BACKGROUND:
Right heart catheterization (RHC) is gold-standard for the diagnosis of pulmonary hypertension (PH) but at the cost of procedure-related complications. We sought to determine the comparative accuracy of non-invasive imaging techniques [(computed tomography (CT), magnetic resonance imaging (MRI), and echocardiography (Echo)] versus RHC.

METHODS:
Electronic databases were searched for relevant articles. Raw data were pooled using a bivariate model to calculate the diagnostic accuracy and to estimate Hierarchical Summary Receiver Operating Characteristic (HSROC) on Stata 13.

RESULTS:
A total of 51 studies with a total patient population of 3947 were selected. The pooled sensitivity and specificity of MRI for diagnosing PH was 0.92 (95% confidence interval (CI) 0.88–0.96) and 0.86 (95% CI, 0.77–0.95), respectively. The net sensitivities for CT scan and TTE were 0.79 (95% CI 0.72–0.89) and 0.85 (95% CI 0.83–0.91), respectively. The overall specificity was 0.82 (0.76–0.92) for the CT scan and 0.71 (95% CI 0.61–0.84) for TTE. The diagnostic odds ratio (DOR) for MRI was 124 (95% CI 36–433) compared to 30 (95% CI 11–78) and 24 (95% 11–38) for CT scan and TTE, respectively. Chi-squared (x^2) test showed moderate heterogeneity on the test for equality of sensitivities and specificities.

CONCLUSION:
MRI has the highest sensitivity and specificity compared to CT and Echo. MRI can potentially serve as a safer alternative to RHC for the diagnosis of PH.