Mobile self-compassion programme for promotion of public mental health: a randomised controlled trial

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KEY MESSAGES

1. The mobile self-compassion programme is as effective as the mobile cognitive-behavioural psychoeducation programme in enhancing mental health and reducing psychological distress. Improvements are maintained at 3-month follow-up.
2. Both programmes can cultivate self-compassion and improve emotional regulation.
3. Smartphone applications are convenient and highly scalable options to promote public mental health, as face-to-face psychological interventions are expensive with long waiting time.
4. Mobile programmes have high attrition rates. Methods to enhance user experience and retention, such as gamification and personalisation, should be considered.

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Introduction

The prevalence of common mental disorders in Hong Kong is estimated to be 13.3%, with the highest prevalence among young adults aged 26 to 35 years.[1] Nonetheless, only 26% of these individuals sought mental health services in the past year. As mental illness causes tremendous burden to individuals, families, and society, mental health promotion should be propagated in the community.

Smartphones and tablet devices are convenient alternatives to face-to-face interventions and make mental health promotion and universal prevention more accessible for those who would otherwise not seek help owing to inconvenience, stigma, and other help-seeking barriers.

Mobile applications based on cognitive behavioural approach have been developed to help people cope with stress, to increase emotional awareness, and to promote wellness.[2] In addition, cultivating self-compassion (defined as a caring attitude towards oneself in the face of hardship or perceived inadequacy[3]) can also enhance mental health. The present study compared the mobile self-compassion programme with the mobile cognitive-behavioural programme in terms of efficacy in enhancing mental health and reducing psychological distress.

Methods

The study was approved by the Joint Chinese University of Hong Kong-New Territories East Cluster Clinical Research Ethics Committee (Ref. No. CRE-2013.160-T).

Young adults were targeted. Inclusion criteria were (1) age of at least 18 years, (2) ability to read and understand Chinese, (3) having a smartphone or tablet, and (4) having consistent Internet access. In March 2015, an application named Living with Heart was developed, parallel with the website: www.livingwithheart.hk. Those who downloaded the application and confirmed that they were over 18 years old were randomly assigned to either the mobile self-compassion programme or the mobile cognitive-behavioural programme.

Participants were asked to fill in an online questionnaire that assessed mental well-being (Well-being Index), psychological distress (K6), self-compassion (Self-Compassion Scale), and emotional regulation (Affective Control Scale) at baseline, post, and 3-month follow-up. Participants also completed the Client Satisfaction Questionnaire after the programme. In addition, their progress (in percentage) was recorded.

Of 1543 users who activated accounts for randomisation, 1458 completed the pre-survey, with 705 enrolled in the self-compassion programme and 753 in the cognitive-behavioural programme (Fig). Only 340 (22%) completed the post-assessment after the 4-week programme, and 224 (14.5%) completed the 3-month follow-up.

Results

Participants in both groups were similar in terms of demographics. They had a mean age of 33.57

years; 73.7% were female; 80.2% received tertiary education; 26.1% were college students; 54% were working full-time. Both groups reported similar usage satisfaction (t(338)=1.596, P=0.111). No significant differences in baseline demographics and outcomes were found between dropouts (n=1118) and retained users (n=340), except for education level (χ^2 (6)=14.52, P=0.024). Table 1 shows outcome scores at baseline, post, and 3-month follow-up.

Linear mixed model was used to test for the group and time effect on the outcomes (Table 2). In both groups, mental health increased at post-programme (mean difference=0.24, 95% confidence interval [CI]=0.12-0.36, P<0.001) and at 3-month follow up (mean difference=0.22, 95% CI=0.08-0.37, P=0.001). Psychological distress decreased at post-programme (mean difference= -0.23, 95% CI= -0.29 to -0.16, P<0.001) and at 3-month follow-up (mean difference=0.098, 95% CI=0.01-0.19, P=0.031). Self-compassion (F(2)=22.998, P<0.001) and emotional regulation (F(2)=9.93, P<0.001) improved in both groups over time. The effect sizes were small. These effects did not differ between groups.

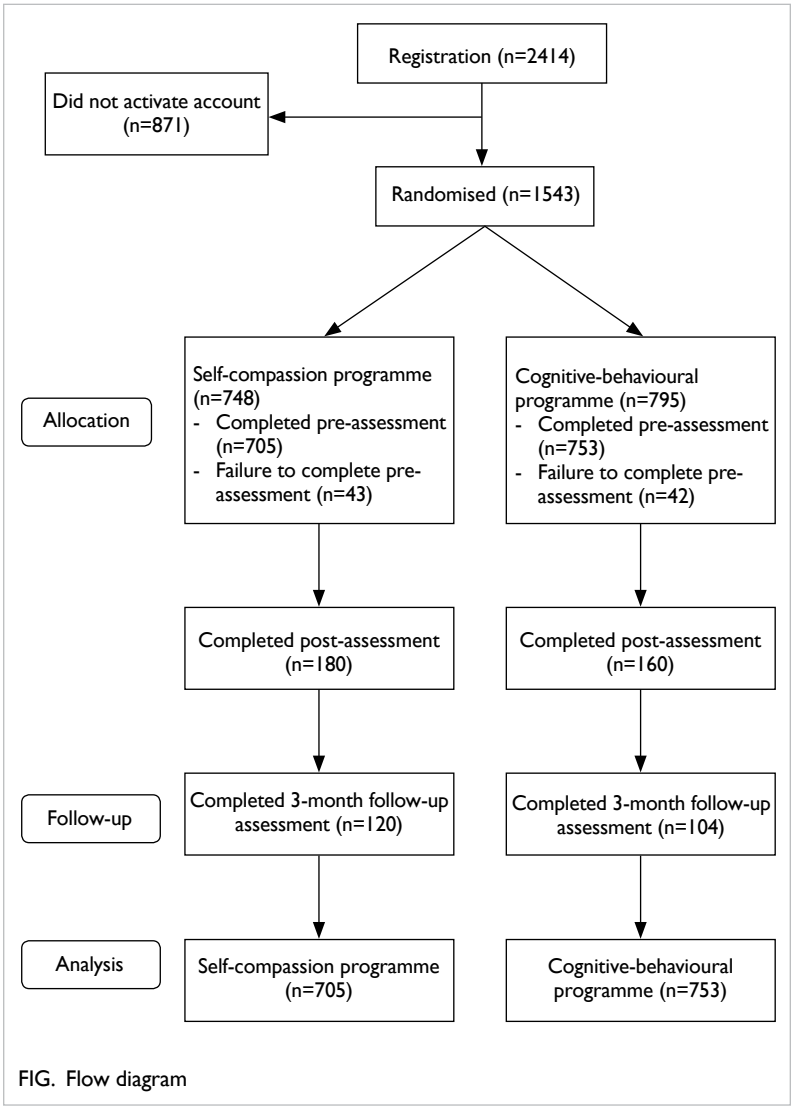

FIG. Flow diagram

Discussion

The 4-week Living with Heart programme significantly improved mental health and reduced psychological distress in our participants, and these improvements were sustained at 3-month follow-up. Mobile self-compassion and cognitive-behavioural training programmes are highly scalable and convenient alternatives to face-to-face psychological interventions. These findings support an unguided mobile application for mental health promotion in Hong Kong, particularly when resources for individuals with mild-to-moderate stress or anxiety/depressive symptoms are limited.

Several limitations have to be considered when interpreting the results. The attrition rate was relatively high, which might affect the generalisability of the findings. Nonetheless, high attrition rate is common in Internet-based intervention studies.[4] Future studies should consider gamification or personalisation[5] of feedback to enhance engagement and increase the personal relevance of the training. In addition, the comparison study design (instead of a waitlist or placebo control) precluded the possibility of a placebo effect in explaining the improvement in mental health. Future studies should consider adding a placebo-control condition in the application such as reading an electronic book not related to psychology, but this may increase the cost of the study. Furthermore, both self-compassion and

TABLE 1. Outcomes between self-compassion programme and cognitive-behavioural programme

	Mean±standard error					
	Self-compassion programme (n=705)			Cognitive-behavioural programme (n=753)		
	Pre	Post	3 months	Pre	Post	3 months
Well-Being Index	2.99±0.04	3.25± 0.07	3.27±0.08	2.99±0.04	3.34±0.07	3.43±0.08
Kessler Psychological Distress Scale	2.44±0.03	2.15±0.05	2.28±0.06	2.48±0.03	2.23±0.06	2.23±0.07
Self-Compassion Scale	2.79±0.03	3.03±0.05	2.91±0.06	2.80±0.03	3.01±0.05	2.93±0.06
Affective Control Scale	4.32±0.04	4.06±0.07	4.27±0.08	4.35±0.04	4.18±0.08	4.14±0.09

TABLE 2. Overall time effects and effect sizes across conditions

	Self-compassion programme (n=705)		Cognitive-behavioural programme (n=753)		Overall time effect, mean difference (95% confidence interval)	
	Cohen's d		Cohen's d		Post vs pre	3 months vs pre
	Post vs pre	3 months vs pre	Post vs pre	3 months vs pre		
Well-Being Index	0.27	0.28	0.35	0.35	-0.31 (-0.42 to -0.20)‡	-0.32 (-0.45 to -0.19)‡
Kessler Psychological Distress Scale	0.35	0.19	0.30	0.30	0.24 (0.12 to 0.36)‡	0.22 (0.08 to 0.37)†
Self-Compassion Scale	0.32	0.16	0.27	0.17	-0.23 (-0.29 to -0.16)‡	-0.13 (-0.21 to -0.05)†
Affective Control Scale	0.02	0.01	0.01	0.02	0.21 (0.095 to 0.33)‡	0.13 (-0.01 to 0.27)

* P<0.05
† P<0.01
‡ P<0.001

cognitive behavioural training showed no significant differences in improving various aspects of mental health. Future studies should consider exploring possible moderators that may distinguish individuals who are more suitable for self-compassion training than cognitive behavioural training. This way, participants can be assigned to interventions that are more compatible to their preferences.

Conclusion

Both mobile self-compassion training and mobile cognitive-behavioural training were effective in improving mental health and reducing distress. Although attrition may be high, they are easily accessible and can be an important augmentation to face-to-face interventions in mental health promotion and universal prevention.

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