

Diagnostic Accuracy Of Protein Creatinine Ratio In Predicting Pre-eclampsia, Taking 24 Hours Urinary Protein As Gold Standard

❑ INTRODUCTION

- Preeclampsia, a common cause of maternal morbidity, occurs in up to 2% to 8% of all pregnancies¹. It is a multisystem endothelial disease that leads to glomeruloendotheliosis, and in severe cases it may lead to renal impairment and failure. The diagnosis of pre-eclampsia (International Society for the Study of Hypertension in Pregnancy) is determined by the presence of elevated blood pressure combined with significant proteinuria (≥ 0.3 g/24 hours) after the 20th week of gestation in a previously normotensive, non-proteinuric patient
- The gold standard for diagnosis of significant proteinuria is 24-hour urine collection, but 24-hour urine collection is inconvenient for women, costly, and may be inaccurate due to incomplete collection
- An alternative method for quantitative evaluation of proteinuria is the measurement of protein-creatinine (P/C) ratio in a spot urine sample, which avoids the influence of variations in urinary solute concentration and provides a more convenient and rapid method to assess protein excretion

Diagnostic accuracy of protein creatinine ratio in predicting pre-eclampsia, taking 24 hours urinary protein as gold standard.

	Positive result on 24 hours urinary protein	Negative result 24 hours urinary protein	P-value
Positive result on P/C Ratio	60 (TP)*	11 (FP)***	0.0001
Negative result on P/C Ratio	09 (FN)**	76 (TN)****	

STUDY DESIGN:

Cross-sectional validation study.

SAMPLE SELECTION:

a. Inclusion Criteria:

- All pregnant women with singleton pregnancy (assessed on USG) with suspected pre-eclampsia.
- Age 18-40 years.
- Gestational age >20 weeks (assessed on LMP).
- Both primiparous and multiparous.

b. Exclusion Criteria:

- Patients with urinary tract infection and renal disease
- Gestational diabetes
- Fulminant pre-eclampsia (women with sign and symptoms of imminent eclampsia)
- Patients with h/o chronic hypertension.
- Patients with chronic liver disease (assessed on history and s/bilirubin >2 mg/dl).
- Women with renal disease (assessed on history and s/creatinine >1.5 mg/dl).

DATA COLLECTION PROCEDURE:

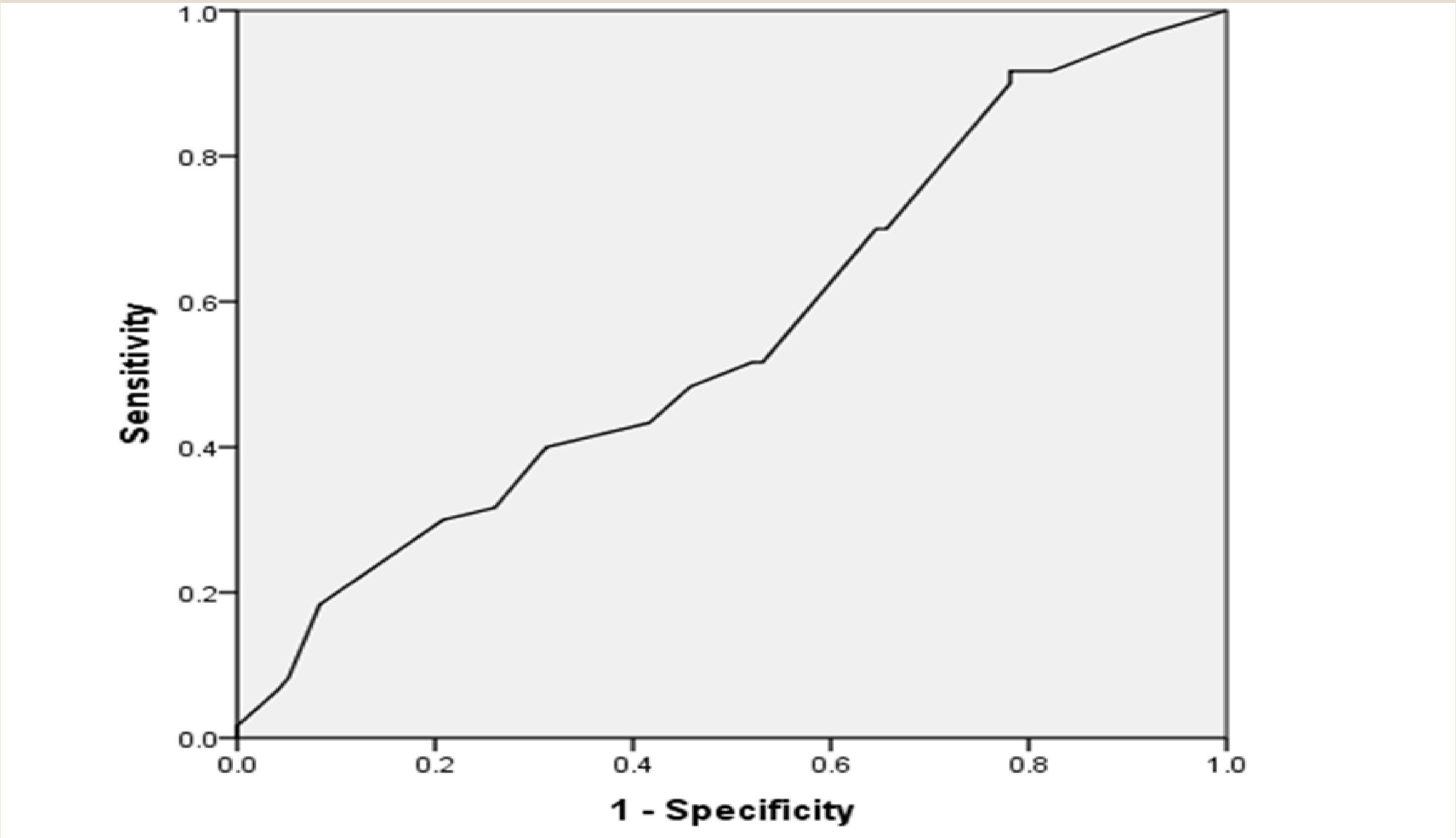
All women, irrespective of the severity of the disease, were asked to provide a 24-hour urine collection for determination of proteinuria. All women were advised to pass urine at 6:00 am and collect all the urine subsequently till 6:00 am the next morning (24-hour period). The adequacy of urine collection was determined by creatinine excretion.

Urine sample for protein-creatinine ratio was collected the next morning after the 24-hour collection was over. Urinary protein quantitation was done by Biuret method, and urinary creatinine estimation was done by modified Jaffe's method.

❑ CONCLUSION

- This study concluded that diagnostic accuracy of random urine protein creatinine ratio in predicting preeclampsia is very high. So, we recommend that random urine protein ratio creatinine for the diagnosis of preeclampsia should be used routinely in our general practice which is beneficial on the account of cost as well as time saving.

ROC curve



Stratification of diagnostic accuracy with respect to h/o pre-eclampsia

	Positive result on 24 hours urinary protein	Negative result 24 hours urinary protein	P-value
Positive result on P/C Ratio	10 (TP)	02 (FP)	0.001
Negative result on P/C Ratio	00 (FN)	16 (TN)	