Smart Health, Adaptive Support: A Sequential, Multiple Assignment, Randomized Pilot Trial of LvL UP

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Coffee Break and Poster Session: P2: Cancer prevention and management | Mental Health and Wellbeing | Implementation and scalability | E- & mHealth | Other, June 13, 2025, 10:30 AM - 11:30 AM

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Purpose: LvL UP is a mobile health intervention designed to prevent chronic disease and improve mental health. It provides scalable reach using a smartphone app while enabling human support when needed. This study assessed the feasibility and preliminary effectiveness of LvL UP using a sequential, multiple assignment, randomized trial design.

Methods: The 8-week pilot trial (April–July 2024) recruited Singaporeans aged 21–59 at risk of chronic conditions. Participants were randomized 2:1 to the intervention group (LvL UP app plus buddy support) or control group (mock app). After 4 weeks, intervention participants meeting predefined non-response criteria (completion of fewer than six digital coaching sessions or usefulness rating below 4 out of 5) were re-randomized to either continue the initial intervention or receive augmented motivational coaching via WhatsApp. Primary outcomes assessed feasibility, including recruitment, retention, app engagement, and user satisfaction. Secondary outcomes evaluated preliminary effectiveness on mental well-being and health behaviors.

Results: A total of 458 individuals were screened, 394 were eligible, and 123 were enrolled (intervention: n=82; control: n=41). The intervention group also included 78 enrolled buddies. After 4 weeks, 39 participants were re-randomized (continue: n=20; augmented: n=19), with 79% of the augmented group attending at least one of three WhatsApp coaching sessions. Retention rates at 8 weeks were high: 91.5% in the intervention group and 90.2% in the control group. Participants in the intervention group logged into the app an average of 24 days (SD = 17). User satisfaction was positive, with a Net Promoter Score of 15.6 (scale: -100 to +100, where scores above 0 indicate more promoters than detractors). Preliminary effectiveness data demonstrated trends toward improvement in mental well-being (change over time difference: 2.12, 95% CI [-0.58, 4.82]), moderate-to-vigorous physical activity (185.01 minutes/week, 95%

CI [52.68, 317.34]), and sleep duration (0.49 hours/week, 95% CI [0.17, 0.82]) compared to the control group, though not powered for statistical significance. No adverse events were reported.

Conclusions: The LvL UP intervention demonstrated feasibility, acceptability, and encouraging preliminary outcomes in improving mental health and health behaviors. These findings support the viability of a larger, definitive trial to assess the intervention's effectiveness and long-term impact.