

Effects of mHealth on promoting self-care health management among older adults in the community: A 3-arm randomized controlled trial

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Background

Mobile health (mHealth) applications are becoming increasingly popular among older adults, although their reactive care approach has limited their usability. A health and social partnership team that includes nurses, social workers, and general practitioners might supplement the functions of the mHealth and improve the mHealth use among older adults by providing continuous physical and psychological health monitoring, and meeting their individual needs, which eventually lead to better holistic health and quality of life (QoL).



Objective

The present study evaluated the effects of an interactive mHealth program supported by a health-social partnership team on holistic health (self-efficacy, blood pressure, capillary blood glucose level, pain score, QoL, depression) and health service utilization outcomes in community-dwelling older adults.

Methods

This was a three-arm, randomized clinical trial conducted in five community centers in Hong Kong from 1 Dec 2020 to 30 April 2022. Older adults (1) aged 60 or above, (2) having health condition(s) of chronic pain, hypertension, and/or diabetes, (3) living within the service areas, and (4) using a smartphone were recruited.

The subjects were randomly assigned to the mHealth with interactivity (mHealth+I), mHealth, and control groups. The mHealth+I group received the mHealth application and nurse case management supported by a health-social partnership team, whereas the mHealth group received the mHealth application only. The control group did not receive mHealth application nor health-social care services.

Data were collected at pre-intervention (T1), post-intervention (T2), and three-month post-intervention (T3). The primary outcome was the change in QoL from T1 to T3.

Results

A total of 221 participants (control 76, mHealth 71, mHealth+I 74) were enrolled.

There was no statistically significant difference in QoL among three groups. Only secondary outcomes, including self-efficacy ($\beta=-2.31$ [95%CI of β , -4.26 to -0.36], $p=.020$), systolic blood pressure ($\beta=-2.30$ [95%CI of β , -5.00 to -0.13], $p=.038$), pain levels ($\beta=1.18$ [95%CI of β , 0.52 to 2.00], $p=.020$), and health service utilization ($\beta=0.98$ [95%CI of β , 0.32 to 2.09], $p=.048$), improved in the mHealth+I group from T1 to T2 when compared with the control group. The mHealth group showed an improvement in QoL (physical component score) and depression scores from T1 to T2, sustained at T3; while the mHealth+I group demonstrated improved self-efficacy from T1 to T2, with a decrease at T3. 37.8% of mHealth+I and 18.3% of mHealth group participants continued using the mHealth app daily until the end of the sixth month. The difference in app usage between the two groups across T2 and T3 was significant ($\chi^2=6.81$, $p=.009$).

Conclusion

Our study result has confirmed that there are no incremental benefits to adding interactivity in mHealth programs for older adults with chronic diseases. The relatively low rates of mHealth app usage at follow-up is comparable to those reported in the literature. Future studies may consider integrating an artificial intelligence decision support system into the application to facilitate disease management for older adults.

Implications

Older adults using mHealth apps alone at home without the support of healthcare experts could mean that they might not fully utilize the apps functions, recognize the apps benefits, and sustain their use. Incorporating an integrated health-social partnership model to support the app usage when further help is needed by the older adults might maximize the apps' benefits in the long term.

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Reference

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