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CP 06

Multi-morbidities, delivery outcomes, and discharge plans of mothers with gestational diabetes mellitus who delivered at Teaching Hospital Jaffna

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Abstract

Introduction: Gestational diabetes mellitus (GDM) is common and is often accompanied with other comorbidities. This study was carried out to describe the prevalence of GDM, the presence of multi-morbidities, outcomes, and management on discharge of mothers who delivered their babies at Teaching Hospital Jaffna.

Methods: A hospital-based descriptive cross-sectional study was carried out at Teaching Hospital Jaffna using a KoBoCollect-based data extraction form. Secondary data from the Bed Head Tickets (BHT) of mothers who delivered babies between January and June 2023 were extracted. Standard descriptive statistics were applied.

Results: BHTs of 3500 mothers were traced; 14.9% (n=523) mothers had GDM. The median age of mothers with GDM was 31.0 (±5.5) years. Among them, 15.5% (n=81), 9.8% (n=51), and 5.7% (n=30) had pregnancy induced hypertension (PIH), anaemia, and thyroid/other disorders, respectively, and seven mothers had both PIH and anemia. Two mothers had all three morbidities along with GDM. Over a quarter (28.1%, n=147) had a family history of diabetes. The median period of amenorrhea (POA) on delivery was 38 weeks. Just over half (52.5%,

n=275) underwent caesarean section. Ninety (17.2%) mothers had perineal tear(s) during labour. The prevalence of preterm births was 7.8% (n= 41). Low birth weight and macrosomia were observed among 1.5% (n=8) and 0.8% (n=4) of newborns, respectively. Fifty-four neonates (10.3%) required admission to the Neonatal Intensive Care Unit. Two babies were identified with congenital anomalies. On discharge, 39.2% and 4.6% of mothers were referred to antenatal clinics at Teaching Hospital Jaffna and the relevant medical officer of health, respectively.

Conclusion: The prevalence of GDM and comorbidities highlight the need for enhanced screening and management strategies for pregnant women. The significant proportion of mothers with a family history of diabetes suggests a genetic predisposition, indicating the need for targeted education and preventative measures in high-risk populations. The incidence of neonatal and post-partum complications signal the need for vigilance in mothers with GDM during the antenatal period.

Keywords: Gestational diabetes mellitus, Maternal multi-morbidities, Delivery complications, Neonatal outcome, Discharge plan

Introduction

Gestational Diabetes Mellitus (GDM) is defined as “carbohydrate intolerance resulting in hyperglycemia of variable severity with the onset of first recognition during pregnancy” [1]. It is one of the most common metabolic disorders that occurs during pregnancy, affecting up to 13% of pregnancies worldwide [2]. Advanced maternal age (>35 years), maternal overweight/obesity, parental diabetes and previous GDM are associated with developing GDM [3]. GDM comes with significant risks for both maternal and foetal health, including increased chances of developing pregnancy-induced hypertension, preeclampsia, and the need for caesarean delivery. For the fetus, risks include macrosomia, hypoglycemia, and future metabolic disorders.

Despite the wide prevalence, few studies have been conducted to assess the maternal and foetal outcomes of mothers with GDM in Sri Lanka. This study aimed to describe the prevalence of GDM, presence of multi-morbidities, outcomes, and management on discharge of mothers who delivered their babies at Teaching Hospital Jaffna (THJ).

Methods

A hospital-based descriptive cross-sectional study based on secondary data was carried out in THJ in northern Sri Lanka. The Bed Head Tickets (BHTs) of mothers who delivered their babies between January 1st and June 30th 2023 in all four maternity wards (18, 20, 21 and 22) of THJ were traced. A KoBoCollect-based data extraction form including medical comorbidities, delivery complications, maternal, neonatal outcomes, and discharge plan was designed to collect data. Descriptive statistics were used to analyse data. Ethical clearance was obtained from the Ethics Review Committee, Faculty of Medicine, University of Jaffna (J/ERC/23/144/NDR/0288).

Results

Data from 3500 mothers were collected. Among them 523 (14.9%) mothers had GDM. The median age of mothers with GDM was 31.0 years, ranging from 18 to 50 years. In the sample, 15.5% (n=81), 9.8% (n=51) and 5.7% (n=30) of mothers had pregnancy-induced hypertension (PIH), anaemia and thyroid/other disorders, respectively. Seven mothers had both PIH and anaemia. Two mothers had all three morbidities along with GDM (Figure 1). Over a quarter (28.1%, n=147) had a family history of diabetes. The median period of amenorrhea (POA) at delivery was 38 weeks, with an interquartile range of 37+2 and 38+6 weeks. The vast majority of mothers (93.7%, n=490) were admitted for delivery from antenatal clinics of THJ, while the remainder (6.3%, n=33) were transferred from other hospitals.

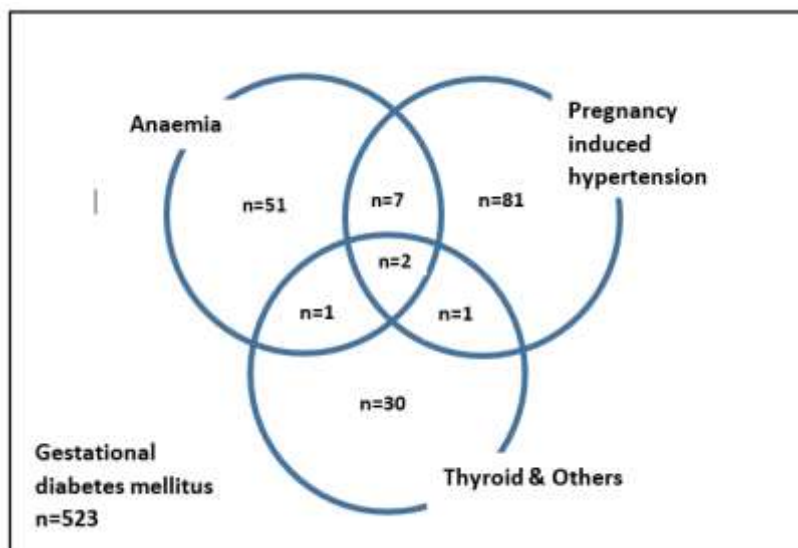


Figure 1: Overlapping multi-morbidity patterns in mothers with GDM

Over half (52.5%, n=275) the mothers underwent cesarean section, while 44.2% had a normal vaginal delivery (44.2%) and 3.3% assisted vaginal delivery. Ninety mothers (17.2%) had perineal tear(s), and 1.1% had postpartum haemorrhage. The prevalence of preterm delivery was 7.8% (n= 41). The median birth weight was 2.95 kg, with an interquartile range of 2.65 to 3.24 kg. The prevalence of low birth weight and macrosomia was 1.5% and 0.8%, respectively. Fifty-four neonates (10.3%) required admission to the Neonatal Intensive Care Unit, and two babies were identified with congenital anomalies. Over half (56.4%) of mothers were discharged from hospital without a plan, while the rest of them were discharged with recommendations (Table 1).

Table 1: Discharge Plan

Discharge plan	n	%
Not mentioned/ No formalities	295	56.4
Plan with a clinic visit at THJ	176	33.7
Discharge with drugs	28	5.3
Referral to respective MOH	24	4.6
	523	100

Discussion

The prevalence of GDM among mothers who delivered at THJ in 2023 was 14.9%. Similar findings were observed in a community-based study carried out in Gampaha district of Sri Lanka, although the prevalence at 13.9% was slightly lower [3], and among Asian women, the prevalence has been reported to be 10.5% [4]. These proportions might be attributable to genetic and lifestyle factors, as Sri Lankan women, being South Asians, are at higher risk of developing GDM [5]. However, a study in the Jayewardenepura Mathugama Medical Officer of Health (MOH) area in the Western Province of Sri Lanka found that 4.7% of mothers had been diagnosed with GDM [6], while another hospital-based study conducted in Thailand showed that the prevalence of GDM was 2.6% [7]. These values are significantly lower than our findings. The differences in prevalence rates may be influenced by variations in study design, diagnostic criteria, and population demographics. Further research is needed to understand the contributing factors and to develop targeted interventions to manage and prevent GDM effectively.

The prevalence of PIH among GDM mothers in our study was 15%. Another Sri Lankan study carried out in De Soysa Hospital for Women in Colombo district revealed a lower prevalence of 7.8% [9]. While the disparity could be due to differences in the study populations, the De Soysa Hospital study included both mothers with pre-gestational diabetes mellitus and GDM, whereas our study focused solely on mothers with GDM. Data from the Family Health Bureau shows that the prevalence of GDM and anaemia are gradually increasing in Sri Lanka, while PIH is on the decline [8]. In contrast, a study by Prakash et al. in Puducherry in India reported a higher prevalence of PIH at 25% among mothers with GDM [10]. These variations could be due to variations in study design, population characteristics, and diagnostic criteria.

Family history of diabetes is another significant risk factor for GDM [11]. In our study, 28.1% of mothers with GDM reported a family history of diabetes, compared to a higher prevalence of 43% reported in a study conducted in Puducherry, India [10]. The higher prevalence of family history in the Indian study suggests that genetic factors may play a crucial role, and emphasizes the need for targeted interventions in populations with a strong family history of diabetes. In our study, the mean maternal age for developing GDM was 31.3 years, consistent with two other Sri Lankan studies [11-12]. The slight variations in age could be attributed to differences in study populations. It is well known that Body Mass Index (BMI) in early pregnancy is a risk factor for GDM. However, we were unable to analyse pre-pregnancy BMI as it was not recorded in the BHTs of mothers with GDM. Hence, it is recommended that pre-pregnancy BMI be documented in BHTs in future to better understand and address this risk factor.

The timing of delivery of women with GDM has been debated by various obstetric professional bodies [13]. The median POA in the present study (38 weeks) was consistent with term delivery, and almost perfectly matched the POA reported from a Colombo study where it was 38.3 (± 1.43) weeks [12]. Mothers with GDM are more likely to deliver by caesarean section [11], in line with the findings of our study where the majority (52.5%, n=275) had a caesarean delivery. This proportion was also similar to the caesarean delivery rate among mothers with GDM at the Castle Street Hospital in Colombo where it was 57.7% [14], and that of Thailand where it was 54.0% [7].

The prevalence of preterm delivery was 7.8% (n= 41) in our study, similar to two studies carried out in Colombo district, where it was 5% [14], and 11.7% [12], while such prevalence was remarkably higher in Thailand where it was 16.7% [7]. The mean birth weight was 2.91 ± 0.49 kg, ranging between 0.54-4.38kg, while it was 3.1 ± 0.52 kg among Colombo babies [12]. In our study, 10.3% of the babies required admission to the Neonatal Intensive Care Unit, while it was 5% in the Colombo study [14], and 18.3% in the Thai study [7]. Among immediate delivery complications, hypoglycemia was not recorded in our study, although it was 5% among mothers with GDM in a study conducted in Castle Street Hospital for Women in Colombo district [14].

Postpartum women with GDM tend to have more difficulties in dealing with postnatal rehabilitation, baby care, baby feeding and so on [15]. However, none of the studies we reviewed described the discharge plan of mothers with GDM. In the present study, 6.3% of admissions were referrals from other hospitals for advanced delivery management to prevent GDM complications, suggesting that these mothers would be referred back to their local hospitals and MOHs. Although the discharge plan indicated whether mothers would be followed up at the clinic, referred to their respective MOH, or discharged with drugs, the majority of BHTs did not contain discharge plans.

Conclusion

The prevalence of GDM and its associated comorbidities highlight the need for enhanced screening and management strategies for pregnant women. The identification of PIH, anemia, and thyroid disorders as common complications in mothers with GDM underscores the importance of comprehensive prenatal care to address these conditions early. A significant proportion of mothers had a family history of diabetes, indicating the need for targeted education and preventative measures in high-risk populations. Addressing these factors can improve maternal and fetal outcomes and reduce the burden of GDM and its complications. Further research is needed to better understand postpartum management of mothers with GDM, including referral procedures.

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Conflict of interest

Authors declare that they have no potential conflicts of interest.

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