

Original Article

Maternal complications and neonatal outcome in Arab women of a fast developing country

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ABSTRACT

Objective: The objective of the study was to examine maternal complications that occur during the third trimester and their neonatal outcome in Arab women residing in Qatar. **Design:** This is a prospective hospital-based study. **Setting:** The survey was carried out in women's hospital. **Materials and Methods:** The study was based on the log book of the women's hospital, from which we recruited women in their third trimester of pregnancy between the first week of January 2010 and April 2011. Of the 1 824 Arab women who were approached to participate in the study, 1 432 (78.5%) consented. Face-to-face interviews were conducted with the pregnant women in the third trimester attending routine antenatal clinics at a women's hospital. The questionnaire covered variables related to sociodemographic factors, family history, medical history, maternal complications, and neonatal outcome. Medical records of the patients were referred to collect the clinical variables. **Results:** Of the pregnant women studied, 39.8% were less than 30 years of age. The risk of maternal complications was higher in housewives (60.8%) and women with a low monthly household income (38.2%). Most of the pregnant women (77.6%) had antenatal care. Normal delivery (69.7%) was more common in expatriate Arab women, whereas caesarean was more prevalent in Qatari women (22.2%). Women aged 35 years or older had a significantly higher risk of maternal complications such as gestational diabetes (20.8% vs 13.4%; $P < 0.01$), gestational hypertension (21.6% vs 15.2%; $P = 0.003$), and ante-partum hemorrhage (17.9% vs 13.7%; $P = 0.042$) than younger women. Gestational diabetes increased the risk of caesarean delivery (25.1%) and macrosomia (42.3%). The frequency of caesarean delivery (22.1%) was higher in women with gestational hypertension. Neonatal complications such as Apgar score (<7) 1 minute (33.1% vs 21.2%; $P < 0.001$), 5 minutes (13.1% vs 8.2%; $P = 0.005$), and congenital anomalies (2.9% vs 0.9%; $P = 0.007$) were significantly higher in newborns of older women. Low birth weight (11.1%) and Apgar 1st minute <7 rate (28.2%) were higher in newborns of mothers with ante-partum hemorrhage. **Conclusion:** The study findings revealed that maternal complications such as gestational diabetes, gestational hypertension, ante-partum hemorrhage, and maternal anemia were significantly higher in older pregnant women. Similarly, neonatal complications were higher in the newborns of older women. Gestational hypertension was the leading maternal complication observed in Arab women.

Key words: Arabs, gestational, maternal complications, pregnant women, prevalence

INTRODUCTION

Complications of pregnancy and childbirth are the leading

causes of disability and death in women of reproductive age in developing countries. This accounts for at least 18% of the global burden of disease in this age group. The leading causes of maternal death and disability are closely linked to poor maternal health during pregnancy, inadequate care during delivery, and lack of care of the new born.^[1] Almost 8 million still births and early neonatal deaths occur every year. In addition to maternal deaths, more than 50 million women experience maternal health problems annually.^[2] In underdeveloped countries, these maternal complications often impose a financial burden on women and their households.

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Modern medicine has made labor and delivery much safer for both the mother and the baby, but complications still occur. The third trimester, starting from the 28th week till delivery, is the last lap of the journey in pregnancy, during which certain obstetric and medical problems can develop. This is also a crucial phase for the baby to gain weight. The adverse events that occur during pregnancy influence the health of the infant and the neonatal outcome. The main potential complications for the mother in the third trimester are pregnancy-induced hypertension (pre-eclampsia and eclampsia), gestational diabetes, anemia, bleeding, placenta previa, abruption placenta, vasa previa, preterm labor, premature rupture of membrane....etc.

The health of a pregnant woman has a profound effect on the health of the developing fetus and new born.^[3] According to World Health Organization, congenital malformations are now the third leading cause of infant mortality, accounting for 12.7% of early neonatal mortality.^[4] It was reported that 70 to 80% of all neonatal mortality and morbidity is due to preterm birth which is one of the major clinical problems in obstetrics and neonatology.^[5] Infants born to women with diabetes are at an increased risk for adverse birth outcomes.^[6] It has been reported that between 40% and 66% of cases of presumed gestational diabetes could be detected early in pregnancy.^[7] Gestational diabetes is considered a major public health problem associated with higher perinatal mortality and morbidity rates. The literature reports a large number of adverse outcomes in pregnancies after infertility treatment, and older maternal age as a likely contributing factor as well as an underlying cause of infertility.^[8,9]

In the State of Qatar, the Annual Health Report^[10] for the healthcare services documented that complications of pregnancy, childbirth, and puerperium have increased in the last decade, and nearly 56% of women admitted to the Women's hospital were there as a result of complications of pregnancy and childbirth. There is no detailed study of serious maternity complications and their neonatal outcome of the community. Though complications are not always dangerous, they generally have the potential to cause harm if not managed promptly and correctly. Early continuous prenatal care is associated with improvements in maternal and perinatal outcomes. Therefore, the aim of this study was to examine the type of maternal complications that occur during the third trimester and their neonatal outcome in Arab women in Qatar.

MATERIALS AND METHODS

This is a prospective hospital-based study of Arab pregnant women in their third trimester between January 2010 and April 2011. The study was based on the log book in which

all the pregnant women attending antenatal clinics of the Women's hospital of the Hamad Medical Corporation are registered. The Research Assistants screened the outpatient register of the Women's hospital during the study period and prepared a list of 1 824 Arab women who were more than 28 weeks pregnant and were attending the outpatient clinic with a pregnancy complication. A series of pregnant women with complications were taken consecutively from the register and included in the study sample. Only patients who agreed to participate were included in the study. A total of 1 824 pregnant women, who had any kind of maternal complications, were approached and 1 432 women (78.5%) expressed their willingness to participate in the study. Of all, 392 women whose questionnaires were incomplete or did not want to respond to the questionnaire because of the lack of time were excluded from the study. Research Assistants screened the medical files of the subjects for any queries on the pregnancy and neonatal complications. In 2010, there were a total of 16 188 deliveries at the Women's hospital. Our study sample included 1 432 pregnant women, which was 8.8% of the mothers who delivered. Antenatal programs in health centers in Qatar take care of pregnant women until they reach 28 weeks of pregnancy. The women attend clinics in the health centers once a month until the 27th week, after which they are referred to hospitals where they attend antenatal clinics every two weeks until they reach 38 weeks. From then on, they attend the clinic every week until delivery.

The study was approved by the Hamad Medical Corporation before data collection. Every participant was given brief information about the study and was assured of strict confidentiality.

A well-designed and pilot-tested questionnaire was used to collect data. Face-to-face interviews were conducted by qualified nurses using a validated self-administered questionnaire in the local language. A translated Arabic version of the questionnaire was revised by a bilingual consultant. The survey instrument was then tested on 100 randomly selected pregnant women from the list for validity. The investigators had made the necessary corrections and modifications after considering the minor differences and discrepancies that had been found during the pilot study. The questionnaire covered sociodemographic characteristics of the pregnant women, family, and medical history, type of maternal complication, and the pregnancy and neonatal outcome.

Hypertension was defined according to WHO^[11] criteria as SBP > 140 mmHg and/or DBP > 90 mmHg and/or the use of antihypertensive medication. Diabetes Mellitus was defined according to the WHO Expert Committee group,^[12] i.e., fasting venous blood glucose

concentration ≥ 7.0 mmol/l and/or 2-hour post-OGTT venous blood glucose concentration ≥ 11.1 mmol/l. The WHO^[13] tabulation adopts the international definition for anemia for pregnant women <110 g/l.

The data were collected and entered after coding into a computer. Chi-square analysis was performed to test for differences in the proportions of categorical variables between two or more groups. Students' *t*-test (two-tailed) was used to determine the significance of difference between two continuous variables. The level $P < 0.05$ was considered as cut-off value for significance.

RESULTS

In the study sample, 77.6% regularly attended the antenatal clinics of the health centers and obstetric clinics of the Women's hospital for antenatal care. Some women (22.4%)

were not regular with attendance at the antenatal care which might have resulted in an increased risk of neonatal complications.

Table 1 shows the sociodemographic characteristics of the studied women according to nationality. The mean \pm SD age of the studied women was (32.9 ± 6.2 and 31.4 ± 6.2 , respectively, $P < 0.001$). The majority with any kind of maternal complications were below 30 years (39.8%), followed by 30 to 34 years (26.6%) with a significant difference ($P < 0.001$). More than half of the women were housewives (60.8%). The risk of maternal complications was higher in those with low monthly household income (5000-9999); and was particularly higher in Arab women who were not Qataris (41.7%) than in Qatari women (33.8%).

Table 2 shows family and medical history of the studied women in the third trimester by nationality.

Table 1: Socio demographic characteristics of the studied pregnant women in the third trimester by nationality (N=1432)

Variables	Total n=1432 n (%) Qatari n=636 n (%)	Nationality		P value
		Other Arab N=796 n (%)	Other Arab N=796 n (%)	
Age (Mean \pm SD)	32.1 \pm 6.3	32.9 \pm 6.2	31.4 \pm 6.2	<0.001
Age group				
<30 years	570 (39.8)	213 (33.5)	357 (44.8)	<0.001
30-34 years	381 (26.6)	175 (27.5)	206 (25.9)	
35-39 years	285 (19.9)	144 (22.6)	141 (17.7)	
40-45 years	196 (13.7)	104 (16.4)	92 (11.6)	
Educational level				
Illiterate	95 (6.6)	34 (5.3)	61 (7.7)	0.026
Primary	134 (9.4)	70 (11.0)	64 (8.0)	
Secondary	139 (9.7)	52 (8.2)	87 (10.9)	
Intermediate	463 (32.3)	220 (34.6)	243 (30.5)	
University	601 (42.0)	260 (40.9)	341 (42.8)	
Occupation				
Housewife	870 (60.8)	337 (53.0)	533 (67.0)	<0.001
Sedentary/Professional	390 (27.2)	213 (33.5)	177 (22.2)	
Manual	101 (7.1)	48 (7.5)	53 (6.7)	
Businesswomen	43 (3.0)	24 (3.8)	19 (2.4)	
Army/Police	28 (2.0)	14 (2.2)	14 (1.8)	
Household income (QR*)				
<5000	124 (8.7)	37 (5.8)	87 (10.9)	<0.001
5000-9999	547 (38.2)	215 (33.8)	332 (41.7)	
10,000-14,999	299 (20.9)	146 (23.0)	153 (19.2)	
15,000-19,999	309 (21.6)	155 (24.4)	154 (19.3)	
>20,000	153 (10.7)	83 (13.1)	70 (8.8)	
Type of residence				
Villa	947 (66.1)	440 (69.2)	507 (63.7)	0.011
Traditional House	375 (26.2)	142 (22.3)	233 (29.3)	
Apartment	110 (7.7)	54 (8.5)	56 (7.0)	
Place of residence				
Urban	1217 (85.0)	530 (83.3)	687 (86.3)	0.118
Rural	215 (15.0)	106 (16.7)	109 (13.7)	

*QR=3.65 US Dollar

Table 2: Family and Medical history of the studied pregnant women in the third trimester by nationality (N=1432)

Variable	Nationality		P value
	Other Arab n = 796 n (%)	Other Arab n = 796 n (%)	
Husband related	297 (46.7)	284 (35.7)	<0.001
1 st cousin	262 (41.2)	310 (38.9)	0.209
2 nd cousin	185 (29.1)	251 (31.5)	0.326
BMI			
Normal (<25 kg/m ²)	299 (47.0)	347 (43.6)	0.434
Overweight (25-30 kg/m ²)	173 (27.2)	230 (28.9)	
Obese (>30 kg/m ²)	164 (25.8)	219 (27.5)	
Family history of illnesses			
G6PD	60 (9.4)	45 (5.7)	0.008
Thalasemia	70 (11.0)	62 (7.8)	0.043
Diabetes	106 (16.7)	100 (12.6)	0.034
Hypertension	135 (21.2)	134 (16.8)	0.035
Down Syndrome	100 (15.7)	158 (19.8)	0.045
Anemia	61 (9.6)	44 (5.5)	0.004
Mental retardation	59 (9.3)	101 (12.7)	0.043
Medical history			
Parity group			
<2	185 (29.1)	305 (38.3)	<0.001
2-4	298 (46.9)	354 (44.5)	
5-6	115 (18.1)	99 (12.4)	
>6	38 (6.0)	38 (4.8)	
Previous preterm birth	68 (10.7)	88 (11.1)	0.964
Inter pregnancy interval (Mean±SD)	20.8±12.6	19.9±10.6	0.266
Antenatal care in clinic/hospital	475 (74.7)	636 (79.9)	0.022
Obstetric risks in the past			
Abortion	134 (21.1)	130 (16.3)	0.024
Stillbirth	65 (10.2)	57 (7.2)	0.045
Low Birth Weight baby	63 (9.9)	91 (11.4)	0.391
Congenital anomalies	40 (6.3)	75 (9.4)	0.031
Type of delivery			
Spontaneous vaginal	421 (66.2)	555 (69.7)	0.048
Caesarian elective	99 (15.6)	107 (13.4)	
Caesarian emergency	42 (6.6)	37 (4.6)	
Vento use	27 (4.2)	36 (4.5)	
Forceps	40 (6.3)	38 (4.8)	
Breech vaginal	7 (1.1)	23 (2.9)	

Cansanguinity was significantly higher in Qatari women (46.7%) than in other Arab women (35.7%) ($P < 0.001$). Family history of hypertension (21.2% vs 16.8%; $P = 0.035$) and diabetes (16.7% vs 12.6%; $P = 0.034$) was more frequent in Qatari women, with a significant difference, than expatriate Arab women. On the average, nearly half of the women had 2 to 4 children (45.5%). Most of the other Arab (79.9%) and Qatari (74.7%) pregnant women had attended the clinic or hospital for antenatal care. Normal delivery was higher in expatriate Arab women (69.7%) than in Qatari women (66.2%) ($P = 0.048$), whereas Caesarean sections were more frequent in Qatari women (22.2%) compared to other Arab women (18%).

Table 3 examines the various types of maternal complications in the women and the adverse neonatal outcome according to the mother's age. Most maternal complications such as maternal anemia (19.2% vs 13.1%; $P = 0.004$), gestational diabetes (20.8% vs 13.4%; $P < 0.001$), gestational hypertension (21.6% vs 15.2%; $P = 0.003$), and ante-partum hemorrhage (17.9% vs 13.7%; $P = 0.042$) were significantly higher in older women who were >35 years than in the younger women who were <35 years. With regard to neonatal outcome, Apgar score (<7) 1 minute (33.1% vs 21.2%; $P < 0.001$), 5 minute (13.1% vs 8.2%; $P = 0.005$), and congenital anomalies (2.9% vs 0.9%; $P = 0.007$) were significantly higher in the newborns of women who were >35 years. Neonatal jaundice was higher

Table 3: Maternal complications in the studied pregnant women and neonatal outcome according to mother's age (N=1432)

Variable	Age group		P value
	>35 Years n=481 n (%)	<35 Years n=951 n (%)	
Maternal complication			
Anemia	183 (19.2)	63 (13.1)	0.004
Gestational diabetes	127 (13.4)	100 (20.8)	<0.001
Gestational hypertension	145 (15.2)	104 (21.6)	0.003
Ante partum hemorrhage	130 (13.7)	86 (17.9)	0.042
Abruptio placenta	94 (9.9)	66 (13.7)	0.033
Placenta praevia	70 (7.4)	52 (10.8)	0.035
Vasa praevia	61 (6.4)	41 (8.5)	0.157
Preterm birth	73 (7.7)	53 (11.0)	0.038
Premature rupture of membranes	41 (4.3)	6 (1.2)	0.001
Pre-eclampsia	50 (5.3)	10 (2.1)	0.005
Malpresentation	22 (2.3)	13 (2.7)	0.718
Neonatal outcome			
Low birth weight(<2500 g)	68 (7.2)	33 (6.9)	0.925
Macrosomia (>4000 g)	35 (3.7)	15 (3.1)	0.584
APGAR score (<7)			
1 Minute	202 (21.2)	159 (33.1)	<0.001
5 Minute	78 (8.2)	63 (13.1)	0.005
Neonatal jaundice	58 (6.1)	34 (7.1)	0.553
Congenital anomaly	9 (0.9)	14 (2.9)	0.007
Birth trauma	27 (2.8)	15 (3.1)	0.896
Suspected sepsis	33 (3.5)	20 (4.2)	0.614

in older women (7.1%), but no significant difference was observed.

Table 4 reveals the birth/neonatal outcome of pregnancies and leading complications. The risk of maternal mortality was greater in women with gestational hypertension (2 cases). The frequency of caesarean deliveries was higher in the group with gestational diabetes (25.1%) and gestational hypertension (22.1%). There was a higher risk of preterm birth with gestational diabetes (9.6%) and anemia (8.5%). Women with gestational diabetes had an increased risk of macrosomia (>4 000 g) (42.3%). Low birth weight was higher with maternal anemia (9.8%) and ante-partum hemorrhage (11.1%) compared to other complications. Apgar 1st minute < 7 rate was higher in newborns of women with ante-partum hemorrhage (28.2%).

DISCUSSION

This study has highlighted the potential maternal complications that affect mothers during the third trimester and the risk for neonatal morbidity and mortality in Arab women in Qatar. It is important to identify the risk factors early in the prenatal period, so that appropriate measures can be taken to ensure the well-being of the mother and child. In the study sample, the majority of the pregnant women with low monthly household income had more

complications during pregnancy (38.2%), the frequency being higher in expatriate Arab women (41.7%) than Qatari women (33.8%). Most were housewives (60.8%) and with university degrees (42%). Also, it is generally accepted that advancing maternal age, especially 35 years or older, carries more risks for both the mother and fetus.

Previous studies have suggested that women aged over 35 years are at an increased risk for obstetric complications as well as perinatal morbidity and mortality.^[14,15] The study findings confirmed that obstetric complications as well as neonatal morbidity were higher in women above 35 years. The first two leading maternal complications, mainly gestational diabetes (20.8% vs 13.4%; $P < 0.001$) and gestational hypertension (21.6% vs 15.2%; $P = 0.003$) were significantly higher in women aged 35 years and above compared to women below 35 years. On the other hand, Anemia, the third leading complication, was higher in younger women below 35 years (19.2% vs 13.1%; $P = 0.004$). Gestational hypertension and gestational diabetes are known to be most common in older women aged more than 35 years and preeclampsia more prevalent in the younger women.^[16] Even in the study sample, complications such as gestational diabetes, gestational hypertension, and ante-partum hemorrhage were common in women of 35 years or more, whereas other complications such as anemia, premature rupture of membrane, and preeclampsia were more frequent in the younger women.

Table 4: Birth/neonatal outcome of pregnancies with first four leading complications in pregnancy (N=1432)

Birth/Neonatal outcome	Leading complications			
	Gestational hypertension n=249 n (%)	Anemia n=246 n (%)	GDM n=227 n (%)	APH n=216 n (%)
Maternal death	2 (0.8)	1 (0.4)	0	1 (0.5)
Caesarian	55 (22.1)	48 (19.5)	57 (25.1)	43 (19.9)
Preterm birth	19 (7.6)	21 (8.5)	22 (9.6)	15 (6.9)
Low birth weight (<2500 g)	14 (5.6)	24 (9.8)	10 (4.4)	24 (11.1)
Macrosomia (>4000 g)	9 (3.6)	7 (2.9)	96 (42.3)	8 (3.7)
Birth trauma	7 (2.8)	3 (1.2)	6 (2.6)	6 (2.8)
Jaundice	12 (4.8)	8 (3.3)	12 (5.3)	9 (4.2)
Sepsis	13 (5.2)	12 (4.9)	9 (4.0)	8 (3.7)
APGAR score				
1 min (<7)	53 (21.3)	48 (19.5)	47 (20.7)	61 (28.2)
5 min (<7)	19 (7.6)	20 (8.1)	17 (7.5)	30 (13.9)

GDM, Gestational diabetes mellitus; APH, Ante-partum hemorrhage

This shows that each age group has its peculiar maternal complications. Modern infertility treatments have increased the number of women able to conceive late in life. The outcome of these pregnancies raises significant concerns because older age is inherently associated with a higher incidence of chronic diseases. A study by Ustun *et al.*,^[16] found similar results that showed that complications of pregnancy were higher in the older age group.

Neonatal complications like Apgar score 1 minute (33.1%) and 5 minute (13.1%) and congenital anomalies (2.9%) were higher in the newborns of older women with maternal complications. Another study also reported that Apgar scores at 1st and 5th minute were significantly higher in older women.^[16] However, neonatal jaundice (7.1%) was higher in newborns of older women, but no statistically significant difference was found with younger women. These results show that the proportion of low-risk pregnancies declined significantly with advancing maternal age. Harrison^[2] stated in his study that one quarter of all adult women living in the developed world currently suffer from short- or long-term illness related to pregnancy and childbirth. A very striking result observed in the studied women was that congenital anomalies were higher in the newborns of older women (2.9% vs 0.9%) compared to younger women. This could be because the studied women had past obstetric risks of congenital anomalies (8%) and nearly half of the women had high parity (2-4) (45.5%). Another supporting factor was the high rate of consanguineous marriages among the studied women (40.6%).

In the study sample, gestational hypertension was the primary leading maternal complication associated with an increased risk of caesarean delivery (22.1%) and Apgar score 1 minute (<7) (21.3%). In another study, it was observed that pregnancies often complicated by

gestational hypertension demonstrated a high risk of fetal outcome, especially Apgar score at 1 minute. Roberts and Cooper^[17] reported that gestational hypertension and severe preeclampsia were the leading causes of maternal and fetal/neonatal morbidity and mortality, which is similar to our study results.

Maternal anemia (17.1%) was the 2nd leading complication in Arab women, and the most common medical disorder in pregnancy in Arab women in Qatar. It has been reported that maternal anemia is considered a risk factor for adverse pregnancy outcome.^[18] Estimates from the World Health Organization report^[19] indicate that 35 to 75% of pregnant women in developing countries and 18% of women from industrialized countries are anemic, which is similar to the proportion of maternal anemia in the current study (17.1%). Low birth weight in anemic women was observed in the present study (9.8%). There is substantial amount of evidence to show that maternal anemia in pregnancy can result in low birth weight subsequent to preterm delivery.^[20] Preterm birth is the most important cause of perinatal mortality in the developed world.^[21] The prevalence of preterm birth in first world countries is between 6 and 10%^[22] which is consistent with the findings of this study (8.8%). Preterm birth was the second highest in Arab anemic pregnant women (8.5%). Klebanoff *et al.*, showed that the risk of preterm births doubled in women with anemia.^[23] A higher risk of premature birth is an additional concern related to the effect of maternal iron deficiency on an infant's health. Preterm infants are likely to have more perinatal complications.

Gestational diabetes (15.9%) was the third leading maternal complication in the studied women. These women were at an increased risk of having caesarean deliveries (25.1%) and macrosomic babies (42.3%). Although preterm births were more common with gestational diabetes (9.6%), a greater

proportion of Arab women with gestational hypertension had preterm births (7.6%) which is similar to the findings of Liu *et al.*^[24] With documented increasing prevalence of gestational diabetes all over the world comes the increased risk of macrosomia, birth injuries, and caesarean deliveries.^[25] Our rate of macrosomia (42.3%) is strikingly similar to a prospective study in the Netherlands^[26] of 42.6%. In Saudi Arabia,^[27] however, it was found that congenital malformations and neonatal jaundice were the most common problems in babies born to mothers with gestational diabetes. Also, gestational diabetes is a strong risk factor for the development of type 2 DM later in life.^[28]

The finding of a recent study^[29] was very encouraging in that an antenatal care audit showed that almost all pregnant women attended antenatal care. The present study indicates that 77.6% of the studied pregnant women attended maternity clinic or hospital for antenatal care. The lack of adequate prenatal care is considered one of the most indirect significant risk factors for neonatal complications. Low literacy, lack of knowledge and awareness of health issues could be the factors militating against women seeking medical care and advice during pregnancy. The goal of prenatal care is not only to monitor the development of the fetus during pregnancy, but also to assess the high risk factors that may have a negative impact on the outcome of pregnancy.

To the best of our knowledge, this is the first report in Qatar on the leading maternal complications in pregnant women and their potential danger to newborns. It appears that Arab women had the greatest risk of maternal complications during third trimester and required close monitoring in order to improve maternal and fetal outcome. The identification of common high risk factors is important for the provision of appropriate prenatal care. This study advocates the detection and management of high-risk pregnancies throughout antenatal care, as a vital means of reducing maternal and perinatal morbidity and mortality.

CONCLUSION

The study has shown maternal complications to be more frequent in older women. There was a greater chance of a poor outcome in women with serious maternal complications such as gestational hypertension, maternal anaemia, gestational diabetes, and ante-partum hemorrhage. Gestational diabetes increased the risk of macrosomia and caesarean delivery. The high consanguinity rate, advanced maternal age, and past obstetric risk of congenital anomalies might have increased the risk of congenital anomalies in newborns of older women in the

studied population. Low birth weight was found to be higher with maternal anemia and ante-partum hemorrhage.

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