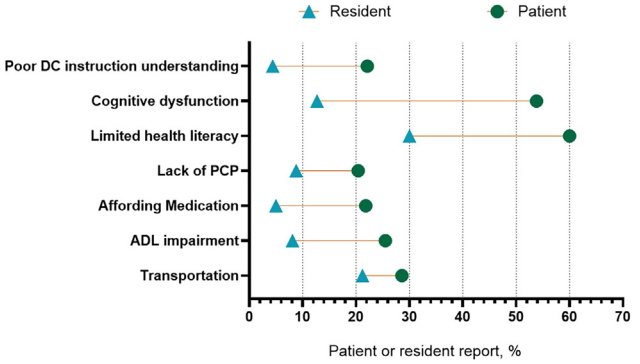
brief written survey immediately after the patient was discharged. The primary outcome was physician detection of these patient reported barriers, reported as sensitivity (patients reporting barriers that are identified by physicians / all patients reporting the specific barrier). McNemar's test and Cohen's kappa statistics were utilized to evaluate patient-physician agreement.

Results: The sample included 206 total patients [10 (5%) excluded for missing data] and 179 surveys completed by 36 different PGY 1-3 residents. Median patient age was 59 years; 48% female, and 87% black. Across all domains, patients reported barriers at a higher rate than physicians, including transportation difficulties (29.7% vs 22.2%), need for assistance with ADLs (26.1% vs 8.1%), difficulty affording medications (23.2% vs 5.6%), lack of a primary care physician (18.2% vs 8.7%), limited health literacy (60.4% vs 27.2%), cognitive dysfunction (46.5% of patients >=65 vs 12.7%), and poor understanding of discharge instructions (32.9% vs 3.0%). Sensitivity of resident identification was low across all barriers, with the highest for transportation difficulties (31.7%) and lowest for medication cost concerns (3.1%). Using McNamara's test, there was significant disagreement between patient reports and resident identification. Residents consistently under-identified barriers to ED discharge across all domains, except for transportation difficulty.

Conclusions: Emergency medicine residents often underrecognize critical social and functional barriers that impact patient care after ED discharge. Poor agreement between patient-reported and physician-identified challenges, particularly in health literacy, the presence of a primary care physician, and financial constraints, suggesting a need for enhanced training, systematic screening, and interdisciplinary collaboration. Addressing these gaps is essential to improving discharge safety and reducing preventable adverse outcomes for vulnerable patients.



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125 Contactless Assessment of Vital Signs Using Remote Photoplethysmography in the Emergency Department

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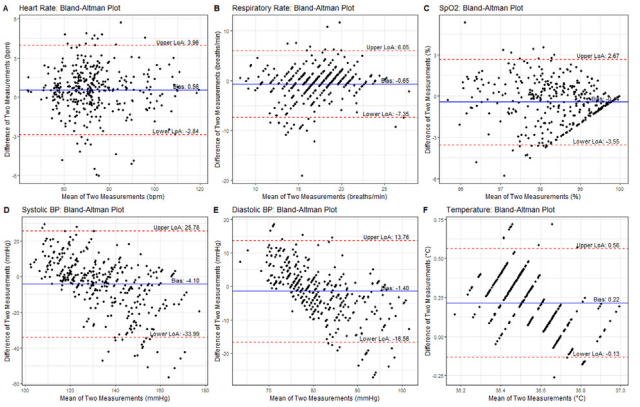
Study Objectives: Automating vital signs acquisition can increase the operational efficiency of the emergency department (ED). Remote photoplethysmography (rPPG) enables estimation of vital signs by using artificial intelligence (AI) algorithms to analyse the subtle changes of light reflected from the skin in facial videos captured by smartphone cameras. However, its accuracy in the ED settings remains understudied. Furthermore, an all-in-one contactless vital sign measurement platform that covers heart rate (HR), respiratory rate (RR), SpO_2, blood pressure (BP), and body temperature is currently lacking. The aim of this study was to evaluate: (1) the accuracy of a proprietary AI-based rPPG algorithm in contactless estimation of the HR, RR, SpO_2, BP, and body temperature based on facial videos captured by smartphones; and (2) patient comfort and satisfaction with different measurement methods.

Methods: A prospective observational cross-sectional study was conducted in a university-affiliated ED of a tertiary hospital in Hong Kong (NCT06536647). A convenience sample of clinically stable and ambulatory adult patients of HK ED triage category 4 (Semi-urgent) and 5 (Non-urgent) were recruited after obtaining informed written consent. Vital signs were measured manually by a research nurse using standard hospital equipment as reference standards. Facial videos of 25 seconds in length were recorded simultaneously using an iPhone 14 and analyzed with a proprietary convolutional neural network-based AI algorithm for contactless estimation of vital signs. The accuracy of contactless estimations was evaluated using Pearson correlation coefficient (r), root mean square error (RMSE), and Bland-Altman plots. Patient satisfaction and comfort, assessed using a 100 mm visual analogue scale (VAS), were compared between the two measurement methods using the Wilcoxon signed-rank test.

Results: From October to November 2024, 360 videos obtained from 126 patients (79 women and 47 men; mean age 54 years) with sufficient signal quality were analyzed. Contactless HR estimations had a high level of agreement with manual measurements (r 0.992, $p < 0.05$; RMSE 1.82 bpm). The respective values for other vital signs were: RR (r 0.589, $p < 0.05$; RMSE 3.48 breaths/min), SpO_2 ($r > 0.173$, $p < 0.05$; RMSE 1.65%), systolic BP (r 0.710, $p < 0.05$; RMSE 15.77 mmHg), diastolic BP (r 0.677, $p < 0.05$; RMSE 7.85 mmHg), and temperature (r 0.555, $p < 0.05$; RMSE 0.28°C). The Bland-Altman plots on the agreement between the contactless and manual measurements for individual vital signs are shown in the **Figure**. Patient comfort (median rPPG comfort VAS 100 mm vs manual comfort VAS 85.6 mm, $p < 0.001$) and satisfaction ratings (median rPPG satisfaction VAS 95.7 mm vs manual VAS 90.3 mm, $p < 0.001$) were significantly higher with contactless measurements compared to manual measurements.

Conclusions: AI-based rPPG technology is highly accurate in HR estimation in the ED for stable and ambulatory adult patients. More work is needed to train and improve the AI algorithm for other vital signs. This proof-of-concept project demonstrates the great potential of AI-based rPPG in automating vital sign acquisition in clinical settings, which may save manpower and reduce the risk of infection in future pandemics.



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