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Preterm labor

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Acknowledgment

one I prefer over myself, and why not, she sacrificed for me ,She spared no effort to always make me happy (**My beloved mother**)

We walk the paths of life, and those who control our minds remain in every path we take His kind face and good deeds.

He did not stingy throughout his life (**My dear father**).

To the sincere human, **Dr. Azal**, who helped me over and over again in my research, I thank you very much, and I wish you success in all aspects of life.

To my friends, and all those who stood by me and helped me with whatever they had, in many ways

I present to you this research, and I hope it will be to your satisfaction.

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Abstract

Preterm birth, defined as birth prior to 37 weeks of gestation, affects 5-18% of pregnancies. It is the leading cause of neonatal death and the second cause of childhood death below the age of 5 years. Approximately 15 million preterm neonates are born every year, and the highest rates occur in Africa and North America. In our study we discussed the causes of preterm labor in Diyala.

Methods: we collected sample of 100 preterm neonates who ere born in al Batool teaching hospital. We asked their mother some questions by prepared questionnaire.

Results: the mean maternal age was 36.28 years. the babies were 46% male and 54% females, most of them were 35 and 36 weeks in gestational age (about 80%). 58% of the mothers were anemic and 22% of them had chronic diseases.

Conclusion: we found association between increased maternal age and anemia and the increased risk of preterm labor.

Introduction

Preterm birth, defined as birth prior to 37 weeks of gestation, affects 5-18% of pregnancies. It is the leading cause of neonatal death and the second cause of childhood death below the age of 5 years. Approximately 15 million preterm neonates are born every year, and the highest rates occur in Africa and North America. Neonates born preterm are at an increased risk of short-term complications attributed to immaturity of multiple organ systems, as well as neurodevelopmental disorders, such as cerebral palsy, intellectual disabilities, and vision/hearing impairments. Preterm birth is a leading cause of disability-adjusted life years, the number of years lost due to ill health [1].

A tacit assumption underlying the study of parturition is that preterm labor is merely labor that starts too soon. In other words, the main difference between preterm and term labor is when labor begins. The current understanding of this process is that the switch of the myometrium from a quiescent to a contractile state is accompanied by a shift in signaling between anti-inflammatory and pro-inflammatory pathways, including chemokines (interleukin-8), cytokines (interleukin-1 and -6), and contraction-associated proteins (oxytocin receptor, connexin 43, prostaglandin receptors). Progesterone maintains uterine quiescence by repressing the expression of these genes. Increased expression of the miR-200 family near term can derepress contractile genes and promote progesterone catabolism [2].

The following are etiologies that may contribute to preterm labor: stress, infection, placental abruption, placenta previa, substance use, history of preterm birth or abortion, inadequate prenatal care, smoking, maternal age <18 or >40, poor nutrition, low body mass index, fetal anomaly, fetal growth restriction, oligohydramnios, polyhydramnios, vaginal bleeding, premature preterm rupture of membranes (PPROM), and environmental factors. This list is not comprehensive,

and various other factors contribute to preterm labor. However, it encompasses the most common reasons patients present in clinical settings [3].

Management is implemented based on the gestational age at which the mother presents to the hospital. At >34 weeks, if the mother presents with preterm labor, she is admitted. After observation for 4-6 hours, if she does not have progressive cervical dilation and effacement, fetal well-being is noted on a reactive non-stress test, and complications in pregnancy have been excluded, she can be sent home with instructions for follow-up in 1-2 weeks and return if there are additional signs and symptoms of preterm labor or other pregnancy concerns. Mothers presenting at <34 weeks with signs and symptoms of preterm labor are hospitalized. In preterm labor with intact membranes, tocolytic drugs for up to 48 hours are used to inhibit labor [4].

Aim of study

To discuss the causes the causes of preterm labor before 37 weeks in women attending Al-Batool teaching hospital in Diyala, Iraq.

Patients and methods

This is cross sectional study. We collected a sample of 100 women who had preterm labor in Al-Batool teaching hospital in the period from October 2022 to February 2023. We collected every preterm labor before 37 weeks and we excluded the ICU lying down neonates and any baby aged less than 26 weeks. We also excluded emergency cesarean sections due to other illnesses. We excluded the IVF pregnancies.

We collected the informations using prepared written questionnaire and by direct interview with the mothers. We asked questions about age, parity, history of chronic disease, anemia, chronic drugs and preterm labor. The privacy and confidentiality of the participants were preserved. For data analysis we used Statistical package of social sciences (SPSS) version 26 software. We expressed the quantitative data by arithmetic mean and standard deviation and the qualitative data by frequencies. We used Chi square to investigate the association between the variables when P value less than 0.05 considered significant.

RESULTS

100 pregnant women was included in this cross-sectional study. Their mean age was 36.28 ± 6.3 years. Their parity is demonstrated in table 1.

Table 1. parity

Parity	Frequency	Percent%
0	18	18.0
1	25	25.0
2	23	23.0
3	10	10.0
4	9	9.0
5	11	11.0
6	3	3.0
7	1	1.0
Total	100	100.0

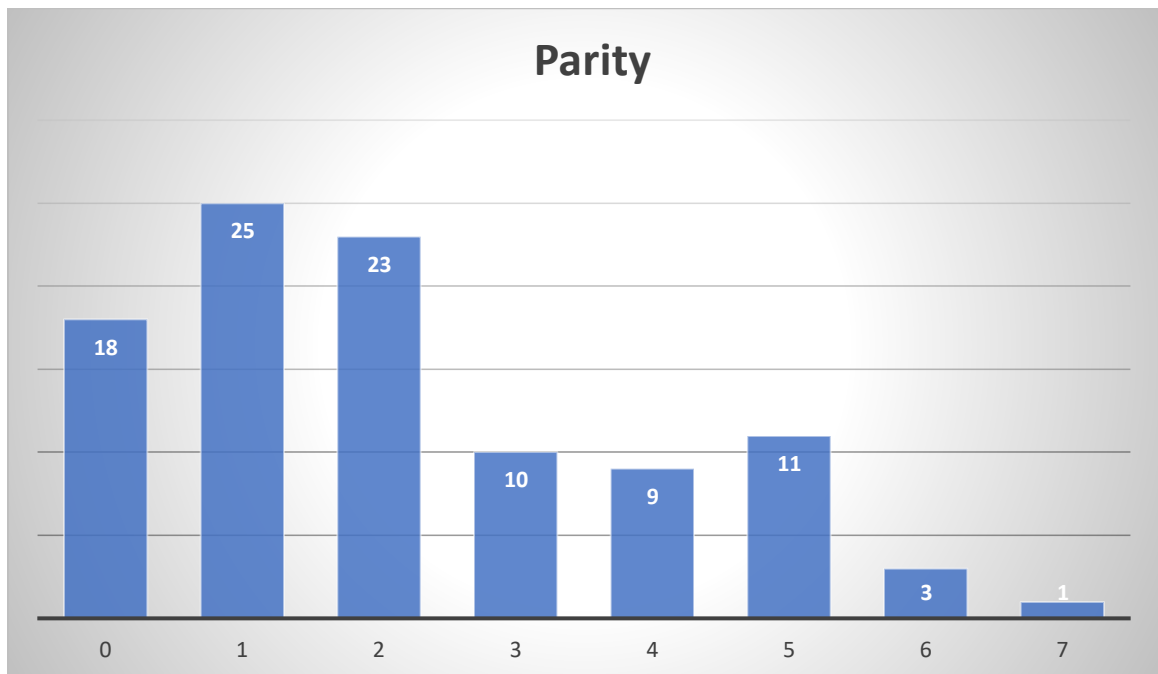


Figure 1. parity

The gestational age is demonstrated in table 2.

Table 2. Gestational age in weeks

GA in weeks	Frequency	Percent%
29	1	1.0
30	4	4.0
31	3	3.0
32	2	2.0
33	3	3.0
34	7	7.0
35	47	47.0
36	33	33.0
Total	100	100.0

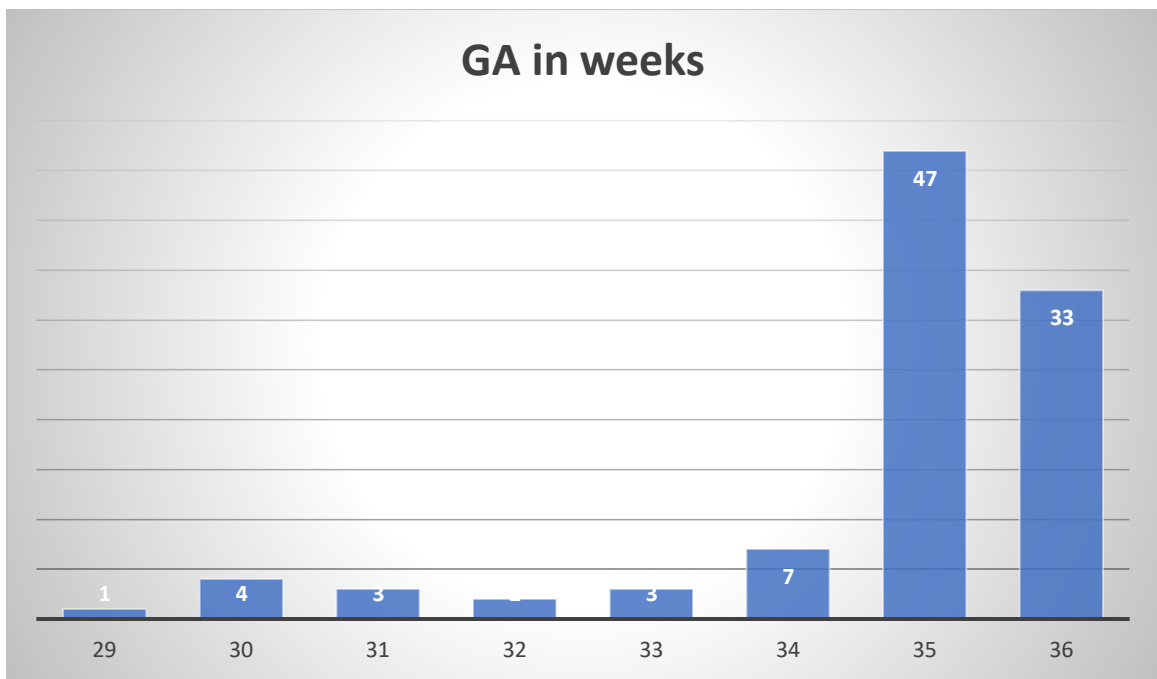


Figure 2. gestational age in weeks

31% of them suffered infertility in the past, 13% had previous preterm labor and only 4 % of them suffered 2nd trimester miscarriage.

The normal hemoglobin level is 12-16 g/dL and the levels of the study are demonstrated in table 3 and their blood groups are demonstrated in table 4.

Table 3. Hb levels

Hb level in g/dL	Frequency	Percent
Normal (12-16)	42	42.0
Anemic (less than 10.5)	58	58.0
Total	100	100.0

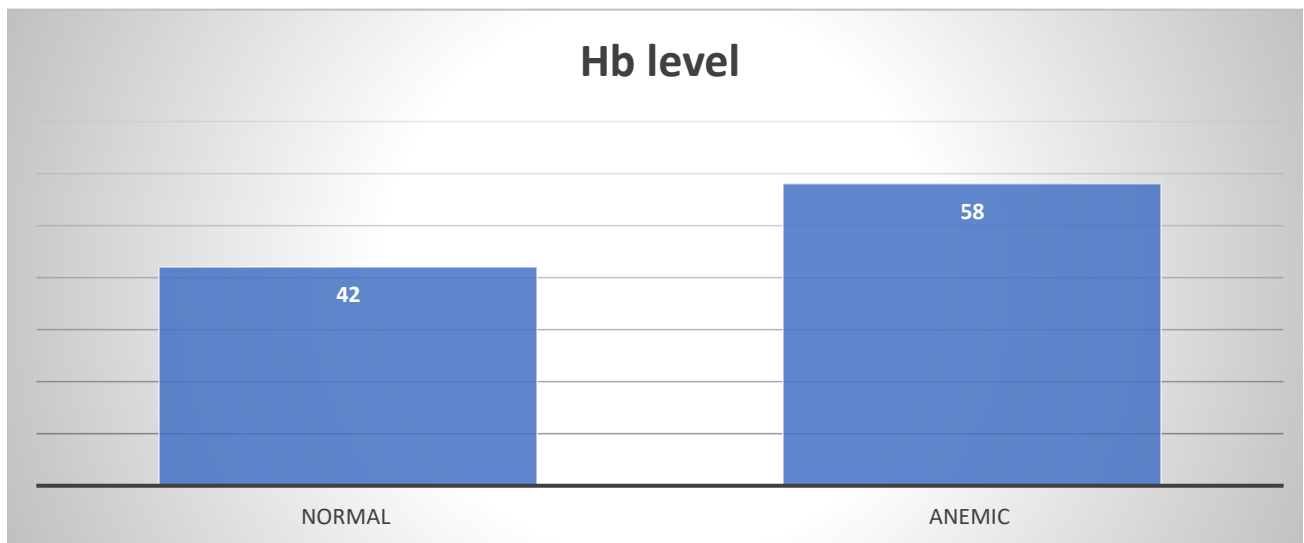


Figure 3. anemia in our study

Table 4. Blood groups

Blood group	Frequency	Percent%
A+	30	30.0
A-	4	4.0
B+	12	12.0
B-	1	1.0
AB+	9	9.0
O+	43	43.0
O-	1	1.0
Total	100	100.0

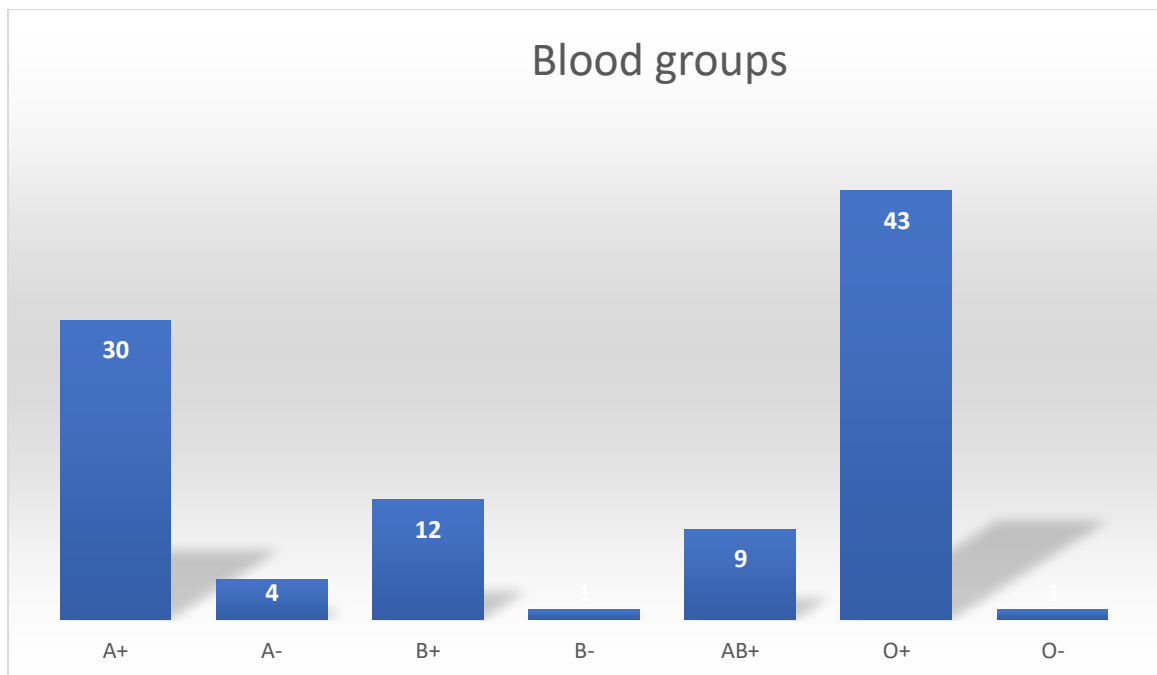


Figure 4. blood groups

89% of them were singletons, 10% were twins and only one case was triplet. 22% of them had chronic diseases (as shown in figure 5), 3% of them were taken chronic drugs.

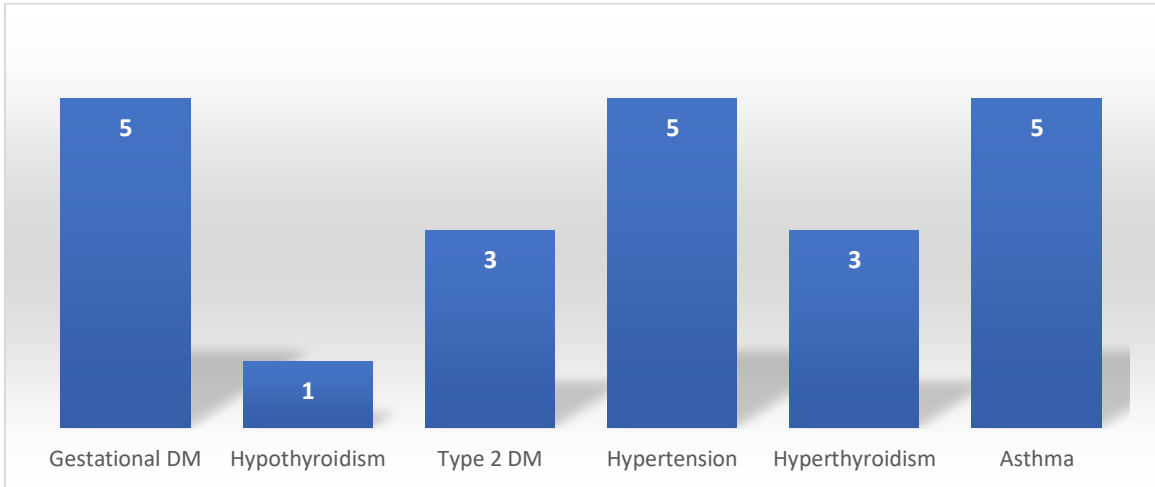


Figure 5. medical diseases in our study

Babies gender is demonstrated in figure 4.

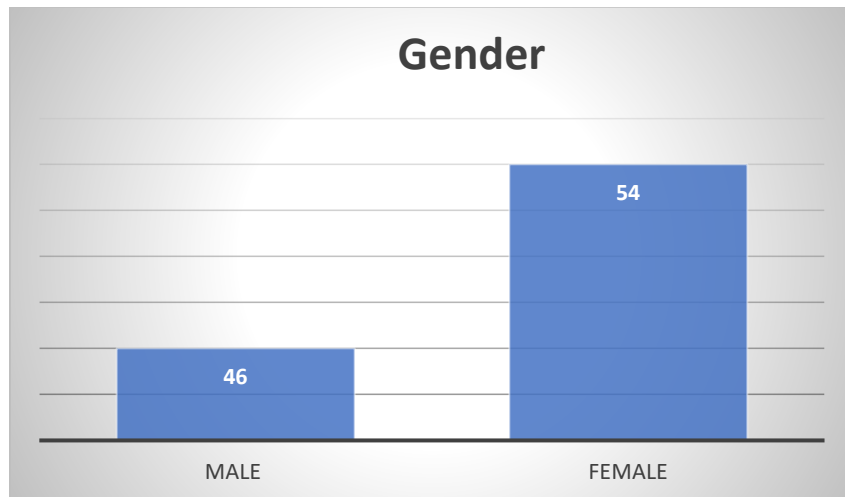


Figure 4. male to female ratio

We found little increased risk of preterm labors among older mothers (older than 30 years) but with no statistical significance.

As in table 5.

Table 5.

GA in weeks	Mean	N	Std. Deviation
29	23.00	1	.
30	27.50	4	9.815
31	22.67	3	3.786
32	24.50	2	4.950
33	33.33	3	8.327
34	24.14	7	7.290
35	28.11	47	6.963
36	23.88	33	4.788
Total	26.28	100	6.632

We found an association between the anemia and the preterm labor since about 58% of the mother were anemic with HB level less than 10.5 g/dL.

We found no association between the gestational age and the parity (P=0.583).

Discussion

Preterm labor is serious medical issue that is rising recently and considered a main cause of fetal morbidity and mortality. Preterm labor is diagnosed when a patient is having regular uterine contractions that are accompanied by progressive dilation and cervical effacement. Accuracy of the clinical diagnosis is increased when there are at least six contractions per hour, cervical dilation is more than 3 cm, effacement is at least 80%, membranes are ruptured, or there is vaginal bleeding.

In our study we investigate the possible causes of preterm labor in Al-Batool teaching hospital to reach evidence about its true etiology.

100 neonates were enrolled in the study with gestational age between 29 to 36 weeks. We asked about maternal age and found an association between increased maternal age and incidence of preterm labor but with no significant difference. Our findings is consistent with the findings of McIntyre et al [5], and Lang et al [6].

There was an association between Hb level and the risk of having preterm labor as 58% of them were anemic with Hb less than 10.5 g/dL. And this agrees with the findings of Klebanoff et al [7] and Levy et al [8].

O+ was the commonest blood group (43%) and then A+ (30%), B+ (12%), AB+ (9%), A- (4%) and finally B- and O- with 1% for both of them. We found no association between blood group and the risk of preterm labor and this agrees with findings of Phaloprakarn et al [9].

89% got a good antenatal care level. And this disagrees with findings of Beeckman et al [10], which mean wither uncertainty in answering the questions or a problem in the ANC system in Diyala province.

In women with single gestation pregnancy and a history of spontaneous preterm delivery, antenatal progesterone therapy is the most effective strategy to decrease the risk of a recurrent preterm delivery. Progesterone supplementation is beneficial in these women starting at 16 to 24 weeks' gestation and continuing through 34 weeks' gestation [11]. Our study is consistent with the following studies:

Gian Carlo et al (Des 2011) found an association between preterm delivery and certain maternal factors as: BMI, employment, previous abortions, previous PTBs and previous cesarean section [12].

Rashed Shah et al (April 2014) found that , preterm birth risk could be reduced by close monitoring and/or frequent follow-up of women with history of child death and antenatal complications, by encouraging women to seek antenatal care , to maintain good nutritional status. Additional research is needed to further explore the associations of antenatal iron supplementation and maternal nutritional status on preterm birth [13].

C. Prunet et al (Jan. 2017) found that , increases in baseline rates for maternal age and medically induced abortions may explain changes in certain preterm birth risk factors [14].

Marjorie K et al (July 2001) found that , there is an association between the presence of periodontitis at 21 to 24 weeks gestation and subsequent preterm birth. Further studies are needed to determine whether periodontitis is the cause [15].

Hasiang –Yang et al (May 2011) found that , multiple birth and hemorrhage during pregnancy are the top two risk factors [16].

Lisanne Palomar et al (August , 2007) found that , paternal black race is associated with an increased risk of preterm birth in white mothers, which suggests

a paternal contribution to fetal genotype that ultimately influences the risk for preterm delivery [17].

Xiaosong et al (March 2015) found that , low family income, advanced maternal age, education level , pregnancy complications, gestational anemia .These factors also influence adverse maternal and infant health outcomes. Thus, increased prevention strategies are likely to made far reaching effects on the health and wellbeing of the wider population in the western rural China [18].

Conclusion

Taking a prenatal vitamin that contains iron and in anemia, can strongly affect and enhance the pregnancy outcome and enhance the maternal health ,we recommend routine visits to the PHC to get advice about the treatment of antenatal anemia.

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