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The effectiveness of mobile application - iCare on improving self-management of adult patients with type 2 diabetes

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Diabetes mellitus affects about 10% of total population in Hong Kong, and Type 2 Diabetes (T2DM) accounts for 90% of all diagnosed diabetes cases. The standard management plan of T2DM includes diabetes self-management education and continuous diabetes support. eHealth offers a 24 h accessible platform that promotes self-management and self-care among patients with diabetes. A fully automated mobile application called 'iCare' was developed, and its effect on the outcome of patients with T2DM in Hong Kong was examined by conducting a Randomized Controlled Trial (RCT). The primary outcome was diabetes self-care behaviour and the secondary outcome was glycated haemoglobin (HbA1C). The study was conducted at a diabetes clinic in a regional hospital in Hong Kong from June, 2015 to October, 2016. Those eligible patients were approached for the study and screened for their interest and final eligibility. After explanation and obtaining the written consent, they were randomised into a control group or intervention group. The participants in the control group received usual care and intervention group received eHealth intervention - iCare on top of the usual care. All outcome measures were assessed at baseline (T_0) and 3 months post intervention (T_1) in both groups. Intention-To-Treat (ITT) and per-protocol analyses were performed to address the effect of attrition. A total of 170 eligible participants were randomised into the control group ($n=85$) or the intervention group ($n=85$). No significant differences were observed in the group-by-time interaction for all constructs of diabetes self-care behaviour in the adjusted model (diet $p=0.804$; exercise $p=0.912$; medication $p=0.892$; Self-Monitoring Blood Glucose [SMBG] $p=0.109$; and foot care $p=0.187$). Similar to the primary outcome, the secondary outcome did not differ between the two groups after the 3-month intervention. Results of per-protocol analysis were comparable with the findings of the ITT analysis. Results showed that the eHealth intervention iCare did not significantly improve any outcome measurements when compared with usual care after the 3-month study period. Modest improvements were observed in all constructs of diabetes self-care behaviour in the intervention group. Future research and development of eHealth applications may be needed to strengthen the interactivity of the eHealth design and to identify the aspects and extents that can facilitate self-management among patients with T2DM.

Biography

Ginny Y. Y. Lam, RN(HK), MSN, MDEM earned her MSc in nursing and MSc in Endocrinology, Diabetes and Metabolism from the Hong Kong Polytechnic University and the Chinese University in Hong Kong, respectively. She has 13 years of nursing experience and 2 years of experience as a diabetes nurse. Currently, she is a doctoral student at the Chinese University in Hong Kong and a Nursing Educator in Hong Kong Baptist Hospital. Her research efforts are focused on the area of self-management in patients with diabetes.

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