

Mentoring of the Primary Health Centers by Obstetricians: A Novel Public Health Program from Tamil Nadu, India

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ABSTRACT

Introduction and objectives: The healthcare system of India, being publicly funded relies on the numerous health programs run by the government. Maternal health is benefitted from many such programs. One such innovation by the National Health Mission, Tamil Nadu is the “mentoring” program, where obstetricians from the first referral units (FRU) mentor the service providers at the primary health care level. Our study aims to examine the efficacy of the program.

Materials and methods: We conducted a prospective, mixed-methods, longitudinal study at Government Kamaraj Hospital, Chidambaram, Tamil Nadu. Two blocks of the taluk and their nine primary health centers (PHC) were included in the study. The two-mentor obstetricians gave virtual mentoring over WhatsApp groups and real-time mentoring by organizing camps twice a month and collecting the data.

Results and discussion: A total of 1,054 antenatal women-kilometers per week were saved due to the reduction of travel from PHC to FRU. Reduction in the waiting time at the outpatient department (OPD) of FRU from 74 ± 31 minutes to 52 ± 19 minutes. Increase in the proportion of elective surgeries by 53%. Reduction in the rate of re-referrals by 5.8 times. The questionnaire-based satisfaction score showed 82% of the PHC team were extremely satisfied with the mentoring program.

Conclusion: Mentoring of the primary health care providers by the obstetricians of the FRU is a novel and innovative concept by the National Health Mission, Tamil Nadu, and has helped bridge the gap between pregnant mothers and obstetricians in the resource-limited setting of the rural public sector.

Keywords: Antenatal care, First referral unit, Maternal health, Mentoring, Primary health center, Public health program, Rural health, Telemedicine.

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INTRODUCTION

Maternal and child health of a nation reflects on the strength and integrity of its healthcare system.¹ Maternal mortality rate is considered to be one of the most sensitive indicators of a country's overall health.² The Government of India (GOI) has more than 50 schemes that either directly or indirectly aim to optimize maternal and child health.^{3,4} The individual states in India also have their own unique programs to enhance the maternity services provided.

The “mentoring” concept of management of high-risk antenatal mothers during the COVID-19 pandemic was introduced by the National Health Mission Tamil Nadu (<https://nhm.tn.gov.in/en>). It was launched between November 2019 and December 2019. The initiative involved the recruitment of obstetricians working in the Comprehensive Emergency Obstetric and Neonatal Care centers (CEmONC) at the sub-district and district hospitals run by the state, and each one of them were roped in to mentor one block in their district, which includes the Block PHC and its additional PHCs.

The field workers from the PHC along with the nurses, midwives, and medical officers will share the details of the health parameters of the pregnant women in their area, with their respective mentor obstetricians.

The task assigned to the mentor obstetricians was 2-folded. First, as real-time mentoring, they had to visit the block PHC and the additional PHCs assigned to them once a month, and conduct a high-risk pregnancy camp to identify and stratify pregnant women based on their medical risks. They also supervised and mentored the follow-up and treatment of pregnant women by the service providers in the PHC.

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Second, existing official WhatsApp groups of each block PHC were expanded to include the mentor OG where virtual mentoring could continue. The line list of all pregnant women was circulated with the mentor obstetricians and they formulated a tentative birth plan opined on the date and place of confinement. This was decided based on the medical and obstetric risk stratification to ensure unnecessary referrals and re-referrals were reduced and the whole team knew where the mother is supposed to deliver – whether in the primary health center or in the FRU or at the tertiary care teaching hospital.

Virtual mentoring also included weekly mentoring of birth planning for all mothers who had their expected date of delivery in that week. The PHC medical officers, the staff nurses, and the village health nurses sought mentor opinions virtually over WhatsApp when faced with a high-risk pregnancy.

The present study aims to assess the benefits of the mentoring program launched by the state of Tamil Nadu, India.

OBJECTIVES

The primary objective was to assess the following finite, measurable end points in the improvement of the quality of the maternity services provided:

- Antenatal women-kilometers saved due to reduction of travel from PHC to FRU.
- Reduction in the waiting time at the OPD of FRU.
- Increase in the proportion of elective surgeries.
- Reduction in the rate of re-referrals.
- The satisfaction score among the mentored PHC teams using a 5-point anonymous web-based Likert scale questionnaire.

The secondary objective was to assess the following data points to pave way for the future research:

- Focused group interviews with the PHC team.
- Identifying knowledge gaps at the primary care level and devising programs to address them.

MATERIALS AND METHODS

We conducted a prospective longitudinal mixed-methods study in the Chidambaram Taluk of Cuddalore District of Tamil Nadu, India. The FRU of the taluk was The Government Kamaraj Hospital which caters to a population of six lakhs.

Keerapalayam and Sivakkam were the two blocks, which had a total of nine PHCs, were chosen for the study. We were the respective mentor obstetricians and we collected that data points prospectively for 2 years from May 2020 to May 2022.

We used the existing WhatsApp groups of the district and of the individual PHC groups to conduct virtual mentoring and disburse expert opinions to the field workers. We streamlined the referrals and made birth planning for each and every mother in the block. We also launched continuing medical education programs for the service providers to fill in the knowledge lacunae on standard operating protocols.

We also provided the following additional mentoring services:

- Initiation and dose adjustment of thyroxine (ATA 2020).
- Initiation and dose adjustment of Insulin (Sweet Success Guideline 2015).
- Anemia management [GOI Guidelines and the Federation of Obstetrician and Gynecologists of India Good Clinical Practice Recommendations (FOGSI GCPR)].
- Scheduling dates for elective cesarean section.
- Dating of pregnancy.
- Opinions on obstetric ultrasonograms.
- Treatment of side effects caused during the usage of contraceptive methods

Any additional data required from the previous 2 years, 2018 and 2019, to be used for comparison with the present data was obtained from the medical records department of the FRU.

The data was analyzed using Statistical Package for the Social Sciences (SPSS), version 26, and presented as descriptive statistics.

RESULTS AND DISCUSSION

Antenatal Women-kilometers Saved

A common issue with rural public sector hospitals is that pregnant mothers have to commute a long distance to reach the FRU to obtain a specialist opinion (the obstetrician in this case). However, with the advent of mentoring, all the PHC medical officer had to do was WhatsApp the details of the pregnant woman and the mentor obstetrician would give the needed opinion over the phone, which ranged from simple reassurance to emergency referral to the FRU.

This led to a drastic reduction in the antenatal kilometers traveled, which was calculated as the sum of the distance each pregnant woman would have had to travel if mentoring was unavailable to them in the comfort of their more easily accessible PHCs.

We calculated the distance from the PHCs in the mentored blocks to the Chidambaram CEmONC (FRU) and the geocodes were obtained using the google maps API (Fig. 1).

- Orathur to Chidambaram CEmONC: 16 km
- Vilagam to Chidambaram CEmONC: 17 km
- Palayamkottai to Chidambaram CEmONC: 36 km
- Kumaratchi to Chidambaram CEmONC: 17 km
- Vallampadugai to Chidambaram CEmONC: 8 km
- Elleri to Chidambaram CEmONC: 22 km
- Vandayar Iruppu to Chidambaram CEmONC: 22 km
- Chidambaram Urban PHC to Chidambaram CEmONC: 2 km

The average weekly antenatal kilometers saved was 1054 km per week (Fig. 2) and a total of 54808 km of travel of antenatal mothers was obviated by mentoring, annually. It was a boon during the COVID-19 pandemic as it curtailed the risk of exposure and also helped women with limited access to travel.

Reduction in Waiting Time at OPD of FRU

The mean pre-COVID-19 waiting time at the antenatal OPD was 74 minutes \pm 31 minutes. The mean post-COVID-19 waiting time at the antenatal OPD was 52 minutes \pm 19 minutes. Mentoring services provided to the PHC team reduced the OPD waiting time as it had a two-pronged benefit.

- Reduced need for opinions which can be obtained *via* the mentor OG group.
- Better planning of OPD and streamlining of antenatal mothers.

Apart from the reduction in the waiting time, we also observed decreased fluctuation in the OPD census as shown by the trendline of Figure 3. All days of the week started to have similar OPD census unlike the previous year, where Mondays were manically busy and Tuesdays/Fridays had significantly lesser crowd.

Increase in Proportion of Elective Surgeries

Planned surgeries are always preferred by both the operating team and the pregnant women. The elective repeat cesarean section rate increased by 4.8 times after the initiation of mentoring, from 14% in the prementoring era to 67% during the study period. Mentoring achieved this increase by improved coordination between the PHC team and the FRU, avoidance of dumping and over-crowding of scheduled cases on Mondays, and obtaining the investigations needed for preanesthetic work-up, well in advance. The number of days prior to surgery, in the hospital minimized from an average of 3.2 days to 1.4 days.

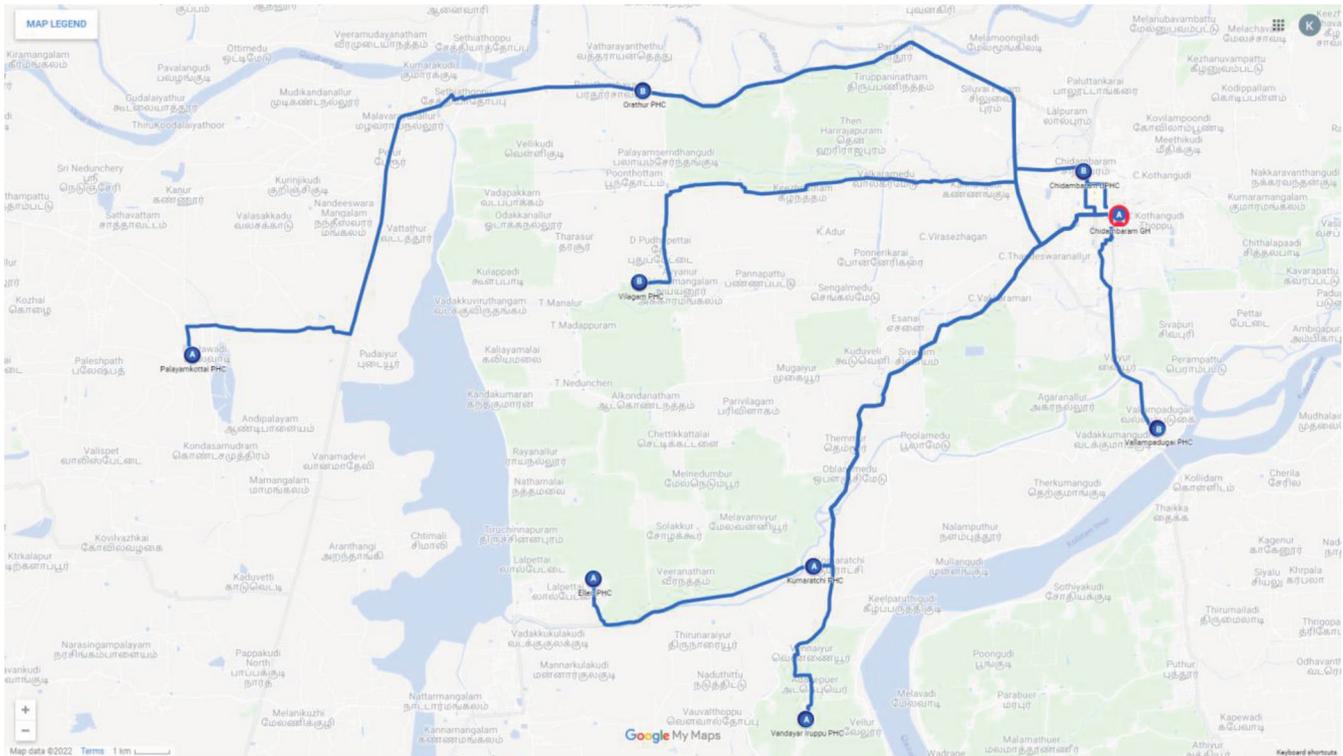


Fig. 1: Geocodes of the PHCs and the FRU – Antenatal kilometers saved

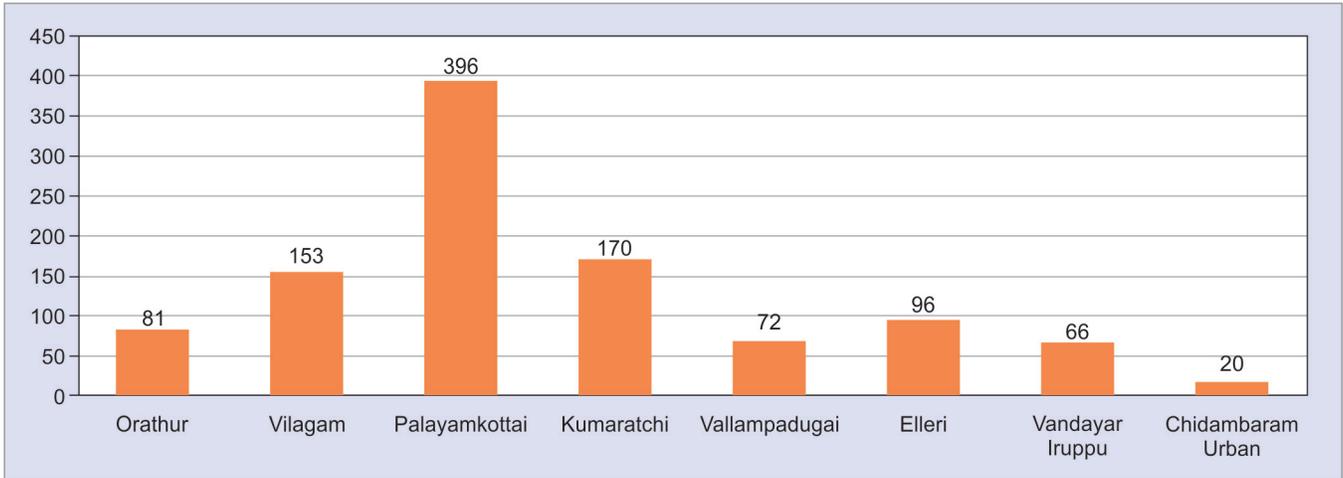


Fig. 2: Antenatal kilometers saved per week

Reduction in the Number of Re-referrals

We also were able to reduce and avoid unnecessary re-referrals (re-referral is when a pregnant woman referred to an FRU is again re-referred to the tertiary care center). From 121 re-referrals in the year 2018–2019, we reduced it to 21 during the study period. This was possible because mentoring involved birth planning to all women in the block by the mentor Obstetrician and women were stratified based on the risk factors and referred from PHCs directly to FRU or tertiary care as indicated.^{5–8}

Satisfaction Score among Mentored PHC Teams

We used a web-based, anonymous, 5-point Likert-scale-based survey and circulated it to the PHC team, regarding the satisfaction

of the mentoring services provided by the CEmONC obstetricians. A total of 82% of the PHC team was extremely satisfied with the mentoring provided, 16% were satisfied, and only 2% were neutral as shown in Figure 4.^{9–11}

Focused Group Interviews with the PHC Team

The focused group interviews we conducted with the medical officers of the PHC team, at quarterly intervals truly showcased the efficacy of the mentoring program. “Our knowledge on core concepts of obstetrics and GOI Guidelines has vastly increased” opined Orathur PHC Medical Officer (MO). “Travel time of patients and waiting in long queues to obtain specialist opinion is minimized,” said Vallampadugai PHC MO. “Patients get instant

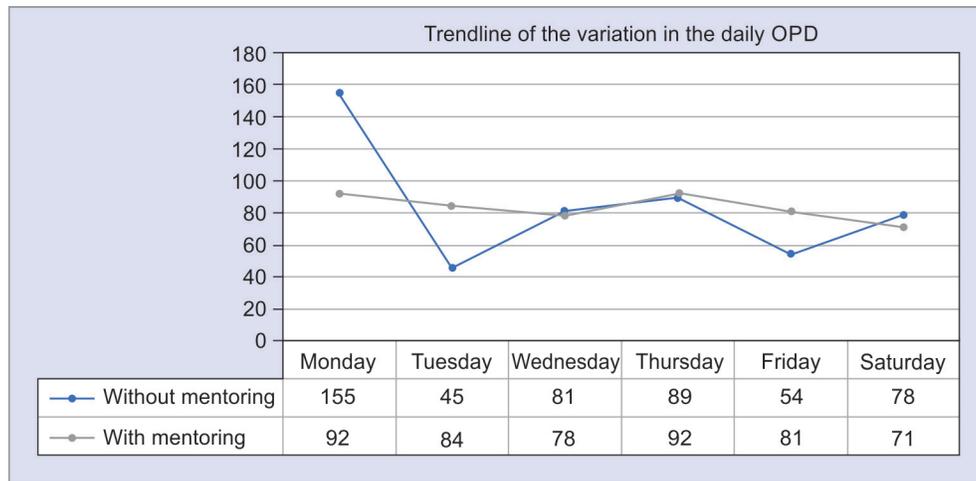


Fig. 3: Reduction in the waiting time at the OPD of the FRU

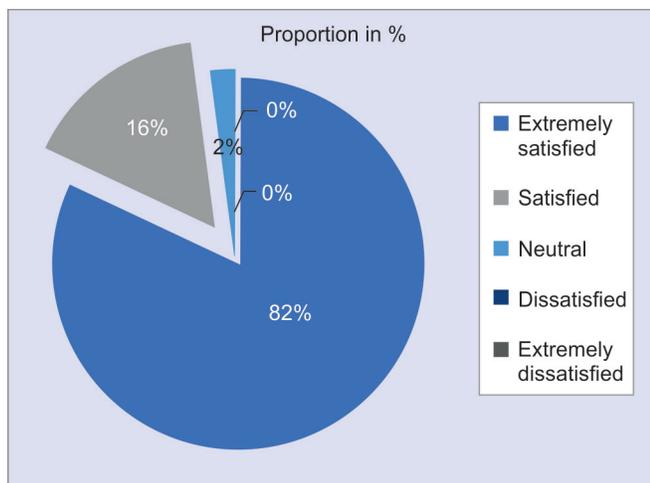


Fig. 4: The satisfaction score from the PHC team about mentoring by obstetricians

opinion from specialists at the click of a button,” remarked Palayamkottai PHC MO. “Mentoring cleared so many confusions that we had in treating the patients” voiced Vilagam PHC MO. “We feel protected and nurtured under the aegis of the mentor Obstetrician,” told Kumaratchi MO. “Trust on the PHC team has increased and the regards our patients have for us have also improved,” said Chidambaram Urban PHC MO.

Identifying Knowledge Gaps in Primary Care Level and Measures to Address Them

The focused group interviews also revealed the gaps in knowledge and skill empowerment among the service providers in primary care. We devised teaching modules in accordance with the GOI protocol, to cover the following commonly perceived myths and misconceptions in antenatal care of a pregnant woman.

- Cord around the neck as an indication of cesarean section.
- Cut-off for high/low amniotic fluid index.
- All mobile head at term mislabeled as cephalo-pelvic disproportion (CPD) major.
- Assessment of pelvis.
- Appropriation of modified Bishop’s score.

- Excessive or inadequate gestational weight gain.
- Leucorrhoea of pregnancy.
- Gestational glycosuria.

Unintentional Benefits

Public sector–private sector partnership had increased as the PHC teams are the focal linking point between the private and public sector.

We also noted an increase in the gynecology OPD census and gynecology because of the gynecology referrals from the mentored PHCs and we expanded the scope of the services into operative gynecology in the resource-limited setting of our rural public hospital.

Strengths and Limitations

Strengths

- Being a pilot study, ours is the first of its kind from a rural public hospital of Eastern Tamil Nadu that provides the much-needed ground-level data about the successful implementation of a unique and novel concept, introduced by the NHM in the state of Tamil Nadu.
- Feedback from the field workers throws light on the reality at the grass-root level.
- We used a mixed-methods study to define concrete, measurable data points shed light on the numerous fronts touched by the mentoring program.

Limitations

- Our study included only a small sample size of two blocks from a single taluk of Cuddalore district for analysis.
- Large-scale studies will show the additional evolving and real challenges in the implementation of the concept of mentoring.
- Other programs by the GOI such as LaQshya,⁵ DAKSHATA,⁶ and Surakshit Matritva Aashwasan (SUMAN)⁷ can act as potential confounders as they also influence a few of the data points and their outcomes.

CONCLUSION

The public healthcare system in India is built on a three-tier system.⁸ The Directorate of Public Health (DPH) – caters to basic healthcare and primary prevention, the Directorate of Medical and Rural health

Services (DMS) – holds the bastion of the FRU, and the Directorate of Medical Education (DME) – which consists of the apex teaching hospitals and the research centers providing tertiary care.

These directorates are interdependent, yet autonomous hierarchical administrative machineries, and hence the linkage between three directorates becomes cumbersome at best and disastrous at worst. The result being many of the national and state-level health programs suffer from numerous hiccups and struggle and stagger to reach their goals. The COVID-19 pandemic proved to be a blessing in disguise in unifying the segregated units of public healthcare *via* technology and smartphones.^{9,10}

National Health Mission selected Tamil Nadu's "mentoring" concept as best practice and was published in *The Hindu* on 24 January 2021.¹¹ "Mentoring" has definitely helped in bridging the disconnect that existed between the field and institutional care for high-risk pregnant women. It had supported us to tide over the COVID-19 pandemic and will continue to aid in optimizing maternal and perinatal outcomes in the future. The results of our study show that "mentoring" is well on its way to becoming the superstar among public health programs in India.

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