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ORIGINAL RESEARCH

Role of Blended Learning in Enhancing Self-Efficacy and Medication Adherence in Cardiac Rehabilitation for Individuals Undergoing Coronary Artery Bypass Surgery: A Randomized Control Trial

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HIGHLIGHTS

- This is one of the first cardiac rehabilitation (CR) trials via mobile application in middle-income countries.
- The CR-based blended learning resulted in higher self-efficacy, and increased medication adherence.
- The knowledge attitude and practice model is effectively integrated into CR.

Abstract

Objective

This study aimed to evaluate the effectiveness of a traditional cardiac rehabilitation (CR) program compared with an augmented program that integrates traditional CR with face-to-face training sessions and remote assistance facilitated through an application based on the knowledge, attitudes, and practices model for individuals undergoing coronary artery bypass graft (CABG) surgery.

Design

A randomized controlled trial with a blinded outcome assessment was used (IRCT20230902059333N1).

Setting

A major heart center in a middle-income country.

Participants

Of the 80 patients referred to the CR program during the study, 70 patients (N=70) were successfully enrolled, reaching the target sample size. Participants were randomly assigned in a 1:1 ratio, resulting in 35 patients per group.

Interventions

In addition to traditional CR, patients participated in 4 in-person training sessions throughout the rehabilitation process and received 3 months of follow-up support via the app after completing the program.

Main Outcome Measures

Medication adherence and self-efficacy were assessed before the initiation of CR, immediately after its completion, and 3 months postcompletion.

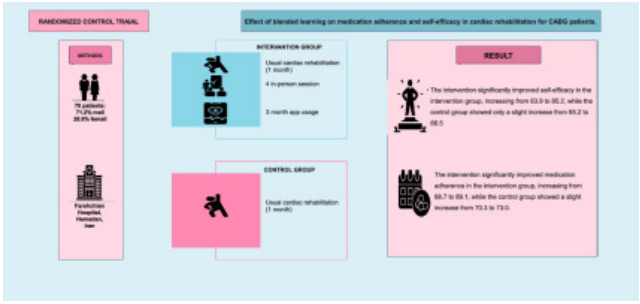
Results

There were no significant demographic differences between the intervention and control groups. However, throughout the study, significant differences emerged in favor of the 3 groups concerning medication adherence and self-efficacy ($P<.001$). The intervention group showed substantial and continuous improvements in medication adherence and self-efficacy scores, which were evident from the 1st month and persisted over time.

Conclusions

Implementing a blended learning approach in CR has demonstrated benefits in medication adherence and self-efficacy, highlighting the necessity for further research and clinical application.

Garaphical Abstract



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Section snippets

Trial design

This randomized controlled trial at the heart center involved voluntary participants who completed informed consent. The trial was approved by the ethics committee (ethical approval IR.UMSHA.REC.1402.551) and registered with the Registry of Clinical Trials. Because of the benefits of CR, a no-treatment group was deemed unethical. Participants were randomized into either a traditional CR group (control) or a blended-learning–based CR group following the KAP model (intervention). The …

Results

Figure 1 presents an illustration of the research flow. A total of 87.5% of the selected patients participated in the study after being randomly assigned to the intervention and control groups. Effective randomization is demonstrated in table 1, which indicates no significant differences in the demographic characteristics between the 2 groups.

The assessments were conducted at three distinct time points: before the initiation of cardiac rehabilitation (CR), after completion of 12 sessions of …

Discussion

This randomized controlled trial confirmed the effectiveness of the blended learning program in a CR setting. The educational strategy enhanced self-efficacy and medication adherence in cardiac patients. The intervention group showed significantly greater medication adherence and self-efficacy compared with the control group after 12 traditional rehabilitation sessions, 4 in-person education sessions, and 3 months of support through a CR app. Using the application for ≤3 months after the …

Conclusions

The study found that implementing a blended learning model in CR significantly improved patients' self-efficacy and medication adherence. Patients attended 4 in-person training sessions and received 3 months of follow-up education via an app, which included daily reminder messages and facilitated communication with researchers. This approach fostered a robust support system, enhancing self-efficacy and medication adherence. The positive results suggest that cost-effective strategies could scale …

Supplier

a. SPSS, version 16.0; IBM. …

Acknowledgment

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Disclosures: none.

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