



# Effects of cognitive behavior therapy-based psychoeducation program on mental health among LGBTQ+ high school students

Thanawat Suwan Manee<sup>\*,†</sup>, Nanthaka Supreeyaporn<sup>†</sup>

*Educational Psychology and Guidance, Department of Educational Foundations and Development, Faculty of Education, Chiang Mai University, Chiang Mai 50200, Thailand*

## Article Info

### Article history:

Received 22 August 2024

Revised 18 December 2024

Accepted 03 January 2024

Available online 08 May 2026

### Keywords:

CBT,  
cognitive behavior therapy,  
LGBTQ+ mental health,  
LGBTQ+ youths,  
psychoeducation

## Abstract

Despite the increasing prevalence of mental health issues among LGBTQ+ high school students, research on prevention interventions has remained limited. This quasi-experimental study aimed to develop and evaluate the effectiveness of Rainbow Psycho-care, a CBT-based psychoeducational group program to promote mental health in LGBTQ+ high school students. Thirty participants aged between 15 and 17 years were recruited and assigned to the experimental group ( $n = 15$ ) and the control group ( $n = 15$ ). Participants in the experimental group received a 12-session intervention, while those in the control group received no intervention. The Depression Anxiety Stress Scale (DASS-21) and protective factors on mental health problems for LGBTQ+ high school student questionnaire were administered at pre-intervention, post-intervention, and 1-month and 3-month follow-ups. The results indicated significant differences between the groups in stress, anxiety, and depression levels at the post-experiment, as well as at 1-month and 3-month follow-up periods ( $p < .05$ ), with a large effect size ( $\eta^2_p > 0.14$ ). Additionally, resilience and self-esteem differed significantly between groups across the assessment points ( $p < .05$ ), with a large effect size ( $\eta^2_p > 0.14$ ). However, positive psychology levels did not differ significantly ( $p > .05$ ). These findings suggested that Rainbow Psycho-care effectively reduces stress, anxiety, and depression levels among LGBTQ+ high school students. Moreover, Rainbow Psycho-care demonstrated potential benefits in enhancing protective factors such as resilience, self-esteem, and positive psychology for LGBTQ+ high school students.

© 2026 Kasetsart University.

\* Corresponding author.

E-mail address: [thanawat.m@cmu.ac.th](mailto:thanawat.m@cmu.ac.th) (Manee, T. S.).

† Co-first authors.

## Introduction

The LGBTQ+ community is currently gaining acceptance in a growing number of nations, but not enough for LGBTQ+ people to live happy lives (Payaksee, 2017). Moreover, Southeast Asia's mental health support programs for LGBTQ+ people aged 15 to 24 are inadequate in meeting their regional and national needs, despite the high prevalence of mental health issues among this demographic (Newman et al., 2022). This finding is consistent with research conducted in Thailand, which showed that more than fifty percent of LGBTQ+ Thai youths face problems arising from their sexual orientation, such as victimization, bullying, academic problems, suicidal behavior, social rejection, stigma, and discrimination (Mahidol University et al., 2014; Ojanen, 2009). These problems result in LGBTQ+ youths feeling guilty about their sexual orientation, having to hide, and being forced to change their sexual orientation, increasing their risk of suffering from mental health problems. In addition, LGBTQ+ face a high level of mental health problems, including stress, anxiety, and depression (Mahidol University et al., 2014; Rungruang et al., 2020). Moreover, LGBTQ+ youth in Thailand experience 16.3 percent more stress than cisgender youths (Lerdrat, 2022). Therefore, preventing mental health problems among LGBTQ+ youths in Thailand remains a priority.

The literature review on protective factors for mental health problems among LGBTQ+ youths indicated resilience, self-esteem, and positive psychology against mental health problems. LGBTQ+ youths with high resilience, self-esteem, and positive psychology have low mental health issues (Puckett et al., 2019; Toomey & Anhalt, 2016), protective factors for mental health problems assist LGBTQ+ youths in understanding and accepting themselves, recognizing their worth, and developing positive feelings and attitudes toward themselves. Therefore, building resilience, self-esteem, and positive psychology is crucial for improving positive emotions, optimism, and inner strength to help youth who face mental health problems caused by discrimination and stigma with sexual orientation (Baiocco et al., 2023; Toomey & Anhalt, 2016).

Cognitive Behavioral Therapy (CBT) is a psychotherapy strategy and is one of the most extensively researched treatments (David et al., 2018). CBT effectiveness in youths has been proven through meta-analysis research, particularly in addressing mental health issues in LGBTQ+ youths (Beck & Alford, 2009; Craig & Austin,

2016). CBT uses cognitive and behavioral strategies to assist individuals in better understanding themselves and developing self-awareness (Pityaratstian, 2022). Therefore, CBT protective factors were developed for mental health problems (Şahin & Türk, 2021). However, CBT has been recommended in combination with psychoeducation (Pinciotti et al., 2022; Sarkhel et al., 2020). Psychoeducation programs are a type of mental health support commonly used to aid people with mental health issues (Anderson et al., 1980), psychoeducation provides mental health knowledge and essential skills. That covers basic mental health problems, symptoms, expressions, and first aid, allowing participants to understand and apply this knowledge in their daily lives. Several academics altered and developed it to assist others suffering from mental health issues in different categories, such as stress, anxiety, and depression, and increase levels of protective factors against mental health problems (Ghanbari et al., 2021; Şahin & Türk, 2021).

However, limited research on preventing mental health issues among LGBTQ+ youths in Thailand and internationally highlights the need for empirical research to demonstrate the efficacy of CBT-based psychoeducation programs for LGBTQ+ youths. Therefore, this research aimed to develop the 'Rainbow Psycho-care', a CBT-based psychoeducational group program to promote mental health in LGBTQ+ high school students. This research has undertaken the first study to create a CBT-based psychoeducational group program called Rainbow Psycho-care in Thailand, aimed at promoting mental health in LGBTQ+ high school students. Before this study, LGBTQ+ youths in Thailand had not been the focus of group psychological activities using CBT-based psychoeducation to prevent mental health issues in those under the age of 18. The program aims to address the mental health needs of LGBTQ+ high school students by promoting and supporting their psychological well-being and filling gaps in mental health education.

## Research Objective

To develop and evaluate the efficacy of a 12-session Rainbow Psycho-care program in promoting mental health among LGBTQ+ high school students

Hypothesis 1: Mean scores of mental health problems, including stress, anxiety, and depression in the experimental group at post-experiment, 1-month follow-up, and 3-month follow-up were different from the control group.

Hypothesis 2: The experimental group's mean scores of protective factors of mental health problems, including

resilience, self-esteem, and positive psychology at post-experiment, 1-month follow-up, and 3-month follow-up were different from those of the control group.

---

## Literature Review

### *Mental Health Problems with LGBTQ+ Youths*

LGBTQ+ youth may experience mental health issues as a result of factors related to their sexual orientation that they face in everyday life, such as not being accepted by those around them, discrimination, stigmatization, harassment, and bullying (Chavanduka et al., 2021). As a result, LGBTQ+ youth have difficulty living their lives, including working, studying, and caring for their health, which has an impact on their mental, physical, cognitive, and social well-being (Tinnam et al., 2020), that causes LGBTQ+ youth to be more likely than straight teenagers to suffer mental health issues such as stress, anxiety, and depression. Additionally, suppose LGBTQ+ youth suffer from mental health issues for an extended period without help, it may have an impact on their moods, cognitive processes, behavior, work or academic performance, and even lead to suicide (Hafeez et al., 2017).

### *Protective Factors on Mental Health Problems with LGBTQ+ Youths*

The review literature found that resilience, self-esteem, and positive psychology effectively reduce the level of mental health problems in LGBTQ+ youth (Argyriou et al., 2021). However, LGBTQ+ youth have lower levels of protective factors against mental health problems than cisgender youth, owing to social issues such as stigma and discrimination based on sexual orientation (Hafeez et al., 2017). Nevertheless, LGBTQ+ youth may increase their protective factors against mental health problems by receiving emotional and social support from family, school, friends, or other LGBTQ+ youth (Puckett et al., 2019). Therefore, suppose LGBTQ+ teenagers have high levels of protective factors against mental health problems, this may improve their well-being, avoid mental health problems, and reduce risky behaviors among LGBTQ+ youth (Argyriou et al., 2021).

### *Cognitive Behavior Therapy (CBT)*

Cognitive Behavioral Therapy (CBT) is a type of psychotherapy that involves changing thoughts and

behaviors to reduce or modify problems with cognition, emotion, and behavior. The fundamental concept is that thoughts, feelings, behavior, and the body are interconnected. CBT is a clinically approved therapy for assisting people in dealing with mental health issues. It was discovered that CBT comprises 9 to 12 sessions of at least 20 minutes each and extends up to 2 hours, which effectively reduces the level of mental health problems, depending on the counselor's activity and attentiveness (Beck & Alford, 2009; Westbrook et al., 2007). CBT has been used to prevent mental health problems among LGBTQ+ youth and effectively increases the level of protective factors against mental health problems (Smith et al., 2017).

### *Psychoeducation*

The psychoeducation program based on concepts of Anderson et al. (1980), is a model of care and assistance for schizophrenia patients and their families, consisting of four phases: (1) Connection with the family, (2) Teaching survival skills for living, (3) Reentry and application of survival skills to individual families, and (4) Maintenance. However, many academics have adapted and developed the format of psychoeducation programs to assist those experiencing mental health issues in different categories, such as stress, anxiety, and depression (Ghanbari et al., 2021) and increasing the level of protective factors for mental health issues (Şahin & Türk, 2021). Furthermore, a research review recommended the usage of psychoeducation to promote LGBTQ+ people's mental health and showed that combining psychoeducation with CBT increased the intervention's effectiveness (Pinciotti et al., 2022; Sarkhel et al., 2020).

---

## Methodology

This study employed a quasi-experimental research design with four measurement periods (pre-intervention, post-intervention, one-month, and three-month follow-ups) with experimental and control groups.

### *Participants*

Participants were recruited via purposive sampling from four Mueang District, Chiang Mai, Thailand secondary schools. Participants were eligible if: (1) being LGBTQ+ high school students; (2) their family members accepting and were aware of their gender identification; (3) aged between 15 and 18 years;

(4) completed the Depression Anxiety Stress Scale (DASS-21), with stress, anxiety, and depression levels ranging from normal to moderate; (5) had never been diagnosed with a stress disorder, anxiety disorder, or depression; (6) could attend the Rainbow Psycho-care on the dates and times specified by the researcher; (7) could communicate in Thai fluently; and (8) willingness to provide informed assent and have legal guardian willingly provide informed consent if aged under 18 years.

A priori analysis was calculated using the G\*Power version 3.1 for sample size estimation, based on data from Pinto-Gouveia et al. (2016) ( $N = 36$ ) by setting the statistical test to ANOVA: Repeated measure, within-between interaction. The power value was 80 percent of the recognized standard value, the statistical significance value  $\alpha = .05$ , and the partial eta squared ( $\eta^2_p$ ) value was 0.06. Results showed that the necessary sample size with  $f = 0.25$  was  $N = 24$ . To account for potential dropouts, the researcher increased the sample size to 32, representing a 30 percent increase. The 32 participants were randomly allocated to an experimental group ( $n = 16$ ) and a control group ( $n = 16$ ).

The matched-pair approach was used to select samples with comparable characteristics on a one-to-one basis in terms of age, grade, stress level, anxiety, depression, resilience, self-esteem, and positive psychology. Subsequently, the samples were divided into the experimental and control groups, one pair at a time, using simple random sampling determined by the lottery method. The experimental group received the intervention from June to July 2023, administered twice weekly for six weeks, totaling twelve sessions.

## Measures

### *Depression anxiety stress scale (DASS-21)*

The researcher used the Depression Anxiety Stress Scale (DASS-21), a 21-item self-report questionnaire used to assess stress, anxiety, and depression symptoms. The DASS-21 has been adapted and translated into Thai by Oei et al. (2013) and further improved by Pityaratstian and Buathong (n.d.). In this current study, the DASS-21 was tried out with 52 LGBTQ+ high school students for testing reliability. Results showed good internal consistency for stress, anxiety, and depression subscales ( $\alpha = 0.76, 0.73$ , and  $0.75$ , respectively).

### *Protective factors for mental health problems questionnaire*

The researcher developed resilience, self-esteem, and positive psychology scales for LGBTQ+ high school student questionnaire, which were evaluated for content

validity using the Index of Item-Objective Congruence (IOC) by five psychology experts (two LGBTQ+ lecturers, two psychology lecturers, and one development psychology lecturer). The IOC value ranged between 0.60 and 1.00. The reliability was tested in groups similar to the sample. The resilience, self-esteem, and positive psychology questionnaires for LGBTQ+ high school students had reliability scores of 0.87, 0.90, and 0.91 respectively (Manee & Chupradit, 2024).

## Intervention

### *The rainbow psycho-care*

The researcher developed the Rainbow Psycho-care, a CBT-based psychoeducational group program to promote mental health in LGBTQ+ high school students by combining information from a literature review and the results of qualitative data that were obtained from information from in-depth interviews with eight experts on gender-diverse people and focus groups involving fifteen LGBTQ+ high school students (Manee & Chupradit, 2025).

Researchers developed Rainbow Psycho-care, a program that combines the concept of CBT with Anderson et al.'s psychoeducational approach (1980). It consists of implementing four parts of the mental health education method: (1) the develop relationship phase, (2) the phase of teaching basic mental health knowledge, (3) the phase of providing knowledge and skills in daily life, and (4) the follow-up phase.

Rainbow Psycho-care includes 12 sessions and two follow-up sessions at one and three months after interventions. All activities were sequenced according to Anderson et al.'s (1980) psychoeducational approach and were carried out using the CBT method. CBT emphasizes the relationship between thoughts, emotions, behaviors, and physical response. Each activity was divided into three parts: beginning, middle, and end. The discussion begins with a basic overview of the preceding activity and action plan, as well as the topics to be addressed together this time. The middle section includes a detailed description of mental health literacy or essential life skills knowledge, and collaborative activities focused on different topics each time. The final session is a feedback and action plan. Furthermore, all 12 activities are designed to focus on the psychological factors investigated in this study, including stress, anxiety, depression, resilience, self-esteem, and positive psychology, while remaining relevant to the setting of LGBTQ+ youths.

Additionally, five psychologists evaluated the program's content validity using IOC criteria (between 0.60 and 1.00). Details of the program are shown in [Table 1](#).

**Table 1** Activity details of rainbow psycho-care

| Activity                                             | Objectives                                                                                                                                                                                                     |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Framework                                            | 1. Cognitive Behavioral Therapy (CBT)<br>2. Psychoeducation<br>3. Mental health problem; Stress, Anxiety, Depression<br>4. Protective factors; Resilience, Self-esteem, Positive psychology                    |
| Period                                               | 12 sessions, organized 2 times/week, 90 minutes each, with follow-up at 1 month and 3 months after the end of the program.                                                                                     |
| 1. Orientation and Who Am I activities               | To inform participants about the details of the overall program, develop positive relationships, and encourage self-exploration and positive social support.                                                   |
| 2. Sexuality education activities                    | To provide participants with knowledge and understanding of sexuality and gender diversity, sexual health care, and to recognize positive sources of support around them.                                      |
| 3. Five-part model and learning of stress activities | To understand the relationship between emotions, thoughts, behaviors, and physical responses. Moreover, they learned about stress and exercised basic stress-coping skills.                                    |
| 4. Learning of anxiety activities                    | To learn about anxiety and practice observing thoughts, emotions, behaviors, and physical responses, as well as to assess their abilities to regulate their emotions and social support resources.             |
| 5. Learning of depression activities                 | To understand depression, practice positive thinking and observe emotions, behavior, and physiological responses that change in response to thoughts.                                                          |
| 6. Wheel of emotion activities                       | To learn about emotions according to the emotion wheel concept, practice expressing emotions appropriately, and develop skills in observing factors that affect emotions.                                      |
| 7. Emotional management activities                   | To learn emotion management skills and methods of managing emotions, and observing changes in their thoughts, emotions, behavior, and physiological responses after using the emotional management techniques. |
| 8. Empathy and forgiveness activities                | To learn and practice empathy and forgiveness skills, connecting their experiences to a deeper comprehension of these concepts.                                                                                |
| 9. Communication skills activities                   | To learn and practice positive communication skills, being able to communicate their emotions, thoughts, and needs appropriately and efficiently.                                                              |
| 10. Problem-solving strategies activities            | To learn and practice problem-solving skills to develop their problem-solving skills and apply them in their lives.                                                                                            |
| 11. S.M.A.R.T. Goal activities                       | To learn and practice systematically setting goals, concrete implementation of goals, and reviewing positive resources to build confidence to make the goal successful.                                        |
| 12. Gratitude activities                             | To learn about gratitude for the things around them and to check their mental health status immediately after the program and ending group activities.                                                         |
| 13. Follow up 1 month                                | To evaluate the effectiveness of the mental health education program after the end of group activities for 1 month.                                                                                            |
| 14. Follow up 3 months                               | To evaluate the effectiveness of the mental health education program after the end of group activities for 3 months.                                                                                           |

### *Ethics Approval and Consent to Participate*

The Chiang Mai University Research Ethic Committee Thailand reviewed and approved this study (CMUREC No. 65/046). Based on the standards prescribed by the Chiang Mai University Research Ethics Committee, informed written consent was obtained from all participants and the parents of young people under 18 years of age.

### *Data Analysis*

Descriptive statistics were used to analyze the samples' characteristics, including percentages, means,

and standard deviations. Furthermore, the equality of the samples was studied. The differences in the means of the experimental and control groups at baseline, using Fisher's exact test in age testing, the Chi-square test in grade, and independent *t*-tests to compare mean scores for stress, anxiety, depression, resilience, self-esteem, and positive psychology. Moreover, repeated measures ANOVA was used to compare the mean scores of the experimental and control groups on the pre-test, post-test, 1-month, and 3-month follow-ups after the program was completed. Following that, they used the LSD method for a post-hoc test. The effect size was interpreted as less than 0.01, which is trivial; 0.01 is small; 0.06 is medium; and 0.14 is large effects (Gross-Sampson, 2022).

## Results

### General Characteristics of the Sample

The researchers tested the equality of the experimental and control groups in terms of age, education level, stress level, anxiety, depression, resilience, self-esteem, and positive psychology in the pre-intervention period, shown in Table 2.

According to Table 2, most of the experimental group were 16 years old (53.30 %), whereas the control group was 16 and 17 years old (40.00 %). The participants studied in grade 11, with the majority in the experimental and control groups constituting 73.00 and 60.00 percent, respectively. The results of the equality test showed that age ( $\chi^2 = 1.26, p = .69$ ), grade ( $\chi^2 = 0.60, p = .44$ ), stress ( $t = -1.18, p = .25$ ), anxiety ( $t = -0.46, p = .65$ ), depression ( $t = -0.45, p = .66$ ), resilience ( $t = 0.76, p = .45$ ), self-esteem ( $t = 0.84, p = .41$ ), and positive psychology ( $t = -0.22, p = .82$ ) of the experimental group and the control group in the pre-intervention period were not significant ( $p > .05$ ).

### Descriptive Results

The researchers measured stress, anxiety, depression, resilience, self-esteem, and positive psychology at four periods of time, including pre-intervention (pre-test), post-intervention (post-test), follow-up 1 month, and follow-up 3 months. The average scores obtained are detailed in Table 3

*The comparative analysis of the variables in the experimental and control groups during the pre-intervention, post-intervention, 1-month follow-up, and 3-month follow-up periods using repeated measures ANOVA*

The results of data analysis, including stress, anxiety, depression, resilience, self-esteem, and positive psychology, respectively, are presented in Table 4. Table 4 shows a significant interaction between time and group (Time\*Group) for anxiety ( $F = 5.70, p < .05, \eta_p^2 = 0.17$ ) and resilience ( $F = 3.33, p < .05, \eta_p^2 = 0.11$ ), with a large effect size. The study found no significant interaction between time and group on stress ( $F = 1.70, p = .18, \eta_p^2 = 0.06$ ), depression ( $F = 1.71, p = .17, \eta_p^2 = 0.06$ ), self-esteem ( $F = 1.40, p = .25, \eta_p^2 = 0.05$ ), or positive psychology ( $F = 1.63, p = .19, \eta_p^2 = 0.06$ ), with a medium effect size.

**Table 2** The equality testing of the experimental and control groups

| Variables           | Experimental Group<br>(n = 15) | Control<br>Group (n = 15) | $t/\chi^2$         | p-value |
|---------------------|--------------------------------|---------------------------|--------------------|---------|
| Age                 |                                |                           | 1.26 <sup>F</sup>  | .69     |
| 15 years old (n/%)  | 1 (6.70)                       | 3 (20.00)                 |                    |         |
| 16 years old (n/%)  | 8 (53.30)                      | 6 (40.00)                 |                    |         |
| 17 years old (n/%)  | 6 (40.00)                      | 6 (40.00)                 |                    |         |
| All                 | 15 (100.00)                    | 15 (100.00)               |                    |         |
| Class               |                                |                           | 0.60 <sup>C</sup>  | .44     |
| Grade 10 (n/%)      | 4 (26.70)                      | 6 (40.00)                 |                    |         |
| Grade 11 (n/%)      | 11 (73.30)                     | 9 (60.00)                 |                    |         |
| All                 | 15 (100.00)                    | 15 (100.00)               |                    |         |
| Stress              |                                |                           | -1.18 <sup>t</sup> | .25     |
| Mean (SD)           | 5.07 (2.69)                    | 6.07 (1.91)               |                    |         |
| Anxiety             |                                |                           | -0.46 <sup>t</sup> | .65     |
| Mean (SD)           | 3.27 (1.94)                    | 3.60 (2.03)               |                    |         |
| Depression          |                                |                           | -0.45 <sup>t</sup> | .66     |
| Mean (SD)           | 4.00 (2.42)                    | 4.40 (2.50)               |                    |         |
| Resilience          |                                |                           | 0.76 <sup>t</sup>  | .45     |
| Mean (SD)           | 4.19 (0.39)                    | 4.10 (0.27)               |                    |         |
| Self-esteem         |                                |                           | 0.84 <sup>t</sup>  | .41     |
| Mean (SD)           | 4.19 (0.51)                    | 4.05 (0.40)               |                    |         |
| Positive psychology |                                |                           | -0.22 <sup>t</sup> | .82     |
| Mean (SD)           | 4.27 (0.48)                    | 4.30 (0.37)               |                    |         |

Note: F = Fisher's exact test, C = Chi-square test, t = Independent t-test

**Table 3** Means and standard deviations of the experimental and control groups classified by time and variables

| Variable            | Group        | Pre-test    | Post-test   | Follow up 1 month | Follow up 3 months |
|---------------------|--------------|-------------|-------------|-------------------|--------------------|
|                     |              | MEAN (SD)   |             |                   |                    |
| Stress              | Experimental | 5.07 (2.69) | 3.67 (2.56) | 5.00 (2.67)       | 3.53 (2.36)        |
|                     | Control      | 6.07 (1.91) | 6.93 (2.63) | 7.27 (4.56)       | 6.60 (4.73)        |
| Anxiety             | Experimental | 3.27 (1.94) | 1.87 (1.69) | 2.47 (1.64)       | 1.27 (1.71)        |
|                     | Control      | 3.60 (2.03) | 5.40 (2.41) | 4.73 (4.27)       | 4.53 (3.89)        |
| Depression          | Experimental | 4.00 (2.42) | 2.00 (1.46) | 3.20 (2.62)       | 1.73 (1.79)        |
|                     | Control      | 4.40 (2.50) | 3.73 (2.34) | 5.00 (4.11)       | 4.40 (3.96)        |
| Resilience          | Experimental | 4.19 (0.39) | 4.45 (0.28) | 4.50 (0.28)       | 4.58 (0.38)        |
|                     | Control      | 4.10 (0.27) | 4.13 (0.36) | 4.12 (0.40)       | 4.15 (0.38)        |
| Self-esteem         | Experimental | 4.19 (0.51) | 4.38 (0.31) | 4.43 (0.30)       | 4.48 (0.38)        |
|                     | Control      | 4.05 (0.40) | 4.08 (0.33) | 4.20 (0.36)       | 4.12 (0.37)        |
| Positive psychology | Experimental | 4.27 (0.48) | 4.53 (0.32) | 4.56 (0.29)       | 4.63 (0.29)        |
|                     | Control      | 4.30 (0.37) | 4.48 (0.40) | 4.47 (0.42)       | 4.41 (0.27)        |

**Table 4** Result of repeated measure ANOVA

| Variables           | Sources of variation | SS     | df   | MS     | F                 | p    | $\eta^2_p$ |
|---------------------|----------------------|--------|------|--------|-------------------|------|------------|
| Stress              | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 172.80 | 1    | 172.80 | 6.63 <sup>H</sup> | .02* | 0.19       |
|                     | Error                | 729.67 | 28   | 26.06  |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 18.97  | 2.72 | 6.97   | 1.35 <sup>H</sup> | .27  | 0.05       |
|                     | Time*Group           | 23.80  | 2.72 | 8.75   | 1.70 <sup>H</sup> | .18  | 0.06       |
| Anxiety             | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 165.68 | 1    | 165.68 | 8.46 <sup>S</sup> | .01* | 0.23       |
|                     | Error                | 548.17 | 28   | 19.58  |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 10.36  | 3    | 3.45   | 1.27 <sup>S</sup> | .29  | 0.04       |
|                     | Time*Group           | 47.36  | 3    | 15.79  | 5.70 <sup>S</sup> | .00* | 0.17       |
| Depression          | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 81.68  | 1    | 81.68  | 4.15 <sup>S</sup> | .05* | 0.13       |
|                     | Error                | 551.17 | 28   | 19.69  |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 42.76  | 3    | 14.25  | 3.72 <sup>S</sup> | .02* | 0.12       |
|                     | Time*Group           | 19.69  | 3    | 6.56   | 1.71 <sup>S</sup> | .17  | 0.06       |
| Resilience          | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 2.78   | 1    | 2.78   | 8.31 <sup>S</sup> | .01* | 0.23       |
|                     | Error                | 9.35   | 28   | 0.33   |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 0.81   | 3    | 0.27   | 5.57 <sup>S</sup> | .00* | 0.17       |
|                     | Time*Group           | 0.48   | 3    | 0.16   | 3.33 <sup>S</sup> | .02* | 0.11       |
| Self-esteem         | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 1.99   | 1    | 1.99   | 4.74 <sup>H</sup> | .04* | 0.15       |
|                     | Error                | 11.75  | 28   | 0.42   |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 0.76   | 2.59 | 0.29   | 5.38 <sup>H</sup> | .00* | 0.16       |
|                     | Time*Group           | 0.20   | 2.59 | 0.08   | 1.40 <sup>H</sup> | .25  | 0.05       |
| Positive Psychology | Between-group        |        |      |        |                   |      |            |
|                     | Group                | 0.21   | 1    | 0.21   | 0.57 <sup>S</sup> | .46  | 0.02       |
|                     | Error                | 10.324 | 28   | 0.369  |                   |      |            |
|                     | Within-group         |        |      |        |                   |      |            |
|                     | Time                 | 1.14   | 3    | 0.38   | 7.26 <sup>S</sup> | .00* | 0.21       |
|                     | Time*Group           | 0.26   | 3    | 0.09   | 1.63 <sup>S</sup> | .19  | 0.06       |
|                     | Error                | 4.39   | 84   | 0.05   |                   |      |            |

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ , S = Sphericity Assumed, H = Huynh-Feldt

However, focus on between groups found that the variance between the experimental and control groups was found to be stress ( $F = 6.63, p < .05, \eta^2_p = 0.19$ ), anxiety ( $F = 8.46, p < .05, \eta^2_p = 0.23$ ), depression ( $F = 4.15, p < .05, \eta^2_p = 0.13$ ), resilience ( $F = 8.31, p < .05, \eta^2_p = 0.23$ ) and self-esteem ( $F = 4.74, p < .05, \eta^2_p = 0.15$ ) were significant and large effect size. The researcher used a post-hoc test using LSD, as shown in Table 5. Nevertheless, the variance values of positive psychology between the experimental and control groups were not significant ( $F = 0.57, p = .46, \eta^2_p = 0.02$ ), with a small effect size.

In addition, the variance within the experimental and control groups revealed that the variance values of depression ( $F = 3.72, p < .05, \eta^2_p = 0.12$ ), resilience ( $F = 8.31, p < .05, \eta^2_p = 0.23$ ), self-esteem ( $F = 5.38, p < .05, \eta^2_p = 0.16$ ) and positive psychology ( $F = 7.26, p < .05, \eta^2_p = 0.21$ ) were significant at the .05 level and had a large effect size. The researcher performed a post-hoc test using the LSD method, shown in Table 6. However, the variance values of stress ( $F = 1.35, p = .27, \eta^2_p = 0.05$ ) and anxiety ( $F = 1.27, p = .29, \eta^2_p = 0.04$ ) within the experimental and control groups were not significant and medium effect size.

**Table 5** Result of pairwise comparison between groups by the LSD method

| Variable    | Group                | Time               | Mean difference | <i>p</i> |
|-------------|----------------------|--------------------|-----------------|----------|
| Stress      | Experimental-Control | Pre-test           | -1.00           | .25      |
|             |                      | Post-test          | -3.27**         | <.01     |
|             |                      | Follow up 1 month  | -2.27           | .11      |
|             |                      | Follow up 3 months | -3.07*          | <.05     |
| Anxiety     | Experimental-Control | Pre-test           | -0.33           | .65      |
|             |                      | Post-test          | -3.53***        | <.001    |
|             |                      | Follow up 1 month  | -2.27           | .07      |
|             |                      | Follow up 3 months | -3.27**         | <.01     |
| Depression  | Experimental-Control | Pre-test           | -0.40           | .66      |
|             |                      | Post-test          | -1.73*          | <.05     |
|             |                      | Follow up 1 month  | -1.80           | .16      |
|             |                      | Follow up 3 months | -2.67*          | <.05     |
| Resilience  | Experimental-Control | Pre-test           | 0.09            | .45      |
|             |                      | Post-test          | 0.32*           | <.05     |
|             |                      | Follow up 1 month  | 0.38**          | <.01     |
|             |                      | Follow up 3 months | 0.43**          | <.01     |
| Self-esteem | Experimental-Control | Pre-test           | 0.14            | .41      |
|             |                      | Post-test          | 0.30*           | <.05     |
|             |                      | Follow up 1 month  | 0.23            | .07      |
|             |                      | Follow up 3 months | 0.36*           | <.05     |

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

**Table 6** Result of pairwise comparison within groups by the LSD method

| Variable            | Time                   | Experimental    |       |       | Control         |        |       |
|---------------------|------------------------|-----------------|-------|-------|-----------------|--------|-------|
|                     |                        | Mean difference |       |       | Mean difference |        |       |
|                     |                        | (1)             | (2)   | (3)   | (1)             | (2)    | (3)   |
| Depression          | Pre-test (1)           |                 |       |       |                 |        |       |
|                     | Post-test (2)          | 2.00**          |       |       | 0.67            |        |       |
|                     | Follow up 1 month (3)  | 0.80            | -1.20 |       | -0.60           | -1.27* |       |
|                     | Follow up 3 months (4) | 2.27**          | 0.27  | 1.47  | 0.00            | -0.67  | 0.60  |
| Resilience          | Pre-test (1)           |                 |       |       |                 |        |       |
|                     | Post-test (2)          | -0.26**         |       |       | -0.03           |        |       |
|                     | Follow up 1 month (3)  | -0.31**         | -0.05 |       | -0.02           | 0.01   |       |
|                     | Follow up 3 months (4) | -0.39***        | -0.13 | -0.08 | -0.05           | -0.02  | -0.03 |
| Self-esteem         | Pre-test (1)           |                 |       |       |                 |        |       |
|                     | Post-test (2)          | -0.20*          |       |       | -0.04           |        |       |
|                     | Follow up 1 month (3)  | -0.25*          | -0.05 |       | -0.16           | -0.12  |       |
|                     | Follow up 3 months (4) | -0.29**         | -0.10 | -0.05 | -0.08           | -0.04  | 0.08  |
| Positive psychology | Pre-test (1)           |                 |       |       |                 |        |       |
|                     | Post-test (2)          | -0.26**         |       |       | -0.17*          |        |       |
|                     | Follow up 1 month (3)  | -0.29**         | -0.02 |       | -0.16           | 0.01   |       |
|                     | Follow up 3 months (4) | -0.36***        | -0.10 | -0.07 | -0.10           | 0.07   | 0.06  |

Note: \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$

## Discussion

The results demonstrate that Rainbow Psycho-care effectively reduces mental health problems and promotes protective factors among LGBTQ+ youths, the program successfully reduced stress, anxiety, and depression levels in the experimental group to levels lower than those in the control group at the post-intervention, one-month, and three-month follow-ups. The finding is comparable to Kaplan et al.'s (2023) study, which studied the effects of CBT-based psychoeducation programs on university students. This study found that Rainbow Psycho-care reduces student stress levels. Therefore, this explains that the program provides basic information on mental health problems occurring among LGBTQ+ youths, including common symptoms, risk factors, treatments, emotional awareness skills, and techniques for managing emotions and stress. As a result, participants in the experimental group were more aware of mental health issues and possessed fundamental knowledge and abilities for self-observation and self-care. Furthermore, the experimental group was assigned homework (Action Plan) to apply what they learned from each activity in real-life situations. As such, the experimental group gained knowledge and skills in self-observation, coping skills, and emotion management, which they can implement in their daily lives (Craig et al., 2013; Pityaratstian, 2022; Sarkhel et al., 2020).

However, the study findings showed that the experimental group of LGBTQ+ youths experienced higher levels of stress, anxiety, and depression during the 1-month follow-up period compared to the post-intervention period. That describes the mental health problems had interconnected, suggesting that an increase in some mental health problems may lead to a rise in other mental health problems (Hafeez et al., 2017). This is explained in that the one-month follow-up study was conducted in August, when LGBTQ+ youths face midterm exams at school, which could explain why mental health problems among LGBTQ+ youths were on the rise. This demonstrates that the increased prevalence of mental health problems among LGBTQ+ youths can be attributed to several kinds of daily concerns, including economics, learning, and exam-related issues (Chooting et al., 2019). This is consistent with the concept of minority stress, which states that minority stress may occur in three ways. General stress may occur regardless of whether an individual is a minority, such as economic, transportation, and general living issues (Meyer, 2003).

Conversely, during the 3-month follow-up period, the experimental group's levels of stress, anxiety, and depression were lower than the control groups, with mean scores similar to those obtained after the intervention. In contrast, the control group reported more mental health problems, which suggests that the LGBTQ+ youths in the experimental group who participated in Rainbow Psycho-care, which included activities to train them to observe their own emotions, be able to recognize and manage their feelings, develop skills that are necessary for their daily lives, and had activities that trained them to apply those skills in their daily lives, could significantly decrease the level of their stress, anxiety, and depression. This is evident from the qualitative data that the experimental group in the three-month follow-up explained:

*"I use relaxation techniques to assist me to relax. When I face stressful situations, I am less stressed than before joining the activity."*

(A LGBTQ+ youth, a focus group in a three-month follow-up).

*"I usually have trouble sleeping, but using the mood tracker method before sleeping allows me to observe how I'm feeling today and what makes me feel better. Then, I feel more relaxed and asleep more easily lately."*

(A LGBTQ+ youth, a focus group in a three-month follow-up).

Such shows that Rainbow Psycho-care improved the experimental group's emotional management skills. This resulted in the experimental group returning to having low levels of mental health problems after going through difficult situations, compared to the control group, which had greater levels of mental health problems throughout the research period. This is consistent with Ittasakul and Hongsangansri (2015), who explain that CBT can decrease mental health problems and prevent recurrence in the long term.

Furthermore, in the post-intervention, one-month, and three-month follow-ups, the Rainbow Psycho-care increased the levels of resilience, self-esteem, and positive psychology of the experimental group to a higher level than the control group. This is consistent with Ghanbari et al. (2021), and Şahin and Türk (2021), who discovered psychoeducation raised the level of factors preventing mental health problems in the experimental group to a higher level than the control group. This shows that the Rainbow Psycho-care included appropriate activities and materials for LGBTQ+ high school students. The activities, which included problem-solving, goal-setting, forgiveness, empathy, and communication skills, empowered the experimental group to identify

their strengths (Pinciotti et al., 2022; Smith et al., 2017). Moreover, emotional and social support from LGBTQ+ peers strengthened protective factors against mental health problems (Hendricks & Testa, 2012). Additionally, Rainbow Psycho-care maintains a level of resilience, self-esteem, and positive psychology three months after the program ends, consistent with the study of Şahin and Türk (2021), which discovered that implementing a CBT-based psychoeducation program could create protective factors against mental health issues in the sample during the post-intervention and follow-up period.

The results also suggest the difference in positive psychology between the experimental and control groups was not significant. Nevertheless, the experimental group had higher levels of positive psychology than the control group at post-intervention, one-month follow-up, and three-month follow-up. Yet, the difference may not be large enough to be significant. This shows that the control group had a higher level of positive psychology, similar to the experimental group, because the level of positive psychology is measured using five components: (1) Positive emotions, (2) Engagement, (3) Relationships, (4) Meaning, and (5) Accomplishment. Furthermore, the researcher examined the average values of each component in every research period, explaining that the two sample groups attend high school and participate in various school-related activities. Besides, they are also at the point where they need to set a study goal to take the university entrance exam. As such, goals were established and pursued, resulting in comparable levels of engagement, meaning, and accomplishment pre-intervention and post-intervention. Unfortunately, during the 1-month and 3-month follow-up periods, it was found that the control group did not have the necessary resources to keep track of their goals or the skills to regulate their emotions. This may have caused sadness, loss, and guilt about their daily experiences, gradually decreasing the average values for each component. In contrast to the experimental group, which maintained goal setting, gratitude, and communication skills, the average values for each element steadily climbed and peaked over the three-month follow-up period. This is consistent with studies by Pinciotti et al. (2022) and Smith et al. (2017), which found that LGBTQ+ youths should improve their communication, emotional management, goal-setting, and positive emotions.

---

## Conclusion and Recommendation

The Rainbow Psycho-care, designed for LGBTQ+ high school students, derived from CBT-based

psychoeducation, mental health problems, resilience, self-esteem, and positive psychology, effectively reduces the level of mental health problems and enhances protective factors against such issues. Despite LGBTQ+ youths increasing acceptance, they continue to face gender discrimination. As a result, preventing mental health problems in LGBTQ+ youths still demands focusing on positive characteristics such as helping LGBTQ+ youths develop resilience, self-esteem, and positive psychology. They should also get support from many sectors of society, including families, schools, health facilities, and society, to appreciate and accept diversity and promote long-term mental health among LGBTQ+ youths.

However, this study has limitations. Firstly, further research should track mental health problems and protective factors at six-month and one-year intervals following the end of the program, as mental health problems and protective factors can change due to everyday life events. Secondly, the small sample size in this study may introduce bias, so future research should involve a larger sample size to minimize errors. In addition, this study focused on LGBTQ+ in specific group. Future research should extend to include LGBTQ+ in diverse religious backgrounds, rural areas, and different provinces to minimize errors. Finally, this study focuses specifically on LGBTQ+ students with supportive and accepting parents of their sexual orientation, thus future research should also evaluate LGBTQ+ students who conceal their sexual orientation. This will help in addressing the mental health challenges faced by all groups within the LGBTQ+ community.

---

## Conflict of Interest

The authors declare that there is no conflict of interest.

---

## Acknowledgments

The researchers gratefully acknowledge the TA/RA Scholarship from the Graduate School at Chiang Mai University, Thailand. We extend our sincere thanks to all individuals who contributed to this study.

---

## References

- Anderson, C. M., Hogarty, G. E., & Reiss, D. J. (1980). Family treatment of adult schizophrenic patients: A psycho-educational approach. *Schizophrenia Bulletin*, 6(3), 490–505. <https://doi.org/10.1093/schbul/6.3.490>

- Argyriou, A., Goldsmith, K. A., & Rimes, K. A. (2021). Mediators of the disparities in depression between sexual minority and heterosexual individuals: A systematic review. *Archives of Sexual Behavior*, 50, 925–959. <https://doi.org/10.1007/s10508-020-01862-0>
- Baiocco, R., Scandurra, C., Rosati, F., Pistella, J., Ioverno, S., Bochicchio, V., Wang, H.-C., & Chang, T.-S. (2023). Minority stress, resilience, and health in Italian and Taiwanese LGB+ people: A cross-culture comparison. *Current Psychology*, 42, 104–115. <https://doi.org/10.1007/s12144-021-01387-2>
- Beck, A. T., & Alford, B. A. (2009). *Depression: Causes and treatment* (2nd ed.). University of Pennsylvania Press.
- Chavanduka, T. M. D., Gamarel, K. E., Todd, K. P., & Stephenson, R. (2021). Responses to the gender minority stress and resilience scales among transgender and nonbinary youth. *Journal of LGBT youth*, 18(2), 135–154. <https://www.tandfonline.com/doi/full/10.1080/19361653.2020.1719257>
- Chooting, R., Wiwattanaworaset, P., Buathong, N., Noofong, Y., Chaithaweesup, P., Cheecharoen, P., Sarayutpitak, O.-O., Yusuk, C., Rungruang, N., Jansuwan, R., Sae-Lim, P., & Madawa, N. (2019). สถานภาพสุขภาพจิต สภาพครอบครัว และการทำหน้าที่ของครอบครัวของนักศึกษาปริญญาตรีในมหาวิทยาลัยแห่งหนึ่งในภาคใต้ของประเทศไทย [Mental health status, family state and family functioning of undergraduate students in a Southern University, Thailand]. *Journal of the Psychiatric Association of Thailand*, 64(4), 337–350. [in Thai]
- Craig, S. L., & Austin, A. (2016). The AFFIRM open pilot feasibility study: A brief affirmative cognitive behavioral coping skills group intervention for sexual and gender minority youth. *Children and Youth Services Review*, 64, 1–9. <https://doi.org/10.1016/j.childyouth.2016.02.022>
- Craig, S. L., Austin, A., & Alessi, E. (2013). Gay affirmative cognitive behavioral therapy for sexual minority youth: A clinical adaptation. *Clinical Social Work Journal*, 41, 258–266. <https://doi.org/10.1007/s10615-012-0427-9>
- David, D., Cristea, I., & Hofmann, S. G. (2018). Why cognitive behavioral therapy is the current gold standard of psychotherapy. *Frontiers in Psychiatry*, 9, 4. <https://doi.org/10.3389/fpsy.2018.00004>
- Ghanbari, E., Yektatalab, S., & Mehrabi, M. (2021). Effects of psychoeducational interventions using mobile apps and mobile-based online group discussion on anxiety and self-esteem in woman with breast cancer: Randomized controlled trial. *JMIR mHealth uHealth*, 9(5), e19262. <https://doi.org/10.2196/19262>
- Goss-Sampson, M. A. (2022). *Statistical analysis in JASP 0.16.1: A guide for students*. JASP Stats <https://jasp-stats.org/wp-content/uploads/2022/04/Statistical-Analysis-in-JASP-A-Students-Guide-v16.pdf>
- Hafeez, H., Zeshan, M., Tahir, M. A., Jahan, N., & Naveed, S. (2017). Health care disparities among lesbian, bisexual, and transgender youth: A literature review. *Cureus*, 9(4), e1184. <https://doi.org/10.7759/cureus.1184>
- Hendricks, M. L., & Testa, R. J. (2012). A conceptual framework for clinical work with transgender and gender nonconforming clients: An adaptation of the minority stress model. *Professional Psychology: Research and Practice*, 43(5), 460–467. <https://doi.org/10.1037/a0029597>
- Ittasakul, P., & Hongsangunsri, S. (2015). *ภาวะซึมเศร้า* [Depression]. In M. Lotrakul & P. Sukanich (Eds.), *Ramathibodi essential psychiatry*, (4th ed., pp. 167–189). Department of Psychiatry, Faculty of Medicine Ramathibodi Hospital. [in Thai]
- Kaplan, V., Duken, M. E., Kaya, R., & Almazan, J. (2023). Investigating the effects of cognitive-behavioral-therapy-based psychoeducation program on university students' automatic thoughts, perceived stress, and self-efficacy levels. *Journal of Research & Health*, 13(2), 87–98. <http://doi.org/10.32598/JRH.13.2.2125.1>
- Lerdrat, V. (2022). ปัญหาชีวิตและการสนับสนุนสิทธิ LGBTQ+ จากการสำรวจเยาวชนโดย Kid for Kids [Life problems and support for LGBTQ+ rights from the youth survey by Kid for Kids]. Retrieved from [https://www.the101.world/lgbtq-life-in-youthsurvey2022/#:~:text=1.%20อารมณ์และสุขภาพจิต,16.3%25%20หรือกว่าครึ่งเท่าตัว. \[in Thai\]](https://www.the101.world/lgbtq-life-in-youthsurvey2022/#:~:text=1.%20อารมณ์และสุขภาพจิต,16.3%25%20หรือกว่าครึ่งเท่าตัว. [in Thai])
- Mahidol University, Plan International Thailand, & UNESCO Bangkok. (2014). *การกลั่นแกล้งทางเพศที่มุ่งเป้าไปยังนักเรียนมัธยมศึกษาที่เป็นหรือตามที่ถูกละเมิดว่าเป็นคนข้ามเพศหรือชอบเพศเดียวกัน: ประเภท, ความชุก, ผลกระทบ, แรงจูงใจและมาตรการป้องกันใน 5 จังหวัดของประเทศไทย* [Bullying targeting secondary school students who are or are perceived to be transgender or same-sex attracted: Types, prevalence, impact, motivation and preventive measure in 5 provinces of Thailand]. UNESCO. <http://unesdoc.unesco.org/images/0022/002275/227518e.pdf> [in Thai]
- Manee, T. S., & Chupradit, P. W. (2025). Evidence-based analysis of mental health challenges among LGBTQ+ youths. *Community and Social Development Journal*, 26(2), 105–120. <https://doi.org/10.57260/csdj.2025.273468>
- Manee, T. S., & Chupradit, P. W. (2024). Development of a protective factors questionnaire on mental health problems among high school students with sexual diversity. *Academic Psychiatry and Psychology Journal*, 40(2), 13–27. <https://he01.tci-thaijo.org/index.php/APPJ/article/view/270281>
- Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: Conceptual issues and research evidence. *Psychological Bulletin*, 129(5), 674–697. <https://doi.org/10.1037/0033-2909.129.5.674>
- Newman, P. A., Prabhu, S. M., Akkakanjanasupar, P., & Tepjan, S. (2022). HIV and mental health among young people in low-resource contexts in Southeast Asia: A qualitative investigation. *Global Public Health*, 17(7), 1200–1214. <https://doi.org/10.1080/17441692.2021.1924822>
- Oei, T. P. S., Sawang, S., Goh, Y. W., & Mukhtar, F. (2013). Using the Depression Anxiety Stress Scale 21 (DASS-21) across cultures. *International Journal of Psychology*, 48(6), 1018–1029. <https://doi.org/10.1080/00207594.2012.755535>
- Ojanen, T. T. (2009). Sexual/gender minorities in Thailand: Identities, challenges, and voluntary-sector counseling. *Sexuality Research and Social Policy*, 6(2), 4–34. <https://doi.org/10.1525/srsp.2009.6.2.4>
- Payaksee, S. (2017). *ความไม่เท่าเทียมทางสิทธิของกลุ่มผู้มีความหลากหลายทางเพศ* [Inequalities of rights with sexual diversity]. In *The struggles and cries of those with secondary status*. Proceedings of the 16<sup>th</sup> Graduate Students' Conference in Sociology and Anthropology, 29–30 June 2017, Naresuan University (pp. 903–914). [in Thai]
- Pincioti, C. M., Smith, Z., Singh, S., Wetterneck, C. T., & Williams, M. T. (2022). Call to action: Recommendations for justice-based treatment of obsessive-compulsive disorder with sexual orientation and gender themes. *Behavior Therapy*, 53(2), 153–169. <https://doi.org/10.1016/j.beth.2021.11.001>
- Pinto-Gouveia, J., Carvalho, S. A., Palmeira, L., Castolho, P., Duarte, C., Ferreira, C., Duarte, J., Cunha, M., Matos, M., & Costa, J. (2016). Befree: A new psychological program for binge eating that integrates psychoeducation, mindfulness, and compassion. *Clinical Psychology & Psychotherapy*, 24, 1090–1098. <https://doi.org/10.1002/cpp.2072>
- Pityaratstian, N. (2022). *ทักษะพื้นฐานในการบำบัดด้วยความคิดและพฤติกรรม* [Basic skills in CBT]. Chulalongkorn University Press. [in Thai]
- Pityaratstian, N., & Buathong, N. (n.d.). *แบบวัดภาวะซึมเศร้า ความวิตกกังวล และความเครียด (DASS-21)* [Depression Anxiety Stress Scales (DASS-21)]. <http://www.cumentalhealth.com/index.php?lay=show&ac=article&Id=539909324> [in Thai]
- Puckett, J. A., Matsuno, E., Dyar, C., Mustanski, B., & Newcomb, M. E. (2019). Mental health and resilience in transgender individuals: What type of support makes a difference? *Journal of Family Psychology*, 33(8), 954–964. <https://doi.org/10.1037/fam0000561>

- Rungruang, P., Suksai, T., Jinwongpo, A., Prasomruk, P., Phosuk, I., & Panthumas, S. (2020). การเปรียบเทียบความเครียดระหว่างนักศึกษาที่มีความหลากหลายทางเพศที่ครอบครัวยอมรับและไม่ยอมรับในมหาวิทยาลัยมหิดล [Comparison of stress between family acceptance LGBT and non-acceptance LGBT's students in Mahidol University]. *Journal of Khon Kaen Provincial Health Office*, 2(2), 187-198. [in Thai]
- Şahin, H., & Türk, F. (2021). The impact of cognitive-behavioral group psycho-education program on psychological resilience, irrational beliefs, and well-being. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 39(4), 672–694. <https://doi.org/10.1007/s10942-021-00392-5>
- Sarkhel, S., Singh, O. P., & Arora, M. (2020). Clinical practice guideline for psychoeducation in psychiatric disorders: General principles of psychoeducation. *Indian Journal of Psychiatry*, 62(Suppl 2), S319–S323. [https://doi.org/10.4103/psychiatry.IndianJPsychiatry\\_780\\_19](https://doi.org/10.4103/psychiatry.IndianJPsychiatry_780_19)
- Smith, N. G., Hart, T. A., Kidwai, A., Vernon, J. R. G., Blais, M., & Adam, B. (2017). Results of a pilot study to ameliorate psychological and behavioral outcomes of minority stress among young gay and bisexual men. *Behavior Therapy*, 48(5), 664–677. <https://doi.org/10.1016/j.beth.2017.03.005>
- Tinnam, C., Omphornuwat, K., & Duaidee, R., (2020). ยุทธศาสตร์สุขภาวะ LGBTQ+ ประเทศไทย 2021–2023 [LGBTQ+ wellbeing strategies in Thailand 2021–2023]. Thai Health Promotion Foundation. <https://doi.thaihealth.or.th/File/media/6d6d28e0-5321-4e73-b161-9228f2d74f11.pdf> [in Thai]
- Toomey, R. B., & Anhalt, K. (2016). Mindfulness as a coping strategy for bias-based school victimization among Latino sexual minority youth. *Psychology of Sexual Orientation and Gender Diversity*, 3(4), 432–441. <https://doi.org/10.1037/sgd0000192>
- Westbrook, D., Kennerley, H., & Kirk, J. (2007). *An introduction to cognitive behavior therapy: Skills & applications*. SAGE Publication.