Smartphone Application Self Checklist For Detecting Atrial Fibrillation In General Population

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Introduction: The asymptomatic nature and frequency of AF lead to suboptimal early detection. We developed a self checklist based on smartphone application for AF screening. However, there has been limited validation of mobile phone compared to 12-lead electrocardiograms (ECG).

Methods: A total of 453 subjects (≥50 Yo) were consecutively collected from cardiovascular inpatient ward room of Saiful Anwar General hospital and Highrisk patient from Indonesian Cardiology Foundation from January-March 2019. Each participant simultaneously tested with 2 methods of screening: a 60-second radial pulse-check with self checklist based on smart phone and 12-lead electrocardiogram (AF diagnosed by cardiologist). Self checklists were Irregular of pulse palpation, Hypertension, Old more than 60 yo, Palpitation, and Exercise intolerance. Each component of self checklist had a clinical scoring. The score more equal than 7 was a predictor of atrial fibrillation.

Result: AF was detected in 84 of 453 patients (18.5%). The mean age of this subjects were 53.8±10.9 Yo, 75.5% subject’s were female. Sensitivity of smartphone self checklist was 82.1% (95% confidence interval [CI], 74%-84%). It's specificity was 93% (95% CI, 86%-94%). The positive likelihood ratio was 11.71, while the negative likelihood ratio was 0.19. The positive predictive value was 72.63% (95% CI 71.61%-74.98%), the negative predictive value was 95.8% (95% CI 93.50%-97.90%).

Conclusion: In this study, we suggest that smartphone has a high sensitivity and specificity for atrial fibrillation. It is therefore useful for ruling out atrial fibrillation. It may also be a useful screen to apply opportunistically for previously undetected atrial fibrillation.