

## Changing Trends on the Place of Delivery among Rural Women of Tamilnadu State in India

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**Abstract:** The aim of this study was to identify whether place of delivery is changing over time and to assess socio-economic and demographic factors influencing women's decision for choice of place of delivery in rural areas of Thiruvarur district of Tamilnadu state in India. A community based cross-sectional study was conducted in 28 villages selected using multistage sampling technique for selecting 605 women in the age group of 15-24 years during July 2010-April 2011. The result shows that 94.2% of deliveries have been taken place at institutions and only 4.8% of deliveries took place at home. There was increase in institutional delivery over the years. All women who had completed higher secondary education were preferred the institution for their delivery. First birth order deliveries were more likely to take place at institution than second and third birth order deliveries. The key factors influencing choice of place of delivery was education, age at marriage, birth order and low standard of living index. Having a distant health center, lack of transportation and financial constraints were the other main reasons for choosing a home delivery. It concludes that trend of delivery at health institution was remarkably increased but there were strong differentials in low social status of women. Ignorance and dominance of mothers-in-law were main reasons contributing to home delivery.

**Key words:** Place of Delivery • Rural Women • Scheduled Castes • Standard of Living Index

### INTRODUCTION

In many parts of the world the complications of pregnancy and childbirth are the cause of death for childbearing women. Comprehensive high-quality maternity care can help prevent infant and maternal death. Many countries are currently intensifying their efforts to reduce maternal and neonatal mortality and morbidity, typically through the development and implementation of national safe motherhood action plans. According to UN agency, 358,000 maternal deaths occurred worldwide in 2008 [1], this figure showed 34% decline from the level of 1990 [2]. Despite this decline low income countries continue to account for 99% of maternal deaths primarily in Africa and South Asia [3]. Maternal mortality rate (MMR) shows a wide gap between rich and poor countries. Among developing regions South Asia has the second highest MMR at 280 maternal deaths per 100,000 live births in the global context [2]. The place of delivery is a crucial factor which affects the health and well-being

of mother and newborn [4]. The percentage of birth attended by skilled health workers remains lower in South Asia i.e. 45% as compared to other Asian regions [5].

Tamilnadu state is one of the few states in India which has achieved near universal coverage in many of the maternal care indicators. Antenatal care initiatives including tetanus immunization for pregnant women have been successful in the state. According to the National Family Health Survey-3 (NFHS-3) conducted in 2005-06, almost all (98.6%) pregnant women in Tamilnadu state received some form of antenatal care and 96% of pregnant women received two or more doses of Tetanus Toxoid injections [6]. All women were received at least one or more antenatal care services during their pregnancy period in the state [7]. Annually, about 12.5 -13 lakh pregnancies are registered in Tamilnadu state (NFHS-3) [6]. During the decade 1998-2008, the state has made significant progress in promoting institutional delivery as a result of innovative policies and programmes on maternal health. According to District Level Household

Survey (DLHS-3) conducted in 2007-08, the proportion of home deliveries declined from 16% in 1998-99 to 1.7% 2007-2008. The report indicates that more than 90% of births had taken place in safe environment at institutions conducted by health professionals in Tamilnadu state. In Thiruvarur district of Tamilnadu state, overwhelming majority of women visited the facilities more than three times for antenatal care (ANC) services (95.4%) and around only 2% of women did not make even a single ANC visit during pregnancy period for their latest pregnancy. It is also noticed from the DLHS-3 report that only 11% of women delivered their babies at the home [8].

**Muthulakshmi Reddy Maternity Benefit Scheme:**

Tamilnadu state Government launched financial assistance scheme for poor women during maternity. The assistance would be extended to poor women over 19 years of age for the birth of the first two children. Muthu Lakshmi Reddy Maternity Benefit Scheme funds is enhanced to Rs.12000/-. The cash assistance will be given in three installments (Rs.4000/-) on conditional release and restricted for first two deliveries only. The pregnant mother should be of age 19 years and above. The pregnant woman should be in the BELOW POVERTY LINE (BPL) GROUP. This cash assistance will be given to every pregnant woman: (a.) who avails all required Antenatal services during pregnancy in concerned PHC, (b.) Mother who delivers in the Government institutions (PHC, GH, Govt. Teaching Institutions) and (c.) Completion of immunization for the child up to 3<sup>rd</sup> dose of DPT/PENTAVALENT/HEPATITIS-B/POLIO [9].

**Janani Suraksha Yojana Scheme:** Janani Suraksha Yojana (JSY) is another maternity benefit scheme, is fully funded by the national government under National Rural Health Mission (NRHM). The JSY scheme aims at reducing the maternal and infant mortality by focusing on skilled attendance in delivery. Under the scheme, a sum of between Rs 500/- and Rs 700/- is being granted to women from Below Poverty Line (BPL) households if they deliver in home and an institution respectively. This scheme is only for the first two deliveries. Irrespective of their economic status all the women in the socially marginalized caste group scheduled castes/scheduled tribes (SC/ST women) are eligible to avail the benefit. One of the remarkable achievements over the last three years has been the manifold increase in the number of the deliveries conducted in the primary health centers (PHCs). This proportion has increased from 5% in 2005 to 28% in the current year with 276399 deliveries being conducted from April 2010 to March 2011 [10].

**A Profile of Scheduled Castes Population in India:**

The Indian caste system is a highly complex institution, though social institutions resembling caste in one respect or another are not difficult to find elsewhere, but caste is an exclusively Indian phenomenon. At presents, scheduled castes in India constitute around 16.8% of the total population. Almost one-third of them live below poverty line and do not have access even to the basic needs like food, clothing and shelter and constitute major part of our labour force and are generally engaged in petty occupations like agriculture labour, construction work, hawking and other low grade jobs [11]. There is a general consensus that the health status of the scheduled castes population is very poor and worst [12]. Under this circumstance, the present study made an attempt to identify whether place of delivery is changing over time and to assess socio-economic and demographic factors influencing women's decision for choice of place of delivery in rural areas of Thiruvarur district of Tamilnadu state in India.

**MATERIALS AND METHODS**

**Study Area:** According to 2001 census, Thiruvarur district was the highest Scheduled Castes populated district and also backward district in Tamilnadu state. All women were living with their husbands and had given at least one birth one year prior to the survey.

**Study Design:** A community based cross-sectional study was conducted in 28 villages selected using multistage sampling technique for selecting 605 women in the age group of 15-24 years during July 2010-April 2011.

**Selection of the Blocks:** Thiruvarur district had totally ten blocks, which comprise 573 revenue villages. In the first stage, five blocks were selected which represent the geographical distribution of the study district. The selected blocks were Nannilam from north, Thiruvarur from east, Tiruturaipundi from south, Valangaiman from west and Mannargudi from central part of the study district.

**Selection of the Villages:** There were 352 revenue villages in these selected five blocks. In the second stage, all the villages which had 50% of scheduled castes population were selected. I.e. 87 villages were selected. For covering entire block, one third of the villages (5/6 villages) were selected from each block by simple random sampling method. Thus, 28 villages were selected for the research purpose.

**Selection of the Respondents:** In the third stage, house listing operation was carried out prior to the data collection to provide the necessary frame for selecting the households for the study. Totally 6376 houses were listed in all the five blocks. Identification of eligible young married women (15-24 years) in each household was the next step in the research. There were 1164 households with the target population (39 households had two couples). Totally 1203 women in the age group of 15-24 were identified.

Systematic random sampling technique was applied for selecting 21/22 respondents from each village. In order to take care of non-response due to various reasons, an extra 10% of respondents were included in the sample. i.e. 661 respondents were selected for the interview. Totally, 605 respondents were completed the interview and 32 respondents declined to participate interview. The response rate of the research study was 91.5%.

**Data Collection Tools:** The respondents were assessed using a structured interviewer administered questionnaire which was pretested in Chidambaram Taluk near Annamalai University, about 102 km away from Thiruvaur district.

**Data Analysis:** Results were summarized and presented as frequencies and percentages and also Chi-square test was used for assessing the statistical significance at p-value.

**Ethical Approval:** The syndicate review board at Annamalai University, Tamilnadu state, India has approved the research entitled “Reproductive and Sexual Health status of Scheduled Castes Youth in Thiruvaur district, Tamilnadu, India” for the degree of Doctor of Philosophy (PhD) in Population Studies with effect from 05-07-2012.

Map of Thiruvaur district (Study Area)

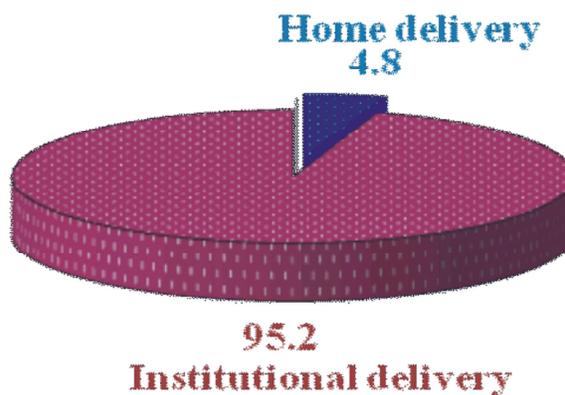


Fig. 1: Percentage distribution of women by Place of delivery

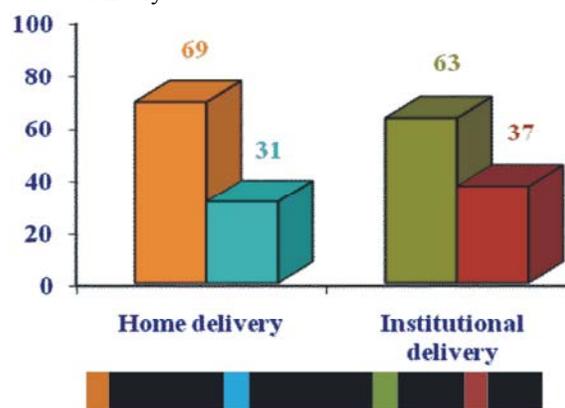


Fig. 2: Percentage distribution of women by Pattern of consumed IFA tablets/syrup

## RESULTS

**Place of Delivery:** All the women who participated in this research study were asked their place of delivery one year prior to the survey and the result are tabulated. Figure 1 reveals that significant proportion of the deliveries were taken place in health institution (95.2%) and only 4.8% of the deliveries were conducted at home among scheduled castes (SC) communities.

**Assistance While Delivery:** Figure 2 discloses that 69% of home deliveries were monitored by trained birth attendants (TBAs) and the remaining deliveries were attended by village health nurses (31%). It can be clear that though an insignificant proportion of child deliveries happened at homes, all the child deliveries were attended by trained persons. With regard to institutional deliveries, more than three-fifth of deliveries were conducted by doctors (63%) and the remaining 37% of deliveries were conducted by nurses.

Table 1: Percentage of women by Reasons for not going to health institution for child delivery (Multiple responses)

Reasons for not going to health institution for delivery	Frequency	Percentage
Family members did not allow	16	55.2
Lack of time to health centre	8	27.6
Lack of transportation	9	31.0
Trained Dai available	20	69.0
Better care at home	23	79.3
Total	29	100.0

**Reason for Not Going to Health Institution:** The Table 1 presents the percentage distribution of women according to main reasons for not going to the health institution for child delivery. In the study area, around 79.3% of women who had given their birth at home reported that they had better care at home itself and another 69% stated that the trained Dais were available in their area. A quite significant proportion of women reported that their family members did not allow them to visit the health facility for child delivery (55.2%). It is also observed that 31% of women stated that the transportation facility was not available to reach the health centre. More than one-fourth of women stated that they had no time to visit the health institution for delivery (27.6%).

**Place of Delivery by Socio-economic and Demographic Condition:** It is essential that delivery should be conducted under proper hygienic conditions with the help of a trained medical practitioner. The Table 2 shows the percentage distribution of SC women's place of delivery by their socio-economic and demographic conditions. The result of the analysis shows that the younger women (18-20 age groups) were less likely than older women given birth at home. The women in the age group 18-20 were less likely to given birth at home (2.1%) than those aged 21-22 (5.2%). The relation between women's education and place of delivery was positively associated. The women who had completed higher secondary and above level of education were preferred the health institutions for their delivery but at the same time home deliveries were more common (18.8%) among illiterates with a Chi-square value of 23.46 at p= .000. Delivery at the health facilities was quite common among women who were working in non-agricultural sector (100%) than non-workers (93.5%).

The Table 2 shows that the proportion of women in households in the medium standard of living index (SLI) was less likely given birth at home (3.8%) than women in low SLI (7.3%). And all the child deliveries among the high SLI households took place at

Table 2: Percentage distribution of women by Place of delivery according to their background characteristics

Background characteristics	Place of Delivery			X <sup>2</sup>	P
	Home	Institution	Total		
Age of women					
18- 20	2.1	97.9	94	1.74	.418
21- 23	5.2	94.8	364		
24 years	5.6	94.4	147		
Education of women					
Illiterate	18.8	81.2	32	23.46	.000
Primary education	8.9	91.1	56		
Secondary education	3.9	96.1	467		
Higher secondary and above	-	100.0	50		
Occupation of women					
Non-workers	6.5	93.5	123	8.71	.013
Agricultural labourers	6.0	94.0	348		
Non-agricultural labourers	-	100.0	134		
Standard of living index					
Low	7.3	92.7	234	21.35	.000
Medium	3.8	96.2	318		
High	-	100.0	53		
Age at marriage					
Less than 18 years	22.2	77.8	18	15.54	.001
18-19 years	5.5	94.5	307		
20-21 years	3.4	96.6	238		
22 -23 years	-	100.0	42		
Birth order					
First	2.5	97.5	365	10.97	.004
Second	8.2	91.8	207		
Third	9.1	90.9	33		
Exposure to mass media in weekly					
More frequently	1.6	98.4	252	12.73	.001
Less frequently	7.1	92.9	353		
Health care facility					
Within 1 Km	-	100.0	78	1.09	.581
2- 3 Km	4.7	95.3	171		
4 or more Km	5.9	94.1	356		
Total	4.8	95.2	605		

the institution. It discloses that the place of delivery was significantly associated with the women's SLI with a Chi-square value of 21.35 at p= .000. It reveals the fact that increasing SLI of SC women decreases the home deliveries in the study area. The age at marriage and place of deliveries were positively associated. The women who married at later age (22 and above years) were less likely to given birth at home than those who married at an early ages. First birth order deliveries were less likely to happen at home (2.5%) than higher birth order deliveries (9.1%). Birth order was significantly influence on the place of delivery with a Chi-square value of 10.97 at p= .004. The impact of mass media exposure of women on the place of delivery shows a strong positive association.

The proportion of home deliveries was less among women who were exposed more frequently to mass media (1.6%) than less exposed women (7.1%). All women who were residing within one km preferred the health facility for delivering the child whereas this proportion was 94.1% among women who residing four Km away from health centers. It shows that the proportion of home deliveries increased when the distance to health facilities increased.

## **DISCUSSION**

This study investigated individual, socio-economic and demographic and health services related factors that were associated with the place of delivery. Women's educational level, their standard of living status, age at marriage, birth order, mass media and health care facilities were most predictive of where the delivery occurred. In the study area, 95.2% of deliveries were taken place at institution and remaining 4.8% of deliveries conducted at home. The key factors influencing choice of place of delivery was education, age at marriage, birth order and low standard of living index.

Since 1997, Reproductive and Child Health outreach camps have been conducted in Tamilnadu state. Concrete efforts have been made to provide delivery care services at the primary health centre level. During 1997-99, an attempt was made to provide 24-hour delivery services in some PHCs, staffed by three medical officers, three additional staff nurses, two cleaners and a driver to equip PHCs for 24 hour delivery services. In 2009, all the 1421 PHC's in the state were declared as 24 hours PHC. Now a large proportion of PHC's in the state have two medical officers, one is a female doctor [13]. Encouraged by its success in increasing institutional deliveries through 24-hour PHCs, the state government was decided to upgrade some of these PHCs in every block into Basic Emergency Obstetric and Neonatal Care (BEmONC) centres. In 2007, there were 385 BEmONC centres in Tamilnadu state. BEmONC centre is equipped to provide the following services: 1) Normal deliveries, 2) Manual Vacuum aspiration for termination of pregnancy 3) Tubectomy, 4) Blood storage centres, 5) Stabilisation of obstetric and newborn emergencies and referral and 6) Essential newborn care.

Comprehensive Emergency Obstetrics and New Born Care centres (CEmONC) are initiated to ensure maternal survival and to lower maternal morbidity in Tamilnadu state. CEmONC centres include all the above conditions of BEmONC centres and in addition, blood collection and storage and operation theatre facilities. The idea is to

have one CEmONC centre within 10 Kms of travel for every woman, open round the clock, equipped with an Operation Theatre where emergency -sections can be performed and blood bank with storing and collecting facilities. Each CEmONC centre is meant to be staffed by four obstetrics and gynaecology specialists, four paediatric specialists, two general surgeons and two anaesthetists [14].

It is well recognized that women's current age plays an important role in the utilization of medical services. The result of the present analysis shows that the younger women (18-20 age groups) were less likely than older women given birth at home. Mothers' age may sometimes serve as a proxy for women's accumulated knowledge of health care services, which may have a positive influence on the use of health services. On the other hand, because of developments in modern medicine and improvements in educational opportunities for women in recent years, younger women might have an enhanced knowledge of modern health care services and place more value upon modern medicine [15, 16, 27]. Women's literacy is an important predictor for the use of maternal health care services [17-19]. It is well recognized that a woman's educational level has a positive impact on health care utilization. Increased education influences service use by increasing female decision-making power, increasing awareness of health services, changing marriage patterns and creating shifts in household dynamics [18]. Evidence from the present study reveals that the women who had completed higher secondary and above level of education were preferred the health institutions for their delivery but at the same time home deliveries were more common among illiterates. In Afghanistan, low female literacy is associated with lower skilled birth attendant use in a country in which, nationwide, only 6% of women can read [20].

Socioeconomic factors such as income, household wealth, education, have been shown to be of greater importance in determining health service use than demographic factors [18, 21]. Research consistently shows that a low income and the cost of services are important constraints on service utilization: increased income has a positive effect on the utilization of modern health care services and low income and the cost of services are important constraints on service utilization [16, 21]. Institutional delivery increases markedly as mother's education and wealth index increases [22]. The present study shows that the proportion of women in households in the higher standard of living index was less likely given birth at home than women in low standard of

living index. Huge inequalities in the use of skilled birth attendants are found in developing countries, with the poor being at a stark disadvantage [20, 21]. In some studies, birth order and parity were important determinants for the use of maternal health care services: higher birth order and higher parity decrease the likelihood of using services. Compiled data from national surveys from all continents showed that in all continents, low parity women were more likely to seek skilled birth attendance [16]. Evidence from the present study also reveals that birth order significantly influenced the place of delivery. First birth order deliveries were less likely to happen at home than higher birth order deliveries. High birth order was found to be a predisposing factor of home delivery in India [23] as well as in four states of southern India; after an uneventful birth of the first child at home, subsequent deliveries are perceived to be low risk thus increasing the likelihood of delivering the subsequent babies at home [23, 19].

Place of residence also plays an important predictor to prefer women's place of delivery. Living in urban areas increases the probability of pregnant women using trained professionals for birth deliveries [24, 25]. The present study discloses that all women who were residing within one Kilometer (Km) of radius preferred the health facility for delivering the child whereas this proportion was less among women who residing four Km away from health centers. It shows that the proportion of home deliveries increased when the distance to health facilities increased. Place of residence was found to be an important predictor for the use of delivery services in Ethiopia as well as in Nigeria, with urban women more likely to use institutional deliveries compared to rural women [26-28]. Significant differences in health care utilization by different social groups, even in countries with universal insurance coverage, have been observed. In many cases, poorer people with greater needs use less services (inverse care law), therefore equity concerns and reducing gaps are positioned as essential goals for policy making and policy makers [29].

Trend of delivery at health institution was remarkably increased among women and also socio-economic and demographic factors have an impact on the women's decision to deliver in a health facility among SC community in rural areas of Tamilnadu state in India. Improving education among girls, at least up to secondary school level, training of traditional birth attendants and sustainable poverty alleviation programmes through income generating activities appear to be viable options and strategies to ensure institutional deliveries, skilled

attendant at birth and consequently safe motherhood. Standard of living index of women has a very significant impact on the place of delivery among the study population. More information is required in rural area through mass media (Radio/Television) regarding the importance of institutional deliveries. At the same time more health care facilities at the door step of rural women is best-touted option. In the study area, trend of delivery at health institution was remarkably increased but there were strong differentials in low social status of women. Ignorance and dominance of mothers-in-law were main reasons contributing to home delivery. In order to make better maternal and child health, the health worker needs to provide knowledge to women on behaviour and communication change and proper maternal health information are the best options to reduce the practice of home delivery among rural women. Therefore, present study recommends that Government should take concrete steps to change the mind-set of the people and encourage them to deliver at institution through targeted programs.

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