Accuracy of urine dipsticks, 2-h and 12-h urine collections for protein measurement as compared with the 24-h collection

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Abstract:

The presence of protein in hypertensive disorders of pregnancy is a sign of a worsening condition and thus requires early intervention to prevent adverse consequences. Accurate assessment of proteinuria in patients with pre-eclampsia will ensure prompt and timely intervention to reduce or prevent the maternal and perinatal morbidity and mortality associated with pre-eclampsia. This study compared the reliability and validity of the more rapid diagnostic tests, such as the dipstick, 2-h and 12-h protein estimations with the 24-h protein. The result of the dipstick, 2-h and 12-h urine were also compared with the 24-h urine results using confidence interval (CI) for proportions with a value of $p < 0.05$ considered significant (CI 95%). When compared with the gold standard, there was a high degree of correlation between the 2-h ($p = 0.244$, CI 95%) and 12-h ($p < 0.0255$, CI 95%) with the 24-h sample in the quantification of proteinuria in women with pre-eclampsia.

The most sensitive and specific test was the 12-h protein estimation, (89%) and (93%), respectively. The least sensitive and specific test was the dipstick test; (81%) and (47%), respectively. The 12-h protein estimation test had the highest positive predictive value (84%). The 12-h protein test also had the lowest false positive rate (12%) and false negative rates (11%), respectively. The most accurate test was the 12-h protein estimation (88%). The dipstick tests were however much cheaper and the results were faster. It is recommended that routine rapid quantisation of proteinuria in patients with pre-eclampsia be done using either the 2-h or 12-h urine sample.