ORIGINAL ARTICLE - PUBLIC HEALTH

Vol 3 | Issue 2 | April - June | 2023

FACTORS INFLUENCING THE CHOICE OF PLACE OF DELIVERY IN TAMIL NADU – A CROSS SECTIONAL STUDY

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Abstract

BACKGROUND: Maternal healthcare services in Tamil Nadu are provided both by public and private sector. The changing pattern in the place of delivery over years is influenced by multitude factors. This includes personal preferences, family choices, and other system related factors. This study aims at determining the factors that influence choice of delivery among women who delivered in the year 2022 in Tamil Nadu.

METHODS : Quantitative study using descriptive design was done among mothers who delivered in the last 1 month (August 2022) in Tamil Nadu. One Urban and rural PHC was randomly selected from each Health Unit District excluding Chennai. All women who delivered in the month of August 2022 was obtained from PICME irrespective of the outcome of delivery in the selected PHC area. Mothers who did not give consent to participate in the study and those who were not available even after three attempts were excluded from the study. The mothers were approached by the Mobile Medical Unit of the respective block and the women interviewed using semi-structured questionnaire.

RESULTS : A total of 1143 mothers were approached, out of which 865 women consented to participate in the study. Among the 865 study participants, 538 (62% -95% CI -58.8- 65.4%) had delivered at a public facility ,in particular more than 25% of the deliveries happened in medical college hospital and10% in PHC. Among the various demographic factors, 75% of rural women delivered in public facility compared to only 50% in urban slum and non-slum area. There is also difference based on religion, caste, education level, economic status on place of delivery. Public health facilities are sought after for registration and getting antenatal services. The place of delivery is chosen predominantly based on distance, familiarity with the facility and availability of skilled personnel and medicine.

CONCLUSION : The choice of place of delivery is defined by the socioeconomic and demographic factors. As the population moves up in the social ladder, preference for private facilities is higher. Public facilities can be assigned specific roles and referral linkage shall be strengthened with regard to maternal care to increase its efficiency, with PHCs performing antenatal and postnatal care services, the higher centres shall focus on providing intrapartum care.

KEYWORDS : Place of delivery, Choice of Place of Delivery care

INTRODUCTION

Maternal health refers to a woman's health during pregnancy, childbirth, and postpartum. Maternal mortality significantly contributes to deaths among women in the reproductive age group. World Health Organisation (WHO) estimates that every day in 2017, 810 women died due to preventable and treatable causes related to pregnancy and childbirth.[1] These deaths can be prevented or treated by providing quality maternal care. WHO states that skilled care before, during, and after delivery can save the lives of women and newborns.[1] A key strategy to ensure skilled care is that all births occur in health facilities where obstetric complications can be treated, which is called institutional deliveries.[2] However, institutional deliveries don't always translate into skilled quality care, as many facilities do not have adequately trained manpower or sufficient equipment and other infrastructure to manage complications.[2,3] In a recent study by HY Lee et al found that institutional deliveries in India have a meaningful survival advantage only where the quality of maternal care services is higher.[4] This signifies the importance of improved quality in the institutions to provide the intended effect.

India with the current maternal mortality ratio of 103/ 1 lakh live births in 2017-195 has adopted 100% institutional delivery as a key strategy to reduce maternal mortality. The government has incentivized institutional delivery through the "Janani Suraksha Yojana" program since 2005. Built on the success of JSY, a newer scheme, "Janani Shishu Suraksha Karyakram" was launched by the central government to ensure no expense childbirth, including free transport, free diet, free drugs, and diagnostics. All these schemes have made progress in institutional deliveries, as is evident from the National Family Health Survey data 40.8% in 2005-06(NFHS-1) to 88.6% in 2019-20(NFHS-5).

The maternal mortality ratio in Tamil Nadu is 54 per one

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lakh live births and has attained the Sustainable development goal of reducing the MMR to < 70/ 1 lakh live births.[5] Tamil Nadu is the only State having 99.9 percent of institutional delivery with 66.9 percent of institutional deliveries occurring in public sector.[6] Maternal healthcare services in Tamil Nadu are provided both by public and private sector. The public sector provides services through the health Subcentres (HSCs) and PHCs in the rural areas and the urban health centres in the urban areas at the primary level. District and subdistrict hospitals provide care at the secondary-level and teaching institutions and their attached hospitals at the tertiary level. Secondary and tertiary-level hospitals function as referral hospitals. Women have direct access to all levels of health facilities for birthing care. Services are provided free of charge in the public facilities. The private facilities range from small nursing homes, corporate hospitals to NGO run hospitals and private medical college hospitals, which charge user-fees. As on 2022, 40% of the child birth happened in Private institutions, 50% in secondary and tertiary hospitals, 10% in PHCs. Prior to 2006, around 43% of the deliveries were conducted in the private institutions, 42% in the secondary and tertiary-level public hospitals, 7% each in the PHCs and HSCs, and a little above 5% had domiciliary deliveries. An analysis of institutional deliveries by sector from 2006 onwards showed a different picture. While HSC and domiciliary deliveries declined to less than 1%, a four-fold increase was observed in PHCs, marginal decline in secondary and tertiary hospitals and, surprisingly, deliveries in the private sector declined by 10 points.

The changing pattern in the place of delivery over years is influenced by multitude factors. This includes personal preferences, family choices, and other system related factors. Schemes like Muthu Lakshmi Reddy Maternity Benefit Scheme insist on delivering in a government institution for the mother to be eligible for the conditional cash benefit of Rs.14000 and kind benefit of Rs.4000. However, factors determining the choice of place of birth among different public health institutions not clear and needs to be studied. This study aims at determining the factors that influence choice of delivery among women who delivered in the last 1 year. The findings from this study will help health planners and other stakeholders formulate policies aimed at enhancing the utilization of various health facilities by pregnant women thereby reducing maternal morbidity and mortality.

METHODS AND MATERIALS

STUDY DESIGN : Quantitative study using descriptive design was used to find the factors which determine the place of childbirth among mothers who delivered in the last 1 year in Tamil Nadu.

STUDY POPULATION : Mothers who delivered in the last 1 month (August 2022) in Tamil Nadu

EXCLUSION CRITERIA : Mothers who do not give consent to participate in the study and those who are not available even after three attempts were excluded from the study.

SAMPLE SIZE : The study was conducted among 1% of women who delivered in the month of August 2022 in Tamil Nadu.

SAMPLING METHOD : The list of PHCs (including UPHCs) in Tamil Nadu was obtained. From the list 1 Urban PHC and 1 rural PHC was randomly selected from each Health Unit District excluding Chennai. All women who delivered in the month of August 2022 was obtained from PICME irrespective of the outcome of delivery in the selected PHC area. PICME registry is used as the sampling frame because it ensures 100% registration as it is linked with Civil Registration System of births and deaths. These women were approached by the concerned Mobile Medical Unit(MMU).

STUDY VARIABLES : The details of the study were explained by the MMU to the study participant and informed written consent was obtained. Data was collected using a semi-structured questionnaire using Google forms. The questionnaire was administered by the medical officer of the MMU in the local language.

The study tool included variables which have been identified as potential factors which determine the choice of place of childbirth from various other studies. (Table 1)

Table 1 : Potential factors which determine the choice of place of childbirth from various other studies.

Socio demographic factors
Maternal age, Marital status, Sex of household head, Religion, Caste, Maternal education, Husband education, Perceived wealth class, Ownership of means of transportation, Decision making.
Obstetric factors
Birth order of last child, Adverse birth outcomes during delivery preceding the last pregnancy, Regular ANC visit during the last pregnancy, Time of the first ANC visit, Number of total ANC visits during the last pregnancy, Any pregnancy related problem during the last pregnancy, Previous antenatal and delivery history
Health system related factors
Availability of health facilities, Accessibility in terms of distance, Satisfaction with services

The questionnaire was prepared and reviewed by experts in the field of maternal care and necessary modifications made. The modified questionnaire was translated to local language and pilot tested among 20 women who delivered before the study period. Based on the feedback from the pilot study, necessary changes were made.

If the approached women were not available on the 1st visit, she was contacted through phone and details regarding the study were explained to her. She was invited to participate in the study. On her willingness to participate in the study, a suitable time and place for interview was fixed. If the selected woman was not available even after 3 attempts, the mother was excluded from the study. Institutional ethics committee clearance was obtained from Directorate of Public Health and Preventive Medicine.

All the Medical officers of MMU team was trained on the questionnaire and the study protocol.

STATISTICAL ANALYSIS PLAN : Descriptive statistics like frequencies and proportions was used to summarise categorical data, while continuous data expressed as means and standard deviation. For skewed data, median and interquartile range was presented. To assess the determinants of place of delivery, the outcome was dichotomised into public health facility and private health facility. Statistical Package of Social Sciences version 21 was used for data analysis.

RESULTS

A total of 1143 mothers were approached, out of which 865 women consented to participate in the study. Of the 865 mothers, 379 (43.8%) were from rural areas, 406 (46.9%) were from urban non-slum areas, and the rest 80 (9.2%) were from urban slum areas. The mean age of the study participants was 25 years(+ 4.4 SD) and almost all, i.e., 864 (99%) of the study participants were married/cohabiting with their partners.

It can be observed from Table 2 that majority of the participants, 720 (83.2%), had a formal education of higher secondary and above and 751 (86.8%) of them were unemployed. Among the study participants, 613 (70.9%) responded the key decision maker in the family was their husband, while 127 (14.7%) said it was the woman herself, and the rest 125 (14.5%) said it was any of the other members of the family (parents, in-laws, grandparents)/friends.

Among the 865 study participants, almost half, i.e., 400 (46.2%) women were primiparous, and the rest 465 (53.75%) were multiparous. From these 465 women, the antenatal and natal history of their previous pregnancy was obtained (Table 3).

Further, details of the current/latest pregnancy and place of delivery were obtained from all study participants. Out of the 865 participants, 538 (62% -95% CI -58.8- 65.4%) had delivered at a public facility while the rest 327 (38%) had delivered at a private facility (Figure 1). Among women who got delivered in public facilities, a larger proportion happened in medical college hospital, followed by sub-district hospital.

Table 2 : Sociodemographic profile of the mothers who delivered in the last 1 month – August 2022 (N=865)

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Variable	Frequency n(%)	Variable	Frequency n(%)
Age of the mother		**Religion**	
< 18 years	10 (1.2%)	Hindu	717 (82.9%)
18 to 35 years	839 (97%)	Christian	41 (4.7%)
> 35 years	16 (1.8%)	Muslim	107 (12.4%)
Caste		**Socio-Economic status***	
Backward caste	391 (45.2%)	Upper Middle (II)	122 (14.1%)
Most backward caste	207 (23.9%)	Lower Middle (III)	265 (30.6%)
Scheduled caste	199 (23%)	Upper Lower (IV)	475 (54.9%)
Scheduled tribe	22 (2.5%)	Lower (V)	3 (0.3%)
Not preferring to say	46 (5.3%)		
Mother's education		**Spouse's education**	
None	7 (0.8%)	None	11 (1.3%)
Primary (1-5th std)	19 (2.2%)	Primary (1-5th std)	27 (3.1%)
Middle School (6-8th std)	65 (7.5%)	Middle School (6-8th std)	101 (11.7%)
Higher secondary (9-12th std)	313 (36.2%)	Higher secondary (9-12th std)	300 (34.7%)
Diploma	57 (6.6%)	Diploma	364 (42.1%)
Degree	293 (33.9%)	Postgraduate	62 (7.2%)
Postgraduate	111 (12.8%)		
Mother's occupation		**Spouse's occupation**	
Unemployed	751 (86.8%)	Unemployed	6 (0.7%)
Unskilled worker	17 (2%)	Unskilled worker	164 (19%)
Semi-skilled worker	17 (2%)	Semi-skilled worker	196 (22.7%)
Skilled worker	31 (3.6%)	Skilled worker	204 (23.6%)
Clerical/shop/farm	9 (1%)	Clerical/shop/farm	130 (15%)
Semi-profession	3 (0.3%)	Semi-profession	48 (5.5%)
Professional	37 (4.3%)	Professional	117 (13.5%)

*-Modified Kuppuswamy Classification.

Table 3 : Previous obstetric history of the mothers who delivered in the last 1 month – August 2022

Variable	Frequency n(%)	Variable	Frequency n(%)
Pregnancy outcome (n=465)	424 (91.2%)	**In case of abortion, visit to any health facility (n=36)**	28 (77.8%)
Live birth	2 (0.4%)		8 (22.2%)
Still birth	3 (0.6%)	Yes	
Intrauterine death	36 (7.7%)	No	
Abortion			
Place of delivery (n=429)	266 (62%)	**Facility approached for abortion (n=28)**	10 (35.7%)
Public facility	163 (38%)	Public facility	18 (64.3%)
Private facility		Private facility	
Public facility where delivery was conducted(n=266)	54 (20.3%)	**Public facility where abortion was conducted (n=10)**	2 (20%)
PHC	4 (1.5%)		1 (10%)
CHC	46 (17.3%)	PHC	1 (10%)
SDH	41 (15.4%)	CHC	1(10%)
DH	106 (39.8%)	SDH	5 (50%)
Medical college hospital	15 (5.6%)	DH	
Central government hospital		Medical college hospital	
Mode of delivery (n=429)	223 (52%)	**Complications during delivery (n=465)**	46 (9.9%)
Normal vaginal delivery	204 (47.6%)	Yes	419(90.1%)
Caesarean Section	2 (0.5%)	No	
Assisted Vaginal delivery			
Note:			
PHC – Primary Health Centre		SDH – Sub-district Hospital	
CHC – Community Health Centre		DH – District Hospital	

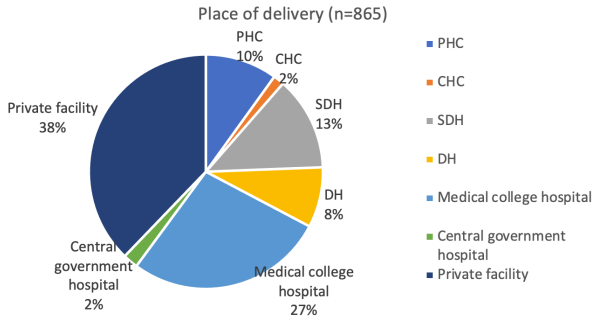

Figure 1: Place of delivery of current/latest pregnancy

Among the study participants, 806 (93.2%) participants said they had a planned pregnancy and 844 (97.6%) participants had sought antenatal care services from a health facility in the same area that they were residing in. At least 696 (80.5%) of the study participants visited or sought care from the location of delivery at some point during the antenatal period and 414(47.3%) of them gave birth at the same facility where they had their usual antenatal care services provided. Majority of the survey participants, 761(88%) reported that the local health worker paid at least one home visit during their entire antenatal period. Other significant sociodemographic factors and obstetric history have been summarized in Table 4 and 5.

Table 4 : Sociodemographic profile of mothers based on place of delivery

Variables		Place of delivery				Chi-square value	P value
		Public facility		Private facility			
		N	%	N	%		
Type of locality	Rural	289	76.3	90	23.7	56.940[a]	<0.001
	Urban non slum	210	51.7	196	48.3		
	Urban slum	39	48.8	41	51.3		
Religion	Hindu	482	67.2	235	32.8	46.802[a]	<0.001
	Christian	19	46.3	22	53.7		
	Muslim	37	34.6	70	65.4		
Caste	Backward caste	191	48.8	200	51.2	86.959[a]	<0.001
	Most backward caste	129	62.3	78	37.7		
	Scheduled caste	169	84.9	30	15.1		
	Scheduled tribe	22	100.0	0	0.0		
	Not preferring to say	27	58.7	19	41.3		
Age of the mother	<18 years	10	100.0	0	0.0	6.153[a]	<0.001
	18 to 35 years	518	61.7	321	38.3		
	>35 years	10	62.5	6	37.5		
Mother's education	Primary (1-5th std)	20	76.9	6	23.1	64.055[a]	<0.001
	Middle School (6-8th std)	51	78.5	14	21.5		
	Higher secondary (9-12th std)	234	74.8	79	25.2		
	Diploma	36	63.2	21	36.8		
	Degree	149	50.9	144	49.1		
	Postgraduate	48	43.2	63	56.8		
Mother's occupation	Unemployed	476	63.4	275	36.6	32.269[a]	<0.001
	Unskilled worker	15	88.2	2	11.8		
	Semi-skilled worker	11	64.7	6	35.3		
	Skilled worker	19	61.3	12	38.7		
	Clerical/shop/farm	7	77.8	2	22.2		
	Semi-profession	2	66.7	1	33.3		
	Professional	8	21.6	29	78.4		
Socio-Economic status	Upper Middle (16-25)	31	25.4	91	74.6	149.319[a]	<0.001
	Lower Middle (11-15)	129	48.7	136	51.3		
	Lower (<110)	378	79.1	100	20.9		
Gravida	1	245	61.3	155	38.8	3.373[a]	0.643
	2	234	61.9	144	38.1		
	3	47	68.1	22	31.9		
	=>4	12	66.7	6	33.3		

Table 5 : Obstetric history of the current/latest pregnancy

Variable		Place of delivery		Chi-square value	P-value
		Public facility (n=538)	Private facility (n=327)		
Registration of current pregnancy was done at	Public facility	538 (100%)	287 (88%)	69.001[a]	<0.001
	Private facility	0	40 (12%)		
If registered in a public facility, type of public facility	Health subcentre	101 (18.8%)	40 (14%)	13.782[a]	0.032
	PHC	389 (72.2%)	228 (79%)		
	CHC	30 (5.6%)	19 (7%)		
	SDH	2 (0.4%)	0		
	DH	2 (0.4%)	0		
	Medical college hospital	13 (2.4%)	0		
	Central government hospital	1 (0.2%)	0		
Received ANC services from	Public facility	526 (98%)	150 (46%)	320.803[a]	<0.001
	Private facility	12 (2%)	177 (54%)		
If in a public facility, type of public facility	PHC	452 (85.9%)	131 (87.3%)	13.529[a]	0.019
	CHC	31 (5.9%)	17 (11.3%)		
	SDH	8 (1.5%)	0		
	DH	7 (1.3%)	1 (0.7%)		
	Medical college hospital	25 (4.8%)	1 (0.7%)		
	Central government hospital	3 (0.6%)	0		
Time of first visit to the health facility	First trimester	424 (78.8%)	258 (79%)	0.838[a]	0.658
	Second trimester	101 (18.8%)	64 (19.5%)		
	Third trimester	13 (2.4%)	5 (1.5%)		
Total number of visits to a health facility	1 to 5	45 (8%)	38 (11.6%)	242.248[a]	<0.001
	6 to 10	345 (64%)	120 (36.7%)		
	11 to 20	132 (25%)	32 (9.8%)		
	More than 20	4 (1%)	0		
	Not Applicable	12 (2%)	137 (41.9%)		
Complications during pregnancy	GDM	14 (2.6%)	30 (9.2%)	18.195[a]	<0.001
	PIH	37 (6.9%)	29 (8.9%)	1.144[a]	0.285
	Severe Anaemia	43 (8%)	8 (2.4%)	11.275[a]	0.001
	Hypothyroid	42 (7.8%)	27 (8.3%)	0.056[a]	0.813
	Multiple pregnancy	7 (1.3%)	6 (1.8%)	0.391[a]	0.532
	Cervical Incompetence	1 (0.2%)	1 (0.3%)	0.127[a]	0.722
	Conceived out of infertility treatment	5 (0.9%)	10 (3.1%)	5.409[a]	0.020
	Other medical complications	9 (1.7%)	6 (1.8%)	0.031[a]	0.860
	Previous Caesarean Section	79 (14.7%)	60 (18.3%)	2.025[a]	0.155
	None	298 (55.4%)	175 (53.5%)	0.288[a]	0.591
	Others	48 (8.9%)	28 (8.6%)	0.033[a]	0.856
History of any hospitalization during antenatal period	Yes	63 (12%)	27 (8%)	2.602[a]	0.107
	No	475 (88%)	300 (92%)		
History of any blood transfusion during antenatal period	Yes	24 (4%)	2 (1%)	10.337[a]	0.001
	No	514 (96%)	325 (99%)		

Note: GDM – Gestational Diabetes Mellitus
PIH – Pregnancy Induced Hypertension

Among the 465 multiparous women, almost half of them, i.e., 226 (48.6%) had delivered at the same facility as any of their previous deliveries while the other half, i.e., 239 (51.3%) delivered at a different facility. Out of the 226 participants, 134(59%) delivered at a public facility, [PHC – 27 (20.1%), CHC - 1 (0.7%), SDH – 30 (22.4%), DH – 14 (10.4%), Medical College/Hospital – 59 (44%) and Central Government hospital – 3 (2.2%)] and 92(41%) delivered at a private facility. 438 (50.6%) of the 865 participants agreed that at least one of their family members/relatives had delivered at the same place as their current/latest place of delivery.

Further, 226 (26.1%) participants had gone to another facility [196 – Public facility, 28 – Private facility and 2 – NGO] for delivery before visiting the current place of delivery. The reasons that influenced the choice of place of delivery of all the study participants have been analysed and displayed in Figure 2a and 2b and the outcomes of the current pregnancy have been summarized in Table 6.

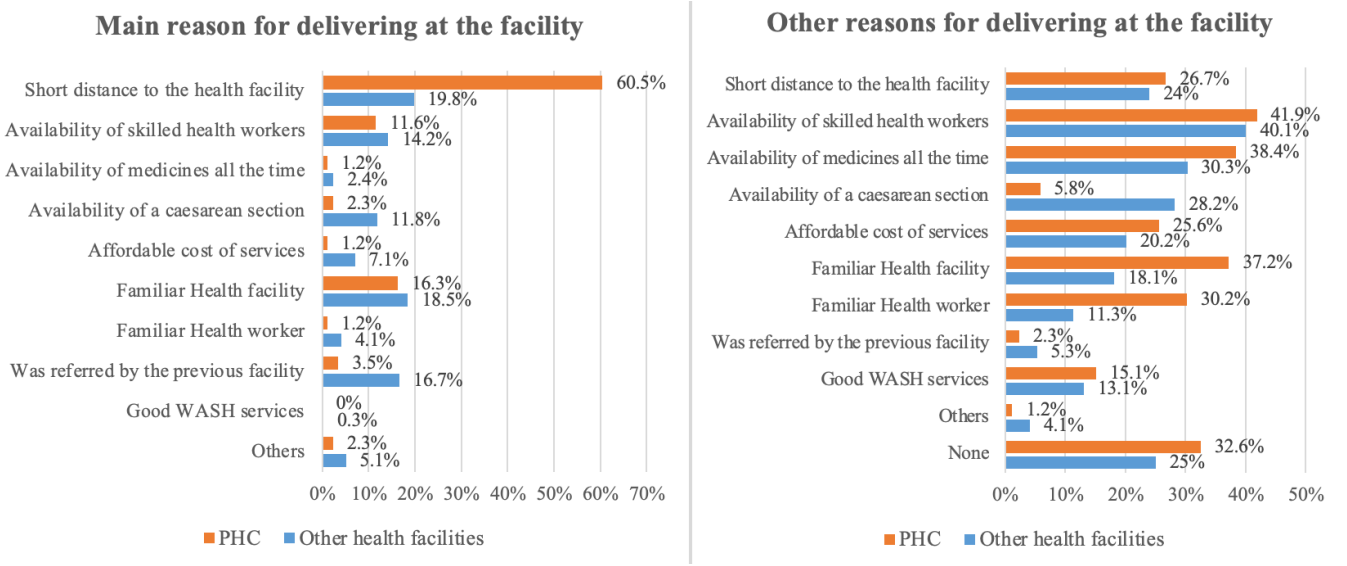

Figure 2a : Reasons for delivering at the facility - PHC (86) Vs Other health facilities (779), n=865

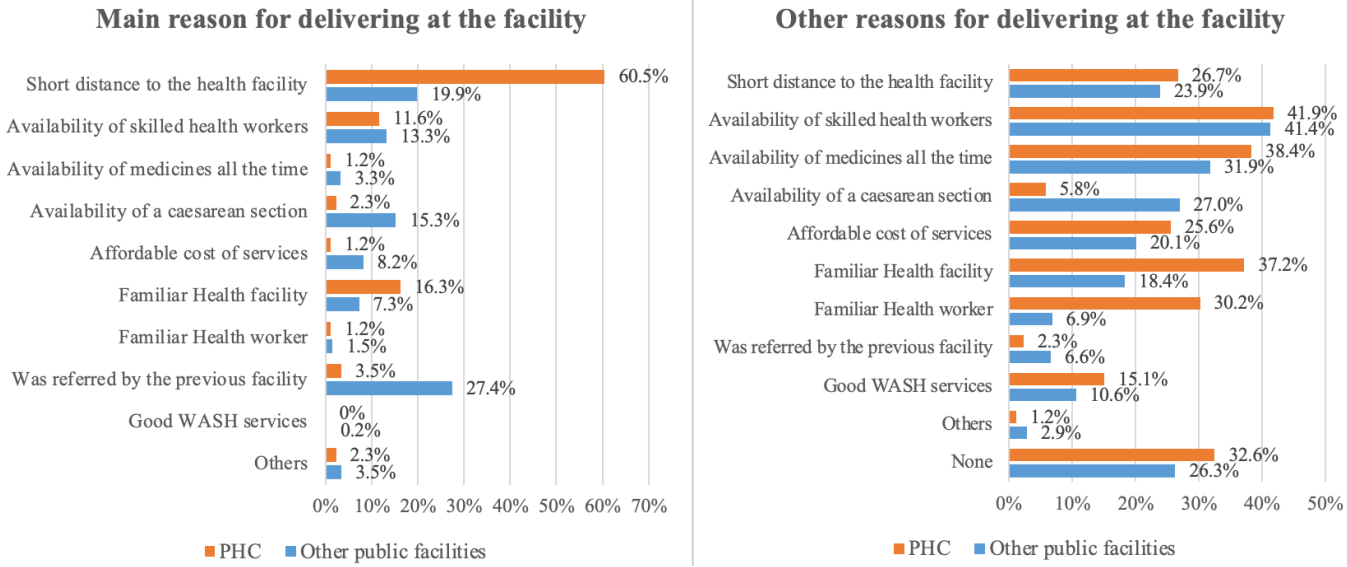

Figure 2b : Reasons for delivering at the facility - PHC (86) Vs Other public facilities (452), n=538

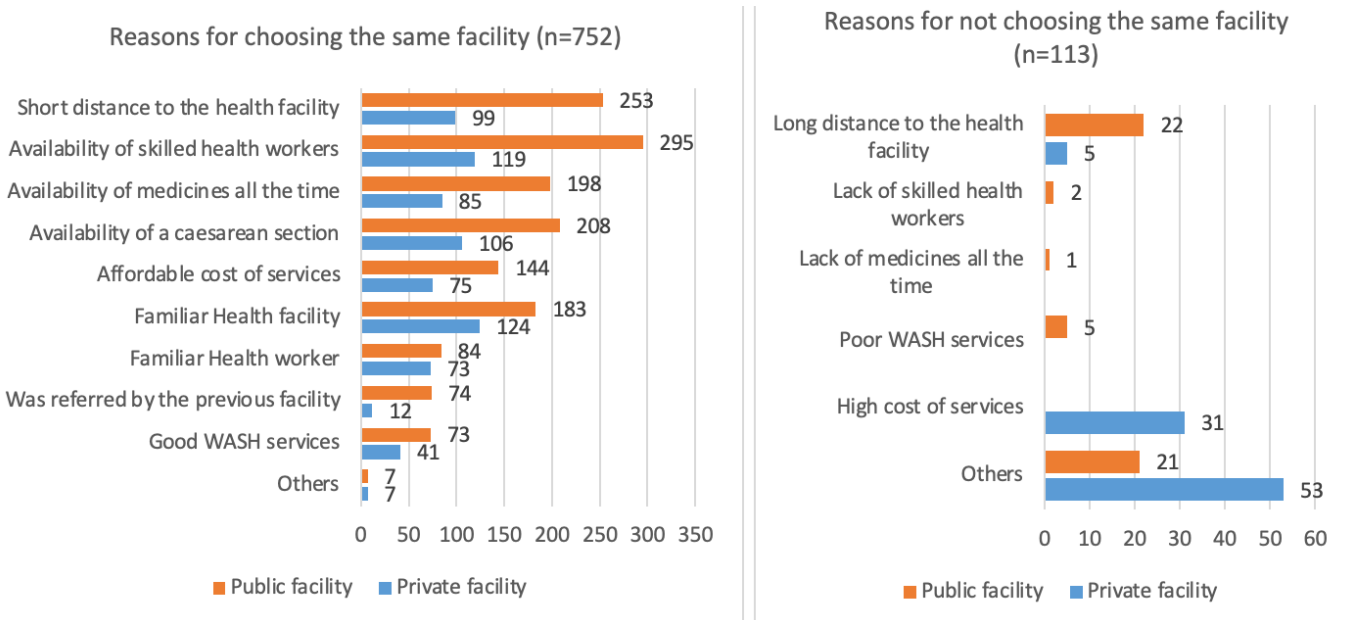

Figure 3 : Reasons for choosing/not choosing the same health facility for subsequent deliveries

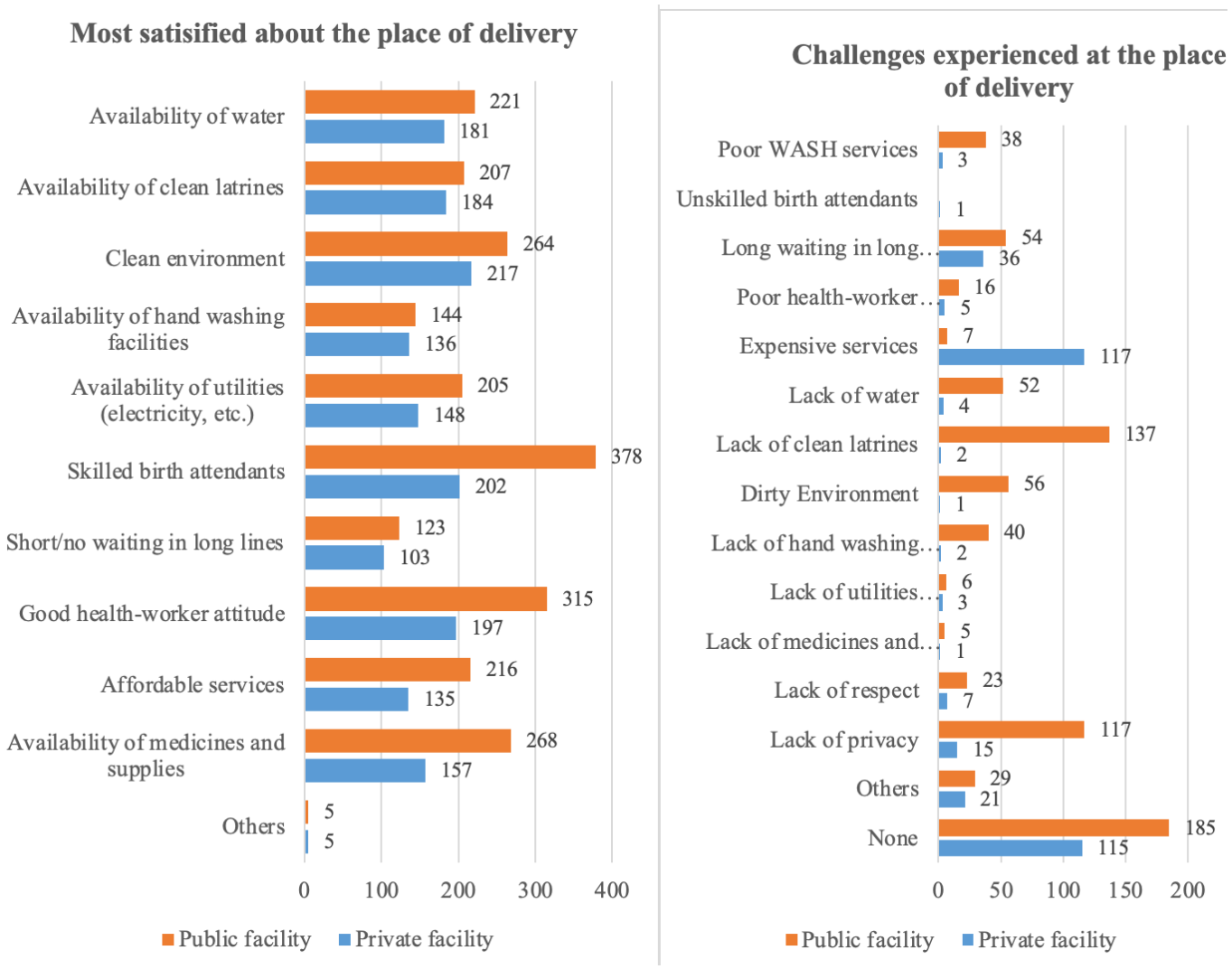

Figure 4 : Satisfactory and challenging factors experienced at the place of delivery (n=865)

Table 6 : Outcome of current/latest pregnancy

Variable		Place of delivery		Chi-square value	P-value
		Public facility (n=538)	Private facility (n=327)		
Outcome of delivery	Live birth	532 (98.9%)	323 (98.8%)	0.811[a]	0.847
	Still birth	1 (0.2%)	1 (0.3%)		
	Intrauterine death	1 (0.2%)	0		
	Abortion	4 (0.7%)	3 (0.9%)		
Mode of delivery	Normal vaginal delivery	314 (58.8%)	97 (38%)	69.348[a]	<0.001
	Caesarean Section	218 (40.8%)	221 (60%)		
	Assisted Vaginal delivery	2 (0.4%)	6 (2%)		
Sex of the baby	Male	295 (55%)	167 (52%)	1.173[a]	0.279
	Female	238 (45%)	157 (48%)		
Birth weight of the baby	</= 1.50 kg (Very LBW)	4 (0.7%)	0	6.380[a]	0.095
	1.51 kg to 2.50 kg (LBW)	127 (23.6%)	74 (22.6%)		
	2.51 to 3.50 kg	387 (71.9%)	230 (70.3%)		
	> 3.50 kg	20 (3.7%)	23 (7.03%)		
Complications during delivery	Yes	49 (9%)	32 (10%)	0.110[a]	0.740
	No	489 (91%)	295 (90%)		

Note: LBW – Low Birth Weight

When the participants were asked if they would deliver at the same health facility as the current/latest pregnancy if they were to deliver another child, majority of them, i.e., 731 (84.5%) participants, agreed that they would, while the rest denied it. Of the 731 that agreed, 492 (67.3%) participants had delivered at a public facility [PHC – 81 (16.5%), CHC – 13(2.6%), SDH – 105 (21.3%), DH – 62 (12.6%), Medical College/Hospital – 217 (44.1%) and Central Government hospital – 14 (2.8%)] and the other 239 (32.7%) had delivered at a private facility. The reasons substantiating their answers have been displayed in Figure 3. Furthermore, when enquired if they would recommend the health facility to other mothers to seek delivery services from the same facility, 752 (87%) of the 865 women were affirmative while the rest 113 (13%) said that they would not recommend it.

The study participants were also enquired if they had made any payment to the health facility for the delivery, for which around 329 (38%) women agreed to have made a payment. Of the 329 participants, about 32 (9.7%) had delivered at a public facility and had spent not more than Rs. 30,000, while the other 297 (90.3%) who had delivered at a private hospital made payments ranging from Rs. 2500 up to a maximum of Rs. 2,00,000. Details regarding the mode of transport used to reach the place of delivery, time taken to reach the facility

and payments made (if any) for transport were elicited from all the 865 participants. 142 (16.4%) had utilised the 108 ambulance services to reach the health facility, and the rest 723 (83.6%) had used their own vehicles/taxis/private ambulances. 657 (76%) of the participants had reached the facility in less than 30 minutes, 157 (18.2%) took between 30 minutes to 1 hour, 32 (3.7%) of them took between 1 hour to 2 hours and 19 (2.1%) of the participants had taken more than 2 hours to reach the health facility from their residence. Lastly, the study participants were asked about the most satisfactory aspects and the challenges experienced at the place of delivery of their current/latest pregnancy (Figure 4) to help us draw meaningful conclusions about the factors that ultimately influence a mother in choosing a place to deliver her child.

DISCUSSION

The study revealed that 62% (95% CI – 58.8% - 65.4%) of the mothers delivered in any of the public facility, in particular more than 1/4th of the deliveries happened in medical college hospital. One in 10 deliveries happened in PHC. This is conforming to the NFHS - 5 report. Tamil Nadu, a state which has a vision of having one medical college hospital in each district has the largest number of government medical college hospitals. Hence, medical college hospitals are more accessible for the patients to get delivered, avoiding anticipation of any further referral. Ten percent of the deliveries happened in PHC. There are no deliveries in Health Subcentres. PHC deliveries in Tamil Nadu, over a period of time has shown a declining trend from 28.3% to 10.1% as per the government records.

Among the various demographic factors, 75% of rural women delivered in public facility compared to only 50% in urban slum and non-slum. This could be because of the stronger primary health infrastructure available in rural areas including reaching out to the mothers at their door steps through field staff. However, in urban areas the primary health infrastructure is yet to be strengthened and the role of field functionaries is limited to urban slum, and this is coupled with easily accessible private facilities in the urban areas which pushes them to avail services from private sector. While the primary care infrastructure in urban areas is still inadequate, the secondary and tertiary care facilities of public sector are available in urban areas. Despite this, almost half of urban population chose private providers for delivery. These finding throws speculation regarding the choices made, as in rural areas the private providers are low in numbers making their choices limited and hence rural population had to depend only on available public resources. Whereas in urban areas, they have multiple options to choose from. There is also difference based on religion, the reason for which needs to be explored. With regards to caste, larger proportion of women belonging to historically deprived caste community like Most backward caste, scheduled caste and scheduled tribe delivered in public health facility. A larger proportion of people belonging to SC /ST are living in rural areas (65% of SC live in rural areas and 83% of ST live in rural areas), which again provides them with limited choices of health care providers and are highly dependent on the public providers. Similarly, women with lower education status and lower income group, delivered in public facilities. Based on demographic profile, it is very evident that mothers belonging to poor socio-economic group delivered in public facilities. This could be because of their ability to pay, as all government health facilities provide maternal health services free of cost, women with lower paying capacity opted for public health facility. Alternatively, women with high purchasing power had more choices of health care providers and of the various choices, they opted for delivering in private facilities. Based on socio- demographic profile, it is evident that non- availability of competing private providers and low purchasing power of people, determine their choice of place of delivery. As the state is currently urbanising at a faster rate, there are possibilities that the private providers would increase in numbers and people might have enough choices to make.Also with improving socio- economic development, the purchasing power of the people would improve. As it is evident from this study, with increasing purchasing power, there would be an inclination towards private care providers for delivery care.

Almost 80% of the women had sought antenatal care at least once in the place of delivery and 50% had delivered in the same centre where they received antenatal care. With regards to antenatal care, 95% of the registration of pregnancy happened in public health facilities, among which PHC were the most sought over followed by Health Sub-centre. Among mothers who delivered in private facilities, 46% had availed ANC services at some point in public facilities, and almost 98% of them had been to a PHC/CHC for their antenatal visits. This requires further exploration using qualitative methods to understand the push and pull factors which led them to decide on availing private services despite visiting public facilities. It is also found that most of the mothers have had almost 6-10 antenatal visits, while the recommended minimum number of antenatal visits are 4. However, increased number of antenatal visits doesn't

translate into better antenatal care, but also increases the out-of-pocket expenditure incurred towards these visits. Hence, any pregnancy after registration should plan for ideal number of visits during the antenatal period and fixed services in each visit should be planned well. As PHCs are the key antenatal service provider, enough planning should be done for each antenatal visit. As component of the antenatal care services, the expectant mothers can be escorted to the nearest comprehensive obstetric management centre by the field workers of the PHC. This gives familiarity for the mother regarding the higher centre and there is also a strong referral linkage between facilities. Since most of the women had visited a PHC during their AN Visits, their idea about delivery care services in public facilities will be restricted to only about PHC. Escorting the expectant mothers on a tour to such higher centres, will let them know regarding the services that are available in Public sector. This can also be used as an opportunity for screening by a specialist.

Among mothers with various complications, larger proportion of those with Gestational Diabetes delivered in private facility, (9.2% in private versus 2.6% in public facility). Similarly, mothers who conceived out of infertility treatment, a significantly higher proportion delivered in private facility (3.1% vs 0.9% in public facility). Whereas among mothers with anaemia, a significantly larger proportion delivered in public facility (8%) compared to private (2%). This was correlating with blood transfusion history. This shows that public facilities are approached for the purpose of registration. Anaemia, a nutritional deficiency disorder is common among mothers who seek public health facilities. Conception after treatment for infertility is largely sought by people who have ability to spend, as the facility for such procedures is currently lacking in public health facilities.

With regards to outcome of pregnancy, almost 99% were live births. There was a significant difference in the mode of delivery between public and private facility. Sixty percent of the deliveries in public facility were vaginal delivery, compared to 60% of caesarean in private facilities. This is correlating with the NFHS - 5 finding of Tamil Nadu. As it is expected to have an increase in deliveries in private facilities, with improving socio- economic status, the role of government in protecting the welfare of its citizens should be well defined. The government should take up regulatory role rather than provider role, to ensure the mothers safety is protected. Government should be performing regular audits like maternal death audits, near miss death audit, caesarean audits etc to ensure regulations.

The main reason quoted by the mothers for choosing public health facility was short distance to reach the facility, and the 2nd most common quoted was referral by health facility. Whereas among private users, the most common reason was familiarity of the health facility. The other reasons for choosing public or private facility for delivery was availability of skilled health workers especially specialists, availability of essential medicines all the time. This could also be the reason for choosing medical college facilities over PHC.

Among mothers who delivered in public facility, 91.4% of the mothers opined to choose the same facility for any subsequent deliveries. The most common reason quoted was availability of skilled health workers and short distance. Among those who did not prefer the current facility for future deliveries, lack of water sanitation and hygiene was the most common reason among public facility users compared to cost of services among private users.

Women who delivered in public health facility were satisfied with the facility for availability of skilled health personnel whereas among women who delivered in private facility, the most common satisfying reason was clean environment. Similarly, the most common challenges faced by women who delivered in public health facility was lack of clean latrines and water and lack of privacy, while private users felt the expensive services as the predominant challenge.

CONCLUSION

Public health facilities are sought after for registration and getting antenatal services. However, only 2/3rd of deliveries is happening in public health facilities and these facilities are commonly sought by women belonging to poor socio-economic status. The place of delivery is chosen predominantly based on distance, familiarity with the facility and availability of skilled personnel and medicine. Lack of clean environment and privacy should be addressed in public facilities to increase the coverage in public facilities which in turn can cut down the out-of-pocket expenditure incurred towards intrapartum care.

The roles of facilities at each level should be well defined. With increasing preference to deliver in a higher centre or in private facility, PHCs role in antenatal care should be planning and promoting planned antenatal visits and facilitating referral linkage with higher centres, while the higher centres should be focusing on intrapartum care and managing high risk pregnancies. Such role delegation will enable efficient use of resources and improve the public health performance further.

CONFLICT OF INTEREST : Nil

ACKNOWLEDGEMENT : We sincerely thank the team of Mobile Medical Units of the selected block for their contribution in data collection from the mothers of their block.

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