

ANALISIS KESESUAIAN PENGUKURAN *HEART RATE* (HR) DAN *SPO₂* PADA
SMARTWATCH HUAWEI DIBANDINGKAN *BEDSIDE MONITOR* SELAMA
INTRAOPERATIF PASIEN ONKOLOGI

M Raffi Ardian¹, Umi Istianah², Maryana²
Jurusan Keperawatan Poltekkes Kemenkes Yogyakarta
Jl. Tatabumi No. 3 Banyuraden, Gamping, Sleman
Email: dexketopropen@gmail.com

ABSTRAK

Latar Belakang: Pemantauan *Heart Rate* (HR) dan saturasi oksigen (*SpO₂*) secara kontinu selama anestesi umum merupakan bagian penting dalam menjaga keselamatan pasien. Perkembangan teknologi *wearable* berupa *Smartwatch* berpotensi dimanfaatkan sebagai alat pemantauan tambahan, namun tingkat kesesuaian hasil pengukurannya dengan *Bedside Monitor* pada pasien onkologi masih perlu dievaluasi.

Tujuan: Mengetahui tingkat kesesuaian hasil pengukuran *Heart Rate* (HR) dan saturasi oksigen (*SpO₂*) menggunakan *Smartwatch Huawei* dan *Bedside Monitor* pada pasien onkologi yang menjalani anestesi umum.

Metode: Penelitian ini merupakan penelitian observasional analitik dengan desain *method comparison (agreement study)* menggunakan analisis Bland–Altman. Sampel penelitian berjumlah 40 responden yang dipilih menggunakan teknik *consecutive sampling*. Pengukuran dilakukan secara simultan menggunakan *Smartwatch Huawei* dan *Bedside Monitor* selama fase *maintenance* anestesi sehingga diperoleh 206 pasangan data. Analisis dilakukan menggunakan metode Bland–Altman dengan menghitung nilai *bias (mean difference)* dan *limits of agreement*.

Hasil: Rerata pengukuran *Heart Rate* (HR) menggunakan *Smartwatch Huawei* sebesar 76,33 bpm dan *Bedside Monitor* sebesar 76,37 bpm, dengan selisih rerata 0,04 bpm. Rerata pengukuran *SpO₂* menggunakan *Smartwatch Huawei* sebesar 98,14% dan *Bedside Monitor* sebesar 98,72%, dengan selisih rerata 0,58%. Analisis Bland–Altman menunjukkan nilai *bias* sebesar –0,05 bpm dengan *limits of agreement* –2,10 hingga 2,00 bpm pada parameter HR serta *bias* sebesar –0,59% dengan *limits of agreement* –1,94% hingga 0,77% pada parameter *SpO₂*.

Kesimpulan: *Smartwatch Huawei* memiliki tingkat kesesuaian (*agreement*) yang baik terhadap *Bedside Monitor* dalam pengukuran *Heart Rate* (HR) dan saturasi oksigen (*SpO₂*) pada pasien onkologi yang menjalani anestesi umum. *Smartwatch Huawei* berpotensi digunakan sebagai alat pemantauan tambahan (*adjunct monitoring device*), namun tidak dapat menggantikan *Bedside Monitor* sebagai standar pemantauan utama selama tindakan anestesi.

Kata Kunci: *Smartwatch Huawei*, *Heart Rate*, saturasi oksigen, *Bedside Monitor*, Bland–Altman, anestesi umum.

¹Mahasiswa Keperawatan Poltekkes Kemenkes Yogyakarta

²Dosen Keperawatan Poltekkes Kemenkes Yogyakarta

AGREEMENT ANALYSIS OF HEART RATE (HR) AND OXYGEN SATURATION (SpO₂) MEASUREMENTS USING A HUAWEI SMARTWATCH COMPARED WITH A BEDSIDE MONITOR DURING INTRAOPERATIVE MONITORING IN ONCOLOGY PATIENTS

M Raffi Ardian¹, Umi Istianah², Maryana²

Department of Nursing, Health Polytechnic of the Ministry of Health Yogyakarta

Jl. Tatabumi No. 3 Banyuraden, Gamping, Sleman

Email: dexketopropen@gmail.com

ABSTRACT

Background: Continuous monitoring of Heart Rate (HR) and oxygen saturation (SpO₂) during general anesthesia is essential to ensure patient safety. The advancement of wearable technology, particularly Smartwatches, offers the potential to serve as an adjunct monitoring device. However, the agreement between Smartwatch measurements and Bedside Monitors in oncology patients undergoing general anesthesia has not been fully established.

Objective: To determine the agreement between Heart Rate (HR) and oxygen saturation (SpO₂) measurements obtained using a Huawei Smartwatch and a Bedside Monitor in oncology patients undergoing general anesthesia.

Methods: This study employed an analytical observational design with a method comparison (agreement study) approach using Bland–Altman analysis. A total of 40 respondents were selected using a consecutive sampling technique. Simultaneous measurements were performed using a Huawei Smartwatch and a Bedside Monitor during the maintenance phase of anesthesia, resulting in 206 paired measurements. Data were analyzed using the Bland–Altman method by calculating the mean difference (bias) and limits of agreement (LoA).

Results: The mean Heart Rate (HR) measured using the Huawei Smartwatch was 76.33 bpm, while the Bedside Monitor showed a mean value of 76.37 bpm, with a mean difference of 0.04 bpm. The mean oxygen saturation (SpO₂) measured using the Huawei Smartwatch was 98.14%, compared with 98.72% obtained from the Bedside Monitor, resulting in a mean difference of 0.58%. Bland–Altman analysis demonstrated a bias of –0.05 bpm with limits of agreement ranging from –2.10 to 2.00 bpm for HR measurements, and a bias of –0.59% with limits of agreement ranging from –1.94% to 0.77% for SpO₂ measurements.

Conclusion: The Huawei Smartwatch demonstrated good agreement with the Bedside Monitor for measuring Heart Rate (HR) and oxygen saturation (SpO₂) in oncology patients undergoing general anesthesia. Therefore, the Huawei Smartwatch has the potential to be used as an adjunct monitoring device; however, it cannot replace the Bedside Monitor as the primary standard for intraoperative patient monitoring.

Keywords: Huawei Smartwatch, Heart Rate, Oxygen Saturation, Bedside Monitor, Bland–Altman, General Anesthesia.

¹Undergraduate Nursing Student, Department of Nursing, Health Polytechnic of the Ministry of Health Yogyakarta

²Lecturer, Department of Nursing, Health Polytechnic of the Ministry of Health Yogyakarta