

## ORIGINAL ARTICLE

# Supportive supervision of village, health, sanitation and nutrition day (VHSND) during post-pandemic period in Assam

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### ARTICLE CYCLE

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### ABSTRACT

**Background:** VHSND, a community platform bringing health, early childhood development, nutrition, and sanitation services by community engagement was affected by COVID-19 pandemic. **Aims & Objectives:** To assess the process of VHSND implementation during post-pandemic period in Assam. **Methodology:** This cross-sectional study was conducted as operational research in five districts of Assam, selected based on zonal representation; between Sept'2021- Aug'2022. Standard format (GOI) was used for VHSND monitoring. Descriptive analysis was done along with quarter-wise comparison of observations and knowledge of Auxiliary Nurse and Midwife (ANM). **Results:** A total of 370 VHSND sessions were observed. VHSND micro plan availability increased from 87.5% to 98.4% over four quarters. Displaying banners varied between 56.3% and 79.5%, and functional toilets increased from 41.3% to 77%. Height measurement improved from 58.8% to 88.5%. Haemoglobin estimation varied between 46.3% and 75.4%. Recognition of high-risk pregnancies due to severe anaemia increased from 60% to 91.8%. Regarding danger signs like bleeding from vagina increased from 50.0% to 95.1%. **Conclusion:** Notable progress could be documented in logistical readiness and ANM knowledge in different quarters in post-pandemic period. While service delivery and ANM counselling efforts have seen improvement, targeted interventions remain crucial for optimizing maternal and child health outcomes in the region.

### KEYWORDS

Village Health Sanitation and Nutrition Day/ VHND; Nutrition services; Assam; Antenatal Care; Supplies & Equipment.

### INTRODUCTION

VHSND brings health, early childhood development, nutrition, and sanitation services to doorstep of population.(1) It's the first point of contact bringing convergence among service providers of health, Integrated

Child Development Services, and community, Panchayati Raj Institutions.(2,3) Operational guidelines issued by MOHFW, GOI in 2007.(3) Anganwadi centres (AWC) act as hub for service delivery once every month as per micro-plan.(3,4) Revamping performance of

frontline health workers (FLWs) is essential to improve coverage and delivery of quality health services.(5)

Studies documented that only routine immunization is provided in VHSND. Therefore, widening focus from routine immunization to comprehensive package of services is essential to cover all vulnerable. Assam has highest maternal mortality ratio (MMR), 195 maternal deaths per 100,000 live births.(6) About 54.2% of pregnant women are anaemic and infant mortality rate (IMR) is 31.9%.(7) Prevalence of common infections like diarrhoea and helminthic infestations is higher amongst rural population.(5) COVID-19 pandemic, affected health system by depletion/diversion of manpower, supplies, demand, and access.(8) Continuum of care was interrupted forcing, healthcare systems to prioritize services.(9,10) Though, mortality rate for COVID-19 was low but children affected maximally for disruptions of routine services.(9) FLWs were at risk of physical, mental, and emotional exhaustion compromising quality of services.(8)

**Aim and objective:** To assess the process of VHSND implementation in Assam during the post-pandemic period.

**MATERIAL & METHODS**

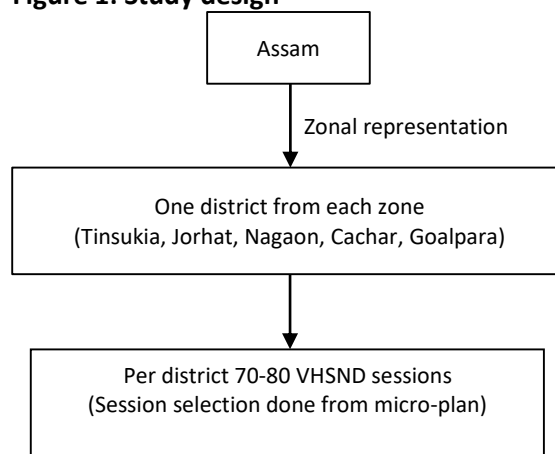
This cross-sectional study was conducted in five districts (Tinsukia, Jorhat, Nagaon, Cachar and Goalpara) of Assam based on zonal representation; between September 2021 and August 2022. Study population was ANM present at VHSND sites. (Figure1)

**Sample size:** From the micro-plans of VHSND sessions a total of 370 VHSND sites were assessed across all blocks of chosen districts during the study period. Selection of sites was based on operational feasibility, administrative suggestions and worker availability.

**Data collection tool:** District coordinators were utilized for data collection after training on tool. Checklist was the standard format for VHSND monitoring developed by MOHFW-GOI included in the operational document.(1) First part of the checklist was based on observations made by district coordinators regarding pre-site preparation, availability of equipment, and service delivery during their VHSND visits.

Second part of checklist was interview of service providers (ANM) which includes their knowledge assessment regarding identification of high-risk pregnancy, danger signs during pregnancy, treatment for severe anaemia, correct dosage of calcium tablets, gestational diabetes mellitus classification, co-existence of other medical illness and key messages to pregnant women during counselling.

**Figure 1: Study design**



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

**Statistical Analysis:** Descriptive statistics for categorical variables was used. Statistical analysis was performed with IBM SPSS Statistics version 21 Software. Quarter-wise comparison of the observations and knowledge of ANMs was done.

**RESULTS**

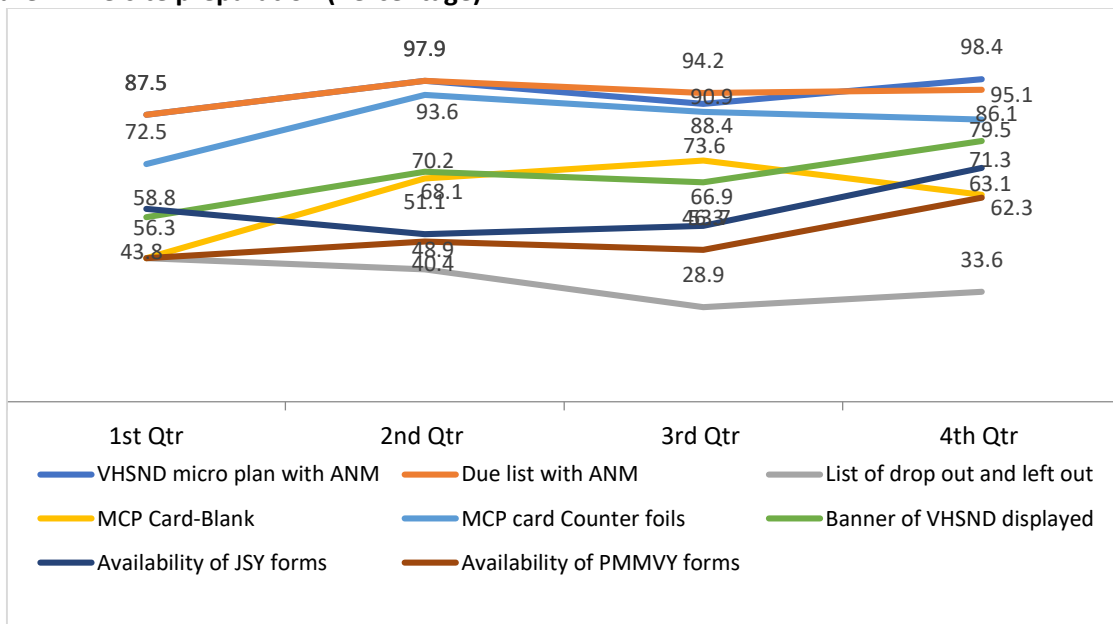
Total of 370 VHSND sessions were monitored in five districts; which ranges from 70-80 sessions. In first(Q1), second(Q2), third(Q3), and fourth(Q4) quarters, there were 80, 47, 121 and 122 sessions evaluated, respectively.

Regarding pre-site preparation, an upward trend was observed in the availability of VHSND micro-plan with ANM, 87.5% in Q1 and steadily increasing to 97.9% in Q2, 90.9% in Q3, and reaching a peak of 98.4% in Q4. Availability of due list with ANM fluctuated between 87.5% and 97.9% in the first two quarters, rising to 94.2% and 95.1% in subsequent quarters. List

of dropouts and left-outs demonstrated a decreasing trend, 43.8% and 40.4% in Q1 and Q2, reaching 28.9% in Q3, and slightly increasing to 33.6% in Q4. Blank mother and child protection cards (MCP card) witnessed a fluctuating pattern, starting at 43.8% in Q1, rising to 68.1% and 73.6% in Q2 and Q3, and then decreasing to 63.1% in Q4. MCP card counter foils showed an increasing trend, from 72.5% in Q1 to 93.6% in Q2 and then settling at 86.1% by Q4. Display of VHSND banners

exhibited an upward trend from 56.3% to 79.5% in Q1 and Q4 respectively. Janani Suraksha Yojana (JSY) forms availability showed a fluctuating trend, starting at 58.8% in Q1, dipping to 51.1% in Q2, then exhibiting a positive upward trend to 71.3% in Q4. Availability of Pradhan Mantri Matru Vandana Yojana (PMMVY) forms began at 43.8% in Q1, slightly increased to 48.9% in Q2, and further increased to 62.3% in Q4. [Figure 2].

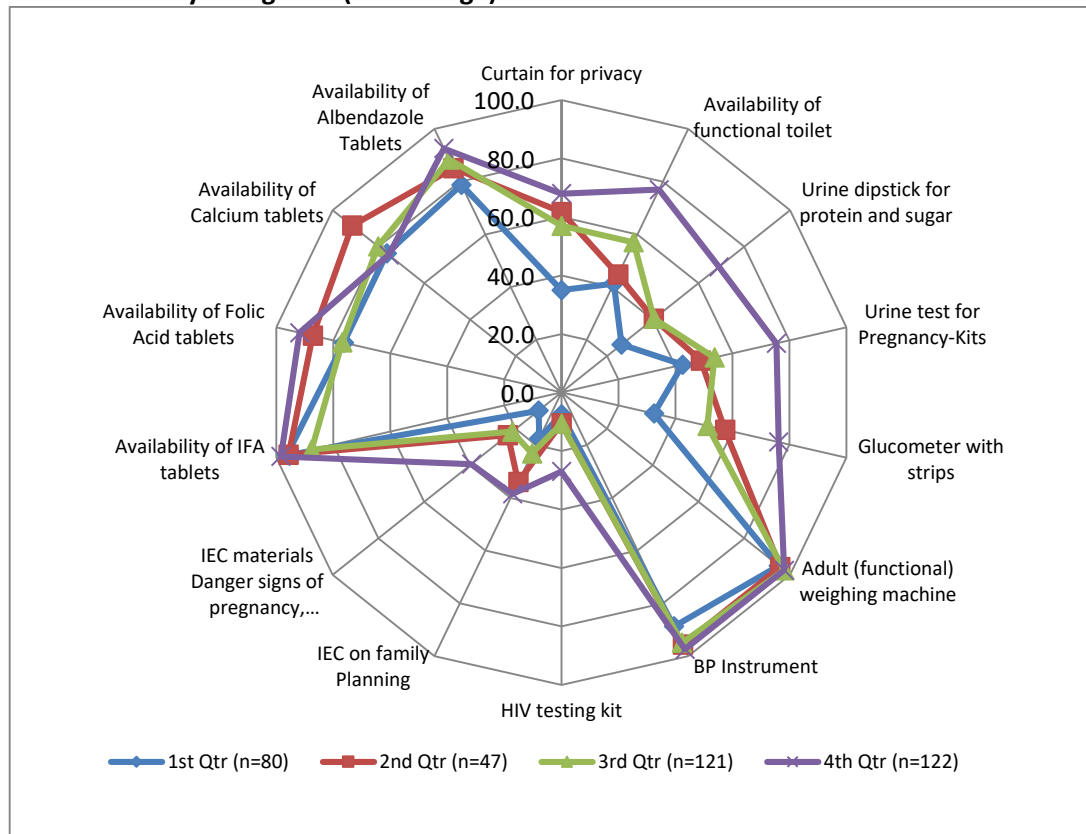
**Figure 2: Pre-site preparation (Percentage)**



Regarding the availability of equipment and supplements, in Q1, the availability of curtains for privacy was at 35.0%, then increased to 61.7% in Q2 with a slight decline to 57.0% in Q3, and peaking at 68.0% in Q4. Availability of functional toilets started at 41.3% in Q1 and gradually increased to 44.7%, 57.0%, and 77.0% in the subsequent quarters. Availability of urine dipsticks for protein and sugar began at 26.3% in Q1 and showed a steady upward trend, reaching 68.9% in Q4. Urine test kits for pregnancy showed an increasing trend from 42.5% in Q1 to 75.4% in Q4. Glucometers with strips showed an increase from 32.5% in Q1 to 57.4% in Q2, a slight decline to 51.2% in Q3, and then rose to 76.2% in Q4. Adult (functional) weighing machines and blood pressure (BP) measuring instruments maintained high availability throughout, with 95.0% and 88.8% respectively in Q1, and both at 97.5% by Q4. Availability of HIV testing kits

started at 7.5% in Q1 and increased to 27.0% in Q4. For IEC (Information Education Communication) on family planning, there was a growth from 17.5% in Q1 to 34.0% in Q2, dipping to 23.1% in Q3 and then increasing to 38.5% in Q4. IEC materials on pregnancy danger signs and anaemia increased from 10.0% in Q1 to 23.4%, 21.5%, and 39.3% in the subsequent quarters. Availability of iron and folic Acid (IFA) tablets started high at 96.3%, maintaining consistency at 95.7%, and 87.6%, and peaking at 98.4% in Q1, Q2, Q3, and Q4, respectively. Availability of folic acid tablets started at 76.3% in Q1, increased to 87.2% in Q2, then dipped to 76.9% in Q3, and finally increased to 91.8% in Q4. Calcium tablet availability peaked at 91.5% in Q2 but showed some fluctuation, ending at 75.4% in Q4. Albendazole tablet availability grew steadily from 78.8% in Q1 to 92.6% in Q4. [Figure 3].

**Figure 3: Availability of logistics (Percentage)**



Regarding service delivery, the measurement of height showed an increase from 58.8% in Q1 to 88.5% in Q4, abdominal checkups improved from 2.5% in Q1 to 42.6% in Q4, counselling initiatives regarding family planning (FP), antenatal care (ANC), maternal, infant, and

young child feeding nutrition (MIYCN), etc began at 37.5% and rose to 83.6% in Q4 and utilization of counselling tools or IEC materials showed an increase from 12.5% in Q1 to 71.3% in Q4. Screening for symptoms also saw growth. [Table 1]

**Table 1: Quarter wise comparison of service delivery**

Variables		1st Qtr (n=80)		2nd Qtr (n=47)		3rd Qtr (n=121)		4th Qtr (n=122)	
		N	%	N	%	N	%	N	%
<b>Service delivery</b>	Measurement of Height	47	58.8	35	74.5	97	80.2	108	88.5
	Measurement of Weight	75	93.8	45	95.7	115	95.0	113	92.6
<b>Lab Test</b>	Haemoglobin estimation	37	46.3	29	61.7	64	52.9	92	75.4
	Urine test for Sugar and Albumin	23	28.8	15	31.9	39	32.2	61	50.0
<b>General and systemic examination</b>	Blood Pressure check	69	86.3	45	95.7	105	86.8	115	94.3
	Abdominal checkup done	2	2.5	2	4.3	42	34.7	52	42.6
<b>Counselling</b>	FP, ANC care, MIYCN, etc	30	37.5	23	48.9	69	57.0	102	83.6
	Are any counselling tools/IEC used	10	12.5	6	12.8	27	22.3	87	71.3
<b>Vaccination</b>	Tetanus Toxoid	71	88.8	46	97.9	109	90.1	113	92.6
<b>Symptoms screening</b>	Fever	31	38.8	23	48.9	70	57.9	112	91.8
	Cough	18	22.5	18	38.3	66	54.5	106	86.9
	Morning sickness	23	28.8	15	31.9	54	44.6	81	66.4
	Swelling in legs or face	15	18.8	15	31.9	62	51.2	93	76.2

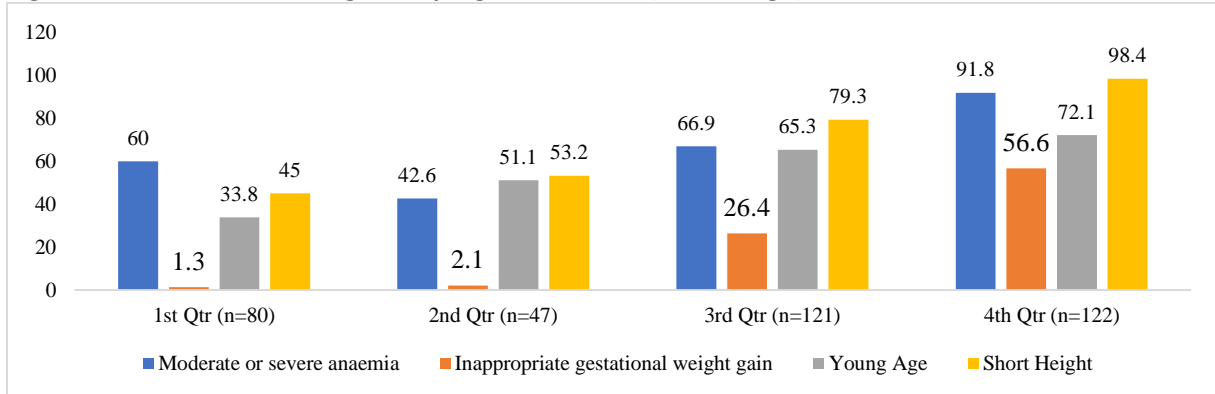
Knowledge of ANM regarding the identification of high-risk pregnancy, an

increasing trend from Q1 to Q4 was seen in responses like moderate or severe anaemia (7-

9.9 gm/dL moderate; < 7gm/dL severe) (60% to 91.8%), inappropriate gestational weight gain (<1kg per month or >3kg per month after 1st trimester) (1.3% to 56.6%), young age, <20

years (33.8% to 72.1%) & short height < 145cm (45% to 98.4%). [Figure 4]

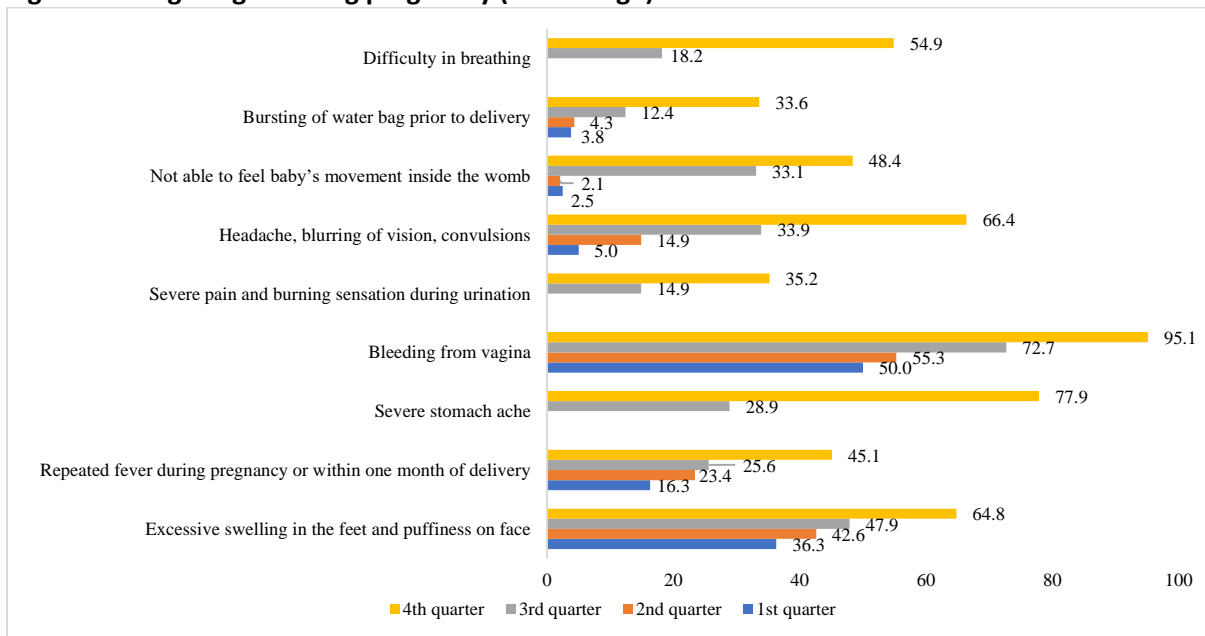
**Figure 4: Identification of high-risk pregnant women (Percentage)**



While asking about danger signs, an increasing trend of knowledge was noticed from Q1 to Q4 in responses like excessive swelling in feet and puffiness on the face (36.3% to 64.8%), repeated fever during pregnancy or within one month of delivery (16.3% to 45.1%), severe stomach ache (0.0% to 77.9%), bleeding from the vagina (50.0% to 95.1%), severe pain and

burning sensation during urination (0.0% to 35.2%), headache, blurring of vision, convulsions (5.0% to 66.4%), not able to feel baby's movement inside the womb (2.5% to 48.4%), bursting of water bag before delivery (3.8% to 33.6%) and difficulty in breathing (0.0% to 54.9%). [Figure 5].

**Figure 5: Danger signs during pregnancy (Percentage)**



From Q1 to Q4, the major treatment for severe anaemia as responded by ANMs showed an increasing trend: the correct dose of IFA supplements increased from 36.3% to 54.1%, and referrals to higher health facilities rose from 12.5% to 36.1%. An increasing trend was

also noticed regarding the correct dosage of calcium tablets (25.0% to 61.5%). Knowledge regarding checking for co-existence of other medical illnesses, an increasing trend was noticed. [Table 2]

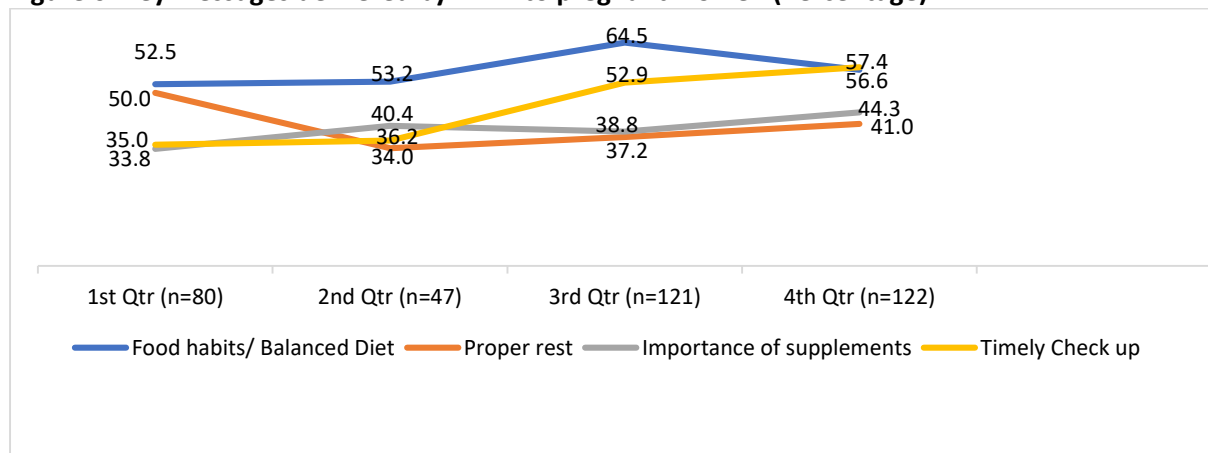
**Table 2: Quarter wise comparison of knowledge of ANM on health problems**

Variables		1st Qtr (n=80)		2nd Qtr (n=47)		3rd Qtr (n=121)		4th Qtr (n=122)	
		N	%	N	%	N	%	N	%
<b>Treatment for severe anaemia</b>	Increase the doses of IFA supplements	29	36.3	21	44.7	53	43.8	66	54.1
	Referred to higher health facility	10	12.5	13	27.7	33	27.3	44	36.1
<b>Calcium consumption</b>	Twice daily	20	25	19	40.4	72	60	75	61.5
<b>Cut off GDM</b>	RBS ≥ 140 mg/dL	55	68.8	33	70.2	77	63.6	79	64.8
<b>Check for co-existence of the following medical illnesses</b>	Hypertensive disorders of pregnancy	37	46.3	31	66	102	84.3	114	93.4
	Gestational diabetes mellitus	30	37.5	21	44.7	71	58.7	93	76.2
	HIV/ AIDS	25	31.3	21	44.7	50	41.3	68	55.7
	Heartburn/ nausea/ vomiting	9	11.3	1	2.1	30	24.8	63	51.6
	Constipation	10	12.5	11	23.4	29	24	44	36.1

Regarding key messages delivered by ANM to pregnant women during counselling, food habits/ balanced diet showed steady progress from 52.5% in Q1 to 56.6% in Q4, peaking at 64.5% in Q3. An increasing trend was noticed in responses like timely check-ups (35.0% to

57.4%) and the importance of supplements that are provided during pregnancy (33.8% to 44.3%). However, regarding proper rest, it decreased from 50.0% in Q1 to 41.0% in Q4 with the highest dip in Q2, 34.0%. [Figure 6]

**Figure 6: Key messages delivered by ANM to pregnant women (Percentage)**



**DISCUSSION**

To attain sustainable development goals (SDGs) and to provide holistic health and development services, Govt. of India has launched several flagship programs namely Ayushman Bharat, Prime Minister's Overarching Scheme for Holistic Nutrition (POSHAN) Abhiyaan, Swachh Bharat Mission, Home Based New Born Care (HBNC), Home Based Care for Young Child (HBYC), Pradhan Mantri Surakshit Matritva Abhiyan (PMSMA), Anaemia Mukt Bharat, Mission Parivar Vikas, PMMVY etc where VHSND can act as a

potential platform to increase reach of these integrated services to the community.(1)

In Assam, with 26,393 villages as per the 2011 census, the VHSND offers a unique opportunity to access a range of health, nutrition, and sanitation services, especially considering the high MMR and IMR that require attention.(11) Maternal health indicators such as 63.8% of mothers received an ANC in 1st trimester and 50.7% of mothers had at least 4 ANCs, 54.2% of pregnant women of age 15-49 years are anaemic (<11.0 g/dl) in Assam need urgent

attention to address early identification and timely intervention. Similarly, child health indicators such as 71.8% of children of the age group 12-23 months were fully vaccinated, 69.1% of children under 5 years of age with diarrhoea received oral rehydration salts (ORS), 49.1% of children received breastfeeding within one hour of birth and 63.6% children under age 6 months were exclusively breastfed in Assam.(7) This indicates the need to improve service delivery.

In the current study, consistent rise in availability of VHSND micro plans, essential forms like JSY and PMMVY, and vital equipment such as glucometers and weighing machines, highlights the enhanced planning and infrastructure support over time. However, there were noticeable fluctuations, especially in supply logistics like MCP cards and IEC materials suggesting uninterrupted supply chain management to ensure consistent service delivery. Similar study conducted by Saxena V *et al.* observed unavailability of BP machines, weighing machines for adults, curtains, hemoglobinometers, and kits for urine examination at most of the VHSND sites.(3,12) Another study done in Assam observed banners and posters were displayed in 43.4% of sessions and weighing machine was available in 87% sessions.(5) Non-linear trend observed in Q3 regarding pre-site preparation and resource availability can be attributed to delays in program implementation (supply chain), seasonal factors (festivals and monsoon), non-availability of health workers due to other training/engagement, and challenges in timely resource allocation.

Regarding service delivery, the measurement of height and weight, as well as haemoglobin estimation, demonstrated positive trends. A notable improvement in the coverage of symptom screenings, along with consistently high vaccination rates, reflects a proactive stand towards preventive healthcare. There is a need to sustain the improving trend through good supply chain management and supportive supervision. Blood pressure measurement was done in most sessions

however abdominal check-up of pregnant ladies was done in < 50%. Keeping in view the highest maternal mortality in Assam mainly due to post-partum haemorrhage, anaemia, and pregnancy-induced hypertension; there is a need to have BP measurements for all pregnant women correctly and regularly for detection of pre-eclampsia and prevention of eclampsia and thorough clinical examination of each pregnant lady coming for ANC. Kotecha *et al.* in their study mentioned similar findings regarding BP measurement.(13) Saxena V *et al.* found that ANC services like BP measurement, weighing, abdominal examination, haemoglobin testing, etc were not provided at most of the VHSND sites.(3)

Consistent improvement in ANM's ability to identify high-risk pregnancies and detect danger signs underscores the effectiveness of their training initiatives, monitoring and supportive supervision, highlighting the significance of timely interventions for enhanced maternal and child health outcomes. While ANMs emphasized crucial aspects such as dietary choices, regular check-ups, and the importance of supplements adequately, counselling for proper rest for pregnant ladies need further strengthening. Another study done in Dibrugarh found nutritional advice provided in 62.3% of sessions after capacity building of FLWs.(5) This gives evidence that capacity building of FLWs has the potential to improve service delivery. Therefore, regular capacity-building programs along with supportive supervision for evidence-based practices should be implemented, especially during this post-COVID situation to restore functionality. Our study suggested for an uninterrupted supply chain for equipment, medicines, and other logistics required to conduct VHSND sessions. Routine laboratory investigation services should be strengthened further for the screening of pregnant ladies. Micro-plan should include strategic IEC/BCC activities with holistic implementation for better utilization of services. Counselling given by FLWs during VHSND sessions should also be improved to create proper awareness and utilization of nutrition and family planning services. Post COVID-19 pandemic services in

Assam can be re-energized with proper planning, monitoring, and effective supportive supervision. Future implementation research can be planned to address the bottleneck and establish a robust mechanism of VHSND implementation in Assam.

### CONCLUSION

Notable progress in logistical readiness and ANM knowledge could be documented in post-pandemic period. Service delivery and ANM counselling efforts have also seen improvement over time. Uninterrupted supply chain management, continued supportive supervision, convergence, and community engagement are essential for sustainability.

### RECOMMENDATION

Supportive supervision needs to be continued with uninterrupted supply chain management and timely action based on findings and feedback at different levels.

### LIMITATION OF THE STUDY

The selection of sessions for monitoring was not random, as it was influenced by operational feasibility and administrative decisions. Therefore, the same set of ANMs could not be assessed in consecutive sessions.

### RELEVANCE OF THE STUDY

VHSND has huge potential to strengthen the routine system during the post-pandemic period with hands-on supportive supervision and mentoring of frontline workers.

### AUTHORS CONTRIBUTION

TGM did planning, implementation of the project. TGM and MS worked for manuscript. SDB did statistical analysis and PR edited the manuscript and helped in submission.

### FINANCIAL SUPPORT AND SPONSORSHIP

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### CONFLICT OF INTEREST

There are no conflicts of interest.

### DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/ AI assisted technologies in the writing process.

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