



## Risk Factors of Miscarriage Among Pregnant Women in Iraq

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### ABSTRACT

**Background:** Miscarriage, also known as spontaneous abortion, is the spontaneous termination of a pregnancy before 28 weeks of gestation, or the birth of a nonviable fetus weighing 500 grams or less.

**Objectives:** Objectives of the study are to determine the risk factors of pregnant women and examine the relationship between variables.

**Methodology:** The study was carried out in Babylon Teaching Hospital for Maternity and Children and Al-Imam Al-Sadeq Teaching Hospital in Iraq. Non-probability using a purposive sample of (50) pregnant women was accomplished from 17th October /2024 to 25 March/ 2025. Data was gathered by using an instrument developed by the researchers through the interviews with the pregnant women. The statistical analysis was utilized to examine the data and obtain the findings by using the SPSS application.

**Results:** The study found that 44% of the participants were aged 18–27 years, and 42% had a basic elementary education. Regarding obstetric history, 52% of the women had a history of previous miscarriage, and 44% had three or more pregnancies (gravidity). Statistical analysis revealed a significant association between miscarriage risk factors and maternal age, parity, and background knowledge of antenatal care ( $P < 0.05$ ). Notably, there was a highly significant association between the risk of miscarriage and the number of previous miscarriages ( $P = 0.004$ ). Among maternal risk factors, increased weakness, fatigue, and physical/psychological exhaustion were identified as significant risks by 54% of the sample.

**Conclusion:** The study concluded that there is a significant association between the age of pregnant women and a number of labor (parity) and risk factors of miscarriage at ( $P$  value less than 0.05).

**Recommendations:** The study recommended educating mothers to take care during the first trimester to avoid any complications and educating families about the risk factors for miscarriage.

**Keywords:** Risk Factors, Miscarriage, Pregnant Women.

### INTRODUCTION

A miscarriage occurs when a pregnancy ends spontaneously before 20-24 weeks of gestation or when a fetus weighing 500 grams or less is delivered—a nonviable fetus—after which fetal death is referred to as a stillbirth. One of the most frequent complications during pregnancy is miscarriage (Abd

Elsalam et. Al 2019). Early miscarriages happen before 12 weeks of pregnancy, and late miscarriages happen between 16 and 20 weeks of pregnancy (Dhillon-Smith et al., 2023). Miscarriages can be further classed as sporadic or recurring ( $\geq 3$  occurrences) and are defined as threatening,

inevitable, incomplete, complete, or missing (Tamblyn et al., 2022) (Abd Elsalam et. Al 2019). The term "spontaneous abortion" refers to the loss of a pregnancy before 20 weeks of gestation. It can also be defined as "incomplete," which happens when part of the products of conception have passed (Dhillon-Smith et al., 2023). Complete — all products of conception have passed through the external cervical (Saadaoui, Singh, Ortashi, & Al Khodor, 2023). Incomplete abortion caused by an ascending infection of the endometrium, parametrium, adnexa, or peritoneum. Bleeding in the presence of a dilated cervix indicates that the conceptus will inevitably pass. Missed: no tissue has been discharged, yet the fetus or embryo is dead. The cervix is closed. These patients frequently exhibit neither audible fetal heart tones nor uterine size growth (Shields, Vidosh, Kavanagh, Nielsen, & Thomson, 2024). Bleeding before 20 weeks of pregnancy in the presence of an embryo with heart activity or a gestational/yolk sac and a closed cervix is considered a threatened abortion (Kostova, Prins, & van Wely, 2023). More than two consecutive pregnancy losses are considered recurrent pregnancy losses (Meng, Lin, Chuang, Chen, & Hsiao, 2024). Although it has been used, the term "habitually aborted" is no longer acceptable (Feodor Nilsson, Andersen, Strandberg-Larsen, & Nybo Andersen, 2014). One risk factor is the mother's advanced age during conception. Other potentially modifiable risk factors during pregnancy, such as smoking, alcohol intake, and caffeine consumption, have been studied; however, the results have been mixed and have mostly been assessed on a relative scale. A few studies have also given the percentage of miscarriages that may be related to the risk variables evaluated, which were predominantly alcohol and tobacco use. Miscarriages can occur for a variety of causes, including genetics, heavy domestic responsibilities, and other conditions. Women between the ages of 35 and 39 had the greatest rate of miscarriage during the first trimester of pregnancy, but women over 40 or those with

complications with the fetus have the highest rate (Kalla, Loucif, & Yahia, 2022). Antiphospholipid antibodies, such as lupus anticoagulant and anticardiolipin (IgG or IgM), target phospholipids in the membranes of endothelial cells, platelets, and other cells in the coagulation cascade. In addition to persistent antiphospholipid antibodies (APLs) (Khamees & Al-Ouqaili, 2022). It happens before twenty-four weeks of gestation in around 20% of pregnancies and 12-15% of clinically identifiable pregnancies (Feodor Nilsson et al., 2014). The rate of spontaneous abortion ranges from 15 to 40%. Two consecutive pregnancy losses increase the likelihood of losing a second pregnancy by 24%, compared to three pregnancies. It demonstrates that it increases to 30% after losing a pregnancy and 40% after four pregnancy losses (Jafar et. al. 2022).

In half of the instances studied, fetal chromosomal abnormalities are assumed to be the cause of early abortion. The most significant risk factors include advanced maternal age and those with a record of early pregnancy loss. Chromosomal abnormalities account for 50-60% of all pregnancy losses. On the other hand, around 15% to 20% of women experiencing recurrent miscarriage have an antiphospholipid antibody syndrome (Khamees & Al-Ouqaili, 2022). Globally, 12-15% of pregnancies result in miscarriage; nevertheless, evidence shows that refugee groups have greater incidence of loss than host communities (Khadra et al., 2022).

## AIMS OF THE STUDY

The purpose of this study are to determine the risk factors of pregnant women and examine the relationship between variables.

## METHODOLOGY

### Study design:

A quantitative research descriptive study designed to determine the risk factors of pregnant women and examine the relationship between

variables was accomplished from 17th October /2023 to 25 March/ 2024.

#### **Study sample:**

Non-probability using a purposive sample of (50) pregnant women, the subject of the study have many characteristics who direct for purposive sample such as (age from reproductive to under manopous age) and the first time of miscarage. The study sample was selected (26) from the emergency department in Babylon Teaching Hospital for maternity and children and (24) from Al-Imam Al-Sadeq Teaching Hospital.

#### **Instrument of the Study:**

After examining relevant articles and literature, the researchers developed the study instrument. The instrument was translated into the Arabic language. The study instrument consists of four parts: Part I demographic characteristics of pregnant women consists of (5), Part II includes obstetrics history of the pregnant women consisting of (8) items, part III includes the medical history of pregnant women consisting of (7) items, and Part IV includes risk factors of miscarriage among pregnant women consisting of (31) items.

#### **Validity of the Instrument:**

In order to verify the validity of the instrument and the correctness of the questionnaires in order to prepare them for sample collection, the researchers gave the instrument to fourteen experts with more than five years. The researchers have taken the expert adjustments into consideration and the final copy of the instrument has become organized and appropriate to conduct the study.

#### **Method of Data Collection:**

The researchers started the collection of data from the period of 17th to 25th February/2024. Primary assessment to find out where pregnant women who experience to miscarriage in the hospital through the time of data gathering after that, the researchers offered adequate information to pregnant women and had the ability of free choice, allowing pregnant women to voluntarily consent to or refuse

participation. The researchers then obtained verbal informed consent from the pregnant women. Data was gathered through the use of interviews with pregnant women. Each interview took approximately (15) minutes to fill out the questionnaire. The data gathering from an emergency department. After the data collection is completed.

#### **Rating and Scoring:**

The researcher has used two-level scales (yes, no) to determine the risk factors of miscarriage among pregnant women. Scoring of the two levels (yes=2 no=1).

#### **Statistical Analysis**

The statistical analysis is used to analyze the data and get the results in this study by using the SPSS program. SPSS (Statistical Package for Science Service version 25). Through this results utilize the descriptive (frequency, percent) and inferential (mean , SD, Chi-square).

## **RESULTS**

Table (1) The table shows that most of the study sample 22 (44.0%) were between (18 - 27) years of age group. In relation to education level this table also shows that most of the study sample 21 (42.0%) were basic elementary level. Related to women's occupation this table shows a high percentage of study group 39 (78.0%) were Employed. 32 (64.0%) of the pregnant women had background knowledge about antenatal care. Also, this table shows that 20 (62.5%) were sources of information from the internet. On the other side, this table shows that most of the study sample 34 (68.0%) did not have a family history of repeated miscarriages.

Table (2) The results in this table show that most of the study sample related to a number of pregnancies (gravidity) were three or more 22 (44.0%) gravidities. related to a number of labor (parity) this table shows that the majority of study sample 16 (32.0%) were once parity. On the other side, this table shows that the majority of study

sample 21 (42.0%) had cesarean section delivery. this table also shows a high percentage of the study sample 26(52.0%) who have previous miscarriages. 20 (76.9%) of the study sample were once time-related to previous miscarriages. related to d & c after previous miscarriage 33 (66.0 %) recorded no response. 38 (76.0%) recorded no response about medical intervention after a previous miscarriage. Finally, the findings in this table show that 29 (58.0%) were between 1-13 weeks as the duration of current gestational age.

Table (3) This table shows the answers of the participants related to Maternal risk factors which show not risky at mean and standard deviation  $1.21 \pm 0.173$ .

Table (4) The result in the table above shows that highly significant association between risk factors and Number of Previous Miscarriages at p-value (0.004) which are less than 0.01. In other side this table shows significant association between risk factors and Age, Background knowledge about antenatal care and Number of Labor (Parity) at p-value more than 0.05.

## DISCUSSION:

### Distribution of Socio-Demographic Characteristics of Study Sample (Table 1)

The study findings revealed that more than two-fifths of the sample were between age groups (18 – 27). This result disagrees with a descriptive study at AL Diwanayah City's Maternity Hospital done by (Khadra et al., 2022) revealed that more than two-fifths of the sample were age group between (26 – 35 Years). as well as the results show that two-fifths of pregnant women had a basic elementary level of education, this study inconsistent with a study done in Omdurman maternity hospital, Sudan carried out by (Mahmoud, Saeed, & Mustafa, 2023)show that (37 %) of pregnant women who have university level. Also, the findings indicated that more than three-quarters of the sample were employed pregnant women, this result disagrees with a descriptive study

at AL Diwanayah City's Maternity Hospital done by (Khadra et al., 2022) revealed that less than two-thirds of the sample were housewife. less than two-thirds of pregnant women had background knowledge about antenatal care and sources of information from internet sources. So more than two-thirds of the study sample had a family history of repeated miscarriages.

### Distribution for Obstetric History of the Study Sample (Table 2)

In this study, results show that more than two-fifths of the sample had three or more gravidities, these findings agree with a descriptive study at AL Diwanayah City's Maternity Hospital done by (Abd Al-Ebadi & Abd Ali, 2021)showing that one-third of the sample were had three or more gravidity and one parity. so, regarding parity, the results revealed that one-third of the sample had given birth one time, also these findings are consistent with a study done in Karachi, Pakistan conducted by (Zafar et al., 2021)found that most (32.30) pregnant women had one parity. Two-fifths of the study sample was delivered by cesarean section, this study result is consistent with a study done by (Abd Elsalam et al., 2019) shows that half of the sample had cesarean delivery. Half of the sample had previous miscarriages whereas three-quarters of the sample had a one-time number of previous miscarriages, this result agrees with a study done by (Jafar et al., 2022) in the city of Baghdad shows that two-fifths of the sample had one frequency of miscarriages, while disagree with a study done in Omdurman maternity hospital, Sudan carried out by (Mahmoud et al., 2023)show that (79 %) not had a history of previous miscarriage.

Also, the results show more than half of the sample between (1-13) weeks of current gestational age. These findings agree with a study done by (Jafar et al., 2022) in the city of Baghdad revealed that three-quarters of the sample was in the first trimester.

### Association between risk factors of miscarriage among pregnant women with socio-demographic variables and Obstetric History (Table 4)

The study findings show a significant association between the risk factors of the sample and the age of pregnant women at a p-value less than 0.05, that is mean risk factors of miscarriage are affected by the increased age of pregnant women. This study consistency with a study done by (Abd Elsalam et al., 2019) shows that a highly significant between the age and risk factors of the sample at p value 0.00. As also shows a significant association between the risk factors of the sample and background knowledge about antenatal care and the number of labor (parity). While highly significant between the risk factors of the sample and the number of previous miscarriages, that means pregnant women who had previous miscarriages are riskier for recurrent miscarriage. Also, the study findings show a no significant association between the risk factors of the sample and the other demographic data of pregnant women at a p-value more than 0.05.

### CONCLUSIONS:

The study concluded that there is a significant association between the age of pregnant women and a number of labor (parity) and risk factors of miscarriage at (P value less than 0.05). Also, there is a highly significant association between the number of previous miscarriages of the sample and the risk factors of miscarriage (P value < 0.01).

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#### TABLES:

Table (1): Distribution of Socio-Demographic Characteristics of Study Sample

Demographic Data	Rating and intervals	Frequency	Percent
<b>Age / Years</b>	<b>18 – 27</b>	<b>22</b>	<b>44.0</b>
	28 – 37	19	38.0
	More than 37 years	9	18.0
	Mean ± Std. Deviation	29.84 ± 7.294	
	<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Level of education</b>	Not read and write	11	22.0
	<b>Basic Elementary Level</b>	<b>21</b>	<b>42.0</b>
	Secondary Level	9	18.0
	University Level & above	9	18.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Woman occupation</b>	<b>Employed</b>	<b>39</b>	<b>78.0</b>
	Unemployed	11	22.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Background knowledge about antenatal care</b>	<b>Yes</b>	<b>32</b>	<b>64.0</b>
	No	18	36.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Sources of information</b>	<b>Internet</b>	<b>20</b>	<b>62.5</b>
	Television	3	9.4
	Social media	9	28.1
	<b>Total</b>	<b>32</b>	<b>100.0</b>
<b>Family history of repeated miscarriages</b>	Yes	16	32.0
	<b>No</b>	<b>34</b>	<b>68.0</b>
	<b>Total</b>	<b>50</b>	<b>100.0</b>

Table (2): Distribution for Obstetric History of the Study Sample

Items	Rating and intervals	Frequency	Percent
<b>Number of Pregnancies (Gravidity)</b>	No	1	2.0
	Once	8	16.0
	Twice	19	38.0
	<b>Three or more</b>	<b>22</b>	<b>44.0</b>
	<b>Total</b>	<b>50</b>	<b>100.0</b>
<b>Number of Labor (Parity)</b>	No	9	18.0
	<b>Once</b>	<b>16</b>	<b>32.0</b>
	Twice	13	26.0
	Three or more	12	24.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>

Type of last labor	No	11	22.0
	<b>Cesarean section</b>	<b>21</b>	<b>42.0</b>
	Normal delivery	18	36.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>
Have Previous Miscarriage	<b>Yes</b>	<b>26</b>	<b>52.0</b>
	No	24	48.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>
Number of Previous Miscarriages	<b>One time</b>	<b>20</b>	<b>76.9</b>
	Two to three times	5	19.2
	More than three times	1	3.8
	<b>Total</b>	<b>26</b>	<b>100.0</b>
D & C After Previous Miscarriage	Yes	17	34.0
	<b>No</b>	<b>33</b>	<b>66.0</b>
	<b>Total</b>	<b>50</b>	<b>100.0</b>
Medical Intervention After Previous Miscarriage	Yes	12	24.0
	<b>No</b>	<b>38</b>	<b>76.0</b>
	<b>Total</b>	<b>50</b>	<b>100.0</b>
Current Gestational Age	<b>1-13 weeks</b>	<b>29</b>	<b>58.0</b>
	14-27 weeks	16	32.0
	28-40 weeks	5	10.0
	<b>Total</b>	<b>50</b>	<b>100.0</b>

Table (3): Assessment of the Responses of the Study Related to Maternal Risk Factors

N	Items	Answers	F	%	M	Std. Deviation	Ass
1.	Advanced maternal age	No	26	52.0	1.48	.505	Not risky
		Yes	24	48.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
2.	Infections such as viruses	No	45	90.0	1.10	.303	Not risky
		Yes	5	10.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
3.	Uterine leiomyoma such as fibroids	No	43	86.0	1.14	.351	Not risky
		Yes	7	14.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
4.	Congenital Uterine abnormalities	No	42	84.0	1.16	.370	Not risky
		Yes	8	16.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
5.	Endometriosis	No	48	96.0	1.04	.198	Not risky
		Yes	2	4.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
6.	Poorly controlled endocrine and metabolic diseases.	No	43	86.0	1.14	.351	Not risky
		Yes	7	14.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
7.	Increased weakness, fatigue, and physical and psychological exhaustion.	No	23	46.0	1.54	.503	Risky
		Yes	27	54.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			

8.	Unintended pregnancy	No	31	62.0	1.38	.490	Not risky
		Yes	19	38.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
9.	Dietary factors such as consumption of drugs.	No	32	64.0	1.36	.485	Not risky
		Yes	18	36.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
10.	Gestational diabetes.	No	46	92.0	1.08	.274	Not risky
		Yes	4	8.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
11.	Pregnancy induce hypertension	No	38	76.0	1.24	.431	Not risky
		Yes	12	24.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
12.	Presence of antibodies.	No	49	98.0	1.02	.141	Not risky
		Yes	1	2.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
13.	Sexually transmitted diseases.	No	47	94.0	1.06	.240	Not risky
		Yes	3	6.0			
		<b>Total</b>	<b>50</b>	<b>100.0</b>			
General mean and Std Deviat on					1.21	0.173	Not risky

Table (4): Association between risk factors of miscarriage among pregnant women with socio-demographic variables and Obstetric History

Demographical data	Chi- square	D.F	P-Value	Assessment
Age \ Year	1.988	2	.030	<b>S</b>
Level of education	2.509	3	.474	N.S
Employment	.013	1	.909	N.S
Background knowledge about antenatal care	4.668	1	.031	<b>S</b>
Sources of information	2.638	2	.267	N.S
Family history of repeated miscarriages	.163	1	.686	N.S
Number of Pregnancies (Gravidity)	3.914	3	.271	N.S
Number of Labor (Parity)	10.494	3	.015	<b>S</b>
Type of last labor	.040	2	.980	N.S
Have Previous Miscarriage	.142	1	.706	N.S
Number of Previous Miscarriages	4.936	2	.004	<b>H.S</b>
D & C After Previous Miscarriage	1.674	1	.196	N.S
Medical Intervention After Previous Miscarriage	1.754	1	.185	N.S
Current Gestational Age	1.269	2	.530	N.S