

Evaluation of Routine Immunization through Supportive Supervision in Assam

Tulika Goswami Mahanta<sup>1</sup>, Mridushman Saikia<sup>2</sup>, Swarnali Devi Baruah<sup>3</sup>

<sup>1</sup>Professor, <sup>2</sup>Junior Resident, <sup>3</sup>Statistician, Community Medicine Department, Assam Medical College & Hospital, Dibrugarh, India

Correspondence : Dr. Mridushman Saikia, Email : saikiamridushman09@gmail.com


**Abstract:**

**Introduction:** Supportive supervision is crucial for enhancing healthcare quality by improving internal relationships, resolving issues, and optimizing resources. Recent evidence from India shows it enhances immunization coverage and strengthens the local health system. **Objective:** To evaluate routine immunization services in terms of input and process through supportive supervision and to compare service delivery between two quarters. **Method:** This cross-sectional study, conducted between July 2021 and February 2022, assessed the delivery of routine immunization services by frontline workers (FLWs) within Village Health Sanitation and Nutrition Day (VHSND) sessions in Assam. Five districts were selected to represent each zone of the state. Micro-plans for VHSND sessions were reviewed to visit 25-30 sessions per district based on operational feasibility. Data collected by district coordinators using a standardized checklist assessed logistics and service delivery. Statistical analysis included quarterly group comparisons using Chi-square and Fisher's exact tests ( $p < 0.05$  significance). The findings were shared in district-level review meetings to facilitate corrective actions by all stakeholders. **Results:** A total of 140 VHSND sites were assessed. Paracetamol was available at 123 sites (87.9%), and updated due list was present at 120 sites (85.7%). However, Vitamin A was available at 26 sites (18.6%), ORS and Zinc were at 11 sites (7.9%) and 14 sites (10.0%), respectively. The presence of Anganwadi Workers (AWWs) at VHSND sites increased significantly from 61.2% in the first quarter to 76.7% in the second quarter ( $p = 0.04$ ). Adherence to micro plans among Accredited Social Health Activists (ASHAs) was high, rising from 97.0% in the first quarter to 100% in the second quarter. Record-keeping also improved, with headcount survey documentation increasing from 83.6% in the first quarter to 95.9% in the second quarter ( $p = 0.01$ ). **Conclusion:** The study highlighted improvements in logistics, documentation, and ASHA performance under supportive supervision. Continued focus on essential supplies and educational materials, alongside effective supervision and further research, is crucial for enhancing child health outcomes.

**Keywords:** Frontline workers, Routine immunization, Supportive supervision, Village Health Sanitation and Nutrition Day (VHSND)

**Introduction:**

Expanded Program on Immunization, initiated in 1978, and further propelled by the Universal Immunization Program (UIP) in 1985, markedly advanced equity in access to immunizations within India's public health system. As one of the largest global health initiatives, it targets annually to reach 3.04 crore pregnant women and 2.7 crore newborns. Through more than 1.2 crore immunization sessions, the program offers free vaccines against 12 preventable diseases under the UIP.<sup>[1]</sup> The World Health Organization (WHO) defines an effective immunization session as one where all attending children and women receive eligible vaccines receive

Quick Response Code	Access this article online	How to cite this article : Mahanta TG, Saikia M, Baruah S.Evaluation of Routine Immunization through Supportive Supervision in Assam. Healthline. 2024; 15 (2): 145-152
	Website : www.healthlinejournal.org	
	DOI : 10.51957/Healthline_ 618_2024	

the necessary vaccines, follow safety protocols, and adhere to the schedule for subsequent doses.<sup>[2]</sup> Mission Indradhanush, launched in 2014, further underscores India's commitment to this cause, aiming for 90% vaccination coverage among pregnant women and children under two years against seven preventable diseases.<sup>[3]</sup>

Despite these efforts, disparities in immunization coverage persist, influenced by individual, contextual, and systemic factors.<sup>[4]</sup> With an Infant Mortality Rate (IMR) of 28 and an under-five mortality rate (U5MR) of 32 per 1000 live births, the urgency for enhanced interventions is evident.<sup>[5]</sup> These interventions include improved micro-planning, cold-chain and logistics management, monitoring and supportive supervision, and community mobilization to increase immunization services' effectiveness.<sup>[6]</sup> National Family Health Survey-5 (NFHS-5) highlights an increase in full immunization coverage, up by 14.4%, indicating progress yet also pointing out regional disparities, such as in Assam where only 66.4% of children are fully vaccinated, lower coverage compared to the national average.<sup>[1,7]</sup> The COVID-19 pandemic has likely halted global progress in routine child immunizations, with WHO and UNICEF reporting that 23 million children worldwide missed basic vaccinations in 2020.<sup>[8]</sup> Despite early pandemic guidelines from India's Ministry of Health and Family Welfare to ensure the continuity of essential services, disruptions were observed, including a drop in DTP vaccine coverage from 91% to 85%.<sup>[9,10]</sup> India's diverse health system experienced varied impacts, with some regions implementing innovative measures to sustain immunization, while others grappled with ongoing disruptions.<sup>[11]</sup>

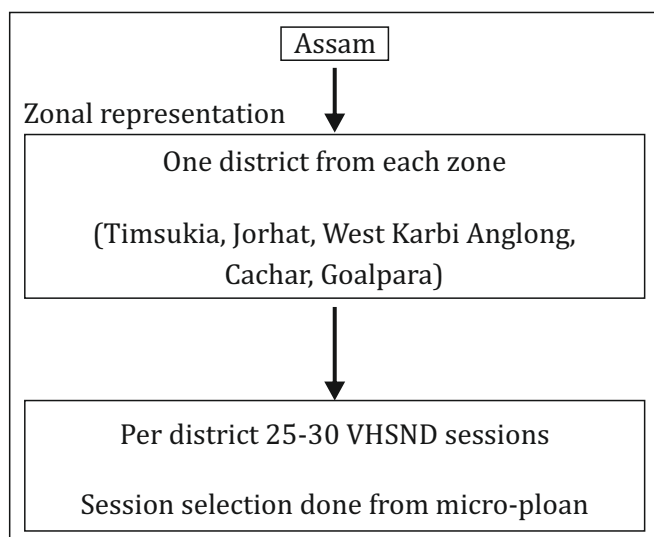
Supportive supervision emerges as a crucial strategy to enhance healthcare quality by strengthening internal relationships, addressing issues, and optimizing resource allocation. It aims to improve communication, problem-solving, teamwork, and leadership support, empowering health providers to monitor and enhance their

performance.<sup>[6]</sup> Recent evidence from India indicates that supportive supervision improves immunization coverage and strengthens the local health system.<sup>[12]</sup> Therefore, the current study is aimed to assess the effectiveness of supportive supervision for strengthening routine immunization in Assam. immunization in Assam.

### Method:

This cross-sectional study assessed routine immunization services within VHSND sessions in five districts of Assam (Tinsukia, Jorhat, West Karbi Anglong, Cachar and Goalpara) representing different zones, between July 2021 and February 2022. The study used supportive supervision to evaluate and compare service delivery in terms of input and process between two quarters. The study population was FLWs including Auxiliary Nurse and Midwife (ANM), AWWs and ASHs involved in VHSND delivery, present at the session sites during the day of visit.

**Sample size and sampling design:** Micro-plans of VHSND sessions were obtained from the selected districts. According to guidelines, each village should hold one VHSND per month,<sup>[13]</sup> but the frequency varies across districts due to population demographics (hills, tea gardens, rural, urban). These variations were incorporated into the annual micro-plan. Following the micro-plan analysis, a plan was devised to conduct 25-30 sessions per district over the course of this eight-month project. As per operational plan VHSND sessions were conducted weekly on Wednesday or Saturday. Efforts were made to cover all block PHC areas. The findings from monitoring and supportive supervision visits were presented by the study investigator at district health society meetings chaired by the Deputy Commissioner in presence of Joint Director of Health Services, Chief Medical Officer, Sr. Medical & Health Officers of each Primary Health Centre, and other stakeholders to ensure comprehensive dissemination of the findings and facilitate necessary corrective actions.



**Data collection tool:** District coordinators, selected for each district were utilized for data collection after training on the tool. Checklist used was the standard format for VHSND monitoring and supervision developed by MOHFW-GOI included in the operational document.<sup>[13]</sup> The data was collected based on observations made by district coordinators regarding availability of logistics and service delivery during their VHSND visits.

**Ethical consideration:** Obtained from Institutional Ethics Committee (Human). Subject enrolment was done after taking written informed consent.

**Statistical Analysis:** Data was presented as frequencies and proportions for categorical variables. Quarterly group comparisons were made employing the chi-square test and Fisher's exact test. A p-value of less than 0.05 was considered statistically significant. Statistical analysis was performed with IBM SPSS Statistics version 21 Software.

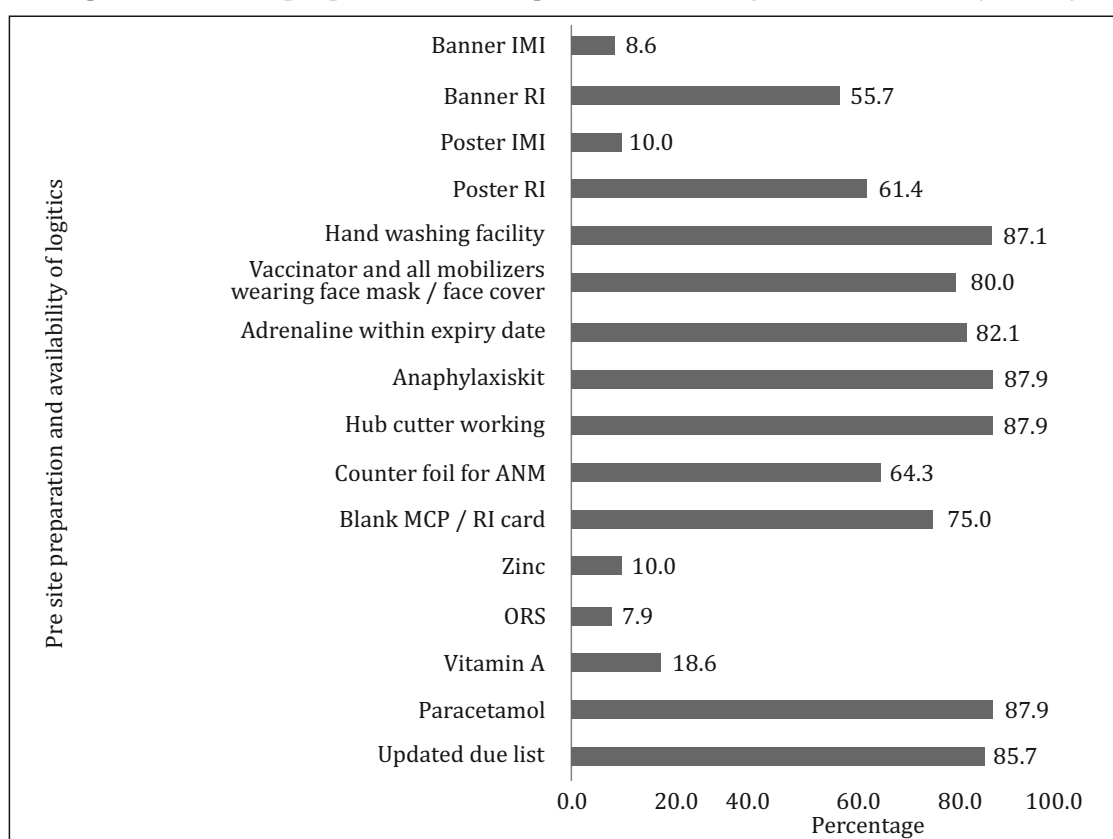
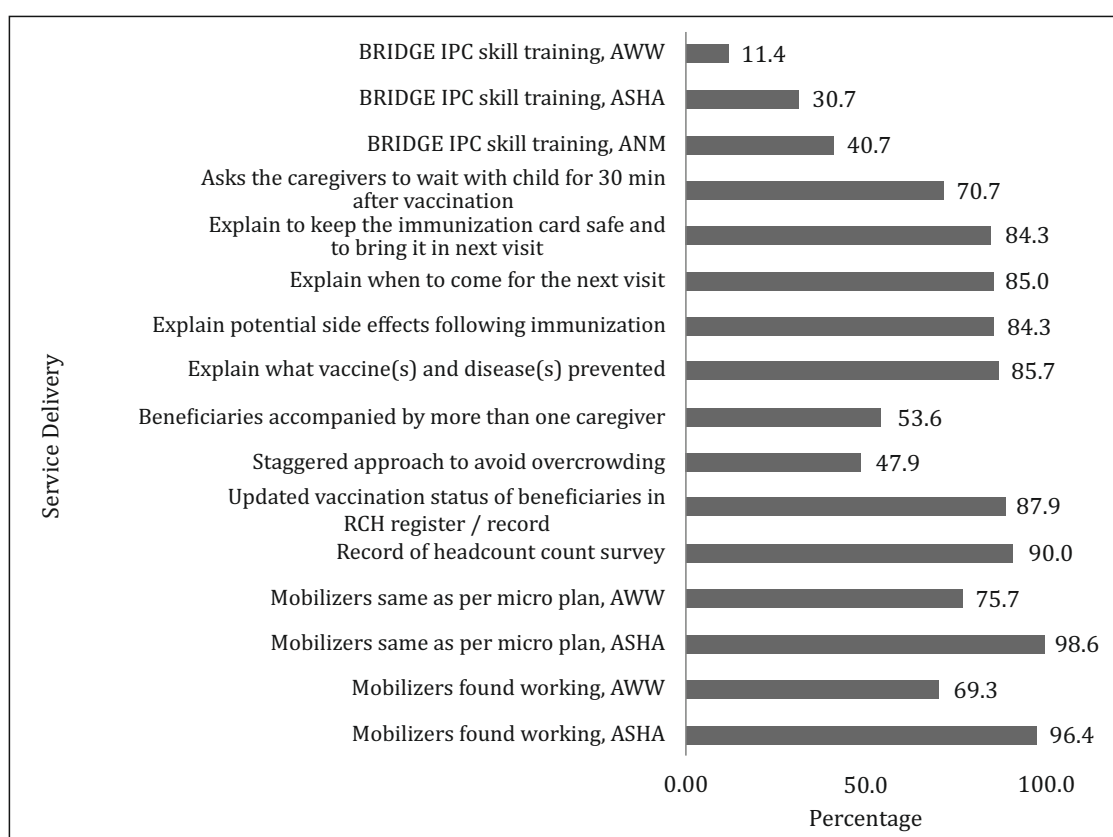
### Results:

The study involved supportive supervision across 140 VHSND sites, with 67 sites covered in the first quarter and 73 in the second quarter. Regarding pre-site preparation and logistics, the updated due list was present at 120 sites (85.7%). Paracetamol availability was noted at 123 sites (87.9%), while

Vitamin A was available at 26 sites (18.6%). ORS and Zinc were available at 11 sites (7.9%) and 14 sites (10.0%), respectively. The presence of blank MCP/RI cards and counter foils for ANM was at 105 sites (75.0%) and 90 sites (64.3%), respectively. The hub cutter and anaphylaxis kit were operational at 123 sites (87.9%). Adrenaline within expiry date was available at 115 sites (82.1%). Poster Intensified Mission Indradhanush (IMI) and Banner IMI were present at 14 sites (10.0%) and 12 sites (8.6%), respectively. (Figure 1)

Regarding service delivery, mobilizers found working were ASHA - 135 (96.4%), AWW - 97 (69.3%). ASHA and AWW mobilizers aligned with the micro plan at 138 (98.6%) and 106 (75.7%) of VHSND sites, respectively. The headcount survey was present at 126 (90.0%) of sites, while updated vaccination status of beneficiaries in RCH register/records was at 123 (87.9%). The staggered approach to avoid overcrowding was at 67 (47.9%). Explanations about what vaccine(s) and disease(s) are prevented were provided at 120 (85.7%) of sites, and explanations of potential side effects following immunization were at 118 (84.3%). Advice to keep the immunization card safe and bring it for the next visit was given at 118 (84.3%) of sites. BRIDGE IPC skill training was completed for AWW at 16 (11.4%) of sites. (Figure 2)

A statistically significant improvement ( $p < 0.05$ ) was observed from the 1st Quarter to the 2nd Quarter in the availability of Oral Rehydration Solution (ORS) at session sites (3.0% to 12.3%), availability of blank MCP/RI cards (62.7% to 86.3%), availability of counterfoils for ANMs to track missed doses (49.2% to 78.1%), working hub cutters (82.1% to 93.2%), availability of adrenaline within expiry date in anaphylaxis kits (71.6% to 91.8%), vaccinators and mobilizers wearing face masks/covers (70.1% to 89.0%), and display of IEC material related to routine immunization (Poster RI) (52.2% to 69.9%). (Table-1)

**Figure 1:Pre-site preparation and logistics availability at VHSND sites (N=140)****Figure 2: Service delivery practices at VHSND sites(N=140)**

**Table 1: Quarter wise comparison of pre-site preparation and logistics availability at VHSND sites (1<sup>st</sup> Quarter, N=67; 2<sup>nd</sup> Quarter, N=73)**

Variables		1 <sup>st</sup> Quarter n (%)	2 <sup>nd</sup> Quarter n (%)	p-value (Chi-square)
Updated due list available		54 (80.6%)	66 (90.4%)	0.09
Availability at session site	Paracetamol	58 (86.6%)	65 (89.0%)	0.66
	Vitamin A	10 (14.9%)	16 (21.9%)	0.28
	ORS	2 (3.0%)	9 (12.3%)	0.04
	Zinc	6 (9.0%)	8 (11.0%)	0.69
Blank MCP/RI card at the session		42 (62.7%)	63 (86.3%)	0.00
Counterfoil for ANM for tracking missed doses		33 (49.2%)	57 (78.1%)	0.00
Hub cutter working		55 (82.1%)	68 (93.2%)	0.04
Anaphylaxis kit		56 (83.6%)	67 (91.8%)	0.13
Adrenaline in anaphylaxis kit within expiry date		48 (71.6%)	67 (91.8%)	0.00
Vaccinator and all mobilizers wearing face mask/ face cover		47 (70.1%)	65 (89.0%)	0.00
Hand washing facility with soap and water / alcohol-based hand sanitizer		57 (85.1%)	65 (89.0%)	0.49
IEC material related to Immunization displayed	Poster RI	35 (52.2%)	51 (69.9%)	0.03
	Poster IMI	6 (9.0%)	8 (11.0%)	0.69
	Banner RI	36 (53.7%)	42 (57.5%)	0.65
	Banner IMI	5 (7.5%)	7 (9.6%)	0.65

\*RI - Routine Immunisation, IMI - Intensified Mission Indradhanush

**Table 2: Quarter wise comparison of service delivery practices at VHSND sites (1<sup>st</sup> Quarter, N=67; 2<sup>nd</sup> Quarter, N=73)**

Variables		1 <sup>st</sup> Quarter n (%)	2 <sup>nd</sup> Quarter n (%)	p-value (Chi-square)
Mobilizers found working that day				
ASHA		64 (95.5)	71 (97.3)	0.56
AWW		41 (61.2)	56 (76.7)	0.04
Mobilizers are same as per micro plan				
ASHA		65 (97.0)	73 (100.0)	0.13
AWW		48 (71.6)	58 (79.5)	0.27
Record of headcount count survey (HCS in register/format/paper)		56 (83.6)	70 (95.9)	0.01
Updated vaccination status of beneficiaries in RCH register / records		55 (82.1)	68 (93.2)	0.04
Staggered approach to avoid overcrowding with time slots allotted to beneficiaries		31 (46.3)	36 (49.3)	0.72
Observed beneficiaries accompanied by more than one caregiver		32 (47.8)	43 (58.9)	0.18
Explain what vaccine(s) will be given and the disease(s) prevented		53 (79.1)	67 (91.8)	0.03
Explain potential side effects following immunization (fever/pain/swelling; etc.) and how to deal with them		56 (83.6)	62 (84.9)	0.83
Explain when to come for the next visit		56 (83.6)	63 (86.3)	0.65
Explain to keep the immunization card safe and to bring it along for the next visit		54 (80.6)	64 (87.7)	0.25
Asks the caregivers to wait with child for 30 min after vaccination		41 (61.2)	58 (79.5)	0.01
BRIDGE IPC skill training	ANM	26 (38.8)	31 (42.5)	0.65
	ASHA	13 (19.4)	30 (41.1)	0.00
	AWW	6 (9.0)	10 (13.7)	0.38

\*IPC - Inter Personal Communication



There was a statistically significant improvement from the 1st quarter to the 2nd quarter in the presence of AWWs as mobilizers (61.2% to 76.7%), documentation of headcount count surveys (83.6% to 95.9%), updated vaccination status in RCH registers/records (82.1% to 93.2%), explanation of vaccines and diseases prevented (79.1% to 91.8%), and caregivers being asked to wait for 30 minutes after vaccination (61.2% to 79.5%). Notably, there was a substantial increase in BRIDGE IPC skill training among ASHAs (19.4% to 41.1%). (Table 2)

### Discussion:

For decades, the prevailing assumption was that inadequate performance in service delivery resulted solely from a deficiency in knowledge and skills, leading to a predominant focus on training interventions, yet these yielded varied and occasionally unsatisfactory long-term outcomes.<sup>[14,15]</sup> Reviews of intervention studies conducted in low and middle income countries indicate that the combination of formal and informal training along with regular supervision and feedback tends to be more effective compared to the mere dissemination of written guidelines.<sup>[14,16]</sup> Traditional supervisory approaches have shown effectiveness but also limitations, as they often prioritize facility inspection over human capital development, and supervisors themselves may lack necessary skills and resources while being burdened with administrative tasks. Supportive supervision can independently enhance the knowledge and practices of supervisors and supervises in conducting immunization sessions.<sup>[17]</sup> Supervision remains a challenging issue for peripheral health staff tasked with delivering primary healthcare services, and the absence of experienced and proficient human resources can significantly undermine the effectiveness of health programs, including immunization efforts.<sup>[17,18]</sup>

The findings of this study underscore the role of supportive supervision in strengthening routine immunization. By addressing key challenges in pre-site preparation, logistics, and service delivery,

supportive supervision has contributed to notable improvements in immunization during VHSND sessions and service quality across the selected districts.

A significant increase in diarrhoea cases in Assam, from 2.9% in NFHS-4 to 5.5% in NFHS-5,<sup>[7]</sup> underlines the critical need for ORS, zinc, and vitamin A to be available at VHSND events. Despite limited supplies of Vitamin A, ORS, and Zinc at VHSND events overall, there has been a positive increase in their availability during the 2<sup>nd</sup> quarter compared to the 1<sup>st</sup> quarter. Similarly, the increase in availability of blank MCP/RI cards, and counter foils for tracking missed doses indicates a positive impact of supportive supervision on ensuring adequate resources for immunization activities. Moreover, the improvement in the functionality of equipment such as the hub cutter and the inclusion of essential items like adrenaline in the anaphylaxis kit further demonstrates the effectiveness in optimizing operational readiness and emergency preparedness during vaccination sessions.

Improvements in adherence to safety protocols among vaccinators and mobilizers, including the wearing of face masks or covers indicates a heightened awareness of infection control measures, which is crucial for safeguarding the health of both healthcare workers and vaccine recipients. Furthermore, the increase in the presence of posters related to routine immunization suggests a concerted effort to enhance public awareness fostering community engagement and acceptance of immunization services. Implementation of communication strategy needs to be strengthened further with proper planning and supply of IEC materials with proper display specially during IMI execution.

Regarding service delivery, the study highlights significant enhancements in the presence and performance of frontline health workers. This increase in workforce engagement and adherence to micro-plans underscores the importance of

supportive supervision in strengthening the capacity and motivation of healthcare providers. Moreover, improvements in record-keeping practices and caregiver education signify a more comprehensive and patient-centred approach to immunization services, which is essential for ensuring the accuracy of data and promoting informed decision-making among caregivers. Additionally, supportive supervision has positively impacted the implementation of behaviour change communication strategies, such as BRIDGE IPC (Boosting Routine Immunization Demand Generation Interpersonal Communication) skill training. The significant increase in ASHAs receiving IPC training reflects an investment in building the communication and counselling skills of healthcare providers, which are vital for addressing vaccine hesitancy and promoting vaccination uptake within communities.

Given its resource-intensive nature, successful implementation of the routine immunization depends on various factors, including sufficient financing, vaccine quality, vaccination practices, and the robustness of the health system. Consequently, enhancing supportive supervision with a mentoring approach is crucial.<sup>[17]</sup> In this study, site visits for monitoring and supportive supervision were based on an existing micro-plan. Consequently, the same sites were not visited on all occasions, which can be considered a limitation. However, the analysis was conducted as a group comparison, and recommendations from various site visits were shared in monthly meetings to ensure corrective actions could be taken by all stakeholders. For better evidence generation, future implementation research and qualitative studies to assess beneficiary satisfaction levels and service providers' perspectives are recommended.

### **Conclusion:**

Supportive supervision at VHSND sites significantly enhanced routine immunization in second quarter, leading to improved logistics,

documentation, and ASHA worker performance. However, consistent availability of essential supplies like Vitamin A, ORS, and Zinc, along with increased awareness of IMI during RI campaigns, are crucial for further improvement. This study strongly supports the integration of supportive supervision into routine immunization practices to optimize child health outcomes.

### **Recommendations:**

- Continued focus on ensuring the availability of essential supplies, such as Vitamin A, ORS, and Zinc, at all VHSND sites.
- Increased efforts to promote and display educational materials related to IMI alongside routine immunization (RI) campaigns.
- Strategies to improve the implementation of a staggered approach for beneficiary arrival to minimize overcrowding at vaccination sites.
- Further investment in BRIDGE IPC skill training for all mobilizers, including AWWs.

### **Declaration:**

The authors of this manuscript confirm that the content within is original and does not replicate any previously published work. A related article, exploring a separate facet of this research project, has been published in a different journal.

### **Funding: Nil**

### **Conflict of Interest: Nil**

### **References:**

1. Universal.pdf [Internet]. Available from: <https://main.mohfw.gov.in/Universal.pdf> [cited 2024 Apr 3].
2. WHOGPV97.03.pdf [Internet]. Available from: <https://iris.who.int/WHOGPV97.03.pdf> [cited 2024 Apr 3].
3. Travasso C. Mission Indradhanush makes vaccination progress in India. *BMJ*. 2015 Aug 13;351:h4440.
4. Sissoko D, Trottier H, Malvy D, Johri M. The Influence of Compositional and Contextual Factors on Non-Receipt of Basic Vaccines among Children of 12-23-Month Old in India: A Multilevel Analysis. *PLOS ONE*. 2014 Sep 11;9(9):e106528.
5. India achieves significant landmarks in reduction of Child Mortality [Internet]. Available from: <https://pib.gov.in> [cited 2024 Apr 3].

6. Mendhe HG, Makade KG, Kamble N, David R, Singh D, Chandrawanshi L. Supportive supervision of routine immunization in Rajnandgaon district of Chhattisgarh. *J Fam Med Prim Care*. 2019 Feb;8(2):3859.
7. Assam.pdf [Internet]. Available from: <http://rchiips.org/nfhs/NFHS-5Reports> [cited 2024 Apr 5].
8. COVID-19 pandemic leads to major backsliding on childhood vaccinations, new WHO, UNICEF data shows [Internet]. Available from: <https://www.unicef.org/covid-19-pandemic> leadsmaj or backslidingchildhoodvaccinations newwhounicef data [cited 2024 Apr 5].
9. Bharadwaj J, Sharma SK, Darbari A, Patil P. Immunization and vaccination of children during current COVID-19 pandemic: Impact and recommendation guidelines for India. *J Fam Med Prim Care*. 2020 Oct 30;9(10):54112.
10. COVID-19 pandemic leads to major backsliding on childhood vaccinations, new WHO, UNICEF data shows [Internet]. Available from: <https://www.who.int/covid19> pandemic leadstomajorbackslidingonchildhoodvaccinations newwhounicefdata [cited 2024 Apr 5].
11. Chakrabarti A, Bair EF, Thirumurthy H. Routine child immunizations in India during the COVID-19 pandemic. *SSM - Popul Health*. 2023 Mar 15;22:101383.
12. Babu GR, Singh VV, Nandy S, Jana S, Tn S, Sm S. Supportive Supervision And Immunization Coverage: Evidence From India. *Internet J Epidemiol* [Internet]. 2010 Dec 31 [cited 2024 Apr 5].
13. National Guidelineson VHSND.pdf [Internet]. Available from: <https://nhm.gov.in/NewUpdates2018//NationalGuidelinesonVHSND.pdf> [cited 2023 Jan 10].
14. Som M, Panda B, Pati S, Nallala S, Anasuya A, Chauhan A, et al. Effect of Supportive Supervision on Routine Immunization Service Delivery-A Randomized Post-Test Study in Odisha. *Glob J Health Sci*. 2014 Jun 30;6.
15. Djibuti M, Gotsadze G, Zoidze A, Mataradze G, Esmail LC, Kohler JC. The role of supportive supervision on immunization program outcome - a randomized field trial from Georgia. *BMC Int Health Hum Rights*. 2009 Oct 14;9(Suppl 1):S11.
16. Esmail LC, Cohen-Kohler JC, Djibuti M. Human resource management in the Georgian National Immunization Program: a baseline assessment. *Hum Resour Health*. 2007 Jul 31;5:20.
17. Panda B, Pati S, Nallala S, Chauhan AS, Anasuya A, Som M, et al. How supportive supervision influences immunization session site practices: a quasi-experimental study in Odisha, India. *Glob Health Action*. 2015;8:25772.
18. Dussault G, Dubois CA. Human resources for health policies: a critical component in health policies. *Hum Resour Health*. 2003 Apr 14;1(1):1.