

Profile for Risky Pregnancy among Antenatal Attendees in Mansoura City



1 Amal Mohamed Talaat Abd El-wahab, 2Prof. Amina Mohamed Rashad El-Nemer

1 Demonstrator of Woman's Health and Midwifery Nursing, Faculty of Nursing, Mansoura University, Egypt

2 Professor of Woman's Health and Midwifery Nursing, Faculty of Nursing, Mansoura University, Egypt

1.ABSTRACT

Background: Risk pregnancy is considered a major public health challenge and an important factor attributing to maternal mortality. Complications of risky pregnancy is not limited to antenatal period, it can extend to intra & postpartum period. Identification of risk pregnancy is a crucial preventive strategy to avoid an adverse maternal and neonatal outcome. **Aim of this study:** is to identify prevalence and associated factors of risky pregnancy among antenatal attendees in Mansoura city. **Subjects and Method:** cross sectional study design was used on 196 pregnant women who chosen by convenient sample technique. Setting: The study was conducted at all governmental hospitals in Mansoura City, Egypt including: The antenatal clinics of Obstetric and Gynecological specialty Center at Mansoura University Hospitals, Old General Hospital, New General Hospital and Health Insurance Hospital. **Tool of data collection:** Data were collected by using Dutta and Das high risk scoring tool **Results:** majority of the studied women (94.4%) were exposed to some degree of risk. Age, education, occupation, lower family income, number of children, socioeconomic level, chronic diabetes and hypertension, bad reproductive and obstetric history, anemia, bleeding, hyperemesis gravidarum and preterm rupture of membrane were significantly associated with risk pregnancy. **Conclusion and Recommendations:** The study inferred that the predominance of risk pregnancy was high in Mansoura city; socio-demographic characteristic, medical history and bad reproductive history were associated with risk pregnancy. Educational programs and campaigns particularly for provincial regions are recommended to improve mindfulness regarding risk pregnancy and other associated co-factors.

Keywords: risk, pregnancy, antenatal, related factors.

2.Introduction:

Pregnancy is a time of change, trust, an expectation, and stress for women and their families. This period is a physiologic and natural event, but it can be related with risk factors which may possibly causing incapacity or demise of the mother or potentially the baby (*Anzenc & Bechtel, 2022*); (*Abdelwahab, Costantine & Pacheco, 2022*). Risky pregnancy is defined as any unexpected or unanticipated medical or obstetric condition associated with pregnancy with an actual or potential hazard to the health or well-being of the mother or fetus (*National Academies of Sciences, 2020*). Specialists concurred that risky pregnancy refers to any condition where the life, health, and wellbeing of the mother and/or developing fetus are at risk due to medical, social, or environmental factors (*Pinar & Pinar, 2020*).

Globally, more than 20 million women are exposed to risk pregnancy and results in an estimated 830 deaths per day, more than 99% of deaths occur in developing countries and is more recurrent among countryside women and in adolescence (*Schuermans, et al., 2021*).

Perinatal outcome can be impacted impressively by early detection of risk pregnancies

and proper planning of antenatal management. Identifying factors contributing to risk pregnancy can be a golden opportunity to decline levels of maternal and neonatal morbidity and mortality, post-traumatic stress, financial burden on families, hospitalization and the expense of clinical and medical care (*Patipeme & Ruru, 2022*). So, this study is an important step forward for building upon knowledge on the prevalence of risk pregnancy and its associated risk factors in Mansoura city.

Aim of the study

The present study aimed to identify the prevalence and associated factors of risky pregnancy among antenatal attendees in Mansoura city.

Research question

- 1- What is the prevalence of risky pregnancy in Mansoura city?
- 2- What are the factors associated with risky pregnancies in Mansoura city?

3. Subjects and Method

Study design

The study followed a descriptive cross sectional design.

Study settings

The study was conducted at all governmental hospitals in Mansoura City, Egypt including: The antenatal clinics of Obstetric and Gynecological specialty Center at Mansoura University Hospitals, Old General Hospital Mansoura International Hospital and Health Insurance Hospital, Mansoura city, Dakahlia governorate, Egypt.

Study Sample technique

This study utilized a convenient sample of pregnant women over the period of four months from July 2021 to October 2021. Estimated sample size of 196 of pregnant women .

Sample size:

Based on data from literature (**Khatab, 2017**) to calculate the sample size with precision/absolute error of 5% and type 1 error of 5%, the sample size for the study is 196.

Tool of data collection:

One tool was utilized for data collection adapted from (**Dutta & Das, 1990**).

Dutta and Das high risk scoring tool :

It is a simplified, valid form for antenatal risk scoring it was consisted of five parts to measure the following:

Part (1): Pregnant women`s socio-demographic data, it includes: age, residence, marital status, socioeconomic status.

Part (2): Pregnant women`s biological data, it includes: weight, height, BMI, gestational age...etc.

Part (3): Pregnant women`s past obstetrical history, it includes: Parity, history of abortion, retained placenta, over \underweight baby, fertility enhancing drugs...etc.

Part (4): Pregnant women`s present pregnancy history, it includes: vaginal bleeding; anemia, hypertension, edema, albuminuria, multiple pregnancy, breech or abnormal position, ...etc.

Part (5): Pregnant women`s associated disease history, it includes: diabetes, cardiac disease, previous gynecological surgery, chronic renal disease, other diseases according to severity...etc.

Scoring system for the tool (Dutta and Das high risk scoring tool):

The questionnaire composed of 65 items (questions), each question was scored according to Dutta and Das scoring system. These risk scores categorize patients as no risk (0), mild risk (1–2), moderate risk (3–5), or high risk (6 or more).

Validity of the study tool:

The validity of the study tool was checked by three experts in the field of obstetrics and gynecology nursing. In light of skill's ideas, minor adjustments were done and the final form was utilized for data collection.

Pilot study

A pilot study was directed on 19 women (10% from the sample size) who attended at the antenatal clinics in the recently referenced setting to evaluate the clarity and applicability of the tool used in the study before start of data collection as well as to appraise the time required for answer. The women involved in the pilot study were excluded from the analyzed sample.

Statistical Analysis

All statistical analyses were performed using SPSS version 20.0. Continuous data were expressed in mean \pm standard deviation (SD). Categorical data were expressed in number and percentage. Chi-square test was used for comparison of variables with categorical data. Cronbach's alpha test was performed to test for the internal consistency of the tools used in the study. Statistical significance was set at $p < 0.05$.

4. Results

Table 1 shows the distribution of studied women according to their demographic characteristics. The mean age of the studied women 28.8 ± 7.7 years. Middle education was prevailing while 39.3 % had higher education. 77.6% were not working, while 10.2 % were governmental employee. More than half (72.4%) of studied pregnant women reported that their monthly family income was enough. 76.5% of the studied sample reported they have 2 or less lived children. Finally, 82.7 % of studied sample were living in good sanitation and electricity

Figure 1 demonstrates that more than half of the studied pregnant women were high risk represent 60.7% and only 5.6% found to have no risk.

Table 2 shows that, there is a highly statistical significant relationship between age, educational level, number of children, and

crowdness of the house occupation, income, housing condition and risk level.

Figure 2 The graph shows negative correlation between socio-economic level and risk level ($P < 0.001^{**}$).

Table 3 shows that there is a highly statistical significant relationship between history

of DM, chronic HTN, cardiac disease and risk level.

Table 4 shows that, there is a statistical significant relationship between history of abortion, toxemia, ART usage, Para, C.S<2yrs, PPH & IUFD and risk level.

Table 5 shows that, there is a statistical significant relationship between hemoglobin level, bleeding before & after 20 weeks of pregnancy, GDM, HG, PROM, hypertension and risk level.

Table 1. Number and distribution of the socio-demographic characteristics of pregnant women

Age (Years)		
< 18	2	1.0
18 – 35	153	78.1
> 35	41	20.9
Mean \pm SD	28.8 \pm 7.7	
Marital Status		
Married	190	96.9
Divorced	3	1.5
Widow	3	1.5
Educational Level		
Illiterate	6	3.1
Primary or Preparatory	5	2.6
Middle	108	55.1
University	77	39.3
Occupation		
Not working	152	77.6
Manual work	22	11.2
Skilled labor	2	1.0
Government employee	20	10.2
Income		
Less than enough	90	45.9
Enough	95	48.4
Enough and save	11	5.6
Number of Children		
0 – 2	150	76.5
3 – 4	39	19.9
5 or more	7	3.6
Members in house		
3 or less per room	172	87.8
4 or more people per room	24	12.2
Housing Condition		
There is sanitation and electricity	162	82.7
Living near a source of pollution	34	17.3

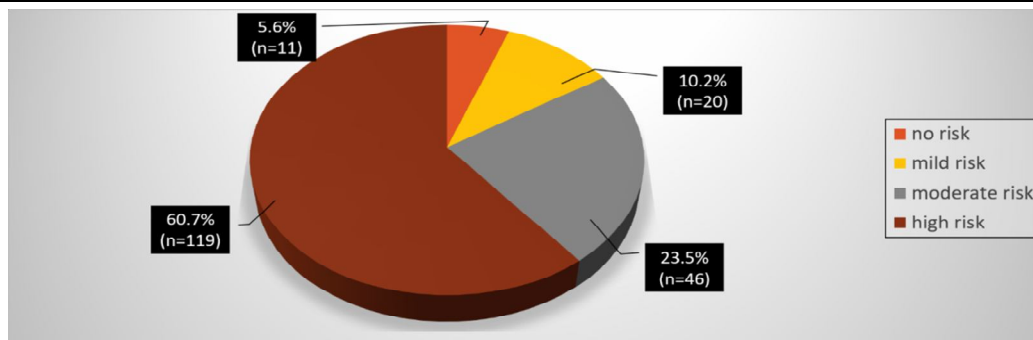


Figure 1. Number and Distribution of total risk level

Table 2. Association between the socio-demographic characteristics and risk factor level

	No risk (n=11)		Mild risk (n=20)		Moderate risk (n=46)		High risk (n=119)		Chi-Square	
	n	%	n	%	n	%	n	%	X ²	P
Age (years)										
< 18	0	0.0	0	0.0	0	0.0	2	1.7		
18 – 35	11	100.0	20	100.0	40	87.0	82	68.9		
> 35	0	0.0	0	0.0	6	13.0	35	29.4	16.901	0.010*
Marital status										
Married	11	100.0	20	100.0	46	100.0	113	95.0		
Divorced	0	0.0	0	0.0	0	0.0	3	2.5		
Widow	0	0.0	0	0.0	0	0.0	3	2.5	4.005	0.676
Educational level										
Illiterate	0	0.0	0	0.0	0	0.0	6	5.0		
Primary or Preparatory	0	0.0	0	0.0	0	0.0	5	4.2		
Middle	1	9.1	10	50.0	28	60.9	69	58.0		
University	10	90.9	10	50.0	18	39.1	39	32.8	21.227	0.012*
Occupation										
Not working	6	54.5	11	55.0	33	71.7	102	85.7		
Manual work	0	0.0	4	20.0	11	23.9	7	5.9		
Skilled labor	0	0.0	2	10.0	0	0.0	0	0.0		
Government employee	5	45.5	3	15.0	2	4.3	10	8.4	48.886	<0.001**
Income										
Less than enough	1	9.1	1	5.0	6	13.0	35	29.4		
Enough	5	45.5	18	90.0	37	80.4	82	68.9		
Enough and save	5	45.5	1	5.0	3	6.5	2	1.7	45.171	<0.001**
Number of Children										
0 – 2	11	100.0	18	90.0	40	87.0	81	68.1		
3 – 4	0	0.0	2	10.0	6	13.0	31	26.1		
5 or more	0	0.0	0	0.0	0	0.0	7	5.9	14.086	0.029*
Members in house										
3 or less per room	11	100.0	20	100.0	45	97.8	96	80.7		
4 or more people per room	0	0.0	0	0.0	1	2.2	23	19.3	14.223	0.003*
Housing condition										
sanitation & electricity	11	100.0	20	100.0	46	100.0	85	71.4		
source of pollution	0	0.0	0	0.0	0	0.0	34	28.6	26.617	<0.001**

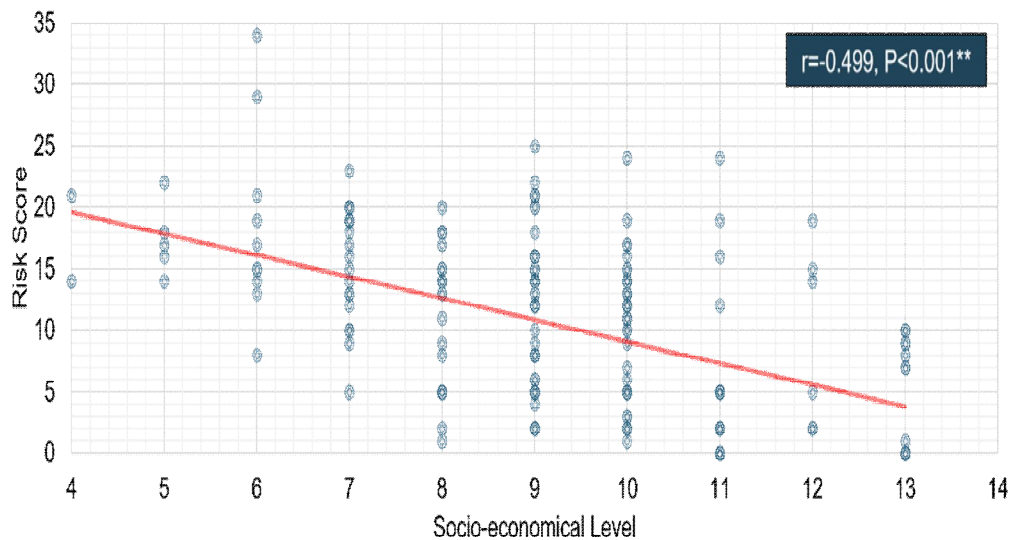


Figure 2. Correlation between socio-economic level and total risk level

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Table 3. Association between medical history of pregnant women and risk level

	No risk (n=11)		Risky (n=185)		Chi-Square	
	n	%	n	%	X ²	P
Diabetes						
No	8	72.7	176	95.1		
Yes	3	27.3	9	4.9	9.070	0.002*
Chronic Hypertension						
No	7	63.6	177	95.7		
Yes	4	36.4	8	4.3	18.543	<0.001**
Heart Disease						
No	7	63.6	169	91.4		
Yes	4	36.4	16	8.6	8.704	0.003*
Previous Pelvic or Reproductive Surgeries						
No	6	54.5	158	85.4		
Yes	5	45.5	27	14.6	7.238	0.007*

Table 4. Association between the reproductive history and risk factor level

	No risk (n=11)		Risky (n=185)		Chi-Square	
	n	%	n	%	X ²	P
Abortion						
None	6	54.5	133	71.9		
Once	1	9.1	35	18.9		
Twice or more	4	36.4	17	9.2	8.142	0.017*
Toxemia of pregnancy						
None	8	72.7	174	94.1		
Preeclampsia	1	9.1	5	2.7		
Severe preeclampsia	1	9.1	6	3.2		
Eclampsia	1	9.1	0	0.0	19.705	<0.001**
Use Of Assisted Reproduction						
No	7	63.6	168	90.8		
Yes	4	36.4	17	9.2	8.015	0.004*
Number of deliveries						
Nulliparous	0	0.0	29	15.7		
1 – 4 births	11	100.0	148	80.0		
5 or more births	0	0.0	8	4.3	8.894	0.011*
Caesarean section < 2 years						
No	8	72.7	171	92.4		
Yes	3	27.3	14	7.6	5.090	0.024*
Postpartum bleeding						
No	7	63.6	169	91.4		
Yes	4	36.4	16	8.6	8.704	0.003*
IUFD						
No	8	72.7	173	93.5		
Yes	3	27.3	12	6.5	6.347	0.011*

Table 5. Association between the condition of current pregnancy of pregnant women and risk level

	No risk (n=11)		Mild risk (n=20)		Moderate risk (n=46)		High risk (n=119)		Chi-Square	
	n	%	n	%	n	%	n	%	X ²	P
Hemoglobin level										
11 gm\dl or more	11	100.0	20	100.0	26	56.5	16	13.4		
Less than 11 gm\dl	0	0.0	6	0.0	20	43.4	100	84		
Less than 7 gm\dl	0	0.0	0	0.0	0	0.0	3	2.5	12.878	0.045*
Bleeding < 20 wks										
No	8	72.7	16	80.0	45	97.8	106	89.1		
Yes	3	27.3	4	20.0	1	2.2	13	10.9	8.468	0.037*

Bleeding > 20 wks										
No	11	100.0	20	100.0	37	80.4	93	78.2		
Yes	0	0.0	0	0.0	9	19.6	26	21.8	8.123	0.044*
Gestational diabetes										
No	9	81.8	20	100.0	46	100.0	114	95.8		
Yes	2	18.2	0	0.0	0	0.0	5	4.2	9.400	0.024*
Hyperemesis										
No	9	81.8	20	100.0	45	97.8	100	84.0		
Yes	2	18.2	0	0.0	1	2.2	19	16.0	9.530	0.023*
PROM										
No	11	100.0	20	100.0	44	95.7	99	83.2		
Yes	0	0.0	0	0.0	2	4.3	20	16.8	9.824	0.020*
Gestational hypertension										
No	11	100.0	20	100.0	43	93.5	78	65.5		
Yes	0	0.0	0	0.0	3	6.5	41	34.5	25.527	<0.001**
Oligohydramnios										
No	11	100.0	20	100.0	46	100.0	107	89.9		
Yes	0	0.0	0	0.0	0	0.0	12	10.1	8.271	0.040*
Polyhydramnios										
No	11	100.0	16	80.0	46	100.0	112	94.1		
Yes	0	0.0	4	20.0	0	0.0	7	5.9	11.221	0.010*
IUGR										
No	11	100.0	19	95.0	46	100.0	96	80.7		
Yes	0	0.0	1	5.0	0	0.0	23	19.3	14.486	0.023*

5. Discussion

Risk pregnancy is considered to be a major public health challenge. It considered as an important factor attributing to maternal mortality. The present study findings showed that majority of the studied women (94.4%) were exposed to some degree of risky pregnancy. The current rate in this study may be even higher due to the tendency of women after the COVID pandemic to avoid visiting ANC. This finding was in agreement with **Bernard & Baliga (2019)** found that majority of the study sample (91.4%) were exposed to risk pregnancy.

Risk pregnancy is significantly associated with the extremes of childbearing age. This finding was in the same line with **Carr, McKinney, Cherry, & Defranco, (2022)** concluded that both adolescent and advanced-age pregnancies have increased risk of SMM. The present study showed that association between low & middle education and high risk pregnancy, on the other side the level of risk decreased with university education. This result supported by study done in Turkey by **Sinaci, et al., (2020)** found that there was a statistically significant difference between high-risk pregnancy and normal pregnancy in terms of education level, high risk pregnancy were more prevalent in middle educated women in contrast to highly educated women. Conversely to current result, study done by **Pajala, Suwangto, Astiarani, & Padang, (2020)** found that there was no relationship between education level (senior & junior education) among

risky and non-risky pregnant women as regard birth complications.

Concerning employment status, the current study found that the majority of women were not working also, current study revealed increased in risk level with unemployment & decreased in risk level with governmental employee. This matched with **Jeganathan,et al., (2022)** found that unemployment was associated with an increased likelihood of hospital readmission. On the other hand **Pajala, et al., (2020)** showed that no relationship between maternal employment status in both risky and non-risky pregnant regard birth complications.

Regarding family income, there was significant association between family income with risky pregnancy as the women with decreased income were more likely to have high risk pregnancy and vice versa. This is supported by **Albrecht et al., (2022); Jeganathan,et al., (2022)** reported that women with decreased household income were more likely to hospital readmission.

The present study revealed association between history of chronic DM & chronic HTN with risky pregnancy. This finding was almost similar to **Jeganathan,et.al (2022)** who found that medical comorbidities (DM &HTN) are associated with an increased likelihood of postpartum hospital readmission. Concerning history of heart diseases, the finding of the present study shows that it was significantly associated with risk pregnancy. This is supported by **Kirby, Curtis, Hlohovsky, Brown, & O'Donnell, (2021)** who found that women with

CHD have increased rates of adverse obstetric and neonatal events in pregnancy. Conversely to current result, study done by *Pfaller, et al., (2022)* who found that women with arterial and pulmonary regurgitations are at low risk for cardiac complications during pregnancy also, many women with mitral and tricuspid regurgitations and do well during pregnancy with rare mortality.

Previous history of miscarriage was significantly associated with risk pregnancy. Similarly, *Feleke & Feleke (2021)* found that mothers with a previous history of abortion had neonates with significantly LBW, anemic, episodes of infectious diseases as compared with neonates born from mothers with no previous history of abortion.

Toward previous history of toxemia it was significantly associated with risk pregnancy. In accordance to current result study done by *Wang, Yee & Feinglass (2022)* reported that women who had preeclampsia or eclampsia significantly increased the risk for sever maternal morbidities and obstetrical complications.

Regarding the number of deliveries, the current study revealed association between nulliparous also more than four births and the likelihood of risk pregnancy, which is consistent with *Ligumsky, Cohen, Lopian, Lessing & Neiger (2022)*. who supported the finding of the present study stated that delivery was significantly earlier in the primiparas. Unlikely, retrospective cohort study of women with parity >5 conducted by *DeBolt, et al., (2022)* found that increasing parity (5 or more) was not associated with adverse outcomes.

The present finding revealed that previous history C.S less than 2 years was in relation with risky pregnancy. In the line with the current results, study done by *Wang, et al., (2022); Jeganathan, et al., (2022)* who found same result.

Previous history of PPH has been suggested to have an association with risk pregnancy. Retrospective studies by *Bommireddy, Garg & Caughey (2021); Liu, Cheng, Chen, Landon & Qu (2020)* showed that women had PPH suffered from increased risks of subsequent preterm delivery, also 2-4 times higher rates of placenta accreta and PPH at subsequent delivery.

When assessing conditions in current pregnancy, an association was found between low Hgb level and high risk pregnancy. This finding was in agreement with *Harrison, Lauhon, Colvin & McIntosh (2021); Wang, et al., (2022)* showed that women with antepartum anemia experienced

increased rates of SMM and other serious adverse outcomes.

Concerning bleeding in pregnancy, current study revealed that bleeding<20weeks & bleeding>20weeks are associated with moderate and high risk pregnancy. These findings were in agreement with retrospective studies done by *Huang, et al., (2022)* ; *long, et al., (2022)* found that women with APH suffered from increased risk of emergency C.S, blood transfusion, PPH, unsatisfactory prenatal FHR monitoring and suspected fetal distress.

Gestational diabetes mellitus significantly associated with risk level. Similarly, studies done by *Cao, et al., (2022); li, et al., (2022)* showed that there was an increased risk of adverse pregnancy outcomes as Preterm birth, postpartum prediabetes or diabetes and postpartum hospital readmission in women with GDM.

Near one fifth of high risk women suffered from HG. In the same line with *Morisaki, et al., (2022)* found possibility of reduced fetal growth in pregnancies with HG and lack of catch-up in gestational weight gain. Pregnancies complicated by PROM significantly associated with increased risk level in pregnancy. In agreement with *Sklar, Sheeder, Davis, Wilson, & Teal (2022)* found that women with PROM associated with a significantly increased risk of maternal morbidity, sepsis, admission to the ICU, unplanned hysterectomy.

6. Conclusion

The study inferred that prevalence of risk pregnancy among antenatal women was high (94.4%) which addressed a public health problem in Mansoura city. Additionally, socio-demographic characteristic, medical history and bad conceptive history were associated with risk pregnancy.

7. Recommendation

- Increasing awareness of the women about factors associated with the occurrence of risk pregnancy and consequences on women, fetus and their families.
- Develop educational programs and campaigns particularly for provincial regions to improve mindfulness regarding risk pregnancy and other associated co-factors

8.Acknowledgement

The researcher might want to thank all members for their participation.

9.Conflict of Interests

The authors state that there is no conflict of interests regarding this study.

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