Research Protocol

Lay-led Brief Cognitive Behavioural Therapy for Insomnia (CBT-I) Group for Older Adults in Hong Kong: A Pilot Study

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Background

Insomnia is a prevalent issue among older adults. Estimates indicate that as many as 50% of this population report difficulties in initiating or maintaining sleep (Crowley, 2011). Furthermore, a pooled analysis revealed that the prevalence of sleep disturbances among older Chinese adults is approximately 35.9% (95% CI: 30.6%–41.2%), based on data from 47 studies involving 242,010 subjects (Lu et al., 2018). Research has shown that older adults experiencing insomnia exhibit a significantly lower quality of life (OR = 1.95, 95% CI = 1.89-2.00) (Lee et al., 2021). Additionally, insomnia is associated with numerous mental health risks. For instance, poor sleep patterns—characterized by prolonged sleep duration coupled with low quality—are linked to impaired cognitive functioning in older Chinese individuals and an increased risk of dementia (Li et al., 2022). Moreover, poor sleep quality at baseline has been found to correlate strongly with neurocognitive disorders after a 6 year follow-up among older Chinese adults (Lai et al., 2022), as well as with depression (Becker et al., 2016), physical disability (OR = 2.03; 95% CI: 1.02–4.05) (Chien & Chen, 2015), and a heightened mortality rate among both middle-aged and older adults (Del Brutto et al., 2023). However, research has found that helping-seeking behaviours for sleep disturbances are still not prevalent among Hong Kong Chinese adults. In a sample size of 3,483, only 51% actively sought help for their insomnia, and only 11% have ever tried the Cognitive Behavioural Therapy for Insomnia (Wing et al., 2024).

Consisting of 5 key treatment components: Sleep Hygiene, Stimulus Control, Sleep Restriction and Relaxation, the Cognitive Behavioural Therapy for Insomnia (CBT-I) It has been demonstrated to be an effective intervention for reducing insomnia symptoms (Trauer et al., 2015) and improving overall quality of life (Alimoradi et al., 2022). Additionally, CBT-I delivered in group has also been identified as an effective strategy for alleviating insomnia symptoms when administered by healthcare professionals (Davidson et al., 2017; Hrozanova et al., 2025). However, despite its

efficacy, the accessibility of CBT-I is often limited by the lack of professional manpower, requirements for intensive training and time commitment. In response to these challenges, task-shifting models and app-based interventions have been developed. While app-based CBT-I intervention has been found to be an effective and more accessible tool for reducing insomnia and depression symptoms in Chinese youth and younger adults (Chen et al., 2025), its effectiveness among older Chinese adults has yet to be explored on a similar scale. Furthermore, the implementation of digital interventions is often limited by older adults' digital literacy, skepticism, and disinterest in digital health care (Frishammar et al., 2023), which may lead to fear and frustration in adaptation. Therefore, in-person delivered CBT-I remains necessary for addressing insomnia in older adults. The task-shifting model, defined as "specific tasks are moved from highly qualified health workers to health workers with shorter training and fewer qualifications" (WHO, 2007), has been implemented in various layperson-led support and psychotherapies. Although one study found that layperson-led CBT sessions for older adults could significantly improve insomnia through a mixed method of in-person and phone call interventions (Stanley et al., 2014), evidence for lay-led psychotherapy primarily pertains to approaches such as Behavioural Activation Therapy and Problem-Solving Therapy, which have proven helpful to participants (Shorey & Chua, 2022). Therefore, lay-led CBT-I should be adapted and studied further.

Among the five components of CBT-I, research indicates that stimulus control and sleep restriction are particularly effective (Steinmetz et al., 2024). However, the challenges in delivery pose barriers to the broader implementation of CBT-I. For instance, advanced training and supervision are requested from qualified professionals who were trained to deliver CBT-I, including psychologists and general practitioners (Sweetman et al., 2024), as well as from psychology graduate students specifically trained in these methodologies (Meaklim et al., 2025). Having said that, systematic reviews have shown that the components of CBT-I can be modified based on the characteristics of different populations and therapeutic aims, with psychoeducation about sleep included in all studies

(Cheung et al., 2018). The American Academy of Sleep Medicine further recommends that both stimulus control and sleep restriction can be used as individual components in CBT-I (Edinger et al., 2020). On the other hand, sleep restriction is related to hindering barriers such as low tolerance for frustration and an inability to commit to recording a sleep diary (Simon et al., 2025).

Objectives

The current study aims to examine (1) the effectiveness of layperson-led group of brief Cognitive Behavioural Therapy for Insomnia (CBT-I) and (2) the feasibility and acceptability in older Hong Kong Chinese adults of this modified brief intervention.

Hypotheses

- Participants will experience significantly increased levels of subjective sleep quality
- Participants will experience significantly reduced levels of both psychological and physical arousal prior to sleep
- The proposed lay-led, brief CBT-I group invention will be operationally feasible to implement
- The proposed lay-led, brief CBT-I group invention will be therapeutically acceptable to participants

Design

This study is an open-label, non-randomized, two-arm clinical trial, consisting of an intervention group and a control group. Participants in the intervention group will be existing members of JC JoyAge, while participants in the control group will be recruited publicly. Upon screening, eligible

JoyAge members with sleep complaints will be assigned to participate in the 4-week intervention group. The intervention group will complete assessments before the first group session and after the last one, which is anticipated to occur within 4 weeks. Meanwhile, eligible control group participants will receive a booklet on sleep health, and be invited to complete two assessments, the first and second of which will be separated by 4 weeks. The research is expected to run from March 2026 to June 2027.

The JC JoyAge is a territory-wide collaborative stepped-care intervention programme involving District Elderly Community Centres (DECCs) and Integrated Community Centres for Mental Wellness (ICCMWs) across all districts in Hong Kong, targeting to provide standardized prevention and intervention to middle-aged or older adults according to the severity of their depressive symptoms based on the PHQ-9.

Participants

As a rule of thumb, research has recommended a participant range of 12-30 per arm (Julious, 2005; Browne, 1995). Considering that the data collection process lasts for a short period of 4 weeks and that an incentive is provided in the control group, an attrition rate of 15% is anticipated. Therefore, a total of 50 participants are planned for recruitment, with 25 participants in each group. The inclusion criteria for the study are as follows: participants must be aged 45 or older. Additionally, they should have a PHQ-9 score between 5-9, and item 3(Trouble falling or staying asleep, or sleeping too much) must be scored at 2 or higher. Participants should be capable of providing informed consent for their participation in the study. Participants will be excluded, if they have a known history of intellectual disabilities, schizophrenia spectrum disorders, bipolar disorder, Parkinson's disease, or dementia. Additionally, individuals assessed to be at active suicidal risk will not be eligible for participation. Those who experience significant difficulties in

communication will also be excluded from the study.

Intervention Group: The Emotional Support Assistant Group (ESAG)

Participants will be invited by the partnering organizations of the Jockey Club Holistic Support Project for Elderly Mental Wellness (JC JoyAge) to participate in a brief in-person group for CBT-I, consisting of four sessions. The group will be held at the centres of the partnering organizations, with each session lasting approximately 1.5 hours and expected to be completed within a month. The sessions will cover four treatment components: sleep hygiene, stimulus control, cognitive restructuring, and relaxation exercises, all facilitated by trained Emotional Support Assistants. Emotional Support Assistants are peer supporters aged 45 or above who are trained to provide mental health-related services to individuals of similar age who are struggling with depressive emotions. They have completed approximately 98 hours of basic training and have received CBT-I training from psychologists affiliated with JC JoyAge. After each session, participants will be encouraged to incorporate the skills learned into participants' daily life and share their experiences or challenges in the following session. In the first session of the group, participants will be invited to fill out a questionnaire regarding their sleep habits, attitudes, and pre-sleep state, which will take about 10-15 minutes. In the final session, they will also be invited to complete the same questionnaire, along with an additional feedback form about the group. No incentive will be provided to ESAG group participants.

Control Group: The Control Group (CG)

Participants will be recruited publicly through social media. Eligible participants will receive a booklet on sleep hygiene education and will be asked to record their sleep hygiene practice in the logbook provided in the booklet for 4 weeks for the same duration as the intervention group. The

sleep hygiene education is often adapted as control group in sleep intervention research (Yeung et al., 2022; W. Yeung et al., 2025). They will be invited to complete two questionnaires over 4 weeks regarding their sleep habits, attitudes, and pre-sleep state, each taking approximately 10-15 minutes. An incentive of HKD$50 will be provided upon completion of the second questionnaire.

Procedure

Participants will be invited by the partnering organizations of the Jockey Club Holistic Support Project for Elderly Mental Wellness (JC JoyAge) to participate in a brief in-person group for CBT-I, consisting of four sessions. Or they will be invited to participate in the control group and receive a booklet on sleep health.

The Emotional Support Assistant Group (ESAG)

The group will be held at the centres of the partnering organizations, with each session lasting approximately 1.5 hours and expected to be completed within a month. The sessions will be facilitated by two trained Emotional Support Assistants (ESA). In the first session of the group, you will be invited to fill out a questionnaire which will take about 10-15 minutes. In the final session, you will also be invited to complete the same questionnaire, along with an additional feedback form about the group.

Control Group (CG)

Participants will be recruited publicly through social media. Eligible participants will receive a booklet on sleep health. They will be invited to complete two questionnaires over 4 weeks, each taking approximately 10-15 minutes. An incentive of HKD$50 will be provided upon completion of the second questionnaire.

Measure

Basic demographics, including age, gender, marital status, ethnicity, education (years and highest attainment), employment status and household type will be collected. Other study outcomes are listed below:

1. Brief Version of the Pittsburgh Sleep Quality Index (B-PSQI)

A 6-items scale assessing sleep quality from past month, including self-reported sleep time and 4-points Likert scale with a global scoring ranging from 0 to 15 (Sancho-Domingo et al., 2020). A higher score indicates worse sleep quality.

2. Dysfunctional Beliefs and Attitudes about Sleep (DBAS)

A 16-items scale ranging from 0 (Strongly Disagree) to 10 (Strongly Agree). Stronger endorsement of these beliefs indicates greater maladaptation in detecting therapeutic changes and effectiveness, as well as in identifying domains that therapy may need to address.

3. Pre-sleep Arousal Scale (PSAS)

Rated on a 5-point Likert scale, ranging from 1 (Not at all) to 5 (Extremely), with total scores ranging from 8 to 40 for both subscales (Nicassio et al., 1985). Higher scores indicate an increased level of pre-sleep arousal. 8 items assess cognitive arousal (PSAS-C), a score of 20 of higher, and 8 items assess somatic arousal (PSAS-S) with a score 14 or higher indicate clinical significance (Puzino et al., 2019).

Data Collection and Analysis

Descriptive statistics will summarize the baseline characteristics of participants and evaluate feasibility and acceptability by assessing the completeness of intervention participation and satisfaction. To test treatment efficacy and report the effect size, a Mixed-Design ANOVA will be utilized to examine changes within groups from pre to post assessments and to compare between-

group post-assessment results at week 4. Additionally, ANCOVA will be employed to compare post-treatment results at week 4 while adjusting for baseline sleep quality and demographic covariates such as age and gender. To maintain the Intention-to-Treat (ITT) principle, missing data will be addressed using multiple imputation.

Data retention

Data containing personal identifiers will be kept for five years after the publication of the first paper. Personal identifiers will be removed for long-term retention of the research data without an end date.

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