



**Factors influencing coverage of measles-rubella vaccination among children aged less than 5 years in Sirsi Village, Jaipur, Rajasthan.**

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KARMA DHENDUP, MPH(IS)  
COHORT-1 (2022-2024)

# Background

Vaccination programs play a crucial role in preventing the spread of infectious diseases and reducing morbidity and mortality rates among children worldwide. Measles and rubella are two such vaccine-preventable diseases that continue to pose significant public health challenges in many parts of the world, including India. Despite the availability of safe and effective vaccines, the coverage of measles-rubella vaccination remains suboptimal, leading to outbreaks and a significant burden on healthcare systems.

The study conducted by Dr. S.K Singh and team (August 2018) shows measles outbreak occurring in different districts of Rajasthan, a state located in the northwestern part of India (1). The capital city, Jaipur, is densely populated and home to various communities, including the rural village of Sirsi. Sirsi is a medium size village located in Amber Tehsil of Jaipur district, Rajasthan. It comes under Sirsi Panchayath. It is 16 KM from state capital Jaipur. The Sirsi village has population of 1476 of which 761 are males while 715 are females as per Population Census 2011 (2). Sirsi village has lower literacy rate compared to Rajasthan. In 2011, literacy rate of Sirsi village was 65.98 % compared to 66.11 % of Rajasthan. In Sirsi Male literacy stands at 81.82 % while female literacy rate was 49.10 %. Understanding the factors influencing coverage is essential for designing targeted interventions to improve vaccination rates and protect vulnerable populations.

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# Background contd..

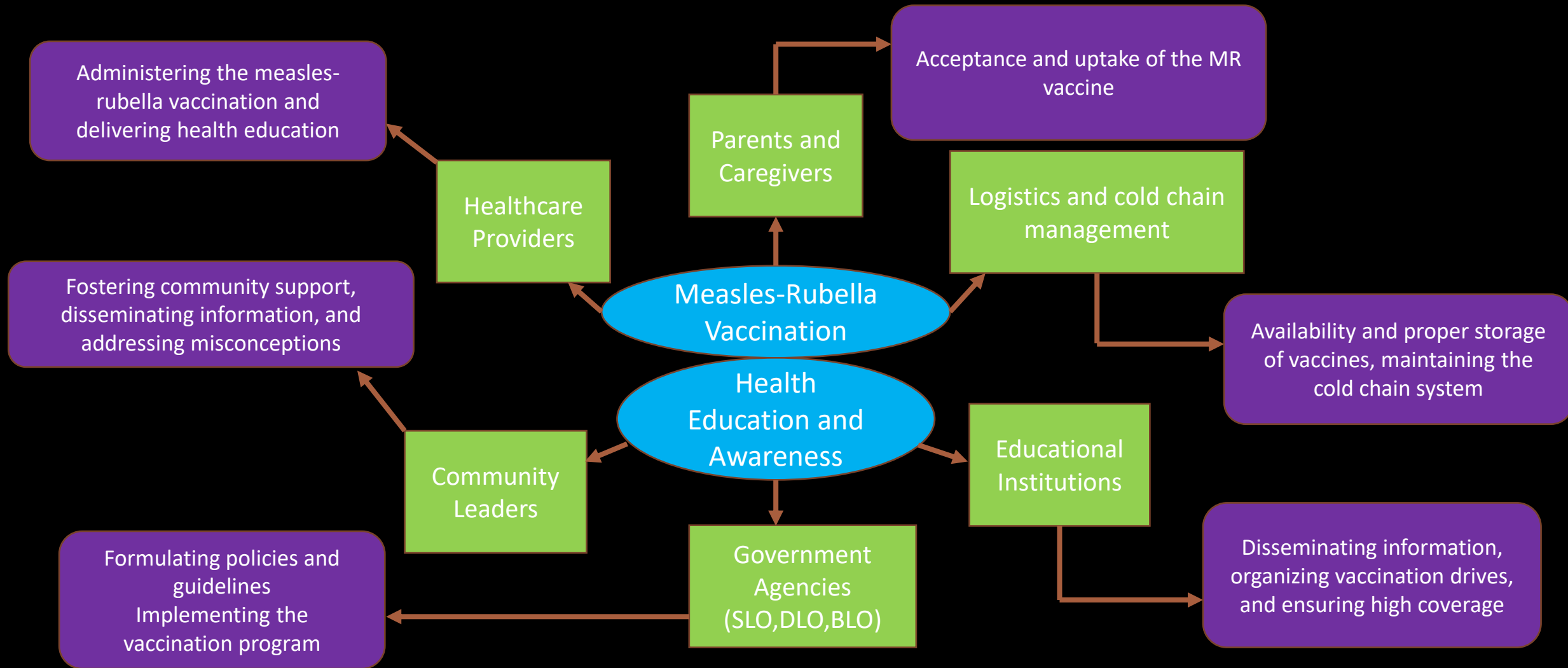
Several studies have explored the factors influencing vaccination coverage in India, highlighting various determinants such as socioeconomic status, parental education, awareness, and accessibility to vaccination services (3), (4). However, no research specifically investigated the factors affecting the coverage of measles-rubella vaccination in the context of Sirsi Village, Jaipur. This study aims to address this research gap by examining the factors influencing the uptake of measles-rubella vaccination among children aged less than 5 years in Sirsi Village.

By identifying and understanding the underlying factors that hinder vaccination coverage in this specific setting, policymakers, healthcare providers, and community stakeholders can develop targeted strategies to enhance vaccination rates and ultimately contribute to the control and elimination of measles and rubella in the region.

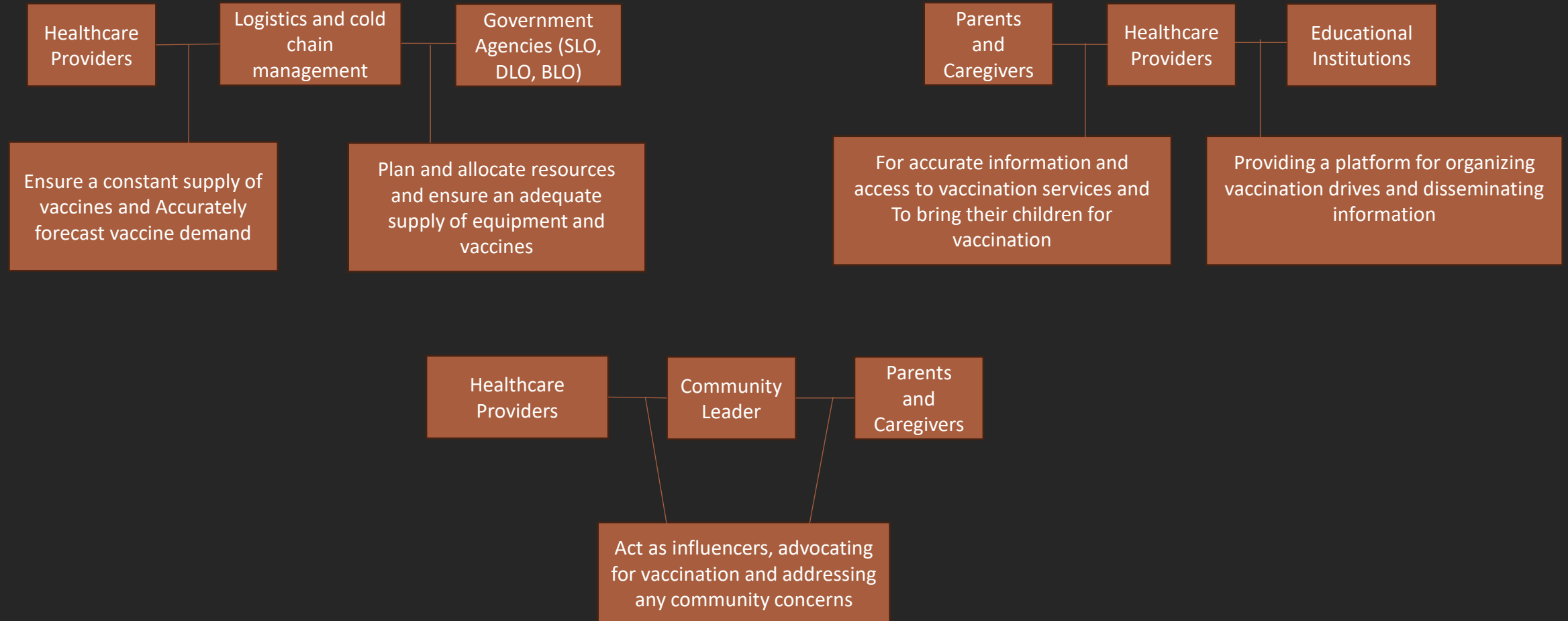
Overall, this study seeks to shed light on the factors influencing the coverage of measles-rubella vaccination in Sirsi Village, Jaipur, Rajasthan, and provide valuable insights for the development of evidence-based interventions to improve vaccination uptake among young children in this population.

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# Program design and service delivery



# Program design and service delivery contd..



# Capstone Work area

## Objectives:

1. To assess the prevalence of MR vaccine coverage
2. To study the factors influencing the uptake of MR vaccine among children aged less than five years.



# Study design

The study has adopted the Mixed-Methods approach using the combination of quantitative and qualitative research methods to gather a holistic understanding of the factors influencing MR vaccination coverage.

## **Study Area:**

Sirsi Community Health Centre, Jaipur, Rajasthan.

## **Data Collection**

### **Quantitative:**

Developed a structured questionnaire to collect quantitative data from parents/caregivers of children aged less than 5 years. Assessed the vaccination status of children through data collected from Sirsi CHC and determined the coverage rate. Assessed the level of awareness and knowledge about MR vaccination among parents/caregivers and also identified specific challenges and enablers influencing vaccination coverage through a survey/structured questionnaire.

### **Qualitative:**

In-depth Interviews and Focus Group Discussions (FGDs): Conducted qualitative interviews with a subset of parents/caregivers, healthcare providers (Doctor, ANM, and ASHAs). Explored in-depth perspectives, experiences, and perceptions related to MR vaccination. Gathered insights on challenges, enablers, and possible solutions to improve coverage.





# Field visit documentation: Sirsi Community Health Center

## Activity Description:

The Sirsi Community Health Center (CHC)'s operations and services were observed and documented during the field visit. The purpose of the visit was to learn more about the healthcare infrastructure, service delivery and healthcare providers' community engagement efforts in the context of the measles-rubella vaccination program.

# Key Activities Conducted

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Arrival and  
Introduction



Infrastructure and  
Facilities  
Assessment



Service Delivery  
Observation



Interactions with  
Healthcare  
Providers



Cold Chain  
Management  
Assessment



Community  
Engagement  
Initiatives



Data Collection and  
Documentation

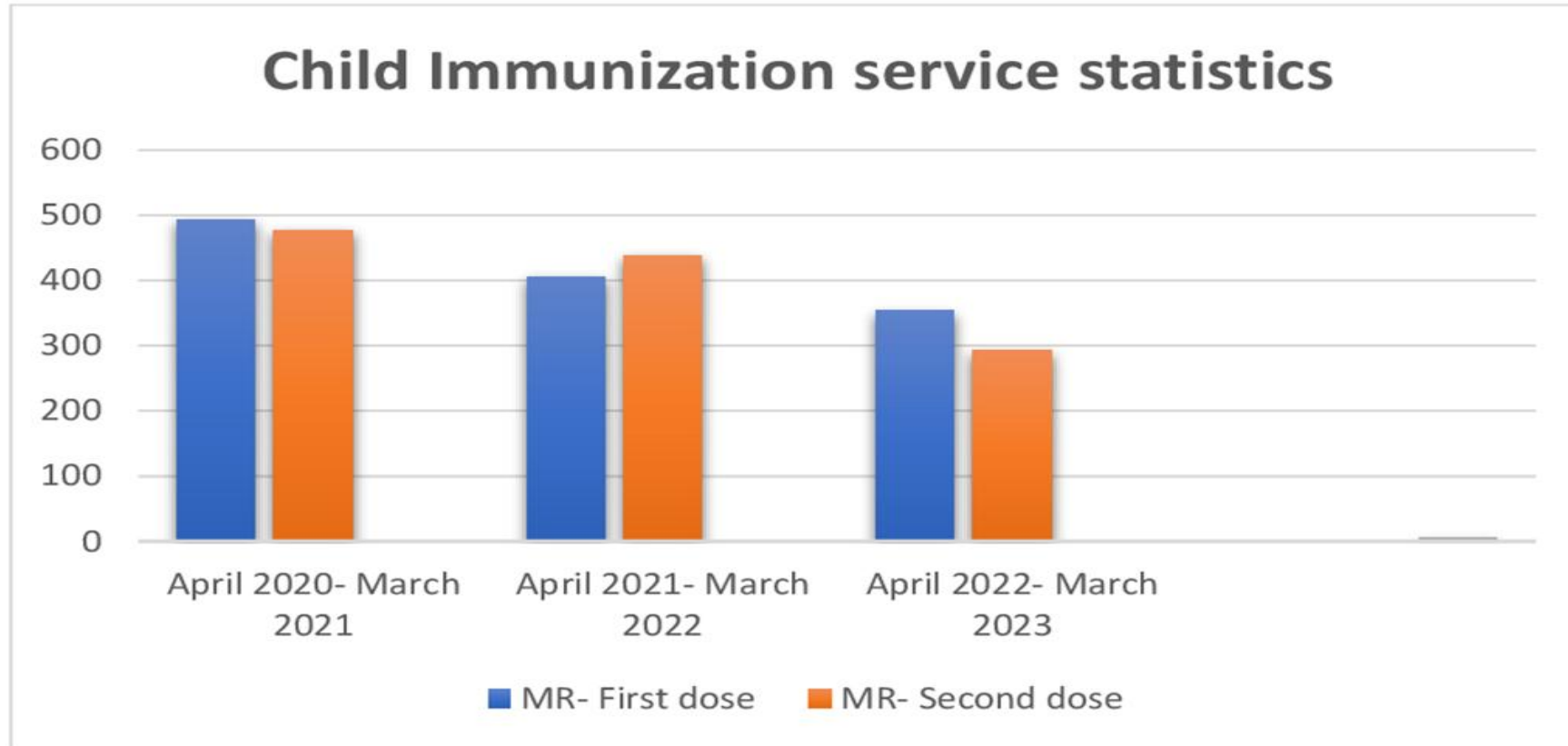


Wrap-up and  
Gratitude

# Service Statistics

Table 1. Service statistics

| CHILD Immunization | April 2020 – March 2021 (Target 605) | April 2021 – March 2022 (Target 567) | April 2022 – March 2023 (Target 690) |
|--------------------|--------------------------------------|--------------------------------------|--------------------------------------|
| MR – First dose    | 494                                  | 406                                  | 354                                  |
| MR – Second dose   | 478                                  | 438                                  | 293                                  |

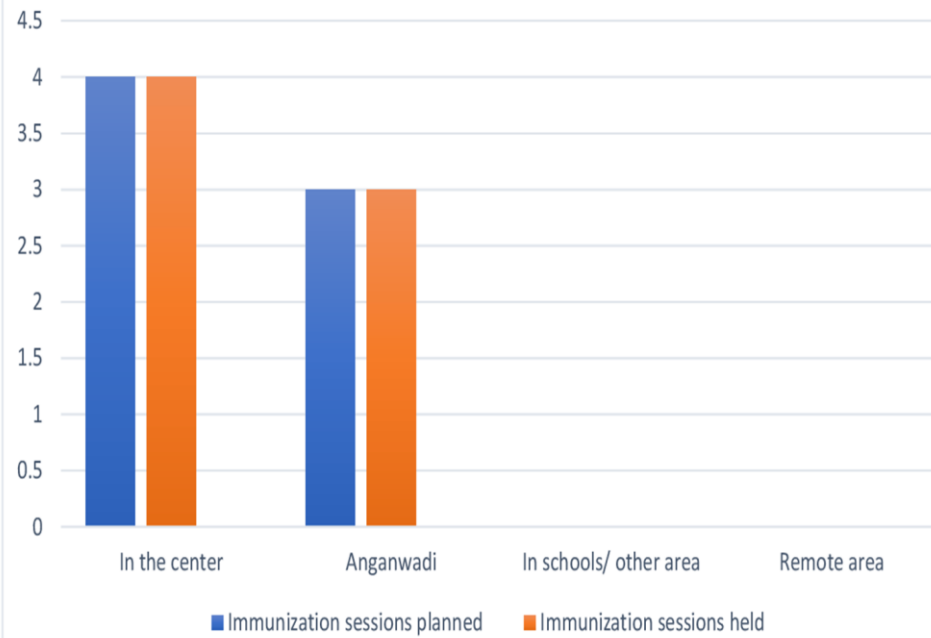


## Number of Immunization sessions

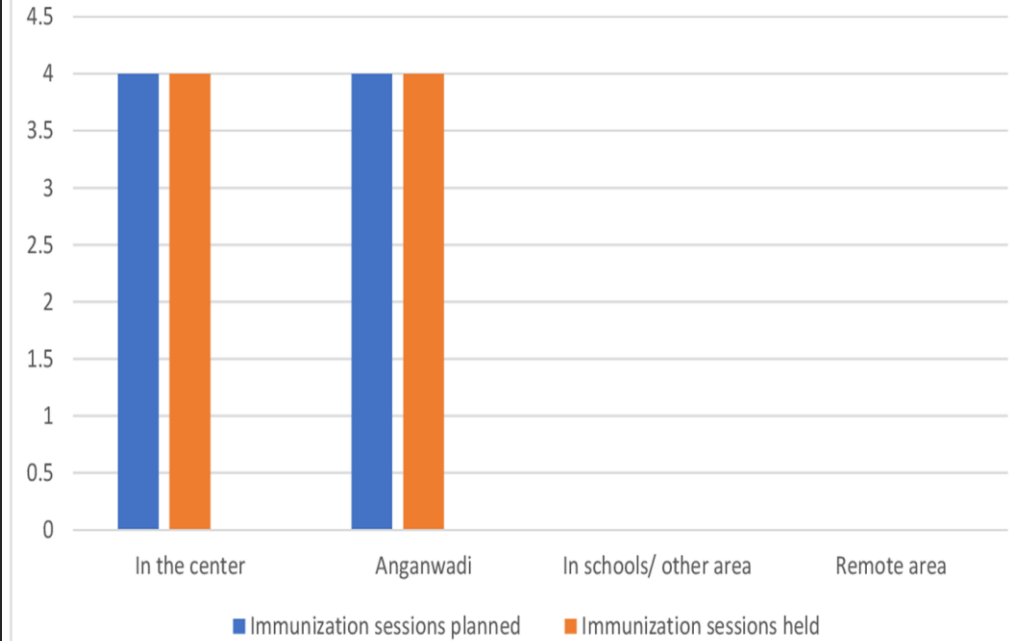
| April 2020 – March 2021                               |          |          |          |          |    |   |       |
|-------------------------------------------------------|----------|----------|----------|----------|----|---|-------|
| Camp                                                  | Type - A | Type - B | Type - C | Type - D |    |   | Total |
| Immunization sessions planned                         | 4        | 3        | 0        | 0        |    |   | 7     |
| Immunization sessions held                            | 4        | 3        | 0        | 0        |    |   | 7     |
| No. of Immunization sessions where ASHAs were present | 7        |          |          |          |    |   |       |
| AEFI                                                  |          |          |          |          |    |   |       |
| No. of cases of AEFI - Abscess                        | 0        |          |          |          |    |   |       |
| April 2021 – March 2022                               |          |          |          |          |    |   |       |
| Camp                                                  | Type - A | Type - B | Type - C | Type - D |    |   | Total |
| Immunization sessions planned                         | 4        | 4        | 0        | 0        |    |   | 8     |
| Immunization sessions held                            | 4        | 4        | 0        | 0        |    |   | 8     |
| No. of Immunization sessions where ASHAs were present | 6        |          |          |          |    |   |       |
| AEFI                                                  |          |          |          |          |    |   |       |
| No. of cases of AEFI - Abscess                        | 0        |          |          |          |    |   |       |
| April 2022 – March 2023                               |          |          |          |          |    |   |       |
| Camp                                                  | Type - A | Type - B | Type - C | Type – D |    |   | Total |
|                                                       |          |          |          | A        | B  | C |       |
| Immunization sessions planned                         | 0        | 0        | 0        | 5        | 11 | 0 | 16    |
| Immunization sessions held                            | 0        | 0        | 0        | 5        | 3  | 0 | 8     |
| No. of Immunization sessions where ASHAs were present | 7        |          |          |          |    |   |       |
| AEFI                                                  |          |          |          |          |    |   |       |
| No. of cases of AEFI - Abscess                        | 0        |          |          |          |    |   |       |

Table 2. Service Statistics (Type – A: in the Center, Type – B: in Anganwadi, Type – C: in the schools/other areas, Type – D: in the remote areas)

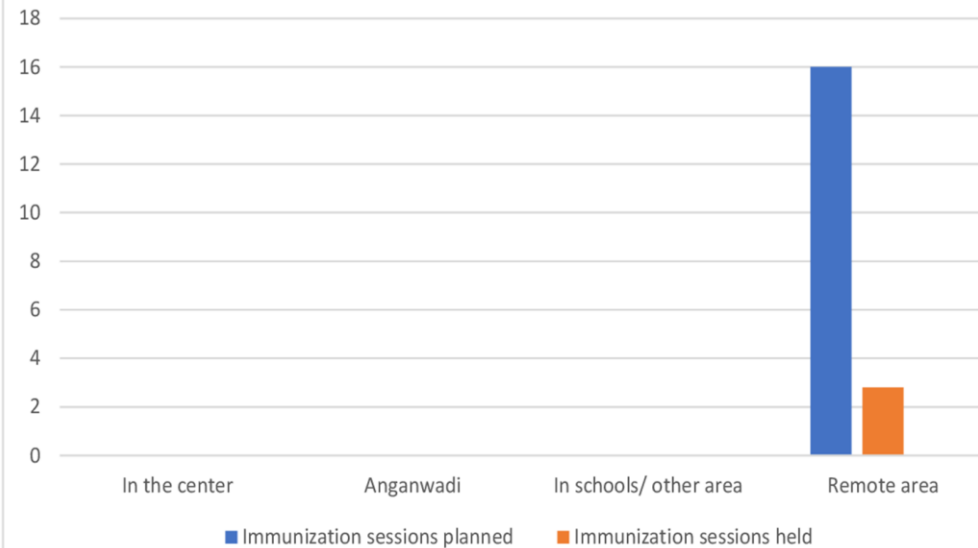
Immunization sessions (April 2020- March 2021)



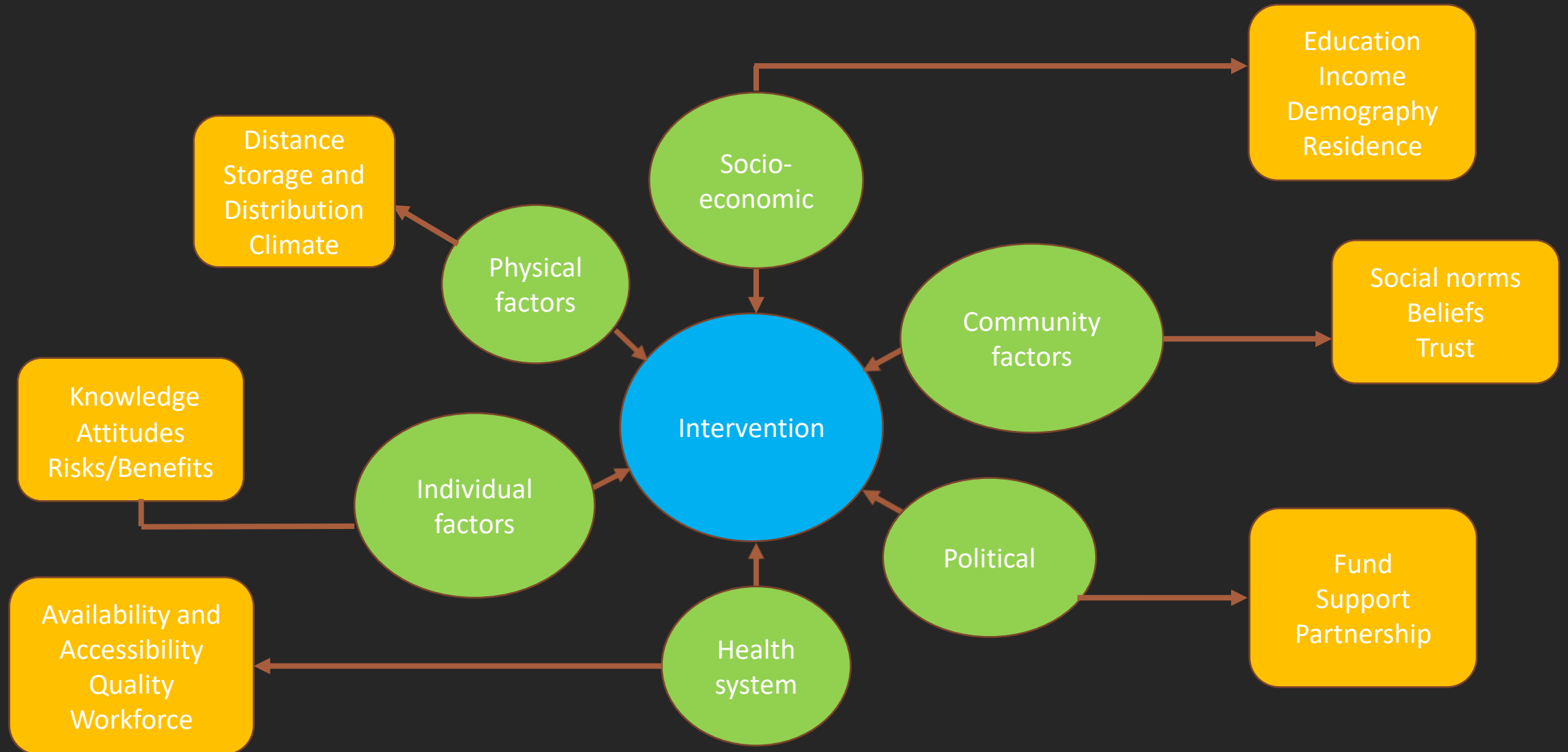
Immunization sessions (April 2021- March 2022)



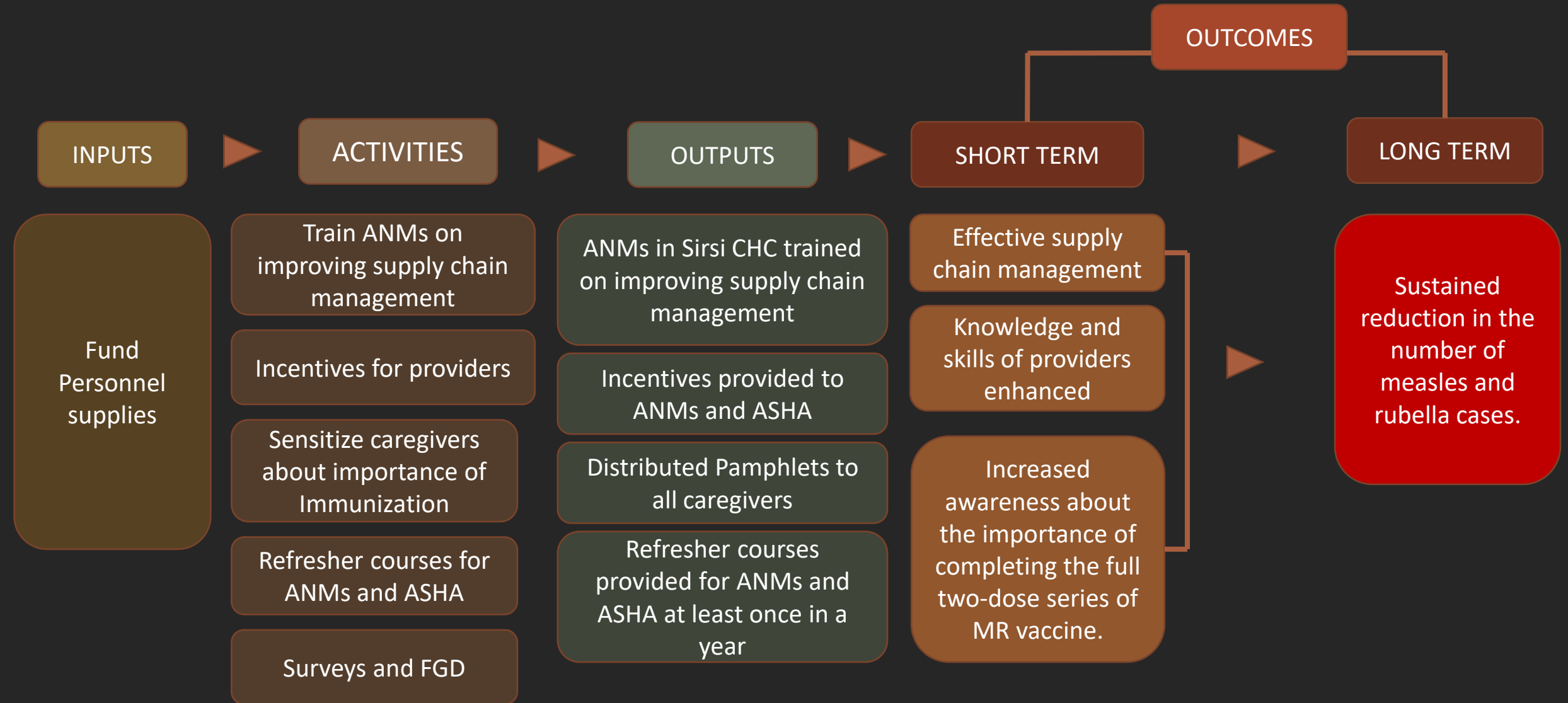
Immunization sessions (April 2022- March 2023)



# General factors associated with the MR vaccine uptake



# Conceptual Framework



# Synthesis Sheet

## Based on the field interactions with Provider/ frontline workers

| Challenges                                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Vaccine delivery to remote areas due to limited transportation options, incentives not provided on time/ very low incentives, extreme weather conditions.</li></ul>                                                                       |
| <ul style="list-style-type: none"><li>• Workload and time constraints, workload due to shortage of staff, this leads to limited interactions time with each patient or caregiver, hindering effective counselling, education and addressing individual concerns</li></ul>         |
| <ul style="list-style-type: none"><li>• Challenges in vaccine stock management, as there are more beneficiaries (people coming from different districts and villages) than the exact Sirsi village population. RCHO (Reproductive Child Health Officer) raise question.</li></ul> |
| Enablers                                                                                                                                                                                                                                                                          |
| <ul style="list-style-type: none"><li>• Training and Capacity building, in terms of cold chain management and data management and reporting</li></ul>                                                                                                                             |
| <ul style="list-style-type: none"><li>• Supportive supervision</li></ul>                                                                                                                                                                                                          |
| <ul style="list-style-type: none"><li>• Community engagement and mobilization</li></ul>                                                                                                                                                                                           |
| <ul style="list-style-type: none"><li>• Access to information and resources</li></ul>                                                                                                                                                                                             |
| <ul style="list-style-type: none"><li>• Recognition and motivation</li></ul>                                                                                                                                                                                                      |

## Based on the field interactions with Parents/ Caregivers

### Challenges

- Limited awareness about the importance of vaccination, the recommended immunization schedule can hinder caregivers from seeking vaccination services for their children.
- Accessibility to vaccination centers, especially for families living in remote areas, can be challenging. Limited transportation options, long distances to healthcare facilities, and lack of nearby vaccination sites can make it difficult for parents/caregivers to access vaccination services.
- Busy schedules, work commitments, and other family responsibilities make it difficult for parents or caregivers to find time to bring their children for vaccination.

### Enablers

- Accessible and Convenient Vaccination Services
- Clear and Effective Communication
- Community Engagement and Education
- Vaccine Reminders and Outreach

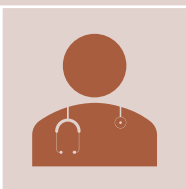
# Results



The socio-economic status of the caregivers was identified as a significant barrier to vaccination coverage. Limited financial resources, lack of awareness about the importance of vaccination, and competing priorities were identified as key factors contributing to low coverage rates. Addressing socio-economic disparities and implementing targeted interventions to reach disadvantaged populations will be crucial in improving vaccination coverage.



Additionally, logistical challenges, such as limited transportation options, were identified as barriers to vaccine delivery, particularly in remote areas. Strengthening the healthcare infrastructure, establishing mobile vaccine delivery units, and collaborating with local authorities and community leaders are essential for overcoming these challenges and ensuring vaccine access to all children, regardless of their geographical location.



The study also highlighted the importance of timely and adequate incentives for healthcare providers and community volunteers. Delayed or insufficient incentives can demotivate frontline workers and impact the quality and coverage of vaccination services. Therefore, it is crucial to establish a streamlined system for providing incentives and recognize the valuable contributions of healthcare providers and volunteers.

# Findings

| Problems                                                                                                                                                            | Possible Solutions                                                                                                                                                                                                                                                                                                                                                                                               | Feasibility | Priority |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------|
| <b>Insufficient healthcare infrastructure, there is no proper vaccination room/unit, no proper waiting area, shortage of staff, and limited resources.</b>          | <ul style="list-style-type: none"><li>• Improve and expand healthcare infrastructure, with proper vaccination room and waiting area and ensuring adequate staffing.</li><li>• Provide necessary resources, especially cold storage equipment, to enhance service delivery.</li><li>• Conduct training programs for healthcare providers especially on cold chain management, and communication skills.</li></ul> | Medium      | High     |
| <b>Reaching remote areas of Sirsi Village poses challenges due to geographical barriers, poor transportation infrastructure, and limited healthcare facilities.</b> | <ul style="list-style-type: none"><li>• Establish mobile vaccination clinics to reach remote areas.</li><li>• Conduct regular outreach programs in collaboration with community-based organizations and local authorities to increase vaccination coverage in hard-to-reach areas.</li><li>• Coordinate with transportation services to facilitate the movement of mobile clinics.</li></ul>                     | High        | Medium   |

## Findings contd..

|                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|
| <b>Maintaining the cold chain for the storage and transportation of vaccines is crucial for their efficacy. Challenges such as insufficient cold storage equipment, and inadequate training in cold chain management.</b> | <ul style="list-style-type: none"><li>• Upgrade cold storage facilities, including refrigerators and freezers.</li><li>• Train healthcare staff on cold chain management protocols, temperature monitoring, and vaccine stock management.</li><li>• Implement a robust monitoring system to regularly assess the temperature integrity of the cold chain and take immediate corrective actions if deviations occur.</li></ul>    | High | High   |
| <b>Outdated data collection and reporting systems which can impact data quality, Insufficient training and support for healthcare providers.</b>                                                                          | <ul style="list-style-type: none"><li>• Refresher training sessions can help maintain data collection skills, ensuring data quality, and using standardized reporting formats.</li><li>• Invest in digital solutions and technologies that facilitate real-time data collection, analysis, and reporting.</li><li>• Conduct regular data quality assessments and audits to identify and address data integrity issues.</li></ul> | High | Medium |

# Recommendation

Mobile vaccine clinics should be organized in schools and other remote areas of the community to improve access to vaccines. These clinics can provide MR vaccines, along with other routine childhood vaccines.

Increase the number and frequency of immunization sessions in Sirsi village to ensure convenient access for parents and caregivers and also extending the working hours of vaccination centers to accommodate working parents and caregivers who may find it challenging to visit during regular hours.

Involve parents and caregivers in decision-making processes, such as through parent advisory committees or community feedback mechanisms, to increase their sense of ownership and participation in the program.

Healthcare infrastructure in the community should be strengthened in terms of upgrading waiting areas, vaccination room. Ensure the availability of essential medical equipment and supplies for effective healthcare service delivery.

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## Recommendation contd..

Provide on-job training and capacity-building sessions to healthcare providers on the importance of accurate and comprehensive reporting, on proper data entry procedures, use of standardized formats, cold chain management and also emphasizing the significance of effective communication with parents and caregivers to address their concerns and misconceptions.

Use data analysis to identify areas with low coverage rates and develop strategies to specifically target those areas and also conduct regular data audits to identify any gaps or inconsistencies in reporting and take corrective actions as needed.

Strengthen coordination and collaboration among different stakeholders, including government agencies, healthcare providers, and schools and educational institutions, to ensure a comprehensive and integrated approach in reaching the target population.

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## Recommendation contd..

Ensure that incentives for healthcare providers and community volunteers involved in vaccine delivery are provided in a timely manner and recognize and appreciate the contribution of healthcare providers and community volunteers publicly, acknowledging their dedication and commitment.

Implement a robust monitoring and evaluation system to track vaccination coverage rates in real-time. Regularly assess the vaccination coverage rates and identify any gaps or barriers. Use this data to inform targeted interventions and adjust strategies to improve coverage.

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# Conclusion

Improving measles-rubella vaccination coverage among children aged less than 5 years in Sirsi Village, Jaipur, Rajasthan, requires a multifaceted approach. This includes addressing socio-economic disparities, enhancing knowledge and awareness among caregivers, strengthening the healthcare infrastructure, ensuring timely vaccine delivery to remote areas, and providing adequate incentives and support to healthcare providers. By implementing these recommendations, we can strive towards achieving higher vaccination coverage rates, ultimately protecting the health and well-being of the children in Sirsi Village.

# Ethical Consideration

We sought ethical clearance and permission to conduct the study from the IIHMR University before proceeding to the study site. Prior to the commencement of the study, informed consent was obtained from all participants, specifically the parents or caregivers of children who were to be vaccinated. They were provided with comprehensive information about the purpose, procedures, potential risks, and benefits of the study.

Participants were informed of their right to refuse participation or withdraw their consent at any time without any consequences. The confidentiality of all participant's personal information was strictly maintained throughout the project. Data collected during the program were stored securely to ensure privacy and prevent unauthorized access. Only authorized personnel had access to the data.

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# MR Vaccine Schedule- Annexure

| Vaccine                          | When to give                                                      | Dose   | Route          | Site            |
|----------------------------------|-------------------------------------------------------------------|--------|----------------|-----------------|
| <b>For infants</b>               |                                                                   |        |                |                 |
| Measles/ MR 1 <sup>st</sup> Dose | 9 completed months- 12 months. (Can be given till 5 years of age) | 0.5 ml | Sub-cutaneous  | Right upper arm |
| <b>For children</b>              |                                                                   |        |                |                 |
| Measles/ MR 2 <sup>nd</sup> Dose | 16- 24 months                                                     | 0.5 ml | Sub- cutaneous | Right upper arm |