of modern world in the prevention of morbidity and mortality. In order to ensure the protective benefits of vaccines, it is essential that the vaccine coverage should reach between 80-100% of a population, with required coverage dependent on the concerned vaccine and the illness that it is designed to prevent. Vaccine hesitancy is defined as the reluctance to be vaccinated or have one's children vaccinated. In this study, we assess the attitude of parents towards childhood vaccinations and the prevalence of vaccine hesitancy among parents in a rural area in Thiruvananthapuram district.

Methods: A cross-sectional study was carried out among parents of children below the age of 15 years, who are residents of a rural area in Thiruvananthapuram district. Data was collected using the parents' attitude about childhood vaccination (PACV) survey, with the consent of the participants. The collected data entered into MS Excel and analysis was carried out using SPSS 20.

Results: Out of 100 participating parents, 14 (14%) parents were concerned about the adverse events following immunization (AEFI). At the same time, the maximum score obtained on the PACV scale was just 24 out of 100. Further, vaccine hesitancy among the parents was found to be only 2 (2%).

Conclusions: There is good vaccine acceptance among the parents residing in a rural area, even though many are from low socio-economic status.

Keywords: Vaccine, Immunization, Vaccine hesitancy, AEFI, PACV, Vaccine preventable diseases

INTRODUCTION

Immunization is a global health and development success story, responsible for saving millions of lives every year. Immunization has served as a key component of primary health care and has been accepted as an indisputable human right. Immunization is considered as the most cost-effective and safest public health intervention towards reducing childhood morbidity and mortality.^{1,2} In 2019 alone, an estimated 5.2 million children under 5 years died mostly from preventable and treatable diseases. Children between 1 to 11 months old, accounted for 1.5 million

deaths while children aged 1 to 4 years accounted for 1.3 million deaths.

Sustainable development goals (SDG) adopted by United Nations in 2015 was designed to promote healthy lives and wellbeing for all children. SDG goal 3.2.1 is specifically set to limit the neonatal mortality to less than 12 per 1000 live births and the preventable deaths of children under 5 to less than 25 per 1000 live births, in every country by 2030.³

The universal immunization programme (UIP) was first introduced in India as expanded programme on

immunization (EPI) in 1978 by the Ministry of Health and Family Welfare. It was later modified to UIP in 1985, with phased implementation in all the districts in the country, towards reducing the morbidity and mortality from vaccine preventable diseases (VPD).^{4,5} Thiruvananthapuram was one of the 10 districts selected for the programme.⁶ It was one of the largest health programmes in the world.^{4,7} Despite sustained efforts over many years, UIP has been able to fully immunize only 65% of children within the first year of their life. In order to strengthen and re-energize the programme as well as achieving full immunization coverage, the Government of India launched Mission Indradhanush on December 2014.^{8,9} Further, intensified Mission Indradhanush (IMI) was launched on October 8th 2017 to reach each and every child under 2 years and pregnant ladies who were missed in routine immunization. IMI envisages the integrated work of ground level staffs from various departments like accredited social health activists (ASHA), auxiliary nurse midwife (ANM), Anganwadi workers (AWW) and self-help groups to strengthen the programme.¹⁰

Kerala, as a state in south India, has made tremendous achievements in indicators of health and social development. According to NFHS 4 (2015-2016), Kerala ranked 5 in immunization coverage with 82.1%, compared to 75.3% in the previous NFHS 3 (2005-2006).^{11,12} But this was lower than the immunization coverage of 82.6%, reported in the data from coverage evaluation survey (CES), a nationwide survey commissioned by the United Nations children's fund (UNICEF) covering all states and Union Territories conducted in November 2009.¹³ This indicated a decline in the vaccination profile of Kerala, and thereby a surge in VPD.^{14,15} Such a resurgence of vaccine preventable diseases had been reported in Kerala, especially in the northern districts.¹⁶

Vaccine hesitancy is a delay in acceptance or refusal of vaccination despite availability of vaccination services.¹⁷ World Health Organization (WHO) has declared it as one of the top ten global health threats of 2019. The reasons as to why people choose not to vaccinate are complex. A vaccine advisory group to WHO identified complacency, inconvenience in accessing vaccines and lack of confidence as key reasons underlying the hesitancy.¹⁸ Vaccine hesitancy may arise from different reasons, such as ignorance about vaccine preventable diseases, difficulty in accessing vaccines, lack of confidence in efficacy of vaccines, superstitions, religious and political beliefs, misinformation spread through social media, anti-vaccination campaigns, mistrust and even doubts about science and technology, belief that vaccination destroys natural immunity and produces other diseases like cancer, autism.¹⁹⁻²² It can result in disease outbreaks and an increase in the number of deaths due to vaccine preventable diseases. However, this aspect is not widely addressed in the context of Kerala. Exploring this issue can aid the vaccination policy makers in undertaking appropriate measures. The objectives of this study were to assess the attitude of parents towards childhood

vaccinations and also to obtain the prevalence of vaccine hesitancy among parents in a rural area in Thiruvananthapuram district.

METHODS

A cross-sectional study was carried out among parents of children below the age of 15 years, residing in Nellanad Panchayat in Thiruvananthapuram district, during October to November 2018. Sampling method used was cluster sampling. After conducting a pilot study the average attitude score and standard deviation was obtained as 7.06 and 4.19. Sample size was calculated using the formula,

$$N = \frac{Z_{\alpha}^2 S^2}{d^2}$$

Standard deviation=4.19, mean=7.06, d=15% of mean

$$N = \frac{(1.96)^2 \times (4.19)^2}{(1.056)^2} = 64$$

Design effect was found to be 1.5.

$$64 \times 1.5 = 96$$

The sample size was estimated to be 100.

Ten out of 16 wards were randomly selected from the Panchayat. First house was selected randomly and consecutive 10 houses consists of children below 15 years of age were taken. Data was collected after obtaining consent from the participants. Those who were not interested to take part in the study were excluded. They were interviewed using a semi structured questionnaire, parents attitude about childhood vaccination (PACV) which was administered in local language, was given to the parents were requested to answer all the questions.^{23,24}

PACV is a semi structured questionnaire which contains 15 items under 3 domains (behaviour, safety and attitude). It is scored in a scale of 0-100. Data was entered in MS Excel and analysed using SPSS 20. The mean and standard deviation (SD) were calculated for quantitative data. Frequencies and proportions were computed for the qualitative analysis and the results presented in tables, bar diagram and pie charts.

RESULTS

Mean age of participants was 39.01 (SD=7.692). Among the study population, 34% were from low socioeconomic status. All mothers and 97% of fathers have minimum of high school education. 84% of participants were Hindus.

Among the 100 parents, 22 (22%) had delayed their child's vaccination for reasons other than illness or allergy and 14 (14%) had decided not to immunize their children for reasons other than allergy or other illnesses.

62% of participants considered vaccination was very useful for the health of their child. 10% parents thought that children are getting excess shots of vaccination than what they really required. 77 (77%) of the participants believe that many diseases that vaccines prevent are not

severe. 40 (40%) parents attitude on vaccination is that it is better for their children to acquire the immunity by getting the disease itself than taking vaccination. 4% are complaining that they were not able to discuss their concerns about immunization with their doctor (Table 1).

Table 1: Distribution of participants according to the PACV questionnaire (n=100).

| Questions | Agree | Disagree | Don't know |
|--|-------|----------|------------|
| Do you think that children get more shots than what they really need? | 10 | 90 | 0 |
| Do you believe that many of the diseases that vaccines prevent are severe? | 23 | 77 | 0 |
| Do you think that it is better for your child to get immunity by getting sick than to get a vaccination? | 40 | 36 | 24 |
| Do you think that it is better to get fewer vaccines at the same time for children? | 51 | 43 | 6 |
| Do you trust the information you got about vaccination? | 90 | 6 | 4 |
| Are you able to openly discuss your concerns about vaccination with your paediatrician? | 96 | 4 | 0 |
| Are you concerned that your child might have serious side effect from vaccination? | 14 | 84 | 2 |
| Are you concerned that any one of the vaccines might not be safe? | 23 | 76 | 1 |
| Do you think that vaccination cannot prevent some diseases? | 59 | 37 | 4 |

In this study, 14 (14%) out of 100 parents were concerned about the adverse effects following immunization (AEFI), 84% were not concerned and 2% were not aware about AEFI (Figure 1). 23 (23%) were concerned that some vaccines might not be safe and 37% doubts that vaccination cannot prevent many diseases.

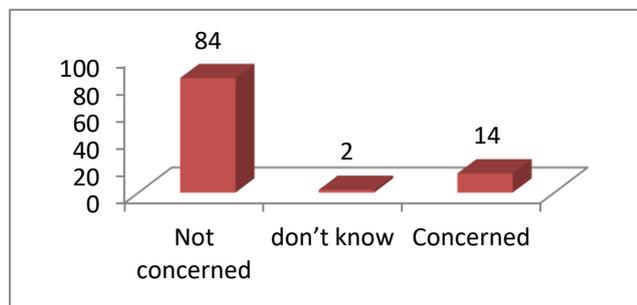


Figure 1: Distribution of participants according to their concern about AEFI (n=100).

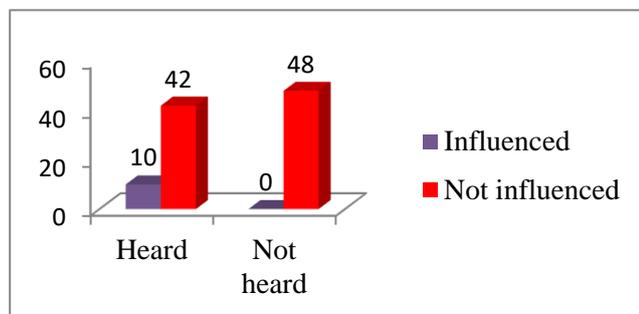


Figure 2: Distribution of participants according to influenced by anti-vaccination movement (n=100).

Among the 100, 52 participants were complaining that they have heard about anti-vaccination movements. Among that, 10 parents were influenced by the anti-vaccination movements, which made them, rethink about giving vaccination to their children (Figure 2).

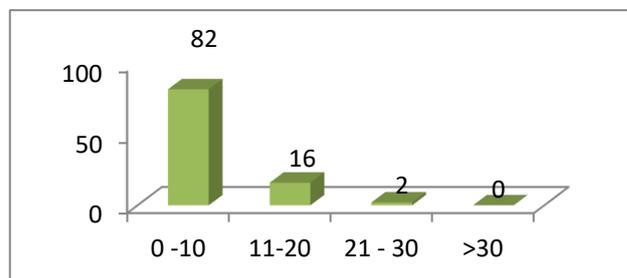


Figure 3: Distribution of participants according to the score obtained in PACV scale (n=100).

In our study, the prevalence of vaccine hesitancy among parents was only 2 (2%) (Figure 4).

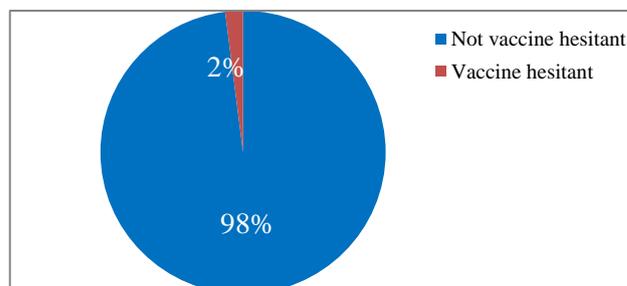


Figure 4: Proportion of participants reporting vaccine hesitancy (n=100).

After using PACV scale, the maximum score obtained was only 24 out of 100 (Figure 3). This shows that the vaccine hesitancy is low even though it is conducted in a rural area. 3 participants obtained Score '0' means no hesitancy, 82% obtained score between 1-10, 16 got score between 11-20 and only 2 got score above 20.

DISCUSSION

In the present study, even though 98% has taken vaccination for their children, 14% of the parents are concerned about the side effects and 23 (23%) were concerned that some vaccines might not be safe. This is mainly because of the over projection of the small proportion of AEFI by the social media without verifying the real facts, that makes the public panic about the situation. In reality, the incidence of morbidity and mortality due to vaccination is not because of the defect of the vaccine itself and side effects are much less when compared to its advantages. A qualitative study in Haryana found that one of the prime reasons behind the denial of vaccination to children was the fear of side effects. Similar result was from a study done by in Italy as 14.6% of parents had concern about side effects.^{25,26}

In our study, 52% heard anti vaccination opinions through media and 10% has influenced by the anti-vaccination movements. In a recent study carried out in Canada, it was found that vaccine hesitancy was present even in high income countries with well-established immunization programmes and high educational standards. The study reported that "many have suggested that the internet, which permits a faster and larger diffusion of anti-vaccination content, has contributed to the of vaccine hesitancy and refusal among parents".¹⁹

In this study 40 (40%) parents had an attitude on vaccination that it is better for their children to acquire the immunity by getting the illness than taking vaccination and 59% believe that it is not possible to prevent many diseases through vaccination. In a study done by Bond et al many parents commented that for some diseases it is better to contract the disease once to acquire immunity than taking vaccination.²⁷

In the present study, the prevalence of vaccine hesitancy among parents was only 2%. While comparing this data with a study conducted by Sankara et al in Chennai the prevalence was 21%.²⁰ Another study done by Agarwal anil, the prevalence of vaccine hesitancy was 19.7%.²⁸ Two studies done at west Bengal, one by Dasgupta et al in Siliguri, and a study done by Sikder in Kolkata, the prevalence of vaccine hesitancy were 83% and 29% respectively.^{29,30}

Prevalence obtained from all the studies are clearly quite higher than in our study. The main reason for this difference is the higher educational status of the people and the quality of health care services providing in Kerala. The integrated and quality work provided by the health care

workers like ASHA, ANM, and AWW plays a major role in increasing the immunization coverage in our state and thereby reducing the morbidity and mortality due to VPD.

Limitations of this study were that the attitude of both the parents of a child was not considered. The participants were selected only from 10 among the 16 wards hence the sample might not be representing the rural population.

CONCLUSION

There is good vaccine acceptance among the parents in rural area even though many of them are from low socioeconomic status. This is because of the educational status of the study area is high. But even the very low vaccine hesitancy matters since the vaccine preventable diseases are very severe and can cause mortality and lifelong morbidity. Hence more awareness activities in the field of vaccination are necessary to achieve 100 percent immunization coverage.

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REFERENCES

1. Vaccines and immunization. Available at: <https://www.who.int/westernpacific/health-topics/vaccines-and-immunization>. Accessed on: 21 October 2020.
2. Closing the immunisation gap: Coverage evaluation in Kollam Corporation, Kerala [Internet]. Available at: https://www.researchgate.net/publication/311952197_Closing_the_immunisation_gap_Coverage_evaluation_in_Kollam_Corporation_Kerala. Accessed on: 09 November 2020.
3. Children: improving survival and well-being. Available at: <https://www.who.int/news-room/fact-sheets/detail/children-reducing-mortality>. Accessed on: 21 October 2020.
4. Universal Immunisation Programme | National Health Portal of India. Available at: https://www.nhp.gov.in/universal-immunisation-programme_pg. Accessed on: 07 November 2020.
5. Park K. Park's Text book of Preventive and Social Medicine. 25th ed. 2017;110-36.
6. Nair TN, Varughese E. Immunization coverage of infants--rural-urban difference in Kerala. *Indian Pediatr*. 1994;31(2):139-43.
7. National Health Mission [Internet]. Available at: <https://nhm.gov.in/>. Accessed on: 07 November 2020.
8. Mission Indradhanush | National Health Portal of India [Internet]. Available at: https://www.nhp.gov.in/mission-indradhanush1_pg. Accessed on: 07 November 2020.
9. Kishore J. National Health Programs of India. 13th ed. 2018;201-3.

10. Singh A. Mission Indradhanush (MI) and Intensified Mission Indradhanush (IMI): The Immunization Programmes in India – A Brief Review. 2018;1.
11. National Family Health Survey [Internet]. Available at: <http://rchiips.org/nfhs/nfhs4.shtml>. Accessed on: 07 November 2020.
12. National Family Health Survey [Internet]. Available at: <http://rchiips.org/nfhs/nfhs3.shtml>. Accessed on: 07 November 2020.
13. National_Factsheet_30_August_no_logo.pdf [Internet]. Available at: http://www.indiaenvironmentportal.org.in/files/National_Factsheet_30_August_no_logo.pdf. Accessed on: 07 November 2020
14. Sangal L, Joshi S, Anandan S, Balaji V, Johnson J, Satapathy A, et al. Resurgence of Diphtheria in North Kerala, India, 2016: Laboratory Supported Case-Based Surveillance Outcomes. *Front Public Health*. 2017;5.
15. Joy TM, George S, Paul N, Renjini BA, Rakesh PS, Sreedevi A. Assessment of vaccine coverage and associated factors among children in urban agglomerations of Kochi, Kerala, India. *J Fam Med Prim Care*. 2019;81:91-6.
16. Diphtheria Deaths in Kerala. *Econ Polit Wkly*. 2015;7-8.
17. MacDonald NE. Vaccine hesitancy: Definition, scope and determinants. *Vaccine*. 2015;33(34):4161-4.
18. Ten health issues WHO will tackle this year [Internet]. Available at: <https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019>. Accessed on: 07 November 2020.
19. Dubé E, Vivion M, MacDonald NE. Vaccine hesitancy, vaccine refusal and the anti-vaccine movement: influence, impact and implications. *Expert Rev Vaccines*. 2015;141:99-117.
20. Narayana SS, Jayaraman A, Gopichandran V. Vaccine hesitancy and attitude towards vaccination among parents of children between 1-5 years of age attending a tertiary care hospital in Chennai, India. *Indian J Comm Fam Med*. 2018;4(2):31-6.
21. Methods to overcome vaccine hesitancy - The Lancet [Internet]. Available at: <https://www.thelancet.com/journals/lancet/article/PIIS0140-67361930218-1/fulltext>. Accessed on: 09 November 2020.
22. Smith TC. Vaccine Rejection and Hesitancy: A Review and Call to Action. *Open Forum Infect Dis*. [Internet]. 2017;43.
23. Opel DJ, Taylor JA, Zhou C, Catz S, Myaing M, Mangione-Smith R. The Relationship Between Parent Attitudes About Childhood Vaccines Survey Scores and Future Child Immunization Status. *JAMA Pediatr*. 2013;16711:1065-71.
24. Roberts JR, Thompson D, Rogacki B, Hale JJ, Jacobson RM, Opel DJ, et al. Vaccine hesitancy among parents of adolescents and its association with vaccine uptake. *Vaccine*. 2015;3314:1748-55.
25. Jain RB, Kumar A, Sharma E, Goel PK. Barriers to childhood vaccination as perceived by accredited social health activists and multipurpose health workers in Mewat, Haryana (India): A qualitative research. *J Fam Med Prim Care*. 2020;98:4134.
26. Giambi C, Fabiani M, D'Ancona F, Ferrara L, Fiacchini D, Gallo T, et al. Parental vaccine hesitancy in Italy – Results from a national survey. *Vaccine*. 2018;366:779-87.
27. Bond L, Nolan T, Pattison P, Carlin J. Vaccine preventable diseases and immunisations: a qualitative study of mothers' perceptions of severity, susceptibility, benefits and barriers. *Aust N Z J Public Health*. 1998;224:441-6.
28. Agarwal A, Aditi S, Preeti G, Rajesh G. A Study of Vaccine Hesitancy among Mother and Care Provider during MR Vaccine Campaign. *Natl J Comm Med*. 2020;10:11-9.
29. Dasgupta P, Bhattacharjee S, Mukherjee A, Dasgupta S. Vaccine hesitancy for childhood vaccinations in slum areas of Siliguri, India. *Indian J Public Health*. 2018;624:253.
30. Sikder R, Mukherjee D, Pattanayak U, Majumdar KK, Kundu SS, Dey R, et al. Prevalence of vaccine hesitancy and its associated factors in an urban area of West Bengal, India. *Int J Comm Med Public Health*. 2020;79:3443-9.

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