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THE RATE OF THE PREVALENCE OF HIGH-RISK PREGNANCIES AND THE RESULTS ON PREGNANT MOTHERS AND THE EFFECT ON PARAMETERS AFTER THE BIRTH

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ABSTRACT

Pregnancy causes large physiologic changes in most body systems and these changes may lead to ease or harden examining some events. The purpose of this study is to define the rate of risk in pregnant women and the results in mother and fetus and also to define the risk rate of pregnancy in pregnant women and its effect on parameters after birth in patients of Educational and Medical center of Gorgan, Dezyani. This case - control study was performed in Educational and Medical Center Dezyany, of Golestan University of Medical Sciences in 1390. In this study, 1266 pregnant women were enrolled of which 804 cases (63.5%) according to the criteria for scoring in the questionnaire with a score greater than or equal to 7 were considered as high risk pregnancies (case group), 462 patients (36.5%) were considered as low-risk pregnancies (control group). Parameters after the birth and pregnancy results such as delivery type, infant difficulties, mother health after labor were compared and analyzed by T-test and ANOVA in both groups. About the history of infertility almost 80% of the people who had a 2-year history of infertility were in high-risk group and the difference was significant. (P = 0.02) About the history of abortion also almost 90% of the people who had a 2-year history of abortion were in high-risk group and the difference was significant. (P<0.05) Post-term infant was found in 77 cases that were entirely in high-risk group. This difference was statistically significant (P<0.05). According to results and comparing them to other studies we can conclude that pregnant mothers who have pregnancy difficulties history such as history of abortion or infertility, visits during pregnancy should be paid attention and warn them about the risk of not being visited and timely pursuits.

INTRODUCTION: Pregnancy causes large physiologic changes in most body systems and these changes may lead to ease or harden examining some events. In addition it causes some changes in laboratory results [1]. According to definition, high risk pregnancy is the time during which the mother, fetus or newborn, are at risk of death, disability or illness higher than usual.

Mothers who are in high risk pregnancy group include those who have a history of chronic disease (diabetes, hypertension, heart disease, etc.) or those with a history of previous pregnancy problems (abortion and still birth) and also multiple pregnancies, gestational age under 18 or over 35 years, pregnancy more than 4 times (the fifth and then) and interval between pregnancies less than one year, can be considered in

high-risk pregnancy [2]. Using a suitable rating system can determine how to care before, during and after pregnancy, and thus be effective in reducing prenatal mortality (multiple pregnancies). According to mortality rate of pregnant women in the province and having a high-risk rank, we can reduce the mortality rate by proper care and more accurate monitoring in pregnant mothers and fetuses.

The purpose of this study is to define the rate of risk in pregnant women and the results in mother and fetus and also to define the risk rate of pregnancy in pregnant women and its effect on parameters after birth in patients of Educational and Medical center of Gorgan, Dezyani.

MATERIALS AND METHODS: This is a sectional or analytical approach study. Sampling is going to be easy randomly without replacement. According to no.1 study results and in α=0.05, β=0.9, d=0.04 level sample volume according to this formula is 1355. A table is provided to perform the research that high-risk pregnancy's risk factors and each risk's score is recorded in. Each risk factor score varies from 1 to 7. The lowest score is 1 and the highest is 7. The questionnaire is filled out for pregnant mothers who are admitted to the emergency department of Dezyany's maternity ward and are hospitalized.

According to scoring less than 7 or more or equal to 7 patients are divided into 2 groups low-risk group as control group and high-risk group as case group and pregnancy prognoses in delivery type (normal/ cesarean)- infant fetal distress- need to monitor the infant- Apgar score - infant defects - the mother's health after childbirth - problems after delivery (time of admission - need special care after birth - birth weight) were compared in high risk group and control group. Data were inserted into the computer by SPSS16 after being collected and coded. Were described by calculating the index parameters such as percentages and mean and Standard Deviation and analyzed by parametric and nonparametric tests. Prevalence rate is reported by percentage and a Confidence Interval was defined for it. Average birth weight was compared in the two groups with Normal Distribution by T-test otherwise with Mann-Whitney test. Other second aims were analyzed by k2-mann-whitney test significant level considered $\alpha = 0.05$ in all tests and the test Power was as 0.9.

RESULTS AND DISCUSSION: In this study, 1266 pregnant women were enrolled, of which 804 cases (63.5%) according to the criteria for scoring the questionnaire with a score greater than or equal to 7 were in the group with high risk pregnancies and the remaining 462 patients (36.5%) were in the group with low risk pregnancies. Severe bleeding during delivery or maternal deaths was not reported in any high-risk. In all 4 cases of mothers, in delivery time was single (without husband).

No hospitalizations in the intensive care unit (whether the mother or infant) and no surgical complications. The first twin Apgar score in the high risk group (7.96 ± 1.127) and in the low risk group (8.05± 0.674) had no significant differences. The first twin birth weight in both high and low risk groups showed significant differences.

TABLE 1: COMPARISON OF THE AVERAGE BIRTH WEIGHT OF THE FIRST TWIN IN THE TWO STUDY GROUPS

Group	Mean (g)	SD (g)
High risk	3103.85	1082. 807
Low risk	3232. 63	418. 638
Total	3150.92	900. 780

As showed in **Table 2** and with calculating Risk ratio the difference between the two high and low risk groups of abnormalities were not statistically significant. (RR = 1.24, 95% CI: 0.941-1 .63; P-value = 0.239)

TABLE 2: FREQUENCY DISTRIBUTION OF FETAL MALFORMATIONS AT BIRTH IN HIGH AND LOW RISK GROUPS

Group		Anomaly +	Anomaly -	Total
High risk	Number	11	793	804
	Percent	78.6	63. 3	63.5
Low risk	Number	3	459	462
	Percent	21. 4	36. 7	36. 5
Total	Number	14	1252	1266
	Percent	100	100	100

In term of fetal distress, a significant difference was reported between the two high-risk and low-risk groups (RR = 1.37, 95% CI:1.194-1.573; P-value = 0.004).

TABLE 3: FREQUENCY DISTRIBUTION OF FETAL DISTRESS AT BIRTH IN HIGH AND LOW RISK GROUPS

Group		Fetal distress at birth		Total
		+	-	
High risk	Number	31	773	804
	Percent	86. 1	62. 8	63.5
Low risk	Number	5	457	462
	Percent	13. 9	37. 2	36. 5
Total	Number	36	1230	1266
	Percent	100	100	100

In term of the need for fetal monitoring during pregnancy, a significant difference was reported between the two groups (OR = 3.66, 95% CI:1.53-8.75; P-value = 0.002).

TABLE 4: FREQUENCY DISTRIBUTION OF NEED TO FETAL MONITORING DURING PREGNANCY IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Need for fetal monitoring during pregnancy	+	37	86	6	14	43	100
	-	767	62. 7	456	37. 3	1223	100
Total		804	63.5	462	36.5	1266	100

In term of type of delivery also significant differences were reported between groups (RR = 0.627, 95% CI:0.57-0.68; P-value = 0.000).

TABLE 5: FREQUENCY DISTRIBUTION OF DELIVERY TYPE IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Type of delivery	Normal	333	49. 9	335	50. 1	668	100
	CS	467	79. 6	120	20. 4	587	100
Total		804	63.5	462	36.5	1266	100

In term of pregnancy complications only two cases were reported which were in high-risk group. No significant statistical difference was seen. (P-value = 0.283). In term of parity also the difference between two groups was reported significant. Risk of a high-risk pregnancy was more in nullipara group than in low-risk group (RR = 0.646, 95% CI :0.59-0 .70; P-value = 0.000).

TABLE 6: FREQUENCY DISTRIBUTION OF PARITY IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Parity	Nullipara	350	60.7	227	39. 3	577	100
	Multipara	77	93. 9	5	6. 1	82	100
Total		804	63.5	462	36.5	1266	100

Maternal age in high-risk group was mostly in the risky range less than 18 and over 35. There were significant differences between the two groups (OR = 0.417, 95% CI: 0.319-0.545; P-value = 0.000).

TABLE 7: FREQUENCY DISTRIBUTION OF MATERNAL AGE IN HIGH AND LOW RISK GROUPS

Group		Mother's age		Total
		35-18 years old	Less than 18 or older than 35	
High risk	Number	501	303	804
	Percent	57. 6	76. 5	63.5
Low risk	Number	369	93	462

	Percent	42. 4	23. 5	36. 5
Total	Number	870	396	1266
	Percent	100	100	100

Race did not influence the risk of high risk pregnancies, although colored race was more common in high-risk group (RR = 0.925, 95% CI: 0.851-1.005; P-value = 0.070).

TABLE 8: FREQUENCY DISTRIBUTION OF RACE IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Race	White	454	61. 4	285	38. 6	739	100
	Colored	350	66. 4	177	33. 6	527	100
Total		804	63.5	462	36.5	1266	100

Number of visits during pregnancy showed a significant difference between the two groups. So that 75.1% of people who had been visited less than 5 times or had referred after 27 weeks were in high-risk group.

TABLE 9: FREQUENCY DISTRIBUTION OF VISITS DURING PREGNANCY IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Number of visits during pregnancy	Regularly	641	61. 1	408	38. 9	1049	100
	Less than 5 times or after 27 weeks	163	75. 1	54	24. 9	217	100
Total		804	63.5	462	36.5	1266	100

History of infertility and abortion in both groups showed a significant statistical difference (P-value <0.05).

TABLE 10: FREQUENCY DISTRIBUTION OF INFERTILITY IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low risk		Total	
		Number	Percent	Number	Percent	Number	Percent
History of infertility	Not	755	62. 7	449	37. 3	1204	100
	Less than 2 years	7	70	3	30	10	100
	Equal or more than two years	42	80. 8	10	19. 2	52	100
Total		804	63. 5	462	36. 5	1266	100

TABLE 11: FREQUENCY DISTRIBUTION OF ABORTION IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low risk		Total	
		Number	Percent	Number	Percent	Number	Percent
History of infertility	Not	660	61. 2	419	38. 8	1079	100
	Once	107	72. 8	40	27. 2	147	100
	More than twice	37	92. 5	3	7. 5	40	100
Total		804	63. 5	462	36. 5	1266	100

As you can see in table below preterm neonate or low birth weight was significantly more in high-risk group than in low-risk group (P-value = 0.000).

TABLE 12: FREQUENCY DISTRIBUTION OF PRETERM NEONATE OR LOW BIRTH WEIGHT IN HIGH AND LOW RISK GROUPS

Group		High-risk		Low-risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Preterm or low weight during birth	Negative	633	58.4	450	41.6	1083	100
	Positive	171	93.4	12	55. 6	183	100
Total		804	63.5	462	36.5	1266	100

Macrosomia infants have been seen also more in high-risk group but there was no statistically significant differences.

TABLE 12. FREQUENCY OF MACROSOMIA IN BOTH HIGH AND LOW RISK GROUPS

Group		High-risk		Low risk		Total	
		Number	Percent	Number	Percent	Number	Percent
Macrosomia	Negative	775	63	455	37	1230	100
	Once	25	80. 6	6	19. 4	31	100
	Equal or more than twice	4	80	1	20	5	100
Total		804	63.5	462	36. 5	1266	100

Post-term infant was found in 77 cases. All were in high risk groups (P-value = 0.000).

In table below, all cases which are risk factors in pregnancy are recorded in high and low risk groups in a descending way. As you see the most prevalent factors were urinary infection without fever, colored race and maternal age in both groups.

TABLE 13: FREQUENCY DISTRIBUTION OF RISK FACTORS IN HIGH AND LOW RISK GROUPS

Risk factor	Number in high risk group	Number in low risk group
Urinary infection without fever	422	162
Colored race	350	177
Mother's age less than 18 or greater than 35	303	93
Weight gain over 20%	243	68
Tendency to Cesarean	223	0
Small pelvis	185	23
Preterm neonate or with low birth weight	171	12
Low number of visits during pregnancy	163	54
History of abortions	144	43
Mild preeclampsia	139	19
Excessive weight gain during pregnancy (more than 21.77 Kg)	134	8
Poor fetal position	110	0
Hemoglobin less than 10	100	27
Post term below 42	77	0
Diabetes	57	5
Poor nutrition during pregnancy	55	9
History of infertility	49	13
RH negative and sensitized	48	0
History of thyroid	41	4
History of psychiatric problems	40	4
Hypertension disease	39	4
Severe Preeclampsia	37	1
Obesity: BMI>30	35	1
History of a child born with a birth anomaly	29	7
Multiparity	23	0
Fever or infection in pregnancy	21	0
Alcohol abuse	20	2
Weight loss during pregnancy	12	0
History of heart disease	7	0
Abnormal birth history	7	0
Severe heart disease	4	0
Cervical failure	2	0
Uterine anomaly	1	0
Polyhydramnious	1	0
Smoking	1	0
Cervical neoplasia	1	0

By classifying the high-risk group into three groups (mild, 7-15), medium (15-30) and severe (more than 30) the following table shows the mild group being more.

TABLE 14: FREQUENCY DISTRIBUTION OF HIGH-RISK GROUP CLASSIFIED BASED ON POINTS EARNED

Groups	Numbers	Percentage
Mild high risk (7-15)	559	69.5
Moderate high risk (15-30)	228	28.4
Severe high risk (more than 30)	17	1.3
Total	804	100

CONCLUSION: In this study, 804 (63.5%) high risk pregnancies is compared with 462 (36.5%) low risk pregnancies. Severe bleeding during childbirth or maternal deaths was not reported in any case. In all 4 cases were single mothers (without husband). Only two cases were reported with pregnancy complications, which were located in high risk group and there was no significant statistical difference (P-value = 0.283). Apgar score showed no significant difference in two groups. High risk group is (7.96± 1.127) and low risk is (8. 05±0. 674).

Apgar score below 7 wasn't found in infants. In this study first twin birth weight in high and low risk groups had significant differences. A significant difference was reported in delivery type between the two groups. Cesarean was seen more in high risk group than in low risk group. In Chaman and his partners' study, delivery type and birth weight showed a significant statistical association with neonate mortality. But pregnancy age, mother and father literacy didn't have a significant statistical association [2].

In a study in Shahrekord, level of education and neonate gender didn't have a significant statistical association with low birth weight. Maternal age, first delivery, gestational age less than 37 weeks, multiple pregnancies, and delivery with cesarean section were significantly associated with low birth weight [9].

In Sharmi and his partners' study in terms of delivery type (normal / cesarean section), Apgar score below 7 at minutes 1 and 5, fetal heart rate abnormalities during labor, premature birth and infant mortality rates, there was a significant difference between the two groups, it means The complications were more in the group with abnormal Biophysics test score.

While in terms of the variables of neonate weight and low birth weight, meconium exclusion, and fetal death, there was no significant difference between the two groups [3].

A study in Egypt showed that 3 risk factors had the highest prevalence which was: age at least 35 years old, parity five and more, anemia [5]. Calculating the risk ratio the difference of abnormalities existing in high and low risk groups was not statistically significant that it may be because of abnormal neonate ratio being low in the study. Of fetal distress and fetal monitoring during pregnancy, a significant difference was seen between high and low risk groups.

Of parity also the difference between the groups were reported significantly. In nullipara groups the risk of high risk pregnancy was more than in low risk group. In a study in Saudi Arabia, history of previous pregnancy complications was 67.4% of the causes of high risk pregnancies. These problems included the 67.4% high parity, 12% abortion, 5.8% the previous cesarean section, 4.8% mother with negative RH, 4.5% young nullipara mother and other causes, including history of preeclampsia, the infant mortality, congenital anomalies and low birth weight babies, secondary causes of drug-related problems are the second kind of causes of high risk pregnancies (25.4%).

Maternal age in high risk group was mostly in risky range less than 18 or over 35, and there was a significant difference. Maternal age over 35 is one of the most important risk factors that have been reported in other studies (8,5). Race did not influence the risk of high-risk pregnancy, although colored race was seen more common in high-risk group. Number of visits during pregnancy showed significant differences in the two groups, so that 75.1% of people who had been visited less than 5 times or referred for a visit after 27 weeks of pregnancy were in high risk group.

Therefore, we can conclude that we can generally instruct pregnant mothers while want them to care about the regularity of the visits during pregnancy to reduce the risk of high-risk pregnancies. About the history of infertility almost 80% of the people who had a 2-year history of infertility were in high-risk group and the difference was significant.

About the history of abortion also almost 90% of the people who had a 2-year history of abortion were in high-risk group and the difference was significant. Post-term infant was found in 77 cases that were entirely in high-risk group. This difference was statistically significant.

In this study, in both high and low risk groups, there were significant differences in the first twin birth weight, fetal distress, need for fetal monitoring during pregnancy, delivery type, parity, maternal age, number of visits during pregnancy, a history of infertility and birth abortion, preterm or low weight birth, post-term infants. According to results and comparing them to other studies we can conclude that pregnant mothers who have pregnancy difficulties history such as history of abortion or infertility, visits during pregnancy should be paid attention and warn them about the risk of not being visited and timely pursuits.

Besides paying attention to pregnancy in mothers older than 35 years old and also patients undergoing cesarean must be the main lines to reduce the risk of high-risk pregnancies.

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