Abstract: 211

The effectiveness of an avatar-based education application on knowledge and response to heart attack symptoms - A pragmatic randomised trial in patients with acute coronary syndrome

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Background: Delay in seeking medical treatment is associated with poor understanding and difficulty in recognition of heart attack symptoms and it is associated with preventable death and complications. Digital health patient education interventions are needed to educate and support patient education and self-management.

Purpose: To test the effectiveness of an avatar-based education application (the app) on patients’ knowledge and response to heart attack symptoms.

Methods: A prospective, pragmatic randomised, non-blinded, single-centre study. A powered sample of 70 patients admitted with cardiovascular disease (CVD) and had experienced previous heart attack symptoms were consented and randomised. The usual care group received routine acute coronary syndrome (ACS) discharge education. The intervention group received routine ACS discharge education plus the app. The primary outcome was ACS symptoms knowledge. Secondary outcomes were attitudes, beliefs, Heart Attack Action Plan implementation rate, and Health Care Utilisation. The ACS Response Index was used to collect data on knowledge, attitudes and beliefs and Heart Attack Response Action Questionnaires was used to collect appropriate responses to symptoms at baseline, one and six-month for both groups.

Results: 70 patients were recruited, and 66 patients completed the follow-up. The median age of participants was 64.7±12 years, 63% male. The groups were equivalent at baseline. Significantly improved ACS symptom knowledge (95%CI; p<0.001), attitudes (95%CI; p=0.004), beliefs (95%CI; p<0.001) was sustained in the intervention group at six-months. There was a significant difference in Heart Attack Action Plan implementation on STOP (95%CI; p=0.04), TALK (95%CI; p<0.001) and CALL emergency number (95%CI; p=0.02) between group. There was no significant difference in TAKE nitrate (p=0.20) between group. There was a significant increase in Ambulance use (91.4% vs. 54.3%, p<0.001) compared with the usual care group. Cardiac hospitalisation was significantly lower on the intervention group then on the usual care group (3.6 ± 2.8 vs. 6.4 ± 4.4 days, p=0.002). Patients reported that the app has helped them to be more confident in recognising and managing heart attack symptoms in the future (85.14%).

Conclusion: Our avatar-based education application intervention had beneficial effect on all outcomes and this was sustained over the six months follow-up period.