PREGNANCY RELATED RISK FACTORS AMONG WOMEN ATTENDING DUHOK OBSTETRICS AND GYNECOLOGY HOSPITAL

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ABSTRACT

Background: Pregnancy and childbirth are women's great life events. Their health is very important to the well-being of the whole family and society. A poor pregnancy outcome due to complications during the antenatal and intranatal periods emphasizes the importance of using appropriate techniques for determining the pregnancy risk level. The study aims to identify pregnancy risks and levels in order to provide sufficient care.

Methods: A cross-sectional study design was applied to a convenience sample of 400 pregnant women referred to the Obstetrics Consultant's Unit. Detailed history and necessary lab results were taken according to the Modified Coopland scoring system. Pregnant women were divided into three groups: low, moderate, and high risk according to their total risk score.

Results: Most of the study sample were between the ages of 18 and 35 (88%). Those who had previous cesarean section were (25%). Moderate anemia seems to be in (21.8%). Overall (23.5%) of the sample were in the high-risk category. A statistically high significant association was found between age and number of pregnancies with pregnancy risk level at p-value < 0.001.

Conclusions: Study concluded that one quarter of the participants were under high risk category. Anemia and history of previous cesarean section were most common risk factors. In order to prevent adverse maternal and perinatal outcomes, it is crucial to identify high-risk pregnancies in the antenatal period by using a simple, easy-to-use, non-invasive, cost-effective numerical scoring system.Keywords: High risk, Pregnancy Risk factors, Risk scoring.

INTRODUCTION

Pregnancy is a unique and complex experience for every woman; it involves the birth of an entirely new person through a deeply intimate process; therefore, the health of women is of cardinal importance to the health of the family and society. In the past ten years, health care providers and public health experts have paid significant attention to the health of women of reproductive age (Prata *et al.*, 2017).

The risk factors refer to the probability that a poor outcome will occur (Burt, 2007). The pregnancy risk factor is any situation that could affect how a pregnancy turns out, there can be more than one risk factor, which may be medical, including gestational diabetes, urinary tract infections, and anemia, or obstetrical, including a previous cesarean section, limited birth space, and abortion, or a combination of medical and obstetrical risk factors in the same pregnancy (Al-Khafaji, 2015).

The majority of pregnancies is in the low-risk category and has proper outcomes, 20 to 25 % of pregnancies fall into the high-risk category, but this high-risk category group is responsible for 70 to 80 percent of perinatal morbidity and mortality (World Bank, 2019).

Globally, maternal mortality declined by more than a third from 2000 to 2017. Yet, tragically, an estimated 529,000 women die annually due to risk factors associated with pregnancy, childbirth, and abortion that are mostly preventable or treatable causes, such as infectious diseases and complications during or after pregnancy and childbirth (WHO, 2019).

A poor pregnancy outcome as a result of the risk occurring during the antenatal and intranatal period emphasizes the indication of using an appropriate technique for identifying pregnancy risk levels, pregnant women are screened for

their risk factors and grouped into levels, and extra care is needed for those at the high-risk group (Surya & Sushma, 2017).

Despite the complexity of stratifying pregnant women into risk categories especially when there is inadequate information national clinical guidelines recommended the risk-based approach to ensure women are provided with the best appropriate care (National Clinical Guideline, 2020).

Coopland et al. (1977) described a simple pregnancy-risk assessment form that aids in high-risk selection by measuring and applying it retrospectively to women's antenatal factors. The total risk scores were examined concerning the perinatal outcome. As the risk factor increased, the proportion of perinatal risk scores with perinatal mortality and the percentage of neonates requiring special care increased.

Cropland scoring system 1977 was modified by Dutta and Das (1990), Anand *et al.* (2017), and Pillai & Mohan (2021) accordingly women were divided into three groups scoring: low (0–3), moderate (4–6), and high (≥7).

In Iraq pregnant women suffer from many risk factors. Previous study found that from every five women one is recorded with high risk (Zaidan*, et al* 2018).To prevent pregnancy related complications and improving pregnancy outcomes, it is necessary to identify the pregnancy risk factors .In Duhok city there is no such study on pregnancy risks. The study aims to assess the pregnancy risks and risk levels to provide sufficient care for optimal maternal and perinatal outcomes.

METHODS

A descriptive cross-sectional study design was conducted for a period of seven months, extended from the 1st of September/2021 to the 30th of March /2022.

A convenience of 400 pregnant women enrolled in the study. The sample size calculated by online Cochran formula which is used for determination of ideal sample size based on the desired precision level and confidence interval in large populations, there was unknown pregnancy prevalence rate in Duhok City, for this reason sample size calculated based on labor surveillance in Duhok Obstetrics and Gynecology hospital which was nearly 18500 in 2020, the Cochran estimated sample size was 377 but the sample size increased to 400 get

more representative sample of the target population .

The collected data were taken from referred pregnant women in the Obstetrics consultants' unit at Duhok Obstetrics and Gynecology Hospital. All the participants were directly interviewed and inclusion criteria were women with gestational age between 27 to 42 weeks, having sufficient medical records, and who agreed to participate in the study. Verbal consent was taken for interviewing.

A questionnaire was designed which consists of socio-demographic status and the modified Coopland pregnancy risk scoring system (Pillai & Mohan, 2021), including medical, past obstetric, and current obstetrical history. Scores were given for each item according to the modified Coopland score then total risk scores were calculated which ranged from low (0–3), moderate (4–6), and high ≥7 scores to classify the risk status levels of each pregnant woman.

The questionnaire were sent to 11 experts in community, obstetrics and maternity nursing profession in order to validate the questionnair's elements after their valuable comments questionnaire were modified accordingly. To examine the tool's reliability and applicability, A pilot study was done for a period of 15 days. 13 pregnant women from randomly selected 6 antenatal care units from primary health care centers enrolled in the study and the results of the pilot study ascertained the relevance of the questionnaire and applicability but after the pilot screening, it was found pregnant women who met the study's inclusion criteria were about 1 to 2 women per 15 days per each primary health care centers, which was a very small sample to rely on probably the reason was due to pandemic fear COVID-19, Therefore, researchers were enforced to get a sample of pregnant women from Obstetrical consultants unit in Duhok main hospital which in 2020 there was (11082) vaginal delivers and 7405 had CS.

Ethical considerations: Ethical approval was obtained from both the Duhok General Directorate of Health and the Ethical Committee of the College of the Nursing/University of Duhok.

RESULTS

1.Distribution of maternal and Socio-demographic characteristics.

Four hundred pregnant women were randomly recruited for the study. Regarding the

age of the study sample, most of them were between 18-35 years old, which represented (88%). Nearly all of them (91.8) were housewives. (30%) were illiterate, (20.3%) were university graduates with a high level of education, and the economic status distribution signified that (47.3%) were of moderate level, while (12.8%) among them were high. Concerning the residency of participants, it was found that the majority of participants were from rural areas, which existed (42.5%) as shown in table (1).

2. Modified Coopland pregnancy risk scoring:
2.1 Medical surgical risk factors.

Table (2.1) revealed that the main age risk stratification among studied pregnant women was between 18-35 years (89.3%) which represented as no risk. Regarding the parity risk, no para (23.3%) and party ≥5 (16%) were reported as parity risk. Chronic hypertension and previous gynecologic operations (4.5%) were the common medical and surgical risk factors mentioned by pregnant women.

2.2 Past obstetrical risk factors.

Table (2.2) showed that a previous cesarean section was observed in (25%), and (10%) of the women reported a history of infertility. In addition (6.5%) of the women had a history of previous child BW<2.5 kg or >4 kg, and (4%) of

them reported a history of one previous stillbirth neonatal death.

2.3 Present pregnancy conditions as risk factors.

Table (2.3) showed that moderate anemia which afflicted Hb between (6-10 gm/dl) represents the most risk factor among pregnant women in (21.8%) depending on laboratory results, (11.8%,11.8%) reported as who had bleeding before 20weeks and hypertension respectively. Doppler abnormality was associated with the lowest risk (0.8%)

3. Pregnancy risk factor levels according to Modified Coopland scoring system.

Table (3) shows that out of the 400 pregnant women in the study, at the time of delivery, 23.5% were in the high-risk group with a risk score ≥7. The majority of the patients (54%) belonged to the low-risk group.

4. Association between socio-demographic and maternal characteristics with the pregnancy risk level.

Table (4) illustrates the statistically highly significant association between age and number of pregnancies with pregnancy risk levels at (p-value < 0.001). No Statistical association was found between occupation, residency, and BMI with pregnancy risk levels.

Table (1): Socio-demographic and maternal characteristics of the study participants.

Items		No.	%
Age	Less than 18	7	1.8
	18-35	352	88
	More than 35	41	10.2
Gravida	Primi Gravida	101	25.3
	Multi gravida 2 - 4	219	54.8
	Grand multi 5 and more	80	20.0
Occupation	Unemployed	367	91.8
	Employees	33	8.2
Level of Education	Illiterate	120	30.0
	Read and Write	18	4.5
	Primary School Graduate	84	21.0
	Intermediate School Graduate	56	14.0
	Secondary School Graduate	41	10.3
	University Graduate and High Level of Education	81	20.3
Residence	Rural	170	42.5
	Urban	110	27.5
	Sub- Urban	120	30.0

Economic	Low (10-34)	160	40.0
	Medium (35-59)	189	47.3
	High (60-85)	51	12.8
BMI	Underweight (BMI below 18.5)	3	0.8
	Healthy weight (BMI 18.5 to 24.9)	111	27.8
	Overweight (BMI 25 to 29.9)	177	44.3
	Obese (BMI 30 or more)	109	27.3

Table (2.1): Distribution of Medical-surgical risk factors.

Items		No.	%
Age risk	18-35	352	88
	<18 and >35	48	12
Parity risk	Zero Parity	93	23.3
	1-4 Parity	243	60.8
	≥5 Parity	64	16
Chronic hypertension	No	382	95.5
	Yes	18	4.5
Pre_gestational DM	No	391	97.8
	Yes	9	2.3
Chronic renal disease	No	384	96
	Yes	16	4
HD NYHA III or IV	No	400	100
HD NYHA I or II	No	400	100
Previous Gynecological surgery	No	382	95.5
	Yes	18	4.5
Other significant medical illnesses-TB, asthma, epilepsy, autoimmune disease (based on severity)	No	378	94.5
	Mild	13	3.3
	Moderate	8	2
	Sever	1	0.3

Table (2.2): Distribution of past obstetrical pregnancy risk factors.

Items		No.	%
History infertility	No	360	90
	Yes	40	10
History 2 or more first trimester abortions	No	375	93.8
	Yes	25	6.3
History of second-trimester abortions	No	377	94.3
	Yes	23	5.8
Previous child Birth weight	2.5 kg - 4 kg	374	93.5
	<2.5 kg or >4 kg	26	6.5
Previous CS	No	300	75
	Yes	100	25
History PPH manual removal of placenta	No	391	97.8
	Yes	9	2.3
Previous stillbirth neonatal death	No	384	96
	Yes	16	4

Prolonged difficult labor	No	393	98.3
	Yes	7	1.8
Gestational HT preeclampsia	No	382	95.5
	Yes	18	4.5
Past Eclampsia	No	394	98.5
	Yes	6	1.5
Past Gestational DM	No	389	97.3
	Yes	11	2.8

Table (2.3): Distribution of present pregnancy conditions as risk factors.

Items		No.	%
Bleeding before 20 weeks	No	353	88.3
	Yes	47	11.8
Bleeding after 20 weeks	No	381	95.3
	Yes	19	4.8
Anemia	No	306	76.5
	Hb 6-10 g%	87	21.8
	Hb <6 g%	7	1.8
Rh is immunization	No	365	91.3
	Yes	35	8.8
Malpresentation	No	380	95
	Yes	20	5
Multiple pregnancies	No	395	98.8
	Yes	5	1.3
Hypertension	No	353	88.3
	Yes	47	11.8
Pre Eclampsia	No	393	98.3
	Yes	7	1.8
Gestational DM	No	383	95.8
	Yes	17	4.3
Placenta previa	No	389	97.3
	Yes	11	2.8
PROM	No	368	92
	Yes	32	8
PPROM	No	384	96
	Yes	16	4
Polyhydramnios	No	366	91.5
	(Amniotic fluid index >24)	34	8.5
Oligohydramnios	No	367	91.8
	(Amniotic fluid index < 5)	33	8.3
IUGR	No	395	98.8
	(Fetal weight <10th centile for gestational age)	5	1.3
Abnormal Doppler	No	397	99.3
	Yes	3	0.8

Table (3): Modified Coopland's total pregnancy risk score levels.

Parameters	No.	%
Low risk (0-3)	216	54
Moderate risk (4-6)	90	22.5
High risk (≥7)	94	23.5

Table (4): Socio-demographic and maternal characteristics with pregnancy risk levels.

Parameters		Modified Coopland's total score			P. Value
		Low risk No. (%)	Moderate risk No. (%)	High risk No. (%)	
Age	Less than 18	3(42.9)	0(0.0)	4(57.1)	< 0.001*
	18-35	212(60.2)	74(21.0)	66(18.8)	
	More than 35	1(2.4)	16(39.0)	24(58.5)	
Gravida	Primi Gravida	66(65.3)	17(16.8)	18(17.8)	< 0.001*
	Multi gravida	136(62.1)	50(22.8)	33(15.1)	
	Grand multi	14(17.5)	23(28.7)	43(53.8)	
Occupation	Housewife	195(53.1)	82(22.3)	90(24.5)	0.233**
	Employees	20(64.5)	8(25.8)	3(9.7)	
	Personal private worker	1(50.0)	00.0	1(50.0)	
Level of Education	Illiterate	54(45.0)	22(18.3)	44(36.7)	< 0.001*
	Read and Write	9(50.0)	5(27.8)	4(22.2)	
	Primary School Graduate	42(50.0)	27(32.1)	15(17.9)	
	Intermediate School Graduate				
	Secondary School Graduate	32(57.1)	8(14.3)	16(28.6)	
	University Graduate and High Level				
	of Education	20(48.8)	11(26.8)	10(24.4)	
		59(72.8)	17(21.0)	5(6.2)	
Residence	Rural	97(57.1)	39(22.9)	34(20.0)	0.710*
	Urban	56(50.9)	25(22.7)	29(26.4)	
	Sub- Urban	63(52.5)	26(21.7)	31(25.8)	
BMI	Underweight	2(66.7)	0(0.0)	1(33.3)	0.258**
	Healthy weight	67(60.4)	26(23.4)	18(16.2)	
	Overweight	95(53.7)	40(22.6)	42(23.7)	
	Obese	52(47.7)	24(22.0)	33(30.3)	
Economic Levels	Low	81(50.6)	34(21.3)	45(28.1)	0.025*
	Medium	98(51.9)	46(24.3)	45(23.8)	
	High	37(54.0)	10(19.6)	4(7.8)	

DISCUSSION

The current study done and focused on specific pregnancy related risks which could present before or arise during pregnancy. Most of the study sample were unemployed (91.8%), this proportion was similar to that reported by Sardesht *et al*., which studied 350 women of childbearing age who were referred to health centers in Mashhad/Iran to receive antenatal care (2021), the housewifery and unemployment had the highest percentage (90.9%).

Age was one of the risk factor associated problem, the highest age group was (18-34 years) which was representing the majority of the women (88%), this age is the safest and the average one for women to conceive. Our findings are similar to the findings of studies

conducted by Taha in Erbil /Iraq (2003) and Goldman in the USA (2005) revealed that most pregnant women were from the age group (17-34) years old (77.15%) and (79%) respectively.

Regarding surgical conditions as pregnancy risk factors, the history of C.S represented one-quarter of the study sample which was the most common one. This is similar to the findings of the study done by Shabila (2012) which reported the rates of C.S in the Iraqi Kurdistan Region (25.4%), And Hafez *et al* (2014) in Taif–Kingdom of Saudi Arabia who found that more than one quarter (26.5%) of study women had a history of C.S, the increase in the percentage of C.S may be due to many factors such as variation between high- and low-income countries, presence of medial or surgical conditions and expansion of the private health sector.

Anemia is considered as one of the most common preventable nutritional deficiencies worldwide which adversely influences people of all ages particularly women of reproductive age (Haidar, 2010). According to the WHO recommendations in 2017, the global percentage of women of reproductive age suffering from anemia is (33%). More than one-fifth of our study participants had moderate anemia, while studies by al Shawi *et al*. (2012) Baghdad and Abdulwahid & Ahmed (2017) in Erbil/Iraq included 600 pregnant women which they founds that found that half of studied pregnant women of reproductive age suffer from anemia, their results are higher than the global rates and our results. The reasons for these differences might be related to a variation in study methodology.

This study results showed that more than half of the women (54%) had low-risk score levels according to the modified Coopland scoring system, this result was in agreement with the results of a study done by Zaidan *et al*, in Baghdad (2018) which showed that out 479 (78%) pregnant women with low risk, were at low risk, while the results of a study represented by Ali & Abdul-Jabbar in Al-Nasiriya/Iraq at (2018) found that the prevalence of low-risk pregnancy was (60.6%).

However, nearly one-quarter of the participants (22.5%) were a high-risk score in the current study, this was almost similar to the proportion of having 2 risk factors and more (24.6%) shown by a study done by Al-Khafaji *et al*., (2015) in Erbil/ Iraq. But was not similar to the findings obtained from a study by Hafez *et al*, (2014) in Taif–Kingdom of Saudi Arabia which revealed near to two-thirds (63.3%) of the sample was at high risk. The same was in a study in Egypt by Yassein *et al*., (2005) who reported a high-risk pregnancy presented in 63.8%, and in Iran /Kashan by Kashani *et al.,* (2012) who reported a high-risk pregnancy in 63.5%. The noticed differences may be due to geographical areas and or methodological differences in assessing pregnancy high risk.

Illiteracy was high and a significant association was found between illiteracy and high pregnancy risks our findings were supported by a study done in Iran by Fatemeh *et al*.,((2017) which showed that most of studied pregnant women were from primary and secondary school. This result indicates that the majority of them were not very well educated and which may have influenced their awareness of the risks associated with pregnancy. It is worth mentioning that pregnant women with low educational level may not know enough to take proper care of themselves.

CONCLUSION

The finding of the present study concluded that one quarter of the studied pregnant women were under high risk category, preventable pregnancy risk factor as anemia and C.S were most common. This indicates the need for a systematic screening and awareness program to identify the risk level by providing sufficient antenatal care for early diagnosis and providing essential and appropriate care.

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