

Use of Smartphone Applications to Augment Colonoscopy Preparation Instructions and Effect on Quality of Colonoscopy Preparation and Adenoma Detection Rate – A Systematic Review and Meta-Analysis

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Introduction: Adequate preparation of the large bowel is essential for a successful colonoscopy. Patients should be provided with clear instructions prior to the procedure, which can be achieved by verbal, written, and more recently, digital tools. A few studies have evaluated the role of smartphone applications to augment colonoscopy preparation instructions.

Methods: We conducted a systematic review and meta-analysis. We performed a comprehensive search in the databases of PubMed/MEDLINE, Embase, and the Cochrane from inception through October 11, 2021. The primary outcome was adequate bowel preparation, defined as per Boston bowel preparation scale (BBPS). The secondary outcome was adenoma detection rate (ADR), which was defined as patients with ≥ 1 adenoma detected on colonoscopy. The random-effects model was used. A p value < 0.05 was considered statistically significant. Heterogeneity was assessed using the Higgins I² index.

Results: Nine randomized controlled trials involving 2933 patients were included in the meta-analysis. Eight studies reported adequate bowel preparation, which was significantly higher in patients who used smartphone applications compared with controls (RR 1.17, 95% CI 1.06 – 1.30, $p < 0.003$, I² = 90%). Five studies reported ADR, which was also significantly higher in patients who used smartphone applications compared with controls (RR 1.37, 95% CI 1.19 – 1.58, $p < 0.0001$, I² = 0%).

Conclusion: Our meta-analysis demonstrated that the use of smartphone applications to augment colonoscopy preparation instructions improves the quality of colonoscopy preparation and adenoma detection rate. Further randomized controlled trials are needed to confirm our findings.