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## RESEARCH ARTICLE

# MATERNAL AND PERINATAL OUTCOMES OF DELIVERIES AT AMANA REGIONAL REFERRAL HOSPITAL “DAR ES SALAAM, TANZANIA”

\*Sangalala Mtingele and Dr. Furaha August

Department of Obstetrics and Gynecology, Muhimbili University of Health and Allied Sciences (MUHAS),  
P.O Box 65001, Dar es Salaam, Tanzania

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#### \*Corresponding author:

Sangalala Mtingele

### ABSTRACT

**Background:** Multiple pregnancies are commonly accompanied by adverse maternal and fetal outcomes. Common adverse maternal outcomes are postpartum haemorrhage, pregnancy-induced hypertension, premature rupture of membranes, anaemia, antepartum haemorrhage, and delivery by caesarean section considering the presentation of the first twin. Perinatal outcomes of interest were prematurity, low birth weight, birth asphyxia, congenital anomalies, perinatal death, and admission to the neonatal unit. These adverse outcomes are seen more in the multiple pregnancies than in the singleton pregnancies. This study assessed the proportion of multiple and singleton pregnancies and associated outcomes among women delivering at Amana Regional Referral Hospital, in Dar es Salaam from July 2022 to February 2023. **Materials and Methods:** A cross-section descriptive study was conducted from July 2022 to February 2023 at Amana Regional Referral Hospital, involving a total of 751 women of which 251 were multiple pregnancies. 500 women with singleton pregnancies were recruited from 15<sup>th</sup> November to 15<sup>th</sup> December 2023. Data were obtained using a structured questionnaire and from partographs and registered books of labour wards and were analyzed using the Statistical Package for Social Sciences (SPSS) Version 23. Bivariate and multivariate logistic regressions were done and outcomes of maternal and neonatal with a p-value of < 0.05 were considered statistically significant. **Results:** The proportion of multiple pregnancies at Amana Regional Referral Hospital was 2.6% from July 2022 to February 2023. The adverse maternal outcomes observed were: Postpartum haemorrhage was 10.4% (AOR 4.95 95% CI = (2.42 – 10.12) preterm delivery 27.9% (AOR 2.04 95% CI = (1.40 – 2.97) and delivery by caesarean section was 35.1% (AOR 2.16 95% CI = 1.50 – 3.12). Neonatal admission was 24.8% (AOR 7.38 95% CI = (3.34 – 18.35), low birth weight was 29% AOR 31.25 95% CI = (5.81 – 168.12) Perinatal death was 4.2% (AOR 12.10 95% CI 1.49 – 101.52) and Prematurity was 28.2% (AOR 6.65 95% CI = (2.27 – 19.45). **Conclusion:** Premature delivery, delivery by caesarean section, and postpartum haemorrhage were adverse maternal outcomes to the multiples than singletons, and for the neonates adverse outcomes were low birth weight, prematurity, and perinatal death were more to the multiples than to singletons. Therefore; with an increased proportion of multiple pregnancies early diagnosis of twin pregnancy is important to take care of the women to minimize the anticipated adverse outcomes.

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## INTRODUCTION

Multiple pregnancies occur when two or more fetuses are conceived at the same time in the same woman, it can be monozygotic or dizygotic. Monozygotic pregnancy occurs when a single ovum is fertilized and divided into two similar structures that result in identical twins. Dizygotic occurs when two separate ova are fertilized. Usually, they develop into fraternal twins. Monochorionic–diamniotic occurs in two-thirds of monozygotic twins consisting of a single outer sac and two inner sacs. Monochorionic – monoamniotic will share one inner sac (1).

Higher fetal-maternal risks in multiple pregnancies have been reported in low-income countries and this is due to scarcity of human resources, material resources, infrastructure, and ignorance this has brought a negative impact on the health of both mothers and fetuses (2). Most of the multiple pregnancies are conceived naturally twenty percent, especially of higher orders of multiple pregnancies are associated with Assisted Reproductive Therapy (ART). An increase in maternal age has a higher risk of multiple pregnancies, especially from 30 years and above. This has been observed more in industrialized countries. Over the last ten years, women giving birth at the age of 35 years and older

has increased from 12 to 20% with most of them using ART (3). With the increased age of mothers, they tend to use exogenous follicle-stimulating hormones which lead to an increased rate of ovarian feedback mechanism as a result they conceive multiple pregnancies. An increase in maternal age from 35 years and above has increased the risk of multiple pregnancies and obstetrical complications including placenta praevia, abruption placenta, gestational hypertension, preeclampsia, gestational diabetes and increased risk of caesarean section delivery (4). Multiple pregnancies have an increased risk of pre-eclampsia, preterm labour, low birth weight, antepartum and postpartum haemorrhage, caesarean section delivery, congenital anomalies, intrauterine growth retardation, maternal and perinatal mortality (5). There is a significant increase in most adverse maternal and obstetric complications in women with triplets, quadruplets and higher-order multiple pregnancies than in women with twin pregnancies (6). Major maternal outcomes are premature rupture of membranes, anaemia, pregnancy-induced hypertension, abruption placenta and postpartum haemorrhage (7). The incidence of premature rupture of membranes (PPROM) in multiple pregnancies is higher compared to singleton pregnancies (8). Premature rupture of membranes is associated with preterm birth and increases perinatal mortality. With PPRM the rate of delivery by caesarean section increases especially when labour will not be established spontaneously after 12 hours as the results can lead to premature delivery (3).

## METHODOLOGY

**Study design:** The study design was a cross-sectional descriptive study from July 2022 to February 2023 for multiples and from 5<sup>th</sup> November 2023 to 15<sup>th</sup> December 2023 for singletons.

**Study Area:** The study was conducted at ARRH in Ilala Municipal, Dar es Salaam. The labour ward has six beds for delivery and there are 3 nurses conducting deliveries during the daytime. Not all women delivering at ARRH are from the hospital's antenatal clinic, others are coming from other nearby health facilities, which are served by ARRH. Those health facilities are Kitunda, Tabata, Mnazi Mmoja, Buguruni and Chanika Hospital. There are 5 maternity wards; block 5, block 6, block 7, block 9, block 10 and the new bark ward. Block 5 is joined to the maternity theatre, block 6 is a labour ward while block 7 is a reception ward where all pregnant women are received and observed for 24 hours before being sent to the labour ward if they have labour pain or to the antenatal ward or discharged home if they have a false labour. Block 9 is for post-caesarean patients, while block 10 is for antenatal cases and gynaecology cases. For the New Bark block, the ground floor ward is for postnatal cases and nursing mothers whose babies have been admitted to the neonatal ward. The first floor is for paediatric cases and the 2<sup>nd</sup> floor is a neonatal ward, which has five kangaroo beds and a special place for very sick neonates. Moreover, the ward has 2 phototherapy beds. Admission is for 24 hours and ward rounds are done every day by specialists, registrars and intern doctors. During the day, every ward has three nurses among them one is a registered nurse and two are midwife nurses. During the night hours, there are two nurses, one midwife and one registered nurse who conduct normal deliveries.

Others are student nurses who help during the day and night shifts. The postnatal ward has 66 beds for normal delivery and there are two nurses in the morning, one in the afternoon and one in the night shift. The caesarean section postnatal ward has 15 beds with two nurses in the morning, one in the evening and one during the night shift. The discharge of patients is done two times per day due to the small number of postnatal beds and shortage of staff. The postnatal ward has two registered nurses for both the post-caesarean ward and the normal postnatal ward. In the morning there are two nurses in each ward. They have three shifts: morning, afternoon and night shift. And for the afternoon and night shifts, there is only one nurse in every ward and a nurse attendant. If there is any complication like PPH or need for blood transfusion they will be managed in the postnatal wards till they are well and discharged to go home. The neonates with complications are admitted to the neonatal ward for treatment and observation. Also, there are five kangaroo mother care beds in the neonatal ward. Not all women who delivered at Amana attended the Antenatal clinic (ANC) at ARRH, others are referred due to complications they have developed. In the ANC some nurses take measurements of all pregnant women but the ones who attend to the pregnant women are Medical Doctors and Assistant Medical Officers if there is a difficult case then the specialist is consulted.

**Study Population:** The study population includes women who delivered at Amana Regional Referral Hospital. The first group comprises women who delivered twins or triplets from July 2022 to February 2023. Further, the researcher selected a comparative group that was composed of women who delivered singletons at the same hospital with the same staff members from 5<sup>th</sup> November 2023 to 15<sup>th</sup> December 2023. The comparative group served as a means to rule out any other factors that are not associated with multiple pregnancies in delivery to be certain that the outcomes discussed in this study were associated with multiple pregnancies and not otherwise.

### Sample size

#### Sample size calculation using the formula

$N$  = the expected minimum sample

$Z$  = the standard value which corresponds to 1.96 at a 95% confidence interval

$P$  = The estimated proportion of multiple pregnancies among Tanzania's population which is 18 per 1000 births (11).

$E$  = Margin error is taken as 5 per cent

$N = 226$  is a minimum number of sample size. Adjusting for a non-response rate of 10 % for the sample is 226 women. Therefore, a minimum of 250 were studied. For the comparison group, the ratio of 2:1 was applied so the participants were 500. As from the previous study done by Chiwanga *et al.* preeclampsia among the cases was 2 times compared to singletons and in another study PPRM was two times to the cases compared to singletons (29,36).

### DATA COLLECTION

Two research assistants, an intern doctor and a nurse-midwife were involved in data collection from 1<sup>st</sup> July 2022 to 26 February 2023 were multiple pregnancy groups and for the comparable group that is singletons data was collected from

5<sup>th</sup> November 2023 to 15<sup>th</sup> December 2023. The same research assistants also did the data collection for the comparison group. Data were collected from 1500hrs to 1800hrs and early in the morning before starting the morning presentation because during these hours it was easier to get research participants and did not interfere with working hours. The entry point was the labour ward in the admission register where all women who delivered that day were identified and those with multiple deliveries were identified and followed to their respective wards. From the register book, a file number and the mode of delivery were obtained. If they were delivered by spontaneous vaginal delivery, they were followed to the postnatal ward and those who had caesarean section were followed to the post-caesarean ward. Follow-up of the participants was done for 24 hours only after they were delivered. Data collection for those who had Spontaneous Vaginal Delivery (SVD) was done before they were discharged home for those whose babies were not admitted to the neonatal ward. For those who had a caesarean section, data collection was done the following day so they had time for recovery before participating. All babies soon after delivery were received by nurses who scored them before sending them to the neonatal ward or their mothers within one minute and five minutes. For both multiple and singleton groups, the criteria used to get them were those delivered at ARRH within 24 hours and those who had a gestation of 28 weeks and above. There were no changes or interventions done during the collection of data for singletons.

#### Outcome variables studied in neonates

**Mode of delivery:** If it was a normal Spontaneous Vaginal Delivery (SVD) for both twins, Caesarean Section (CS) for both multiples or combined delivery in which the first twin was delivered vaginally and the second twin by cesarean section.

**Perinatal outcome at birth:** Neonates were either alive or perinatal death. Alive neonates were evaluated using a clinical assessment tool called the Apgar score scored by the nurse who received the baby. The assessment took place at one minute and five minutes. An APGAR score of less than 7 in the fifth minute assessment was termed as a low score and a score of 7 and above was a normal score.

**Perinatal deaths:** Were classified as either stillbirth fresh or stillbirth macerated or death occurred within 24 hours after delivery.

**Postpartum haemorrhage:** Women who had blood loss of more than 500mls by spontaneous vaginal delivery and more than 1000mls by a cesarean section were regarded as having PPH.

**Mode of delivery:** All women who delivered by cesarean section during their previous pregnancy were regarded as having a previous cesarean section scar and those who were delivered by cesarean section during their current pregnancy were regarded as a cesarean section delivery. Women delivered vaginally either by assisted breech delivery, spontaneous vaginal delivery or vacuum delivery.

**PPROM:** Women with a history of per vaginal leakage of liquor before the onset of labour and before 37 completed weeks were regarded as having premature rupture of membranes.

**PIH:** All women who were diagnosed to have high blood pressure during antenatal visits and admission to the labour ward were regarded as having pregnancy-induced hypertension either preeclampsia or eclampsia.

## DATA ANALYSIS

To prevent errors when entering data in the questionnaires research assistants were trained on how to fill the questionnaires and the principal investigator filled a few questionnaires. To make sure that there was quality control, each questionnaire was inspected for its completion before entering it into the SPSS and the principal investigator completed those that were not completed. Data were entered into SPSS version 23 where each questionnaire was numbered and every question was given a code. The variables were entered into the SPSS and coded differently accordingly. Then the categories for multiples and singleton were coded. Variables were coded and grouped for different categories for example: socio-demographic, obstetrics characteristics, mode of delivery, and pregnancy outcome for both maternal and neonates. Data cleaning was done after every questionnaire was entered into the SPSS data sheet. After completion of my postgraduate studies, these questionnaires will be destroyed. Currently, the questionnaires are stored safely by the principal investigator. Univariate analysis was employed where each variable was analysed separately then categorical variables were analysed using frequencies and percentages. The total number of women who delivered during the study period was used to find the proportion of participants. To determine maternal outcomes in mothers who delivered multiple pregnancies, the incidence of mothers with and those without adverse outcomes was calculated. Perinatal outcomes and the percentage of neonates with adverse outcomes were calculated. Those neonates with adverse outcomes were those who were admitted to the neonatal ward or had died. Then, outcomes for both maternal and neonates were entered and their frequency and percentages were put into different categories to aid simple understanding. Multivariate regression was done to make a comparison between the two groups that is singletons and multiples. A P-value of less than 0.05 was taken and considered statistically significant.

## ETHICAL CONSIDERATION

The Senate Research and Publication Committee of MUHAS approved the study. Permission to conduct the study was obtained from the Medical Officer in charge and the ethical committee of the ARRH. Women who met the inclusion criteria explained the aim of the study and its benefits and were reassured that there were no risks associated with participating in the study. All the information obtained was confidential and used for the study only. Voluntary written informed consent was obtained from each participant before starting the interview. A nurse research assistant who has already been trained in patient counselling took the role of counselling participants who had perinatal death.

## RESULTS

The total number of deliveries from 1 July 2022 till 26<sup>th</sup> February 2023 was 9757 and multiples were 251 which made a proportion of 2.6%. For the group of singletons from 5<sup>th</sup> November 2023 till 15<sup>th</sup> December 2023, there were 1543 deliveries. There was a total of 11 maternal deaths and none of them was of multiple pregnancies. Anaemia was 155 among the women delivered during the entire study period and blood transfusion was offered for those with severe anaemia secondary to haemorrhagic shock. Admissions to the neonatal ward were 2500 and the leading cause of admission was birth asphyxia followed by prematurity 383 and 133 respectively. A paired t-test was performed and results indicated that there were statistically significant differences of means between singletons and multiple groups for the variables of age, occupation, history of twins, use of oral contraceptives, parity, gestation age, APH, PPRM, PIH, PPH, delivery by caesarean section, gestation age during delivery, perinatal mortality, fracture of limbs, birth weight, prematurity, admission to the neonatal ward and birth asphyxia.

About 29.1% of women who deliver multiple pregnancies were aged 25 – 29 years while those who had a history of twins in their families had a higher risk of getting twins compared with the singleton group. Most of the twins were primipara and 2.1% were delivered at term (Table 1). Maternal conditions during antenatal visits were not statistically significant from the comparing group. Postpartum haemorrhage, delivery by caesarean section and gestation age during delivery were statistically significant with an odds ratio of 4.95, 2.16 and 2.04 respectively. In contrast, premature delivery was statistically significant to all who delivered at a gestation age of fewer than 37 weeks. However, pregnancy-induced hypertension between the two groups was not statistically significant (Table 2). In this study, 2 triplets were born prematurely and both were admitted to the neonatal ward. The total number of singletons who were born alive was 478 among them 13 were born already dead. For fracture of limbs, it was not statistically significant as there were only 2 cases in multiples and none in the singleton group (Table 3). There were 9 assisted breech delivery singletons and 14 for the multiple pregnancies and the vacuum were 4 for the singletons and 1 vacuum for the multiple pregnancies (Figure 1).

## DISCUSSION

During the study period, the proportion of multiple pregnancies was 2.6%, which shows in every 1000 deliveries there are 26 multiple pregnancies. The maternal adverse outcomes were 44.6% and neonatal adverse outcomes were 42.3%. The incidence of multiple pregnancies from a study done at KCMC in 2014 was 21 in 1000 so in this study, there is a slightly increased incidence of multiple pregnancies (29). Therefore, there has been an increase in multiple pregnancies as time goes on this can be due to genetically inheritance, especially in maternal, and in other West African countries, some foods are associated with an increased risk of multiple pregnancies(37). In our setting incidences of multiple pregnancies are influenced by genetic factors compared to the developed countries.

Maternal outcomes among mothers who delivered multiple pregnancies were 55% and the common outcome that prevailed was delivery by caesarean section, premature delivery, and PPH which was 35.1%, 70%, and 26% respectively which was statistically significant. This is similar when compared to other studies in that there is an increased risk of premature delivery, PPH, and delivery by caesarean section for multiple (4,10,29). Among the common adverse outcomes of multiple pregnancies was neonatal admission to the neonatal ward where there was 24.8%, perinatal death was 21.4%, prematurity was 28.2% and low birth weight was 2.8% for those with an extremely low birth weight of less than 1000grams and 49% for those with a weight between 1001 and 2499 grams. These were neonates who were admitted to the neonatal ward with the exclusion of 14 multiple neonates who were born already dead. This was similar to other studies which show the leading cause for neonatal admission was prematurity, low birth weight, and birth asphyxia to both multiples and singleton deliveries. In this study, the group with birth asphyxia was not statistically significant (12,13,32). This study has shown that there is a higher incidence of PPH among the multiple pregnancies compared to singleton this is due to the increase of uterus size which results in uterine atony occurring because of over-distension. A similar study was conducted by Ononge. *et al* show that there was an increased incidence of PPH among women who delivered twins compared to women who delivered singletons (29,31). PPH has been observed more in multiple pregnancies than in the singleton group due to over-distension of the uterus. Also, delay in the management of the third stage of labour has increased the incidence of PPH and prevention of PPH in at-risk women using misoprostol. Reduction of PPH among multiple pregnancies can be achieved with early diagnosis of multiple pregnancies and counselling of pregnant women before delivery. PIH among the multiple deliveries in this study was 10.4%, which was low compared to those with singletons; this was due to early diagnosis and treatment of the multiple pregnancies during antenatal visits. These were treated early while those with singletons were late diagnosed because of exaggeration of symptoms of pregnancies are more pronounced to multiple compared to singleton. As a result, those with PIH, for both singleton and multiples, were delivered early because of severe PIH (preeclampsia and eclampsia). From studies, PIH was also increased in the multiples compared to the singletons which can be explained by the pathophysiology of placenta size among the two groups (13,14,29). Delivery by caesarean section during this study was 35.1%. It increased due to retained second twin where they had a delivery interval of more than one hour from the first twin who was delivered vaginally. In this study, it was two times higher for the multiples than for the singletons. Singletons who were delivered vaginally were 77.6% while in the multiple groups, 64.9% were delivered with 4% delivered by caesarean section after delivering the first twin vaginally. This was similar to other studies which showed that the increased rate of caesarean was due to the mal-presentation and a history of previous caesarean section, and malpresentation, undiagnosed twin and APH (12–14). Preterm delivery among multiple pregnancies was 22.4% while for the singletons was 16.6%. This increase in preterm labour was similar to other studies and extreme prematurity that is delivery before 34 weeks was more in triplets (10,12,13). These premature babies were admitted to the neonatal ward and were observed for some days before being discharged home.

**Table 1. Socio-demographic and obstetric characteristics of study participants (N = 751)**

Variable		Multiples (N = 251)	Singleton (N = 500)	Total (N = 751)
Age in years	< 20	25 (9.9)	75 (15.0)	100 (13.3)
	20 – 24	52 (20.7)	122 (24.4)	174 (23.2)
	25 – 29	73 (29.1)	146 (29.2)	219 (29.2)
	30 – 34	60 (23.9)	91 (18.2)	151 (20.1)
	≥ 35	41 (16.3)	66 (13.2)	107 (14.2)
Marital status	Single	31 (12.4)	107 (21.4)	138 (18.4)
	Married	220 (87.6)	393 (78.6)	613 (81.6)
Education level	No formal education	10 (3.9)	12 (2.4)	22 (2.9)
	Primary education	139 (55.4)	250 (50)	389 (51.8)
	Secondary education	90 (35.9)	211 (42.2)	301 (40.1)
	College	12 (4.8)	27 (5.4)	39 (5.2)
Occupation	Employed	14 (5.6)	37 (7.4)	51 (6.8)
	Small business	103 (41.0)	193 (38.6)	296 (39.4)
	Housewife	131 (52.2)	265 (53.0)	396 (52.7)
	Student	3 (1.2)	5 (1.0)	8 (1.1)
History of twins	Yes	134 (53.4)	134 (26.8)	268 (35.7)
	No	117 (46.6)	366 (73.2)	483 (64.3)
Use of contraceptives	Yes	58 (23.1)	111 (22.2)	169 (22.5)
	No	193 (76.9)	389 (77.8)	582 (77.5)
Parity	1	133 (52.9)	309 (61.8)	442 (58.9)
	2 – 4	108 (43.0)	179 (35.8)	287 (38.2)
	≥ 5	10 (3.9)	12 (2.4)	22 (2.9)
Gestation Age	28 – 36	70(27.9)	83(16.6)	153(20.4)
	37 and above	181(72.1)	417(83.4)	598(79.6)
Antenatal visits	None	0 (0)	2 (0.4)	2 (0.3)
	< 4 visits	47 (18.7)	103 (20.6)	150 (19.9)
	≥ 4 visits	204 (81.3)	395 (79.0)	599 (79.8)
Booking	<16 weeks	153 (60.9)	345 (69.0)	498 (66.3)
	≥16 weeks	98 (39.0)	155 (31.0)	253 (33.7)

**Table 2. Multivariate analysis of maternal condition during antenatal visits and after delivery**

Maternal condition before delivery								
	Multiples (251)	Singletons (500)	Total (751)	COR CI (95%)	p-value	AOR CI (95%)	P-value	
APH	8(3.2)	11(2.2)	19(2.5)	1.46(0.58 – 3.69)	0.42	1.48(0.59 – 3.74)	0.40	
PPROM	20(8.0)	34(6.8)	54(7.2)	1.19(0.67 – 2.11)	0.56	1.20(0.75 -2.13)	0.53	
Maternal condition after delivery								
	Multiples (251)	Singletons (500)	Total (751)	COR CI (95%)	p-value	AOR CI (95%)	P-value	
Postpartum haemorrhage	26 (10.4)	12 (2.4)	38 (5.1)	4.69(2.33 – 9.48)	0.00	4.95(2.42 – 10.12)	0.00	
PIH	26 (10.4)	51 (10.2)	77 (10.3)	1.02(0.62 – 1.67)	0.95	1.09(0.54 – 1.54)	0.73	
Delivery by cesarean section	88(35.1)	112 (18.8)	200 (26.6)	1.84(1.29 – 2.62)	0.001	2.16(1.50 – 3.12)	0.00	
Gestation age during delivery	28 – 36	70(27.9)	83(16.6)	153(20.4)	1.94(1.35 – 2.79)	0.00	2.04(1.40 – 2.97)	0.00
	37 and above	181(72.1)	417(83.4)	598(79.6)				

\*p-value 0.05 is statistically significant.

**Table 3. Multivariate analysis of neonatal outcomes**

		Multiples (504)	Singleton (500)	Total (1004)	CI 95%	p-value	AOR CI (95%)	P-value
Neonatal Admission	Yes	125(24.8)	22(4.4)	147(14.6)	18.08(11.03 – 29.64)	0.00	7.83(3.34 – 18.35)	0.00
	No	379(75.2)	478(95.6)	857(85.4)				
Birth Asphyxia	Yes	34(6.7)	7(1.4)	41(4.1)	1.27 (0.61 – 2.66)	0.00	6.49(0.91 – 46.55)	0.63
	No	470(93.3)	481(96.2)	951(94.7)				
Birth weight	≤ 1000 gm	15(2.9)	1 (0.2)	16(1.1)	32.60(8.68 -122.35)	0.01	31.25(5.81 – 168.12)	0.00
	1001 – 2499 gm	259(51.4)	14 (2.8)	273 (18.2)				
	Above 2499 gm	230(45.6)	485 (97.0)	715 (80.7)				
Perinatal death	Yes	21(4.2)	13(2.6)	34(3.4)	4.47(2.07 – 9.65)	0.00	12.01(1.49 – 101.52)	0.02
	No	483(95.8)	487(97.4)	970(96.6)				
Prematurity	Yes	142(28.2)	83(16.6)	225(22.4)	1.94(1.35 – 2.79)	0.00	6.65(2.27 – 19.45)	0.001
	No	362(71.8)	417(83.4)	779(77.6)				

P-value = 0.05 was statistically significant

Most of the common causes of admission in premature babies were respiratory distress and low Apgar score; this was similar when compared to other studies (13,14). Spontaneous labour is common following PROM and is seen more in multiples than in singletons (38). Perinatal death among multiples was two times more compared to singletons this was due to birth asphyxia which is common to the second twin compared to the first twin. This was similar to other studies which showed that with multiple pregnancies there is a risk of prolonged labour which in the end leads to birth asphyxia (10,13). Also, other maternal problems like antepartum haemorrhage especially abruption placenta are more likely to cause neonatal birth asphyxia in multiples compared to singletons (35). Low birth weight among multiple pregnancies was 2.9% of babies below 1000 grams which was 15 times more compared to the singletons. While birth weight 1001 – 2499 grams to multiples was 54.1% which was 25 times more compared to singletons; most of the multiple pregnancies neonates had low birth weight compared to the singletons. Compared to other studies there was an increased incidence of low birth weight in multiple pregnancies than in singletons (10,13). With low birth weight also the incidence of admission to the neonatal ward increases. This can be due to the increase in the size of the uterus causing a restriction of growth to another twin, especially to the second twin.

Neonatal admission among the multiple pregnancies neonates was six times more compared to singletons because with multiples it is more likely to have adverse outcomes like prematurity, birth asphyxia, and low birth weight which will lead to admission to the neonatal ward. It was similar to other studies in that there was increased admission to the neonatal ward among multiple compared to singletons (10,12,13). During this study, the leading causes of admission among the neonates were prematurity, low birth weight, and birth asphyxia which were more to the multiples than singletons.

## CONCLUSION

Compared to the previous studies done there has been an increased proportion of multiple pregnancies but adverse maternal and neonatal outcomes are still higher to the multiples. There is a need to develop ways to minimize complications that are associated with multiple pregnancies during antenatal, intrapartum, and postpartum to both mother and fetus.

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