

# Reasons for obstetric referrals from community facilities to a tertiary obstetric facility: A study from Southern Karnataka

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## ABSTRACT

**Context:** Pregnancy-related preventable morbidity and mortality remain high in India. Safe delivery services should focus on improving neonatal and maternal outcomes while also enabling a positive childbirth experience. However, high rates of intrapartum obstetric referrals are common. **Objective:** To describe the timing and the reasons for obstetric referrals to a public tertiary care hospital in Bangalore and characteristics of the referring facilities. **Methods:** We interviewed 320 women who delivered at the tertiary care hospital within a one-month time frame prior to the interview and who originally planned to deliver elsewhere. **Results:** Ninety four percent of women in the study reported that the decision to transfer to the tertiary hospital was made after the onset of labour. Referrals were made for medical as well as non-medical reasons. About a third (35%) had to take loans to cover the expenses of childbirth. **Conclusions:** Referrals frequently occurred after the onset of labour. Our data imply that improving obstetric referral protocols will improve the birth experience and reduce the burden on tertiary care facilities and on the women themselves.

**Keywords:** Intrapartum referrals, obstetrics, obstetric referrals, tertiary care hospital

## Introduction

Most causes of maternal and neonatal mortality and morbidity can be prevented with organized primary health care and appropriate and accessible referral facilities.<sup>[1]</sup> The requirements of an effective referral system include an adequately resourced referral centre, designated transport, specific protocols for the identification of complications, and teamwork between referring sites.<sup>[2]</sup> India has made significant strides in reducing maternal and neonatal mortality.<sup>[3]</sup> Under the

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Received: 14-04-2019 Revised: 14-04-2019 Accepted: 13-05-2019

### Access this article online

#### Quick Response Code:



**Website:**  
www.jfmpc.com

**DOI:**  
10.4103/jfmpc.jfmpc\_308\_19

National Health Mission (NHM), services have improved and guidelines have been developed for the management of complicated pregnancies. However, recent studies have shown that referrals continue to be poorly managed, with lack of basic essential care at referring facilities, inadequate information exchange between referring sites, and direct referrals made from primary to tertiary level facilities contributing to overcrowding of the latter.<sup>[2,4]</sup> Studies from India, including a systematic review, have shown that referral management in cities is complex and that one of the critical elements lacking in primary health care is that of trained human resources.<sup>[5]</sup>

Much of the maternal health referral literature focuses on rural environments where distance and terrain are key factors

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**How to cite this article:** Nagavarapu S, Shridhar V, Kropp N, Murali L, Balachandra SS, Prasad R, *et al.* Reasons for obstetric referrals from community facilities to a tertiary obstetric facility: A study from Southern Karnataka. J Family Med Prim Care 2019;8:2378-83.

in barriers to care. Less is documented about urban obstetric referrals where a mixture of private, state and municipal health facilities coexist within a relatively small radius.<sup>[6]</sup> Specifically, management of referrals and communication within and between the public and private sectors has been identified as an unmet need in the urban scenario.<sup>[7]</sup>

This paper describes the reasons for obstetric referral, the timing of referral and the characteristics of the referring centre to a large, public tertiary care hospital in Bangalore.

## Methods

### Study setting

The study proposal was approved by a local ethics review board. The study took place in Bengaluru, the capital of Karnataka, a city with an estimated population of over 10 million. Government health services for maternity care are provided by a number of entities at different levels of government: the Urban Local Body (Bruhat Bengaluru Mahanagara Palike, BBMP); the Karnataka State Health and Family Welfare Department; the Employee State Insurance (ESI) scheme and various autonomous institutions reporting to the Karnataka State Medical Education Department.

The tertiary care hospital of interest in this paper is a referral centre for primary and secondary care government hospitals in Bangalore.

Women over 18 years of age, who had a full-term birth at the tertiary care hospital in the month prior to the study interview, and had originally planned to deliver at another facility were selected for the study. Interviewers, paired in teams and fluent in local languages, approached women in the hospital postpartum ward and obtained informed consent from the eligible women. The women were not necessarily interviewed alone as often family members or other patients were present in the postpartum wards, and they were asked if it was convenient to conduct the interview at that time. Interviews were conducted for 53 days between 20 September, 2014 and 2 January, 2015. A total of 320 women completed surveys that were used in the analysis with confidentiality maintained.

## Results

### Background characteristics

Table 1 gives the demographic and socioeconomic characteristics of the respondents, and their antenatal care.

The cost of antenatal care (ANC) ranged from 0 to Rs. 60,000 with a median cost of Rs. 4000, with the major expense being diagnostic tests in private labs.

### Where were women referred from?

The majority of women (67.81%) came from Bengaluru, about 4% from rural areas around the city and about 28% from other districts in Karnataka and neighboring states. [Table 2].

**Table 1: Background characteristics of women in the study**

Characteristics	Number of women, (%)
Living area	
Urban (any)	231 (72.19%)
Within Bengaluru city limits	217 (67.81%)
Rural	89 (27.81%)
Residence	
Natal home	140 (43.75%)
Marital home	151 (47.19%)
Nuclear family home	29 (9.06%)
Birth order	
Primipara	173 (54.06%)
2nd birth	114 (35.63%)
>2 births	33 (10.31%)
Socioeconomic status	
Antyodaya card (extremely poor)	6 (1.88%)
BPL (below poverty line)	184 (57.5%)
Above Poverty Line (APL)	4 (1.25%)
No government card	126 (39.38%)
Antenatal visits (ANC)	
0 visits	2 (0.63%)
1-3 visits	15 (4.69%)
4-7 visits	81 (25.31%)
8 or more visits	222 (69.38%)
At least 1 ANC visit at a private clinic/hospital	141 (44.06%)

**Table 2: Location of first referring facility**

District/location	Number of women (%)
Bengaluru city (within municipal limits)	217 (67.81%)
Bangalore Urban district (outside municipal limits)	12 (3.75%)
Bangalore Rural district	26 (8.13%)
Ramanagara district	21 (6.56%)
Other districts in Karnataka	42 (13.13%)
Neighbouring states	2 (0.62%)

Table 3 gives a breakdown of each facility level, along with the authority that manages each type of facility.

### Timing of referral to the tertiary hospital

The respondents were asked about the time of decision to come to the tertiary hospital to which most of the women (93.75%, n = 300) stated that the decision was made after beginning of labour. Among those who said the decision was made before the onset of labour, 4.69% (n = 15) said it was made in the month before labour began, and 1.56% (n = 5) said the decision was made even earlier.

### Health facilities visited

Of the 320 women, 242 were referred directly to the tertiary care hospital from the first centre and 11 of them self-referred themselves. Fifty six women were referred to another facility before going to the tertiary hospital. Nine women have visited three facilities before reaching the tertiary hospital, while two women have visited four facilities before reaching the hospital where they gave birth.

### Reasons for referral

Of the 309 women who visited another hospital prior to coming to the tertiary hospital, 248 (80.2%) women received a referral slip or had the referral noted in their ANC card. In most cases, the reason for referral was not noted, and interviewers relied on the information provided by the women and their families.

Table 4 indicates the main reasons for referral, which fall into two categories: Medical and nonmedical. Women often reported more than one reason and thus percentages do not add up to 100%.

The reasons for referral by city- and state-run facilities were not significantly different. Of all the reasons reported from municipal

**Table 3: Type of health care facility first visited (referring centre)**

Facility	Level of care	Managed by	Number of women (%)
Urban Health Centre/Urban Family Welfare Centre	Primary Urban	Municipal Corporation	12 (3.75%)
Maternity Home	Primary Urban	Municipal Corporation	57 (17.81%)
Primary Health Centre (PHC)	Primary	State Health Department	70 (21.88%)
Referral Hospital	Secondary Urban	Municipal Corporation	42 (13.12%)
Community Health Centre (CHC)/Taluk Hospital*	Secondary Urban or semi-urban	State Health Department	72 (22.5%)
District Hospital and Ghosha†	Secondary Urban (including smaller urban areas)	State Health Department	26 (8.13%)
Nursing home/Hospital	Secondary or Tertiary Urban or semi-urban	Private sector	27 (8.44%)
Others	Secondary or Tertiary Urban	Autonomous Institution under Dept of Medical Education	3 (0.94%)
The tertiary hospital in this study^	Tertiary Urban	Government teaching hospital (Dept of Medical Education)	11 (3.44%)
		Total	320 (100%)

\*Sub-district hospitals; some have been designated as First Referral Units (FRUs) †A maternity hospital in Bengaluru city ^These women went directly to the tertiary hospital at the onset of labour, in spite of alternative plans, because they expected to be referred (holiday etc.)

**Table 4: Reasons given for referral**

Category	Reason	Number (%) of women n=309	Number of women referred before onset of labour, n=20
<b>Medical reasons</b>			
Issues/complications with woman	Elevated BP	62 (20%)	3 (15%)
	Anemia	33 (10.7%)	
	“Bag of water broke”/loss of amniotic fluid	44 (14.2%)	
	Heavy bleeding	11 (3.4%)	
	Other (diabetes, seizures, thyroid problems, etc.)	57 (18.4%)	5 (25%)
Issues/complications with fetus	“Baby swallowed meconium”	7 (2.3%)	
	Breech position	17 (5.5%)	
	Low heartbeat/“weak”	18 (5.8%)	
	Twins	4 (1.3%)	
	Died in utero	2 (0.6%)	
<b>Non-medical reasons</b>			
Issues with staffing or facilities	Doctor or specialist on leave or not available/after working hours	35 (11.3%)	1 (5%)
	Strike/festival/other staffing problems	9 (2.9%)	
	Facility doesn't conduct birth	17 (5.5%)	4 (20%)
	Facility doesn't conduct C-Sections	43 (13.9%)	
	No incubator or ICU for infant	17 (5.5%)	
	Hospital under repair/damaged	6 (1.9%)	
	Medicines or injections out of stock	2 (0.6%)	
	Bed or operating theatre not available/too many people	4 (1.3%)	
Cost	High costs for birth in private hospital	9 (2.9%)	2 (10%)
Denial of services	“Will not deliver third child”	2 (0.6%)	1 (5%)
	“Insufficient or no ANC checkups”	2 (0.6%)	
Self-referred†		10 (3.2%)	

†Self-referred indicates a woman who went to the tertiary hospital because she or her family decided to do so, sometimes against the recommendation of the primary referring facility

facilities, 86% were medical reasons and 40% nonmedical. Among referrals made by state-run facilities, 78% were for medical reasons and 55% for nonmedical reasons.

Of the women referred after the onset of labour ( $n = 289$ ) without prior discussion/information, 10.33% were referred for anemia.

## Outcomes

Outcomes related to birth are given in Table 5.

The cost of care at the tertiary hospital ranged from 0 to Rs. 13,850 with a median cost of Rs. 600. Fourteen percent of these women perceived the cost of care to be high. Women and their families spent money on travel, medicines and diagnostics as well as informal payments to doctors, nurses and other staff, and 35% took a loan to meet expenses while 11.6% of the women reported that they did not pay any money.

An overwhelming number of women who delivered at the tertiary care centre were satisfied with the care in that facility (94%). Twenty seven percent of the patients responded that they wish to deliver their next baby in this tertiary facility, while 22.8% preferred another government hospital closer to home and 38.8% did not plan to get pregnant again.

## Discussion

Theoretical models for the examination of obstetric referrals include the Three Delays framework,<sup>[8]</sup> evaluation tools of Emergency Obstetric Care<sup>[9]</sup> and severe acute maternal morbidity protocols.<sup>[10]</sup> However, in recent times, there is a global call to turn attention to the health systems that deliver those interventions—to ‘tap the expertise and local knowledge often hidden from the global view’.<sup>[8]</sup> In-depth examination of local referral matrices can go a long way in providing critical insight into where referral systems need specific improvement<sup>[11]</sup> while

highlighting lessons that public health systems can use for referral service monitoring and improvement.<sup>[12]</sup>

## Overwhelming majority of women sought to deliver at their local facilities

It is commonly thought that a major cause of overcrowding of government-run tertiary hospitals is the direct access of tertiary centres by patients. Policymakers have suggested various solutions to this problem, such as colour coding.<sup>[13]</sup> Our study suggests that more nuanced research is required for better understanding. We estimate that only 10%–20% of the women we contacted had sought care at the tertiary hospital at the onset of pregnancy itself (making them ineligible for our study). The majority of women accessed primary and secondary facilities as a first option for birth. However, these facilities referred them to the high-volume, tertiary government facility. Further, 22.8% of the women interviewed indicated that, for their next delivery, they would prefer a government hospital closer to home.

## Referrals made after the onset of labour

Of the 320 women interviewed, 93.75% ( $n = 300$ ) said that they were referred to or decided to come to the tertiary hospital after the onset of labour. This finding has been previously reported in a prospective study of pregnant women in rural Karnataka.<sup>[14]</sup> The vast majority of women we interviewed (94%) had at least four ANC visits, out of which 69% had eight or more, indicating that there were many missed opportunities for these medical centres to manage common issues such as anemia or high BP ahead of time or to counsel the women much before labour to go to an appropriate facility for breech babies or multiple pregnancies. Since our study did not gather the complete medical histories of these patients, the appropriateness of the referral to the tertiary centre could not be determined, although many secondary care facilities should have the infrastructure to manage these common risk factors if they followed the protocols and precautionary guidelines.

Many of the nonmedical reasons for referrals were due to staffing issues or lack of infrastructure (incubator, medicines or beds not available). Nonmedical reasons for referral also included denial of service such as a woman having a third child or absence of any antenatal checkups, reasons that impinge upon the rights of the women seeking care.

## Obstetric care referrals result in financial distress

Although only 14% of the respondents felt that the costs were high at the tertiary hospital, 35% needed to take a loan to cover costs, including medicines, travel, administrative costs as well as food and associated costs for the person/s accompanying the woman. Medical expenses are a major reason for indebtedness among the Indian poor<sup>[15]</sup> and, with a vast majority of our study population (~60%) falling below the poverty line, the added expenses associated with unexpected referrals are not insignificant.

**Table 5: Obstetric outcomes of the study population**

Characteristic	Description/Outcome	n (%)
Childbirth	Vaginal delivery	179 (55.9%)
	Through Caesarean section	141 (44.1%)
Baby	Live singleton birth	296 (92.5%)
	Live twin birth	8 (2.5%)
	Stillborn	10 (3.1%)
	Postpartum death	6 (1.9%)
	Medical issues with baby	27 (8%)
	Baby did not breathe	10 (3.1%)
	Baby looked blue	3 (0.94%)
	Injuries on baby	3 (0.94%)
	Congenital deformities	8 (2.5%)
	Any fits	3 (0.94%)
<b>Baby birth weight</b>		
	<2000	35 (11%)
	2000-2500	128 (48%)
	>2500	157 (49%)

## High levels of satisfaction in spite of huge caseload

The high volume of deliveries (about 44 deliveries per day during the study years) at the tertiary hospital was accompanied by low levels of staffing. Of the 466 sanctioned positions (including managerial and clerical positions) in 2014–2015, only 147 positions were filled. Nurses were hired on a contract basis to make up for the shortfall, but the vacancies in doctors and specialists were made up for by students and residents.<sup>[16]</sup> Despite these conditions, most women reported high levels of satisfaction with the hospital. The positive responses included no further referrals, low cost, normal delivery in spite of being told earlier that a caesarean section would be required, good care in critical condition, etc., A number of women mentioned that their lives and those of their children had been saved.

It was found that in 2013–2014 and 2014–2015, the number of live births recorded within BBMP limits were 1,51,361 and 1,56,582, respectively. This particular tertiary hospital performed 10.9% and 10.2%, respectively, of these deliveries.<sup>[17]</sup> In contrast, the six BBMP referral hospitals, which provide secondary-level care, performed 3.48% ( $n = 5262$ ) and 3.79% ( $n = 5940$ ) of these deliveries with 1383 and 1565 referrals.<sup>[18]</sup>

## Caesarean rates and over-medicalisation

Although caesarean deliveries have been found to be associated with higher rates of maternal and neonatal mortality, we see the rise in caesarean section rates in Karnataka from 3.7% in 1992–1993 to 23.6% in 2015–2016.<sup>[19]</sup> WHO Guidelines, set out in 1994, state that the caesarean section rate in any population should be 5–15% as there is no additional benefit observed beyond this threshold. Private facilities conduct higher rates of caesarean deliveries compared to public facilities in Karnataka (40.3% vs. 16.9%), which points to a financial incentive.<sup>[19]</sup> This is further demonstrated by the example of Janani Sahyogi Yojana, a fee-for-service scheme introduced initially in Madhya Pradesh with higher reimbursement for Caesarean sections. The first year of the scheme saw Caesarean sections rates as high as 67% in Jabalpur district.<sup>[20]</sup> Insurance schemes that reimburse the cost of procedures in the private sector can thus lead to over-medicalisation, and the newly introduced Ayushman Bharat is set to further this trend.

Even though women were generally satisfied with their experience at the tertiary care centre, we do not believe low-risk women should be delivering here and are better off in community care settings equipped with skilled birth attendants to handle their deliveries, which avoids the unplanned travel and associated costs. Multiple studies have shown that obstetric referrals to tertiary care centres are associated with higher caesarean section levels. The tertiary hospital in our study had caesarean section rates of almost 44%. However, these high rates seem to be a symptom of the significant health system and health policy gaps, as well as medical complications and higher interventions at tertiary centres. A chain of events starting from the time of missed opportunities during the antenatal visits, improper

communication and inadequate coordination between the various arms of the health system, personal preferences and economic realities may all be contributing factors.

## Clear need for improving obstetric referral protocols in the referring community centres

In this study, about 35% of the women first accessed a municipal hospital, 43% went to a state government facility run by the Health Department, 5% to an autonomous state government hospital, and 8% went to a private hospital, before birthing in the tertiary hospital attached to a government medical college. Currently, these departments and levels of government all have different standards of care. State-run facilities follow the Indian Public Health Standards while the municipal hospitals state that they follow WHO guidelines.<sup>[21,22]</sup> The tertiary hospital is further bound by MCI (Medical Council of India) guidelines while private hospitals may or may not adhere to any particular protocol.

The National Urban Health Mission (NUHM) Framework for Implementation states that “The multiplicity of service providers in urban areas, with the Urban Local Bodies and state Government jointly provisioning even primary health care, has led to a dysfunctional referral system and a consequent overload on tertiary hospitals and underutilized primary health facilities”.<sup>[23]</sup> These multiple facilities require joint planning and regular monitoring to develop common protocols for referrals and to provide an interface for tackling problems in referrals.

## Limitations of the study

1. The data collected relied on the understanding of the women or their attenders: While we examined the referral slips, reasons were often not stated and we did not analyse the medical charts
2. The number of women who were not eligible to take part in the study was not accurately recorded, especially in the initial surveys. A review done mid-survey provided an estimate, but not an accurate number.

## Conclusions

Our study shows that obstetric referrals in the city of Bangalore are fragmented, uncoordinated, and untracked. Though most of the women in our study had adequate ANC visits during their pregnancy and had not intended to deliver at the tertiary care centre, they were finally referred to a higher health facility during labour, and travelled across multiple facilities at a time when a pregnant woman and her unborn child are at their most vulnerable phase.

The reasons for referral particularly highlight: a) the need of a standard referral protocol to support smooth transfer of care; b) the need to strengthen capacity across the health care delivery ecosystem especially at primary and secondary levels and c) the need for coordination across levels of government and private health facilities.

Given the 2018 WHO guidelines that emphasize the long-lasting value of a positive childbirth experience, it is critical that we make our public health obstetric processes safer, less stressful, and easier to navigate for our women and their families.

## Acknowledgements

The authors acknowledge the contributions of the SPAD interviewer team, which conducted these sensitive interviews in a respectful and caring manner. We also thank the Superintendent, Doctors, Nurses and other staff of Vanivilas Hospital for not just providing access but also for their valuable inputs and insights to this study.

## Financial support and sponsorship

Oxfam India for funding, Society for People's Action for Development (SPAD) for conducting the study.

## Conflicts of interest

There are no conflicts of interest.

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