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Performance of CEmONC Centres in Public Hospitals of Tamil Nadu: A Case Study

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Abstract

This case study examines the performance of public hospitals in Tamil Nadu in delivering emergency obstetric care services over a period of 8 years as well as to investigate from provider's perspective the issues and constraints that affect performance. A mixed method approach has been adopted, integrating the descriptive analysis of administrative data on performance reports (2006–2007 to 2013–2014) of emergency obstetric and newborn care services in 46 public hospitals, along with primary study comprising of semi-structured interviews of 27 health personnel across selected public hospitals. Examination of trends in selected performance indicators shows that utilization of public hospitals for emergency obstetric and newborn care services has improved; a number of complicated and critical cases revived in the comprehensive emergency obstetric and newborn care (CEmONC) centres of public hospitals have gone up. The capability to treat complicated maternal and neonatal cases, however, is limited by inadequacy of specialist doctors, equipment maintenance issue and lack of hospital management. This case study is of interest to both public hospital administrators and health care policymakers who want to improve and develop strategies for better management in public hospitals. Specifically, there is an urgent need to (a) readdress human resource policy for health care personnel, (b) devise appropriate mechanisms for periodic inspection and preventive maintenance of hospital equipment and (c) develop management capabilities and leadership skills within public health system.

Keywords

Performance reports, hospital management, health care providers

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Introduction

This case study focuses on the performance of comprehensive emergency obstetric and newborn care (CEmONC) centres across public hospitals of Tamil Nadu, the southern state of India. A CEmONC centre is a health facility that must have performed seven life-saving interventions within the past 3 months: parenteral administration of antibiotics, anticonvulsants, oxytocics, manual removal of placenta, manual vacuum aspiration for retained products, assisted instrumental delivery by vacuum extractor and newborn resuscitation with mask along with two additional signal functions—emergency caesarean section and safe blood transfusion (UNICEF, WHO, UNFPA, & AMDD, 2009).

Tamil Nadu is cited as an example of success story of safer pregnancy and newborn survival (WHO Regional Office for South-East Asia, 2009). The state is well-known for its initiatives towards safe motherhood such as maternal death audits—a reporting system to analyse the causes of maternal death and take appropriate remedial actions; birth companion programme to allow a female relative or friend inside the labour room to provide psychological support to a delivering mother; prevention and screening of gestational diabetes mellitus (GDM); state-level cash transfer scheme—Dr Muthulakshmi Reddy Maternity Benefit Scheme (MRMBS)—to overcome financial barrier of poor women in seeking institutional delivery; 108 emergency vehicular services; setting up CEmONC centres in public hospitals to reduce maternal and child mortality and so on (Padmanabhan, Raman, & Mavalankar, 2009; WHO Regional Office for South-East Asia, 2009) In Tamil Nadu, CEmONC centres were first set up in 1999 as first referral units (FRUs) under the Tamil Nadu Area Health Care Project (TNAHCP) with funding support from World Bank and Danish International Development Agency (DANIDA). The existing community health centres and the taluk hospitals were also upgraded as CEmONC centres since 2005 under the Tamil Nadu Health System Project (TNHSP) financed by the World Bank. Each centre is equipped with a fully functional maternity block with operation theatre and labour rooms, equipment, drug kits and specialist doctors such as obstetricians, paediatricians and anaesthetists. Every district has two or three centres within the government hospitals, such that the travel time to these centres is approximately an hour. They are certified once in every 2 years for adherence to the prescribed quality standards, particularly infection control and waste management (GoTN, 2008).

The CEmONC centres were set up gradually in three phases. In Phase I, 66 centres (52 secondary public hospitals and 14 teaching hospitals) were established during 2005–2006. In Phase II, 32 centres were established in secondary public hospitals for the period of 2006–2007. In Phase III, 27 centres were established in 2010–2011. Some of these centres have been restructured over the years, for instance, five secondary hospitals were converted into teaching hospitals as part of the newly constituted Medical Colleges in Dharmapuri, Villupuram, Thiruvarur, Tiruvannamalai and Sivaganga districts. At present, there are 125 centres in secondary hospitals, including 20 centres in teaching hospitals supported under the TNHSP (this information is from TNHSP official).

Out of 125 centres in secondary public hospitals, we selected only 46 CEmONC centres (established in Phase I of the TNHSP operational since 2006) that have been operating throughout the study period. Data on performance indicators for 46 CEmONC centres—24 district hospitals (DH) and 22 taluk hospitals (TH)—compiled by the TNHSP Statistical Cell, Chennai, for the period of 2006–2007 to 2013–2014, have been used for the study.

Purpose of the Study

The stated policy objective for setting up CEmONC centres in Tamil Nadu is to improve the access and utilization of services and bring about reduction of maternal and neonatal mortality rates and maximize the efficiency of public hospitals to deliver essential services (TNHSP website). Specifically,

this study re-examines the performance of these centres in terms of utilization, access, health outcomes and capability of public hospitals to treat complicated maternal and neonatal cases. The study examines how well the CEmONC centres have fulfilled these stated objectives. Has it led to improvements in access and utilization? Has it led to improvements in maternal and neonatal outcomes? How well the capability of public hospitals to treat complicated maternal and neonatal cases (equivalent to the notion of efficiency and effectiveness) has been strengthened? The study is motivated by these questions and attempts to identify scope for improving performance of public hospitals in delivering CEmONC services.

Methodology

The study uses mixed methods approach; it integrates the administrative data on performance indicators on 46 public hospitals collected by the statistical cell of Directorate of Medical Services, as well as primary study conducted in selected six public hospitals with semi-structured interviews of health care personnel to throw light on issues and constraints in service delivery.

Performance Indicators of Public Hospitals

To assess the performance of CEmONC centres in terms of utilization, access, health outcomes and capability of public hospitals to treat complicated maternal and neonatal cases, the trend in selected indicators from TNHSP performance reports (Box 1) over a period of 8 years has been examined.

Utilization of Services

Utilization of hospital services is usually measured with indicators such as bed occupancy rate (BOR) and average length of stay (ALOS). The TNHSP performance report, however, does not include information on cumulative inpatients days during a given year that is required to compute BOR and ALOS. Instead, total maternal admissions and total neonatal admissions are used to measure utilization of CEmONC services, which are correlated with related activities, such as, scans and blood tests performed, usage of drugs and supplies and so on, and can affect hospital expenditures. Figure 1 shows a steady rise in total maternal admissions over the years, but total neonatal admissions show a declining trend since 2011–2012 across district hospitals under the study. Both maternal and neonatal admissions have remained stagnant across taluk hospitals during the study period.

Access to Services

Access here is defined as the utilization of CEmONC services by disadvantaged sections of the society. One of the performance criterion under TNHSP mandates that at least 23 per cent of total maternal admissions must be from socially and economically disadvantaged sections (this information is from TNHSP official). The performance report captures access through utilization of CEmONC services by Scheduled Caste (SC) and Scheduled Tribe (ST) and women of different income groups. Around 34 per cent to 38 per cent of maternal admissions are from disadvantaged sections across the public hospitals

Box 1. Indicators Used in the Performance Report of TNHSP-supported CEmONC Centres

1. Resources/inputs
   - Number of beds
   - Number of specialist doctors
   - Number of staff nurses
   - Availability and functionality of blood banks
   - Availability and functionality of ultra-sonogram scan machines
2. Intermediate activities/outputs
   - Total maternal and total neonatal admissions
   - Complicated maternal and neonatal admissions
   - Total deliveries-normal, assisted and caesarean deliveries
   - Caesarean deliveries conducted by timings—12:00 Night–6.00 AM, 6:00 AM–6:00 PM & 6:00 PM–12:00 Night
   - Total female sterilization
   - Medical termination of pregnancy services
   - Referral-in and referral-out maternal and neonatal cases, along with causes
   - Left against medical advice maternal and neonatal cases
3. Health outcomes
   - Number of live births along with birth weight of babies
   - Number of still births
   - Number of intra uterine deaths
   - Number of preterm babies
   - Number of maternal and neonatal deaths, along with causes; deaths for which medical audit done; deaths occurred on government holidays and Sundays
4. Utilization by disadvantaged section
   - Number of Scheduled Caste/Scheduled Tribe (SC/ST) mothers admitted among total maternal admissions
   - Number of SC/ST mothers among total caesarean deliveries
   - Number of SC/ST neonates among total neonatal admissions
   - Income status of mothers : < ₹1,200/month, ₹1,200 to ₹3,000/month and > ₹3,000/month

Source: Compiled by authors.

under the study. More than 90 per cent of maternal admission comprise of women with economically weak status having income less than ₹1,200 per month across the public hospitals under the study.

Health Outcomes

Critical indicators such maternal deaths, maternal case fatality rate per 0.1 million maternal admissions, neonatal deaths and neonatal case fatality rate per 1,000 neonatal admissions across public hospitals under the study have been examined.

Figure 2 shows maternal deaths and maternal case fatality rate per 0.1 million maternal admissions show an improving though unsteady trend, across both the sub-groups of public hospitals.

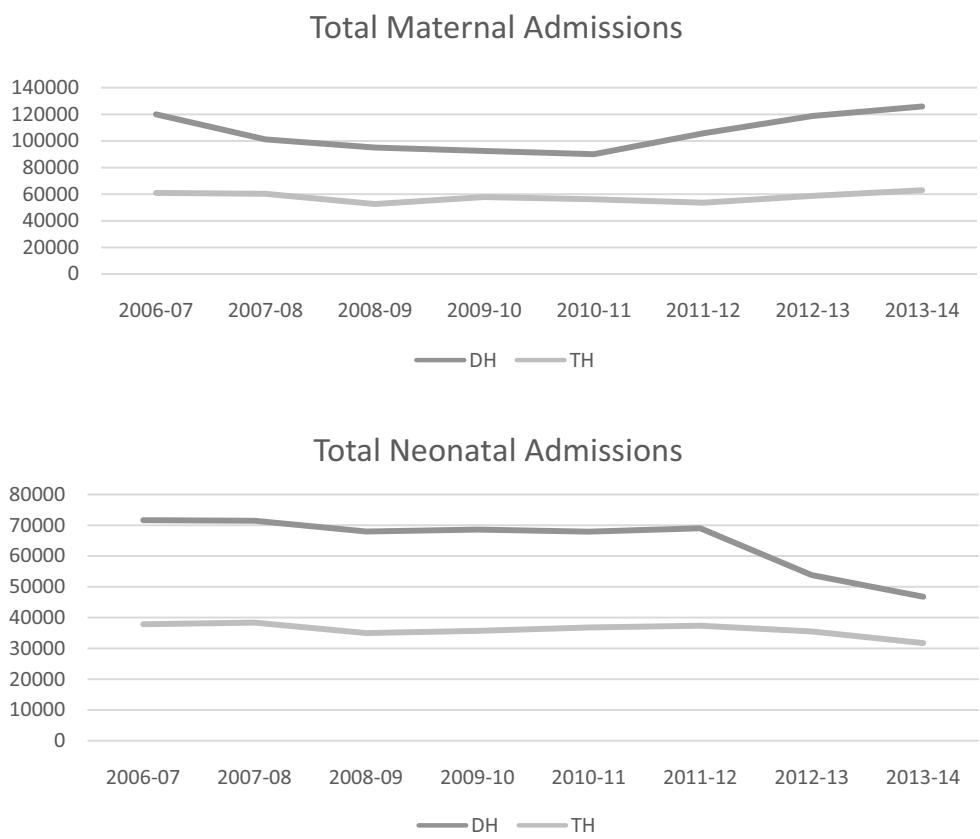

Figure 1. Total Maternal and Neonatal Admissions in Selected Hospitals in Tamil Nadu over 8 Years
Source: TNHSP, Chennai.

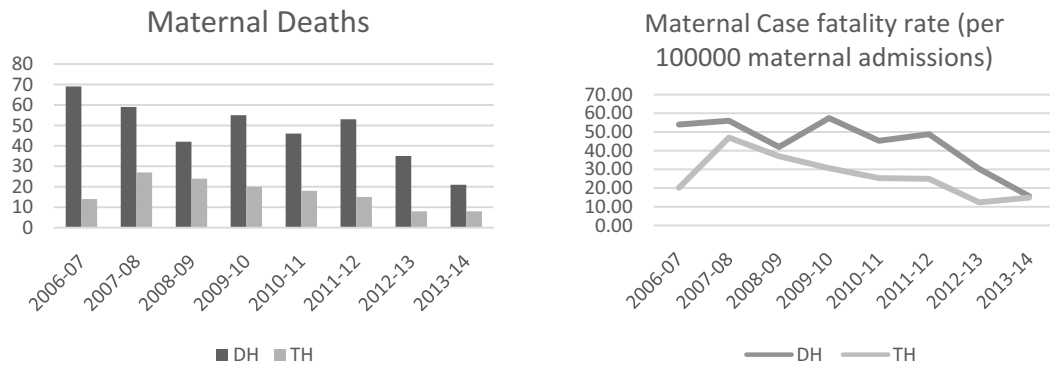

Figure 2. Maternal Health Outcomes in Selected Public Hospitals of Tamil Nadu over 8 Years
Source: TNHSP, Chennai.

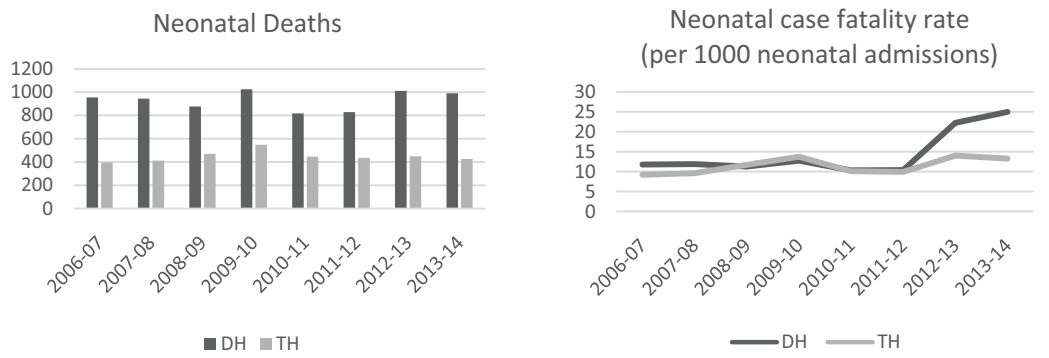

Figure 3. Neonatal Health Outcomes in Selected Public Hospitals of Tamil Nadu over 8 Years

Source: TNHSP, Chennai.

Likewise, an unsteady trend in neonatal deaths is observed across public hospitals in the study; the neonatal case fatality rate shows steady trend across both the sub-groups of public hospitals till 2011–2012, but it has been rising in the recent years, faster across district hospitals.

Capability to Treat Complicated Cases

To assess the capability of public hospitals to treat complicated maternal and neonatal cases, four indicators of intermediate activities have been examined, namely, complicated maternal admissions as percentage of total maternal admissions (% CMA); complicated neonatal admissions as percentage of total neonatal admissions (% CNA); and referral-in and referral-out maternal and neonatal cases. The proportion of complicated maternal admissions (% CMA) has increased gradually and is more than 70 per cent across both the sub-groups of public hospitals (Figure 3). Both the sub-groups of public hospitals have shown an increasing trend in proportion of complicated neonatal admissions (% CNA) since 2011–2012 (Figure 4). This could be attributed to setting up of neonatal intensive care units (NICU) in many public hospitals under the study (this information is from TNHSP official as well as observations from primary study).

Trends in referral-in and referral-out cases are shown in Figure 5. Referral-in cases to a health facility reflects its capacity to treat complicated cases as perceived by lower level facilities such as PHCs, sub-centres, private hospitals and so on in terms of manpower and materials, while referral-out cases as the inability of the health facility to handle such cases. Referral-in maternal and neonatal cases across district hospitals increased gradually but a sharp increasing trend can be observed since 2010–2011. This could be attributed to the operation of 108 emergency vehicular services throughout Tamil Nadu (this information is from TNHSP official as well as observations from primary study). Referral-out maternal and neonatal cases have gradually increased across both the sub-groups of public hospitals. Surprisingly, not much difference is noticeable across district hospitals and taluk hospitals with respect to referral-out cases. The performance reports show a majority of cases have been referred out due to non-availability of specialists and equipment, followed by non-availability of blood and drugs.

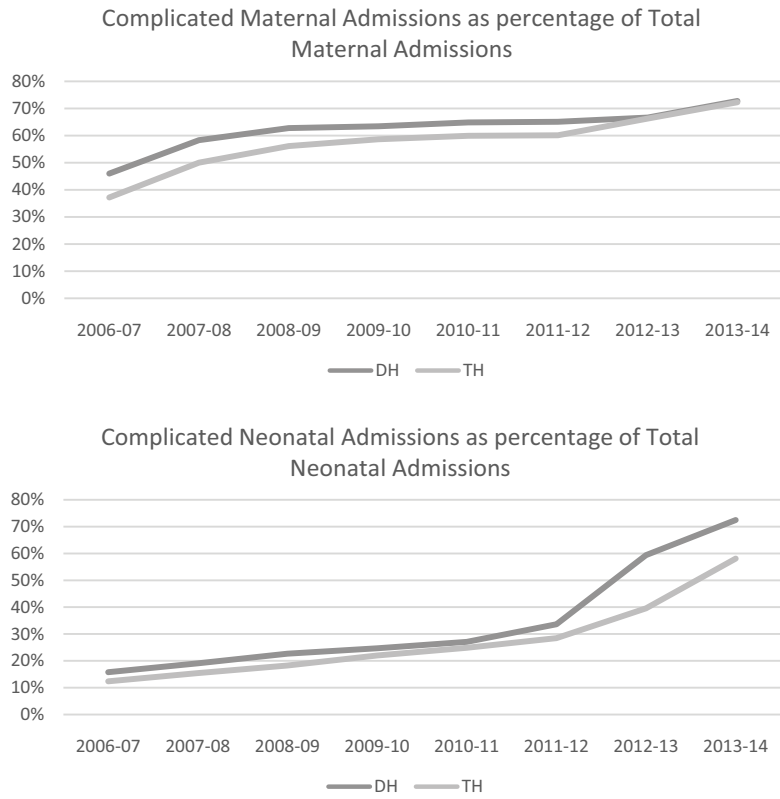

Figure 4. Percentage of Complicated Maternal and Neonatal Admissions in Selected Public Hospitals of Tamil Nadu over 8 Years

Source: TNHSP, Chennai.

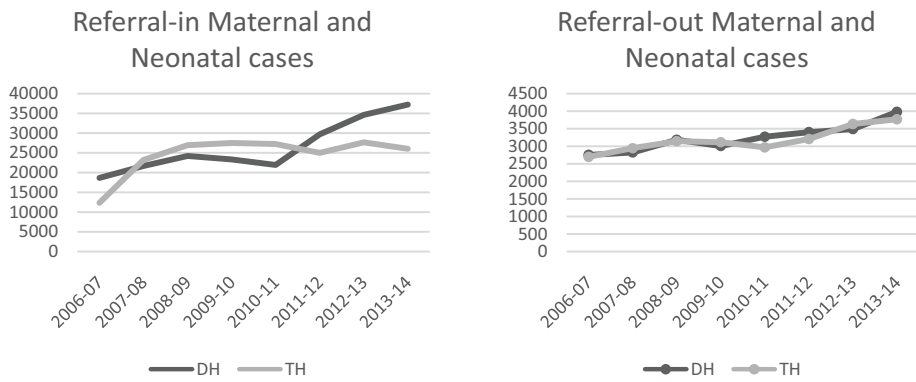

Figure 5. Referral-in and Referral-out Maternal and Neonatal Cases in Selected Public Hospitals of Tamil Nadu over 8 Years

Source: TNHSP, Chennai.

The observations from the administrative data on performance of CEmONC centres across 46 public hospitals of Tamil Nadu are as follows: a satisfactory trend is observed with respect to utilization of maternal and newborn care services and access to care by socio-economically weaker sections of the society across both the sub-groups of hospitals. Improvements in terms of health outcomes like maternal and neonatal case fatality rate across the public hospitals under the study have not been steady. A closer look at the intermediate health activities reveals that while there has been an increasing proportion of complicated maternal and neonatal admissions across public hospitals, there is also a rising trend of referral-out maternal and neonatal cases across district hospitals and taluk hospitals in the study. This disturbing observation raised the question whether the capability of public hospitals to treat complicated maternal and neonatal cases has been indeed strengthened? Whether the effectiveness and efficiency of public hospitals to deliver CEmONC services have improved with TNHSP programmatic effort? To throw light on these questions, a primary study was conducted to investigate the issues and constraints in service delivery across selected six public hospitals of Tamil Nadu.

Primary Study and its Findings

The primary study was undertaken in selected six public hospitals (three district hospitals and three taluk hospitals) to account for factors influencing performance of CEmONC centres. A qualitative approach using semi-structured interviews of health care personnel has been adopted to investigate the issues and constraints related to service delivery in public hospitals. These six public hospitals were chosen from six different districts, selected on the basis of district ranking (Ram & Shekhar, 2006; refer note for detail). Respondents for the study were identified through convenience sampling technique; all respondents were associated with CEmONC centres, who were on duty and willing to participate in the study. Pilot open-ended interviews were conducted with five health care personnel of two CEmONC centres between March 2012 and April 2012. An interview guide (shown in Box 2) was used, though interviewees were allowed to express themselves freely.

The main fieldwork was conducted between May 2012 and March 2013, with 18 health care personnel of different categories—hospital superintendent, chief civil surgeon (senior obstetrician & gynaecologist [O&G]), assistant surgeon (DGO), and matron nurse and staff nurses—associated with the CEmONC centres. The interviews lasted for 10–30 minutes. Most interviews were audio-taped. Some interviews were not audio-taped as requested by respondents; hand-written notes were taken. In addition, field notes for each centre was also carried out on the availability of services, personnel, drugs and supplies, equipment, physical infrastructure and civic amenities and so on, with responses taken from

Box 2. Interview Guide

Briefly explain your role and responsibilities in this CEmONC Centre.
What do you think are the recent developments that have taken place in this CEmONC centre?
How has it improved the performance of the centre?
What kind of constraints/difficulties do you face in your day-to day work in the centre?
Whom do you inform about such constraints/difficulties? What actions are taken, if any?
What suggestions/recommendations would you give to improve services in this centre?

Source: Compiled by authors.

respective staffs on duty (four respondents). For instance, information on drugs availability was sought from pharmacist and regarding blood bank availability from staff nurse in charge of blood bank/storage unit. Interviews of all 27 respondents have been included in the study.

Analysis

All interviews were transcribed verbatim in English. The interview text data were examined and subjected to open coding. These codes were assimilated to identify main categories, which were analysed manually to describe and demonstrate patterns and emerging themes. These themes were further categorized under three broad headings—organizational factors, external factors and perceived policy effect.

Findings

Most respondents acknowledged that the performance of public hospitals has improved in the recent past and the number of complicated and critical cases revived in the CEmONC centres has gone up. These developments have been attributed to improved medical technology as embodied in the latest physical infrastructure, better availability of drugs and supplies, blood banks, sophisticated equipment, the 108-emergency ambulance and better management of hospital records with hospital management information system (HMIS).

The study revealed two broad set of factors affecting delivery of CEmONC services: *organizational factors*—the human resource and management systems within the public hospital—and *external factors*—the policy environment in which the public hospitals operate. Key issues and constraints were illustrated with direct quotes from respondents. In addition, there is perceived policy effect of NRHM affecting the performance of taluk hospitals.

Organizational Factors

Human Resource Issues

Shortages of human resources of all levels, including administrative cadre, emerged as the critical factor affecting performance of public hospitals under the study. The scenario of health personnel shortages has been aptly described by a respondent,

> Sonography (Ultra sonogram) machines are available, but no sonographer to report result…We have X-ray machines, but no radiologist to give x-ray results... No orthopedic is available to deal with trauma cases… No surgeons in ICUs…

The actual availability of specialists like O&G was observed to be lesser than the staff norm of 4 O&Gs, 2 surgeons, 4 paediatricians and 2 Anaesthetists particularly in CEmONC centres of taluk hospitals. The workload and stress for the existing health personnel increased tremendously if one O&G is absent or diverted from taluk hospital to district hospital. To quote one Chief Medical Officer,

> The O&Gs are getting 24 hours duty thrice in a week, Monday She has duty, Tuesday she gets off, Wednesday she comes for duty, Thursday is off, Friday she again has duty …. So there is pre- duty stress, on-duty stress and post-duty fatigue.

Further, in the event of any error or maternal death, the O&Gs felt threatened with penal charges under 17A (minor penalties) and 17B sections (major penalties) under the Tamil Nadu Civil Services (Discipline and Appeal) Rules. One hospital superintendent from one of the public hospitals under study, explains the situation in the following words,

> … if she (the O&G) is tired and mentally exhausted, she is likely to commit error, the baby may die, the mother can die or both can end with complications. If any query comes up, she is answerable.

A senior O&G expresses the reluctance on part of assistant O&G to handle complicated maternal cases, as follows:

> But nowadays for any PPH (Post-partum hemorrhage), my assistants are not able to manage they are calling me any time, within 10–15 minutes I will reach.

Shortages of specialist doctors in public hospitals across Tamil Nadu are currently being dealt in five ways:

1. Multi-skilling, that is, training of MBBS doctors for six months in CEmONC and life-saving anaesthetic skills;
2. Private anaesthetists and obstetricians hired to conduct caesarean delivery;
3. On call duty by anaesthetists and obstetricians;
4. Posting of postgraduate medical students who get free seats in government medical colleges for 2 years of services in rural post; and
5. Diversion of specialists from taluk hospitals to district hospitals.

Yet, these solutions have not been sufficient in easing the problem of specialist shortages. In many instances, the trained MBBS doctors were not able to handle complicated maternal cases leading to deaths or the cases would be referred out to teaching hospitals. On other instances, due to delays in release of remuneration from patient welfare society's fund, the privately hired anaesthetists and obstetrics were not willing to come to CEmONC centres in public hospitals.

Repeated training of the existing health care personnel was of limited use, as expressed by one respondent:

> I get training and retraining again and again on NCD (non-communicable diseases), poison bites, breast cancer … ok I get good training, I become multi-skilled and intelligent … but I cannot be in all the wards at the same time….training can help only to some extent, we need more hands.

Poor service conditions, lack of amenities for health personnel, inadequate pay and monetary incentives, no reward and recognition for performance, limited opportunities for learning and career growth and lack of hands-on experience training were demotivating factors that led to high attrition among health care personnel, which affected the performance of public hospitals.

Non-functional Equipment

Life-saving equipment like cardiotocograph (CTG) machine and Doppler for monitoring foetal distress and ultrasonography (USG) scan machines were available across the six selected public hospitals. However, at least one or two machines were observed to be non-functional for more than a month across

all public hospitals under study. One junior O&G expressed her concern for non-functional equipment in the following words,

> CTG and Doppler not yet repaired … this is a sin in the labour ward…

Heavy and continuous usage led to frequent breakdown of machines in public hospitals. For instance, on every Wednesday (scanning day), the scan machine is used on 300 cases minimum, as informed by one respondent from district hospital.

Repair of equipment like the generators, scan machines or the CTG Doppler is a long-delayed process within the public health system. The complaint about equipment repair (memo) is first sent to the hospital superintendent/chief medical officer, who in turn communicates to the electrical junior engineer (JE), the JE then sends the biomedical engineer to check the repair work, and then quotations from private party for the estimated work are invited, which require the approval of senior technical officer; once approval is given, the repair work gets done after 15–20 days

Physical Infrastructure and Support Services

The newly built CEmONC centres across the six selected public hospitals were observed to have separate labour ward, septic labour room, antenatal ward, eclampsia room, post-operative ward, preparation room, and bathroom and toilet facilities. However, operation theatres were found to be missing in the newly built CEmONC centres across the three taluk hospitals; all the caesarean section operations were conducted either in the general side OT or in the family welfare OT. To quote one respondent,

> The new building does not have OT … there is lack of OT … only single Family Welfare OT at present functional … another OT in old building is demolished, theatre construction not yet done.

Lack of OT in the main CEmONC building, particularly in selected taluk hospitals, had two consequences: one, the general side OT was being used mostly for caesarean section operation, thus crowding out other types of surgeries like orthopaedic surgery or any minor surgery (due to non-availability of civil surgeon); second, emergency cases have to be referred out when OT has to be necessarily closed on washing (fumigation) day, usually Sunday, causing inconvenience to the patients.

District hospitals provide support services such as pharmacy, laboratory facilities and blood banks for 24 hours for 7 days a week. Non-availability of such support services after 5 PM on weekdays and on Sundays and public holidays across taluk hospitals was also considered one of the reasons for referral-out cases.

Leadership and Management Systems

Effective leadership, supervision and control and management systems are crucial for smooth day-to-day functioning of public hospitals. In district hospitals, the hospital superintendent took regular rounds of the hospital. On the other hand, the chief medical officers (CMO) post lay vacant in taluk hospitals, or the monthly review meetings were not held regularly. Respondents who had experience of working in both district and taluk hospitals felt that management of drugs and supplies, blood storage, equipment maintenance and adherence to protocols related to biomedical waste management and infection prevention practices were better across district hospitals as compared to taluk hospitals.

Public hospitals are entrusted with funds under different heads like patient welfare society (PWS) fund and untied fund and annual maintenance grant (AMG) to enable smooth hospital management.

However, fund utilization largely depended on the ability of the medical superintendent or the chief medical officer of the public hospital. To quote one respondent,

> Leadership matters … it all depends on Medical Superintendent/Chief Medical Officers. In district hospital, the medical superintendent are more mature and balanced … better in utilization of funds. While in taluk hospital, the CMO lacks management skills … does not want use funds available, often returns unutilized money.

External Factors

Political Influences and Community Support

Some respondents also felt that the district hospitals being closer to the district administration had regular 'visitors' like the district collector and local politicians, who interfered frequently in the functioning of the hospital. In some instances, it was shared that these local politicians also help in sending municipal workers for cleaning the hospitals. Some taluk hospitals receive active support from community-based organizations like the local Rotary Club for installing 'Aquaguard' (reverse osmosis drinking water machine) as well as power generators at OT.

Patient-related Issues

Often young mothers with complications are reluctant to go when they are referred to another hospital due to lack of family support. Some women, through in labour pain, arrive late after celebrating festivals and on holidays. Young mothers often demand for unnecessary caesarean operations or other medical procedures. Some women do not cooperate with the hospital staff for treatment while some women want their attenders and men to be allowed inside the ward. Often families of women lack patience till all the case sheets and formalities are completed before discharge. To quote one respondent,

> It is difficult to keep patients for long up to 7–8 days, patients abscond after 3rd day soon after delivery without bothering about the post natal complications; this creates administrative problems for us.

Perceived Policy Effect

Some respondents perceived that the policy of 2005 National Rural Health Mission (NRHM), now called National Health Mission (NHM), has diverted the obstetric caseloads (especially cases of normal deliveries) away from the taluk hospitals to lower level PHCs. One O&G who had prior work experience in nearby PHCs explains as follows:

> Prior to NRHM, PHCs used to book ANC cases; their primary task was to segregate high-risk mothers and Anemia correction and early referral of high risk cases. After NRHM funding, PHCs are expected to conduct normal deliveries which they may or may not capable of. There is always fear of losing cases to GH, resulting in poor census for the PHC. They even try normal deliveries in high-risk cases of those having previous abortion history and c-secs, pregnancy-induced hypertension, those with still-birth history or Gestational Diabetes Mellitus … which leads to increased morbidity in the post-natal period. As a result, patient load in secondary hospitals has gone down; very few OP (Outpatient) cases are booked for ANC in GH.

The findings from the primary study can be summarized as follows: the capability to treat complicated maternal and neonatal cases in these public facilities is greatly restricted by non-availability of specialist doctors. In addition, the fear of being penalized among young O&G in the event of maternal death seems to be the most probable cause for the increasing trend of referral-out maternal and newborn cases. Non-functional life-saving equipment emerged as yet another critical constraint in delivery of CEmONC services across both the sub-groups of public hospitals. Further, taluk hospitals had limited capability to provide CEmONC services on Sundays and public holidays either due to non-functional OTs or lack of support services such as pharmacy, laboratory facilities and blood banks. Leadership and supervision and control play an important role in the utilization of available funds and management of utilities, thereby facilitating smooth functioning of CEmONC centres within public hospitals. Interferences by local politicians and community support and non-cooperative patients were external factors that impacted performance of public hospitals. Low performance of taluk hospitals was also attributed to policy effect of NRHM, which led to loss of obstetric cases to PHCs.

Discussion and Conclusion

The findings of the study are consistent with the existing studies that have assessed the availability, utilization and quality of emergency obstetric care. Three organizational factors identified by the study are as follows: shortage of specialists; inadequate repair and maintenance of equipment; and lack of leadership and management skills.

Studies from other states of India like West Bengal (Biswas et al., 2005) and Karnataka (Mony et al., 2013) have attributed poor quality EmOC to shortage of skilled specialist doctors. Given the accelerated pace of health sector reforms in Tamil Nadu, the state faces a shortfall of 1,540 specialist doctors (GoI, 2015; RHS, 2014–2015). Likewise, the issue of equipment maintenance and wastage of resources in the context of the EmOC within public hospitals has been extensively discussed (Mavalankar et al., 2004).

Inadequacy of specialist doctors as well as other health personnel needs to be dealt by re-examining the human resource policy of recruitment, reward and retention as well as the norms of transfer and posting within the public health system. In addition, a district-level technical team comprising of senior OGs, anaesthetists and paediatricians should be formed to monitor the functioning of CEmONC centres at regular intervals across public hospitals.

The issue of equipment maintenance, particularly CTG, Doppler and USG scan machines, needs to be tackled through prudent purchasing strategy. For instance, equipment procurement should be accompanied with mandatory annual maintenance contract for its continuous maintenance and servicing by the suppliers. In addition, appropriate mechanisms may be evolved for periodic inspection and preventive maintenance of equipment.

Management and leadership skills within public hospitals need to be strengthened through selection of competent personnel as facility-in charge, ensuring stability of tenure and performance-based incentives. Training of such personnel for administrative skills such as using the hospital data and information to plan and manage services, effective utilization of funds, motivate staffs for better performance and so on would facilitate optimal utilization of resources within public hospitals.

External factors, such as, uncooperative patients, political interferences and community involvement, are unpredictable and beyond the control of public hospitals. Further, the state health authorities need to investigate whether there is indeed undue loss of caseloads to PHC and plan judiciously the organization of obstetric care services across various levels of the public health system.

To conclude, Tamil Nadu has been promoting safe motherhood through its continued effort in improving its public health system. Establishing and operationalizing CEmONC centres across public hospitals has been one such programmatic effort. Effective and efficient delivery of services, however, would necessitate greater commitment on part of Tamil Nadu to address supply-side constraints and adequacy issues of human resources, maintenance of equipment and hospital management across public hospitals.

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Note

The composite index developed by IIPS, Mumbai is an average of 13 indicators; it is based on a rural survey and excludes urban area. Indicators used are as follows:

- Percentage of population 0–6 years
- Birth order three and above
- Birth below age 20
- Complete immunization coverage
- Dropout from full immunization
- Female literacy rate
- Households using safe drinking water
- Households with toilet facility
- Percentage of electrified households
- Women receiving two tetanus toxoid (TT) injections
- Women receiving three or more ANC visits
- Under five mortality rates
- Contraceptive prevalence rate

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