



Original Article

Process Evaluation of MAMTA Day Services in Primary Health Centres of Surendranagar District, Gujarat: A Cross-Sectional Study

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ABSTRACT

Background: Village Health and Nutrition Day (VHND), known as MAMTA Day in Gujarat, is a key initiative under the National Health Mission aimed at delivering integrated maternal and child health services at the community level. Periodic process evaluation is essential to assess the quality of implementation and identify gaps in service delivery.

Objectives: To assess the implementation of maternal and child health services provided during MAMTA Day sessions and compare the performance of central and peripheral Primary Health Centres (PHCs) in Surendranagar district, Gujarat.

Methods: A community-based cross-sectional study was conducted in Surendranagar district, Gujarat, from January 2021 to December 2022. Twenty PHCs (10 central and 10 peripheral) were selected using simple random sampling, and one MAMTA Day session from each PHC was observed. Data were collected through personal interviews with Medical Officers, Auxiliary Nurse Midwives (ANMs), and Multi-Purpose Health Workers (MPHWs) using the Ministry of Health and Family Welfare PHC-level monitoring checklist. The study tool demonstrated excellent reliability (Cronbach's alpha = 0.88) and content validity (Content Validity Index = 0.989). Data were analyzed using SPSS version 26. Descriptive statistics, Chi-square test, and Independent Samples t-test were applied, with statistical significance set at $p < 0.05$.

Results: Most MAMTA Day sessions (95%) were conducted in government buildings, while 90% of PHCs had uninterrupted water supply. Functional labour rooms were available in only 50% of PHCs, and deep burial pits were present in 25%. Essential equipment, vaccines, pregnancy testing kits, IFA tablets, ORS packets, and Vitamin A syrup were available in the majority of PHCs. Central PHCs demonstrated significantly higher mean scores than peripheral PHCs for infrastructure (8.4 ± 1.28 vs. 7.1 ± 1.57 ; $p < 0.05$), equipment (9.1 ± 1.22 vs. 7.8 ± 1.40 ; $p < 0.0001$), record maintenance (13.4 ± 1.28 vs. 12.1 ± 1.57 ; $p < 0.0001$), and IEC activities (8.6 ± 0.28 vs. 7.2 ± 0.08 ; $p < 0.05$). Gaps were identified in the availability of emergency obstetric drugs, contraceptives, updated microplans, and biomedical waste disposal facilities.

Conclusion Central PHCs performed significantly better than peripheral PHCs across most domains of MAMTA Day implementation. Strengthening infrastructure, ensuring uninterrupted availability of essential drugs and equipment, improving record maintenance, and enhancing staff training at peripheral PHCs are necessary to improve the quality of maternal and child health services delivered through MAMTA Day.

Keywords: MAMTA Day, Village Health and Nutrition Day, Process Evaluation

INTRODUCTION

In 2007, Government of India established VHNDs (Village Health and Nutrition Days) to provide first-contact primary health care to rural areas to improve maternal and child services at grassroot. [1] Maternal mortality ratio of INDIA in 2016-18, As per Sample Registration data is 113/1,00,000 live birth, declining by 17 point from 130/1,00,000 live birth.[2] while in Gujarat Maternal mortality ratio in 2014-16, As per Sample Registration data is 91 per 1,00,000 live birth declined from 112 per 1,00,000 live birth 2011-13.[2] This declining of maternal and infant mortality rate is due to VHND which conceptualized under National health mission (NHM).[3] VHND is seen as platform for interfacing between community & health system & if monitoring of these were not done then its lost opportunity to deliver quality RMNCH+A services to the community. [8] VHNDs are based on three important principles: 1. Comprehensiveness and Integrated Service Delivery: VHNDs bring to- gather a large package of important health, nutrition, and sanitation services offered in a single location. 2. Regularly and Geographic proximity: the VHND is organized once per month in each village to facilitate regular service contact and ensure that rural residents do not have to incur costs related to time and travel to avail health services; 3. Financial Accessibility: all services offered at the VHND are provided free of charge. [1,4] Core VHND services include those for reproductive, maternal, new-born and child health, tuberculosis and HIV treatment and control, and counselling for communicable disease prevention and health promotion.[1] In Gujarat, Village Health and Nutrition Day is celebrated as Mamta day at every Monday in the Primary Health Centre and every Wednesday in Subcentre to provide Preventive, Promotive and Curative Services. There are four components of Mamta Abhiyan: 1) Mamta Divas is a fix day, fix site, preventive, promotive health care service centre for mother and child population. Services provided through this session including growth health check-up, immunization, primary treatment, and referral and counselling services. 2) MAMTA Mulakat is a home visit on 1st, 3rd and 7th day after delivery for preventive promotive health care. [5] 3) Mamta Sandarbsh Service is the development and mapping of fix day, fix site referral services for Antenatal care (ANC), Postnatal care (PNC), Essential Newborn Care (ENBC), and reproductive tract infection (RTI). [5] 4) Mamta Nondh, records and reports of RCH services are important to monitor coverage and quality of RCH services. It is done through ICDS Register and Register [4,5]. All health monitoring and health service record are maintained on Mamta Card given to mother. [5] Process evaluation aims to study the realities of program implementation [6] and to understand and measure to what extent an intervention is being implemented as intended, and to shed light on some important components of Health programme. [10]

Aim: To assess Maternal and Child health services on “MAMTA day” in Central and Peripheral PHCS.

METHODOLOGY:

A community based Cross Sectional Study was conducted in Surendranagar district during January 2021 to December 2022. From each 10 taluka 2 PHCs (One central + One Periphery = Total 20 PHCs) was selected by simple random sampling and Mamta day sessions from all the selected PHCS were observed on the day of visit. All the Medical Officer, ANM, MPHW of the selected PHCs who were present during the visit were included in the study. Data Collection Method was Personal Interview of the Medical Officer, ANM, MPHW. The data was collected through Primary Health Center Level Monitoring Checklist published by Ministry of Health and Family Welfare.

The validation of data collection tool was carried out by,

- 1) Pilot testing
- 2) The Cronbach's coefficient alpha was also calculated to establish the reliability & internal consistency of the data collection tool. The value of the Cronbach's Alpha between 0.7 to 1 was considered as acceptable to excellent internal consistency. The Cronbach's Alpha of data collection tool of this study was 0.88.
- 3) Content Validity of the data collection tool was assessed with the help of Content Validity Index (CVI), where the set of questionnaires was validated by the six subject expert and the I-CVI value of 0.83 or more was considered as acceptable level of content validity of items. The I-CVI score of current study was 0.989.

Process Evaluation of PHC:

Score was generated for each component of PHC and mean score was generated for

- Infrastructure
- Essential medicine and supply
- Services
- IEC materials
- Record Maintenance

Table 1: Scoring of PHC for the Evaluation of MAMTA day on basis of key indicators

Sociodemographic profile of ANM	Score		
	0	1	2
Education of ANM	Below secondary education	Secondary education	Higher Secondary Education
Work experience of ANM	0-5	5-10	>10

	years	years	years
Skills of ANM	Poor	Average	Good
Public Services Monitoring Tool			
Number of VHND held in the last 6 months	< 4	4 to 6	> 6
Number of Estimated pregnancies	< 30	30 to 40	> 40
Number of women registered in the first trimester	< 25	25 to 35	> 35
Number of high-risk pregnancies detected	< 4	4 to 5	> 5
Were all children vaccinated in appropriate age?	All Unvaccinated	Partial Unvaccinated	All Vaccinated
Number of children fully Immunized	< 25	25 to 30	> 30
Number of low-Birth-weight Babies	> 5	3 to 5	up to 3
No. of pregnant women given IFA	< 25	25 to 35	> 35
Availability of Essential Equipment	Not Available	Some Available	All available
Essential Drugs	Not Available	Some Available	All available
Are village health register, birth-death registers, and cash book of VHSNC maintained?	Not Available	Some Available	All available
Training of the Members of VHSNC			
Medical officer Training	No training Taken	IMNCI or RI training taken	IMNCI & RI (Both taken)
ANM Training	No training Taken	IMNCI or RI training taken	IMNCI & RI (Both taken)
MPHW Training	No training Taken	IMNCI or RI training taken	IMNCI & RI (Both taken)

All the collected data was entered in MS Excel 2019 and was analysed in SPSS version 26. Frequencies, percentages, and means were calculated for variables like healthcare utilization and socio-demographic profiles. Measures of central tendency and dispersion were applied for continuous data.

Chi-Square Tests used to analyze associations between categorical variables like geographical location (central vs. peripheral PHCs) and performance scores. Independent Samples T-Test, Compared mean scores of central and peripheral PHCs for service quality and patient satisfaction. Data were entered into Microsoft Excel 2019 and analyzed using SPSS (version 26). Tests were conducted at a 95% confidence level.

RESULTS:

Physical Infrastructure of PHC

As per Physical Infrastructure of the PHCs, it was observed that majority (95%, n=19) of the MAMTA Divas Sessions were held in Government Building. It was also observed that out of the total 20 PHCs, most of the buildings were found in good condition (80%, n=16) with 24x7 water supply (90%, n=18). It was found that only half of the centres (55%, n=11) were equipped with facility of functional power back up for electricity. Although facility of residential quarter was found in 55% (n=11) of PHCs, only 8 ANMs were utilizing the quarters. The facility of functional labour room was available in only 50% (n=10) of PHCs and out of them majority (90%, n=9) were having functional and clean toilet attached with labour room. An essential part of the PHC that is functional New Born Care Corner consist of radiant warmer and neonatal ambu bag was found at all of PHCs which had functional labour room (100%, n=10). General cleanliness was found satisfactory in most of the facilities (85%, n=17). It was observed that around 3/4th of the PHCs (75%, n=15) had availability of complaint/suggestion box and only 1/4th of the PHCs (25%, n=5) have availability of deep burial pit for Waste Management.

Availability of Equipment in PHCs:

The availability of Equipment's at the session site is presented in the table 2, which shows that Equipment for haemoglobin estimation was found at every PHCs (100%, n=20). It was observed that majority of the PHCs were equipped with the basic equipment's like Blood sugar testing kits (95%, n=19), working BP Instrument and Stethoscope (95%, n=19), Infant/New born weighing machine (85%, n=17) & Needles and hub cutters (95%, n=19). Only half of the PHCs (50%, n=10) were facilitated with the full set of delivery equipment's and only 1/4th of the session sites (35%, n=7) was having Neonatal ambu bag. It was found that for the Bio Medical waste segregation, majority of the PHCs (90%, n=18) were utilizing Biomedical Waste storage colour coded bags at the time of visit. Adult weighing machines was available in around 3/4th of the PHCs (75%, n=15) while more than 2/3rd (60%, n=12) of the centres had availability of RBSK pictorial kit.

Availability of Essential Supplies and Essential Medicine in the PHC

Almost all the PHCs (90%, n=18) had availability of Vaccine and Diluents, while all of them had availability of pregnancy kit (100%, n=20) in the centre at the time of visit. More than half (55%, n=11) of the centres were having urine albumin and sugar testing kit and only 1/3rd of PHCs (35%, n=7) had availability of Oral Contraceptives pills at time of visit.

The above table shows the availability of essential drugs at the session site like Vitamin A syrup, ORS packets, Antibiotics etc. Availability of drugs for common ailments e.g., PCM, anti-allergic drugs were found at all the PHCs (100%, n=20). Apart from that majority of PHCs were also found availability of IFA tablets (95%, n=19), IFA syrups with dispenser (90%, n=18) and Zinc tablets (90%, n=18). It was observed that only 1/4th of PHCs (25%, n=5) had inj. Magnesium Sulphate available at time of visit and only 30% (n=6) had inj. Oxytocin. It was found that more than 3/4th of the PHCs (80%, n=16) were having Misoprostol tablets.

Status of Record Maintenance at PHC

Status of Records/Registers maintained at PHCs at the time of visit it was seen that in majority of the PHCs, register/records like MCH register (80%, n=16), Delivery Register (80%, n=16), Stock register (85%, n=17), MCP cards (80%, n=16) Vaccine supply register (95%, n=19) and were available and maintained regularly. The other registers/records like VHND plan (75%, n=15) and VHSNC meeting minutes (75%, n=15) were also present and updated. But very few PHCs were having regular update of Eligible couple register (45%, n=9) & Updated Micro plan (5%, n=25).

Status of display of IEC Material at the PHCs

It was revealed that Immunization schedule was present at all the PHCs (100%, n=20) While other IECs material like Citizen charter (70%, n=14), Timings of the PHC (70%, n=14), Visit schedule of ANMs (75%, n=15), VHND plan (65%, n=13), JSSK (80%, n=16), and JSY (95%, n=19) entitlements, Other IEC material (85%, n=17) were also displayed in majority of PHCs. And only half of the PHCs (45%, n=9) were posted SBA protocol at their facility.

Table 2: Mean Scoring of PHCs by Location

Location of PHCs	Infrastructure	Equipment	Supply and Essential Medicine	Record maintained	IEC
Maximum score	12	10	15	12	10
	(Mean $\pm$ SD)				
Central PHCs	8.4 $\pm$ 1.28	9.1 $\pm$ 1.22	14.5 $\pm$ 0.58	13.4 $\pm$ 1.28	8.6 $\pm$ 0.28
Peripheral PHCs	7.1 $\pm$ 1.57	7.8 $\pm$ 1.40	23.8 $\pm$ 0.64	12.1 $\pm$ 1.57	7.2 $\pm$ 0.08
P value	<0.05	<0.0001	<0.05	<0.0001	<0.05

The evaluation of primary healthcare centers (PHCs) in terms of infrastructure, equipment, availability of critical drugs, record keeping, and Information, Education, and Communication (IEC) activities revealed significant disparities between central and peripheral PHCs. The highest scores for these parameters were 12, 10, 15, 12, and 10, respectively. Central PHCs did better in the majority of domains.

Central PHCs had a higher mean location score (8.4 $\pm$ 1.28) than peripheral PHCs (7.1 $\pm$ 1.57), indicating better geographic placement and accessibility. Central PHCs had higher infrastructure scores (9.1 $\pm$ 1.22) compared to peripheral PHCs (7.8 $\pm$ 1.40), indicating better facilities.

Central PHCs scored 14.5 $\pm$ 0.58, near the maximum, but peripheral PHCs had a much higher mean score of 23.8 $\pm$ 0.64. This disparity could imply a reporting error or different evaluation standards. Central PHCs had a slightly higher supply of essential drugs (13.4 $\pm$ 1.28) than peripheral ones (12.1 $\pm$ 1.57), indicating continuous availability in central locations. Central PHCs had better scores for record keeping and IEC activities (8.6 $\pm$ 0.28 and 7.2 $\pm$ 0.08).

The findings highlight the relative benefits of central PHCs in terms of overall infrastructure, accessibility, and operational efficiency.

DISCUSSION:

In the present study, majority (95%) of the MAMTA divas sessions were held in government buildings and similar findings were noted in other studies like Mehta K et al (100%)¹⁰ and Kotecha I et al (93%).¹¹

A study conducted in Nellore district, Andhra Pradesh found that 100% of PHCs operated from their designated government buildings, which is consistent with our findings where 95% of MAMTA Divas sessions were held in government buildings.¹² This suggests a general trend toward PHCs having designated facilities. However, only 53.3% of their PHCs had all-weather road access, indicating that infrastructure accessibility remains a significant concern. Regarding basic amenities, the study in Nellore reported that all PHCs had electricity and water supply, but only 66.7% had functional toilets with adequate water. This closely aligns with present study findings, where 90% of PHCs had 24 $\times$ 7 water supply. These deficiencies highlight the need for comprehensive infrastructure development to support essential health services.

In the present study, it was found that half (50%) of the PHCs were having functional labour room.

The reason found for non-availability of functional labour room was lack of trained staff for delivery and their frequent deputation to the higher centre.

In the Present Study, only 1/4th PHCs had availability of deep burial pit. The reason for same could be privatization by E.coli private limited.

A study conducted by Gandhi S et al noted incorrect methods of waste collection for disinfection and disposal. Present study revealed that majority PHCs had working BP instruments and stethoscopes (90%). Somewhat higher results were noted by a study done by Kotecha I et al (96.7%).¹¹

In the Present Study, 3/4th (75%) PHCs had adult weighing machines. Higher results were noted in other studies Kotecha I et al (100%)¹¹ and Mehta et al (89.4%)¹⁰. Most of the PHCs (95%) had availability of needles and hub cutters similar to other study (89.4%). Majority PHCs had availability of Vaccine and Diluents and similar finding was noted in studies conducted by Kotecha I et al (100%)¹¹ and Mehta K et al (94%).¹⁰

Availability of Oral Contraceptives pills was found low (35%) and none of the PHCs had Emergency Contraceptive Pills at the time of visit. Kotecha I et al. noted same result where no contraceptives were found at any session.¹¹

Vitamin A syrup, ORS packets, Antibiotics and drugs for common ailments e.g. PCM, anti-allergic drugs were present at all the PHCs (100%). Majority of PHCs were had availability of IFA tablets (95%), IFA syrups with dispenser (90%) and zinc tablets (90%).

Kotecha I et al found that IFA tablets were provided to the pregnant mothers at majority of sessions site (96.7%).¹¹ Mehta K et al found that IFA tablets were in 84.2% of session site, while basic medicine were available at all session site. In the present study, 1/4th of total PHCs had updated micro plan available at the time of visit.¹⁰ However, higher results were noted in studies conducted by Banerjee S (78%) and Kotecha I et al (93%). Mehta K et al found in their study that All the Session was held as per Micro plan. In the Present Study, more than 3/4th session sites had availability of blank MCP. However, Mehta K et al noted that Blank MCP cards were available in all PHCs.¹⁰ Due list of beneficiaries found at only 3/5th of the total session site similar to other study. About 85% of session site have IEC material related to Health Education in present study and similar result was noted in study done by Kotecha I et al (80%). Banerjee S et al found that health education materials were displayed in all the sessions organised in AWCs, but not in any session organised in other settings. Mehta K et al found that Mamta Day banners were displayed at most of the (89.4%) session sites.¹⁰

CONCLUSION:

Central PHCs generally performed better than peripheral PHCs in terms of infrastructure, record keeping, and MAMTA Day performance, whereas peripheral PHCs face challenges such as inadequate infrastructure and a lower level of skilled personnel.

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