بِسْمِ اللَّهِ الرَّحْمَٰنِ الرَّحِيمِ

(وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ)

Precipitating factors of Pre-Eclampsia

Department of Gynaecology

6th stage

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الطلبة أعداد:

رسن حميد احمد

كاظم حيدر كاظم

هندي الباري عبد مشتاق

عويد جادر حسين

بإشراف:

الخفاجي وسن الدكتورة

content

Abstract

This study was conducted to identify the precipitating factors of preeclampsia in 50 patients .

Introduction

Preeclampsia is defined as the presence of (1) a systolic blood pressure (SBP) greater than or equal to 140 mm Hg or a diastolic blood pressure (DBP) greater than or equal to 90 mm Hg or higher, on two occasions at least 4 hours apart in a previously normotensive patient, **OR** (2) an SBP greater than or equal to 160 mm Hg or a DBP greater than or equal to 110 mm Hg or higher (In this case, hypertension can be confirmed within minutes to facilitate timely antihypertensive therapy.).
In addition to the blood pressure criteria, proteinuria of greater than or equal to 0.3 grams in a 24-hour urine specimen, a protein (mg/dL)/creatinine (mg/dL) ratio of 0.3 or higher, or a urine dipstick protein of 1+ (if a quantitative measurement is unavailable) is required to diagnose preeclampsia.
Preeclampsia with severe features is defined as the presence of one of the following symptoms or signs in the presence of preeclampsia :

* SBP of 160 mm Hg or higher or DBP of 110 mm Hg or higher, on two occasions at least 4 hours apart while the patient is on bed rest (unless antihypertensive therapy has previously been initiated)

* Impaired hepatic function as indicated by abnormally elevated blood concentrations of liver enzymes (to double the normal concentration), severe persistent upper quadrant or epigastric pain that does not respond to pharmacotherapy and is not accounted for by alternative diagnoses, or both.

* Progressive renal insufficiency (serum creatinine concentration >1.1 mg/dL or a doubling of the serum creatinine concentration in the absence of other renal disease)

*New onset cerebral or visual disturbances

*Pulmonary edema

*Thrombocytopenia (platelet count < 100,000/µL)

In a patient with new-onset hypertension without proteinuria, the new onset of any of the following is diagnostic of preeclampsia:

* Platelet count below 100,000/μL

* Serum creatinine level above 1.1 mg/dL or doubling of serum creatinine in the absence of other renal disease

*Liver transaminase levels at least twice the normal concentrations
* Pulmonary edema

* Cerebral or visual symptoms

Eclampsia is defined as seizures that cannot be attributable to other causes in a woman with preeclampsia. HELLP syndrome (hemolysis, elevated liver enzyme, low platelets) may complicate severe preeclampsia.

Pathophysiology

An estimated 2-8% of pregnancies are complicated by preeclampsia, with associated maternofetal morbidity and mortality. In the fetus, preeclampsia can lead to ischemic encephalopathy, growth retardation, and the various sequelae of premature birth. Eclampsia is estimated to occur in 1 in 200 cases of preeclampsia when magnesium prophylaxis in not administered.

Cardiovascular disease

As previously mentioned, preeclampsia is characterized by endothelial dysfunction in pregnant women. Therefore, the possibility exists that preeclampsia may be a contributor to future cardiovascular disease. In a meta-analysis, several associations were observed between an increased risk of cardiovascular disease and a pregnancy complicated by preeclampsia. These associations included an approximately 4-fold increase in the risk of subsequent development of hypertension and an approximately 2-fold increase in the risk of ischemic heart disease, venous thromboembolism, and stroke. Moreover, women who had recurrent preeclampsia were more likely to suffer from hypertension later in life.
In a review of population-based studies, Harskamp and Zeeman noted a relationship between preeclampsia and an increased risk of later chronic hypertension and cardiovascular morbidity/mortality, compared with normotensive pregnancy. Moreover, women who develop preeclampsia before 36 weeks' gestation or who have multiple hypertensive pregnancies were at highest risk.

A prospective observational study by Vaught that included 63 women with pre-eclampsia with severe features reported higher systolic pressure, higher rates of abnormal diastolic function, decreased global right ventricular longitudinal systolic strain, increased left-sided chamber remodeling, and higher rates of peripartum pulmonary edema in these women when compared with healthy pregnant women. Harskamp and Zeeman also found that the underlying mechanism for the remote effects of preeclampsia is complex and probably multifactorial.

The risk factors that are shared by cardiovascular disease and preeclampsia are as follows:

* Endothelial dysfunction

* Obesity

* Hypertension

* Hyperglycemia

* Insulin resistance

* Dyslipidemia

Metabolic syndrome, the investigators noted, may be a possible underlying mechanism common to cardiovascular disease and preeclampsia.

Mechanisms behind preeclampsia

Although hypertension may be the most common presenting symptom of preeclampsia, it should not be viewed as the initial pathogenic process.

The mechanisms by which preeclampsia occurs is not certain, and numerous maternal, paternal, and fetal factors have been implicated in its development. The factors currently considered to be the most important include the following :

* Maternal immunologic intolerance

* Abnormal placental implantation

* Genetic, nutritional, and environmental factors

*Cardiovascular and inflammatory changes

Risk factors

Risk factors for preeclampsia and their odds ratios are as follows :

* Nulliparity (3.1)

* Age older than 40 years (3:1)

*Black race (1.5:1)

*Family history (5:1)

* Chronic renal disease (20:1)

*Chronic hypertension (10:1)

*Antiphospholipid syndrome (10:1)

*Diabetes mellitus (2:1)

*Twin gestation (but unaffected by zygosity) (4:1)

*High body mass index (3:1)

*Homozygosity for angiotensinogen gene T235 (20:1)

*Heterozygosity for angiotensinogen gene T235 (4:1)

Signs and symptoms

Because the clinical manifestations of preeclampsia can be heterogeneous, diagnosing preeclampsia may not be straightforward. Preeclampsia without severe features may be asymptomatic. Many cases are detected through routine prenatal screening. Patients with preeclampsia with severe features display end-organ effects and may complain of the following:

* Headache

* Visual disturbances: Blurred, scintillating scotomata

* Altered mental status

* Blindness: May be cortical or retinal

*Dyspnea

* Edema: Sudden increase in edema or facial edema

* Epigastric or right upper quadrant abdominal pain

* Weakness or malaise: May be evidence of hemolytic anemia

* Clonus: May indicate an increased risk of convulsions

Diagnosis

All women who present with new-onset hypertension should have the following tests:

* CBC

* Serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) levels

* Serum creatinine

* Uric acid

* 24-hour urine collection for protein and creatinine (criterion standard) or urine dipstick analysis

Additional studies to perform if HELLP syndrome is suspected are as follows:

* Peripheral blood smear

* Serum lactate dehydrogenase (LDH) level

* Indirect bilirubin

Although a coagulation profile (prothrombin time [PT], activated partial thromboplastin time [aPTT], and fibrinogen) should also be evaluated, its clinical value is unclear when the platelet count is 100,000/mm^3 or more with no evidence of bleeding.

* Head CT scanning is used to detect intracranial hemorrhage in selected patients with any of the following:

* Sudden severe headaches

* Focal neurologic deficits

* Seizures with a prolonged postictal state

* Atypical presentation for eclampsia

Other procedures

* **Ultrasonography**: Transabdominal, to assess the status of the fetus and evaluate for growth restriction; umbilical artery Doppler ultrasonography, to assess blood flow

* **Cardiotocography**: The standard fetal nonstress test and the mainstay of fetal monitoring

Management

Delivery is the only cure for preeclampsia. Patients with preeclampsia without severe features are often induced after 37 weeks' gestation. Before this, the patient is usually hospitalized and monitored carefully for the development of worsening preeclampsia or complications of preeclampsia, and the immature fetus is treated with expectant management with corticosteroids to accelerate lung maturity in preparation for early delivery.
In patients with preeclampsia with severe features, induction of delivery should be considered after 34 weeks' gestation. In these cases, the severity of disease must be weighed against the risks of infant prematurity. In the emergency setting, control of BP and seizures should be priorities.

Criteria for delivery

Women with preeclampsia with severe features who are managed expectantly must be delivered under the following circumstances:
* Nonreassuring fetal testing including (nonreassuring nonstress test, biophysical profile score, and/or persistent absent or reversed diastolic flow on umbilical artery Doppler velocimetry)
* Ruptured membranes
* Uncontrollable BP (unresponsive to medical therapy)
* Oligohydramnios, with amniotic fluid index (AFI) of less than 5 cm
* Severe intrauterine growth restriction in which the estimated fetal weight is less than 5%
* Oliguria (< 500 mL/24 hr)
* Serum creatinine level of at least 1.5 mg/dL
* Pulmonary edema

* Shortness of breath or chest pain with pulse oximetry of < 94% on room air
* Headache that is persistent and severe
* Right upper quadrant tenderness
* Development of HELLP syndrome
* Eclampsia
* Platelet count less tha 100,000 cells/microL
* Placental abruption
* Unexplained coagulopathy

Seizure treatment and prophylaxis

* The basic principles of airway, breathing, and circulation (ABC) should always be followed
* Magnesium sulfate is the first-line treatment for primary and recurrent eclamptic seizures
* Treat active seizures with IV magnesium sulfate [5] : A loading dose of 4 g is given by infusion pump over 5-10 minutes, followed by an infusion of 1 g/hr maintained for 24 hours after the last seizure
* Treat recurrent seizures with an additional bolus of 2 g or an increase in the infusion rate to 1.5 or 2 g per hour
* Prophylactic treatment with magnesium sulfate is indicated for all patients with preeclampsia with severe features
* Lorazepam and phenytoin may be used as second-line agents for refractory seizures

Acute treatment of severe hypertension in pregnancy

Antihypertensive treatment is recommended for severe hypertension (SBP >160 mm Hg; DBP >110 mm Hg). The goal of hypertension treatment is to maintain BP around 140/90 mm Hg.

Medications used for BP control include the following:

* Hydralazine
* Labetalol
* Nifedipine
* Sodium nitroprusside (in severe hypertensive emergency refractory to other medications)

Fluid management

* Diuretics should be avoided
* Aggressive volume resuscitation may lead to pulmonary edema

* Patients should be fluid restricted when possible, at least until the period of postpartum diuresis
* Central venous pressure (CVP) or pulmonary artery pressure monitoring may be indicated in critical cases
* A CVP of 5 mm Hg in women with no heart disease indicates sufficient intravascular volume, and maintenance fluids alone are sufficient
* Total fluids should generally be limited to 80 mL/hr or 1 mL/kg/hr

Postpartum management

* Many patients will have a brief (up to 6 hours) period of oliguria following delivery
* Magnesium sulfate seizure prophylaxis is continued for 24 hours postpartum
* Liver function tests and platelet counts must document decreasing values prior to hospital discharge
* Elevated BP may be controlled with nifedipine or labetalol postpartum
* If a patient is discharged with BP medication, reassessment and a BP check should be performed, at the latest, 1 week after discharge
* Unless a woman has undiagnosed chronic hypertension, in most cases of preeclampsia, the BP returns to baseline by 12 weeks' postpartum
* Patients should be carefully monitored for recurrent preeclampsia, which may develop up to 4 weeks postpartum, and for eclampsia that has occurred up to 6 weeks after delivery.

Methods

we ask about

Precipitating factors for Pre-eclampsia

1-Age:————
2-Hypertension:————
3-DM:————
4-Nulliparity:————
5-Multiple Pregnancy:————
6-Obesity:————
7-previous HX of pre-eclampsia:————
8-Renal diseases:————
9-HX of Covid-19:————
10-Bad obstetric history like history of recurrent abortion or history of preterm labor:————

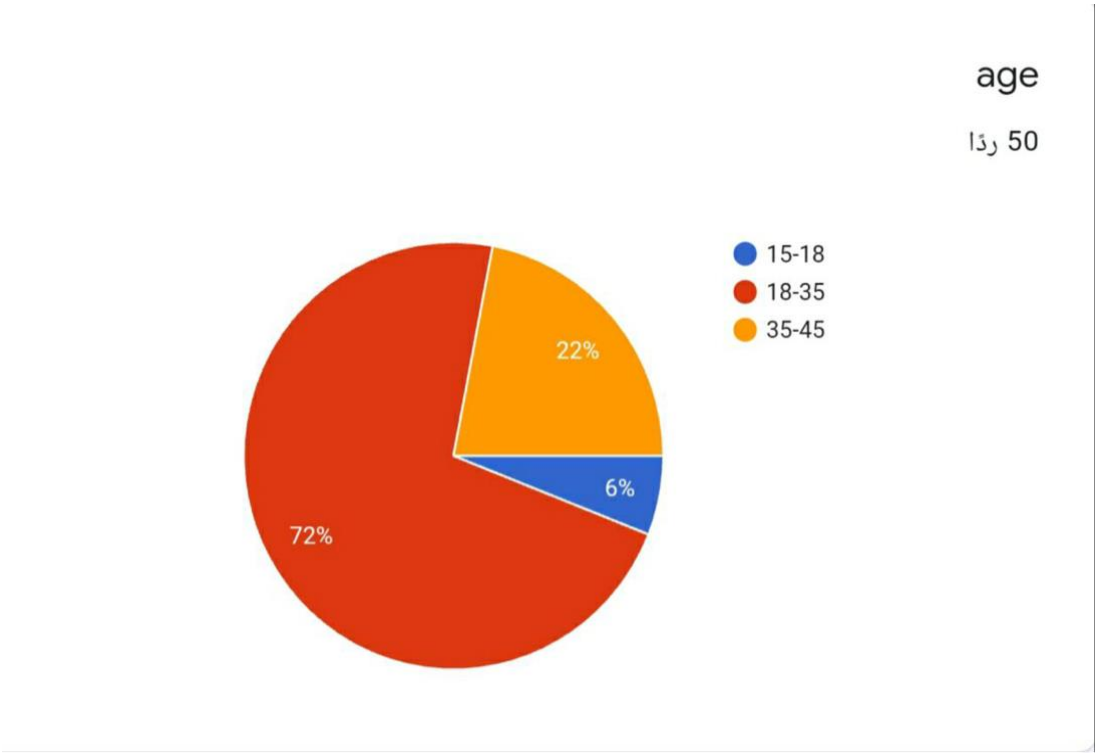
11-Smoking:————

Discussion

We reviewed 50 cases who have pre eclampsia we found :

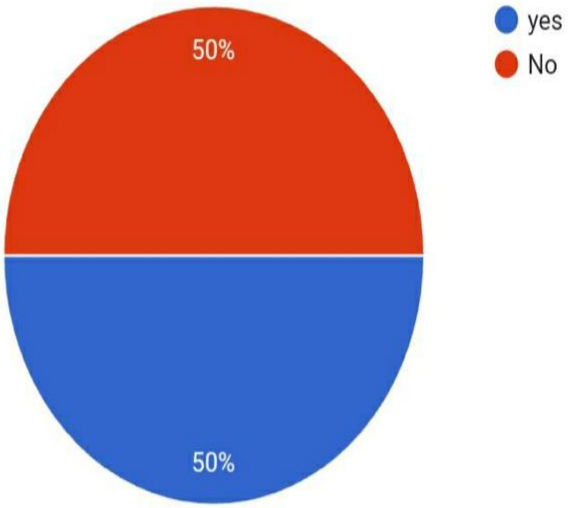
1. Age groups 6% 15-18
   22% 18-35
   72% 35-45
2. Hypertension 66%
3. DM 50%
4. Nulliparity 20%
5. Multiple pregnancy 18%
6. Obesity 56%

7. Previous Hx of pre eclampsia 32%
8. Renal disease 22%
9. Hx of Covid 19 60%
10. Bad obstetric Hx like recurrent Abortion or preterm labor 26%
11. Smoking 4%



DM

50 ردًا



hypertension

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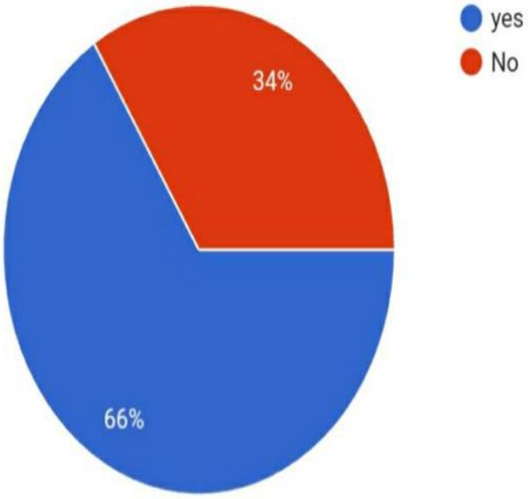

previous hx of pre eclampsia

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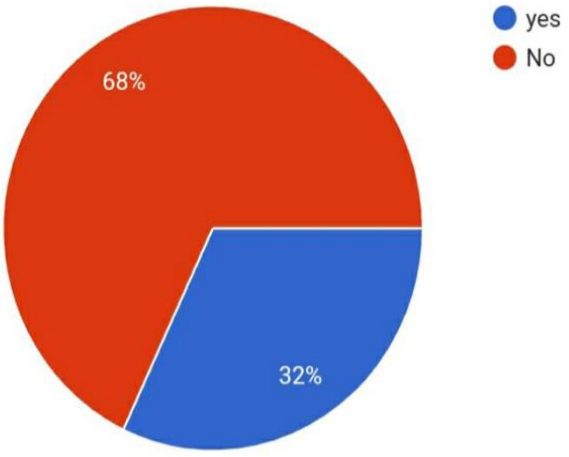

obesity

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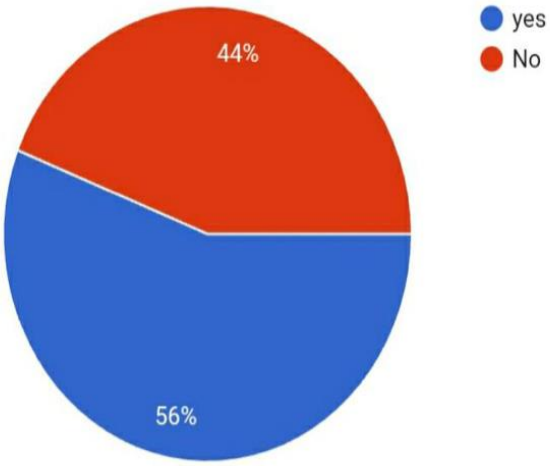
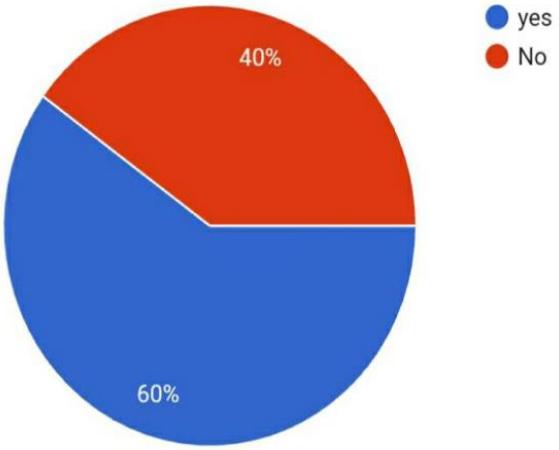


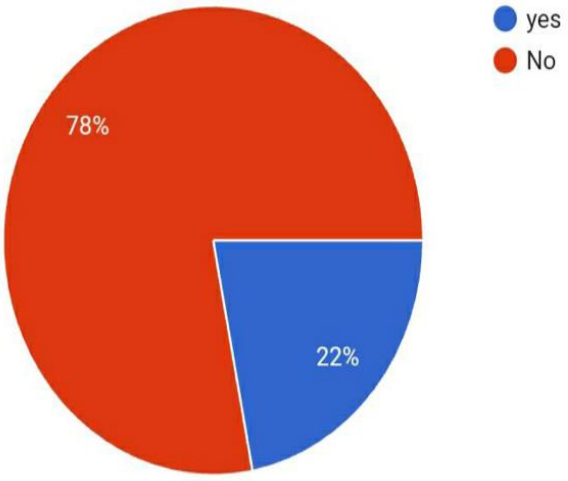
Hx of Covid-19

50 ردًا



Renal disease

50 ردًا



Smoking

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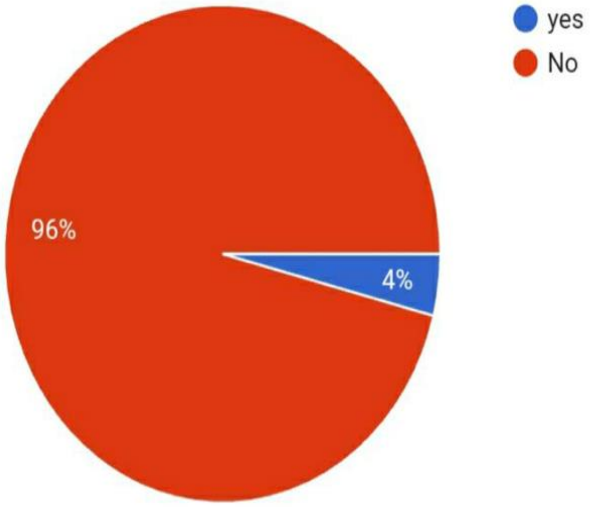
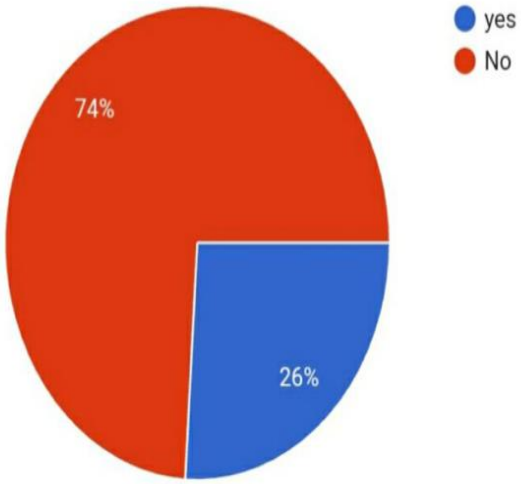
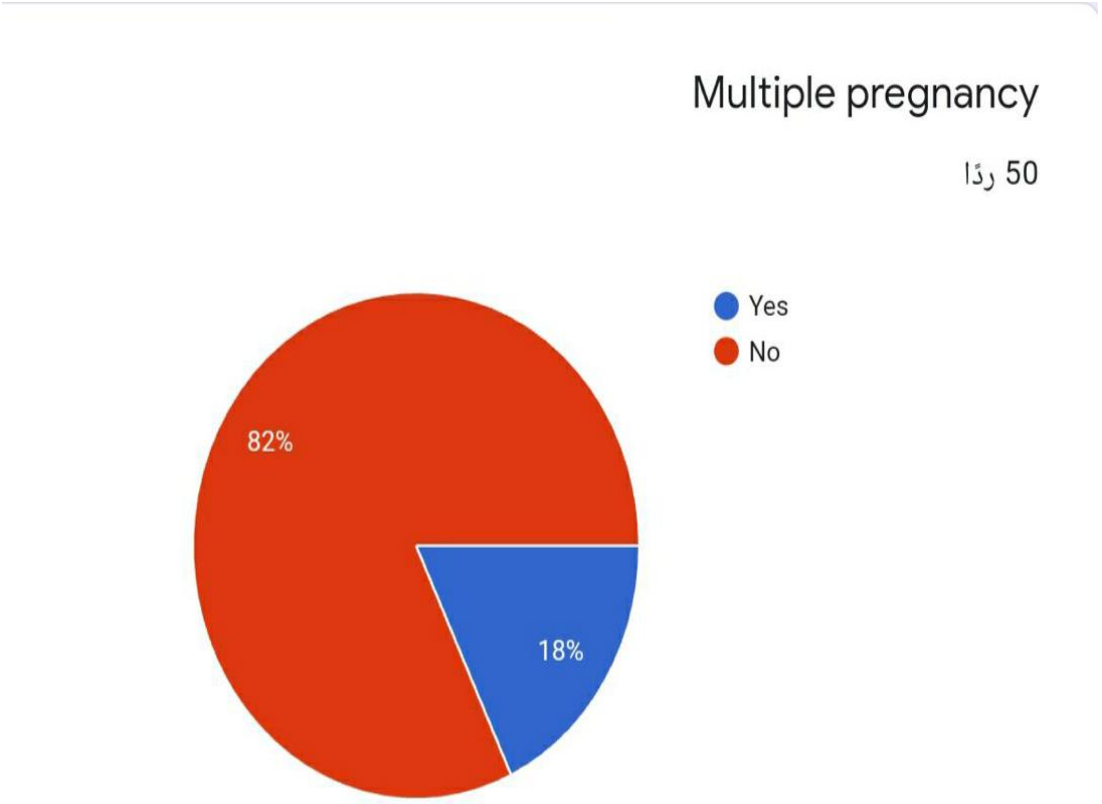
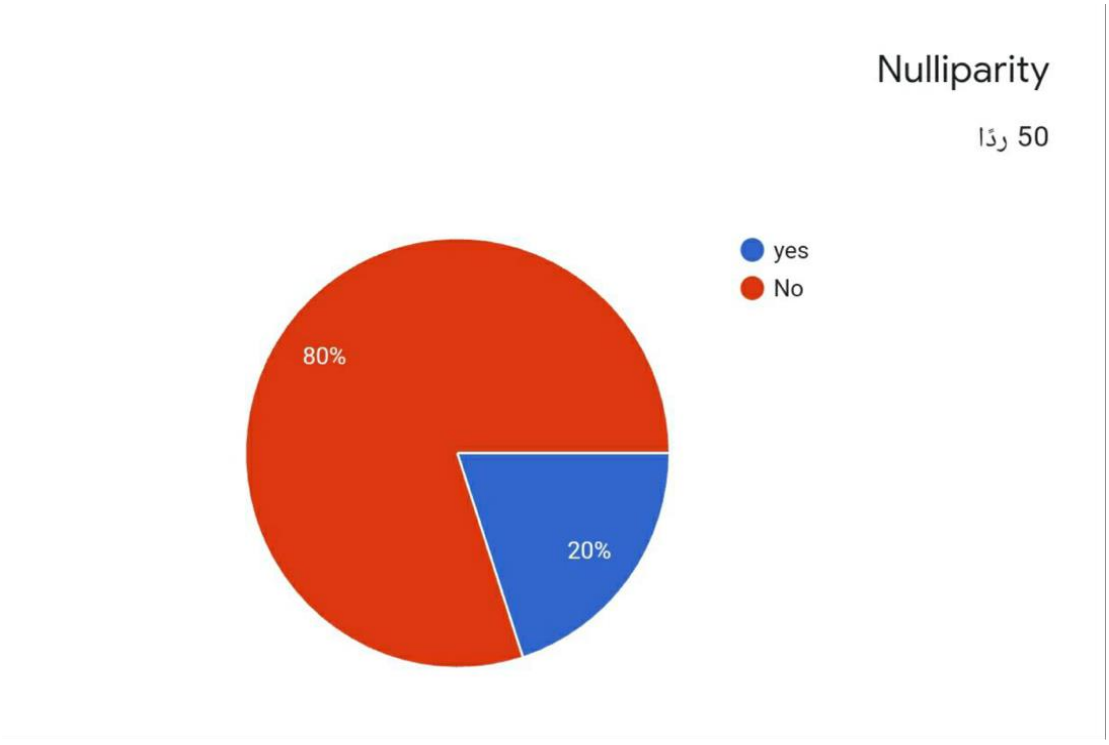


Bad obstetric history like recurrent abortion or preterm labor

50 ردًا




Multiple pregnancy
ردًا 50
Yes
No
82%
18%


Nulliparity
ردًا 50
yes
No
80%
20%

conclusion

The rate of pre-eclampsia has been increased worldwide because of various risk factors that affect maternal and fetal health in general

So the patient with pre-eclampsia should have frequent screening for her blood pressure, proteinuria,renal function test ,and monitoring the fetus for any distress or complications and should have frequent counseling To her doctor for more advices because complications like eclampsia,heart failure, pulmonary oedema, cerebral haemorrhage,renal failure and DIC can occur.

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Nulliparity	Smoking	Bad obstet	Multiple pre	previous h	Hx of Covi	Renal dise	obesity	p	hypertensi	DM	age
No	No	No	Yes	yes	No	No	No	4	yes	yes	35-45
No	No	No	No	No	No	No	No	2	yes	No	18-35
No	No	No	No	No	yes	No	No	6	No	No	18-35
No	yes	No	No	No	No	No	yes	4	No	No	35-45
No	No	No	No	yes	yes	No	yes	3	No	yes	18-35
yes	No	No	No	No	yes	yes	yes	0	yes	No	18-35
yes	No	yes	No	No	yes	No	No	0	yes	No	15-18
No	No	No	No	No	yes	yes	No	1	No	yes	18-35
No	No	yes	No	No	yes	No	yes	4	yes	No	18-35
No	No	No	Yes	yes	yes	No	No	3	yes	yes	35-45
No	No	yes	No	yes	No	No	yes	1	No	yes	18-35
yes	No	yes	No	No	yes	yes	No	0	yes	yes	18-35
No	No	No	No	No	yes	yes	No	1	No	yes	18-35
yes	No	No	No	No	No	No	yes	0	yes	No	18-35
No	No	No	No	yes	yes	No	yes	1	No	yes	18-35
No	No	No	Yes	yes	yes	No	No	3	yes	yes	35-45
No	No	No	No	No	yes	yes	yes	5	yes	No	18-35
yes	No	No	No	No	No	No	No	0	yes	No	15-18
No	No	No	No	No	yes	No	yes	2	yes	No	18-35
No	No	yes	No	yes	No	No	yes	1	No	yes	18-35
No	No	No	No	No	yes	yes	No	1	No	yes	18-35
No	No	No	No	yes	yes	No	yes	3	yes	yes	18-35
No	No	No	No	No	No	No	No	1	yes	yes	18-35
yes	No	yes	No	No	yes	yes	No	0	yes	yes	18-35
No	No	yes	No	No	yes	No	yes	1	No	yes	35-45
No	No	No	No	No	No	No	No	1	yes	yes	18-35
yes	No	yes	No	No	yes	yes	No	0	yes	yes	18-35
yes	No	No	No	No	No	No	yes	0	yes	No	18-35
No	No	No	Yes	yes	No	No	No	4	yes	yes	35-45
No	No	No	No	No	No	No	No	2	yes	No	18-35
No	No	No	No	No	yes	No	No	6	No	No	18-35
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yes	No	No	No	No	No	No	No	0	yes	No	15-18
No	yes	No	No	No	No	No	yes	4	No	No	35-45
yes	No	No	No	No	yes	yes	yes	0	yes	No	18-35
No	No	No	No	yes	No	No	yes	2	yes	yes	18-35
No	No	yes	No	yes	No	yes	yes	12	yes	No	35-45
No	No	yes	No	yes	No	No	yes	11	yes	No	18-35
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No	No	No	No	No	yes	yes	yes	5	yes	No	18-35
No	No	No	No	No	yes	No	yes	2	yes	No	18-35