

Pengaruh Intervensi Digital Terhadap Tekanan Darah Pasien Hipertensi: Meta Analisis

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Abstrak

Hipertensi merupakan penyebab utama morbiditas dan mortalitas global. Teknologi digital kini semakin banyak digunakan dalam pengelolaannya. Namun, efektivitas intervensi digital dibanding perawatan standar masih bervariasi. Penelitian ini bertujuan mengevaluasi efektivitas intervensi digital dalam menurunkan tekanan darah pada pasien hipertensi melalui pendekatan meta-analisis. Meta-analisis dilakukan terhadap 9 studi RCT yang membandingkan intervensi digital dengan perawatan standar. Pencarian jurnal dilakukan melalui PubMed dan Google Scholar dengan kata kunci ("hypertension" AND "digital health intervention" AND "standard care" AND "blood pressure control"). Ukuran efek yang digunakan adalah Standardized Mean Difference (SMD) dan dianalisis menggunakan model efek acak. Hasil dari studi di Australia, Jerman, Inggris Raya, Ghana, Nigeria, Amerika, dan China menunjukkan intervensi digital efektif menurunkan tekanan darah sistolik secara signifikan dibandingkan perawatan standar (SMD = -0.37; 95% CI: -0.57 hingga -0.17; $p < 0.001$). Efek ini termasuk kategori kecil hingga sedang. *Funnel plot* tidak menunjukkan bias publikasi, namun tingkat heterogenitas antar studi cukup tinggi ($I^2 = 82\%$). Intervensi digital terbukti efektif dalam menurunkan tekanan darah pada pasien hipertensi dan berpotensi menjadi bagian penting dari strategi pengendalian hipertensi.

Kata Kunci: Hipertensi; Tekanan Darah; Intervensi Digital.

Abstract

Hypertension is a leading cause of global morbidity and mortality. In recent years, digital technology has been increasingly utilized in its management. However, the effectiveness of digital interventions compared to standard care remains variable. This study aims to evaluate the effectiveness of digital interventions in lowering blood pressure among hypertensive patients through a meta-analysis approach. The meta-analysis included 9 randomized controlled trials (RCTs) comparing digital interventions with standard care. Journal searches were conducted using PubMed and Google Scholar with the keywords ("hypertension" AND "digital health intervention" AND "standard care" AND "blood pressure control"). The effect size used was the Standardized Mean Difference (SMD), analyzed using a random-effects model. Results from studies conducted in Australia, Germany, the United Kingdom, Ghana, Nigeria, the United States, and China showed that digital interventions significantly reduced systolic blood pressure compared to standard care (SMD = -0.37; 95% CI: -0.57 to -0.17; $p < 0.001$). This effect size is considered small to moderate. The funnel plot showed no indication of publication bias. However, a high level of heterogeneity was observed across studies ($I^2 = 82\%$). Digital interventions are effective in reducing blood pressure among hypertensive patients. These findings support the integration of digital technology as part of hypertension control strategies.

Keywords: Hypertension; Blood Pressure; Digital Intervention.