Original Research Article
Maternal Care in Private Sector, Colombo District, Sri Lanka; Profile and Factors associated with key Newborn Care Practices

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ABSTRACT

Aims: Limited information is available on private sector contribution for maternal care in Sri Lanka. The main objective of this assessment is to describe the maternal and newborn characteristics of deliveries in private sector in Colombo District, Sri Lanka. Secondly, the assessment of the factors associated with key newborn care practices using the National Maternal and Newborn Surveillance of Private Health Institutions (NMNS-PHI)-Phase 1 was conducted.

Study design: Secondary descriptive analysis was performed using data reported in the NMNS-PHI-Phase 1, Sri Lanka.

Place and Duration of Study: All deliveries in private health institutions in Colombo District which were reported in the NMNS-PHI-Phase 1 was included in the study. The time period was from 1st January 2021 to 31st December 2021.

Methodology: Maternal, delivery and newborn characteristics of national vs. private sector in Colombo District were compared using Z test. Associated factors for key newborn care practices was calculated using univariate and multivariate Odds ratios.

Results: Incidence of Gestational DM was higher among pregnant women delivered at private sector, Colombo compared to national rate (17.9% vs. 7.1%, p<0.001). Further, the reported caesarean section rate in private sector was close to twofold that of the national rate (41.9% vs. 76.5%, p<0.001). Stillbirth rate of private sector in Colombo was comparatively low than the national rate (0.2% vs. 0.7%). Similarly, reduced number of low-birth-weight newborns was reported in private sector in comparison to national figure (12.4% vs. 13.9%). Significantly more newborns of primi-pregnant women received skin-to-skin contact (SSC) immediately after birth compared to newborns of multi-parous women (AOR=0.814, CI=0.735-0.900, p<0.001).

Conclusion: Maternal and neonatal characteristics of pregnant women delivered in private sector in Colombo was significantly different from the national profile of pregnant women. Promotion of immediate SSC and reduction in unnecessary caesarean sections should be considered in private sector deliveries in Sri Lanka to further enhance the positive maternal and newborn outcomes.

Keywords: Delivery, Maternal, Newborn Outcomes, Private sector, Sri Lanka

1. INTRODUCTION

Skin-to-skin contact immediately after birth and early initiation of breastfeeding within one hour of birth are two key neonatal practices globally. These essential newborn practices are recommended by the UNICEF and WHO for all newborns unless contraindicated [1].

Early initiation of breast feeding differs greatly between and within countries. Early initiation of breastfeeding within one hour of birth, protects the newborn from infections and reduce the neonatal mortality. Initial breastmilk contains the colostrum which is a key source of nutrition and immune booster for the newborn. In addition, early breastfeeding aids the emotional bonding of the mother with the newborn. Early initiation also improves the duration of exclusive breastfeeding. Prolongation of exclusive breastfeeding in turn reduces the gastro-intestinal, ear and respiratory tract infections, overweight and Diabetes in later life in newborns. Prolongation of breastfeeding also reduces the risk of developing breast and ovarian cancers in mothers [2-3].

The usual practice in many institutions following birth is the wrapping or dressing of the newborn. This practice is followed by keeping the baby in the mothers' arms for a short period before placing in the open cribs or under warmers. Recommended skin-to-skin contact is defined as placing the newborn naked on mother's bare chest at birth or immediately after the birth. Categorization of the skin-to-skin contact is based on the time of initiation with immediate skin-to-skin contact (SSC) is within 10 minutes of birth whereas early SSC is between 10 minutes to 24 hours following birth. Immediate or early SSC have shown to enhance the initiation and continuation of the breastfeeding as well as facilitation of smooth transition of the newborn from womb to the outside and to keep the newborn calm following birth [1,4].

The Private health sector in Sri Lanka

Sri Lankan private health sector is not evenly distributed geographically unlike the public health sector. Majority of the private health sector is concentrated in Western province which consisted of close to 25% of the population in the country. World Bank report on Sri Lankan private sector contribution to health, describes the private sector under 3 categories, namely, hospitals including specialized and general, clinics and laboratories. All most all major players in the private sector are stationed in the Colombo District with the rest dispersed in selected districts, namely Kandy, Galle, Kurunegala and Anuradhapura. The World Bank report further stated that during the previous 3 years prior to the survey, 28% reported an increase in their bed strength [5]. Approximately over 30% increase in private sector hospital beds was observed in 4 years between 2010 to 2014 as per two main reports published on private health sector in Sri Lanka by Ranan-eliya and Govindaraj and others [5-6]. However, limited information exists on the contribution, practices, and outcomes in obstetric care in the private sector in Sri Lanka. The main information available on private sector obstetric services is that round 10% of total deliveries in Sri Lanka is taking place in private sector with further characteristics were not available [7].

The aim of this study is to describe the maternal and newborn characteristics of deliveries in private sector in Colombo District and factors associated with key newborn care practices using the National Maternal and Newborn Surveillance of Private Health Institutions.

2. METHODOLOGY

Secondary descriptive analysis was conducted to describe
1. maternal and newborn characteristics of deliveries in private sector in Colombo District

2. Factors associated with key newborn care practices using the National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1.

2.1 National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1.

National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1 was initiated in June 2019 by the Family Health Bureau of Ministry of Health to report the deliveries and their selected maternal, newborn characteristics which happen in the private sector of Colombo District in Sri Lanka. Stepwise expansion was planned to increase the coverage to Western province in 2022 and by 2024 to cover all districts in Sri Lanka [7].

A separate surveillance on maternal and newborn care for private sector was widely discussed in Sri Lanka due to the increased obstetric care contribution by the private sector. Nearly 10% of the deliveries in Sri Lanka takes place in private sector. The maternal and newborn details of the deliveries which occurred in private sector were partially reported in the National Reproductive Health Management Information System with the extent of the coverage unknown. Therefore, National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1 was initiate in Colombo District. Out of the total bed strength in the country, private sector accounted for 4%. The number of total beds in the private sector was approximately 4210 in 2010. Colombo District holds not only the administrative capital of Sri Lanka but also the commercial capital. Thus, accumulation of private health sector in Colombo District was observed in Sri Lanka. Out of the 4210 beds, 50% were in Colombo District. Thus, as mentioned by Rannan-eliya, Colombo District private health sector is the major contributor for private health services in Sri Lanka with rest playing a subsidiary role. Therefore, as the phase one of the surveillance, Colombo District was selected [5-7].

Information of each delivery in the private sector is entered to a printed data extraction form by the Nursing Officer/ Medical Officer at each postnatal ward in all private sector hospitals in Colombo District before the discharge of the mother and newborn. Thereafter, data is transferred to the separate portal in health institution surveillance which is available in the electronic Reproductive Health Management Information System (eRHMIS) by the same or a different officer using electronic facilities in the postnatal ward. eRHMIS is the current electronic data management system of Reproductive, Maternal, New-born, Child, Adolescent, and Youth Health (RMNCAYH) programme in Sri Lanka which is built on the DHIS2 platform.

2.2 Study methods

Data of all deliveries in private health sector in Colombo District was extracted from 1st January to 31st December 2021. Completed provisional national data on deliveries was only available for the year 2021 up to 31st of October 2021. Therefore, for comparison with the private health sector data of Colombo District, national data from 1st January 2021 to 31st October 2021 was used.

The information was extracted to a excel sheet from the database of National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1 at Family health Bureau. Data were coded and analysed using Statistical Package for Social Sciences (SPSS) 22 version. Rates were presented as proportions and their 95% confidence intervals (CI). Statistical significance was calculated based on the Z score and a p value of less than 0.05 was considered as statistically significant. All variables were used to perform the multivariate

analysis using logistic regression (enter method) irrespective of their significance in bivariate analysis to identify adjusted ORs and their Confidence Intervals.

3. RESULTS AND DISCUSSION

3.1 Results

Delivery and newborn outcome details of 10,181 pregnant women was reported to National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1 from 1st of January 2021 to 31st December 2021. Details of all these pregnant women minus individual identifiable markers were extracted and included in the analysis. National surveillance on family health reported 246,447 deliveries from 1st of January 2021 to 31st October 2021. Therefore, close to 5% of the deliveries reported in Sri Lanka was included in our secondary analysis which occurred in private sector in Colombo District (Table 1).

Table 1 describes the maternal, delivery and new-born characteristics of national vs. private sector in Colombo District in the year 2021. All private sector variables that were included in the analysis displayed significant difference from the national figures on maternal, delivery and newborn outcomes. Significantly higher proportion of pregnant women aged 35 years or older have selected private sector for the delivery. Though the national guidelines instruct blood sugar testing at booking visit and at 28 weeks of POA, more than 1 in 10 pregnant women, did not underwent glycemic screening at 28 weeks of POA which was significant. However, adhering to the guidelines, all most all women have undergone the assessment of hemoglobin level around 28 weeks of POA (99.9%). Higher coverage was demonstrated in private sector compared to nation averages for majority of the compulsory screening in antenatal period as per guidelines. Incidence of Gestational DM was more than twofold among pregnant women delivering at private sector compared to national incidence (17.9% vs. 7.1%, p<0.001) [8].

Close to 10% of the deliveries performed in the private sector were preterm (9.8%). Significant difference was observed in mode of delivery in private sector compared to nation averages. The private sector in Colombo District reported caesarean section rate of all most double that of the national rate (41.9% vs. 76.5%, p<0.001). Still birth rate of private sector in Colombo District was comparatively low than the national rate (0.2% vs. 0.7%, p,0.001). Similarly, lower low birth weight rate was reported in private sector in comparison to national figure (12.4% vs. 13.9%, p<0.001). Further, almost all newborns were breastfed within one hour of birth in private sector of Colombo district (99.3%) whereas close to two third of newborns was given skin-to-skin contact immediately after birth (62.6%). (Table 1).

Table 1: Maternal, delivery and new-born characteristics of national vs. private sector in Colombo District, 2021			
	Private sector in Colombo District	National N (%)*	Significance

		N (%)		
Maternal variables				
Age	35 years or less	7,824(76.8%)	240,816(86.6%)	Z=28.2384, p<0.001
	More than 35 years	2,357(23.2%)	37,113(13.4%)	
Residence	Colombo District	4,541(54.8%)	N/A	
	Western province outside Colombo District	2,753(33.3%)	N/A	
	Outside Western province	991(11.9%)	N/A	
Bood sugar level tested at 26-28 weeks of POA	Yes	9,119(89.6%)	232,618(95.0%)	Z=24.2775, p<0.001
	No	1,062(10.4%)	12,192(5.0%)	
Glycaemic status (For cross analysis chronic Diabetes and GDM was combined)	Normal	7,320(80.4%)	224,799(91.2%)	Z=35.0737, p<0.001
	Chronic Diabetes	150(1.6%)	4,160(1.7%)	
	Gestational Diabetes Mellitus	1633(17.9%)	17,488(7.1%)	
HIV status tested before delivery	Yes	9,925(97.5%)	238,456(96.8%)	Z=4.0816, p<0.001
	No	256(2.5%)	7,991(3.2%)	
VDRL test conducted before delivery	Yes	10,071(98.9%)	238,866(96.9%)	Z=11.5734, p<0.001
	No	110(1.1%)	7,581(3.1%)	
VDRL reactivity	Yes	118(1.2%)	603(0.3%)	Z=16.9573, p<0.001
	No	9,844(98.8%)	238,263(99.7%)	
Haemoglobin level tested at 26-28 weeks of POA	Yes	10,168(99.9%)	220,548(90.1%)	Z=32.9548, p<0.001
	No	13(0.1%)	24,262(9.9%)	
Haemoglobin level at 26-28 weeks of POA**	11g/dl or more	6,676(76.2%)	163,408(74.1%)	Z=4.3342 P<0.001
	10 to 10.9 g/dl	1,831(20.9%)	57,140(25.9%)	
	Less than 10g/dl	259(2.9%)		
Parity at Delivery	One	5.848(57.4%)	90,063(32.4%)	Z=52.653, p<0.001
	More than one	4,333(42.6%)	187,882(67.6%)	
Delivery and New-born variables				
POA at Delivery	Extreme preterm	19(0.2%)	N/A	
	Very preterm	50(0.5%)	N/A	
	Moderate preterm	77(0.8%)	N/A	
	Late preterm	855(8.4%)	N/A	
	Term	9.176(90.2%)	N/A	
Mode of Delivery***	Normal Vaginal Delivery	1,833(18.0%)	143,103(58.1%)	Z=68.8335 P<0.001
	Assisted Vaginal Delivery	561(5.5%)		
	Elective Caesarean Section	5,396(53.0%)	103,344(41.9%)	
	Emergency Caesarean Section	2,391(23.5%)		
Delivery Outcome****	Live Birth	10,152(99.7%)	244,810(99.3%)	Z=4.6712, p<0.001
	Still Birth- Fresh	20(0.2%)	1,637(0.7%)	
	Still Birth- Macerated	9(0.1%)		
Birthweight*****	High	110(1.1%)	210,892 (86.1%)	Z=4.0933 P<0.001
	Normal	8,718(86.5%)		
	Low	1,197(11.9%)	33,894 (13.9%)	
	Very Low	39(0.4%)		
	Extremely Low	15(0.1%)		
Administration of immediate postpartum uterotonics	Yes	8,202(80.6%)	N/A	
	No	1,979(19.4%)	N/A	

Multiplicity******	Single	9,845(96.7%)	239,831(98.0%)	Z=8.8499, p<0.001
	Twins	314(3.1%)	4,955(2.0%)	
	Triplets	16(0.2%)		
	Four or more	6(0.1%)		
Treated for Neonatal Infection	Yes	9,821(96.9%)	N/A	
	No	312(3.1%)	N/A	
Neonatal Resuscitation required	Yes	234(2.3%)	N/A	
	No	9,886(97.7%)	N/A	
Breast fed within one hour of birth	Yes	10,069(99.3%)	N/A	
	No	66(0.7%)	N/A	
Provision of Skin-to-skin contact immediately after birth for new-born	Yes	3,789(37.4%)	N/A	
	No	6,337(62.6%)	N/A	

*Provisional [9]. From 1st of January 2021 to 31st October 2021

**For significance testing level of haemoglobin was grouped as 11g.dl or above and below 11 g/dl due to classification difference in the two systems

***For significance testing, assisted and normal vaginal deliveries were combined as vaginal deliveries and elective and emergency Caesarean sections were combined as Caesarean sections due to unavailability of breakdown at national level

****For significance testing, fresh and macerated stillbirths were combined due to due to unavailability of breakdown at national level

*****For significance testing, high and normal birthweight were combined as normal birthweight and low, very low and extremely low birthweights were combined as low birthweight due to unavailability of breakdown at national level

******For significance testing, twins, triplets and four or more new-borns were combined as multiple births due to unavailability of breakdown at national level

Risk of non-initiation of breast feeding within one hour of birth significantly increased among the anaemic pregnant women compared to non-anaemic counterparts (AOR=2.113, CI=1.216-3.673, p=0.008). Similarly, pre-term and low birthweight new-borns are at higher risk of non-initiation of breast feeding within one hour of birth compared to term and normal birthweight neonates (AOR=8.221, CI=4.236-15.956, p<0.001 and AOR=3.473, CI=1.791-6.736, p<0.001 respectively) (Table 2).

Table 2: Odds Ratios for factors associated with initiation of breast feeding within one hour of birth. Univariate and multivariate analysis

Outcome variable- Initiation of breast feeding within one hour 0 - Initiated 1 – Not initiated		Initiated	Not initiated	OR (Univariate)	OR (Multivariate)
Age	Less than 35 years	7,742(99.4%)	50(0.6%)		
	35 years or more	2,327(99.3%)	16(0.7%)	1.065(0.605-1.873, p=0.828)	1.126(0.592-2.143, p=0.718)
Haemoglobin level at 26-28 weeks of POA	Normal	6604(99.4%)	37(0.6%)		
	Anemia	2056(98.7%)	27(1.3%)	2.344(1.424-3.859, p=0.001)	2.113(1.216-3.673, p=0.008)
Glycaemic status	Normal	7237(99.3%)	51(0.7%)		
	Chronic or Gestational DM	1764(99.5%)	9(0.5%)	0.724(0.356-1.473, p=0.373)	0.653(0.311-1.371, p=0.260)
Multiplicity	Single	9746(99.4%)	56(0.6%)		
	Multiple	323(97.0%)	10(3.0%)	5.388(2.724-10.656, p<0.001)	0.893(0.409-1.951, p=0.777)

Parity at delivery	More than one	4298(99.6%)	19(0.4%)		
	One	5771(99.2%)	47(0.8%)	1.842(1.080-3.143, p=0.025)	1.467(0.779-2.760, p=0.235)
POA at delivery	Term	9124(99.7%)	25(0.3%)		
	Preterm	941(95.8%)	41(4.2%)	15.902(9.627-26.266, p<0.001)	8.221(4.236-15.956, p<0.001)
Mode of delivery	Vaginal delivery	2368(99.7%)	7(0.3%)		
	Cesarean section	7701(99.2%)	59(0.8%)	2.592(1.182-5.681, p=0.017)	2.084(0.811-5.354, p=0.127)
Birthweight	Normal or high	8789(99.7%)	26(0.3%)		
	Low	1211(97.1%)	36(2.9%)	10.049(6.046-16.701, p<0.001)	3.473(1.791-6.736, p<0.001)

Table 3 describes the odds ratios for factors associated with provision of skin-to-skin contact immediately after birth. Risk of not receiving skin-to-skin contact immediately after birth for the newborn increased among the pregnant women with either gestational diabetes mellitus or chronic DM compared to new-born of normoglycemic women (AOR=1.688, CI=1.489-1.915, p<0.001). In contrast, newborns of anemic pregnant women were more likely to receive skin-to-skin contact immediately after birth in comparison to newborns of pregnant women with normal hemoglobin (AOR=0.200, CI=0.178-0.255, p<0.001). Similarly, significantly more newborns of primi-pregnant women received skin-to-skin contact immediately after birth compared to newborns of multi-parous women (AOR=0.814, CI=0.735-0.900, p<0.001). Interestingly, preterm newborns did not display higher chances of receiving skin-to-skin contact immediately after birth compared to term newborns (AOR=1.021, CI=0.849-1.228, p=0.827) (Table 3).

Table 3: Odds Ratios for factors associated with provision of skin-to-skin contact immediately after birth for newborn. Univariate and multivariate analysis					
Outcome variable- provision of skin-to-skin contact immediately after birth for newborn 0 - Yes 1 – No		Yes	No	OR (Univariate)	OR (Multivariate)
Age	Less than 35 years	2926(37.6%)	4856(62.4%)		
	35 years or more	863(36.8%)	1481(63.2%)	1.034(0.940-1.138, p=0.493)	0.975(0.866-1.097, p=0.671)
Haemoglobin level at 26-28 weeks of POA	Normal	2273(34.3%)	4359(65.7%)		
	Anemia	1486(71.3%)	597(28.7%)	0.209(0.188-0.233, p<0.001)	0.200(0.178-0.225, p<0.001)
Glycaemic status	Normal	3032(41.6%)	4249(58.4%)		
	Chronic or Gestational DM	518(29.2%)	1253(70.8%)	1.726(1.542-1.932, p<0.001)	1.688(1.489-1.915, p<0.001)
Multiplicity	Single	3684(37.6%)	6108(62.4%)		
	Multiple	105(31.4%)	229(68.6%)	1.305(1.040-1.663, p=0.022)	1.304(0.967-1.758, p=0.082)
Parity at delivery	More than one	1509(35.0%)	2808(65.0%)		
	One	2280(39.2%)	3529(60.8%)	0.832(0.766-0.903, p<0.001)	0.814(0.735-0.900, p<0.001)
POA at delivery	Term	3427(37.5%)	5714(62.5%)		
	Preterm	360(36.7%)	621(63.3%)	0.967(0.843-1.108, p=0.626)	1.021(0.849-1.228, p=0.827)
Mode of delivery	Vaginal delivery	863(36.4%)	1507(63.6%)		

	Cesarean section	2926(37.7%)	4830(62.3%)	0.945(0.859-1.040, p=0.248)	0.945(0.841-1.060, p=0.334)
Birthweight	Normal or high	3289(37.3%)	5518(62.7%)		
	Low	449(36.0%)	798(64.0%)	1.059(0.936-1.199, p=0.360)	1.035(0.880-1.218, p=0.677)

3.3 Discussion

More pregnant women aged 35 years or older have selected private sector for the delivery. Among the private sector deliveries, one in ten pregnant women, did not underwent glycemic screening at 28 weeks of POA. However, adhering to the guidelines, all most all women have undergone the assessment of hemoglobin level around 28 weeks of POA (99.9%). Incidence of Gestational DM was more than twofold among pregnant women delivering at private sector compared to national incidence (17.9% vs. 7.1%, p<0.001). The private sector in Colombo District reported caesarean section rate of all most double that of the national rate (41.9% vs. 76.5%, p<0.001). Stillbirth rate of private sector in Colombo District was comparatively low than the national rate (0.2% vs. 0.7%). Similarly, a smaller number of low-birth-weight newborns was reported in private sector in comparison to national figure (12.4% vs. 13.9%). Risk of non-initiation of breast feeding within one hour of birth significantly increased among the anaemic pregnant women compared to non-anaemic counterparts (AOR=2.113, CI=1.216-3.673, p=0.008). Significantly more newborns of primi-pregnant women received skin-to-skin contact immediately after birth compared to newborns of multi-parous women (AOR=0.814, CI=0.735-0.900, p<0.001) whereas preterm newborns did not display higher chances of receiving skin-to-skin contact immediately after birth compared to term newborns (p=0.827).

Present study showed that more pregnant women aged 35 years or older have selected private sector for the delivery. This could be due to the socioeconomic factors with private sector levying fee at point of care with educated females conceiving later in their lives [10]. Significant difference was observed in mode of delivery in private sector compared to nation averages. Sri Lankan national caesarean section rate is already one of the highest in the world. The private sector in Colombo District reported caesarean section rate of all most double that of the national rate with close to 4 out of 5 pregnant women deliver by caesarean section (CS) in private sector (41.9% vs. 76.5%, p<0.001) [11]. The reasons for higher CS rates in the private sector require further analysis to propose strategies to reduce the unnecessary and elective CS. As women undergoing CS compared to vaginal delivery, are more likely to develop Asthma, food allergy and DM type 1 and obesity in early childhood [12].

Improved neonatal outcomes were reported in private health sector compared to national figures (Only 0.3% stillbirth rate in private health sector compared to national figure of 0.7%). Major proportion of private sector with inward facilities are concentrated in Colombo District and Western province whereas government health institutions are dispersed island wide. Difficulties in physical access due to geographical location and financial access due to poor socioeconomic status are more prevalent in government sector and thus represented in national figures. Therefore, the reduction in still birthrate is expected [5-6].

Present study revealed that 99.3% of the newborns were initiated breastfeeding within one hour. This is well above the Sri Lankan national figure as reported in Demographic and Health survey (DHS) in 2016 (90%). Wide range of variability was observed in DHS survey with district rates ranged from 77% to 100% [10]. Present study reported that preterm and low birthweight newborns are at increased risk of non-initiation of breastfeeding within one

hour of birth. In addition, CS and primi-parity demonstrated increase the risk of non-initiation of breastfeeding among the newborns compared to mothers who were multiparous and underwent vaginal delivery. However, after adjusting for potential confounders, CS and primi-parity did not show significant increase in the risk of non-initiation. Significant increase in the non-initiation of breastfeeding within one hour was observed in the secondary analysis of Bangladesh demographic and health survey among the women of primi-parity, CS and high pre-pregnancy BMI [13]. Secondary analysis of WHO global survey on initiation of breastfeeding showed that CS increased the risk of delay in initiation of breastfeeding in newborns due to many factors which include prolonged unconsciousness of the mother due to anesthesia [14].

In Bangladesh, CS significantly reduced the immediate skin-to-skin contact of newborns whereas both public and private sector institutional delivery and 4 or more antenatal clinic visits increased the chances of immediate SSC among the newborns. Similarly, in Gambia, newborns with low birthweight reduced the chance of SSC whereas institutional delivery and ANC visit in first trimester increased the chances of SSC. Present study reported increased risk of non-initiation of immediate SSC among the low birthweight newborns compared to normal weight newborns though the increased risk was not significant. [15-16]. Both studies in Bangladesh and Gambia did not include the comorbidities as associated factors. Whereas our study reported increased risk of non-initiation of immediate SSC among the hyperglycemic and reduced risk of non-initiation of immediate SSC among the anemic pregnant women.

This study is the first assessment in Sri Lanka which reported the population level characteristics of the profile of pregnant women who delivered at the private sector in Colombo District and the newborn outcomes of the deliveries in private sector.

3.2 Limitations
The data was obtained from the National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1.

4. CONCLUSION
In conclusion, our study showed significantly improved maternal and newborn outcomes in private sector in Colombo District compared to national averages. However, close to 4 in 5 pregnant women have undergone caesarean section in private health sector as the mode of delivery which is concerning. Though all most all women who delivered in private sector in Colombo District initiated breastfeeding, less than two third of women provided skin-to-skin contact to their newborn. This should an area for improvement in private sector in Sri Lanka.

CONSENT
Not applicable as secondary data analysis was carried out using National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1.

ETHICAL APPROVAL
Not applicable as this study was conducted using secondary data from National Maternal and Newborn Surveillance of Private Health Institutions- Phase 1 minus personal identification markers. Administrative approval was obtained from Family Health Bureau.

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