

Effect of abdominal vibration combined with walking exercise program on bowel preparation in older patients with constipation: A single-blind randomized clinical trial

Yuan-Yuan Zhang^{1,2}, Ramoo Vimala¹, Ping Lei Chui¹, Ida Normiha Hilmi³

¹Department of Nursing Science, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia, ²School of Medical and Health Engineering, Changzhou University, Changzhou, Jiangsu, China, ³Department of Medicine, Faculty of Medicine, Universiti Malaya, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: High-quality bowel preparation is an important prerequisite for a successful colonoscopy. However, older patients with constipation are at high risk for inadequate bowel preparation. This study aimed to evaluate the effectiveness of an abdominal vibration combined with walking exercise (AVCWE) program compared to walking exercise (WE) and routine bowel preparation regimens for bowel preparation in older patients with constipation. **Design:** This prospective, single-blind, three-arm randomized controlled trial involved 271 older patients with constipation scheduled for colonoscopy. These patients were randomly assigned to three groups: AVCWE group (n = 90), WE group (n = 90), and control group (n = 91). During the period of laxative ingestion, patients assigned to the AVCWE group were asked to walk independently for at least 5,500 steps and received two cycles of moderate-intensity abdominal vibration. Patients in the WE group were required to walk independently for at least 5,500 steps, whereas patients in the control group only received a conventional preparation regimen. The primary outcome was the quality of bowel preparation. The secondary outcomes including adenoma detection rate, cecal intubation rate, cecal intubation time, adverse events, satisfaction, and willingness to repeat preparation. **Results:** The total BBPS score in the AVCWE group (6.99 ± 0.93) was significantly higher compared to both the WE group (6.58 ± 1.08) and the control group (5.96 ± 1.14) ($p < 0.001$). Similarly, compared with other groups, the AVCWE group also had significant advantages in improving adenoma detection rate ($p = 0.003$), satisfaction score ($p < 0.001$) and reducing the incidence of bloating ($p = 0.016$). **Conclusion:** Given the significant benefits of the AVCWE program, healthcare providers are strongly encouraged to adopt this strategy widely to enhance the detection of colorectal tumors in this “difficult-to-prepare” population.