

Status of vaccination among migrant and urban children in Delhi NCR

Childhood vaccines not only protect children from the deadly diseases but also improve later health and economic outcomes. All countries across the world have adopted immunization program for pregnant women, infants and young children, having high risk of diseases preventable by vaccines.

India too has marked a remarkable progress in child vaccines since independence. Eradication of smallpox in 1977 and polio free India since 2012 has proven the improved health system for vaccine preventable diseases (VPDs)¹. India's Expanded program for Immunization (EPI) was launched in 1978. Later in 1985, EPI was expanded and renamed as Universal Immunization Program (UIP) with a focus on scaling and in achieving self-sufficiency in vaccine production and in manufacturing cold chain system. In 1990-91, vaccination program targeted cent percent coverage of infants with universal geographical spread. Over the years, immunization program has got strengthened with addition of new vaccines, adoption of open vial policy to prevent vaccines' wastage, better logistic and enhanced surveillance for vaccine preventable diseases (Murhekar and Kumar, 2021)².

Despite all these initiatives, the full vaccination rate among 12-23 months children has increased slowly, around 1 percent every year (from 35% in 1992 to 62% in 2015-16)³. To address this, Government of India has launched Mission Indradhanush (MI), a campaign in 2014 targeting 90 percent full immunization coverage by 2020. However, only 77 percent children belonging to age cohort 12-23 months are fully vaccinated (NFHS-5).

Multiple factors both from the supply and demand side effects the coverage of immunization programs among young children. Supply side factors involve lack of trained personnels, poor relationship between health care personnel and mothers, inconvenient timing or location of immunization service and vaccines' out of stock (Shrivastava, et.al. 2015)⁴. On the other hand, demand side factors comprise socio demographic characters such as sex of child, birth order, place of delivery, mothers' age at childbirth, educational status of parents, religion, caste, household income quantile and location. There are non-socio demographic factors also such as

¹ Lahariya C. A brief history of vaccines & vaccination in India. *Indian J Med Res.* 2014 Apr;139(4):491-511. PMID: 24927336; PMCID: PMC4078488.

² Murhekar MV, Kumar MS. Reaching zero-dose children in India: progress and challenges ahead. *Lancet Glob Health.* 2021 Dec;9(12): e1630-e1631. doi: 10.1016/S2214-109X(21)00406-X. PMID: 34798011.

³ Bhadoria AS, Mishra, S, Singh, M, Kishore S. National immunization programme-Mission Indradhanush program: newer approaches and interventions. *India J. Pediatr* 86: 633-38.

⁴ Shrivastwa, N., Gillespie, B. W., Kolenic, G. E., Lepkowski, J. M., & Boulton, M. L. (2015). Predictors of vaccination in India for children aged 12–36 months. *American journal of preventive medicine*, 49(6), S435-S444.

belonging to the age group 12-23 months participated in this study.

Proof of immunization: A child was considered as immunized or not immunized based on the information on the immunization cards. Two types of immunization cards-Mother and child protection (MCP) card and Mobile Creches' immunization cards were seen in the field. MCP card (Figure1) is issued by Ministry of Health and Family Affairs and Ministry of Women and Child Development. It is a maternal and childcare entitlement card, providing information on the immunization schedule of the child during the first five years.

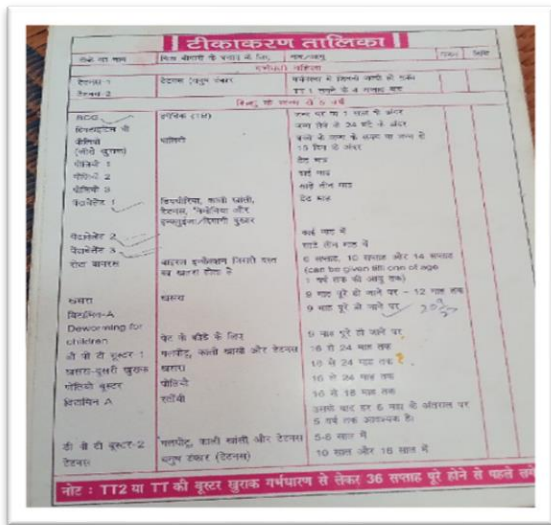


Figure 2: Immunization Card of Mobile Creches

Another card was provided by the Mobile Creches as shown in figure 2. Parents with young children get this card to access the early childhood development services provided by the MC at their centres.

For those without MCP card or absence of any evidence of birth was considered as immunization based on mothers' recall.

Information of immunization status of child was determined from the MCP card. A child aged 12-23 months was considered **fully immunized** if he/she has received **all basic vaccinations (ABV)**, i.e., **one dose of BCG** (bacillus Calmette-Guérin), **three doses of pentavalent (DPT-**

containing vaccine against diphtheria, pertussis, tetanus, hepatitis-B and *Haemophilus influenzae B*), **three doses of OPV** (Polio) and single dose of **measles (MCV)** vaccine (Avijit & Soilalsiem, 2024)⁷. If the child has not completed all scheduled doses of all basic vaccines, child will be termed as **partially immunized** and if child has not received any dose of basic vaccines will be considered as **unimmunized**.

Socio-Demographic Details

Table 1 shows the socio-demographic characteristics of the 12-23 months children. Out of 181 children, 48 percent of children are male, and 52 percent are female. About three fourths of

⁷ Mistri, Avijit; Gangte, Soilalsiem. Basic Vaccinations among Children Aged 12–23 Months in Northeast India: Trend, Pattern and Factors Influencing Low Coverage. Indian Journal of Public Health 68(2): p 298-301, Apr–Jun 2024. | DOI: 10.4103/ijph.ijph_558_23.

children are living at construction sites (67%) and one third (33 %) are living in urban slums. Mothers belong to the age group 17-40 years while fathers are between 19-50 years.

Age Group of mothers	Numbers	In %	Age Group of fathers	Numbers	In %
≤ 17	2	1.3	≤ 17	0	0
18-25	114	64.7	18-25	57	32.4
26-33	51	28.9	26-33	84	47.7
≥34	9	5.1	≥34	35	19.9
Mothers' education			Fathers' education		
Never been to school	61	33.7	Never been to School	54	30
Primary standard	38	21.0	Primary Standard	43	23.9
Secondary Standard	59	32.6	Secondary Standard	62	34.4
Higher secondary	17	9.4	Higher secondary	16	8.9
College	6	3.3	College	5	2.8
Mothes' Occupation			Fathers Occupation		
Not in paid employment	46	25.4	Not in paid employment	4	2.2
Daily wage laborer	77	42.5	Daily wage laborer	157	86.7
Domestic helper	41	22.7	Domestic helper	0	0
Self-employed	7	3.9	Self-employed	8	4.4
Others	10	5.5	Others	12	6.6

Table 1: Socio-Demographic Characteristics of 12-23 months children

Result

Immunization coverage

Figure 3 presents the details on the reception of all basic vaccines by the children appropriate for age. Approximately, 85.6 % of children had received BCG and 75.7 % of children had received first dose of MCV vaccine. About 77.4 and 77.9% of children had received three doses of polio and DPT vaccines respectively.

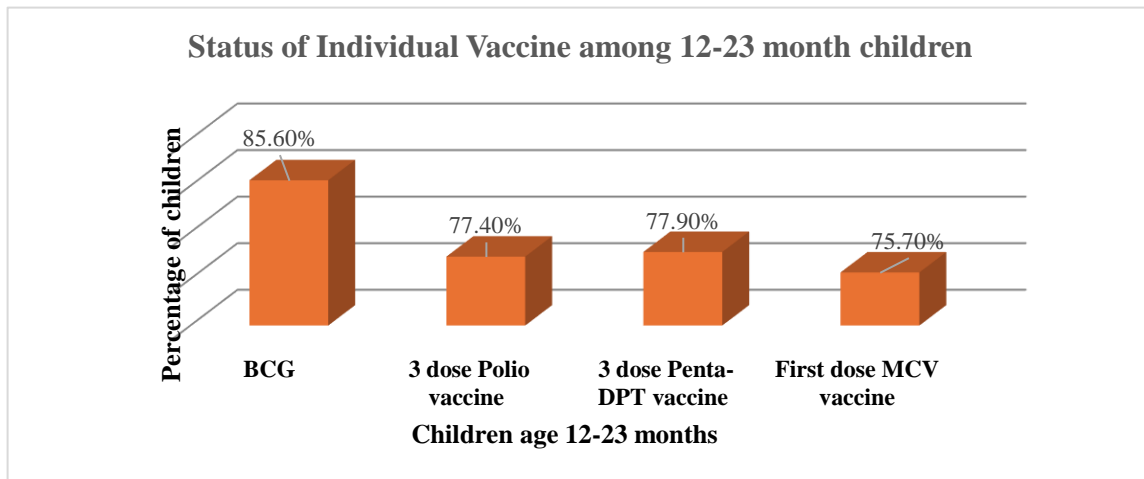


Figure 3: Percentage of children received 8 vaccines

Full vaccination based in information from either vaccination card or mothers recall was 70.1 % as evident from the figure 4. Further, coverage of full vaccination based on information from vaccination card was 47.2 % and 22.90% based on mothers' recall. None of the children in the present study were unimmunized.

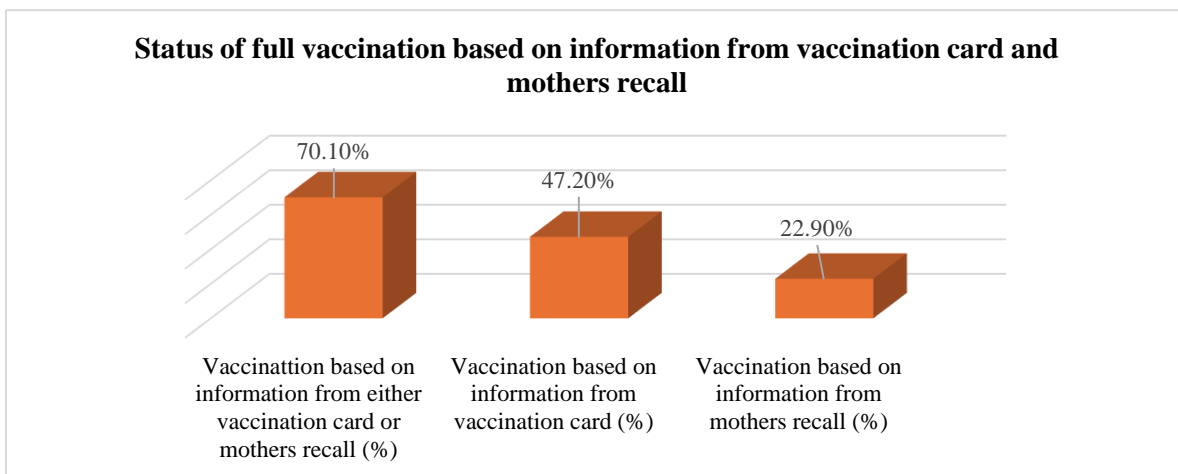


Figure 4: Percentage of children received full vaccination based on information from vaccination card and mothers' recall

About 29.1 % of children were partially vaccinated. When asked about reason of partial vaccination, most of the mothers expressed unaware of the need of immunization and lack of information regarding place and time of vaccination. One of the mothers shared that she delivered her child at home, and she doesn't have any information regarding vaccination. Later, she got to know about vaccination from ANM. As a result, her child did not get the BCG. There was another woman who used to frequently migrate from one place to another with her family, shared that her child missed the vaccine due in 9 months owing to frequent migration of her family. A father of two children migrated from his village to one of the construction sites in greater Noida shared, *'my child was born in hospital and got all the vaccines at the time of birth. After that I went to Gwalior for work, there I was severely ill for three months, then came back to my hometown and now in Greater Noida. Gwalior city was too crowded, and I don't know any place for vaccination. My wife doesn't go out of home.'* Due to frequent migration, his illness and limited mobility of women outside the home, his child had missed three doses of DPT and polio.

Determinants of full immunization uptake

It was observed that 51 % of the mothers have MCP card while 49 % of mothers did not have MCP card as shown in figure 5. Among mothers having MCP card, 70.8 % of them were aware of the vaccines and has provided all the eight vaccines to their children. However, 29.2 % of mothers missed few doses of vaccines and provided partial vaccine to their children.

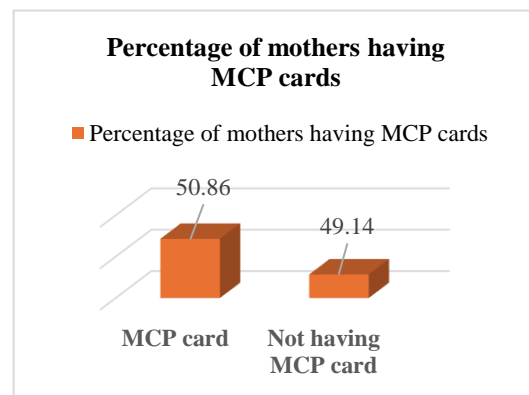


Figure 5: Percentage of mothers having immunization card

Mothers who have received the MCP card were using it for vaccination record and were taking their young children for vaccination. Though most of the mothers have not read the MCP card, they don't know the diseases targeted by the immunization program. But they understood the significance of vaccines and so has carried the MCP card safely even while migrating from one place to another. Sunita⁸, mother of a one-year girl child said, *"I came from Chhattisgarh to this construction site (Gurgaon). My husband used to work on this site before. This time I came with my husband only because there is a facility for vaccination and for care to my child else, I would not have come"*. On further enquiring about how they knew when child need to take vaccine, some of the mothers shared that they gave their card to Auxiliary Nurse Midwife (ANM) to review the immunization history and to convey the next vaccination due date. Mostly, ANM used to tell them about next dose of vaccine during her door-to-door visit in the community. Thus, it is evident that receiving MCP card enhances the probability of full vaccination among children of migrants and urban slum dwellers.

⁸ All the names used in this research paper are fictitious.

However, availability of MCP cards differs on variables such as migration, educational status of parents and place of delivery. These variables are discussed in detail (in context of 181 participants of this study) below.

From figure 6, it is evident that **migration** reduces the possibility of availability of MCP cards among mothers. About 64 % of mothers were not carrying MCP card due to regular migration in the past two years. Few mothers expressed that they don't carry MCP card while leaving their hometown in fear of losing it. Sonam, mother of two children shared that she did not bring MCP

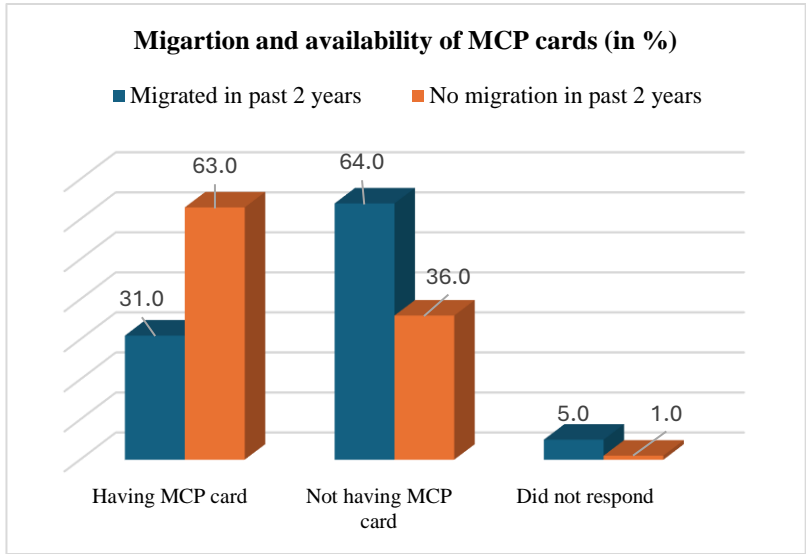


Figure 6: Migration and availability of MCP card

card of her son (20 months old) as her in-laws used to take the child for vaccination. She was unaware of the importance of vaccination card. Rajkumari, a migrant worker from West Bengal shared that they did not carry the vaccination card with them while leaving their village. They were in a hurry as the contractor was calling them urgently, so they took only a few clothes for their child. Adding to her, some of the mothers shared

that they left the card at home purposively as it can be used for different schemes of

the government. However, 31 % of mothers were aware of the importance of vaccination and has carried the MCP card while migrating from one place to another.

Further, the **educational status of parents** was also found to affect the availability of MCP card as shown in figure 7. When both the father and mother were literate (primary class to college), about 64 % of them had MCP card. On the contrary, when both the mother and father were illiterate (never been to school), about 55 % of them did not have MCP card. A mixed group comprises one spouse literate and another illiterate having 28 % of MCP card. Shyamali, a 23 year old women, migrated from Chhatarpur district of Madhya Pradesh to one of the construction

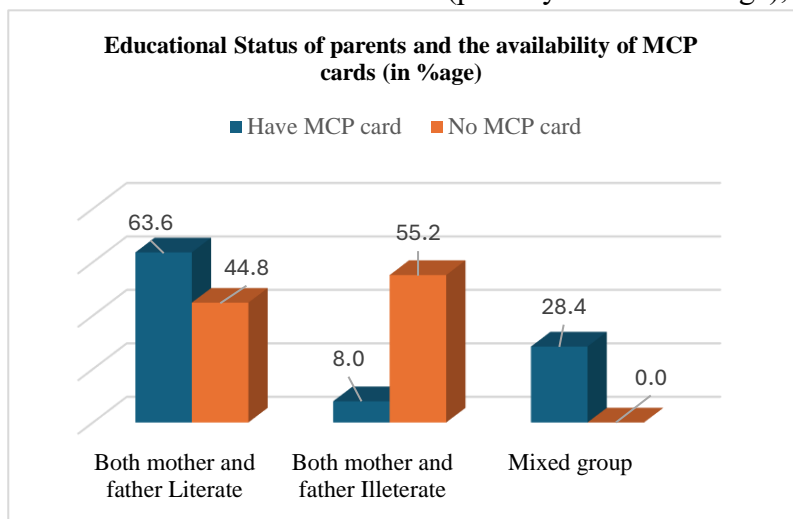


Figure 7: Educational status of parents and the availability of MCP card

sites in Greater Noida. She is 8th standard pass, and her husband did not go to school. She came to know about this construction site through one of her relatives from the same village. Her relative told her to carry all the cards of her child if she wanted to access the early childhood services of Mobile Creches. She carried all the required documents related to her daughter who is one and half years old when she came to one of the centres of greater Noida. She knows the number of vaccines that her children have taken along with their location.

The contribution of education in fostering knowledge and awareness regarding availability of MCP card is also evident in the case of analyzing mothers and fathers separately. About 43.7 % of mothers who were illiterate (never been to school) did not have MCP card as illustrated in

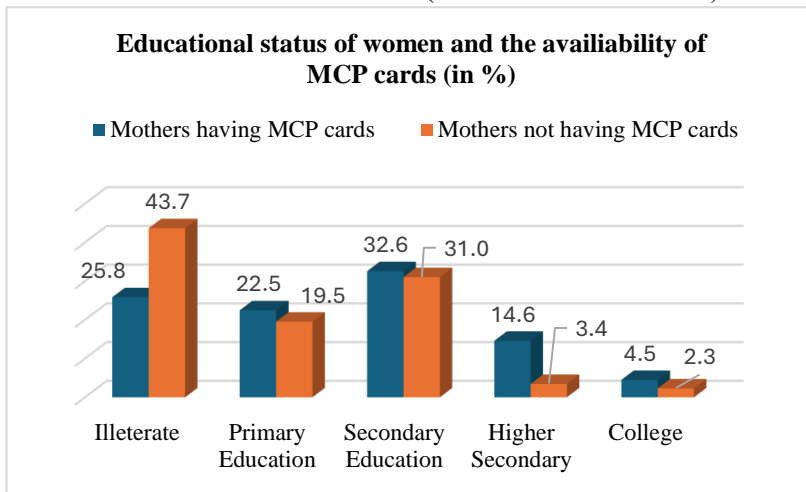


Figure 8: Educational status of mothers and availability of MCP cards

Figure 8. With education, mothers were becoming more aware of the need for immunization and were accessing the government's immunization program through MCP card. About 22.5% of mothers have primary education, 32.6 % secondary education, 14.6 % higher secondary and 4.5% graduated have MCP card.

Similarly, it has been observed that with education among fathers the availability of MCP card increases. About 24.1% of fathers have primary education, 42.5 % secondary education, 10.3% higher secondary and 3.4% graduated have MCP card as shown in figure 9. About 39 % of fathers who were illiterate did not have an MCP card.

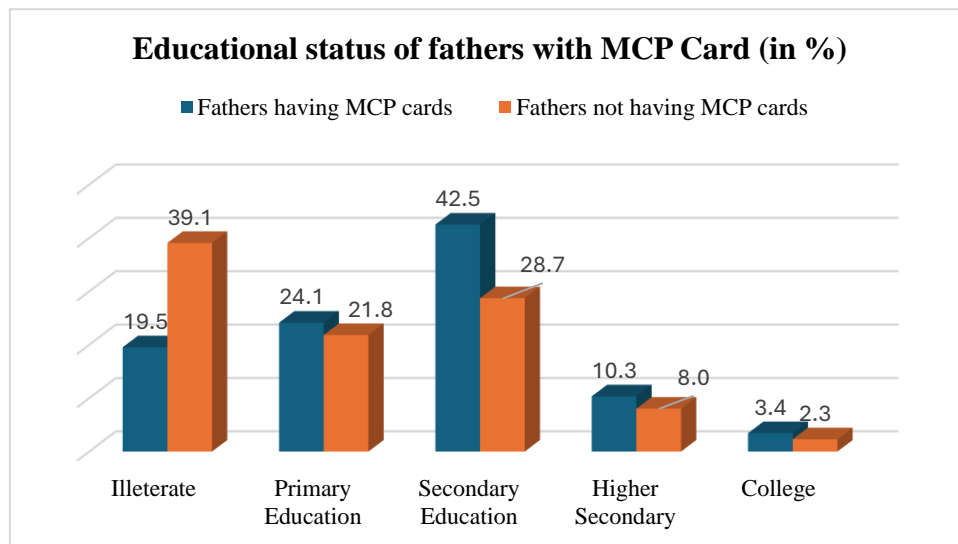


Figure 9: Educational status of fathers and availability of MCP Cards

Place of delivery is another factor affecting the availability of MCP card among mothers as revealed from figure 10. Among mothers having MCP cards, about 89.5 % had their institutional deliveries at hospital, PHC etc.

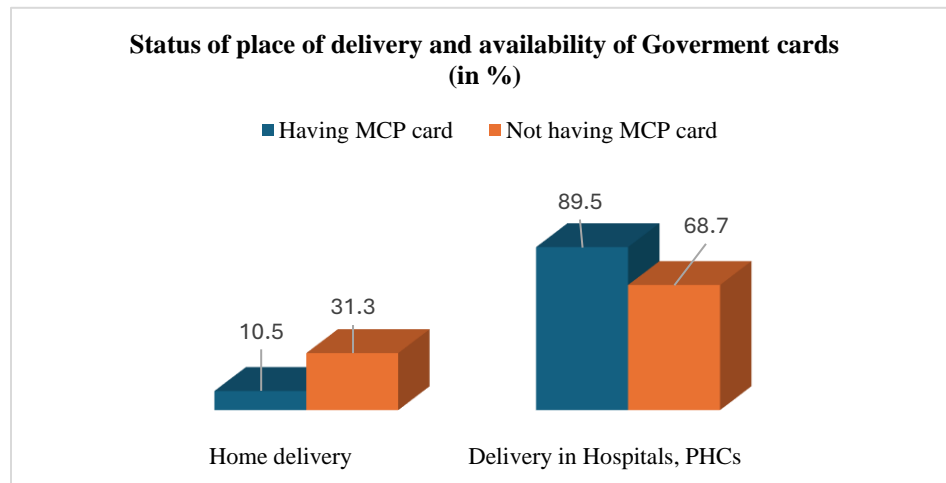


Figure 10: Place of delivery and availability of MCP card

Conclusion

This study done on 181 children belonging to age group 12-23 months has shown that overall coverage of full vaccination was 70.1 percent. In the present study, determinants which showed association with the immunization status of 12-23 months children were MCP cards, migration, educational status of parents and the place of delivery. Mothers were using MCP card for vaccination but their knowledge and awareness on vaccines were very low.

Limitations

A limitation of this study is its retrospective reporting, involving recalling of information related to vaccines (number of vaccines, age, location where vaccine is given) by mothers which might impact the reliability of data.

Recommendations

The risk of not being immunized by children of urban slums and migrant families is high due to their multiple vulnerabilities and deprivation. The study findings reveal the need to improve awareness and knowledge regarding the vaccination along with improving the documentation to access age-appropriate services.

There is a need for **intervention specific to targeted communities to improve uptake of vaccines**. It should enhance the awareness and knowledge among marginalized communities on

the importance of age-appropriate vaccination, MCP cards and the availability of free vaccination programs by the government. Campaigns should provide required details regarding vaccination to communities in languages that are easily understandable and should address any misconceptions or concerns about vaccines.