RISK FACTOR FOR FIRST TRIMESETER MISCARRIAGE: QUESTIONNAIRE BASED OBSERVATIONAL STUDY

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ABSTRACT

Background and Aim: Miscarriage is defined as an abortion that occurs spontaneously without the use of a medical or mechanical method to terminate the pregnancy before viability and is the most prevalent complications in early pregnancy. The present study aimed to examine various risk factors associated with first trimester miscarriage. Patients and Methods: This questionnaire based observational study was carried out on 383 pregnant patients presented with 1st trimester miscarriage to the Department of Obstetrics and Gynecology, Fatima hospital Gadap Karachi, Baqai Medical University from January 2022 to December 2022. Data was extracted from the Hospital Information System. Variables such as age, parity, consanguinity, BMI, diabetes, hypertension, hypothyroid, history of drug intake, history of polycystic ovary syndrome, viral infection, multiple gestation, uterine anomaly, and history of recurrent miscarriage were recorded. Descriptive statistics were done in SPSS version 23. Results: The overall mean age was 42.68±8.4 years. Patients were distributed based on their age: 128 (33.4%) in 35-40 years, 245 (64%) in 41-45 years, and 10 (2.6%) in >45 years. All the patients were categorized into three groups based on their body mass index as follows: underweight 18 (4.7%), normal 192 (50.1%), and obese 173 (45.2%). About 255 (66.6%) patients had a history of PCO whereas comorbidities such as hypertension (HTN), diabetes, and hypothyroid was found in 90 (23.5%), 45 (11.7%), and 17 (4.4%) respectively. Viral infection (measles), multiple gestation, molar pregnancy, uterine anomaly, and recurrent miscarriage were different risk factors for first trimester miscarriage found in 2 (0.5%), 127 (33.2%), 8 (2.1%), 3 (0.8%), and 109 (28.5%) respectively. Conclusion: The present study found that multiple pregnancy, increased BMI, and recurrent miscarriage were all risk factors for first trimester miscarriage. All of these factors must be considered while delivering prenatal care to mother's in order to reduce the risk of miscarriage.
Keywords: *Miscarriage, Risk factors, first trimester pregnancy*

INTRODUCTION

Spontaneous pregnancy loss is unquestionably frequent around the world, accounting for roughly 5% of all pregnancies [1]. Miscarriage is defined as spontaneous abortion without a medical or mechanical means to terminate the pregnancy before viability [2]. The spontaneous abortion are multifaceted and includes genetic and non-genetic origins that are unified. Genetic variables included chromosomal abnormalities and polymorphisms whereas non-genetic factors included socioeconomic status, life history, thrombophilic diseases, infectious agents, and endocrine disorders [3, 4]. Based on estimated statistics, miscarriage can be effectively controlled in cases where risk factors are reduced [5]. One out of every four clinically recognized pregnancies ends in miscarriage during the first trimester, according to estimates [6].

Despite the frequency, 50% are related to chromosomal abnormalities, with a significant fraction classed as unexplained [7].The theoretical probability of miscarriage for a couple who have had prior miscarriages, taking into account the incidence of having the first instance, is 2-3%, 0.34% after two miscarriages, and o.05% after the third loss [8, 9]..Advanced maternal and paternal age, excessive smoking, infertility, and prior miscarriage are frequent risk factors for miscarriage [10]. Foetal chromosomal abnormalities account for nearly half of all miscarriages caused by meiotic errors induced by advanced maternal age at conception [11]. A previous study conducted on 1196 pregnant women reported that BMI, infertility, maternal age, and polycystic ovarian syndrome (PCOS) were various risk factors for first trimester miscarriage. It has been observed that 16% of pregnancies result into miscarriage prior to reaching the 6th or 7th gestational weeks [12]. Furthermore, the increasing rate of miscarriage during first trimester are caused by smoking in majority of cases. In contrast, age and obesity are not significantly associated with early loss of feotus [13]. Previous miscarriage history is one of the variables that increases the chance of miscarriage. The fact that women are postponing childbearing till 30s exacerbates the clinical condition. The present study aimed to determine the risk factors in first trimester miscarriage.

METHODOLOGY

This questionnaire based observational study was carried out on 383 pregnant patients presented with 1ˢᵗ trimester miscarriage to the Department of Obstetrics and Gynecology, Fatima hospital Gadap Karachi, Baqai Medical University from January 2022 to December 2022. All inpatient pregnant women presenting with 1st trimester miscarriages, women with history of recurrent miscarriages are prior miscarriages, women with PCOs and chronic medical illness, history of viral infection and contact in first trimester, women with multiple gestation, obese women, and any uterine pathology like fibroids were enrolled. Patients with genetic or chromosomal disorder were excluded. Sample size was calculated based on previous prevalence of outcome 46.8% as a reference value with 95% confidence level and 5%, the final sample size was 383 patients. Data was extracted from the Hospital Information System. Variables such as age, parity, consanguinity, BMI, diabetes, hypertension, hypothyroid, history of drug intake, history of polycystic ovary syndrome, viral infection, multiple gestation, uterine anomaly, and history of recurrent miscarriage were recorded.

Descriptive statistics were done in SPSS version 23. Continuous variables were expressed as mean and standard deviation whereas categorical variables were expressed as frequency and percentages. Chi-square test was used to compare the continuous variables with

categorical variables. All the results were presented in tabulated form.

RESULTS

The overall mean age was 42.68±8.4 years. Patients were distributed based on their age: 128 (33.4%) in 35-40 years, 245 (64%) in 41-45 years, and 10 (2.6%) in >45 years. All the patients were categorized into three groups based on their body mass index as follows: underweight 18 (4.7%), normal 192 (50.1%), and obese 173 (45.2%). About 255 (66.6%) patients had history of PCO whereas comorbidities such as hypertension (HTN), diabetes, and hypothyroid was found in 90 (23.5%), 45 (11.7%), and 17 (4.4%) respectively. Viral infection (measles), multiple gestation, molar pregnancy, uterine anomaly, and recurrent miscarriage were different risk factors for first trimester miscarriage found in 2 (0.5%), 127 (33.2%), 8 (2.1%), 3 (0.8%), and 109 (28.5%) respectively. Demographic detail and baseline characteristics are represented in Table-I. Different comorbidities are illustrated in Figure-1. Various risk factors for first trimester miscarriage are shown in Table-II. Drug intake are shown in Table-III.

TABLE-I DEMOGRAPHIC DETAIL AND BASELINE CHARACTERISTICS

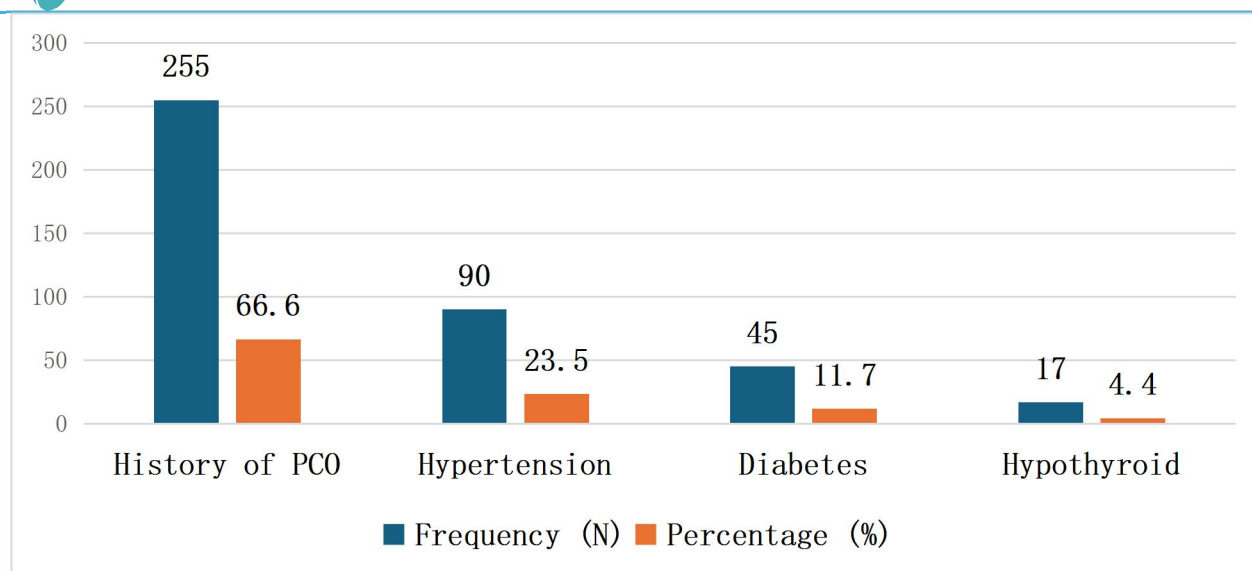| Variables	Value N (%)
Age (years)	42.68±8.4
Age group (years)	
35-40	128 (33.4)
41-45	245 (64)
>45	10 (2.6)
Parity	
5	275 (71.8)
>5	108 (28.2)
Consanguinity	
Consangenous	247 (64.5)
Non-consangenous	36 (35.5)
BMI (Kg/m^2)	
Underweight	18 (4.7)
Normal	192 (50.1)
Obese	173 (45.2)

FIGURE-1 DIFFERENT COMORBIDITIES

TABLE-II VARIOUS RISK FACTORS FOR FIRST TRIMESTER MISCARRIAGE

Risk factors	N (%)
Viral infection (measles)	2 (0.5)
Multiple gestation	127 (33.2)
Molar pregnancy	8 (2.1)
Uterine anomaly	3 (0.8)
Recurrent miscarriage	109 (28.5)

TABLE-III DRUG INTAKE

Drug Intake	N (%)
Anti-HTN	152 (39.7)
hypoglycemic agents	231 (60.3)
Throxin	17 (4.4)

DISCUSSION

The present study mainly focused on the various risk factors for first trimester miscarriage and found that multiple pregnancy, increased BMI, and recurrent miscarriage were all risk factors for first trimester miscarriage. Miscarriage is described as the natural demise of a foetus before it is capable of surviving on its own [14]. Maternal age, obesity, miscarriage history, drug addiction, diabetes, and smoking are specific risk factors that enhance the chance of miscarriage [15]. Pregnancy loss affects around 45% of women over the age of 40 and 10% of women before the age of 35 [16]. Almeida et al. [17] reported that early pregnancy loss are significantly associated with elevated estradiol levels, thin endometrium, maternal age, and FSH high levels.

According to our findings, women with a higher BMI are more likely to miscarry. These findings resembles with Rossen et al [18] results. In recent few years, underweight and obese patients have been investigated in their fertility [19]. Tanner et al. discovered that underweight women are more susceptible to early loss of pregnancy especially before 7th gestational weeks irrespective of their age. Another study established a significant association between leptin levels and BMI [20]. Earlier research has indicated that repeated pregnancies increase the probability of miscarriage, which is connected to an increase

in the number of foetuses [22]. However, our study found no evidence of a link between parity and miscarriage. Furthermore, Gorge et al. observed that the probability of miscarriage increased in diabetic women [23], but the current investigation demonstrated no significant relationship between miscarriages and diabetes mellitus. Another major factor related with losses was a prior miscarriage history, which is similar to the Linehan et al [24] findings. According to their study, women with prior history of abortion and miscarriage are more susceptible to early loss of pregnancy. As a result, early loss of pregnancy could be eliminated by critical screening of these pregnant women.

Despite the notion that smoking is a significant risk factor for miscarriage, all of the women in our research were nonsmokers. However, previous research has revealed an association between miscarriage and smoking [25]. Smoking has also been linked to miscarriage in studies. Tobacco smoke includes carbon monoxide, which can deprive a growing foetus of oxygen. Tobacco smoke contains extra chemicals that are detrimental to unborn children [26].

CONCLUSION

The present study found that multiple gestation, increasing body mass index, and recurrent miscarriage were different risk factors for first trimester miscarriage. All of these factors must be considered while delivering prenatal care to mother's in order to reduce the risk of miscarriage.

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