**Original Article**

# The profile of high risk pregnancy in Damanhur city

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## Abstract

**Background:** A woman's pregnancy is a physiologically normal time in her life. However, just like any other stage, it might place the women on a continuum of high risk, from low risk to high risk. A high-risk pregnancy is one where the mother's life or the health of the fetus is endangered. Risk factors may have already existed before becoming pregnant or they may emerge as the pregnancy progresses. Due to the increased risk of perinatal mortality and morbidity during high-risk pregnancies, extraordinary, individualized care must be given. **Objective:** To identify the profile of high-risk pregnancy in Damanhur city. **Settings:** The antenatal clinic in Damanhur Medical National Institute (D.M.N.I) and the three available maternity and child health centers (MCH) in Damanhur city. Namely: Elhelal ELKadem MCH center, Shoubra MCH center and Abou Abdellah MCH center. **Subjects:** A convenience sample of 250 pregnant women attending the aforementioned settings was proportionately distributed based on the turnover rates of each setting. **Tools:** Two tools were utilized to gather data: Tool I: Structured interview schedule for pregnant women's basic data Tool II: pregnancy risk inventory score. **Results:** According to the study, 75.2% of the study participants had high-risk pregnancies, 20.0% had moderate-risk pregnancies, and 4.8% had low-risk pregnancies. **Conclusion:** According to the results of the current study, Damanhur's profile of high-risk pregnancies showed that 75 percent of the study subjects were at high risk. **Recommendations:** All pregnant women who visit antenatal clinics should be subjected to appropriate screening procedures to detect risk factors for them.

**Keywords:** profile, high risk pregnancy,

## Introduction

Pregnancy is a welcomed temporary experience in the life of women. It confirms their normal body functions as well as their feminine and/or maternal identity [1]. Simultaneously, it is a stressful experience on both the physiological and psychological aspects. It entails great bio-psychosocial disequilibrium that needs massive adjustment [2].

The literature names some pregnancies as a high-risk one. A high-risk pregnancy (HRP) is defined as the one in which maternal and /or fetal life is threatened with a disorder that is coincidental with or unique to pregnancy, which attributes to maternal morbidity and/or mortality [3]. Maternal morbidity is the term used to describe the unwell condition or medical issues that women experience throughout pregnancy, labor, or delivery. Maternal mortality, on the other hand, is defined as the death of women during pregnancy or within 42 days of delivery, regardless of the length and location of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but excluding unintentional or incidental causes [4].

The maternal mortality rate (MMR) is frequently used as an index of the level of development in a society. It doesn't only reflect the socioeconomic status, educational level and cultural background of the women, but also the quality of medical care given to the women during the maternity cycle [5]. The national study on maternal mortality shows that between 2010 and 2015, the maternal mortality ratio in Egypt has decreased drastically from 40/100.000 to 33/100 000 in 2010-2015. More than two fifths (41.1%) of these deaths occur in postpartum period, 36.4% occur during childbirth and 21.1% take place in pregnancy [6].

The majority of women experience a normal, uncomplicated pregnancy. However, about 15% to 20% of them are regarded as "high risk". Risks may be reduced if early identification of danger signs had occurred. Vaginal bleeding, severe headaches with impaired vision, swollen hands and face, convulsions, decreased fetal activity, fever, feeling too weak to get out of bed, severe abdominal discomfort, and rapid or difficult breathing are among the common warning indicators of pregnancy. [7].

Pregnancy risks are typically divided into three categories: normal risk (sometimes known as low risk), moderate risk, and high risk. Normal risk implies the absence of any risk factors that may lead to any pregnancy complication. Moderate Risk denotes the existence of maternal or fetal risk factors that could have a negative impact on the development of the pregnancy. Major fetal or maternal risk factors in high-risk pregnancies must always be managed by an expert obstetrician [8].

High risk pregnancy has been identified by the National Institutes of Health (NIH) in women who have one or more of the following characteristics: a poor reproductive history; hypertensive disorders of pregnancy; cardiovascular illness; diabetes; cancer; and kidney disease. Additionally, the fetus that is suspected to be at risk for a congenital deformity, chromosomal abnormality, or genetic disease increases risk for preterm birth which contributes to neonatal morbidity and mortality [9].

### *Significance of the study:*

The importance of this study comes from the fact that it deals with identifying profile of high-risk pregnancy in order to decrease incidence of maternal morbidity and mortality.

## The aim of the study

### *Aims of the Study*

This study aims to determine the profile of high-risk pregnancy in Damanhour city.

### Research Question

What is the profile of high-risk pregnancy in Damanhur city?

## MATERIALS AND METHODS

### *Materials*

### *Research Design*

A descriptive exploratory research design was utilized in this study**.**

**Setting** :

In order to represent Damanhur city in the study, data was gathered from the following settings: The antenatal clinic in Damanhur Medical National Institute (D.M.N.I). This hospital was purposefully selected because it represents the main health sector that provides antenatal care for Damanhur population as well as adjacent provisions.

The three available maternity and child health centers (MCH) in Damanhur city.

-AbouAbdellah MCH center.

-ElhelalELKadem MCH center.

-Shoubra MCH center.

**Subjects :**

-A convenience sample of 250 pregnant women attending the aforementioned setting was distributed proportionately based on the rates of turnover in each setting.

-This sample size was determined according to Epi info program by the following information:Population size was = 1724 for 3 months.Expected frequency =50%, Acceptable error = 10%, Confidence coefficient = 99% and Minimum sample size = 156.

*Tools*:

Data collection was involving the usage of two tools:

**Tool I**: women Socio-demographic characteristics structured interview schedule:

This tool was developed by the researcher. It entailed the following:

Age, education level, occupation, marital status, place of residence, type of family, income, and consanguinity of the husband was included.

**Tool II: pregnancy risk inventory score:**

This tool was adapted from three other tools: Morrison &Olsen, 1979 [10], Dutta& Das, 1990 [11] and foxcroft k, callaway L &Humphrey M, 2014 [12]. Additionally, the researcher will translate it into Arabic to identify profile of risk pregnancy.

Total items are 36 divided into:

1-item for age.

18-items for reproductive history such as gravidity, parity, abortion……etc.

8-items for history of present pregnancy such as bleeding, hypertensive disorders …etc.

8-items for associated medical conditions such as diabetes mellitus, heart disease…..etc.

1-item for body mass index.

According to a 4-point Likert scale, each item was rated as follows:    0      no risk.

1     Low risk pregnancy.

2     Moderate risk pregnancy.

3    High risk pregnancy.

According to the total score, women were categorized into three degrees of risk:

Low risk: 0-2

Moderate risk: 3-5

High risk: $\geq 6$

## *Method*

-After outlining the objectives of the study, official letters from the Faculty of Nursing at Alexandria University was sent to the relevant decision-makers in the study settings to request their consent to collect data.

- Tool (I) was developed by the researcher based on extensive review of current, pertinent literature. Tool (II), was adapted and translated into Arabic language

- A jury of five experts in the field of obstetric and gynecologic nursing evaluated the tools' content validity. After proven to be valid, the suggested changes were made and the final form was published.

- Reliability test was not indicated in this study, because reliability is always done in measuring people's attitudes or opinions where the answers must be consistent, but in this study women's answers were different from each other's due to difference in risk level. .

-A pilot study was carried out on 25 pregnant women from the aforementioned settings (who were not be included as study subjects) in order to determine the feasibility of the study, clarity and application of the tools and to identify any potential barriers to data collection. Prior to collecting data, the appropriate tool modifications were made.

-Data was collected by using the developed tools through an interview method after explanation of the objectives of the study.

-Each subject was individually interviewed by the researcher after explaining the purpose of the study and obtaining an informed oral consent. The duration of each interview ranged between 10-15 minutes. Three days per week (from 8:30 am to 12 pm) were specified for data collection over a period of two months, started from the mid of November 2017 till the mid of January 2018. An average of 6 to 20 interviews was performed per day.

- Body mass index was calculated through divided an adult's weight in kilograms (kg) by their height in meters (m) squared

-The study subjects were assigned to a score from 0-3 to each risk factor.

-According to the total score, women was categorized into three degrees of risk: Low risk :(0-2) Moderate risk : (3-5) High risk : ($\geq 6$)

### Ethical consideration

The following concerns were taken into account for each subject recruited:

• After explaining the aim of the research, obtaining the informed oral and written consent of subjects.

• Ensuring confidentiality of data that was obtained.

•Anonymity and freedom to withdraw at any time.

### Analytical statistics

- The collected data was revised, categorized, coded, computerized, tabulated and analyzed using Statistical Package for Social Sciences (SPSS) version 20, Chicago, USA). The following statistical measures were used:

- Descriptive statistics including frequency, distribution, mean, median, standard deviation and inter-quartile range were used to describe different characteristics.

- Kolmogorov – Smirnov test was used to examine the normality of data distribution.

- Univariate analyses including: Chi-Square test and Fisher's Exact test were used to test the significance of results of qualitative variables.

- The significance of the results was at the 5% level of significance.

## Results

Table 1 demonstrates the general characteristics of the study the subjects. Slightly less than two-thirds (64%) of them were in their twenties. About one-half (53.2%) of them had secondary education. The majority (83%) of them reported no consanguinity with their husbands. A similar percentage (36%) of them had either over weight. Almost all (93.2% & 99.6%) of them were housewives and married, respectively. More than one-half (56%) of them were urban dwellers.

**Table (I):** **Number and percent distribution of the study subjects according to their general features**

| General features | Number (250) | Percent (%) |
|---|---|---|
| **Age:**<br>- Less than 20<br>- 20 to less than 30<br>- 30 to less than 35<br>- Equal or more than 35 | 25<br>160<br>41<br>24 | 10.0<br>64.0<br>16.4<br>9.6 |
| | Mean ± SD = 26.9 ± 5.6 | |
| **Level of education:**<br>- Illiterate/read and write<br>- Primary<br>- Secondary<br>- University | 48<br>45<br>133<br>24 | 19.2<br>18.0<br>53.2<br>9.6 |
| **Occupation:**<br>- Housewives<br>- Worker<br>- Employer | 233<br>4<br>13 | 93.2<br>1.6<br>5.2 |
| **Marital status:**<br>- Married<br>- Divorced | 249<br>1 | 99.6<br>0.4 |
| **Residence:**<br>- Urban<br>- Rural | 140<br>110 | 56.0<br>44.0 |
| **Family type:**<br>- Nuclear | | |

| | | |
|---|---|---|
| - Extended | 115 | 46.0 |
| | 135 | 54.0 |
| **Perceived income:** | | |
| - Enough | 144 | 57.6 |
| - Not enough | 106 | 42.4 |
| **Consanguinity:** | | |
| - Yes | 41 | 16.4 |
| - No | 209 | 83.6 |
| **Body mass index (BMI) Kg/m2:#** | | |
| - 18 – <25 kg/m2 | 69 | 27.6 |
| - BMI 25-<30 kg/m2 | 91 | 36.4 |
| - 30 kg/m2 or more | 90 | 36.0 |

**Table 2** exhibits that about 65.2% of women are multigravida. Slightly more than two-thirds (68.8%) of them were multipara. About two-thirds (69%) of them delivered their last child through cesarean section. more than one-fifth (34.8% & 23.6%) of them had either one or two children respectively.

**Table (II):** **The study participants' total number and percentage distribution based on their reproductive history**

| Reproductive history | Number(250) | Percent (%) |
|---|---|---|
| • **Gravidity:**<br>- Primi-gravida<br>- multigravida<br>- Grand-multigravida | 67<br><br>163<br><br>20 | 26.8<br><br>65.2<br><br>8.0 |
| • **Parity:**<br>- None<br>- multipara<br>- grand-multipara | 76<br>172<br>2 | 30.4<br>68.8<br>0.8 |
| • **Number of abortions:**<br>- No<br>- Once<br>- ≥ twice | 191<br>36<br>23 | 76.4<br>14.4<br>9.2 |
| • **Number of living children:**<br>- None<br>- One child<br>- Two children<br>- Three children or more | <br>78<br>87<br>59<br>26 | <br>31.2<br>34.8<br>23.6<br>10.4 |
| • **Sex of living children:(n=172)**<br>- Males<br>- Females<br>- Both | 64<br>71<br>37 | 37.2<br>41.3<br>21.5 |
| • **Interval between the current pregnancy and last delivery:**<br>- No previous pregnancy<br>- <2 years<br>- ≥2 years | <br><br><br>67 | <br><br><br>26.8 |

| | | 72 | 28.8 |
|---|---|---|---|
| | | 111 | 44.4 |
| **Nature of last delivery:(n=174)** | | | |
| - Vaginal delivery | | 54 | 31.0 |
| - Caesarian section | | 120 | 69.0 |

**Table 3** shows that 52.5% of the study participants had history of previous pregnancies complications. Specifically, antepartum haemorrhage (36.1%), preeclampsia (5.5%), abnormal fetal position (8.2%) and poly or oligo-hydramnios (12%). About three –fourths (73.6%) of them had a normal history of previous delivery, while 26.4% of them had a history of previous deliveries complications and the majority (90.8%) of them had no history of postnatal complications.

**Table (III):** **The study participants' total number and percentage distribution based on their history of perinatal complications**

| perinatal complications | Number (250) | Percent (%) |
|---|---|---|
| **Previous pregnancies complications (n=183)** | | |
| - None | 87 | 47.5 |
| - #Yes | 96 | 52.5 |
| Ante partum haemorrhage | 66 | 36.1 |
| Pre-eclampsia | 10 | 5.5 |
| Abnormal fetal position | 15 | 8.2 |
| Poly or Oligo-hydramnios | 22 | 12.0 |
| • **Previous deliveries complications(n=174)** | | |
| - None | 128 | 73.6 |
| - #^Yes | 46 | 26.4 |
| Prolonged labor | 7.0 | 4.0 |
| Baby weigh > 4 kg or < 2.5 kg | 24 | 13.7 |
| Pre mature birth (less than 37 week) or Post        term birth (more than 42 week) | 14 | 8.0 |
| Still birth or neonatal death/ Fetal malformation | 11 | 6.3 |
| • **Previous postpartum complications (n=174)** | | |

| | | |
|---|---|---|
| - None | 158 | 90.8 |
| - #Yes | 16 | 9.2 |
| Post-partum haemorrhage | 9.0 | 5.2 |
| Puerperal Sepsis | 8.0 | 4.6 |

#Categories are not mutually exclusive

**Table 4** shows that 81.2% of the study's participants intended or planned their pregnancies. More than one-half (59.2%) of them were in their third trimester ,turning to current pregnancy complications, 37.6% of the study participants had normal pregnancy while 62.4% had complications. Namely anaemia (50%), bleeding (13.6%), hypertension (9.2%), multiple pregnancy / abnormal fetal position (2.8%), polyhydramnios or oligohydramnios (7.6%), small for dates (3.2%), and (1.6%) gestational diabetes. With highly significant differences (p=0.005), protocol stress levels were improved to (53.3% in the control group) and (86.7% in the study group) were normal (no stress).

**Table (IV):** **The study participants' total number and percentage distribution based on their current pregnancy**

| Profile of current pregnancy | Number =250 | Percent (%) |
|---|---|---|
| • **Pregnancy that was wanted or planned:** | | |
| - Yes | 203 | 81.2 |
| - No | 47 | 18.8 |
| • **Pregnancy weeks:** | | |
| - First trimester (1-12) | 35 | 14.0 |
| - Second trimester (13-27) | 67 | 26.8 |
| - Third trimester (28-40) | 148 | 59.2 |
| • **Sex of fetus:** | | |
| - Male | 71 | 28.4 |
| - Female | 96 | 38.4 |
| - Unknown | 83 | 33.2 |
| • **antenatal visits:** | | |
| - None | 1 | 0.4 |
| - *Regular visits | 208 | 83.2 |
| - **Irregular visits | 41 | 16.4 |

| | | |
|---|---|---|
| • **Presence of complications:** | | |
| - None | 94 | 37.6 |
| - #Yes | 156 | 62.4 |
| Bleeding < 20 week | 26 | 10.4 |
| Bleeding > 20 week | 8 | 3.2 |
| Hypertension | 23 | 9.2 |
| Multiple pregnancy or Abnormal fetal position | 7 | 2.8 |
| Poly or oligo- hydramnios | 19 | 7.6 |
| Small for dates | 8 | 3.2 |
| Gestational diabetes | 4 | 1.6 |
| Anaemia (haemoglobin less than 10 gm/dl) | 125 | 50.0 |
| • **Associated medical conditions** | | |
| - None | 238 | 95.2 |
| - ^Yes | 12 | 4.8 |

*< 4 visits
**≥ 4 visits
# Categories are not mutually exclusive
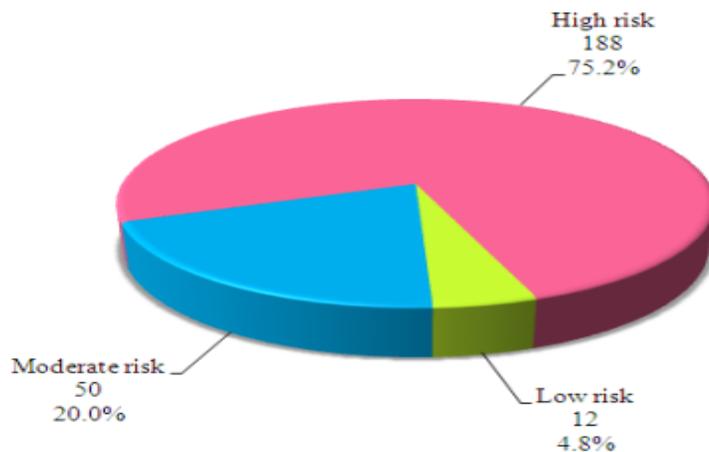^ Diabetes mellitus, heart disease, renal disease and blood disorders



**Figure (1):**        **Number and percentage distribution of research participants based on risk level**

**Figure (1)** demonstrates that as much as 75.2% of the study participants had a high-risk pregnancy, compared to 20.0% who had moderate risk pregnancy, while only 4.8% had low risk pregnancy.

*Discussion*

A High-risk pregnancy is the one in which the life or health of the mother and/ or fetus is jeopardized or endangered. Risk factors may have already existed before becoming pregnant or they may emerge as the pregnancy progresses. Because perinatal mortality and morbidity are increased during high-risk pregnancy, it calls for exceptional, tailored treatment [13].

Up to 75.2% of the study individuals were at high risk, according to the study's findings. This result is kind of expected because more than 70% of them had negative reproductive history. Specifically, previous pregnancy complications (72.3%), Cesarean section deliveries (76%) and current pregnancy complications (71.3%).

This outcome is similar to the results of four other studies, *the first of which was conducted by Hafez et al.* [14] in Taif, Saudi Arabia, and examined the profile of high-risk pregnancies among Saudi women.. Their results revealed that 63.3% of their study subjects were at high risk. *Second* : Kashani E et al (2012)[15] who studied the rate of high-risk pregnancy prevalence and its impact on postpartum parameters in Iran. In their study, 63.5% of the participants were classified as high risk.

In addition to two other older Egyptian studies by **Abd El Rahim F** (**2005**) [16] in **Tanta** city and **Omer AK** (2004) [17] in **El Mansoura** city. Both of these studies had identified the profile of high-risk pregnancy. Their results had revealed that 61.1%, 63.8% of their study subjects were at high risk, respectively. This consistency between the current study's findings and those of the studies described above may be ascribed to the fact that they all made use of the same risk inventory score for their data collection.

However, the results of the following four researches do not agree with this same outcome. *First***:** a recent study done in **Egypt** by **Muhammed O et al (2017)** [18]**,** they had carried out a study titled " pregnancy Risk among women attending a rural, family healthcare unit". Their findings indicated that just 10% of pregnancies were high risk.

Michel K et al (2016) [19] they had determined epidemiological profile of high-risk pregnancies in Congo. Their results had stated that 37% of their study subjects were at high risk. This disagreement between the current study and this one may be attributed to the fact that in the present study, subjects were representing the three trimesters of pregnancy. Unlike the Congo's one where all of their study subjects were in the third trimester. Accordingly, high risk pregnancy is expected to be higher in the former one than the later one.

Kalaivani S et al (2016) [13]. They had identified the prevalence of high-risk pregnancy in India. Their results showed that only 25%of their study subjects were at high risk. Kumar M et al (2015) [20]. They had conducted a study titled "Prevalence of high-risk pregnancy in rural Dharwad, India". Their results had indicated that only 37% of their study subjects were at high risk.

*Conclusion*

Based on the findings of the present study, the profile of high-risk pregnancy in Damanhur revealed that three quarters of the study subjects were at high risk. The most predominant risk domains among the study subjects were the personal domain followed by current pregnancy related domain then previous perinatal domain.

### *Recommendations*

#### *In line with the findings of the study, the following recommendations are made:*

-Proper screening techniques for all pregnant women attending antenatal clinics to identify factors that put them at risk.

-Health education sessions to all pregnant women about importance of compliance with antenatal care visits.

-A specialized antenatal clinic for high-risk pregnancy is recommended in all maternity and child health centers (MCH).

-In service training for antenatal nurse about high-risk pregnancy.

-Antenatal assessment sheet should include a tool for assessment of high-risk pregnancy.

-A special attention to pregnant women's personal risk domains.

#### **Further studies:**

Relationship between pregnancy risk level and its outcome.

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