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 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 subject's (≥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 Irreguar of pulse palpation, Hypertension, Old more than 60 yo, Palpitation, and Excercise 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.