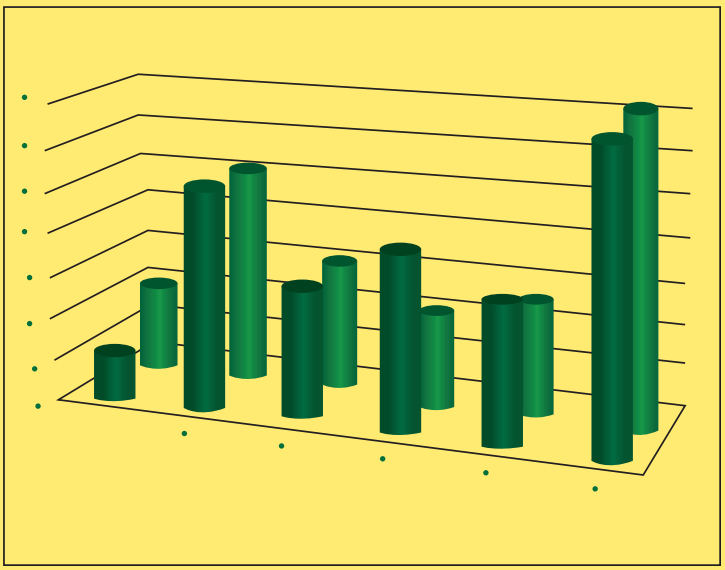
المعهد العربي للتدريب والبحوث الإحصائية

مجلة العلوم الإحصائية



العدد رقم 30

مجلة علمية محكمة

يصدرها المعهد العربي للتدريب والبحوث الإحصائية

معتمدة في قائمة المجلات العلمية ulrich´s

www.ulrichsweb.com

مصنفة في معامل التأثير والاستشهادات المرجعية العربي (أرسيف)

www.emarefa.net/arcif/

ISSN 2522-64X (Online), ISSN 2519-948X (Print)

مجلة العلوم الإحصائية

No. 30 June 2026

مجلة العلوم الإحصائية

مجلة علمية محكمة

معتمدة في قائمة المجلات العلمية **Ulrich's**
www.ulrichsweb.com
مصنفة في معامل التأثير والاستشهادات المرجعية العربي (أرسيف)
www.emarefa.net/arcif/

ISSN 2522-64X (Online), ISSN 2519-948X (Print)

شروط النشر في مجلة العلوم الإحصائية

1 – تنشر المجلة البحوث والدراسات العلمية في المجالات الإحصائية والمعلوماتية المكتوبة باللغة العربية والانكليزية والفرنسية على أن لا يكون البحث المقدم للنشر قد نشر او قدم للنشر في مجلات او دوريات أخرى او قدم ونشر في دوريات لمؤتمرات أو ندوات.

2 – ترسل البحوث والدراسات الى أمين التحرير على أن تتضمن اسم الباحث او الباحثين وألقابهم العلمية وأماكن عملهم مع ذكر عنوان المراسلة وأرقام الهواتف والبريد الالكتروني. وان يرسل البحث المراد نشره الكترونيا (على قرص او بالبريد الالكتروني) وفق المواصفات أدناه:

أ – أن يكون مطبوعاً على ورق حجم A4 وان يكون على شكل عمود واحد ويستخدم للغة العربية نوع حرف (Simplified Arabic) و(Times New Roman) للإنجليزية والفرنسية وبحجم خط (12). وباستخدام Microsoft Word وعلى وجه واحد للورقة.

ب – الهامش مسافة 2.5 سم لجميع جوانب الورقة.

ج – يرفق الباحث ملخصاً عن بحثه باللغتين العربية والانجليزية والفرنسية بما لا يزيد عن صفحة واحدة.

د - يتم الإشارة الى المصادر العلمية في متن البحث وفي نهايته، مع مراعاة أن لا يتضمن البحث سوى المصادر التي تم الإشارة إليها في المتن ووفق الأصول المعتمدة في ذلك (اسم المؤلف، سنة النشر، عنوان المصدر، دار النشر، البلد).

هـ– ترقم الجداول والرسوم التوضيحية وغيرها حسب ورودها في البحث، كما توثق المستعارة منها بالمصادر الأصلية.

و– أن لا يزيد عدد صفحات البحث اوالدراسة عن (25) صفحة.

3 – يتم إشعار الباحث باستلام بحثه خلال مدة لا تتجاوز يومين عمل من تاريخ استلام البحث.

4 – تخضع كافة البحوث المرسلة الى المجلة للتقييم العلمي الموضوعي ويبلغ الباحث بالتقييم والتعديلات المقترحة إن وجدت خلال مدة لا تتجاوز اسبوعان من تاريخ استلام البحث.

5 – لهيئة تحرير المجلة الحق في قبول او رفض البحث ولها الحق في إجراء أي تعديل او إعادة صياغة جزئية للمواد المقدمة للنشر بما يتماشى والنسق المعتمد في النشر لديها بعد موافقة الباحث.

6 – يصبح البحث المنشور ملكاً للمجلة ولا يجوز إعادة نشره في أماكن أخرى.

7 – تعبر المواد المنشورة بالمجلة عن آراء أصحابها، ولا تعكس وجهة نظر المجلة او المعهد العربي للتدريب والبحوث الإحصائية.

8 – ترسل البحوث على العنوان الالكتروني للمجلة:

journal@aitrs.org / Info@aitrs.org

المحتويات

Pregnant women in third trimester having risk factor and complications attending antenatal care in a tertiary hospital in Baghdad 2021

Dr. Walaa Waleed Taha
Family physician at the ministry of health

Dr. Hala Ahmed Shaker
Family physician at the ministry of health

تاريخ استلام البحث: 2026/01/08
تاريخ قبول البحوث: 2026/02/19

نشر البحث في العدد الثلاثون : حزيران / يونيو 2026

رمز التصنيف ديوي / النسخة الالكترونية (Online): 2522-64X/ 618.25
رمز التصنيف ديوي / النسخة الورقية (Print): 2519-948X/ 618.25

Pregnant women in third trimester having risk factor and complications attending antenatal care in a tertiary hospital in Baghdad 2021

Dr. Hala Ahmed Shaker
Family physician at the ministry of health

Dr. Walaa Waleed Taha
Family physician at the ministry of health

Abstract

Background: The third trimester of pregnancy is a crucial period during which maternal and fetal risks are heightened. Conditions such as anemia, hypertensive disorders, and diabetes mellitus contribute significantly to maternal morbidity and mortality. Identifying risk factors aids in early detection and prevention.

Objectives: To assess the prevalence and determinants of major pregnancy-related risk factors among third-trimester women attending antenatal care in Baghdad.

Methods: A cross-sectional study was conducted from February to May 2021 at Baghdad Teaching Hospital. A total of 353 women in their third trimester were recruited. Data on demographic, obstetric, and clinical characteristics were collected through structured interviews. Statistical analysis was performed using SPSS version 23, applying descriptive statistics and chi-square tests. Significance was set at $p \leq 0.05$.

Results: The mean age was 27.6 ± 5.3 years; 55.2% were aged 21–30 years, and 71.7% had low family income (<500,000 IQD). The prevalence of anemia was 83%, hypertension 20.7%, and diabetes mellitus 14.7%. Significant associations were observed between anemia and low income, early first pregnancy, and normal BMI ($p < 0.05$). Hypertension was significantly associated with advanced age and higher BMI ($p < 0.05$) . Diabetes mellitus showed associations with age, BMI, and coexisting hypertension ($p < 0.01$).

Conclusion: Anemia, hypertensive disorders, and diabetes mellitus are highly prevalent among pregnant women in Baghdad. Strengthening antenatal screening and targeted health education programs are essential to improve maternal and neonatal outcomes.

Keywords: Third trimester; Pregnancy; Risk factors; Anemia; Hypertension; Diabetes mellitus; Antenatal care; Baghdad.

Introduction

The third trimester start at 28 weeks of pregnancy and lasts until delivery which may be around 40 weeks of pregnancy [(1).] The components of antenatal care include risk identification, prevention and management of pregnancy related or concurrent disease and health education and health promotion.

At these third trimester contacts, ANC providers should aim to reduce preventable morbidity and mortality through systematic monitoring of maternal and fetal wellbeing, particularly in relation to hypertensive disease and other complications that may be asymptomatic but detectable during this critical period [(2)]. prenatal care is especially important in the third trimester because the identification of high-risk cases even if only a few weeks before clinical onset, might have a huge impact on maternal and perinatal outcomes, some research has demonstrated that a policy of active labor induction in patient with mild preeclampsia significantly reduce cost and progression to sever disease without any increase in cesarean section rates. third trimester screening strategies are effective in predicting preeclampsia, IUGR and perhaps other complication such as still birth [(3).] during third trimester prenatal visit the healthcare provider may check the following according the current medical condition of the patient and her fetus [any current symptoms or discomfort, weight, blood pressure, urine test, (position, growth, and development of the fetus), height of the fundus, fetal heart rate].[(4)]

Most common prenatal problem in third trimester of pregnancy are:

1. Anemia is a global public health problem effecting people of all ages in both developing and developed countries (5). it is a condition in which the number and size of red blood cells or hemoglobin concentration fall below the cutoff value consequently reducing the ability of blood transport oxygen around the body (5). According to the WHO anemia in pregnancy is define as a Hb concentration below 11 g/d (5, 6). In developing countries in pregnant women iron and folate deficiency anemia are common and associated with nutritional deprivation intestinal worm infection, hemolytic anemia is most common in malaria region of developing countries (7,8,9). it is most common preventable cause of maternal and perinatal mortality and morbidity (10). Anemia prevalence rate still high, it is proven by world health organization data. The worldwide prevalence of anemia in pregnancy is 41.8 %, Asia is 57.1 %, American is 24.1 %and Europe is 40 % of maternal death associated with anemia in pregnancy (5,7, 11). In previous studies observed

prevalence rate of anemia was higher among third trimester pregnant females, low level of education, decrease birth spacing and history of anemia before pregnancy was associated with increased risk of anemia (12).

2. Any patient with vaginal bleeding should be seen by physician and follow up to determine the gestational age and prior obstetric history (prior cesarean section, uterine surgery, history of abruption), vital signs (maternal and fetal). Placenta Previa is defined as the implantation of the placenta in the lower segment of the uterus either partially or completely covering the internal cervical os., the incidence of placenta Previa is started to be 4.8 per 1000 pregnancies at term (13). Risk factor for placenta Previa include maternal age above 35 years, smoking, cocaine, minority race, multi-parity, previous history, previous elective abortions, increase altitude and most importantly prior cesarean section (13,14). Placenta abruption is the premature separation of a normally implanted placenta from the uterine well, it occurs in approximately 1% of all deliveries (13,14) and its severity can be ranged from asymptomatic to lethal for both mother and fetus (13). Abruption is the most cause of intrapartum fetal death and has an approximate 35 % of fetal mortality (13). Maternal risk factor includes (hypertension, advance parity or age, tobacco use, poor nutrition, cocaine use (13,14), Preterm Prolabor Rupture of Membranes (PPROM), diabetes, preeclampsia, polyhydramnios, blunt external abdominal trauma, is also important cause of abruption (13)

3. Hypertensive disease of pregnancy is one of the top three complications that effect pregnancy. The others being hemorrhage and infection (13). they are common and affecting about 5 – 9 % of normal pregnancies (15), and account for 15 % percent of all maternal deaths being second leading cause of maternal mortality in the United States (13-14), given increase prevalence of baseline hypertension, obesity , diabetes, in women child bearing age and the social trend toward advanced maternal age , the published rates may underestimate recent incidence (15).Women with hypertensive disorder in pregnancy are at risk for complications including placental abruption, cerebral hemorrhage, hepatic dysfunction, renal insufficiency, and disseminated intravascular coagulation (DIC). The fetal consequences of hypertension include growth restriction, premature birth, and fetal demise (14). There are 4 categories of hypertensive disorders in pregnancy, chronic hypertension, and preeclampsia, eclampsia, superimposed on chronic

hypertension (13, 14,15). Chronic hypertension; it's defined as a systolic blood pressure of 140 mmHg or more, a diastolic blood pressure of 90 mmHg or more according to the national high blood pressure, hypertension that is diagnosed before 20 weeks gestation is chronic hypertension. (14,15) Gestational hypertension called pregnancy induce hypertension, it is occurred during pregnancy and resolved during postpartum period usually within 12 weeks, blood pressure greater than 140 over 90 without presence of proteinuria or edema. Preeclampsia is defined as hypertension with blood pressure of 140 over 90 or greater with the presence of proteinuria or edema. Eclampsia is the occurrence of seizures in pregnant women with preeclampsia that cannot attributed to any other cause (14). Women with hypertensive disorder in pregnancy are at risk for complications including placental abruption, cerebral hemorrhage, hepatic dysfunction, renal insufficiency, and disseminated intravascular coagulation (DIC) (14)

4. Diabetes mellitus and pregnancy:

Diabetes mellitus is the most common medical complication of pregnancy and its carries a significant risk to the fetus and the mother. Congenital malformations and perinatal morbidity remain common compared with the offspring of nondiabetic pregnancies (16). Diabetes in pregnancy refers to any diabetes in pregnancy including gestational diabetes mellitus, type 1 diabetes mellitus and type 2 diabetes mellitus. Gestational diabetes mellitus is defined as glucose intolerance that develops during pregnancy or that is diagnosed at an antenatal visit in the second or third trimester (9,16,17). the global prevalence of gestational diabetes varies from 1% to 14% (16,17).

5. **Premature labor is defined as uterine contraction with cervical** dilatation before 37 weeks of gestation (14). Preterm labor occurs in 8% - 10% of all pregnancies. The risk factor for all prenatal problem include; low socioeconomic status, extreme age, substance abuse (alcohol, smoking, cocaine) multiple gestation, history of preterm labor, low pre-pregnancy weight (BMI < 20) (14).

This study aims to describe the frequency of risk factors among pregnant women in third trimester and to study the association of the risk factors with complication of pregnancy.

METHOD

A cross-sectional study was conducted in the antenatal care unit of Baghdad Teaching Hospital between February and May 2021.The study

setting involved Ministry of Health (MOH) and the Scientific Committee at the department of Family and Community Medicine, College of Medicine, University of Baghdad. The study Population included all pregnant women in their third trimester who attended antenatal care and consented to participate. Women with incomplete data or outside the third trimester were excluded. Data Collection done by using Structured questionnaires were used to collect information on demographics (age, education, family income, occupation), obstetric history(number of pregnancies, age of last delivery, previous history of miscarriage, age at first pregnancy, birth spacing, use of intrauterine device, diabetes mellitus, hypertension, anemia, preterm labor, cerclage, heavy menstrual bleeding), History of current pregnancy, (Hb%, daily tea intake, use of iron supplementation nausea and vomiting, pre-pregnancy BMI, diabetes mellitus, hypertension, vaginal bleeding).

BMI calculated by using a person's height and weight. The formula is BMI = kg/m2 where kg is a person's weight in kilograms and m2 is their height in meters squared. A BMI of 25.0 or more is overweight, while the healthy range is 18.5 to 24.9.

The data was collected and stored electronically; Statistical Analysis Data were entered into SPSS version 23. Descriptive statistics (mean, standard deviation, frequency, percentage) summarized the sample characteristics. The chi-square test assessed associations between categorical variables, and a p-value ≤ 0.05 indicated statistical significance.

Results

In the current study 353 pregnant women in the third trimester were selected to participants, 195 (55.2%) were aged 21–30 years, 139 (39.5%) had primary education, and 253 (71.7%) had family incomes below 500,000 IQD. The majority were housewives (88.1%) as in table 1 below

.

Table 1: Demographical characteristics of pregnant women.

Demographic characteristic of pregnant women	**No. Total No.=353**	**%**
Age groups (in years)		
- Less than 20	46	13.0%
- 21 - 30	195	55.2%
- Greater than 30	112	31.7%
Education		
- Illiterate	72	20.4%
- Primary	139	39.4%
- Secondary	103	29.2%
- Collage , high education	39	11.0%
Monthly income of family		
- Less than 500000	253	71.7%
- 500000 -1000000	58	24.1%
- Greater than 1000000	15	4.2%
Current status of patient		
- House wife	311	88.1%
- Employed	42	11.9%

Most pregnant women have more than 3 child (multiparas) 185 (44.8%), higher birth spacing greater than 2 years 204 (57.8%), age at first pregnancy higher in less than 20 years old 197 (55.8%) as shown in table2

Table 2: Obstetrical history of the patient.

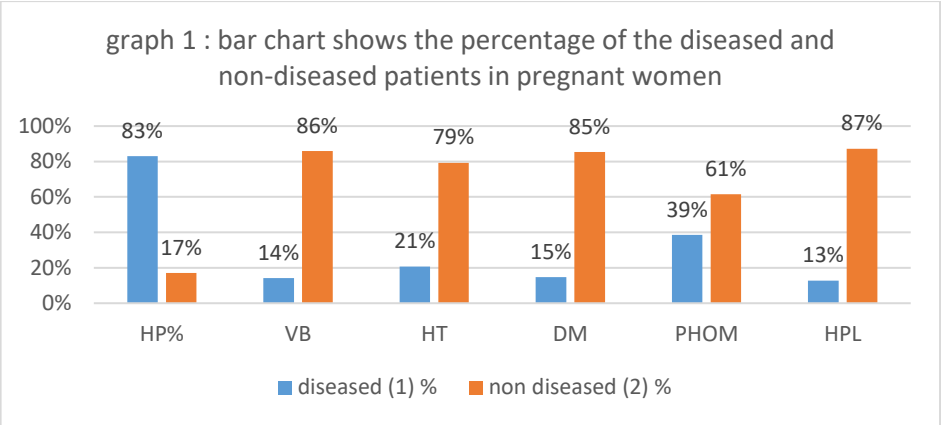
Obstetrical history	**No. Total No.=**353	**%**
Number of children		
- Nil para	49	13.9%
- 1 – 3	146	14.4%
- More than 3	185	44.8%
Age of last delivery		
- First child	57	16.1%
- Less than 1 year	82	23.2%
- 2 years	33	9.3%
- Greater than 2 years	181	51.3%
Age at first pregnancy		
- Less than 20 years	197	55.8%
- 20 – 30 years	138	39.1%
- Greater than 30 years	18	5.1%
Birth spacing		
- First child	47	13.3%
- One year	102	28.9%
- Greater than 2 years	204	57.8%
Use of intrauterine device		
- Yes	46	13.0%
- No	307	87.0%

In the current pregnancy more than half of the pregnant women have nausea and vomiting during the third trimester 246 (69.7%), most daily tea intake less than 2 per day 215 (60.9%), the pregnant women not having anemia before get pregnant 217 (61.5%), pre-pregnancy BMI within normal 260 (73.7%), overweight 58 (16.5%), obese 17 (4.8%) as shown in (table 3)

Table 3: History of current pregnancy.

History of current pregnancy	**No.** **Total No.=353**	**%**
Nausea and vomiting		
- Yes	246	69.7%
- No	107	30.3%
Daily tea intake		
- No	92	26.1%
- Less than 2	215	60.1%
- Greater than 3	46	13.0%
Anemia before getting pregnant		
- Yes	136	38.5%
- No	217	61.5%
Pre-pregnancy body mass index		
- Under weight	18	5.1%
- Normal	260	73.7%
- Over weight	58	16.4%
- Obese	17	4.8%

Anemia (Hb < 11 g/dL) was detected in 293 participants (83.0%), hypertensive disorders in 73 (20.7%), diabetes mellitus in 52 (14.7%) preterm birth 45 (12.7%) and 136 (38.5) has previous history of miscarriage Gestational hypertension accounted for (18.1%) of all hypertensive cases, while gestational diabetes constituted (12.5%) of diabetic cases. Vaginal bleeding in the third trimester was reported by 50 women (14.2%) as in graph 1.



Significant associations were found between anemia and low income, early first pregnancy, and normal BMI ($p < 0.05$) as in table 4,5.

Table 4: The association between Hb% and demographic characteristics of pregnant women.

	Hb%		**Total: 353 N and %**	**P - value**
	< 11 g/dl	**≥ 11 g/dl**		
Age group				
- less than 20 years	41 (14.0%)	5 (8.3%)	46 (13.0%)	
- 20 -30 years	158 (53.9%)	37 (61.7%)	195(55.2%)	0.400
- Greater than 31 years	94 (32.1%)	18 (30.0%)	112 (31.7%)	
Education				
- Illiterate	60 (20.5%)	12 (20.0%)	72 (20.4%)	
- Primary	121 (41.3%)	18 (30.0%)	139 (39.4%)	0.076
- Secondary	85 (29.0%)	18 (30.0%)	103 (29.2%)	
- Collage, high education	27 (9.2%)	12 (20.0%)	39 (11.0%)	
Monthly income of family				
- Less than 500000	211(72.0%)	42 (70.0%)	253 (71.7%)	
- 500000 -1000000	74 (25.3%)	11 (18.3%)	85 (24.1%)	**0.006**
- Greater than 1000000	8 (2.7%)	7 (11.7%)	15 (4.2 %)	

Table 5: The association between Hb% and obstetric history of the pregnant women.

	Hb%		Total: 353 N and %	P – value
	< 11g/dl	≥ 11 g /dl		
Number of children				
- Nil para	39 (13.3%)	10 (16.7%)	49 (13.9%)	
- 1-3	128 (43.7%)	18 (30.0%)	146 (41.4%)	0.146
- More than 3	126 (43.0%)	32 (53.3%)	185 (44.8%)	
Age at first pregnancy				
- Less than 20	165 (56.3%)	32 (53.3%)	197 (55.8%)	
- 20 – 30 years	117 (39.9%)	21 (35.0%)	138 (39.1%)	**0.039**
- Greater than 30	11 (3.8%)	7 (11.7%)	18 (5.1%)	
History of miscarriage				
- Yes	112 (38.2%)	24 (40.0%)	136 (38.5%)	0.797
- No	181(61.8%)	36 (60.0%)	217 (61.5%)	
Birth spacing				
- Nil para	37 (12.6%)	10 (15.4%)	47 (13.3%)	
- One year	85 (29.9%)	17 (28.3%)	102 (28.9%)	0.699
- Greater than 2	171 (72.6%)	33 (53.9%)	204 (57.8%)	
Heavy menstrual bleeding				
- Yes	40 (13.7%)	5 (8.3%)	45 (12.7%)	0.260
- No	253 (86.3%)	55 (91.7%)	308 (87.3%)	
Use of intrauterine device				
- Yes	38 (13.0%)	8 (13.3%)	46 (13.3%)	0.939
- No	255 (87.0%)	52 (86.7%)	307 (87.0%)	
Anemia before getting pregnant				
- Yes	118 (40.3%)	18 (30.0%)	136 (38.5%)	0.136
- No	175 (59.7%)	42 (70.0%)	217 (61.5%)	
Pre-pregnancy BMI				
- Underweight	10 (3.4%)	8 (13.3%)	18 (5.1%)	
- Normal	223 (76.1%)	37 (61.7%)	260 (73.7%)	
- Overweight	49 (16.7%)	9 (15.0%)	58 (16.4%)	**0.002**
- Obese	11 (3.8%)	6 (10.0%)	17 (4.8%)	
Nausea and vomiting				
- Yes	205 (70.0%)	41 (68.3%)	246 (69.7%)	0.802
- No	88 (30.0%)	19 (31.7%)	107 (30.3%)	
Daily tea intake				
- No	75 (25.6%)	17 (28.3%)	92 (26.1%)	
- Less than 2 per day	178 (60.8%)	37 (61.7%)	215 (60.9%)	0.719
- Greater than 3 per day	40 (13.7%)	6 (10.0%)	46 (13.0%)	

About hypertension in the study, there was statistically significant association between hypertension and age of the patient, birth spacing and pre-pregnancy BMI, there p-value < 0.05 (0.004, 0.013, 0.000) as in as in table 6.

Table 6: The association between hypertensive disease and characteristic of pregnant women.

	Hypertensive disease		Total N= 353	P-value
	Yes N and (%)	N0 N and (%)		
Age group				
- less than 20 years	8 (11%)	38 (13.6%)	46 (13.0%)	0.004
- 20 -30 years	30 (41.1%)	165 (58.9%)	195 (55.2%)	
- Greater than 31 years	35 (47.0%)	77 (27.5%)	112 (31.7%)	
Birth spacing				
- Nil para	5 (6.8%)	43 (15.4%)	48 (13.6%)	0.013
- One year	15 (20.5%)	86 (30.7%)	101 (28.6%)	
- Greater than 2	53 (72.6%)	151 (53.9%)	204 (57.8%)	
Pre-pregnancy BMI				
- Underweight	6 (8.2%)	43 (15.4%)	21 (5.9%)	0.000
- Normal	39 (53.4%)	86 (30.7%)	257 (72.8%)	
- Overweight	23 (31.5%)	151 (53.9%)	54 (15.3%)	
- Obese	5 (6.8%)	280 (79.3%)	21 (5.9%)	

While diabetes mellitus correlated with age, BMI, birth spacing and highly statistically significant association between diabetes mellitus hypertension ($p < 0.05$) as in table 7

Table 7: The association between diabetes mellitus and characteristic of pregnant women.

	Diabetes mellitus		Total N= 353	P-value
	Yes N and (%)	N0 N and (%)		
Age group				
- less than 20 years	6 (11.5%)	40 (13.3%)	46 (13.0%)	**0.008**
- 20 -30 years	20 (38.5%)	175 (58.1%)	195 (55.2%)	
- Greater than 31 years	26 (50.0%)	86 (28.6%)	122 (31.7%)	
Number of children				
- Nil para	5 (9.6%)	44 (14. 6%)	49 (13.9%)	0.444
- 1-3	20 (38.5%)	126 (41.9%)	146 (41.4%)	
- more than 3	27 (51.9%)	131 (43.5%)	158 (44.8%)	
Birth spacing				
- Nil para	5(9.6%)	42(14.0%)	47(13.3%)	**0.022**
- One year	8(15.4%)	94(31.2%)	102(28.9%)	
- Greater than 2	39(75.0%)	165(54.8%)	204(57.8%)	
Pre-pregnancy BMI				
- Underweight	6(11.5%)	15 (5.0%)	21 (5.9%)	**0.010**
- Normal	28 (53.8%)	229 (76.1%)	257 (72.8%)	
- Overweight	13 (25.0%)	42 (14.0%)	55 (15.6%)	
- Obese	5 (6.8%)	15 (5.7%)	20 (5.7%)	

Hypertensive disease				
- Yes	26 (50.0%)	47 (15.6%)	73 (20.7%)	**0.000**
- No	26 (0050.0%)	254 (84.4%)	280 (79.3%)	

There was statistically significant association between vaginal bleeding and hypertension their p-value < 0.05 as in table 8.

Table 8: The association between vaginal bleeding and characteristic of pregnant women.

	Vaginal bleeding		Total N= 353	P-value
	Yes N and (%)	N0 N and (%)		
Age group				
- less than 20 years	9 (18.0%)	37 (12.2%)	46 (13.0%)	
- 20 -30 years	26 (52.0%)	169 (55.8%)	195 (55.2%)	0.530
- Greater than 31 years	15 (30.0%)	97 (32.0%)	112 (31.7%)	
Education				
- Illiterate	8 (16.0%)	64 (21.1%)	72 (20.4%)	
- Primary	22 (44.0%)	117 (38.6%)	139 (39.4%)	0.815
- Secondary	14 (28.0%)	89 (29.4 %)	103 (29.2%)	
- Collage, high education	6 (12.0%)	33 (10.9%)	39 (11.0%)	
Number of children				
- Nil para	10 (20.0%)	39 (12.9%)	49 (13.9%)	
- 1-3	17(34.0%)	129 (42.6%)	146 (41.4%)	0.308
- Greater than 4	23 (46.0%)	135 (44.6%)	158 (44.8%)	
Age of last delivery				
- Fist child	13 (26.0%)	44 (15.0%)	57 (16.1 %)	
- Less than 1 year	9 (18.0%)	73 (24.1%)	82 (23.2%	0.210
- 2 years	5 (10.0%)	28 (9.2 %)	33 (9.3%)	
- Greater than 2 years	23 (46.0%)	158 (52.1%)	181 (51.3%)	
Hypertensive disease				
- Yes	19 (38.0%)	54 (17.8%)	73 (20.7%)	**0.001**
- No	31 (62.0%)	249 (82.2%)	280 (79.3%)	
Diabetes mellitus				
- Yes	9 (18.0%)	43 (14.2%)	52 (14.8%)	0.481
- No	41 (82.0%)	269 (85.8%)	301 (85.3%)	

Discussion

Anemia in pregnancy remains a major problem in nearly all developing and many industrialize countries the WHO estimated that 58% of pregnant women in developing countries are anemic (12). In the current study the patients who were suffering from anemia were 293 (83%) of the total sample, and this is higher than that was reported by (Grace Stephen et al.) (8), in the present study number of anemic cases 158

(53.9%) were in the age group of 21 – 30 years old , (Agrawal J. et al.) reported age of pregnant women was 74.2% in the age group of 21-35 years (18) , in this study anemia were more common in multiparous women 128 (43.7%) , and this agree with (Agrawal J. et al.) who reported that 68.6% were multiparas (18) , The current study showed that the level of education as primary education was most frequent 121 (41.3%) and this agrees with (Agrawal J et al.) in India (18) . 165 (56.3%) were age less than 20 years old at first pregnancy, (Amany Abdel Hafez et al.) reported 41.1% were age less than 20 years old at first pregnancy (12). The results showed that all variables were not associated with Hb% level except three of them were associated with Hb% that are (monthly income of the family, age at first pregnancy, pre-pregnancy BMI) as in (table 3). Unlike (A. Abbasi et al.) where there is significant association between Hb% and most variables only three showed no significant association with Hb% (previous history of miscarriage, nausea and vomiting and any hemorrhagic disease (19).

In the present study there is 73 (20.7%) prevalence of hypertensive disease was higher than that reported by (Chun ye et al.) the prevalence of hypertensive disease in pregnancy was 5.22% (20) The present study found a statistically significant association between hypertensive disease in pregnancy and age higher BP among old age female more than 31 years old unlike what reported by (Anita Nath et al.) were higher BP was reported among women more than 28 years of age (21). Hypertension in pregnancy is known to be associated with advancing maternal age. (Chun ye et al.) reported risk of hypertensive disease in pregnancy was 1.8 times higher in those aged 35-39 years and 2.4 times higher in those aged 40 years old and older (20). There is highly significantly association between hypertensive disease in pregnancy and pre-pregnancy BMI similar to (Chun ye et al.) was reported close relationship between hypertensive disease in pregnancy and pre-pregnancy BMI, obese women were at a higher risk of preeclampsia compere to those with normal BMI (20)

In present study the main age group of pregnant women with diabetic disease in pregnancy was greater than 31 years old. (Milln et al.) Reported the main age group of the participant was 27 years (22). There is significant association between diabetes mellitus and age, birth spacing, pre-pregnancy BMI and hypertensive disease in pregnancy,

(Milln et al.) reported that participant with hyperglycemia in pregnancy had higher risk of hypertensive disorder in pregnancy compared to the norm-glycemic participant (22), (Chun Ye) reported that gestational diabetes mellitus is a risk factor for hypertensive disease in pregnancy (20). Malgorzata Lewandowska reported gestational diabetes mellitus had a statistical significant association with higher age and pre-pregnancy BMI and hypertensive disease in pregnancy (23).In this study 50 (14.2 %) have antepartum hemorrhage (Bener, et al.) was reported prevalence of antepartum hemorrhage among Arab women residing in Qatar was 15.3% with 6.7% among Qatari women and 8.6 % among non-Qatari Arab women (24) (Dazhi Fan et al.) Reported that between 20% and 78% of women screened positive for antepartum hemorrhage (25).

In this study there is significant association between antepartum hemorrhage and hypertensive disease in pregnancy (Bener et al.) was reported no significant association with variables while there is significant association with family history of hypertension (24).

Conclusion

This study reveals alarmingly high rates of anemia, hypertension, and diabetes mellitus among third-trimester pregnant women in Baghdad. Low socioeconomic status, young age at first pregnancy, and higher BMI were major contributors. Integrating routine screening and early intervention into antenatal care is crucial. Future research should explore the effectiveness of targeted interventions aimed at improving nutritional status and chronic disease prevention during pregnancy.

Recommendations:

1. Strengthen health education programs to raise awareness about anemia, hypertensive disorders, diabetes mellitus, and vaginal bleeding during the third trimester.
2. Implement preventive strategies starting from school health programs to address anemia and promote preconception health.
3. Reinforce antenatal counseling on iron supplementation, nutrition, and weight management before and during pregnancy.
4. Ensure timely access to effective antenatal and emergency obstetric care for early detection and management of high-risk pregnancies.
5. Improve hospital readiness and adherence to evidence-based guidelines for managing obstetric emergencies to reduce maternal and neonatal complications.

References

1. Colleen de belle found, "your guide to the third trimester of pregnancy" 2018, available at https://www.whattoexpect.com/third-trimester-of-pregnancy.aspx.
2. World Health Organization "WHO Recommendation on antenatal care for a positive pregnancy experience" 2016, WHO library cataloguing-in-publication data.
3. Karger S.AG, Basel "towards an integrated third trimester screening in pregnancy " fetal diagn ther 2013, 33:141- 142.
4. Johns Hopkins medicine "the third trimester" 2021, available at https://www.hopkinsmedicine.org/health/wellness-and-prevention/the-third-trimester
5. Osman, M.O. and etl.al "Risk factors of anemia among pregnant women attending the antenatal care unit in selected jigjiga public health facilities, Somali region, east Ethiopia 2019, unmatched case control study " Journal of multidisciplinary health care 2020: 13 769-777.
6. Taner, C.E. etl.al "Prevelance and risk factors of anemia among pregnant women attending a high-volume tertiary care center for delivery" J turk Ger Gynecol Assoc 2015, 16:23,1-6.
7. Gebreweld, A., Tsegaye, A. " Prevalence and factors associated with anemia among pregnant women attending clinic at St. Pouls hospital millennium medical college, Addis Ababa, Ethiopia "Advances in hematology 2018 ,1-8 https://dio.org/10.1155/2018/3942301
8. Grace S., etl.al "Anemia in pregnancy: prevalence, risk factors, and adverse perinatal outcomes in northern Tanzania Anemia "2018, 1-9 https://doi.org/10.1155/2018/1846280
9. Daniela Marchetti, Danilo Carrozzino, etl.al "Quality of life in women with gestational diabetes mellitus: a systematic review " journal of diabetes research, 23 February 2017(2017), 1-12.
10. Sharda Patra et al. "Clinical profile of women with severe anemia in third trimester of pregnancy" tropical doctor 2010; 40:85-86.
11. Katmini, Yunita, A. "Factors associated with anemia among pregnant women in trimester III" Journal of maternal and child health 2020, 05 (03): 313-320.
12. Abdelhafez, A.M. and El-Soadaa, S.S. " Prevalence and risk factors of anemia among a sample of pregnant females attending primary health care centre in Makkah, Saudi Arabia ", Pakistan journal of nutrition 2012,11 (12): 1113 – 11120.
13. Martin Lankoande et.al " incidence and outcome of sever ante-partum hemorrhage at the teaching hospital Yalgado Ouedraogo in Burkina Faso " BMC emergency medicine 2017, 17(17): 1-7.

14. Emly Newfield,"third trimester pregnancy complication" prim care clin office pract 39 (2912) 95-113.
15. Reddy, S. and Jim, B., "hypertension and pregnancy management and future risk" Adv. Chronic kidney Dis. 2019, 26(2):137-145.
16. Catherine Chamberlain et al. "Diabetes in pregnancy among indigenous women in Australia, Canada, New Zealand and the United States" Diabetes Metab Res Rev. 2013; 29(4):241-256.
17. Panyakat, W., etl.al "correlation between third trimester glycemic variability in non-insulin-dependent gestational diabetes mellitus and adverse pregnancy and fetal outcome "Journal of diabetes science and technology, 2018, 12(3):622-629.
18. Agarwal, J., et al. "Analytical study of cause and risk factors of severe anemia in third trimester of pregnancy at tertiary care center " International journal of reproduction, conception, obstetrics and gynecology, September 2018, 7(9):1-5.
19. Abbasia, A., etl.al " cause of anemia in pregnant women of the state of Azad Kashmir: a cross-section survey " health ,2013, 5(1):35 – 44
20. Chun Ye, et al. " the 2011 survey on hypertensive disorders of pregnancy (HDP) in china: prevalence, risk factors, complications, pregnancy and perinatal outcomes " PLOS ONE, June 2014, 9(6):1-9.
21. Anita Nath, et al. "prevalence of hypertension in pregnancy and its associated factors among women attending antenatal clinics in Bengaluru" Journal of family medicine and primary care. 2021; 10(4):1621-1627.
22. Milln J, et al. "antenatal management and maternal /fetal outcomes associated with hyperglycemia in pregnancy (HIP) in Uganda; a prospective cohort study "BMC pregnancy and childbirth (2021) 21; 386:1-9.
23. Lewandowska, M. "Gestational diabetes mellitus risk for declared family history of diabetes, in combination with BMI categories" international journal of environmental research and public health 2021,18, 6936:1-16.
24. Bener et al. " prevalence and associated risk factors of antepartum hemorrhage among Arab women in an economically fast-growing society "Najerian journal of clinical practice 2012 ,15(2):185-189.
25. Dazhi Fan et al. " prevalence of antepartum hemorrhage in women with placenta Previa: a systematic review and meta-analysis " scientific reports 2017; 9(7):1-9.

Publication Prerequisites and terms

1- The journal publishes scientific research and studies in statistics and informatics written in Arabic, English and French, to make it clear that research submitted for publication has been published or submitted for publication in magazines or other periodicals or presented and published in periodicals for conferences or seminars.
2- Send electronic copies (word & PDF) of the research and studies to the editor should include the name of the researcher or researchers and their scientific titles and places of work with the address of the correspondence, the numbers of telephones and e-mail. The research to be published should be sent electronically in accordance with the specifications below:
   a. To be printed on A4 paper and be in the form of a single column and use the Type simplified Arabic and Times New Roman for English and French and with a font size (12). Using Microsoft Word and on one face of the paper.
   b. The margin is 2.5 cm for all sides of the paper.
   c. The researcher will attach a summary of his research in Arabic, English, or French in no more than one page.
   d. Place references at the end of the paper and separated page. It is recommended to use the Harvard system of referencing, which (author's name, year of publication, source address, publishing house, country).
   e. Numbered tables, illustrations, and others as they are received in the research, documents as aliases of the original sources.
   f. The number of search or study pages should not exceed (25) pages.
3- Authors will notified of receiving their research within two working days from the date of receipt of the research.
4- Referees will evaluate all submitted research, the Authors will informed of the proposed evaluation and modifications if any within two weeks of receipt of the research.
5- The editorial board of the Journal has the right to accept or reject the research and has the right to make any modification or partial redrafting of the material submitted for publication in accordance with the format adopted in its publication after the approval of the researcher.
6- Published research becomes the property of the Journal and may not republished elsewhere.
7- The articles published in the magazine reflect the opinions of the authors, and do not necessarily reflect the view of the Journal or the Arab Institute for Training and Research in Statistics.
8- The research is sent to the magazine's e-mail address:
   journal@aitrs.org or **Info@aitrs.org**

Journal of Statistical Sciences

Scientific Referred Journal

Listed in Ulrich's website
www.ulrichsweb.com
Classified in The Arab Citation & Impact Factor (Arcif)
www.emarefa.net/arcif/
ISSN 2522-64X (Online), ISSN 2519-948X (Print)

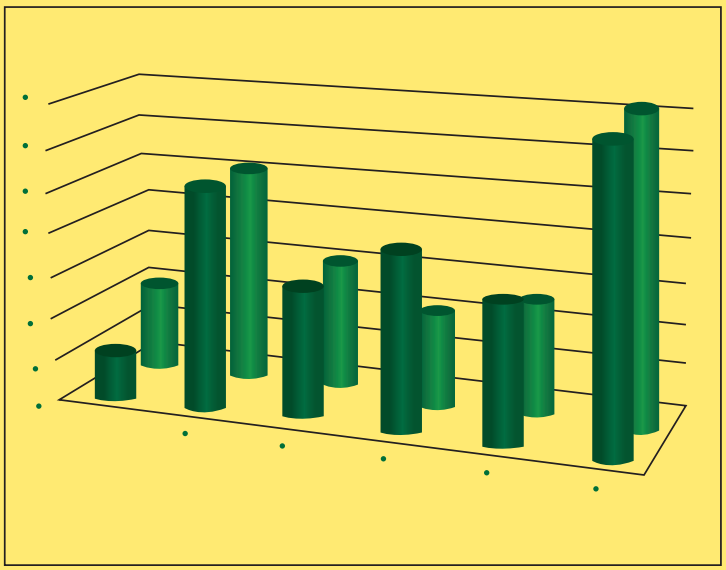
P.O. Box: 851104- Amman 11185 Jordan ص.ب: 851104 عمان 11185 الأردن
Tel: +96265549805 – Fax: +96265549804- www.aitrs.org , info@aitrs.org

مجلة العلوم الإحصائية

No. 30 June 2026

Arab Institute for Training and Research in Statistics

Journal of Statistical Sciences



Issue No. 30

Scientific Peer-reviewed Journal issued by
Arab Institute for Training and Research in Statistics
Listed in Ulrich's website
www.ulrichsweb.com
Classified in The Arab Citation & Impact Factor (Arcif)
www.emarefa.net/arcif/
ISSN 2522-64X (Online), ISSN 2519-948X (Print)