



## Hybrid-delivered community psychoeducation for people aged 50 and older: A mixed-method evaluation and lesson learned

Dara Kiu Yi Leung<sup>a</sup>, Nicole Hiu Ling Wong<sup>a</sup>, Jessie Ho Yin Yau<sup>a</sup>, Frankie Ho Chun Wong<sup>a,b</sup>, Tianyin Liu<sup>a,c</sup>, Wai-wai Kwok<sup>a</sup>, Gloria Hoi Yan Wong<sup>a</sup>, Terry Yat Sang Lum<sup>a,d,\*</sup>

<sup>a</sup> Department of Social Work and Social Administration, The University of Hong Kong, Hong Kong

<sup>b</sup> Philip Merrill College of Journalism, University of Maryland, College Park, United States

<sup>c</sup> Department of Applied Social Sciences, The Hong Kong Polytechnic University

<sup>d</sup> Sau Po Centre on Ageing, The University of Hong Kong, Hong Kong

### ARTICLE INFO

#### Keywords:

Teleconferencing  
Psychoeducation  
Hybrid  
Gerontechnology

### ABSTRACT

**Introduction:** Hybrid training mode comprising in-person and teleconferencing sessions is effective and sustainable, yet no standardized principles guide its development for older people. This study aimed to develop a set of principles for hybrid-mode psychoeducation for older people from the experiences of middle-aged and older people in two folds: (1) examining the effects of hybrid-mode community psychoeducation and (2) identifying features that could enhance participants' experience.

**Methods:** We delivered 12-hour Older Person Mental Health First Aid and 3-hour late-life depression training to adults aged 50 and older in in-person and hybrid modes. Hybrid group participants received technology-related support, including in-advance training and on-site support. All participants completed assessments on depression literacy, depression stigma, meaning in life, social support, depressive symptoms, and anxiety pre-and post-intervention and evaluated the program in open-ended questions.

**Results:** A total of 471 in-person and 346 hybrid group participants completed the psychoeducation and post-assessment (80.4 % female, mean age = 64.73 years, SD = 7.29). Linear mixed models revealed improvements in depression literacy, depression stigma, meaning in life, social support, and anxiety ( $B = -1.43$  to  $0.13$ , all  $p < .001$ ), with no significant difference between in-person and hybrid groups. Thematic analysis of open-ended questions identified three themes: (1) informational content with case studies, (2) hardcopy course handouts, and (3) interactive learning environment.

**Discussion/conclusion:** Hybrid-mode and in-person psychoeducation had comparable benefits on middle-aged and older people. The TORCH principles, an acronym for Technology provision, On-site technical support, Rehearsal, Connection with group members, and Hardcopy notes, was derived from practice wisdom and qualitative findings to support older people in online learning.

### 1. Introduction

Mental disorders are the leading cause of global health-related burdens and are common among older people (World Health Organization, 2021). Depression, for example, affects 28.4 % of the older population globally (Hu et al., 2022). While treatment for these disorders exists, mental health problems in older people are often underdiagnosed and undertreated (Bodner et al., 2018). A possible explanation is that older people with mental health problems are unaware of their conditions

being diagnosable and curable or the help-seeking pathway. Community psychoeducational programs help prepare individuals to identify mental health issues and provide support to themselves, family, and community members (Grant et al., 2021). Mental Health First Aid (MHFA), for instance, has been shown to improve knowledge, attitudes, and supportive behaviors related to mental health problems (Hadlaczky et al., 2014), as well as reduce depressive symptoms and loneliness among the participants (Noriega et al., 2021; Riasmini, 2020; Bin et al., 2018). Considering the potential of community psychoeducation programs in

\* Corresponding author at: Department of Social Work and Social Administration, 5/F, The Jockey Club Tower, Centennial Campus, The University of Hong Kong, Pokfulam, Hong Kong.

E-mail address: [tlum@hku.hk](mailto:tlum@hku.hk) (T.Y.S. Lum).

<https://doi.org/10.1016/j.invent.2023.100699>

Received 7 May 2023; Received in revised form 23 November 2023; Accepted 11 December 2023

Available online 12 December 2023

2214-7829/© 2023 Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

building social capacity to support older people with mental health problems, it is essential to explore ways to reach a bigger audience, one of which is the use of teleconferencing.

The importance of teleconferencing in the provision of mental health services has been recognized since the early 2000s (Schopp et al., 2006). The use of teleconferencing allows individuals otherwise constrained by accessibility to receive timely and professional mental health care. In a similar vein, mental health training programs delivered via teleconferencing means can attract more individuals, which in turn increases social capacity in supporting individuals with mental health issues. Previous research reported that trauma-focused cognitive behavioral training delivered to trainees from diverse backgrounds successfully increased trainees' knowledge and confidence in handling traumatized individuals (Pérez-Aronsson et al., 2021). Crucially, interventions delivered via teleconferencing were as effective as those delivered in person (Mohr et al., 2008; Osenbach et al., 2013; Wootton, 2016).

The COVID-19 pandemic further established the importance of incorporating technology in mental health training, especially, the development of a hybrid mode that comprises both in-person and teleconferencing modes (Bao, 2020). Hybrid training mode was found to be effective and sustainable in various fields across the globe (Platos et al., 2022; Tharani et al., 2022). However, these training programs targeted highly educated individuals with medical or psychology backgrounds (Platos et al., 2022; Tharani et al., 2022; Jorm and Ross, 2018). Programs for training the general public are offered predominantly in in-person mode (Morgan et al., 2018). The older community, a group susceptible to mental health problems and yet least equipped to resolve such issues due to dwindling social circles and resources, can play a major role in preventing mental health problems among their peers. With adequate training, they could support individuals during a mental health crisis and refer them to healthcare professionals. Their lived experience of dealing with mental health problems or the aging process could serve as common ground to establish trustful relationships with the person with mental health problems (Tang et al., 2022). Additionally, engaging in these productive aging and meaningful activities may promote their mental wellness (Tang et al., 2022). Despite their potential, low digital literacy in older people remains a considerable challenge to the execution of hybrid training programs. Further, a teleconferencing hybrid mode, which is more interactive than self-paced e-learning widely used in MHFA training targeting the younger generation, may facilitate training more for older people than for the young. Hybrid delivery that involves both e-learning and face-to-face delivery has been found to be preferable to e-learning (Sitzmann et al., 2006). Additionally, teleconferencing has the advantage over e-learning by enabling students to seek clarification and additional information in real-time (Sangpratoom et al., 2021).

To the best of our knowledge, a standardized set of principles for developing psychoeducation programs for older people in a hybrid mode is yet to be developed. Existing evidence has primarily focused on internet-based psychological treatments. It suggested the adoption of content-focused guidance, which contained personalized written feedback by coaches and adherence monitoring, over administrative-guided that focused on providing technical support only or unguided interventions to increase intervention adherence (Richards and Richardson, 2012). A recent study integrated Gagne theory in hybrid teaching. The theory highlights different types of learning require different types of instructions; however, the study was conducted on undergraduate nursing students (Tharani et al., 2022; Gagne et al., 1998). It did not consider the technical support that older people may need to learn as effectively as in-person training.

### 1.1. Present study

This study aimed to develop a set of principles for hybrid-mode psychoeducation for older people in two folds: (1) comparing the effect of community psychoeducation delivered in-person and in hybrid

teleconferencing-based mode and (2) identifying features that enhance participants' experience in hybrid teleconferencing-based interventions. Developing a set of principles for hybrid-mode psychoeducation with older people of lower digital and mental health literacy to assist their fellows can potentially benefit the older generation and society in the long run.

## 2. Materials and methods

### 2.1. Intervention

The community psychoeducation was the Ambassador Training Program in the JC JoyAge, a territory-wide project that promotes mental wellness among older people (JoyAge, 2022). The Ambassador Training Program aimed to equip middle-aged and older people with lived experiences of dealing with depression or the aging process with the competence and confidence to provide support to older people at risk of depression or with depressive symptoms. The program included a 12-hour Older Person MHFA (three 4-hour sessions) and a 3-hour JoyAge service briefing session. The Older Person MHFA covered topics on signs and symptoms of the common mental health problems in older people, providing initial help, professional help-seeking resources, evidence-based interventions, and first-aid in a crisis situation. It also included experiential learning and skills training, such as role-play and scenario-based activities. The JoyAge service briefing session covered topics on knowledge of late-life depression, positive psychology, screening assessments of common mental disorders, and online materials for public education. All participants received a copy of the MHFA manual and supplementary notes for the JoyAge service briefing session.

In the in-person mode, the Older Person MHFA and the JoyAge service briefing session were delivered in person. The MHFA manual and supplementary notes were given to participants in the first session. In the hybrid mode, two 4-hour Older Person MHFA sessions and the JoyAge service briefing were delivered through teleconferencing. The last 4-hour Older Person MHFA session was conducted in person and was designed to contain more skill training elements. The MHFA manual and supplementary notes were mailed to participants before the program started. Technology support was provided as needed, including individual or small group in-person training on using Zoom before the program, tablet lending, and on-site technical support. As participants lived close to the community centers where the project social workers were based, if participants experienced technical issues, social workers would go to participants' homes to solve their problems.

### 2.2. Participants

Participants were recruited from community centers for older people and community mental wellness centers. We posted leaflets about the Ambassador Training Program at the community centers, and older people reached out to social workers at the centers to enroll in the program. The inclusion criteria included (1) being aged 50 or above; (2) being at risk of depression as indicated by the Patient Health Questionnaire-9 (PHQ-9) score  $\leq 4$ ; (3) able to understand and communicate in Cantonese.

### 2.3. Procedure

Participants provided written informed consent and completed the self-administered questionnaire before and after the psychoeducation program. The questionnaire was given to participants in paper form or online through Qualtrics, depending on the centers' preferences and program delivery mode. All procedures involving human subjects were approved by the Human Research Ethics Committee of the University of Hong Kong (reference number EA2004028).

## 2.4. Measurement

Participants' demographic information was collected, including age, gender, marital status, living arrangement, education level, and mental health history in self or family.

**Late-life depression literacy:** We used the Knowledge of Late-Life Depression Scale-Revised (Karantzas et al., 2012) to assess three domains of late-life depression literacy: symptoms of depression (four items), facts about depression (three items), and myths of depression (three items). They were rated on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). We calculated the mean total for each subscale. A higher score on the symptoms and facts of depression subscales indicates greater knowledge of depression, while a higher score on the myths subscale indicates less knowledge.

**Personal stigma of depression:** We used the Depression Stigma Scale-Personal (DSS-P) (Griffiths et al., 2004) to measure three domains of personal stigma of depression: stereotype, prejudice, and discrimination (Leung et al., 2023a). They were rated on a 5-point Likert scale ranging from 0 (strongly disagree) to 4 (strongly agree). We calculated the total for each subscale. A higher score indicates a stronger stigma.

**Depressive symptoms.** We used Patient Health Questionnaire-9 (PHQ-9) (Kroenke et al., 2001) to measure the frequency of depressive symptoms. The PHQ-9 has nine items on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), yielding a total score of 27. Participants were put into five groups based on their scores: minimal (0–4), mild (5–9), moderate (10–14), moderately severe (15–19), and severe (20–27) levels of depressive symptoms. Those with a total score of less than or equal to four were eligible to join the current study.

**Anxiety:** We used the General Anxiety Disorders-7 (GAD-7) (Spitzer et al., 2006) to measure the frequency of anxiety symptoms on a 4-point Likert scale ranging from 0 (not at all) to 3 (nearly every day), yielding a total score of 21. Participants were classified into four groups based on their GAD-7 scores: minimal (0–4), mild (5–9), moderate (10–14), and severe (15–21) levels of anxiety symptoms.

**Social support:** We used the Lubben Social Network Scale-6 (LSNS-6) (Lubben et al., 2006) to measure the degree of perceived social engagement, including family and friends. The LSNS-6 measures engagement on a 6-item scale ranging from 0 (less social engagement) to 5 (more social engagement), yielding a total score of 30. A higher score indicates more social engagement.

**Presence and search for meaning in life:** We used the Meaning in Life Questionnaire (MLQ) (Steger et al., 2006) to assess two aspects of meaning in life: the presence of meaning and the search for meaning. The MLQ has ten items on a 7-point Likert scale ranging from 1 (absolutely true) to 7 (absolutely untrue). Items 1, 4, 5, 6, and 9 measure the presence of meaning, while items 2, 3, 7, 8, and 10 measure the search for meaning. Item 9 is reverse scored. A higher score indicates higher meaning in life.

**Course evaluation.** We asked participants to rate their satisfaction with the course content and course materials on a 5-point Likert scale ranging from 1 (not satisfied at all) to 5 (very satisfied). Course content refers to the course information. Course materials refer to materials prepared for and used in training, including course handbook, notes, presentation slides, and videos. Participants were also invited to answer two open-ended questions: "what do you find most useful in the course?" and "what are some areas in the course that can be improved?". Course evaluation was conducted in paper form or online through Qualtrics, depending on the centers' preferences and program delivery mode.

## 2.5. Analysis

Participants' demographics were analyzed using descriptive analysis. Independent sample *t*-tests were conducted to compare the differences in participants' demographics and baseline outcome measurements between in-person and hybrid groups. Paired sample *t*-tests and linear mixed models were used to examine the effect of

intervention and delivery mode on outcome measurements. Thematic analysis (Braun and Clarke, 2006) was employed to analyze evaluation feedback from the open-ended questions to identify participants' experiences in the intervention. DKYL and FHCW familiarized themselves with all evaluation feedback and generated initial codes independently. After the initial coding, they compared the codes from the hybrid and in-person groups. The codes between the two groups were similar enough to be collated into potential themes as a single dataset. For example, "discussion facilitates understanding" from the in-person group and "more interactions are needed" from the hybrid group were collated to the "need of sufficient interaction" for better learning experience. A thematic map of semantic and latent themes was generated. The themes and the thematic map were brought to a meeting with all authors for discussion and theme organization. DKYL incorporated feedback from the discussion for an iterative process of fine-tuning the themes and thematic map, refining each theme's names and definitions, and selecting extracts for the report. Discussions were conducted in Cantonese, with codes and themes written in English and relevant quotes translated into English in the report.

## 3. Results

Table 1 presents the participants' demographics, baseline outcome measures, and course satisfaction. A total of 1028 older people enrolled in the psychoeducation program, with 567 attending the program in person and 461 in hybrid mode. Among them, 817 (79 %) completed the psychoeducation program and the post-assessment, including 471 (83 %) in the in-person group and 346 (75 %) in the hybrid mode group. The group assignment was based on the number of COVID-19 infected cases in participants' living districts and was unrelated to the participant's characteristics. Participants were invited to the hybrid group when the number of infected cases in the districts increased significantly. The in-person groups were delivered from 23 June to 16 December 2020 and the hybrid mode groups from 8 July to 18 December 2020. Participants had a mean age of 64.73 years (SD = 7.29). The majority of them were female (80.4 %) and lived with someone (75.0 %). Over half were married (57.1 %) and had high school education or above (59.5 %). A quarter had mental health history and/or had family members with mental health history (24.2 %). The in-person and hybrid groups were matched in gender, marital status, living arrangement, knowledge of symptoms and myths of depression, personal depression stigma, presence of meaning in life, search for meaning in life, social support, and anxiety. Compared to the in-person group, the hybrid group participants were younger, more educated, more likely to have mental health history in self and/or family members, had higher knowledge of facts of depression, and had lower depressive symptoms. Participants were satisfied with course content (mean = 3.87, SD = 0.64) and course materials (mean = 4.19, SD = 0.62), with no significant differences between in-person and hybrid groups.

### 3.1. Linear mixed models

Table 2 and Table 3 summarize the outcome measures pre-and post-intervention and results from linear mixed models, respectively. After controlling for demographics, all participants showed improvement in knowledge of symptoms ( $B = 0.13, p < .001$ ) and myths ( $B = -0.13, p < .001$ ) of depression, stereotype ( $B = -0.49, p < .001$ ), prejudice ( $B = -0.39, p < .001$ ), discrimination ( $B = -0.42, p < .001$ ), presence of meaning in life ( $B = 0.75, p < .001$ ), social support ( $B = 0.76, p < .001$ ), and anxiety symptoms ( $B = 0.42, p < .001$ ) after the psychoeducation program, regardless of group allocation. Compared to in-person group participants, hybrid group participants showed increased depressive symptoms after the psychoeducation program.

**Table 1**  
Participants' demographics.

N/mean (%/SD)	Total (N = 1028)	In- person (N = 567)	Hybrid (N = 461)	T-test/chi- square
Age (range 50–94 years)	64.73 (7.29)	65.52 (7.68)	63.76 (6.66)	3.94***
65 or above	514 (50.0)	312 (55)	202 (44)	12.78***
Gender (female)	827 (80.4)	459 (81)	368 (80)	0.21
Married	587 (57.1)	337 (59)	250 (54)	2.81
Living alone	257 (25.0)	142 (25)	115 (25)	0.001
Education				8.76*
Primary school or below	176 (17.1)	113 (20)	63 (14)	
Secondary school	240 (23.3)	131 (23)	109 (24)	
High school	386 (37.5)	211 (37)	175 (38)	
Tertiary or above	226 (22.0)	112 (20)	114 (25)	
Mental health history in self and/or family members	352 (24.2)	177 (31)	175 (38)	5.07*
Late-life depression literacy Symptoms (1–4)	2.79 (0.43)	2.77 (0.43)	2.82 (0.42)	–1.83
Facts (1–4)	2.79 (0.35)	2.77 (0.37)	2.81 (0.33)	–2.03*
Myths (1–4)	2.58 (0.46)	2.58 (0.46)	2.57 (0.47)	0.31
Personal depression stigma (0–36)	15.34 (0.87)	15.44 (3.90)	15.22 (3.83)	0.91
Stereotype (0–8)	3.09 (1.55)	3.13 (1.50)	3.03 (1.61)	1.05
Prejudice (0–8)	4.07 (1.57)	4.10 (1.57)	4.04 (1.58)	0.58
Discrimination (0–16)	5.61 (2.17)	5.77 (2.18)	5.42 (2.15)	2.56
Presence of meaning in life (5–35)	27.66 (5.45)	27.69 (5.30)	27.63 (5.60)	0.18
Search for meaning in life (5–35)	27.88 (5.45)	27.99 (5.45)	27.74 (5.45)	0.74
Social support (0–30)	14.72 (5.97)	14.54 (5.82)	14.95 (6.16)	–1.09
PHQ-9 (0–27)	1.63 (2.27)	1.79 (2.63)	1.44 (1.72)	2.54*
GAD-7 (0–21)	1.70 (2.72)	1.67 (2.87)	1.74 (2.51)	–0.40

\*  $p < .050$ .  
\*\*\*  $p < .001$ .

**3.2. Thematic analysis**

Three themes emerged from the answers to the open-ended questions regarding features contributing to better learning experiences: (1) informational content with case studies, (2) hardcopy course handouts, and (3) interactive learning environment.

**3.2.1. Informational content with case studies**

Participants in both groups agreed that the information included in the program was informative. They reported knowing more about the manifestation, prevention, and treatment of different mental health challenges. Such information was essential for them to identify and support others with mental health challenges, as well as increasing their awareness towards their own mental wellness. Some of them reflected on how they could prevent from developing mental health problems. Case studies, in particular, facilitated their understanding of mental health conditions as they illustrated mental health problems were manifested and handled among older people in real life.

It would be better to have more case discussions or videos, it's easier to understand and memorize stories than texts  
(In-person group)

I learned how to assist and assess people with anxiety and depression, have appropriate attitudes and skills to deal with emergencies, and know who and where to turn to for support  
(Hybrid group)

**3.2.2. Interactive learning environment**

Participants from both groups enjoyed interacting with other group members as this could facilitate knowledge exchange and create a more profound impression of the topic. Although there was no consensus of the appropriate length of each session or the entire training, they mentioned the need to provide more time for discussion around case studies and role-play to practice their skills in dealing with a mental health crisis.

More personal sharing among coursemates can enhance our sense of engagement in the group.  
(In-person group)

I like group discussion because it allows me to reflect on the topic from various perspectives.  
(Hybrid group)

Some participants in the hybrid group mentioned the disruptions brought by unstable internet connection, background noise, and other distractions. Despite these concerns, the hybrid delivery mode allowed them to attend the program they otherwise could not join.

I overall enjoyed the program. It's a pity that we couldn't attend the program in person due to the pandemic. I couldn't really concentrate in the Zoom sessions, but I know it's the best we could do.  
(Hybrid group)

A few participants from both groups also considered the class atmosphere something affecting their engagement. One participant from the in-person group appreciated the attitudes and respect the instructor showed to the participants, as well as the willingness to clarify their uncertainty.

**3.2.3. Hardcopy course handouts**

Participants from both groups valued the printed handbook. The handbook not only detailed the information they acquired from the training, but also offered access to information beyond training sessions and even offline. In addition, participants in the hybrid groups appreciated social workers' effort in sending them the handbook and notes in advance. Still, there were comments about the need to explain better how the notes were used in relation to the program sessions.

It makes a deeper impression and allows for more opportunities to ask questions when we can learn about the concepts from the handouts before listening to the lecture.  
(In-person group)

I like the handouts and notes because I can revisit the information anytime.  
(In-person group)

The order of the worksheet could be clearer. [They] may consider listing which worksheet is used in which session.  
(Hybrid group)

**Table 2**  
Measurement outcomes pre-and post-intervention.

Mean (SD)	Total (N = 817)			In-person (N = 471)			Zoom (N = 346)		
	T0	T1	T0-T1	T0	T1	T0-T1	T0	T1	T0-T1
Late-life depression literacy									
Symptoms (1–4)	2.79 (0.43)	2.93 (0.51)	-7.82***	2.78 (0.44)	2.90 (0.50)	-5.64***	2.81 (0.42)	2.97 (0.52)	-5.41***
Facts (1–4)	2.79 (0.36)	2.83 (0.38)	-2.53*	2.77 (0.37)	2.81 (0.37)	-1.96*	2.82 (0.34)	2.85 (0.40)	-1.43
Myths (1–4)	2.57 (0.45)	2.46 (0.50)	5.65***	2.57 (0.45)	2.45 (0.45)	4.83***	2.57 (0.46)	2.48 (0.52)	3.02**
Personal depression stigma (0–36)	15.58 (3.84)	14.15 (4.18)	1.43***	15.55 (3.90)	14.12 (4.17)	8.54***	15.62 (3.75)	14.20 (4.21)	6.68***
Stereotype (0–8)	3.17 (1.56)	2.63 (1.55)	9.80***	3.15 (1.49)	2.62 (1.51)	7.27***	3.18 (1.65)	2.62 (1.61)	6.57***
Prejudice (0–8)	4.10 (1.58)	3.72 (1.65)	6.09***	4.11 (1.58)	3.76 (1.65)	4.38***	4.09 (1.59)	3.67 (1.64)	4.23***
Discrimination (0–16)	5.59 (2.20)	5.15 (2.37)	5.73***	5.74 (2.21)	5.29 (2.41)	4.49***	5.38 (2.16)	4.95 (2.32)	3.57***
Presence of meaning in life (5–35)	27.61 (5.49)	28.14 (4.90)	-3.45**	27.50 (5.37)	28.18 (4.82)	-3.26**	27.75 (5.65)	28.08 (5.00)	-1.35
Search for meaning in life (5–35)	27.68 (5.48)	27.46 (5.97)	2.09*	27.90 (5.47)	27.54 (5.97)	1.45	27.81 (5.48)	27.36 (5.98)	1.53
Social support (0–30)	14.58 (5.96)	15.13 (5.82)	-3.31**	14.56 (5.80)	15.34 (5.76)	-3.65***	14.62 (6.18)	14.85 (5.91)	-0.88
Depressive symptoms (0–27)	1.63 (2.18)	2.02 (2.55)	-4.37***	1.79 (2.52)	2.00 (2.53)	-1.78	1.42 (1.59)	2.05 (2.57)	-4.83***
Anxiety symptoms (0–21)	1.68 (2.57)	1.36 (2.42)	3.67***	1.65 (2.67)	1.21 (2.21)	4.32***	1.72 (2.44)	1.58 (2.66)	0.97
Course content (0–5)			3.87 (0.64)		3.86 (0.64)			3.87 (0.65)	-0.21
Course materials (0–5)			4.19 (0.62)		4.22 (0.60)			4.15 (0.64)	1.41

\*  $p < .050$ .  
 \*\*  $p < .010$ .  
 \*\*\*  $p < .001$ .

**Table 3**  
Linear mixed model.

	Depression literacy			Personal depression stigma			Presence of meaning	Search for meaning	Social support	Depressive symptoms	Anxiety symptoms
	Symptoms	Facts	Myths	Stereotype	Prejudice	Discrimination					
Age over 60	-0.09**	0.00	0.08*	0.38***	0.46***	0.64***	0.11	0.21	-0.84*	0.15	0.13
Female	0.05	0.08**	-0.01	-0.14	0.18	-0.08	-0.24	-0.03	1.23**	-0.00	0.51**
Married	0.08*	0.01	0.04	-0.11	-0.05	-0.36*	0.46	-0.20	2.05***	-0.34	-0.12
Living alone	0.09*	0.00	0.04	-0.22	-0.19	-0.10	0.23	0.16	-1.03	-0.34	-0.28
Education (ref: primary or below)											
Secondary school	0.01	0.04	-0.02	-0.35*	-0.30	-0.22	0.33	-0.04	0.64	-0.42	-0.60*
High school	0.16***	0.03	-0.04	-0.63***	-0.33*	-0.39	0.75	0.07	0.93	-0.63**	-0.78***
Tertiary or above	0.28***	0.07	-0.09	-1.18***	-0.56***	-0.63**	0.81	-1.98**	0.74	-0.85***	-0.70*
Mental health history	0.11***	0.03	0.03	-0.12	-0.10	-0.30*	-0.86*	-0.00	-1.48***	0.98***	1.03***
Course content	0.05*	0.03	-0.02	-0.09	-0.02	-0.23	1.13***	1.18***	0.36	-0.28*	-0.24
Course materials	0.03	-0.00	0.03	0.07	0.14	-0.20	0.81**	0.33	0.57	-0.06	-0.11
Hybrid mode	0.02	0.04	0.01	0.13	0.06	-0.18	0.40	0.02	0.28	-0.45**	0.03
Time	0.13***	0.02	-0.13***	-0.49***	-0.39***	-0.42***	0.75***	-0.45	0.76***	0.18	-0.42***
Hybrid mode * Time	0.03	0.01	0.05	-0.06	-0.03	-0.01	-0.42	0.01	-0.53	0.44*	0.27
R <sup>2</sup>	0.423	0.290	0.401	0.517	0.397	0.538	0.643	0.555	0.694	0.432	0.526

\*  $p < .050$ .  
 \*\*  $p < .010$ .  
 \*\*\*  $p < .001$ .

### 3.3. Principles for hybrid-mode psychoeducation

The practice wisdom and feedback from participants informed the TORCH principles, acronym for Technology provision, On-site technical support, Rehearsal, Connection with group members, and Hardcopy notes. These principles outline the key elements to enhance older people’s learning experience in hybrid-mode psychoeducation.

The first three components, Technology provision, On-site technical support, and Rehearsal revolve around the level of technological support for older people. They are informed by the preparation of social workers to ensure older people could join the teleconferencing sessions smoothly. For example, social workers lent participants tablets and pocket Wi-Fi and providing in-person training to those unfamiliar with teleconferencing technology. Participants could rehearse using

teleconferencing applications with support from social workers. Moreover, on-site support was offered at participants' homes for those who showed difficulty mastering the technology simply through rehearsals in technical training. Dedicated social workers helped set up the devices and resolved technical problems during the intervention, such as muting and unmuting oneself.

The fourth component, Connection with group members, is reflected in participants' feedback on interactive learning environment. Our participants reported that more group discussion time enhanced their relationship with group members and trainers and helped maintain their engagement in the hybrid training program. Particularly, discussion around case studies broadened their understanding of mental health challenges and enhanced their abilities to handle these challenges.

The last key component, Hardcopy notes, acts as a safety net for older people. This theme derived from participants' feedback on hardcopy handouts, in which they could enhance asynchronous learning experience. In addition to MHFA and the JoyAge course materials, social workers provided participants with written and graphic instructions on operating the communication devices and applications. The availability of these hardcopy instructions at home enabled them to practice the online learning procedures using their own device at home and get support from staff before class when needed.

#### 4. Discussion/conclusion

This study demonstrated that delivering community psychoeducation to middle-aged and older people using a hybrid mode incorporating in-person and videoconferencing sessions showed comparable effects to in-person only intervention. Our study supports previous findings that community psychoeducation improved mental health literacy and psychological well-being and reduced mental health stigma (Hadlaczky et al., 2014; Noriega et al., 2021; Riasmini, 2020). Participants from in-person and hybrid groups were equally satisfied with the intervention content and materials. The comparable effects between hybrid and in-person delivery modes could be attributed to the additional assistance provided to the hybrid group in enhancing the group experience. While existing studies mainly established effectiveness among students and young adults, this study extended the benefiting population to middle-aged and older people. Our work also addresses the potential for developing a set of principles for hybrid-mode psychoeducation with older people.

Informational content with case studies, interactive learning environment, and hardcopy course handouts are essential to enhance participants' learning experience in both in-person and hybrid mode. While information-based knowledge provides participants with a theoretical foundation to mental health, case studies help bridge theory to practice. Discussion around case studies and role play could further deepen participants' understanding and ability to recognize and support people with mental health challenges. Furthermore, hardcopy notes enabled participants to prepare or revise the course materials outside the training sessions. Older students have been found to value asynchronous learning experience, such as pre-recorded and recorded lectures (Simonds and Brock, 2014).

Consistent with previous studies on hybrid mode training targeting highly-educated individuals (Pérez-Aronsson et al., 2021; Owen, 2020), current results suggest older people with lower education levels found the hybrid program useful, evidenced in the post-course comments and increase in depression literacy, despite technological challenges. Participants demonstrated increased mental health knowledge and more confidence in handling emergencies. In our current program, we delivered skills training, including role plays and scenario-based activities, in in-person sessions, and information-based knowledge through teleconferencing. By maintaining an interactive online environment, participants could obtain real-time feedback, apply handling skills online, and reflect upon their encounters with those in need. In particular, participants valued the connection with their groupmates and viewed the

connection as a critical element in their sustained engagement. Depending on the organization of hybrid programs, a hybrid teaching mode can potentially maximize the clinical experience by serving as post-in-person training booster classes or as a means to minimize physical constraints. Further, the importance of telehealth is evidenced during the COVID-19 pandemic. The provision of mental health services, and by extension, the training in providing mental health services online, is indispensable.

At the time of publication, most psychoeducation programs for older people are delivered in person and are limited in number and variety. Our findings show how hybrid-mode psychoeducation with older people can be tailored and improved. Older people are more likely to experience the digital divide and have lower digital literacy (Wong and Ho, 2022; Friemel, 2016). The TORCH principles highlight the importance of providing tailored technical support, including Technology provision, On-site technical support, and Rehearsal, to facilitate their participation in a hybrid mode intervention. The need for on-site support has been documented in a previous study with older people with dementia and their carers, with carers serving as stand-by support at home (Hui et al., 2022). Previous studies conducted by the research team found that in-person technical training did not only help participants navigate the devices and software but was also helpful in building rapport with participants individually (Leung et al., 2023b). Printed operational guideline also has the advantage of allowing older people to learn navigating a new media platform through a form of materials that is more familiar to them (Leung et al., 2023b). Trainers could assess participants' digital resources and literacy to offer corresponding level of technological support.

Nonetheless, there was a higher attrition rate in the hybrid group (25 %) than in-person group (17 %). Some possible explanations include being unfamiliar with technology and less interactions with the instructors and other group members. Although teleconferencing allows interactions, they are often moderated. Previous study has shown that while instructors could gain control over interactions with individual participants using the "mute all" function, it limited the interactions between participants, impeding the sense of engagement in the group (Leung et al., 2023b). These factors may affect participants' learning experience and their willingness to continue engaging in it. Trainers may consider using the breakout room or similar functions to organize small group discussions within a large online class to increase interactions.

While the TORCH principles are developed using data from people aged 50 and above, it can be applied to other populations. However, population characteristics and individual preferences should be considered. Compared to older people, younger people are more familiar with technologies—they use more technologies and use them more frequently for learning-related activities (Staddon, 2020). They also indicated a stronger preference towards synchronous, interactive learning and viewed asynchronous learning activities and watching pre-recorded lectures less appealing (Simonds and Brock, 2014). Therefore, technical support and hardcopy materials as a safety net may be less relevant to them, but a greater emphasis should be placed on creating an interactive learning environment to facilitate their learning.

##### 4.1. Limitations

This study was not a randomized control trial with participants randomly assigned to a hybrid or control group. The hybrid training was adopted because of the increasing COVID-19 infected cases in Hong Kong amid project implementation. On the other hand, the group assignment was not related to any of the dependent or independent variables, increasing the internal validity of our design. E-learning was not selected as the comparison group due to practical reasons. Self-paced e-learning MHFA was not available in Chinese at the time of the study. We suggest future studies to evaluate the effectiveness of hybrid, e-learning, and face-to-face training for older people to adopt an RCT design to build more definite evidence of the efficacy of hybrid or online

training for older adults. Second, we did not measure the digital literacy of our participants. Although we controlled for age and education in our regression analysis, which we believed were proxies for digital literacy, we suggest future research to measure and control participants' digital literacy explicitly. Third, participants in the hybrid group showed increased depressive symptoms after the psychoeducation program. Some potential explanations are that participants might be more aware of their somatic symptoms after the training and, as the hybrid training was implemented amid the worsening COVID-19 pandemic, their mental health might be negatively affected by the pandemic.

#### 4.2. Future directions

The TORCH principles outline potential components facilitating the implementation of online or hybrid-mode interventions derived from participants' experiences and practice wisdom from social workers. However, this study did not investigate the extent to which these principles improve intervention outcomes or participants' satisfaction with online or hybrid-mode training. Future research may explore older people and interventionists' views on how these principles may enhance their experiences in participating and implementing online interventions, respectively. Studies may also examine whether interventions developed based on the TORCH principles or meeting more principles would reduce anxiety and challenges related to online or hybrid-mode training.

#### 5. Conclusion

This study showed that delivering community psychoeducation to middle-aged and older people vulnerable to mental health challenges using a hybrid mode incorporating in-person and videoconferencing sessions could have comparable effects to in-person intervention. Based on the themes that emerged from participants' qualitative feedback and practice wisdom, we proposed TORCH principles to guide the future implementation of hybrid psychoeducation.

#### Statement of ethics

This study protocol was reviewed and approved by the Human Research Ethics Committee at The University of Hong Kong, approval number EA200428. Written informed consent was obtained from participants.

#### Funding sources

This work was supported by The Hong Kong Jockey Club Charities Trust for The University of Hong Kong for the Project JC JoyAge: Jockey Club Holistic Support Project for Elderly Mental Wellness [HKU Project Code: AR160026, AR190017]. The funder has no role in the preparation of data or the manuscript.

#### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

#### Data availability statement

The data that support the findings of this study are not publicly available due to their containing information that could compromise the privacy of research participants but are available from the corresponding author TYSL upon reasonable request.

#### Acknowledgement

The authors thank the participants for joining in the Ambassador Training and clinical psychologists and social workers for delivering the training.

#### References

- Bao, W., 2020. <scp>COVID</scp>-19 and online teaching in higher education: a case study of Peking University. *Hum. Behav. Emerg. Technol.* 2, 113–115.
- Bin, Shafie A.A.H., Jailani, M.R.B.M., Miskam, N.A.B.A., Elias, F.A.B., Wahab, H.B.A., 2018. The impact of integrated psychospiritual module among the drug addicts in Malaysia in elevating the psychospiritual and drug-related locus of control level towards the decrease of relapse rate. *Int. J. Acad. Res. Bus. Soc. Sci.* <https://doi.org/10.6007/IJARBS/v8-i3/3929>.
- Bodner, E., Palgi, Y., Wyman, M.F., 2018. Ageism in Mental Health Assessment and Treatment of Older Adults, pp. 241–262.
- Braun, V., Clarke, V., 2006. Using thematic analysis in psychology. *Qual. Res. Psychol.* 3, 77–101.
- Friemel, T.N., 2016. The digital divide has grown old: determinants of a digital divide among seniors. *New Media Soc.* 18, 313–331.
- Gagne, R.M., Briggs, L., Wager, W., 1998. Principles of Instructional Design, 3rd edition. <https://doi.org/10.1002/pfi.4140440211>.
- Grant, M., Luvuno, Z., Bhana, A., Mntambo, N., Gigaba, S., Ntsewe, E., Petersen, I., 2021. The development of a Community Mental Health Education and Detection (CMED) tool in South Africa. *SSM Ment. Health* 1, 100023.
- Griffiths, K.M., Christensen, H., Jorm, A.F., Evans, K., Groves, C., 2004. Effect of web-based depression literacy and cognitive-behavioural therapy interventions on stigmatising attitudes to depression. *Br. J. Psychiatry* 185, 342–349.
- Hadlaczky, G., Hökby, S., Mkrtchian, A., Carli, V., Wasserman, D., 2014. Mental Health First Aid is an effective public health intervention for improving knowledge, attitudes, and behaviour: a meta-analysis. *Int. Rev. Psychiatry* 26, 467–475.
- Hu, T., Zhao, X., Wu, M., Li, Z., Luo, L., Yang, C., Yang, F., 2022. Prevalence of depression in older adults: a systematic review and meta-analysis. *Psychiatry Res.* 311, 114511.
- Hui, E.K., Wong, G.H.Y., Tischler, V., Yuan, S.N.V., Leung, W.G., Saunders, R., Suen, L. W., Spector, A., 2022. Virtual individual cognitive stimulation therapy in Hong Kong: a mixed methods feasibility study. *Geriatr. Nurs. (Minneapolis)* 47, 125–134.
- Jorm, A.F., Ross, A.M., 2018. Guidelines for the public on how to provide mental health first aid: narrative review. *BJPsych Open* 4, 427–440.
- JoyAge, J.C., 2022. Jockey Club Holistic Support Project for Elderly Mental Wellness. <https://research.jcjoyage.hk>. (Accessed 17 November 2022).
- Karantzas, G.C., Davison, T.E., McCabe, M.P., Mellor, D., Beaton, P., 2012. Measuring carers' knowledge of depression in aged care settings: the Knowledge of Late Life Depression Scale — revised. *J. Affect. Disord.* 138, 417–424.
- Kroenke, K., Spitzer, R.L., Williams, J.B.W., 2001. The PHQ-9. *J. Gen. Intern. Med.* 16, 606–613.
- Leung, D.K.Y., Wong, F.H.C., Yau, J.H.-Y., Zhang, A.Y., Au, W.S.H., Liu, T., Wong, G.H. Y., Lum, T.Y.S., 2023a. Dimensionality and risk factors of the personal stigma of depression in adults aged 50 years and older at risk of depression. *Aging Ment. Health* 1–8.
- Leung, D.K.Y., Wong, F.H.C., Wong, E.L.Y., et al., 2023b. Technology affordance in an information and communication technology delivered group psychotherapy and exercise program for older people with depressive symptoms: a multiple triangulation qualitative study. *Innov. Aging.* <https://doi.org/10.1093/geron/igad063>.
- Lubben, J., Blozik, E., Gillmann, G., Iliffe, S., von Renteln, Kruse W., Beck, J.C., Stuck, A. E., 2006. Performance of an abbreviated version of the Lubben social network scale among three European community-dwelling older adult populations. *Gerontologist* 46, 503–513.
- Mohr, D.C., Vella, L., Hart, S., Heckman, T., Simon, G., 2008. The effect of telephone-administered psychotherapy on symptoms of depression and attrition: a meta-analysis. *Clin. Psychol. Sci. Pract.* 15, 243–253.
- Morgan, A.J., Ross, A., Reavley, N.J., 2018. Systematic review and meta-analysis of Mental Health First Aid training: effects on knowledge, stigma, and helping behaviour. *PLoS One* 13, e0197102.
- Noriega, C., Ortiz, M.D., Martínez, M.T., López, J., 2021. Balneotherapy with a psychoeducation program for the promotion of a balanced care in family caregivers of older adults. *Int. J. Biometeorol.* 65, 193–203.
- Osenbach, J.E., O'Brien, K.M., Mishkind, M., Smolenski, D.J., 2013. Synchronous telehealth technologies in psychotherapy for depression: a meta-analysis. *Depress. Anxiety* 30, 1058–1067.
- Owen, N., 2020. Feasibility and acceptability of using telehealth for early intervention parent counselling. *Adv. Ment. Health* 18, 39–49.
- Pérez-Aronsson, A., Löfving, S.G., Sarkadi, A., Warner, G., 2021. Training allied professionals to hold mental health support groups for children who have experienced trauma: can online education meet the need? *Acad. Psychiatry* 45, 623–628.
- Platos, M., Wojaczek, K., Laugeson, E.A., 2022. Effects of social skills training for adolescents on the autism spectrum: a randomized controlled trial of the polish adaptation of the PEERS® intervention via hybrid and in-person delivery. *J. Autism Dev. Disord.* <https://doi.org/10.1007/s10803-022-05714-9>.
- Riasmini, N.M., 2020. Improvement of family care ability for elderly with depression through psychoeducation intervention program. *J. Ilmu Teknol. Kesehat.* 8, 80–89.

- Richards, D., Richardson, T., 2012. Computer-based psychological treatments for depression: a systematic review and meta-analysis. *Clin. Psychol. Rev.* 32, 329–342.
- Sangpratoom, J., Tharatipyakul, A., Ua-Arak, N., Thanasuan, K., Pongnumkul, S., 2021. Comparing Remote Learning Between Live Lectures and Self-paced Interactive Tutorials for Learning an Introduction to Blockchain. In: 2021 International Conference on Information Systems and Advanced Technologies (ICISAT). IEEE, pp. 1–5.
- Schopp, L.H., Demiris, G., Glueckauf, R.L., 2006. Rural backwaters or front-runners? Rural telehealth in the vanguard of psychology practice. *Prof. Psychol. Res. Pr.* 37, 165–173.
- Simonds, T., Brock, B., 2014. Relationship between age, experience, and student preference for types of learning activities in online courses. *J. Educ. Online*. <https://doi.org/10.9743/JEO.2014.1.3>.
- Sitzmann, T., Kraiger, K., Stewart, D., Wisher, R., 2006. The comparative effectiveness of web-based and classroom instruction: a meta-analysis. *Pers. Psychol.* 59, 623–664.
- Spitzer, R.L., Kroenke, K., Williams, J.B.W., Löwe, B., 2006. A brief measure for assessing generalized anxiety disorder. *Arch. Intern. Med.* 166, 1092.
- Staddon, R.V., 2020. Bringing technology to the mature classroom: age differences in use and attitudes. *Int. J. Educ. Technol. High. Educ.* 17, 11.
- Steger, M.F., Frazier, P., Oishi, S., Kaler, M., 2006. The meaning in life questionnaire: assessing the presence of and search for meaning in life. *J. Couns. Psychol.* 53, 80–93.
- Tang, J.P.S., Liu, T., Lu, S., Sing, C.Y., Sze, L.C.Y., Lum, T.Y.S., Tse, S., 2022. 'It was the deepest level of companionship': peer-to-peer experience of supporting community-dwelling older people with depression - a qualitative study. *BMC Geriatr.* 22, 443.
- Tharani, A., Lalani, S., Mughal, F.B., Momin, R.B., 2022. Developing mental health competency in undergraduate nursing students amid pandemic: a hybrid model approach. *Teach. Learn. Nurs.* 17, 277–281.
- Wong, N.W.M., Ho, L.K., 2022. E-government and the hurdle of the “digital divide”? Rethinking the responses of the underprivileged in COVID-19 Hong Kong. *Asian Politics Policy* 14, 423–435.
- Wootton, B.M., 2016. Remote cognitive-behavior therapy for obsessive-compulsive symptoms: a meta-analysis. *Clin. Psychol. Rev.* 43, 103–113.
- World Health Organization, 2021. Depression. <https://www.who.int/news-room/fact-sheets/detail/depression>.