

Relationship of Antenatal Risk Factors and Postpartum Problems



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1. ABSTRACT

Background: Exposing to antenatal risk factors has negative consequences on the incidence of postpartum problems. **Aim:** This study aimed to assess the relationship between antenatal risk factors and postpartum problems. **Method:** A descriptive retrospective research design was used. This study was conducted at the Postpartum Wards at Mansoura University Hospitals, Mansoura, Egypt. A convenient sample of 307 postpartum women who complained of any postpartum problems. A structured interview questionnaire was utilized to offer demographic characteristics, obstetric data and last pregnancy history, antenatal risk factors, and different types of postpartum problems. **Results:** Reveals that there were highly statistically significant relationships between the occurrence of primary and secondary postpartum hemorrhage and certain antenatal risk factors as anemia, autoimmune disorder, abruption placenta, placenta previae and antepartum hemorrhage. Additionally, the occurrence of postpartum infection and antenatal risk factors of anemia, venereal disease, and oligohydramnios. Furthermore, the occurrence of postpartum hypertension and antenatal risk factors of renal diseases, diabetes, hypertension, pregnancy induced hypertension, gestational diabetes, pre-eclampsia, and polyhydramnios. **Conclusions:** There are positive relationships between certain antenatal risk factors as medical history of the mother and last pregnancy complications and the occurrence of certain postpartum problems as primary postpartum hemorrhage, secondary postpartum hemorrhage, postpartum hypertension and infection. **Recommendation:** Designing an educational program about the common antenatal risk factors and how to manage.

Keywords: Antenatal Risk Factors, Postpartum Period, Postpartum Problems.

2. Introduction

Pregnancy is a window to maternal and fetal future health. The pregnancy and postpartum periods are crucial times to ensure effective and sustainable transitions to long-term preventive health care. When the pregnancy proceed through it is normal passage it will have positive results, but when any risk factors arise, this may lead to negative consequences for the mother and her fetus (Sun et al., 2020).

The antenatal period is a period of happiness and joyful anticipation of the delivery of a newborn. It is the time frame from the beginning of the pregnancy to the onset of labor. For the mother, this is a crucial time as the body begins to adjust to various hormonal shifts that impact her physical and mental well-being. Thus, it's critical to follow up throughout the prenatal stage in order to reduce the likelihood of having any risk factors that could endanger the health of the mother (Ahmed, Mohamed, & Heiba, 2023).

Antenatal risk factors may include pregnancy-related complications as (pregnancy induced hypertension, gestational diabetes mellitus, antepartum hemorrhage, eclampsia, polyhydramnios, oligohydramnios, varicose veins

and hyperemesis gravidarum). So, every pregnant woman should seek medical help if any dangerous symptoms appears such as persistent headache, blurred vision, excessive vomiting, edema, foul vaginal discharge and bleeding (Yunitasari et al., 2023)

Any pregnant woman with chronic illness such as diabetes, hypertension, renal diseases or any other medical condition should seek medical help on regular basis to maintain normal status during pregnancy (McNestry et al., 2023). Furthermore, any pregnant woman with history of any surgical procedures as previous cesarean section should have a base of knowledge related to wound care and any signs of infection (Osayande et al., 2023). Every pregnant woman should seek social support from husband and family to go through normal pregnancy especially if maternal stress and anxiety are noted. Lack of access to maternal antenatal care can significantly have negative consequences on both mother and her child during postpartum period (Deligiannidis et al., 2023).

The postpartum period is thought to be a critical transitional time for the woman, her

newborn, and her family that impacts the physiological and psychological status. Postpartum period is the period of 6-8 weeks after delivery (Perry et al., 2024). It is subdivided into three stages: the immediate postpartum period, which covers the first 24 hours; the early postpartum period or first week; the late postpartum period, which refers to the period from the second week until 6 weeks after delivery. Every period has its problems which can be prevented if appropriate nursing care is provided (Ali, 2022).

Despite the importance of the postpartum period, it is the most ignored period for providing high quality services as it has received relatively less attention compared with the prenatal and intranatal period. The lack of care may be most life threatening, since this is the time when sudden emergency complications are most likely to occur (El- Naggar, Madian, & Mahrous, 2023).

Postpartum complications vary from woman to another and some of them are primary postpartum hemorrhage, secondary postpartum hemorrhage, postpartum infection, postpartum hypertension, postpartum thromboembolic disorders, gastrointestinal problems and postpartum blues. Early identification of antenatal risk factors is very important as early detection equal better prognosis (Abd Allah, Mohamed, & Kamel, 2023). The nurse has a vital role in the detection of antenatal risk factors and providing instructions about how to deal with these risk factors to prevent any further complications during the postpartum period (Critchley, 2022).

2.1 Aim of the study

This study aimed to assess the relationship of antenatal risk factors and postpartum problems.

2.2 Research question

Is there a relationship between antenatal risk factors and postpartum problems?

3. Method

3.1 Design

A descriptive retrospective research design utilized in the present study, in which the researcher is primarily interested in describing the relationship among variables without seeking to establish a causal connection.

3.2 Setting

This study was conducted at Postpartum Wards at Mansoura University Hospitals, which consist of four units divided into four wards; the first unit (Department10) contains 29 beds, the second unit (Department 9) contains 32 beds, the third unit (Department 15) contains 26 beds, and

the fourth unit (Department18) contains 25 beds. The three departments (9, 10, and 18) are located on the third floor while the third unit (Department15) is located on the fourth floor, there is a room for nursing staff. The postpartum wards were opened daily from Saturday to Friday, all the day in Dakahlia Governorate.

3.3 Sample Size

Based on data from literature (Abd Elaziz & Abdel Halim, 2021) to calculate the sample

Sample size = $[(Z_{1-\alpha/2})^2 \cdot P(1-P)]/d^2$, where $Z_{1-\alpha/2}$ at 5% type 1 error ($p<0.05$) is 1.96,

P: is the expected proportion in the population based on previous studies

d: is the absolute error or precision. Therefore, sample size = $[(1.96)^2 \cdot (0.275) \cdot (1-0.275)]/(0.05)^2 = 306.4$.

Based on the formula, the sample size required for the study is 307, which will be divided equally on the previously mentioned settings.

3.4 Data Collection Tools

Data collected using one tool:

A Structured Interview Questionnaire

It was developed by the researcher after reviewing the related national and international literatures (Abd Elaziz & Abdel Halim, 2021; DeNoble, Heine, & Dotters-Katz, 2019; Iyengar, 2012; Wachman, Schiff, & Silverstein, 2018). It consisted of three parts:

Part I: General Characteristics of the Mothers

It included socio-demographic characteristics as age, level of education, marital status, socio-economic status, occupation, etc.....

Obstetric data of the woman as parity, history of abortion, previous still birth, number of child death, etc.....

Last pregnancy history as gestational age at birth, number of antenatal visits, history of postnatal visits, and mode of the last delivery.

Part II: Antenatal Risk Factors of the Mothers

It included medical history, previous surgical history, emotional problems history, last pregnancy complications.

Part III: Different Types of Postpartum Problems

It included the occurrence of the postpartum problems as primary postpartum hemorrhage, secondary postpartum hemorrhage, infection, breast mastitis, breast abscess, breast engorgement, hypertension, thromboembolic disorders, gastrointestinal problems, etc.....

Ethical Considerations

1. An ethical approval was obtained from the head of Woman's Health and Midwifery Nursing Department followed by approval from the Research Ethics Committee at the Faculty of Nursing, Mansoura University to conduct the study.
2. Official permission was obtained from the director and head of the Obstetrics and Gynecology Department at the previously stated governmental hospital.
3. An informed consent was obtained from each mother.
4. The studied mothers were reassured about the anonymity, privacy, safety and confidentiality of the collected information throughout the whole study.
5. The studied mothers were informed about their rights to refuse participation or withdraw from the study at any time.
6. After finishing data collection, all sheets were burned.

3.5 Data Collection

- The actual field work of the study was conducted for over a period of 6 months from the start of August 2022 to the end of January of 2023. It was carried out through two stages: preparatory and operating stages.
- Preparatory stage included three phases: administrative phase, reviewing literature and developing tool phase, and pilot phase.
- The operating stage included three phases: data collection, data analysis and ethical considerations phases.

3.6 Statistical Analysis

The data were collected by questionnaires and structured tools, coded, computed, and statistically analyzed using SPSS (statistical package of social sciences) version 20 (SPSS, Chicago, IL). All data were categorical data, and were expressed in number and percentage as mean+SD and Pearson correlation. The Chi-square (χ^2) test was used to compare categorical groups. Statistical significance was set at $p < 0.05$

4. Results

Table 1 shows that the mean age of the studied mothers was 29.9 ± 5.6 years. Regarding weight (51.1%) of them were more than 90 K.G. Concerning height, (25.7%) were less than 150 Cm. Additionally, presents that (44.0 %) of the studied cannot read and write. (63.8%) of them had income

less than 4000 pounds and (77.9%) of them were from rural area. As regards to the nearest health system (43.0% & 44.0%) of them were far and reported expensive transport.

Table 2 shows that the chronic diseases were the highest medical risk factors as (50, 2%, 37, 1% & 37, 1% respectively) of the studied mothers had anemia, diabetes, and hypertension. Cesarean section was a major surgical history among (83, 1%) of them. Regarding emotional problems history (90.6% & 57.3% respectively) had anxiety and stress. Additionally (27.7%) had varicose veins, followed by (21.2%) had gestational diabetes, (19.5%) had pregnancy induced hypertension, (16.3%) had pre-eclampsia.

Table 3 shows that postpartum gastrointestinal problems occurred by about (48.8%) and then postpartum breast engorgement, postpartum breast mastitis and postpartum breast abscess occurred by about (32.5%, 26 % & 24, 4 % respectively). Additionally (29.6 %) of the studied postpartum women had postpartum hypertension, (16.3% & 20.2% respectively) of them had postpartum thromboembolic disorders and postpartum blues. While only (9.7%, 7.1%, & 1.6% respectively) had postpartum infection, primary postpartum hemorrhage, and secondary postpartum hemorrhage.

Table 4 shows that there was a statistically significant relation found between medical history of the mother, including (anemia and autoimmune disorder), as well as last pregnancy complications, including (placenta previa, abruptio placenta, and antepartum hemorrhage), all with primary postpartum hemorrhage, as p -value < 0.05

Table 5 shows that there was a statistically significant relation found between medical history of the mother, including anemia & venereal diseases, previous deliveries, including cesarean section, as well as last pregnancy complications, including oligohydramnios, with postpartum infection, as p -value < 0.05

Table 6 shows that there was a statistically significant relation found between medical history of the mother, including renal disease, diabetes & hypertension, as well as regarding last pregnancy complications, including (pregnancy induced hypertension, gestational diabetes, pre-eclampsia & polyhydramnios) with postpartum hypertension as p -value < 0.05 .

Table 1. Demographic Characteristics of the Studied Mothers. (n=307)

Items	n	%
Age (Years)		
<25	63	20.5
25 – 30	126	41.1
>30	118	38.4
Mean \pm SD	29.9 \pm 5.6	
Weight (K.G.)		
< 70	47	15.3
70 – 90	103	33.6
> 90	157	51.1
Height (Cm)		
< 150	79	25.7
150 – 170	210	68.4
> 170	18	5.9
Level of education		
Cannot read and write	96	31.3
Middle education	135	44.0
High education	76	24.7
Income (pounds)		
<4000 pounds (not enough)	196	63.8
4000 – 6000 pounds (enough)	96	31.3
6000 – 10000 pounds (enough and save)	15	4.9
Residence		
Rural	239	77.9
Urban	68	22.1
Distance for the nearest health system		
Near	175	57.0
Far	132	43.0
Transport cost		
Suitable	172	56.0
Expensive	135	44.0

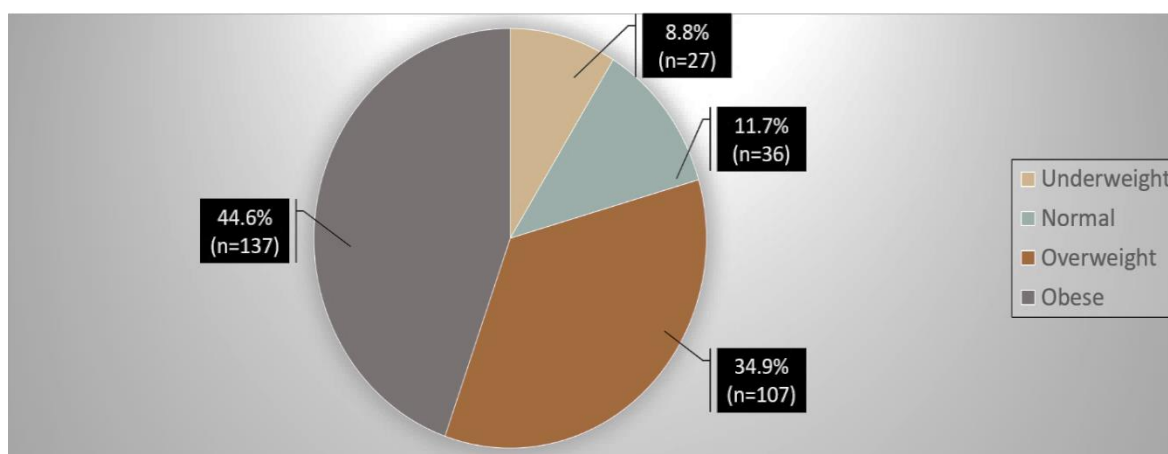


Figure 1. Body Mass Index

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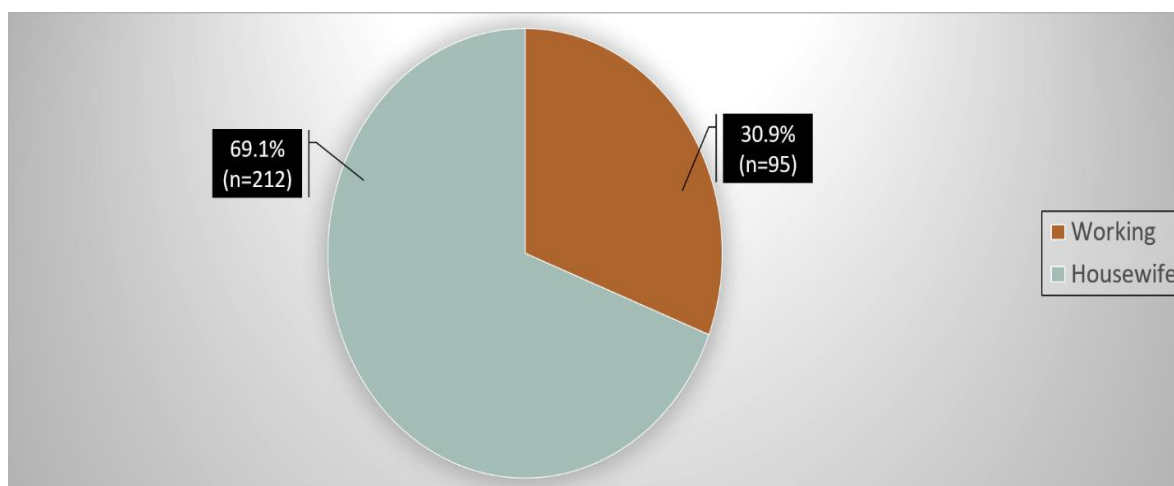


Figure 2. Woman Occupational Status

Table 2. Antenatal Risk Factors Among the Studied Mothers (n=307)

Items	Yes	
	n	%
Medical history of the mother		
Renal Diseases	78	25.4
Anemia	154	50.2
Diabetes	114	37.1
Hypertension	114	37.1
Autoimmune diseases	29	9.4
Venereal diseases	54	17.6
Thromboembolic disorders	66	21.5
Psychiatric disorders	26	8.5
Previous surgical history		
Cesarean section	255	83.1
Vesical-vaginal fistula	68	22.1
Curettage	120	39.1
Pelvic and abdominal surgery	92	30.0
Appendectomy	38	12.4
Hemorrhoidectomy	19	6.2
Emotional problems history		
Anxiety	278	90.6
Stress	176	57.3
Stress with anxiety	146	47.6
Eating disorders	92	30.0
last pregnancy complications		
Pregnancy induced hypertension	60	19.5
Placenta previa	10	3.3
Abruptio placenta	6	2.0
Obstetric placental trauma	9	2.9
Gestational Diabetes	65	21.2
Antepartum hemorrhage	26	8.5
Pre-eclampsia	50	16.3
Polyhydramnios	12	3.9
Oligohydramnios	20	6.5
Varicose veins	85	27.7
Hyperemesis Gravidarum	12	3.9

More than one answer

Table 3. Different Postpartum Problems Among the Studied Mothers (n=307)

Items	Yes	
	n	%
Primary Postpartum Hemorrhage	22	7.1
Secondary Postpartum Hemorrhage	5	1.6
Postpartum Infection	30	9.7
Postpartum Breast Mastitis	80	26
Postpartum Breast Abscess	75	24.4
Postpartum Breast Engorgement	100	32.5
Postpartum Hypertension	91	29.6
Postpartum Thromboembolic Disorders	50	16.3
Postpartum Gastrointestinal Problems	150	48.8
Postpartum Blues	62	20.2

Table 4. Association Between Antenatal Risk Factors and Primary Postpartum Hemorrhage (n=22)

Items	Primary Postpartum Hemorrhage					
	Absent (n=285)		Present (n=22)		Chi – Square / Fisher's exact test	
	n	%	n	%	X ²	p
Medical history of the mother						
Anemia	138	48.4	16	72.7	4.826	0.028*
Autoimmune disorder	23	8.1	6	27.3	8.804	0.003*
Last pregnancy complications						
Placenta previa	2	0.7	6	27.3	56.815	<0.001**
Abruptio placenta	1	0.4	5	22.7	53.366	<0.001**
Antepartum hemorrhage	10	3.5	16	72.7	126.232	<0.001**

Table 5. Association Between Antenatal Risk Factors and Postpartum Infection (n=30)

Items	Postpartum infection					
	Absent (n=277)		Present (n=30)		Chi – Square / Fisher's exact test	
	n	%	n	%	X ²	p
Medical history of the mother						
Anemia	127	45.8	27	90.0	21.107	<0.001**
Venereal Diseases	44	15.9	10	33.3	5.685	0.017*
Last pregnancy complications						
Oligohydramnios	5	1.8	15	50.0	103.236	<0.001**

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Table 6. Association Between Antenatal Risk Factors and Postpartum Hypertension (n=91)

Items	Postpartum hypertension					
	Absent (n=216)		Present (n=91)		Chi – Square / Fisher’s exact test	
	n	%	n	%	X ²	p
Medical history of the mother						
Renal disease	64	29.6	14	15.4	6.855	0.009*
Diabetes	32	14.8	82	90.1	155.491	<0.001**
Hypertension	71	32.9	43	47.3	5.673	0.017*
Last pregnancy complications						
Pregnancy induced hypertension	26	12.0	34	37.4	26.116	<0.001**
Gestational Diabetes	17	7.9	48	52.7	77.259	<0.001**
Pre-eclampsia	18	8.3	32	35.2	33.808	<0.001**
Polyhydramnios	2	0.9	10	11.0	17.262	<0.001**

5. Discussion

The current study aimed to assess the relationship of antenatal risk factors and postpartum problems. The aim of the present study was achieved in the light of the present study findings which revealed that there were statistically significant relationships between certain antenatal risk factors as medical history of the mother (Anemia, diabetes, hypertension, renal diseases and venereal diseases) and last pregnancy complications (pregnancy induced hypertension, placenta previa, abruption placenta, gestational diabetes, antepartum hemorrhage, pre-eclampsia, polyhydramnios and oligohydramnios) and the occurrence of certain postpartum problems as (primary postpartum hemorrhage, secondary postpartum hemorrhage, postpartum infection and postpartum hypertension).

The present study findings reveal positive relationships between certain medical problems including (anemia, and autoimmune disorder) as well as last pregnancy complications including (placenta previa, abruptio placenta and antepartum hemorrhage) and the occurrence of primary postpartum hemorrhage as p-value <0.05.

In the line with current study findings, a retrospective cohort study done by **Liu et al. (2021)** who studied the prevalence and risk factors of postpartum hemorrhage. The researchers found that the antenatal risk factors for postpartum hemorrhage were maternal anemia, placenta previa and placenta abruptio.

In addition, with the current study findings, a descriptive study done by **Bazirete et al. (2022)** who studied the risk factors for postpartum hemorrhage in the northern province of Rwanda, who found that the risk factors for postpartum hemorrhage were antepartum hemorrhage and anemia during the intrapartum and immediate postpartum period.

Regarding the antenatal risk factors for postpartum infection the present study findings revealed that there was statistically significant relation found between medical history of the mother including (anemia & venereal diseases) as well as last pregnancy complications including oligohydramnios and the occurrence of postpartum infection as p-value <0.05.

Parallel to the present study findings multivariable analysis conducted in a nested case-control study done by **Bakhtawar et al. (2020)** who study the risk factors for postpartum sepsis and revealed that diabetes in pregnancy, anemia, venereal diseases and oligohydramnios were significantly associated with sepsis.

Regarding the antenatal risk factors for postpartum hypertension. The present study findings revealed that there were statistically significant relationships between medical history of (renal disease, diabetes & hypertension) as well as last pregnancy complications including (pregnancy induced hypertension, gestational diabetes, pre-eclampsia & polyhydramnios) and the occurrence of postpartum hypertension as p-value <0.05

The present study findings were in harmony with the study conducted by **Katsi et al. (2020)** who revealed that the majority antenatal risk factors of postpartum hypertension cases are due to gestational or chronic hypertension and preeclampsia with persistent high blood pressure after delivery.

6. Conclusion and Recommendations

There are positive relationships between certain antenatal risk factors as the medical history of the mother and last pregnancy complications, and certain postpartum problems as primary postpartum hemorrhage, secondary postpartum hemorrhage, postpartum infection, and postpartum hypertension.

7. Recommendations

- Encouraging antenatal risk factors reduction through increasing antenatal visits.
- Motivating a healthy lifestyle pattern among pregnant women to lower the risk of (Anemia, hypertension & diabetes).
- Designing an educational program about the common antenatal risk factors and how to manage.

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