A CHINESE-CULTURE-SPECIFIC INTERVENTION TO DECREASE THE STIGMATISATION OF SCHIZOPHRENIA BY NURSING STUDENTS：A PILOT RANDOMISED CONTROLLED TRIAL

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A Chinese-culture-specific intervention to decrease the stigmatisation of schizophrenia by nursing students: A pilot randomised controlled trial

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CERTIFICATE OF ORIGINALITY

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ABSTRACT

Background

The stigmatisation of mental illness is affected by culture, beliefs, and empathy; however, researchers rarely take these factors into consideration when developing interventions to reduce stigma. Nursing professionals represent the largest group of healthcare workers globally and are responsible for the care and recovery of individuals with schizophrenia. However, people with schizophrenia face serious stigmatisation. Research findings indicate that nursing students express unfavourable attitudes towards people with schizophrenia, indeed more severely than medical students express such attitudes. As nursing students are future healthcare providers for individuals with schizophrenia, addressing their existing stigma is essential for providing high-quality care for people with schizophrenia.

Aim

The purpose of this study was to assess the feasibility, acceptability, and preliminary efficacy of a Chinese-culture-specific intervention aimed at reducing schizophrenia stigma among fourth-year nursing students in mainland China.

Methods

This study consisted of three phases. During the initial phase, a descriptive qualitative study was undertaken to develop a Chinese-culture-specific intervention to decrease the stigmatisation of schizophrenia by nursing students. Thirty nursing students involved in the initial phase of the study were recruited by purposive snowball sampling. Data were collected through online focus group interviews using the Tencent video

conference platform. Concurrently, content analysis with NVivo 12 was used to analyse the data, and the findings helped to develop the content of the second-phase intervention. Phase 2 involved a single-centre, two-arm, open-label pilot randomised controlled trial (RCT) in which 60 fourth-year nursing students were recruited by convenience sampling from the Xiangya Hospital and randomly distributed to the experimental or control arms. The intervention design was rooted in transformation learning theory and the knowledge–attitude–practice paradigm. Participants in the experimental arm attended a 4-week intervention programme, while those in the control arm were asked to read a book during the same period. The intervention programme had been validated by three experts from mainland China, comprising two psychiatric nursing professors from a university and a head nurse from a clinical psychiatric department. The feasibility of the intervention was assessed in terms of subject recruitment rate, the consent rate, the eligibility rate, and the feasibility of the measurement tools. The acceptability of the intervention was assessed based on prospective acceptability, the recruitment rate, concurrent acceptability, the dropout rate, the intervention attendance rate, the retention rate, the intervention completion rate, and the acceptability of randomisation. The preliminary efficacy of the intervention was examined by calculating the differences in schizophrenia-related knowledge, attitudes, intended behaviour, and empathy between the experimental and the control group at three time points using the Chinese versions of the Knowledge about Schizophrenia Test (KAST), the Mental Illness Clinicians' Attitudes Scale (MICA), the Reported and Intended Behaviour Scale (RIBS), and the Jefferson Scale of Empathy – Nursing Students'

version R (JSE-NSR). Paired T-test and Wilcoxon signed-rank tests were used to identify within-group differences. Generalised estimating equations were used to calculate the differences between the experimental group and the control groups at three time points: baseline (T1), post-intervention (T2), and 3-month follow-up (T3). A P-value less than 0.05 was used to establish statistical significance in a two-tailed test. Phase 3 included a process evaluation that aimed to assess the second-phase pilot RCT. This evaluation used self-report questionnaires and focus group interviews with 30 participants to gather feedback on the participants' experiences with the intervention and to collect their suggestions for its future improvement and application. The data from the questionnaires are presented as means and standard deviations, and content analysis was employed to analyse the data collected from the focus group interviews.

Results

In the first phase of the focus group interviews, the following four themes emerged: 1) recognition status of schizophrenia, 2) attitudes towards schizophrenia, 3) nursing students' coping strategies for schizophrenia, and 4) perspectives of individuals with schizophrenia. These themes were influenced to some extent by Chinese culture.

In the second phase, the Paired T-test or Wilcoxon signed rank test showed that the pilot RCT showed good feasibility and acceptability. The experimental group exhibited significant improvements in KAST scores (knowledge of schizophrenia) at both T2 and T3, and noteworthy improvements in the RIBS score (intended behaviour) at T2, with a simultaneous significant decrease in the MICA score (negative attitudes) at T2 and T3 time point. Furthermore, the JSE-NSR score (empathy) displayed a significant

increase at T3. Nevertheless, although the pilot RCT showed significant improvements in the KAST score compared with the baseline of the control group, the control group did not show any notable alterations in the MICA, RIBS, or JSE-NSR scores at T2 and T3 time points. The GEE test showed that the interplay of group and time demonstrated that the experimental arm experienced a notably more significant decrease in MICA scores than the control group at T2 (Wald $\chi^2 = 4.907$, P = 0.027) and T3 (Wald $\chi^2 = 10.848$, P = 0.001). Moreover, the interplay of group and time in the experimental group displayed a substantial enhancement in JSE-NSR scores (Wald $\chi^2 = 6.466$, P = 0.011) in comparison with the control group at T3. The RIBS score significantly decreased at T2 compared with the baseline score at T1 (Wald $\chi^2 = 4.197$, P = 0.040). In the third phase of process evaluation, 30 nursing students from the experimental group participated, and the participants reported high satisfaction scores for the pilot RCT, with a mean score of 9.83 ± 1.09 out of 10. The evaluation revealed the following four key themes concerning the participants' experience of the study: 1) the feasibility of the intervention, 2) the acceptability of the intervention, 3) the efficacy of the intervention, and 4) suggestions for future interventions. These four themes indicate that the second-phase pilot RCT had good feasibility and acceptability.

Implications

As this constitutes a pilot RCT, the sample size and effectiveness were limited. A full RCT should be conducted in the future to take cultural considerations into account, address nursing students' misconceptions and knowledge gaps regarding schizophrenia,

and focus on mitigating their negative attitudes while fostering their positive attitudes and empathy towards people with schizophrenia. By addressing these implications in future research, we can work towards reducing mental-illness stigma among nursing students and enhancing the nursing and support provided to individuals with schizophrenia.

Conclusions

This study successfully demonstrated the feasibility and acceptability of an online training programme to reduce schizophrenia stigma among fourth-year nursing students in mainland China. The study's findings offer promising and high-quality preliminary evidence regarding the feasibility, acceptability, and preliminary efficacy of the intervention.

RESEARCH OUTPUT ARISING FROM THE STUDY

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LIST OF ABBREVIATIONS

CDC	Centers for Disease Control
CNKI	China National Knowledge Infrastructure
CONSORT	Consolidated Standards of Reporting Trials
DSM	Diagnostic and Statistical Manual of Mental Disorders
GEEs	Generalised estimating equations
ICD	International Classification of Diseases
JSE-NSR	Jefferson Scale of Empathy Nursing Students' version R
KAP	Knowledge–attitude–practice
KAST	Knowledge about Schizophrenia Test
MICA	Mental Illness Clinicians' Attitudes Scale
RCT	Randomised controlled trial
RIBS	Reported and Intended Behavior Scale
SD	Standard deviation
SE	Standard error
WHO	World Health Organization
χ^2	Chi-square

CHAPTER ONE: INTRODUCTION.

This chapter introduces the historical and societal background of schizophrenia stigma and its negative impacts on various aspects of everyday life. The research problem is also discussed, and the study's objectives are outlined.

1.1 Background of the study

Schizophrenia is widely recognised as the most stigmatised mental illness (Valery, 2020). Approximately 24 million people worldwide are affected by schizophrenia (World Health Organization [WHO], 2022a). Individuals with schizophrenia often describe stigma as a second illness, underscoring the significant impact it can have on their lives and well-being (Mannarini et al., 2022). Nursing professionals represent the largest group of healthcare workers globally (WHO, 2019) and are responsible for the care and recovery of individuals with schizophrenia (Sanchez-Martinez & Sales-Orts, 2020). In mainland China, nursing students exhibit a negative attitude towards people with mental illness (Geng, 2015; Pan et al., 2013; Fei et al., 2016). Meanwhile, nursing students in China have lower levels of knowledge regarding schizophrenia than their counterparts in the United States (Liu, 2019). It is crucial to consider the attitudes of nursing students towards schizophrenia, as they may need to care for individuals with schizophrenia in the future.

It is recognised that interventions delivered to nursing students are likely to lead to improved patient care in the future (Fawaz et al., 2018). Therefore, altering the negative attitudes of nursing students towards schizophrenia might reduce their stigmatisation of individuals with this condition, and these improved attitudes may persist throughout

their nursing careers.

Stigmatisation arises from factors such as inadequate knowledge and prejudicial attitudes, which induce discriminatory behaviour (Van Zelst, 2009). Thus, the study described in this thesis aimed to create and assess a Chinese-culture-specific intervention aimed at decreasing nursing students' stigma towards schizophrenia in mainland China.

1.2 Introduction to this chapter

This section serves as the introductory chapter for this doctoral thesis. While Section 1.1 offered an introductory background to the study as a whole, Section 1.2 offers an introduction to this specific chapter. Section 1.3 provides general information about mental illness and schizophrenia. In Section 1.4, the definition of stigma is presented. Section 1.5 introduces general information about mental illness and schizophrenia stigma. Section 1.6 centres on the correlation between culture and the stigma surrounding mental illness. Section 1.7 introduces the theoretical understanding of mental illness stigma formation and the theoretical basis of interventions for decreasing mental illness stigma. Section 1.8 offers general information about decreasing mental illness stigma, while Section 1.9 outlines the objectives of this research. Section 1.10 describes the stages of this project.

1.3 General information about mental illness and schizophrenia

According to the World Health Organization (WHO, 2022b), the term 'mental illness' refers to diagnosable mental disorders that significantly disrupt an individual's cognition, emotion regulation, or behaviour. Frequently, mental illness is linked to distress or impairment in significant areas of functioning (WHO, 2022b). Mental disorders are identified by alterations in thinking, mood, or behaviour, either independently or in combination, resulting in distress and impaired functioning (Goldman & Grob, 2006).

Mental illness is a prevalent condition impacting a considerable segment of the populace. According to the Centers for Disease Control and Prevention (CDC, 2023), mental illnesses rank among the most prevalent health conditions in the United States, with over 20% of adults and youth experiencing a debilitating mental illness at some point in their lives. The CDC also reports that there are more than 200 types of mental illness, which can present in different forms, such as short-term or episodic, ongoing, or long-term conditions. The causes of mental illness are complex, and various factors can contribute to its development, including adverse childhood experiences, such as trauma or abuse; chronic medical conditions; alcohol or drug abuse; biological factors; chemical imbalances in the brain; and feelings of isolation or loneliness (CDC, 2023).

Unfortunately, mental illness often comes with stigmatisation in society, discriminatory actions, and violations of human rights. The WHO reported that approximately one in eight individuals worldwide suffered from a mental illness in 2019 (WHO, 2022b). This figure has risen as a result of the global impact of the COVID-19 pandemic, which has

had a substantial effect on mental health. Schizophrenia is a severe mental illness that can cause significant disruptions to an individual's perception of reality, leading to behavioural changes, such as persistent hallucinations, enduring delusions, instances of control or passivity, disorganised thought, highly disorganised behaviour, negative attributes, heightened restlessness or diminished physical activity, and maintaining unusual postures (WHO, 2022a). Schizophrenia is widely recognised as the most stigmatised mental illness (Valery & Prouteau, 2020).

1.4 Definition of stigma

The Greek term 'stigma' originally referred to bodily marks that served as indicators of a person's unusual or dire moral condition (Goffman, 1963). Individuals who were slaves, criminals, or traitors and who violated societal norms were punished by having symbols cut or burned into their bodies. As a result, they were required to stay away from public places and keep their distance from others (Goffman, 1963). Hilbert formulated a concept of stigma as a 'blemish' (trait) that associates an individual with an unfavourable characteristic stereotype (Hilbert et al., 1985). Link and JC (1999) added a component of 'discrimination' to Hilberts' definition of mental disorder stigma. Stigma includes public stigma and self-stigma (Corrigan, 2018). Corrigan and Watson (2002) built a framework of stigma and categorised it as public stigma or self-stigma. Stereotyping, prejudice, and discrimination are three aspects of stigma (Corrigan & Watson, 2002). Public stigma refers to negative beliefs or stereotypes that the general

public holds about a particular group, such as people with mental illness (Corrigan & Watson, 2002). Self-stigma involves taking on the stigmatising opinions of others and applying them to oneself (Gerlinger et al., 2013). Public stigma often takes the form of biased attitudes and discriminatory conduct towards individuals with mental disorders. This can result in social avoidance, exclusion, joblessness, infringement of human rights, and problems in familial and relationship settings. These negative consequences can also impede the recovery process of individuals affected by mental disorders (Padmavati, 2014). In contrast, self-stigma occurs when individuals internalise societal stereotypes, resulting in adverse self-perceptions, such as feelings of inadequacy, and experiencing detrimental emotions, such as diminished self-efficacy, despair, or feelings of insignificance. This can lead to unfavourable behavioural responses, such as avoidance, and reluctance to pursue employment and housing opportunities (Rüsch et al., 2005).

The ramifications of stigma go beyond individuals who have mental illnesses, and extend to their families. The act of stigmatising an individual due to their connection with another stigmatised person has been referred to as ‘courtesy’ (Goffman, 1963) or ‘associative’ stigma (Mehta & Farina, 1988). Associative stigma is frequently experienced by family members of an individual diagnosed with a mental illness, who face disgrace due to societal constructs tied to the affected relative (Vayshenker et al., 2018). Structural stigma encompasses the validation and continuous reinforcement of a stigmatised condition through the institutions and ideological systems of society (Bos et al., 2013). In this study, we focused on public stigma, and the term ‘stigma’

henceforth specifically refers to public stigma.

1.5 General information about mental illness, mental illness stigma, and schizophrenia stigma

This thesis follows the most current Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR) in terms of the definition of mental illness. Mental illness pertains to a collection of symptoms marked by noteworthy disruptions in a person's cognitive or emotional regulation or behavioural tendencies, signalling dysfunction in the psychological, biological, or developmental mechanisms that underlie mental functioning (Stein et al., 2021). Mental illnesses typically result in substantial distress or impair an individual's ability to carry out essential activities, such as social or occupational activities. It is crucial to recognise that a typical reaction to a commonplace stressor or loss, such as mourning the passing of a loved one, does not meet the criteria for a mental disorder. Similarly, behaviours that deviate from social norms, or conflicts primarily between an individual and society, should not be considered mental disorders, unless they originate from the individual's dysfunction (Thyer, 2015). Numerous types of mental disorder exist, including anxiety, depression, bipolar disorder, post-traumatic stress disorder, schizophrenia, eating disorders, disruptive behaviour, and dissocial disorders, as well as neurodevelopmental disorders (WHO, 2022b).

Individuals with mental disorders are not only influenced by the actual symptoms of

their illness, but also by the negative social stereotypes or discrimination associated with their condition, known as mental illness stigma (Corrigan & Knudsen, 2005). This stigma is characterised by a negative attitude towards those with mental illness, leading to perceptions of people with mental disorders as being more dangerous or weak-willed than the general population (Wood et al., 2014). Mental-illness-related stigma can have severe consequences, such as discouraging individuals from seeking help, reducing their commitment to treatment, lowering their self-esteem, and negatively affecting their overall quality of life (Henderson et al., 2014; Livingston & Boyd, 2010).

Schizophrenia ranks among the most profound mental disorders (Valery & Prouteau, 2020; Young et al., 2020). Profound mental disorders like schizophrenia are especially susceptible to stigma (Whitley & Campbell, 2014). Schizophrenia stands out as one of the most stigmatised mental disorders and is often regarded as a prime example among various mental health disorders (Li et al., 2020; Valery & Prouteau, 2020). Decreasing the stigma surrounding schizophrenia is a crucial focus of anti-stigma activities. People diagnosed with schizophrenia encounter stigmatisation across various facets of their everyday existence, including finding employment (Koschorke et al., 2014), building friendships (Lee et al., 2005), forging romantic relationships (Lee et al., 2005), rehabilitation (Vass et al., 2017), social integration (Vass et al., 2017), and receiving medical treatment (Caqueo-Urizar et al., 2019). This stigmatisation can negatively impact their quality of life (Valery & Prouteau, 2020), reduce their openness to share with others or seek help (Maharjan & Panthee, 2019), and even lead to suicide (Sharaf et al., 2012). Moreover, the presence of stigmatising attitudes among healthcare

workers can diminish their motivation to be employed in mental health units (Henderson et al., 2014), resulting in a scarcity of doctors and nurses in these settings (Samari et al., 2019).

1.6 The relationship between culture and mental illness stigma

The meaning, practices, and effects of stigma can vary across cultures (Yang et al., 2007). For instance, in Sri Lanka, where witchcraft and sorcery beliefs are prevalent, mental illness is less stigmatised (Samarasekara et al., 2012). In South India, those with schizophrenia may associate their condition with karma and evil spirits (Charles et al., 2007). In China, stigma has a significant impact on individuals' social networks, which are seen as essential for accessing support, resources, and opportunities (Yang & Kleinman, 2008). Due to the 'face-saving' culture, people in China may be hesitant to disclose their own or their family members' mental illness (WonPat-Borja et al., 2012). *Kuang* and *dian*, which can be translated as 'insane', are old-fashioned words that were historically used to describe the symptoms of mental illness in China (Tseng, 2013). *Kuang* originally described a rabid dog and was later used to describe people who are insane (Online-Xinhua-Dictionary, 2023a). *Dian* originally described a mental disorder (Online-Xinhua-Dictionary, 2023b).

In Chinese culture, Confucianism, Taoism, and Buddhism are considered to be the foundational beliefs (Custer, 2023). As philosophical ideologies, they help to elucidate the behavioural, cognitive, and emotional processes of Chinese people's cultural

knowledge. These beliefs have had a significant impact on Chinese society, shaping cultural norms and influencing various aspects of life. The effects of these ideologies may interact in synergistic or opposing ways, in addition to those ideologies' independent effects on cultural attitudes and behaviours (Lin et al., 2021).

In Confucian social theory, the family is the fundamental and central institution among all social organisations (Tseng, 2013). Therefore, in traditional Chinese culture, emphasis is placed on the family unit's importance in promoting mental well-being (Tseng, 2013). If a family member displays unacceptable or abnormal behaviour, such as mental illness, the entire family's reputation may be tarnished, and others may view the family as lacking in virtue for generations to come (Tseng, 2013). As a result, if a family member experiences mental illness and exhibits abnormal behaviour, shame and guilt may extend to the entire family, with blame placed on their ancestors for past mistakes (Tseng, 2013).

Taoism is centred on the concept of *yin and yang* (Yip, 2004), and when the balance between these two forces is disrupted, mental illness may occur (Ting & Ng, 2011). Ancestor worship is a fundamental practice in Taoism, and failing to honour and pay tribute to ancestors may result in the loss of their protection, potentially leading to obstacles or illness (Ting & Ng, 2011). The term *feng-shui* originated from Taoism (Jin & Juan, 2021), and belief in *feng-shui* is traditional in Chinese society (Mok & Lam, 2021). This concept proposes that architecture and the environment exert a substantial influence on people, and the movement of energy between individuals and their surroundings can promote physical and mental well-being (Bonaiuto et al., 2010). Poor

feng-shui at the gravesites of ancestors may be linked to the illness of their offspring (Rachel et al., 2020), and this may even lead to mental disorders (Yanong, 2005).

Karma (*ye-zhang*) and rebirth are concepts from Buddhism (Ting & Ng, 2011). Karma refers to the consequence of one's past actions (Ting & Ng, 2011). People with mental illness may attribute it to karma, and believe that the problems the illness incurs are closely associated with their past life (Ting & Ng, 2011).

In China, there are certain beliefs about the causes of schizophrenia. Some individuals attribute the condition to the wrongdoing or unethical behaviour of one's forebears, implying that those who suffer from schizophrenia were themselves immoral in their past lives (Yang & Kleinman, 2008). Additionally, there is a prevalent view that schizophrenia is the result of black magic or being possessed by supernatural entities (gods or demons) (Tseng, 2013).

Research has indicated that stigmatising attitudes are significantly influenced by sociocultural and religious factors (Waqas et al., 2020). These cultural beliefs place responsibility for mental illness on the individual or their ancestors, resulting in blame directed at their present-day family members. Consequently, people may be unlikely to show empathy towards those with mental illness, and those affected may feel compelled to conceal their own or their family member's condition, ultimately discouraging them from seeking help. Such ideas may also foster self-stigma.

1.7 Theoretical understanding of mental illness stigma formation and the theoretical basis of interventions for decreasing mental illness stigma

Link and Phelan (2001) developed a concept of stigma formation that involves several steps. First, people identify and label differences among individuals (labelling). Second, mainstream culture associates labelled individuals with negative characteristics, resulting in the formation of stereotypes. Finally, labelled people are regarded as an isolated category distinct from others, leading to their social status loss and discrimination, causing unfair outcomes (Link & Phelan, 2001). In 2006, Thornicroft proposed that stigma arises from three aspects: knowledge culminating in unawareness, attitudes culminating in bias, and behaviour culminating in discrimination (Thornicroft, 2006). Thus, reducing mental illness stigma requires interventions that focus on altering participants' knowledge, attitudes, and behaviour towards mental illness.

1.8 General information about decreasing mental illness stigma

Three approaches have been recognised as effective at decreasing mental illness stigma: education, engagement with people with mental illness, and protest. A combination of these approaches may also be effective (Corrigan & Penn, 1999; Klarić & Lovrić, 2017). The goal of education is to furnish the public with accurate information, empowering them to make well-informed decisions and assessments concerning mental disorders. Previous studies have indicated that individuals with a stronger understanding of mental disorders are less inclined to support prejudiced perspectives, and educational efforts

centred around delivering accurate information have the potential to enhance positive attitudes towards individuals with mental health conditions (Naslund & Deng, 2021). Engagement entails chances to interact with individuals who have a mental disorder. These interactions have been observed to diminish stigmatising attitudes in numerous prior studies conducted in wealthy nations. Nonetheless, several of these studies lacked rigorous methodology and might not be universally applicable across all contexts (Jorm, 2020). Protest involves addressing inaccurate information about or representations of mental disorders, by combatting adverse media depictions and images that promote stigma and by challenging negative public views. Despite being a viable approach, protest is often overlooked in interventions aimed at combatting mental health stigma (Griffiths et al., 2014).

Two systematic reviews and meta-analyses have reported that the most effective strategy for reducing mental disorder stigma is a combination of education and social contact (Corrigan et al., 2012; Lien et al., 2021). However, there are some methodological issues with the studies included in these reviews, such as a high risk of bias and unclear allocation concealment (Waqas et al., 2020). Furthermore, insufficient research exists on reducing the stigma associated with schizophrenia, and high-quality randomised controlled trials (RCTs) are needed to assess the effectiveness of education combined with contact interventions at decreasing schizophrenia stigma.

1.9 The aim and objectives of this study

The aim of this study was to assess the feasibility, acceptability, and preliminary efficacy of a Chinese culture-specific intervention aimed at decreasing schizophrenia stigma among nursing students in their fourth year of study. The objectives of this study were as follows.

1. Develop a Chinese-culture-specific intervention based on a comprehensive literature review, a systematic review, and focus group interviews with fourth-year nursing students in the first phase of study.
2. Evaluate the feasibility and acceptability of the new intervention programme in the second phase of study.
3. Examine the preliminary efficacy of the Chinese-culture-specific intervention in the second phase by assessing the differences between an experimental group and a control group in terms of knowledge, attitudes, and intentional behaviour regarding schizophrenia, and empathy towards people with schizophrenia, after the intervention and at a 3-month follow-up assessment.
4. Conduct a process evaluation to assess the feasibility and acceptability of the new intervention programme and its implementation in the third phase of study.

The hypothesis of this study:

1. A Chinese culture-specific intervention can be successfully developed based on a comprehensive literature review, a systematic review, and focus group interviews with fourth-year nursing students.

2. The new intervention programme will be feasible and acceptable to the participants.

3. There are significant differences between an experimental group and a control group in terms of knowledge, attitudes, and intentional behaviour regarding schizophrenia, and empathy towards people with schizophrenia, after the intervention and at a 3-month follow-up assessment.

4. The process evaluation will show positive findings in the feasibility and acceptability of the new intervention programme and its implementation.

1.10 Stages of this project

This project involved a pilot study to examine the feasibility and acceptability of an intervention programme aimed at decreasing schizophrenia stigma among nursing students. The results of the study can inform the formation of future approaches aimed at reducing stigma related to schizophrenia. Previous research has shown that it is feasible for a short training programme (less than 1 month) to decrease mental illness stigma. Similar programmes could be developed to decrease stigma towards schizophrenia.

To obtain a thorough understanding of existing interventions aimed at decreasing mental illness and schizophrenia stigma, both a literature review and a systematic review were conducted to identify any research gaps. Previous research has demonstrated that education combined with contact can effectively reduce mental illness stigma, but a limited amount of research has been undertaken to investigate the impacts of interventions tailored to specific cultures.

Hence, the aim of this study was to assess the feasibility, acceptability, and preliminary efficacy of an intervention specifically tailored to Chinese culture, with the goal of diminishing schizophrenia-related stigma among fourth-year nursing students. Due to the COVID-19 pandemic, the study was carried out exclusively through online means, with both quantitative and qualitative data being collected to assess outcomes and processes. The calculated effect size can be used as a reference to calculate the sample size for a full RCT, and the experiences of this pilot project will be used to inform a fully powered larger-scale study in subsequent work.

This thesis includes seven chapters. The first chapter serves as an introduction, providing general background information about the study and detailing the process of the entire thesis. The second chapter consists of a literature review, offering specific information on mental illness, mental illness stigma, and previous studies focused on decreasing mental illness stigma. Chapter three presents a systematic review aimed at identifying research gaps from previous studies that focused on decreasing schizophrenia stigma among health professional students. Chapter four describes the methods used in the study, which comprise three phases. The first phase involves a qualitative focus group interview. The findings from this phase will be combined with those from the literature review and the systematic review to develop a culture-specific intervention for a pilot randomized control trial in the second phase. This trial will specifically target a group of fourth-year nursing students to assess the preliminary efficacy of the intervention in reducing their schizophrenia stigma. The third phase will consist of a process evaluation, assessing the feasibility, acceptability, and the

implementation process of the pilot RCT. Chapter five presents the results of the study while chapter six discusses the study's findings. Finally, chapter seven concludes the study.

CHAPTER TWO: LITERATURE REVIEW.

2.1 Introduction to this chapter

This chapter offers a review of the existing literature on how schizophrenia stigma manifests within traditional Chinese culture. This chapter offers a comprehensive introduction to schizophrenia stigma, including the concept, theoretical framework, significance, associated factors, and research gaps. Within this chapter, Section 2.2 specifically addresses the definition and diagnosis of schizophrenia, as well as the concept of schizophrenia stigma. Section 2.3 examines the prevalence of schizophrenia stigma. Section 2.4 reviews the negative impacts of schizophrenia stigma, and Section 2.5 discusses interventions aimed at reducing schizophrenia stigma. Section 2.6 discusses the theory applied when developing interventions aimed at reducing schizophrenia stigma. Sections 2.7 provide an overview of previous studies on reducing schizophrenia stigma and identifies research gaps in this area. Finally, Section 2.8 provides a concise summary of the key points discussed throughout the chapter.

2.2 The definition and diagnosis of schizophrenia

Schizophrenia is a multifaceted and varied set of behavioural and cognitive symptoms that result from disturbances in brain development, which can be influenced by genetic factors, environmental factors, or a combination of both (Owen et al., 2016). Schizophrenia results in psychosis and can profoundly affect an individual's capacity to perform in various domains of life, such as personal, familial, social, educational, and occupational domains (WHO, 2022a).

Schizophrenia can be diagnosed with respect to two standards: DSM-5-TR and the International Classification of Diseases (ICD-11). To meet the DSM-5-TR criteria for a diagnosis of schizophrenia, individuals must have experienced at least two symptoms persistently for a minimum of 6 months, with a significant portion occurring over the course of 1 month. Indications include delusions; hallucinations; incoherent speech or conduct; or adverse symptoms, such as reduced emotional expression, poverty of speech, or purposeless actions. A minimum of one symptom must encompass either delusions, hallucinations, or disorganised speech, and there should be substantial impairment in social or occupational functioning (NeuRA's-Evidence-Libraries, 2022). In contrast, for a diagnosis of schizophrenia, the ICD-11 requires the presence of at least two symptoms, which can be positive, negative, depressive, manic, psychomotor, or cognitive. At least one of these must be a fundamental symptom, such as delusions, thought insertion or withdrawal, hallucinations, or thought disorder. The symptoms must have been consistently observable for the majority of the time within a span of 1 month (NeuRA's-Evidence-Libraries, 2022).

2.2.1 The definition of schizophrenia stigma

Referring to Corrigan's (2000) definition of mental illness stigma, schizophrenia stigma is defined as stereotypes, prejudice, and (discriminatory) behaviour of the public towards people with schizophrenia (Corrigan, 2000). The term 'mental illness stigma' refers to the negative perceptions, social rejection, or discrediting of individuals who

have a mental illness (Goffman, 1963; Kalichman, 2019). On that basis, schizophrenia stigma can be defined as the negative perceptions, social rejection, or discrediting of people who have schizophrenia. The stigma of schizophrenia encompasses the stigmatisation experienced by individuals diagnosed with schizophrenia. It involves a range of negative attitudes, false beliefs, and apprehensions associated with this diagnosis, which significantly influence how others perceive those affected. This stigmatisation arises from factors such as inadequate knowledge (ignorance), prejudicial attitudes, and discriminatory behaviour, and it can be worsened by healthcare professionals' inaccurate emphasis on biogenetic models of illness (Van Zelst, 2009). Academic studies have recognised different forms or facets of stigma related to mental health, including self-stigma, public stigma, professional stigma, and institutional stigma (Subu et al., 2021). Meanwhile, stigma by association is also common which refers to the experience of family members with loved ones diagnosed with mental illness, illustrating family members of people with schizophrenia suffer from public shame due to these familial connections (Goldberg et al., 2023). Schizophrenia is also subject to these identified types of stigma.

2.3 The prevalence of schizophrenia and schizophrenia stigma

Schizophrenia affects approximately 24 million individuals globally, corresponding to 0.32% of the population or approximately 1 in 300 individuals. Among adults, the estimated prevalence rate is approximately 0.45%, equivalent to approximately 1 in 222

individuals (Preksha et al., 2022). A systematic review conducted among 51,925 homeless people reported that the occurrence rate of schizophrenia was 10.29% (95% CI: 6.44, 16.02, I^2 = 98.76%) (Ayano et al., 2019). In a retrospective cohort study of 3,976,071 subjects aged 15 to 64 years from 2008 to 2015, 24,749 of them had schizophrenia, resulting in an overall prevalence of 6.2 per 1,000 persons (Orrico-Sánchez et al., 2020). Globally, in 2017, the prevalence of all-age schizophrenia cases was estimated to be 19.8 million (95% UI: 17.6–22.2) for all ages and both sexes combined (James et al., 2018). In China, according to an epidemiological survey, the occurrence of schizophrenia over a lifetime was 5.44 per 1,000 individuals in general, with rates of 5.33 per 1,000 for males and 5.51 per 1,000 for females. In urban areas, the prevalence was 6.60 per 1,000, while in rural areas, it was 4.73 per 1,000 (Long et al., 2014). With its extensive population, China recorded an age-standardised incidence rate of 18.47 cases of schizophrenia per 100,000 individuals in 2019 (Dong et al., 2022).

2.3.1 The prevalence of schizophrenia stigma

A study conducted in 16 countries with sample sizes ranging from 2,372 to 12,992, involving a total of 80,737 adult participants, showed that people with schizophrenia perceived stigma at a rate of 13.5% in developing countries and 22.1% in developed countries (Alonso et al., 2008). Another study with 1,229 participants from 14 European countries reported that approximately 41.7% of individuals with schizophrenia perceived stigma to be prevalent (Brohan et al., 2010). In Ethiopia, a study involving

409 participants found that a substantial number (62.6%) of individuals experienced a high level of perceived stigma (95% CI: 58.3, 67.4) (Tesfaw et al., 2020). A study that developed a machine learning model to identify schizophrenia-stigmatising tweets found that 47% of English-language tweets (n = 5,676) had a mostly negative sentiment (Jilka et al., 2022). A similar study conducted in Turkey, analysing 24,529 tweets, found that 68.3% and 23% of the tweets displayed stigmatising and trivialising attitudes towards schizophrenia, respectively (Kara & Kara, 2022).

In China, a study published in 2020 investigated a popular social media site (Sina Weibo, similar to Twitter) and found that 26.22% of the schizophrenia-related posts were labelled as stigmatising (Li et al., 2020). Another study of 183 adults in Shanghai, China, published in 2022, reported that people with schizophrenia were not always accepted by others due to stigma (Gearing et al., 2022). Similarly, a cross-sectional investigation in Guangzhou, China with 384 participants reported that people with schizophrenia suffered stigma (Li et al., 2017).

A systematic review including 54 studies conducted from 1994 to 2011, with a total of 55,871 participants, investigated perceived and encountered stigmatisation, along with self-stigma, among individuals diagnosed with schizophrenia. The review found that 64.5% of patients reported perceiving stigma (with a range of 45.0%–80.0%), while 55.9% had experienced actual stigma (with a range of 22.5%–96.0%), and 49.2% indicated alienation (shame) as the predominant facet of self-stigma (with a range of 27.9%–77.0%) (Gerlinger et al., 2013). In a separate study conducted in Beijing, more than 40% of the 211 individuals with schizophrenia interviewed reported experiencing

discrimination in their workplace and being looked down upon by their neighbours and family members. Twenty-eight percent of these individuals even reported relocating to avoid such stigma (Gao & Michael, 2001). These studies indicate that the stigma surrounding schizophrenia is particularly strong and may have significant negative effects on those living with the condition.

2.3.1.1 The prevalence of schizophrenia stigma among health professionals

In an integrative review comprising 18 studies on stigma towards mental illness among health professionals, the majority of the studies highlighted the presence of negative attitudes towards mental illness among health professionals, particularly towards schizophrenia (Carrara et al., 2019). A study investigating 1,123 health professionals in six general hospitals in China (excluding mental health professionals) found that 84.4% of the participants perceived people with schizophrenia as dangerous (Wu et al., 2019). Another study investigated 267 mental health professionals from 30 provinces in China and their attitudes towards people with severe mental illness, finding that 35.2% of them sometimes discriminated against people with severe mental illness, while 1.1% always discriminated against them. Moreover, 48.3% of the respondents held the belief that individuals with severe mental disorders always exhibit unpredictable behaviour, 17.2% believed that these people should not marry, and 45.7% believed that they should not reproduce (Yi et al., 2011). A study of 130 rehabilitation workers in Beijing specialising in physiotherapy from 2004 to 2008 found that, compared with their peers

in Japan, the extent to which they maintained social distance from individuals with schizophrenia was greater (Haraguchi et al., 2009). These studies collectively demonstrate that many health professionals in China possess unfavourable opinions about individuals with schizophrenia.

2.4 The negative impacts of schizophrenia stigma

Individuals diagnosed with schizophrenia face stigmatisation across multiple dimensions of their everyday existence. The following sections introduce the impact of public stigma on schizophrenia and its effects on daily life, based on a review of the relevant literature.

2.4.1 Schizophrenia stigma and interpersonal relationships

Individuals diagnosed with schizophrenia are often perceived as erratic and potentially harmful (Crisp et al., 2005), despite the fact that the actual likelihood of being harmed by someone with a severe mental illness is lower than public perception suggests (Thornicroft, 2020). This misconception of danger plays a significant role in creating and perpetuating stigma towards those with mental health issues (Ahad et al., 2023). People with schizophrenia encounter stigma in their interpersonal relationships. A study conducted in Hong Kong involving 320 participants diagnosed with schizophrenia revealed that they often experienced stigma from their parents, siblings, or close

relatives, with 57.2% reporting that their family members viewed them as highly violent (Lee et al., 2005). The INDIGO study (International Study of Discrimination and Stigma Outcomes), which involved 732 people who had been diagnosed with schizophrenia across 27 countries, found that interpersonal relationships were the most affected aspect of the participants' lives due to discrimination. Approximately half of the respondents (47%) reported difficulties when establishing or maintaining friendships, 43% reported difficulties in dealing with family members, and 27% reported difficulties within personal or romantic connections (Thornicroft et al., 2009). Other studies have also reported that stigma negatively impacts interpersonal relationships for people with schizophrenia, affecting areas such as forming friendships (Lee et al., 2005), building romantic relationships (Koschorke et al., 2014), and reintegrating into society (Vass et al., 2017). A study conducted in Poland with 202 participants diagnosed with schizophrenia revealed that 58% of them had experienced discrimination in interpersonal contacts, leading to feelings of rejection by others (87%) and broken-off interpersonal communication (50%) (Cechnicki et al., 2011). Another study in Italy with 921 participants diagnosed with schizophrenia and 379 of their first-degree relatives reported that impaired interpersonal relationships were a significant functional challenge (Galderisi et al., 2016). A systematic review including 54 studies from 1994 to 2011 found that experiencing stigmatisation in schizophrenia spectrum disorders was correlated with social anxiety (Gerlinger et al., 2013). According to a mixed study conducted in India with 282 people with schizophrenia and their caregivers, the participants reported encountering avoidance or exclusion from social interactions

due to stigma (Koschorke et al., 2017).

2.4.2 Schizophrenia stigma and employment

It has been reported that unemployment can lead to a decline in health, while reemployment after unemployment can lead to an improvement in health (Schuring et al., 2010; Schuring et al., 2017). Employment has the potential to benefit people with schizophrenia (Van Der Noordt et al., 2014). However, individuals with schizophrenia encounter discrimination in their work environment (Lee et al., 2005), and it is rarely suggested that individuals with schizophrenia should work (Schulze & Angermeyer, 2003). The low employment rate among people with schizophrenia contributes to the social and economic burden they face (Huxley & Thornicroft, 2003). Poor employment prospects can lead to feelings of loneliness among individuals with schizophrenia, hindering their ability to recover and reintegrate into society (Caple et al., 2023)

A study conducted in Poland with 202 participants diagnosed with schizophrenia reported that 55% of them had experienced discrimination in employment (Cechnicki et al., 2011). Employment poses significant challenges for people with schizophrenia. A study in Hong Kong with 179 participants diagnosed with schizophrenia found that 77 (43%) participants were unemployed due to schizophrenia stigma (Sum et al., 2021), and a study in Guangzhou with 384 participants diagnosed with schizophrenia reported that 272 (70.8%) participants were unemployed due to schizophrenia stigma (Li et al., 2017).

A nationwide study with a 35-year follow-up in Denmark, involving 9,448 participants diagnosed with schizophrenia from the ages of 15 to 25 and 20,633 participants diagnosed with schizophrenia after the age of 25, reported that the unemployment rates for people with schizophrenia at the ages of 25 and 60 were 87% and 85%, respectively (Hakulinen et al., 2019). The employment rate is lower for people with schizophrenia than people with other psychoses (Gureje et al., 2002). According to a review in 2004, the employment rate for individuals with schizophrenia varied between 4% and 31% over the last two decades in the United Kingdom, with most studies in this review showing employment rates of 10% to 20% (Marwaha & Johnson, 2004).

According to a survey conducted in France, Germany, and the United Kingdom with 1,208 participants diagnosed with schizophrenia, the employment rates were 11.5%, 30.2%, and 12.9%, respectively (Marwaha et al., 2007). People with schizophrenia encounter barriers in the workplace due to stigma, prejudice, and discrimination, and they are sensitive to the detrimental effects of unemployment (Boardman et al., 2003). Being employed positively correlates with better health-related life quality for individuals with schizophrenia (Lim & Lee, 2018). In conclusion, employment plays a crucial significance in the daily life of individuals with schizophrenia, and it is closely influenced by the level of stigma, with strong stigma contributing to lower employment rates among this population.

2.4.3 Schizophrenia stigma and housing

The living environment significantly impacts people with schizophrenia. Research has indicated that both autonomous housing and transitional residences benefit individuals with mental illness in many ways (Tops & Hansson, 2013), including improvements in life quality (Patterson et al., 2013). However, some studies present differing opinions. For instance, a study conducted in Australia with 3,231 participants reported that individuals with schizophrenia living in boarding house accommodation had less social support, fewer meaningful activities, and lower employment rates than those living in their own homes (Browne & Courtney, 2004).

Despite the preference of people with schizophrenia to live in their own homes, renting a home is not an easy task for them. Individuals with schizophrenia often face discrimination when trying to rent a home. A study conducted in Turkey with 208 participants reported that 58.2% of the participants were unwilling to rent their homes to people with schizophrenia (Taşkın et al., 2003). Additionally, there is some public support for landlords' refusal to rent homes to people with schizophrenia. For example, a study in Japan with 1,341 members of the public as participants found that 80% of them agreed with landlords' decision not to rent apartments to people with schizophrenia (Tanaka et al., 2005). Schizophrenia is considered a severe mental illness (Sæther et al., 2023), and landlords are often unwilling to rent their apartments to individuals with severe mental illnesses (Corrigan et al., 2003). In a qualitative study conducted in Ethiopia with 15 participants, one participant reported that the landlord drove them out of the house they rented after discovering they had a severe mental

illness (Smartt et al., 2021). Moreover, a cross-sectional study in Guangzhou with 384 participants diagnosed with schizophrenia reported that community-dwelling people with schizophrenia often encounter discrimination and stigma (Li et al., 2017). In summary, people with schizophrenia frequently experience discrimination when trying to rent a home or even when living in the community.

2.4.4 Schizophrenia stigma and treatment/rehabilitation

Individuals with schizophrenia may initially delay seeking treatment due to a lack of insight, and this lack of insight may also be related to stigma (Dockery et al., 2015). Stigma has been identified as a pivotal element that reduces treatment seeking and adherence for people with schizophrenia (Amsalem et al., 2020). Furthermore, stigma is a severe barrier against people with schizophrenia accessing treatment initially and receiving adequate treatment, which can endanger them or worsen their illness (Bachtiar et al., 2020). It is well known that without treatment, mental illness outcomes tend to be poor (Dockery et al., 2015). A study conducted in England with 202 participants showed that people with schizophrenia encountered more stigma-related treatment barriers than people with physical illness (Dockery et al., 2015). Compared with depression, attenuated psychosis syndrome, or psychosis-like experiences, people with schizophrenia experience greater stigma related to treatment carryover (Lee et al., 2016). A systematic review that included 144 quantitative and qualitative studies with 90,189 participants reported that treatment stigma reduced help-seeking by people with mental illness (Clement et al., 2015). Moreover, stigma not only discourages people

with schizophrenia from seeking treatment but also affects their treatment adherence (Wang et al., 2017). Thus, people with schizophrenia, who have a low treatment rate and low treatment adherence, are heavily impacted by stigma. People with schizophrenia require long-term treatment and rehabilitation. A study conducted in Hong Kong with 107 participants with schizophrenia reported that only 52 (48%) participants had achieved clinical remission at the 10-year assessment (Chan et al., 2019). Stigma significantly affects people with schizophrenia during their treatment and recovery processes (Calabrese & Corrigan, 2005). People with schizophrenia are often considered more dangerous and less likely to achieve rehabilitation than those with depression or anxiety (Wood et al., 2014). A study conducted in the United States with 516 participants with serious mental illness reported that previous encounters with prejudice and discrimination can lead to internalised stigma, which negatively affects recovery (Jahn et al., 2020). Another study conducted in China with 232 people with schizophrenia found that when these participants received their diagnosis of schizophrenia, they experienced loss of social status in their network, leading to feelings of isolation and abandonment from others, and their social support and interactions decreased, resulting in poor rehabilitation (Zhang et al., 2018). The findings of a previous study also support the notion that stigma constitutes one of the main factors contributing to premature death in people with schizophrenia (Thornicroft et al., 2016).

2.4.5 Schizophrenia stigma among healthcare professionals

The involvement of healthcare professionals is essential in the treatment and recovery of individuals with schizophrenia. However, studies have also reported that people with schizophrenia often face stigma from healthcare professionals. A systematic review, which comprised 38 studies conducted from 1999 to 2019, encompassing the participation of 10,926 mental health professionals, revealed that they harboured adverse beliefs and attitudes regarding schizophrenia (Valery & Prouteau, 2020). Additionally, a review of qualitative studies found that people with schizophrenia experienced discrimination in both psychiatric and physical healthcare domains (Mestdagh & Hansen, 2013). A cross-sectional survey conducted across 27 countries with 777 people diagnosed with schizophrenia reported that more than 17% of participants had experienced discrimination during physical healthcare interactions (Harangozó et al., 2013). Furthermore, more than 38% of respondents reported feeling disrespected during consultations with mental health staff (Harangozó et al., 2013). These findings highlight the presence of stigma within the healthcare system itself. Moreover, trainee health professionals have also been found to express negative attitudes towards schizophrenia in various studies (Chen et al., 2022; Dixon et al., 2008; Lincoln et al., 2008; Peer et al., 2015; Svensson et al., 2014). These unfavourable attitudes can greatly influence the provision of care and support to individuals with schizophrenia.

2.4.6 Schizophrenia stigma by association

The stigma of schizophrenia does not solely impact individuals diagnosed with the condition, but also extends to other people associated with them, a phenomenon often referred to as ‘courtesy stigma’ or ‘stigma by association’. A study conducted in China with 427 caregivers of people with schizophrenia revealed that they had experienced universal stigma, which may indicate that they encounter stigma frequently in their daily life (Yin et al., 2014). A systematic review employing qualitative methods to explore the experiences of caregivers who provide care for their family members with schizophrenia, which included 43 studies, reported that caregivers experienced stigma and isolation (Cleary et al., 2020). A literature review comprising 200 studies also highlighted stigmatisation as a substantial burden for caregivers (Millier et al., 2014). Health professionals working with individuals with serious mental illnesses are also affected by the stigma of association (Yanos et al., 2017). A study employing a cross-sectional design carried out in Singapore with 462 health professionals working in mental health domains similarly reported being affected by the stigma of association (Picco et al., 2019).

2.4.7 Summary of the impact of schizophrenia stigma on daily life

The stigma of schizophrenia significantly impacts various aspects of individuals’ daily lives, including their ability to build and maintain interpersonal relationships, seek and retain employment, find suitable housing, and access appropriate treatment and

rehabilitation. Additionally, people with schizophrenia encounter stigma from health professionals, which can further exacerbate their challenges in seeking and receiving adequate care.

Unfortunately, the caregivers of individuals with schizophrenia, as well as mental health workers, also experience the repercussions of schizophrenia stigma from the individuals to which they provide services. The above-mentioned studies have clearly demonstrated that people with schizophrenia face stigma from the public, and prevalent stereotypes exist towards them. As previously mentioned, the stigma associated with schizophrenia emerges from both the broader public and mental health professionals. Therefore, future research should focus on developing interventions to address and challenge the stigmatising attitudes of mental health professionals, who serve as critical allies for people with schizophrenia. It is especially crucial to target and reduce stigma among trainee health professionals during their early training period, as previous studies have shown that stigma formation can occur during this phase (Sharif, 2015). By addressing and combatting stigma within the mental health profession, we can create a more supportive and understanding environment for individuals with schizophrenia and improve their overall well-being.

2.5 Theoretical basis of interventions aimed at reducing schizophrenia stigma

A variety of theories can be utilised for the creation of interventions aimed at decreasing the stigma associated with mental illness. Yao (2021) applied Weiner's attribution

theory to create an intervention for decreasing the stigma associated with schizophrenia (Yao et al., 2021). This intervention involved utilising the biogenetic approach, which emphasises the biological or genetic causes of schizophrenia to reduce negative attitudes towards individuals with the condition. The biogenetic approach operates on the premise that attributing schizophrenia to biogenetic factors would reduce the perception by others that those affected by schizophrenia are responsible for their condition, thereby decreasing the extent to which they are blamed and rejected by society (Angermeyer et al., 2011; Clement et al., 2010). In an effort to reduce social distance towards people with schizophrenia, Yao (2021) used attribution theory to develop an intervention that attributed the cause of the condition to biogenetic factors. However, the results revealed that this intervention did not significantly affect participants' desire for social distance.

Allport (1954) first proposed intergroup contact theory, according to which interacting socially with individuals from an outgroup would reduce intergroup hostility and foster favourable intergroup relationships, particularly when the interaction was positive or with superior quality (Allport et al., 1954). In the United Kingdom, an intervention was developed to reduce the stigma surrounding schizophrenia under the guidance of intergroup contact theory, and 200 university students took part in the associated research (West et al., 2014). The results showed that the relationship between contact and avoidance was mediated by lower levels of fear and intergroup anxiety. This implies that contact could effectively reduce prejudice, even against this highly stigmatised group (West et al., 2014). A Hong-Kong-based study that aimed to reduce the stigma

associated with schizophrenia among 37 college students found that varying degrees of interaction with individuals with schizophrenia had distinct impacts on stigma reduction (Gao & Ng, 2021). Knowledge sessions, even without direct contact, were most effective at enhancing participants' understanding, while moderate to intimate levels of contact significantly improved the participants' attitudes towards people with schizophrenia and brought about changes in social distance (Gao & Ng, 2021).

Contact theory suggests that engaging with individuals who have mental illness can diminish prejudiced attitudes and behaviours towards them. According to this theory, as people become more acquainted with individuals who are experiencing severe mental illness, their inclination to adopt stigmatising attitudes and behaviours diminishes (Graves et al., 2011). In a two-phase intervention study involving 229 participants in the United States, individuals were encouraged to interact with people who had schizophrenia, and the study found that such contact could reduce stigma towards schizophrenia (Graves et al., 2011). Previously, interventions that focused on mitigating provider stigma were mainly based on the knowledge–attitude–behaviour (KAB) model, also referred to as the knowledge–attitude–practice (KAP) model. This model, which stands as a crucial theoretical framework within health education, postulates that alterations in behaviour are influenced by both knowledge and attitude (Schneider, 2003). The KAP framework assumes that enhanced biomedical comprehension of mental illness among healthcare providers is associated with improved attitudes and behaviours. Nevertheless, there have been instances in which interventions based on KAP have not yielded the desired shifts in attitudes and

behaviours, and in certain cases, have even led to adverse effects (Stuart et al., 2011). Despite having a greater biomedical understanding of mental illness, healthcare providers still hold attitudes and behaviours marked by stigma (Henderson et al., 2014; Thornicroft et al., 2016; Ungar et al., 2016).

The KAP framework has a counterpart known as 'what matters most,' an anthropological theory that focuses on the notion of moral experience within one's immediate surroundings (Kleinman, 1999). In this theory, stigma is perceived as a moral occurrence arising from challenges to individual and group identity within a particular local setting, which in turn gives rise to stigmatising conduct by individuals (Keusch et al., 2006; Kleinman, 2006; Yang et al., 2014; Yang et al., 2007). The moral encounters of healthcare providers are moulded by the symbols, rituals, and structure of the healthcare setting within which they are situated (Kleinman & Hall-Clifford, 2009). The moral encounters related to mental healthcare in specific local contexts have been described in the ethnography of medical students during psychiatry rotations, among psychiatry residents undergoing training, and within emergency room staff providing care to people with psychiatric issues (Konner, 1987; Luhrmann, 2001; Link & Rhodes, 1993). These accounts often highlight the challenges that people with mental disorders pose to health professionals who might lack training in psychiatry or the resources necessary to deliver proficient care, leading to threats to their social status and self-image as healers who can alleviate suffering.

The theory of dual coding, introduced by Paivio in 1986, suggests that people can learn more effectively when they receive information through both visual and auditory

channels (Paivio, 1986). According to this theory, visual and auditory forms of information undergo processing through distinct cognitive subsystems: one dedicated to visual imagery and another responsible for language. Television serves as a prominent illustration of the dual coding theory in practice, as it employs both auditory and visual subsystems to convey information (Villani, 2001). Likewise, research conducted by Whitehouse (2006) has demonstrated that combining images with auditory information enhances recall of the information presented (Whitehouse et al., 2006). In the context of reducing stigma surrounding mental disorders, the inclusion of dual coding theory in the conceptual model of previous research is attributable to its utilisation of both visual and auditory information, which serves to enhance the processes of learning and comprehension.

Narrative paradigm theory (NPT) was introduced by Fisher in 1987 as a theory of persuasive communication that elucidates how individuals choose among competing narratives to construct their own rendition of historical events (Cragan, 1995). The theory has five main assumptions (Fisher, 1987). First, humans possess an innate inclination for storytelling, using both the acts of recounting and of engaging with narratives to acquire insights about the world. Second, NPT proposes that individuals evaluate the credibility of each narrative they encounter using the principle of 'good reason', influenced by the concepts of narrative probability and narrative fidelity. Narrative probability pertains to how individuals evaluate the logical flow and internal harmony of a story, while narrative fidelity relates to how truthful a story appears. However, NPT acknowledges that individuals might embrace irrational narratives or

discard rational ones based on their personal values. Third, according to NPT, the notion of 'good reason' is individualised and impacted by an individual's cultural background, personality, life encounters, and principles. Fourth, NPT posits that rationality is influenced by humans' inherent disposition as creatures of narrative, implying that individuals perceive a story as rational when it resonates with their personal life experiences. Finally, NPT emphasises that people choose from various stories to construct and reconstruct social reality, which is an ongoing process.

In the context of mental health, narrative storytelling by individuals who have lived experience of mental health challenges can significantly impact the listener's perception and understanding of mental illness (Frank, 2000). Hearing such stories can illuminate multiple realities for the listener, providing them with a different perspective on life. Moreover, narrative stories can question and alter the listener's existing viewpoints by offering them insight into the human experience, particularly in terms of time, sequence, and transformation (Sandelowski, 1991).

Piaget's theory of adaptation and equilibrium (1972) proposes that individuals incorporate new information learned from their experiences into their existing schemas or create new ones (Piaget, 1972). This constant process of schema revision and construction elevates individuals' comprehension of the world and fosters cognitive advancement. According to Piaget's theory, 'first stories' are crucial as they serve as a reference point for judging the truthfulness of other stories (Schrag, 1991). These initial stories are viewed as accurate and are essential for promoting positive attitudes towards mental disorders and reducing stigma. Therefore, it is vital to provide developmentally

appropriate and truthful first stories about mental health.

Diffusion of innovations theory aims to explain the spread of new ideas and technologies, including how and why they are adopted at different rates (Rogers, 1962). According to this theory, change agents play a crucial role in accelerating social change. These individuals are admired and seen as role models by others, making them well-positioned to promote and spread new ideas and practices in social and organisational contexts (Dearing, 2009). Additionally, the theory of planned behaviour proposes that individuals have deliberate control over their behaviour, and that their efforts to perform a behaviour are positively related to their likelihood of success. People are more likely to engage in a behaviour if they hold a favourable attitude towards it (i.e., perceive positive consequences) and feel that important others approve of it (i.e., perceive subjective norms) and if they have a high degree of perceived control over the behaviour. Media interventions that aim to shift attitudes and subjective norms to make them more favourable and increase individuals' perceived control may be effective at reducing mental illness stigma (Pinto & Logsdon, 2009). These theories have been recommended for use in developing interventions to decrease stigma related to mental illness (Pinto & Logsdon, 2009).

2.6 Interventions aimed at reducing schizophrenia stigma

Efforts aimed at altering public stigma have been classified into three frameworks: education, contact, and protest (Corrigan & Penn, 1999). These paradigms have also

been widely utilised in efforts to reduce schizophrenia stigma. Researchers have employed different forms of interventions based on those three frameworks, either individually or in combination, to decrease schizophrenia stigma.

2.6.1 Educational interventions aimed at reducing schizophrenia stigma

Diverse educational approaches, including public service announcements (PSAs), literature, pamphlets, films, videos, Web content, podcasts, and virtual reality, have been employed to mitigate the stigma linked to mental health conditions (Finkelstein & Wasserman, 2008). These interventions offer several benefits, including their wide reach and cost-effectiveness. For instance, a PSA series featuring a celebrity was released on 21 October 2009, backed by the Substance Abuse and Mental Health Services Administration and the National Institute of Mental Health. The PSAs depicted pairs of actors in a train station wearing T-shirts with labels of schizophrenia and their loved ones, for example, their parents or their children. The use of star power in such interventions has proven to be effective at reducing stigma, as demonstrated by news coverage and online activity (Corrigan et al., 2012). Elsewhere, the World Psychiatric Association's programme 'Open the Doors', which disseminates information about schizophrenia through various media outlets, including websites, meetings, books, articles, newspapers, lectures, and congresses, has already reached 18 countries (Kadri & Sartorius, 2005).

Research has been carried out on a global scale to assess the efficacy of various

interventions at diminishing stigma associated with schizophrenia. For example, an Austrian study called the Anti-Stigma-Campaign from 2000 to 2002 utilised TV advertisements, newspapers, flyers, and posters to decrease schizophrenia stigma among 988 participants (Grausgruber et al., 2009; Makowski et al., 2016). A German study involving 51 students used a film to reduce stigma towards schizophrenia (Röhm et al., 2017), while an Australian podcast series called 'Let's Talk' was used to reduce stigma among the public (Morgan et al., 2021). In Brazil, a study involving 21 medical students utilised an augmented reality tool to simulate the psychotic symptoms characteristic of schizophrenia. This method established an immersive encounter that could replicate the pathological experiences of an individual with schizophrenia (De et al., 2017). This approach enabled individuals to develop a deeper understanding of schizophrenia symptoms, leading to a reduction in stigma and the cultivation of heightened empathy for individuals impacted by the disorder. Another study involving 1,203 individuals aged 18–30 found that watching a 90-second video was more effective at reducing stigma towards schizophrenia than reading a written description of the same content or receiving no intervention as a control (Amsalem et al., 2020). All of these studies have shown efficacy in decreasing participants' stigma towards schizophrenia. However, considering their cost and time consumption, researchers should carefully consider the implementation method of educational interventions.

2.6.2 Contact interventions aimed at reducing schizophrenia stigma

In a previous study, both direct and indirect contact were utilised to decrease mental disorder stigma (Nguyen et al., 2012). Similarly, other studies have also employed direct and indirect contact interventions to decrease participants' stigma towards individuals with schizophrenia, and even imaginary contact has been shown to be effective at reducing schizophrenia stigma (Kaminetzky, 2017).

For example, a study conducted in Australia involving 97 university students utilised direct and imaginary contact to decrease stigma towards schizophrenia (Giacobbe et al., 2013). Likewise, Li (2017) used a 10-minute video to employ indirect contact to decrease stigma towards schizophrenia in 191 university students in China (Li et al., 2017). In another study conducted in the United States, McDonald (2014) used 1–3 minutes of imaginary contact to decrease stigma towards schizophrenia in 240 university students (McDonald et al., 2014).

While these studies illustrate the efficacy of contact-based interventions at diminishing stigma related to schizophrenia, researchers may need to consider privacy issues associated with individuals with schizophrenia and the varying efficacy of direct and indirect forms of contact. In fact, in a study by Nguyen (2012), direct contact was found to be more effective than indirect contact (Nguyen et al., 2012), indicating that researchers should choose an appropriate approach when implementing a contact intervention.

2.6.3 Protest interventions aimed at reducing schizophrenia stigma

Corrigan (1999) described 'protest' as a strategy aimed at diminishing stigmatising attitudes towards mental illness (Corrigan & Penn, 1999). For instance, the National Alliance on Mental Illness employs an email notification system to inform members about portrayals in the media that perpetuate stigma against individuals affected by mental health issues. It also offers guidance on reaching out to the concerned organisation and its sponsors (Corrigan, 2005). This structured type of protest can serve as a valuable means to persuade television networks and other media platforms to cease airing programmes and advertisements that perpetuate stigma. In their examination of research carried out across Europe and the United States, researchers discovered that protest interventions can communicate two types of messages: those concerning the misrepresentation of mental illness and those addressing adverse perceptions of mental disorders (Corrigan et al., 2012). However, research concerning the impact or efficacy of this strategy is scarce. Corrigan (1999) drew on insights from the realm of social psychology to illustrate that protest interventions might yield temporary shifts in attitudes. However, they contended that this approach faces two noteworthy constraints. First, a majority of protest interventions fail to replace negative stereotypes with alternative viewpoints or convictions. Second, a notable limitation is the occurrence of the rebound effect – an unfavourable outcome of prejudice suppression wherein suppressing specific notions evokes the same psychological responses as actively contemplating those notions (Corrigan & Penn, 1999). According to some research, the rebound effect may lead to unintended consequences, whereby, in protest campaigns

that encourage individuals to suppress their prejudices, the negative attitudes towards a group remain unchanged or even worsen (Macrae et al., 1994; Wegner et al., 1993; Wegner & Schneider, 1989). The above-mentioned 'Open the Doors' initiative, part of the 'Global Program Against Stigma and Discrimination Because of Schizophrenia' initiated by the World Psychiatric Association, is presently being executed in 20 countries. This programme utilises anti-stigma initiatives that involve protesting against discriminatory behaviour or structural discrimination (Gaebel et al., 2008). A systematic study reported that protest seems to be a valid intervention, but its actual influence on diminishing stigma seems to be modest and necessitates additional exploration (Corrigan et al., 2012).

2.6.4 Combined interventions aimed at reducing schizophrenia stigma

While both education and contact have demonstrated effectiveness at diminishing unfavourable stereotypes, contact interventions have displayed more pronounced efficacy at mitigating behavioural aspects of stigma, including social distancing and willingness to seek help, as well as in engendering enduring transformations (Corrigan et al., 2007). In a meta-analysis, contact was found to be more efficacious than education in diminishing stigma (Corrigan et al., 2012). It has been suggested that incorporating either direct or indirect interaction is a crucial element in achieving long-term, behaviour-based reductions in mental health stigma (Corrigan et al., 2007). As previously mentioned, the inclusion of contact is widely believed to be necessary for

stigma reduction (Corrigan et al., 2007). Therefore, the contact strategy is frequently combined with education to yield combined outcomes (Chan et al., 2009). Many studies have used interventions consisting of contact and education to reduce stigma towards schizophrenia (Cangas et al., 2017; Chan et al., 2009; Economou et al., 2012; Pinfold et al., 2005).

2.6.5 Other interventions for decreasing schizophrenia stigma

While many efforts targeted at diminishing the stigma associated with mental illness are also applicable to reducing the stigma of schizophrenia, there are specific interventions for decreasing schizophrenia stigma that differ from those used for other mental illnesses. For instance, individuals with schizophrenia often experience hallucinations. A systematic review of 10 studies found that replicating the auditory and visual hallucinations encountered by individuals with schizophrenia has the potential to enhance empathy and comprehension of the condition. However, the review also reported contradictory results, showing that this intervention consistently led to an increase in both empathy and a preference for maintaining social separation from people with schizophrenia (Ando et al., 2011). Another intervention for reducing schizophrenia stigma is the renaming of the condition. A systematic review of 23 studies reported that renaming schizophrenia may be linked to improvements in adults' attitudes towards the condition (Yamaguchi et al., 2017).

2.6.6 Online interventions aimed at decreasing schizophrenia stigma

Given the increasing prevalence of information technology, exemplified by an estimated Internet usage rate of 87% (International Telecommunication Union, 2020) and 3G mobile network coverage of 98% in developed countries during 2019, online platforms offer a cost-effective and extensive method for reaching the population (Rogers et al., 2018). Online interventions have gained popularity for reducing schizophrenia stigma, thanks to the widespread use of the Internet. These interventions can be delivered in a standardised manner, while still offering survey users the flexibility to participate at their own pace, time, and location (Schomerus et al., 2016). The results of a study conducted in Germany, which involved 1,679 participants in an online effort aimed at diminishing stigma related to schizophrenia, indicated the efficacy of online interventions at mitigating this stigma (Schomerus et al., 2016). The COVID-19 pandemic has further accelerated the enthusiasm for and adoption of digital services (Wind et al., 2020), and safe distancing measures incorporated into our daily lives have prevented people from gathering. Therefore, online interventions have replaced the less convenient face-to-face mode for implementing treatments at this moment. Systematic reviews have revealed that online interventions have a noteworthy stigma-reducing impact, as participants in online intervention groups have exhibited a notable reduction in public stigma compared with those who did not engage in these interventions (Brown, 2020; Janoušková et al., 2017). Additionally, social-contact-oriented interventions conducted through video recordings have similarly proven to be effective at attaining destigmatisation outcomes (Brown, 2020; Janoušková et al., 2017).

This suggests that conventional stigma interventions can be effectively migrated to online platforms, while preserving their clinical effectiveness (Sampogna et al., 2017).

2.7 Studies of interventions for reducing schizophrenia stigma

Many studies have been conducted on interventions to decrease schizophrenia stigma, including systematic reviews (Ando et al., 2011; Valery & Prouteau, 2020; Yamaguchi et al., 2017), cohort studies (Bachtiar et al., 2020), and controlled trials (Amsalem et al., 2020). Educational interventions combined with contact have proven to be effective at decreasing participants' stigma towards serious mental illness (Morgan et al., 2021), as well as schizophrenia stigma (Chan et al., 2009).

2.7.1 Study settings

As mentioned, numerous studies aimed at reducing schizophrenia stigma have been conducted on diverse populations, using various interventions, and without geographic or national limitations

2.7.2 Control interventions

As mentioned, RCTs examining the effects of reducing schizophrenia stigma have utilised various control interventions. These include face-to-face interviews (Li et al., 2017), imaginary contact (Birtel & Crisp, 2012; Kaminetzky, 2017), reading a story

(Matthews, 2009), education sessions (Patten et al., 2012), no intervention (Campbell et al., 2011; Thonon et al., 2016), watching videos (West & Turner, 2014), perusing a manual for Mental Health First Aid, being assigned to a waiting list control group (Jorm et al., 2010), workshops (Michaels et al., 2014), watching documentary films (Penn et al., 2003), attending lectures (Clement et al., 2012), and traditional-instruction psychology classes (Mann & Himelein, 2008), among other approaches.

2.7.3 Outcome measures

The outcomes of these studies were assessed based on changes in knowledge levels, attitudes, help-seeking, and social distance (Waqas et al., 2020), as well as empathy and behaviour. Table 2.1 summarises the various scales that have been used to assess stigma.

Table 2.1 Outcome measures of interventions aimed at decreasing schizophrenia stigma

Other	1. Continuum and categorical beliefs (Thibodeau & Peterson, 2018) 2. Prognostic pessimism item (Lebowitz & Ahn, 2012) 3. Emotional reactions (Schomerus et al., 2013) 4. Level-of-contact report (Holmes et al., 1999) 5. Schizophrenia-related stigma evaluation (Silva et al., 2017) 6. Dangerousness Scale (Link et al., 1987) 7. Medical Condition Regard Scale (Christison et al., 2002) 8. Questionnaire on aetiology of depression and schizophrenia (Mc & Klusmann, 1988) 9. Community attitudes towards the mentally ill scale (Taylor & Dear, 1981) 10. Social Interaction Scale (Kelly et al., 1987) 11. Questionnaire on Opinions about Mental Illness (Magliano et al., 2012) 12. Semi-structured interviews (Rettenbacher et al, 2004) 13. Questionnaire about outcomes of schizophrenia (Jorm et al., 1997) 14. Implicit Association Test (Greenwald et al., 1998) 15. Causal beliefs about schizophrenia questionnaire (Lincoln et al., 2008)

	16. Standardized Stigmatization Questionnaire (Haghighat, 2005) 17. Devaluation–Discrimination Scale (Link et al., 1987) 18. Stereotypes and social distance questionnaire (Schulze et al., 2003)
Knowledge	1. Familiarity with Mental Illness Scale (Corrigan et al., 2003) 2. Basic knowledge about schizophrenia and the ability to identify it and distinguish it from other conditions (Ling et al., 2014) 3. Knowledge about Schizophrenia Test (Zhou & Li, 2020)
Attitude	1. Community Attitudes Towards Mentally Ill Scale (Taylor & Dear, 1981) 2. Questionnaire on stereotypes (Schulze et al., 2003) 3. Attributions regarding mental illness (Chung & Chan, 2004) 4. Attitudes towards people with schizophrenia (Batson et al., 1997) 5. Negative stereotypes scale (Schomerus et al., 2016) 6. Essentialism Schizophrenia Scale (Haslam et al., 2000) 7. Opening Minds Survey for Health Care Providers (Kassam et al., 2012) 8. Attitudes of Mental Illness Questionnaire (Luty et al., 2006) 9. Brief Version of the Attribution Questionnaire (Cooper et al., 2003) 10. Affect Scale (Penn et al., 2003) 11. Mental Illness Clinicians' Attitudes Scale (Pan, Zhou, & Guan, 2013)
Behaviour	1. Reported and Intended Behaviour Scale (Evans-Lacko et al., 2011)
Help-seeking	1. One item on help-seeking (Fernandez et al., 2022)
Social distance	1. Social Distance Scale (Link et al., 1987)
Empathy	1. Empathic Feelings for People Living with a diagnosis of Schizophrenia (Batson et al., 1997)

As can be seen, different researchers have focused on different aspects of schizophrenia stigma.

2.7.4 Research gaps

The effect of stigma on the caregiving individuals and health professionals underscores the far-reaching consequences of schizophrenia stigma beyond the individuals diagnosed with the condition. Numerous investigations have been carried out to examine the effectiveness of interventions at decreasing schizophrenia stigma and explaining the causes and formation of stigma. However, some research gaps can be identified in previous studies.

1. The overall methodological rigour of previous studies is lacking. Limitations have included unclear procedures for randomisation and allocation concealment (Amsalem et al., 2020), incomplete reporting of outcome data (Hsia et al., 2022; Chiu et al., 2021), lack of validated outcome measures (Aluh et al., 2022), and significant potential for biases linked to the lack of participant and outcome-assessor blinding (Amsalem et al., 2020; Bunn et al., 2009).
2. Culture plays an important role in stigma formation and development, but few studies have considered cultural impacts in the design and implementation of interventions for decreasing schizophrenia stigma.
3. The development of intervention strategies has rarely been guided by theory.
4. The long-term effect and the effect size of interventions for decreasing schizophrenia stigma have rarely been reported.
5. There is a lack of RCTs of culture-specific interventions for decreasing schizophrenia stigma.
6. The effectiveness and feasibility of culture-specific interventions at decreasing schizophrenia stigma have not been examined by rigorous RCTs with standardised outcome measures.
7. The limited sample sizes in both intervention and control groups in certain studies may hinder the generalizability of the findings to the broader population.
8. The interventions in the studies comprised various elements, making it challenging to identify the most effective components.
9. Inadequate analysis of socio-demographic information overlooks the significant

factors potentially linked to the schizophrenia stigma.

10. The methodologies of previous studies have been generally poor, warranting the need for high-quality trials to assess the feasibility and acceptability of culture-specific interventions in decreasing schizophrenia stigma.

Previous studies have mentioned the importance of culture in stigma. Therefore, interventions designed and developed to decrease schizophrenia stigma should consider cultural impacts. Such culture-specific interventions would be more effective and their efficacy would be longer-lasting than those that don't consider cultural factors. Subsequent trials employing robust methodologies should be undertaken to substantiate the effectiveness of culture-specific interventions. Additionally, the results of these trials should be documented in accordance with the Consolidated Standards of Reporting Trials (CONSORT) guidelines.

2.8 Summary of this chapter

This chapter presents a comprehensive literature review on schizophrenia, schizophrenia stigma, and interventions aimed at reducing schizophrenia stigma. Schizophrenia is a prevalent mental disorder globally, and the stigma associated with it creates significant disadvantages for individuals with schizophrenia, their family members, and even healthcare professionals involved in their treatment and nursing care. Stigma can lead to various challenges in daily life; hinder rehabilitation and treatment; and in extreme cases, contribute to suicide.

Numerous studies have been conducted worldwide to address schizophrenia stigma.

These studies have explored different intervention approaches, including education, contact, protest, and combinations of these methods, to reduce schizophrenia stigma. Among these approaches, education combined with contact has been recognised as the most effective at decreasing schizophrenia stigma. Additionally, online interventions have been found to be equally as efficacious as in-person interventions at diminishing the stigma associated with mental illness. Culture is an important factor influencing stigma formation and development, but it has often been overlooked in the design and development of interventions aimed at decreasing schizophrenia stigma. Moreover, many studies in this area lack relevant theoretical guidance.

While most studies on reducing schizophrenia stigma have been conducted in Western countries, China also faces issues related to schizophrenia stigma. There is a need for research focusing on interventions tailored to Chinese culture to effectively decrease schizophrenia stigma. Furthermore, studies addressing schizophrenia stigma among health professionals are crucial, as the stigma held by healthcare staff can significantly impact the treatment and recovery of individuals with schizophrenia. However, such studies are scarce, and even fewer focus on trainee health professionals.

In conclusion, this literature review emphasises the significance of addressing schizophrenia stigma through well-designed interventions that consider cultural factors and target healthcare professionals and students. Further research with robust methodologies is essential to develop effective strategies for reducing schizophrenia stigma and improving the lives of people with schizophrenia and their family members.

CHAPTER THREE: SYSTEMATIC REVIEW.

3.1 Introduction

This chapter presents a systematic review that provides a comprehensive analysis of previous research on interventions aimed at reducing stigma towards schizophrenia among trainee health professionals. The main goals of this systematic review are twofold: first, to assess the efficacy of these interventions at decreasing stigma among trainee health professionals, and second, to identify the key characteristics of successful interventions and suggest directions for future research. Section 3.2 provides the background, while Section 3.3 outlines the methods employed. The findings are detailed in Section 3.4. Sections 3.5 and 3.6 provide a discussion and conclusion of this review, respectively. Section 3.7 provides a summary of this chapter.

3.2 Background

Healthcare students are future professionals who will play an essential role in the treatment, nursing, and recovery processes of people diagnosed with schizophrenia. Studies have shown that health professionals frequently harbour unfavourable opinions regarding mental disorders (Bell et al., 2008; Bennett & Stennett, 2015; Gunay et al., 2016; Poreddi et al., 2015; Wimsatt et al., 2015). Attitudes formed early in their training or education are more susceptible to change (Korszun et al., 2012). Trainee health professionals' attitudes tend to become more stable after they complete their professional training at medical school (Korszun et al., 2012). Compared with health professionals, trainee health professionals more readily change their stigmatising attitudes towards individuals with mental disorders (Korszun et al., 2012). Furthermore,

the responses of trainee health professionals to incidents of stigmatising behaviour or attitudes can serve as a model for others who strive to exhibit more positive behaviour (Abbey et al., 2011). Current reviews indicate that the primary focus of most research is on reducing the stigma associated with mental disorders (Angermeyer & Dietrich, 2006; Brohan et al., 2010; Corrigan et al., 2012; Lien et al., 2021; Morgan et al., 2018; Petkari et al., 2018; Stubbs, 2014; Xu et al., 2017; Yamaguchi et al., 2013). These reviews use the general term 'mental illness' to encompass different mental disorders, encompassing conditions such as depression, schizophrenia, and bipolar disorder. Intervention methods such as education, contact, or a combination have been utilised to decrease the stigma associated with mental disorders. However, as previously mentioned, schizophrenia stands out as one of the most heavily stigmatised mental disorders, and efforts to diminish the associated stigma through interventions may differ from those aimed at reducing the stigma associated with other mental disorders. While the reviews indicate the effectiveness of interventions at decreasing mental illness stigma, there is limited assessment of the efficacy of these interventions at changing trainee health professionals' stigmatisation of schizophrenia.

A systematic review would be an effective way to integrate studies that focus on reducing trainee health professionals' stigmatisation of schizophrenia. Nevertheless, as far as our knowledge extends, such a review has not been undertaken. It is important to explore specific interventions that are effective at decreasing schizophrenia stigma among trainee health professionals. These interventions can provide evidence-based strategies for reducing stigma towards schizophrenia and identify effective, low-cost,

and easily implemented approaches that can be generalised to other mental illnesses. Additionally, the results of these interventions can serve as a reference for developing interventions to reduce stigma towards other mental disorders, for example, bipolar disorder, depression, and anxiety.

To address the knowledge gap regarding methods of reducing trainee health professionals' stigma towards schizophrenia, this systematic review had the following aims.

1. Determine the effectiveness of interventions at decreasing trainee health professionals' stigma towards schizophrenia.
2. Describe the characteristics of interventions aimed at reducing trainee health professionals' stigma towards schizophrenia.
3. Provide recommendations for future research directions in the field.

The aim of this systematic review was to gather and analyse available evidence on interventions designed to address the stigma that trainee health professionals hold towards schizophrenia. We aimed to evaluate the effectiveness of these interventions and gain insights into their key components, such as educational aspects, contact-based approaches, and other strategies used. Furthermore, we aimed to pinpoint deficiencies in the current body of literature and propose potential directions for future research. This may involve exploring innovative intervention approaches, investigating the long-term effects of these interventions, examining factors that influence their success, and identifying strategies for implementing and maintaining effective interventions in

educational and contact settings. In summary, the goal of this systematic review was to make a contribution towards the advancement of evidence-based interventions that can effectively reduce stigma towards schizophrenia among trainee health professionals. Ultimately, this will promote greater compassion and knowledge in mental healthcare practices within the domain.

3.3. Materials and methods

3.3.1 Information sources and search strategy

This systematic review followed the outline of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and has been registered with the number CRD42022338338. A thorough exploration of the literature was conducted across nine electronic databases, namely PubMed, Embase, CINAHL, PsycINFO, MEDLINE, Web of Science, Scopus, China National Knowledge Infrastructure (CNKI), and Wan Fang. Additionally, a grey literature search involved reviewing the first 10 pages of Google and Google Scholar using specific keyword combinations. The search was not limited to specific intervention or control measures, and systematic reviews were also manually searched for relevant studies.

To develop the search keywords, a two-step process was followed. First, the search keywords were refined and specified, and a preliminary search was conducted to evaluate their accuracy in identifying target articles. Second, the guidance of experienced library staff was sought to ensure the accuracy of the search keywords.

Adjustments were made based on the suggestions provided by the library staff to avoid retrieving irrelevant results and to ensure that relevant studies were included. The search keywords were focused on the target population ('P') and study outcomes ('O') of the PICO framework. The target population was narrowed down to health students, while the outcome measures included various indicators of the level of stigmatisation of schizophrenia. The search strategy incorporated the following keywords:

'Health student', 'Schizophrenia', and terms related to stigma, including 'Stigma', 'Discrimination', 'Attitude', 'Behaviour', 'Social distance', 'Knowledge', 'Beliefs', 'Stereotype', 'Bias', and 'Prejudice'. No time restrictions were applied to the search, and equivalent Chinese search terms were utilised to identify relevant articles in the CNKI and Wan Fang databases. Language restrictions were not imposed, and the search period spanned from the inception of each database to the search date. An illustration of the search approach employed for the Web of Science database is shown in Table 3.1. The details of the search strategies for other databases are provided in Appendix 1.

Table 3.1 The search strategy for Web of Science

Database	Search strategy
Web of Science	'Health student' AND 'Schizophren*' AND ('Stigma*' OR 'discriminat*' OR 'attitude*' OR 'behav*' OR 'social distance*' OR 'knowledge' OR 'belief*' OR 'stereotyp*' OR 'bias*' OR 'prejudice*') in all fields

3.3.2 Types of studies

The systematic review encompassed studies that fell under the following designs: RCTs, quasi-RCTs, non-randomised controlled trials (NRCTs), and controlled before-and-after studies (CBAs).

3.3.3 Inclusion and exclusion criteria

The criteria for inclusion and exclusion were formulated in line with the PICO framework.

3.3.4 Types of participants

The participants in this systematic review consisted of trainee health professionals, without any restrictions based on age, sex, race, beliefs, or country of origin. Trainee health professionals were defined as students enrolled in academic programmes such as fields encompassing nursing, medicine, social work, nutrition/dietetics, pharmaceutical sciences, dentistry, occupational therapy, and physiotherapy (Khan et al., 2016).

3.3.5 Types of interventions

The inclusion criteria for this systematic review did not impose any restrictions based on the theoretical basis or cultural practice associated with the studies. That is, all interventions aimed at reducing health students' stigma towards schizophrenia were considered, irrespective of their underlying theoretical framework or cultural context. This review would not include qualitative studies that aim to decrease schizophrenia stigma.

3.3.6 Types of comparison

There were no restrictions on the type of control interventions used in studies that included a control arm. The control interventions were allowed to include traditional lectures, watching films, clinical placements, or any other type of intervention that was used as a comparison for the intervention aimed at reducing health students' stigma towards schizophrenia.

3.3.7 Types of outcome measures

Most studies utilised scales to assess participants' knowledge of schizophrenia, attitudes, intentional behaviour, social distance, and empathy towards schizophrenia or individuals with schizophrenia as indicators of stigma. However, this systematic review also included studies that used other measurement tools to evaluate stigma towards

schizophrenia.

3.3.8 Primary outcomes

Stigma was assessed by examining the direct changes in scores quantifying knowledge, attitudes, social distance, and intentional behaviour towards people with schizophrenia.

3.3.9 Secondary outcomes

Stigma was indirectly assessed by examining changes in scores quantifying the empathy towards people with schizophrenia or through other related indirect assessments.

3.3.10 Study screening process

Two researchers (XC and XLL) independently conducted the search for studies and followed a six-step process to select the target studies. In Step 1, they searched for studies from the nine databases and Google Scholar, and collated the search results. In Step 2, they examined the references of relevant systematic reviews and meta-analyses to identify additional studies. Step 3 involved removing duplicate studies. In Step 4, the researchers conducted a primary screening by reviewing the titles and abstracts of the studies. In Step 5, they conducted a secondary screening by reviewing the full texts of the selected studies. In Step 6, the two researchers cross-checked their screening results.

In the event of any disagreement, a third researcher was invited to resolve the disagreement.

3.3.11 Data screening and extraction

The two researchers independently extracted data, and any discrepancies were resolved either through discourse or by engaging a third researcher. The extracted data were compiled and entered into a statistical software program for analysis. The data extraction table included the following categories:

1. General study information: first author, year, and country
2. Study type and sample size
3. Study participants
4. Contents of the intervention and control groups
5. Number of the intervention (number of sessions, duration of each session, duration of the intervention, and length of follow-up)
6. Outcome measurements
7. Main outcome results of the intervention group
8. Delivery of the intervention (who and how), approaches of the intervention (face to face or online), and theoretical framework
9. Effect size and quality assessment

By sorting the data into these categories, the researchers ensured that all relevant information was captured and organised for further analysis.

3.3.12 Quality assessment

The two researchers autonomously evaluated the quality of the studies included in the analysis using the Cochrane collaboration tool (Higgins et al., 2011) for RCTs (ROB-2) and for quasi-RCTs, NRCTs, and CBAs (ROBSIN-1). These tools assess seven aspects: sequence generation, allocation concealment, blinding of participants, blinding of assessors, incomplete outcome data, selective reporting, and other potential biases. Each domain receives a classification of low, high, or uncertain risk of bias. In the event of any disagreements between the two researchers during the assessment, a third researcher was consulted to participate in a discussion to resolve the discrepancies. Efforts were made to classify domains with an unclear rating as 'probably high risk' or 'probably low risk' to enhance the understanding of the included studies' quality (Guyatt & Busse, 2021). This rigorous assessment process ensured a comprehensive evaluation of the methodological rigour of the studies included in the analysis and guaranteed reliable evidence for the systematic review.

3.3.13 Ethics and dissemination

This systematic review did not involve the collection or analysis of primary data from human participants. Instead, it focused on the synthesis and analysis of existing literature. Therefore, this type of study did not require formal ethical approval. However, it was essential to uphold ethical guidelines and principles throughout the review process, such as maintaining confidentiality, respecting intellectual property rights, and

ensuring accurate reporting of the findings of the included studies.

3.4 Results

3.4.1 Search results

The systematic literature search identified 4,119 references.

Finally, 20 studies were deemed eligible for inclusion. The specifics of the study screening procedure are depicted in Figure 1.

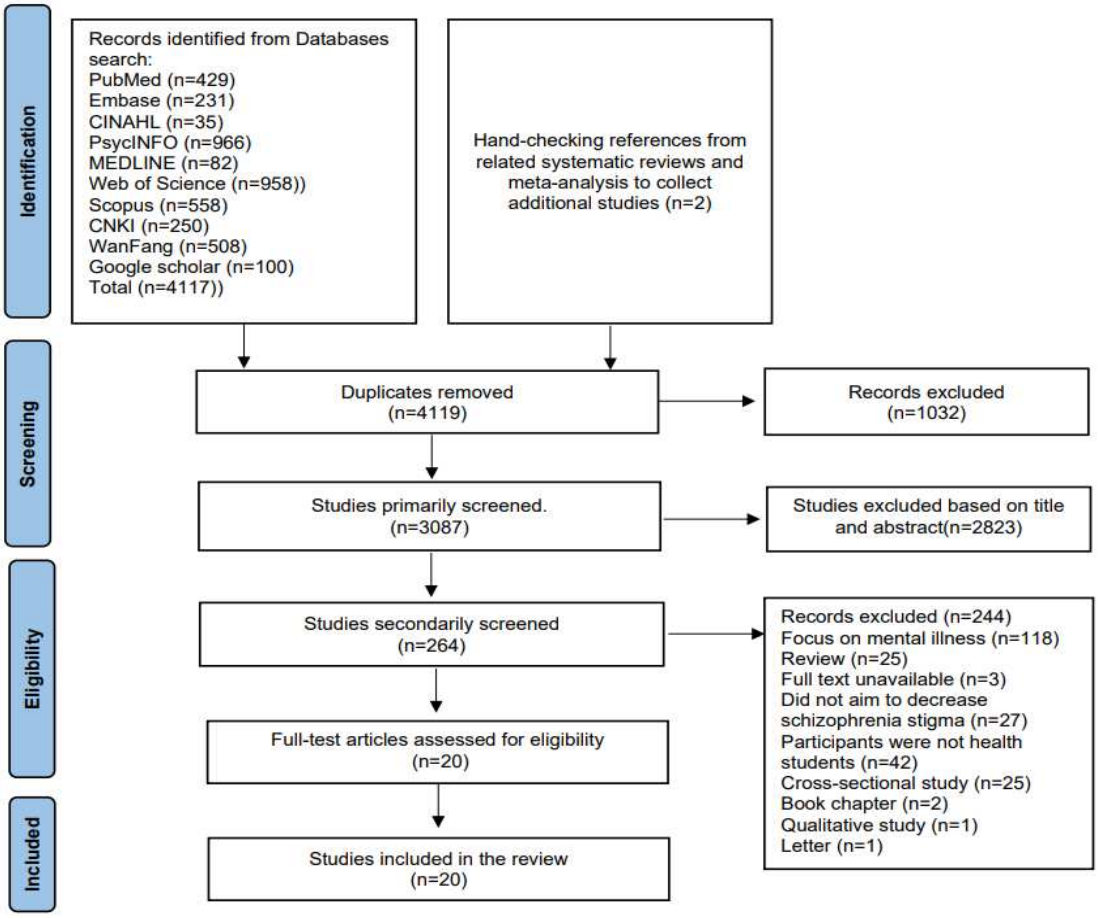

Figure 1: Schematic diagram of the screening process

3.4.1.1 General information about the included studies

All 20 included studies were published from 2001 to 2022. Among them, 5 (25%) studies were from the United States, 4 (20%) studies were from Turkey, 3 (15%) studies were from Italy, 2 (10%) studies were from Australia, 1 (5%) study was from China, 1 (5%) study was from Germany, 1 (5%) study was from Brazil, 1 (5%) study was from Nigeria, 1 (5%) study was from Canada, and 1 (5%) study was from Greece. Ten (50%) studies were CBAs, 8 (40%) studies were NRCTs, 1 (5%) study was an RCT, and 1 (5%) study was a quasi-RCT. The sample sizes of the CBAs ranged from 21 to 346, with a combined total of 1,224 participants; the sample sizes of the NRCTs ranged from 34 to 228, with a combined total of 827 participants; and the sample sizes of the RCT and the quasi-RCT were 150 and 208, respectively. The participants in 9 (45%) studies were medical students; those in 3 (15%) were nursing students; those in 2 (10%) were pharmacy students; those in 2 (10%) were psychology students; those in 1 (5%) were social work students; those in 2 (10%) were medical and psychology students; and those in 1 (5%) were psychology or nursing students.

3.4.1.2 Review of interventions aimed at decreasing schizophrenia stigma among trainee health professionals

The majority of the studies under review employed a mix of education and interaction with individuals diagnosed with schizophrenia as their intervention approaches. The various intervention methods could be categorised under education, contact, combined

education and contact, or particular intervention. The educational components included theoretical lessons (Aslan & Batmaz, 2022; Danacı et al., 2016), lectures (Altindag et al., 2006; Aluh et al., 2022; Eack et al., 2012; Economou et al., 2012), watching a film (Altindag et al., 2006; Aluh et al., 2022; Aşık & Albayrak, 2022), educational courses on stigmatisation of schizophrenia (Asik & Albayrak, 2022; Lincoln et al., 2008; Magliano, 2022; Magliano et al., 2015; Magliano et al., 2014; Sideras et al., 2015), role-playing (Aşık & Albayrak, 2022), reading and discussion (Aşık & Albayrak, 2022), drawing (Aşık & Albayrak, 2022), seminars (Coodin & Chisholm, 2001), focus group discussions (Dearing & Steadman, 2008), contact with individuals with schizophrenia including through psychiatry clerkships or internships (Aslan & Batmaz, 2022; Dearing & Steadman, 2008; Economou et al., 2012; Danacı et al., 2016), direct contact with individuals with schizophrenia (Altindag et al., 2006; Eack et al., 2012; Danacı et al., 2016; Hsia et al., 2022), indirect contact with individuals with schizophrenia (Galletly & Burton, 2011; Giacobbe et al., 2013; Magliano, 2022), voice simulation exercises (Bunn & Terpstra, 2009; Dearing & Steadman, 2008; Galletly & Burton, 2011; Hsia et al., 2022; Sideras et al., 2015), augmented reality (De et al., 2017), and referring to schizophrenia by a different name (Chiu et al., 2021).

3.4.1.3 Review of the comparator group interventions aimed at decreasing schizophrenia stigma among trainee health professionals

Fifty percent (10/20) of the included studies were CBAs, which implies that the comparator groups were members of the target population who had not received the intervention. The participants in the comparator groups engaged in various activities, including attending lectures (Altindag et al., 2006; Aşık & Albayrak, 2022; Sideras et al., 2015), watching films (Altindag et al., 2006), clinical rotation (Coodin & Chisholm, 2001; Dearing & Steadman, 2008; Sideras et al., 2015), receiving the same intervention as the experimental group after being allocated to a waiting list (Magliano et al., 2015), engaging with peers without mental health problems (Giacobbe et al., 2013), and participating in an in-person educational intervention (Magliano, 2022).

3.4.1.4 Number of the inteventions

Among the 20 studies, the number of intervention sessions ranged from 1 to 13, with an average of 3. The duration of each intervention session ranged from 3 mins to 4 weeks. The total durations of the interventions ranged from 90 mins to 13 weeks, with seven studies not reporting the duration of the intervention, and 53.8% (7/13) of the studies having intervention durations that were less than 4 weeks. The length of follow-up after the interventions ranged from 4 weeks to 6 months, with 80% (16/20) of the studies not having a follow-up, and only one study reporting a follow-up longer than 4 weeks (Magliano et al., 2014).

3.4.1.5 Outcome measurements

The included studies used various scales to assess the outcomes. The outcomes were defined in terms of knowledge, beliefs, attitudes, and social distance. The scales included the Knowledge about Schizophrenia Questionnaire (Aslan & Batmaz, 2022; Eack & Newhill, 2008), The Mental Health Knowledge Schedule (Sideras et al., 2015), the belief toward schizophrenia: Beliefs toward Mental Illness Scale (Aslan & Batmaz, 2022), the attitude towards schizophrenia: Attitudes toward People with Mental Disorders Scale (Aslan & Batmaz, 2022), schizophrenia attitude questionnaires or scales (Altindag et al., 2006; Aluh et al., 2022; Coodin & Chisholm, 2001; Eack & Newhill, 2008; Economou et al., 2012; Danacı et al., 2016; Lincoln et al., 2008), the Attitudes to Mental Illness Questionnaire (Galletly & Burton, 2011), The Opinions on Mental Illness Questionnaire (Magliano, 2022; Magliano et al., 2012; Magliano et al., 2015), and the social distance toward schizophrenia: Social Distance Scale (Aluh et al., 2022; Aşık & Albayrak, 2022; Chiu et al., 2022; Eack & Newhill, 2008; Economou et al., 2012; Giacobbe et al., 2013; Lincoln et al., 2008). Other measurement tools for schizophrenia stigma included the Medical Condition Regard Scale (Dearing & Steadman, 2008), the Opening Minds Survey for Health Care Providers scale (Hsia et al., 2022), the Attribution Questionnaire (Chiu et al., 2022; Sideras et al., 2015), the Fear and Behavioural Intentions scale (Sideras et al., 2015), the Jefferson Scale of Empathy (Bunn & Terpstra, 2009; Sideras et al., 2015), a schizophrenia-related stigma evaluation (De et al., 2017), the Dangerousness Scale (Giacobbe et al., 2013), the Affect Scale (Giacobbe et al., 2013), a questionnaire assessing preexisting subjective models

of the aetiology of schizophrenia (Lincoln et al., 2008), the Implicit Association Test (a measure of implicit attitudes) (Lincoln et al., 2008), and the Perceived Psychiatric Stigma Scale (Chiu et al., 2022). In summary, the researchers mainly used scales to measure the effect of the studied interventions on the stigma of schizophrenia.

3.4.1.6 The main outcome results of the intervention groups

Fifty-five percent (11/20) of the studies reported a significant change of stigma after the intervention, indicating the interventions' effectiveness at reducing schizophrenia stigma. Additionally, 40% (8/20) of the studies reported a significant change in certain measurement items following the intervention. However, one study found that the intervention was ineffective at reducing schizophrenia stigma. Furthermore, another study reported a decreased desire among participants to work with individuals with schizophrenia after the intervention (Eack et al., 2012).

3.4.1.7 Delivery of the interventions (who and how), approaches of the interventions, theoretical frameworks, and effect sizes

Among the 20 studies, the interventions were delivered by psychiatry department faculty members (Aslan & Batmaz, 2022; Coodin & Chisholm, 2001; Economou et al., 2012) or other department faculty members (Eack et al., 2012; Magliano, 2022; Magliano et al., 2015; Magliano et al., 2014), associations (Altindag et al., 2006; Chiu

et al., 2022), individuals with schizophrenia (Altindag et al., 2006; Coodin & Chisholm, 2001; Economou et al., 2012; Giacobbe et al., 2013; Hsia et al., 2022; Magliano, 2022; Magliano et al., 2014; Sideras et al., 2015), pharmacists (Aluh et al., 2022), the researchers themselves (Aşık & Albayrak, 2022; Sideras et al., 2015), electronic devices (Bunn & Terpstra, 2009; Dearing & Steadman, 2008; Galletly & Burton, 2011; Hsia et al., 2022; Lincoln et al., 2008; Magliano et al., 2015; Sideras et al., 2015; De et al., 2017), medical and psychology students (Magliano et al., 2015; Magliano et al., 2014), the participants themselves (Giacobbe et al., 2013), and leaflets (Lincoln et al., 2008). Sixty-five percent (13/20) of the studies used face-to-face delivery, 30% (6/20) did not report the delivery process, and 5% (1/20) delivered the intervention online. However, none of the included studies provided a theoretical framework to guide the construction of the intervention process. Only three studies reported the effect size of the intervention (Aşık & Albayrak, 2022; Aslan & Batmaz, 2022; Giacobbe et al., 2013).

3.4.1.8 Quality of the included studies

Every study included in the analysis was evaluated for methodological quality, which was categorised as low, moderate (some concern), or high. Among the studies, 80% (16/20) were assessed as having a serious or high risk and hence, a low quality, and 20% (4/20) were assessed as having a moderate risk and hence, a moderate quality. Further details regarding the characteristics of the included studies are outlined in Table 3.2 and Table 3.3.

Table 3.2 Characteristics of the included studies

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Abdurrahman Altindag 2006 (Turkey)	NRCT	77 (32/45) 60 (25/35) 60 (25/35)	Medical students	A 2-hour lecture explaining the reasons for schizophrenia stigma and common myths. Relationships of violence, aggressiveness, and independence with schizophrenia A young man with schizophrenia introduced schizophrenia-related information, treatments, and stigma experience. Viewing a film, *A Beautiful Mind*, which tells the life story of John Forbes Nash Jr, a genius mathematician living with a diagnosis of schizophrenia, who eventually won a Nobel Prize	1. A 2-h lecture about water metabolism 2. Watching a film, *Winged Migration*, about birds and migratory patterns	2; 2 hours, NA; 1 day; 1 month
Ayşen Esen Danaci 2016 (Turkey)	CBA	NA 106 106	Medical students	One hour of theoretical lessons in the students' 3rd year. Three hours of theoretical lessons during their 3-week psychiatry internship in their 5th year Watching the documentary *We, You, They* Attending interviews held with patients with schizophrenia in inpatient and outpatient clinics	NA	4; 1 hour, 3 hours, NA, NA; NA, 3 weeks, NA, NA; NA

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Cherrie Galletly 2011 (Australia)	CBA	NA 87 NA	Medical students	A 3-h workshop that included both a contact component (a DVD about a young man with schizophrenia) and an experience of simulated auditory hallucinations	NA	4; 40 min, 10 min, 45 min, NA; 3 hours; NA
Deborah Oyine Aluh 2022 (Nigeria)	CBA	200 179 108	Pharmacy students	Attending a clinical lecture on schizophrenia and watching the film *A Beautiful Mind*	NA	3; 5 hours, 5 hours, 5 hours; 1 week; 4 weeks
Elif Aşık 2022 (Turkey)	NRCTs	172 50(25/25) 48(25/23)	Nursing students	The program titled The Education Program on Stigmatization in Schizophrenia was conducted with the students in the intervention groups once a week for a total of 13 weeks. During the education sessions, role-playing, film-watching, reading and discussion, drawing, and participating in activities with individuals diagnosed with schizophrenia were some of the techniques used to detect and determine stigmatizing thoughts, emotions, and behaviour. Mental health and psychiatric nursing courses.	Mental health and psychiatric nursing courses	13, 90 min, 13 weeks NA

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Esma, Akpinar, Aslan 2022 (Turkey)	CBA	NA 158 158	Medical students	A psychiatry clerkship lasting for 3 weeks with formal theoretical lessons based on psychopathology, psychiatric assessment and treatment options, and practical applications in outpatient and inpatient clinics A psychiatry internship lasting for 4 weeks, during which the students engaged directly with the routine care of psychiatric patients	NA	1; 3 or 4 weeks; 3 or 4 weeks; NA
Karen S. Dearing 2008 (USA)	NRCT	116 98 (NA/NA) 94 (52/42)	Nursing students	Visits to a clinical site and completing the forms necessary for the agency A voice simulation exercise Focus groups to discuss the orientation process.	Visits to a clinical site and completing the forms necessary for the agency	3; NA, 45 min, NA; NA, NA, NA; NA
Lorenza Magliano 2014 (Italy)	CBA	222 211 35	Medical and psychology students	An educational intervention entitled ‘Social dangerousness and incurability of schizophrenia: from prejudice to scientific evidence’	NA	2; 3 hours, 3 hours; 3 weeks; 6 months

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Lorenza Magliano 2015 (Italy)	quasi-RCTs	208 (104/104) 208 (86/122) 188(76/112)	Psychology students	Educational intervention, entitled two sessions. The first session addressed stigma and its impact on persons with mental illness, while the second session provided scientific evidence contrasting stereotypes and prejudices toward stigmatized groups	receive the same intervention one month later	2 3 hours, 3 hours 3 weeks, 1 month,
Lorenza Magliano 2022 (Italy)	NRCT	284 (198/86) 228 (142/86) 141 (65/76)	Psychology students	At-distance educational intervention: The first session covered the following topics: a) definitions of stigma; b–c) research studies and personal stories of stigma and its effects; d) stigma and the media; e) stigma and mental health problems; f) stigma against persons with mental disorders in health contexts; g) stigma in schizophrenia. The second session focused on a–c) scientific evidence for the dangerousness in 'at-risk' minority social groups, persons with mental disorders, and particularly schizophrenia; d) subjective and objective dimensions of recovery; e) evidence for recovery in schizophrenia; and f) empowerment-oriented mental health services. Scientific reports, media articles, and video materials from anti-stigma campaigns were used in both sessions. In addition, four people who had recovered from or experienced stigma related to their mental health problems provided audio testimonies of their personal stories.	-In-Presence Educational Intervention.	2; 3 hours, 3 hours; 3 weeks; 1 month

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Marina Economou 2012 (Greece)	CBA	160 158 155	Medical students	Conducted after psychiatric placements In the first 2 weeks, emphasis was placed on lectures covering the main psychiatric disorders, their clinical manifestations, and modes of treatment. In the last 2 weeks, students assumed partial responsibility for some clinical cases under the supervision of psychiatric residents and psychiatrists.	NA	2; 2 weeks, 2 weeks; 4 weeks; NA
Michael R. Giacobbe 2013 (Australia)	NRCT	NA 97 (NA/NA) NA	Psychology or nursing students	Participants had a face-to-face meeting with a confederate who had been diagnosed with schizophrenia. Participants imagined having an interaction with a similarly aged person who did not mention mental illness.	Participants had a face-to-face meeting with a confederate without a mental illness. Participants imagined having an interaction with a person with schizophrenia.	2; 15 min, 15 min; NA; NA

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Rafael D. de C. Silva 2017 (Brazil)	CBA	NA 21 NA	Medical students	Participation in the use of a newly proposed tool based on augmented reality The tool can simulate the psychotic symptoms typical of schizophrenia by simulating changes in sensory perception to create an immersive experience capable of recreating the pathological experiences of a patient with schizophrenia. Integration into the proposed environment occurs through immersion glasses and an embedded camera. Audio and visual effects can also be applied in real time.	NA	1; 3 min; NA; NA
Shalom Coodin 2001 (Canada)	NRCT	NA 34 (24/10) 34 (24/10)	Medical students	A 90-minute seminar on schizophrenia and recovery Clinical rotation	Rotation	2; 90 min, 7 weeks; 90 min, 7 weeks; NA
Shaun M. Eack 2012 (USA)	CBA	NA 60 NA	Social work students	'Social Work Practice with Severe Mental Illness' course An introduction to the knowledge, values, and skills employed in clinical social work practice with clients with severe and persistent mental illness and their families Participants worked with clients with schizophrenia or other severe mental illnesses.	NA	1 NA A semester NA

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
Stephanie Sideras 2015 (USA)	NRCT	NA NA 145 (80/65)	Nursing Students	Classroom education and practicum experiences along with an innovative simulation learning activity	Traditional classroom education along with practicum experiences	3; 4 hours, 2 hours, NA; 3 months NA
Stephanie L. Hsia 2022 (USA)	CBA	NA 346 232	Pharmacy students	A hallucination simulation and a presentation by a speaker diagnosed with schizophrenia	NA	2; 45 min, 1 h; 2 weeks; NA
Tania M. Lincoln 2008 (Germany)	NRCT	121 (41/40/39) 115 (38/38/39) NA	Medical and psychology students	Three experimental groups: -Biogenetic (BG) explanations of schizophrenia Highlighting the trauma, stressful life events, and cognitive styles of schizophrenia (PS) No intervention (N)	NA	2; Group 1: NA, NA Group 2: NA, NA Group 3: NA, NA; NA; NA

First author, year (country)	Study type	Sample size (intervention/ controls) at (invitation/ start/ completion)	Participant characteristics	Contents of the intervention group	Contents of the control group	Number of the intervention (no. of sessions, duration of each session, duration of the intervention, length of follow-up)
William Bunn 2009 (USA)	RCT	NA 150 (100/50) NA	Medical students	40-min voice simulation while completing tasks Neurocognitive testing	Neurocognitive testing	1; 40 min; 6 weeks; NA
Yi-Hang Chiu 2021 (China)	CBA	180 125 123	Medical students	Renaming of schizophrenia	NA	1; NA; NA; NA

Table 3.3 Further characteristics of the included studies

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Abdurrahman Altindag 2006 (Turkey)	A schizophrenia attitude questionnaire with 32 items	The item 'Everyone may experience schizophrenia at some time' had a significant change after the intervention at T1 and T2. Items 'To accept as coworkers' and 'To accept as neighbours' had significant changes after the intervention at T1, and 'Patients are aggressive' had significant changes at T1 and T2. Items 'To recover completely' and 'Drugs used in the treatment may cause serious side-effects' had significant changes after the intervention at T1. Items 'To be cured with drugs' and 'To be dependent on drugs used in the treatment' had significant changes after the intervention at T1 and T2.	Intervention was delivered by an association called 'The Friends of Schizophrenia', a young man with schizophrenia, and the authors. Face-to-face NA	NA	Low
Ayşen Esen Danaci 2016 (Turkey)	The 32-item schizophrenia section of the Attitude Questionnaire	Two items related to the recognition of schizophrenia, three items related to the aetiology of schizophrenia, seven items related to the treatment of schizophrenia, one item related to the help-seeking behaviour of the case, and six items related to the approach to patients with schizophrenia and social relations had significant changes after the intervention.	Unclear how the intervention was delivered Face-to-face NA	NA	Moderate

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Cherrie Galletly 2011 (Australia)	The 5-item Attitudes to Mental Illness Questionnaire	A significant improvement in the students' attitudes towards people with schizophrenia was observed following the workshop.	Intervention was delivered via a DVD, television, and an MP3 player NA NA	NA	Low
Deborah Oyine Aluh 2022 (Nigeria)	A 10-item attitude scale A 7-item social distance scale	The total negative attitude score did not significantly change after the intervention, but some items significantly changed after the intervention. The overall mean social distance score did not significantly change after the intervention, but one item of social distance significantly increased after the intervention.	Intervention was delivered by two pharmacists Face-to-face NA	NA	Low
Elif Aşık 2022 (Turkey)	Social Distance Scale (SDS)	The changes over time in mean SDS scores and in the group × time interaction were statistically significant.	Intervention was delivered by one of the researchers Face-to-face NA	-η^2: 0.095	Moderate
Esma, Akpinar, Aslan 2022 (Turkey)	Knowledge about Schizophrenia Questionnaire (KASQ) Beliefs Toward Mental Illness Scale (BMI) Attitudes Toward People with Mental Disorders Scale (APMDS)	The KASQ and APMDS total scores were significantly higher, whereas the BMI scores were significantly lower after the clerkship/internship in psychiatry.	Intervention was delivered by the faculty of a psychiatry department Face-to-face NA	-KASQ: 0.67 -BMI: 0.20 -APMDS: 0.22	Low

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Karen S. Dearing 2008 (USA)	The 11-item Medical Condition Regard Scale	Nine items of the 11-item Medical Condition Regard Scale significantly changed after the intervention.	Intervention was delivered via a voice audiotape NA NA	NA	Low
Lorenza Magliano 2014 (Italy)	The Opinions on Mental Illness Questionnaire (OQ) Nine further items added to the OQ	Five (out of 13) items on the students' causal explanations of schizophrenia significantly changed after the intervention. Eight (out of 8) items on the students' views on recovery, recognisability, dangerousness, unpredictability, and drug treatments in schizophrenia significantly changed after the intervention.	Intervention was delivered by medical and psychology students, a teacher, and four people recovering from mental illness Face-to-face NA	NA	Low
Lorenza Magliano 2015 (Italy)	The Opinions on Mental Illness Questionnaire	Two items on students' beliefs about the bio-psycho-social factors involved in the development and course of schizophrenia – 'Stress' and 'Love disillusionment' – significantly changed after the intervention. Students' views on prognosis and treatments in schizophrenia significantly changed after the intervention.	Intervention was delivered by medical and psychology students, a teacher, and video testimonies Face-to-face NA	NA	Low

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Lorenza Magliano 2022 (Italy)	The Opinions on Mental Illness Questionnaire (OQ)—Revised Version	Eleven (out of 12) items on psychology students' views of schizophrenia significantly changed after the intervention. Psychology students' views of schizophrenia: paired comparisons of baseline versus 1-month reassessment in the ADEI vs. IPEI groups:1. Within-subject factors: at baseline and 1-month reassessment, 10 (out of 10) items significantly changed after the intervention; Between-subject factors: 5 (out of 10) items on education type significantly changed after the intervention; Interaction effects: at baseline and 1-month reassessment × education type, 5 (out of 10) items significantly changed after the intervention	Intervention was delivered by people recovering from mental illness and psychiatry teaching staff Online NA	NA	Low
Marina Economou 2012 (Greece)	Selected questions from the Alberta Pilot Site Questionnaire Tool Kit: the first section, which refers to beliefs and attitudes and encompasses 17 items; and the social distance section, which incorporates a corresponding scale with 14 items,	Eleven (out of 17) items on beliefs and attitudes had a significant change after the intervention. One (out of 14) item in the social distance section had a significant change after the intervention.	Intervention was delivered by psychiatric residents and psychiatrists Face-to-face NA	NA	Moderate

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Michael R. Giacobbe 2013 (Australia)	Dangerousness Scale Affect Scale Social Distance Scale	Dangerousness beliefs were lower in the face-to-face condition at both time points than in the imagined condition. There was a significant time × contact person interaction for the dangerousness scale. People who interacted (or imagined interacting) with an individual with schizophrenia had significantly lower perceived dangerousness of people with a mental illness. On average, participants reported that they would experience less negative emotion when interacting with a person diagnosed with schizophrenia after participating in the study, according to the results of the affect scale. Consistent with the result for dangerousness beliefs, the time × contact person interaction was significant for the distance scale. The main effect of time was significant for the distance scale.	Intervention was delivered by people with schizophrenia or the participants themselves Face-to-face and imagined NA	Intervention group: dangerousness: d = 0.98, affect: d = 0.60, distancing: d = 0.97; imagined contact group: dangerousness: d = 0.51, affect: d = 0.42, distancing: d = 0.30	Low
Rafael D. de C. Silva 2017 (Brazil)	Schizophrenia-related stigma evaluation based on three questionnaires: evaluation of schizophrenia-related stigma, evaluation of environmental simulation, and evaluation of stigma after an augmented-reality simulation。	The results demonstrated an increase in the mean stigma score, with statistical significance for pity, fear, and segregation. An increase was found in the average score for the probability of giving help.	Intervention was delivered via virtual reality NA NA	NA	Low

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Shalom Coodin 2001 (Canada)	The 14-item Attitude Toward Persons With Schizophrenia Scale	Two items, 'I can tell soon after meeting someone if they have schizophrenia' and 'People with schizophrenia rarely if ever truly recover', had significant changes after the intervention.	Intervention was delivered by an invited person with schizophrenia and the authors Face-to-face NA	NA	Low
Shaun M. Eack 2012 (USA)	-Knowledge about Schizophrenia Questionnaire with 19 items A 13-item self-report questionnaire on attitudes towards individuals with schizophrenia A 9-item social distance measure	Students' knowledge of general attitudes towards individuals with schizophrenia had a significant change after the intervention. Those with a BSW (Bachelor social work) degree showed improved attitudes towards people with schizophrenia and a desire to work with people with schizophrenia. Those without a BSW degree expressed a decreased desire to work with individuals with schizophrenia.	Intervention was delivered by faculty members Face-to-face NA	NA	Low
Stephanie Sideras 2015 (USA)	The Mental Health Knowledge Schedule, the 20-item Attribution Questionnaire, the Fear and Behavioral Intentions scale, and the Jefferson Scale of Empathy	Negative attitudes towards individuals with schizophrenia were reduced in the intervention group compared with the control group.	Intervention was delivered via a headset, by an individual experiencing his first psychotic break, by the investigator, and by colleagues Face-to-face NA	NA	Low

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Stephanie L. Hsia 2022 (USA)	The 20-item Opening Minds Survey for Health Care Providers (OMS-HC) scale Likert-scale items asking students to indicate whether their perception of people with psychosis changed	For both the 2018 and 2019 cohorts, the total OMS-HC score declined significantly. For both the 2018 and 2019 cohorts, the scores for the attitudes and disclosure/help-seeking subscales significantly changed after the intervention. A significant decrease in the social distance subscale was observed for the 2019 cohort.	Intervention was delivered via an audio file and by a speaker with schizophrenia Face-to-face NA	NA	Low
Tania M. Lincoln 2008 (Germany)	A questionnaire assessing preexisting subjective models of the aetiology of schizophrenia Explicit Attitudes and Social Distance Implicit Association Test (to measure implicit attitudes)	There was a significant reduction in stereotyping with regard to responsibility in the BG intervention compared with the PS and N interventions and a significant increase in the stereotype of poor prognosis for the BG intervention compared with PS and N. Significant reductions in stereotyping after the BG intervention occurred with regard to unpredictability/incompetence, responsibility, and social distance, but the BG intervention produced an increase in the stereotype of poor prognosis. The PS condition led to a decrease in the stereotype of dangerousness and a decrease in social distance.	Intervention was delivered via a leaflet and video. NA NA	NA	Low
William Bunn 2009 (USA)	Jefferson Scale of Physician Empathy, Student Version	The students' empathy scores increased significantly.	Intervention was delivered via headphones. NA NA	NA	Low

First author, year (country)	Outcome measurements	Main outcome results in the intervention group	Delivery of the intervention (who and how)/ approaches of the intervention/ theoretical framework	Effect size	Quality assessment
Yi-Hang Chiu 2021 (China)	A modified version of Corrigan's attribution questionnaire Perceived Psychiatric Stigma Scale A modified version of Bogardus' Social Distance Scale	Significant differences were observed in all participants in the scores of the modified attribution questionnaire, the perceived psychiatric stigma scale, and the modified social distance scale after the renaming of schizophrenia.	Intervention was delivered by the Taiwanese Society of Psychiatry NA NA	NA	Moderate

3.5 Discussion

Among the 20 studies, most (14) interventions were carried out in developed nations or regions. The scarcity of research on interventions to reduce stigma in low- and middle-income countries aligns with the wider gap in mental health research within resource-constrained contexts (Collins et al., 2011). Schizophrenia stands out as one of the most stigmatised mental disorders (Valery & Prouteau, 2020), and the stigma associated with schizophrenia can have serious negative impacts on the experiences of individuals diagnosed with the disorder (Chen et al., 2022), warranting increased attention. China, the world's most populous country (Guo et al., 2023), also faces a significant public health challenge regarding schizophrenia stigma (Li et al., 2017). However, there are relatively few studies that aim to reduce schizophrenia stigma in mainland China.

CBAs were the predominant approach among the reviewed studies, a finding consistent with a previous review of interventions targeting mental illness stigma reduction (Dalky, 2012). This review included only one RCT. Given that RCTs provide the highest level of evidence for intervention studies (Burns et al., 2011), this suggests the need for future studies to prioritise the development of RCTs for interventions aimed at reducing schizophrenia stigma. Three of the studies included in this review had limited sample sizes, which raises questions about the reliability of their outcomes. Medical students constituted 55% of the target population, while nurses, as the largest occupational group responsible for caring for individuals with mental illness globally (WHO, 2019), comprised only 20% of the target population in this review. Previous studies have

reported that nursing students often hold negative attitudes towards schizophrenia (Chen et al., 2022). Therefore, there is a necessity to conduct more intervention studies focusing on reducing schizophrenia stigma among nursing students.

The reviewed studies presented several stigma reduction strategies, each involving specific contents and durations. These interventions encompassed educational, contact-based, and combined education–contact approaches. Additionally, the review included specific interventions designed to target schizophrenia stigma reduction. For instance, strategies such as hallucination simulation (Galletly & Burton, 2011; Hsia et al., 2022), the utilisation of augmented reality and virtual reality technology to simulate schizophrenia symptoms (De et al., 2017), voice simulation (Bunn & Terpstra, 2009; Dearing & Steadman, 2008), and the renaming of schizophrenia (Chiu et al., 2022) were incorporated.

These particular interventions differed from previous approaches aimed at reducing stigma related to mental illness. This suggests that future studies should shift their focus from interventions targeting overall mental illness stigma to interventions targeting stigmatisation of specific types of mental disorders, such as schizophrenia, depression, or bipolar disorder. While these specific interventions for reducing schizophrenia stigma represent innovative advancements in this research area, researchers have also reported adverse effects associated with these interventions.

For example, participants undergoing simulations experienced emotional distress and reported feelings of stress, anxiety, fear, anguish, paranoia, despair, insecurity, vulnerability, worthlessness, and a sense of being trapped. They also reported physical

distress, including sensations of weakness, sickness, exhaustion, agitation, tension, shakiness, increased heart rate and body temperature, and headaches (Ando et al., 2011). Thus, to develop more effective interventions for reducing schizophrenia stigma among trainee health professionals, future researchers should take into account the potential adverse effects of these simulation interventions. Considerations could include shortening the duration of each intervention session and increasing the frequency of sessions to possibly mitigate adverse effects and enhance the efficacy of the intervention.

Most experimental studies employed a combination of education and contact interventions. There are various educational methods available for implementing such interventions. Researchers should carefully select the most suitable approach for implementing education and contact interventions within their specific context. Factors such as cost-effectiveness, participant acceptance, and minimising dropout rates should be considered. This review has identified that the mixed approaches incorporating both education and contact seems to be the strategy yielding the highest effectiveness for reducing schizophrenia stigma among healthcare students. This finding aligns with previous research outcomes, which suggest that interventions combining contact and education are generally the most effective at reducing mental illness stigma, as indicated by the preponderance of available evidence (Behavioral, 2016).

In this review, the comparator groups (in those studies that included them) received similar interventions to the experimental arms. This strengthens the evidence base regarding the most effective interventions for decreasing schizophrenia stigma.

Meanwhile, the included studies were diverse in terms of the number of sessions, duration of each session, and total duration of the interventions. Twenty-five percent of the studies only implemented one time intervention; however, a previous study emphasised that one-time-only sessions are not effective (David, 2016). This indicates that the number of the interventions should be explore in future research. The relationships between intervention efficacy and the duration of each session and the total duration of the interventions were unclear, and should be explored in future research. The long-term efficacy of the included studies was unclear because most studies had follow-up periods of less than 4 weeks. Future studies should pay attention to the long-term efficacy of the intervention.

All studies included in this review used some kind of scale to assess the efficacy of the intervention at reducing schizophrenia stigma. Most of the included studies used more than one scale to assess the level of schizophrenia stigma after the intervention and reported the reliability and validity of these tools; however, some studies used self-designed questionnaires or items, which had not been tested using strict psychological indicators, to assess the intervention outcomes (Aluh et al., 2022; Eack et al., 2012; Danacı et al., 2016). Measurement tools are very important for detecting intervention efficacy, and scales that have not been tested using strict psychological indicators may cause examination bias. Thus, a well-established, widely used scale may be more accurate and plausible for measuring intervention outcomes. The included studies were designed to assess the efficacy of the interventions at reducing schizophrenia stigma. However, because stigma is an abstract concept, the researchers could not directly

assess discriminatory behaviour to measure the intervention outcome. Thus, the researchers measured knowledge of and attitudes towards schizophrenia to indirectly assess the intervention efficacy. Indeed, there is no tool that can directly assess stigma, and it can only be measured in terms of specific discriminatory behaviour. A tool to assess intentional behaviour towards people with schizophrenia may be more direct and precise.

The intervention efficacy in most included studies was found to be positive. However, a CBA conducted in Nigeria with 108 pharmacy students as participants reported no significant change after the intervention (Aluh et al., 2022). Thus, it is very important for research designers to think about the intervention applicability before the intervention starts. While that study followed almost the same intervention procedures as other studies (Altindag et al., 2006), combining education and contact interventions to decrease schizophrenia stigma, the efficacy of the intervention was negative. This finding may be related to cultural factors. Across various cultures, individuals possess distinct interpretations of stigma, manage it through diverse approaches, and achieve varying outcomes (Yang, 2007). Meanwhile, a CBA conducted in the United States with 60 social work students as participants reported that the participants expressed a decreased desire to work with individuals with schizophrenia after the intervention (Eack et al., 2012). This finding suggests that illusion simulation may actually increase schizophrenia stigma, which should be seriously considered and avoided in the design of interventions.

The interventions in the included studies were mostly delivered by people closely

connected with schizophrenia, such as psychiatrists, medical students, and faculty members of medical schools, using a face-to-face mode. One study that delivered the intervention online also found positive results after the intervention (Magliano, 2022). Online interventions can overcome the barriers of distance and the inconvenience of face-to-face delivery at low monetary cost, which may promote the future development of interventions to decrease schizophrenia stigma. None of the included studies relied on theoretical guidance in developing their interventions, which may cause some lack of clarity regarding the effect of each individual component of the interventions and the mechanisms by which the interventions decrease schizophrenia stigma. Moreover, very few (15%) studies reported the effect size of the intervention. Some studies reported a statistically significant change after the intervention, but with a very small effect size, which implies that these interventions are relatively ineffective and should be modified to increase the effect size. To avoid bias and prevent other researchers from relying on false guidance, researchers should state their interventions' effect size when reporting significant changes after the intervention. Eighty percent of the included studies had a high level of bias, which indicated that their quality was low. Thus, the reliability of these studies' findings is questionable. Future intervention studies should focus on decreasing the level of research bias to ensure a high quality.

3.5.1 Limitations

There are several limitations to this systematic review. Firstly, it only encompassed publications in English. Despite attempts to include Chinese studies on reducing schizophrenia stigma among health professional students, none were found, which indicated research in decreasing schizophrenia stigma among Chinese health professional students are in needed. Secondly, only quantitative studies were included, overlooking potential qualitative studies that may have developed interventions for reducing schizophrenia stigma. Perhaps qualitative studies that develop interventions for reducing schizophrenia stigma will be needed in the future. Thirdly, the review focused solely on interventions targeting schizophrenia stigma among health professional students. Consequently, the generalizability of the research findings to all healthcare professionals may be limited. However, given that schizophrenia is one of the most stigmatized mental illnesses, the results of this systematic review can still offer insights for developing interventions to reduce stigma associated with other mental disorders. Fourthly, because the included studies either did not report or rarely reported certain essential intervention-related factors, the review was unable to discuss several important aspects potentially linked to intervention efficacy. For instance, the theoretical basis of intervention development, intervention effect size, long-term efficacy, and cultural factors pertaining to intervention forms were not addressed. These limitations can only be mitigated if researchers can connect authors to identify additional sources or future studies incorporate these essential components. Lastly, the included studies in this review exhibited considerable heterogeneity, a limitation

challenging to avoid.

3.6 Conclusions of this systematic review

This review indicated that, although some studies on decreasing schizophrenia stigma have been conducted, most of them have concentrated on developed countries or regions. These studies used innovative methods to decrease schizophrenia stigma, but adverse effects were also observed. Meanwhile, most of the included studies had a high risk of bias. The combination of education and contact was the most popular and effective approach to decreasing schizophrenia stigma. Intervention development without theoretical guidance and the neglect of assessing the role of cultural factors in decreasing schizophrenia are limitations that should be addressed in future work.

3.7 Summary of this chapter

In this chapter, a systematic review of interventions aimed at reducing stigma towards schizophrenia among health students was presented. This systematic review summarised the effectiveness of interventions at decreasing trainee health professionals' stigma towards schizophrenia, described the characteristics of the interventions, and provided recommendations for future research directions in the field. The review identified research gaps and underscored the need for culture-specific, high-quality RCTs to thoroughly examine the impacts of interventions on reducing stigma towards schizophrenia among health students.

CHAPTER FOUR: RESEARCH METHOD.

DEVELOPMENT AND PRELIMINARY IMPLEMENTATION OF A PILOT RCT OF A CHINESE-CULTURE-SPECIFIC INTERVENTION TO DECREASE NURSING STUDENTS' SCHIZOPHRENIA STIGMA

4.1 Introduction

This research project employed a combination of quantitative and qualitative methodologies to create, preliminarily execute, and assess the feasibility, acceptability, and efficacy of a pilot RCT centred around a Chinese-culture-specific intervention. The primary goal was to reduce stigma related to schizophrenia among nursing students. The study unfolded across three distinct phases as follows.

1. The initial phase involved an in-depth review of the existing literature, a systematic analysis, and the integration of pre-intervention focus group interviews.
2. Building upon the findings from the first phase, the second phase entailed the development of a culturally tailored intervention, specific to Chinese culture, aimed at diminishing schizophrenia-related stigma among nursing students. This phase also encompassed the implementation of a pilot RCT with the primary objectives of gauging the practicality, acceptability, and preliminary efficacy of the developed intervention.
3. Following the pilot RCT, the third phase encompassed a process evaluation that employed a blend of quantitative and qualitative techniques. These techniques included the administration of self-report questionnaires and the conducting of focus group interviews. The overarching purpose of this phase was to evaluate the execution, feasibility, acceptability, and preliminary efficacy of the intervention undertaken in the second phase. Furthermore, this phase sought to gather insights and recommendations for refining the study's second phase and

furnish substantial evidence to support the future development and execution of a comprehensive RCT. Section 4.2 presents the first-phase focus group interviews, Section 4.3 presents the second-phase pilot study, and Section 4.4 presents the third-phase study process evaluation. Section 4.5 provides a summary of this chapter. Ethical approval to conduct this study was obtained from the Research Ethics Committee of The Hong Kong Polytechnic University (HSEARS20220127002) on 22 February 2022 and the Research Ethics Committee of Xiangya Hospital (KE202203129) on 18 March 2022. The ethical clearance for this study can be found in Appendix 2 (English version) and Appendix 3 (Chinese version). The information sheet pertaining to this study can be found in Appendix 4 (English version) and Appendix 5 (Chinese version). Detailed interview guides used in the first- and third-phase focus interviews are provided in Appendix 6 and Appendix 7 (Chinese version).

4.1.1 Theoretical framework of the study

Thornicroft introduced a tripartite framework of stigma, consisting of a lack of knowledge that could foster ignorance, negative attitudes that could lead to prejudice, and passive behaviour that might culminate in discrimination (Thornicroft et al., 2007). Empathy, defined as the ability to grasp others' thoughts and emotions, discern the motives behind their reactions, and respond to their distress with sensitivity and compassion, holds significant importance (Batson, 2009). A meta-analysis revealed that empathy serves as an intermediary in the connection between intergroup contact and

reduced prejudice (Pettigrew & Tropp, 2008). Another study emphasised the inverse link between empathy and stigma, proposing that empathy could potentially predict stigma (Webb et al., 2016). Across diverse cultural landscapes, interpretations of stigma differ, approaches to dealing with it vary, and outcomes diverge (Yang, 2007). Cultural norms and beliefs play a pivotal role in shaping perspectives on mental illness (Yang et al., 2007). The concept of stigma is intrinsically entwined with cultural influences (Ainlay et al., 2013). Numerous studies have underscored the substantial influence of sociocultural and religious factors on stigmatising attitudes (Chen et al., 2009; Haddad et al., 2016; Haddad et al., 2017; Waqas et al., 2020; Waqas et al., 2014).

Consequently, interventions aiming to mitigate schizophrenia-related stigma should encompass these domains with a cultural perspective. Specifically, strategies need to be devised to reshape participants' understanding and beliefs regarding schizophrenia (knowledge), their emotional connection and attitudes towards individuals with schizophrenia (attitude and empathy), and their conduct and interactions with affected individuals (behaviour). The knowledge–attitude–practice (KAP) paradigm has been used to guide interventions aimed at diminishing the stigma around mental illness (Kassam et al., 2011; Papish et al., 2013). This framework acknowledges that shifts in knowledge can drive changes in attitudes, which, in turn, can lead to changes in behaviour. Transformative learning, a process through which individuals reevaluate their beliefs and experiences from fresh viewpoints, holds promise (Dincer & Inangil, 2021). Four educational techniques fostering transformative learning – investigative, collaborative, interactive, and higher-order thinking activities – have the potential to

foster empathy, positive attitudes, and understanding among nursing students regarding schizophrenia (Tsimane & Downing, 2020). During the initial phase of the present study, focus group interviews, guided by the KAP paradigm, aimed to explore how culture collectively shaped nursing students' perceptions of schizophrenia in terms of their knowledge, attitudes, intentional behaviours, empathy, and overall impact. This comprehension laid the groundwork for the second phase, where interventions were crafted to diminish schizophrenia-related stigma among nursing students. The creation of the pilot RCT for the intervention in the second phase of this study drew on transformative learning theory and the KAP paradigm. Consequently, effective interventions should strive to enhance knowledge, shift negative attitudes, and eliminate discriminatory behaviour associated with mental illness stigma (Foster, 2017; Thornicroft et al., 2016).

4.2 The first-phase focus group interviews

This phase involved a qualitative study that employed focus group interviews to examine nursing students' understanding of schizophrenia. This study explored nursing students' knowledge of schizophrenia and their attitudes, empathy, and intentional behaviours towards individuals affected by schizophrenia.

4.2.1 Study design and setting

This qualitative research employed a descriptive approach to examine the knowledge of schizophrenia and attitudes, empathy, and intentional behaviours towards individuals with schizophrenia among fourth-year nursing students. The study took place at a leading tertiary hospital in mainland China, providing clinical training to more than 350 fourth-year nursing students annually from various parts of the country. Data collection occurred through focus group interviews conducted on an online interview platform (Tencent video conference platform, a widely used online interview platform in China). The efficacy of focus group interviews in generating profound and comprehensive data in various contexts has been acknowledged, as they involve group interactions (Rabiee, 2004). These interactions assist in shaping the fundamental components of the intervention (Campbell et al., 2000). By conducting focus group interviews, the research team amassed data from both the researcher and each participant, fostering interactive verbal exchanges among group members that led to the emergence of new questions and answers. Consequently, the researchers gained insight into the participants' requirements and emotions, and delved into the impact of their cultural values and beliefs (Holloway & Galvin, 2016). The reporting process of the focus group interviews was guided by the consolidated criteria for reporting qualitative research (Tong et al., 2007).

As mentioned earlier, the significant impact of cultural values on stigma associated with mental illness has been widely acknowledged. Focus groups, which involve conducting in-depth interviews within a specific population, have been utilised to create or adapt

pertinent intervention strategies (Rabiee, 2004). Consequently, the method chosen for data collection was focus group interviews, which were conducted from 25 July 2022 to 30 September 2022. Alongside the focus group interviews, the option of individual interviews was made available to participants who were not at ease addressing the delicate subject of stigma within a group setting. In this phase of the study, no participants chose an individual interview.

4.2.2 Participants and recruitment

All individuals participating in this study were nursing students in their fourth year. Recruitment was facilitated through WeChat or email communication. The primary investigator took on the responsibility of enlisting eligible participants and procuring their written informed consent. The criteria for inclusion and exclusion were as follows.

Inclusion Criteria:

(1) Nursing students who were currently participating in a clinical placement at the specified hospital

(2) An age of 18 years or older

(3) Proficiency in communicating in Mandarin

(4) Willingness to participate in the study

Exclusion Criteria:

(1) Nursing students who did not have access to a computer, smartphone, or an electronic device required to engage in the online interview process

4.2.3 Sampling

'In focus-group research, the approach involves purposeful sampling, in which the researcher deliberately chooses participants according to the study's goals' (Holloway & Galvin, 2016, p. 452). To amass comprehensive insights and ensure diverse perspectives, fourth-year nursing students who met the criteria were recruited. Whenever possible, we aimed to include participants who (1) had firsthand experience with individuals having schizophrenia or other mental illnesses, (2) were male (given the predominantly female demographic of nursing students, an effort was made to include male participants), (3) were from various provinces (with an emphasis on involving individuals from ethnic minority groups), and (4) possessed a keen interest in mental health studies and were open to discussing their viewpoints on the research subject. However, due to the challenges posed by the COVID-19 pandemic and the lack of contact details for prospective participants, assembling a purposive sample became arduous. Therefore, for the initial recruitment of participants, the snowball sampling technique was employed. The primary researcher's affiliation with a nursing college played a pivotal role in attracting interested nursing students to the study. Additionally, participants were encouraged, if feasible, to aid in identifying their peers who met the specified criteria for purposive sampling.

4.2.4 Sample size

A recommended range of 4–12 individuals was proposed for focus group interviews. However, managing more than 12 participants within online focus-group sessions presented challenges. Thus, the decision was made to split the participants into two or

three separate focus groups to facilitate manageability (Nyumba et al., 2018), with each focus group consisting of six participants, as suggested by Holloway and Galvin (2016). To avoid inefficient use of time and resources, it has been noted that data collection needs to be managed, and that data saturation, indicating the point where new codes or themes no longer emerge, should determine the sample size (Marshall et al., 2013). Hence, concurrent data analysis was implemented. The exact sample size prior to the focus group interviews could not be ascertained due to the reliance on data saturation as a determinant (Malterud & Guassora, 2016).

The significance of the initial participants was underscored by the fact that they contributed the bulk of new information to the dataset, with later participants yielding comparatively less insight. The initial 10 participants provided approximately 80%–92% of the information (Guest et al., 2020). As the sample size approaches 20 interviews, the likelihood of gathering novel information diminishes considerably (Baker & Edwards, 2012). With these considerations, it was anticipated that approximately five focus group interview groups (comprising approximately 30 participants in total) would achieve data saturation. Once data saturation was attained, the focus group interviews would be concluded.

4.2.5 Data collection

A discussion guide was prepared for the focus group interviews, drawing from a review of pertinent literature and deliberations within the research group. To enhance the clarity and comprehensibility of the interview questions for nursing students,

preliminary interviews were carried out to collect feedback and recommendations regarding the interview queries. Subsequently, the interview guide underwent adjustments. Table 4.1 enumerates the specific questions incorporated within the interview guide.

Table 4.1 Interview guide for the first-phase focus group interviews

1	What is your understanding of schizophrenia? (Probe: causal factors, manifestation, prognosis; where did you obtain such information?)
2	What do you feel about the life of people with schizophrenia? (Probe: social support > intimate relationship > education > working)
3	What are your experiences of interacting with people with schizophrenia? (if no personal encounter, any story you have heard?) [When > what happened > who > what did you say > How do you feel?]
4	How do you think Chinese people view schizophrenia compared with people from Western countries?
5	What do you think of the view of traditional Chinese culture and religion on schizophrenia? [How do Confucianism, Taoism, and Buddhism view and deal with schizophrenia > According to the ideas of traditional Chinese culture and religion, what are the causes of schizophrenia and how to deal with it?]
6	How do you perceive the stigma often encountered by people with schizophrenia?
7	What do you think are the main factors causing the stigma of schizophrenia?
8	What do you think about caring for people with schizophrenia?
9	From your view, how can an intervention programme be used to decrease the stigma of schizophrenia?
10	If you needed to take part in a contact activity with people recovering from schizophrenia, what kind of activity would you prefer?
11	What do you think about becoming a mental health nurse? (What are the motivations and barriers?)
12	What are your suggestions to attract nursing students to work in psychiatric departments?

Tencent video conference platform was utilised for the execution and recording of the online focus group interviews. To capture the participants' demographic details, a sociodemographic questionnaire was employed. Details of the sociodemographic questionnaire results are shown in Table 5.1. The focus group interviews were conducted by the lead researcher, who had undergone postgraduate research training. Simultaneously, a research assistant documented the non-verbal cues and emotional states of all participants through field notes. Given the online format of the focus group interviews, the participants were granted the flexibility to choose a comfortable setting for themselves during the session. When commencing the interviews, introductory questions were posed to establish rapport among the participants. Each focus group interview spanned approximately 1 to 1.5 hours. Comprehensive recordings and transcriptions of all interviews were completed.

The accuracy of the transcripts was ensured through a meticulous process. A research assistant and the lead researcher cross-referenced the transcripts independently with the recorded videos, meticulously comparing the two versions to identify any discrepancies. A joint review of the video recordings was then conducted to reconcile any differences and achieve a final version. This final transcript was shared with the participants to address any inconsistencies and gain clarifications that may enhance the precision of the data. Importantly, non-verbal responses were also documented within the transcripts, following the guidelines presented by Creswell (2016).

4.2.6 Data analysis

Data analysis took place following the completion of the data transcripts, and coding was promptly initiated. The lead researcher reviewed the transcriptions multiple times to become acquainted with the data, a step that facilitated the subsequent data analysis. The analysis dimensions were developed based on the interview data, with a focus on the designated objectives to explore the participants' comprehension, attitudes, empathy, and intentional behaviours in relation to individuals with schizophrenia.

4.2.6.1 Descriptive statistics

The demographic attributes of the participants were described using descriptive statistics, including means, standard deviations (SDs), and percentages where appropriate.

4.2.6.2 Qualitative content analysis

Content analysis is extensively employed in qualitative research to reveal the latent meaning of words by means of quantification (Renz et al., 2018). An inductive approach was utilised for conducting content analysis in this study, involving thorough examinations of the raw data to extract concepts and themes. This allowed for discoveries to arise directly from the analysis of the raw data, avoiding preconceived expectations or models (Thomas, 2006). Meanwhile, qualitative content analysis utilises systematic coding to elucidate the meaning within qualitative data (Assarroudi

et al., 2018). The two main approaches are manifest content analysis, which examines the surface structure of the text, and latent content analysis, which explores concealed meanings within the text (Bengtsson, 2016; Kleinheksel et al., 2020).

Both manifest content and latent content analyses offer benefits in text interpretation, and employing a combination of both ensures more consistent and accurate findings than using either approach individually (Bengtsson, 2016; Vaismoradi et al., 2013). Thus, this study incorporated both types of content analysis to elucidate the participants' genuine perspectives on schizophrenia. Simultaneous qualitative data collection and analysis has been recognised to enhance the depth and quality of data analysis (Gibbs, 2018). Accordingly, simultaneous data analysis was employed during the interviews, and the interviews were concluded upon data saturation.

The five stages of qualitative content analysis were as follows: data preparation and organisation, reading and memoing, data coding, category generation, and presentation of descriptions and themes (Creswell, 2016). The qualitative data analysis software NVivo 12 (Lumivero, Denver, CO, USA) was employed for data management. A seasoned qualitative researcher was engaged to code the transcripts independently, and the coding results from both the lead researcher and the qualitative researcher were compared for consistency. Any discrepancies were addressed through discussions within the research team, resulting in modifications until a consensus was reached.

4.2.7 Issues of data trustworthiness

Qualitative validity pertains to the extent to which the study findings remain accurate throughout the analysis process, while qualitative reliability indicates the level of consistency in the study findings among various researchers and programmes (Gibbs, 2018). Credibility, dependability, transferability, and confirmability constitute the four criteria that establish the trustworthiness of a robust qualitative study (Lincoln, 1986). Peer-debriefing, member-checking, and transcription of all interview data into Chinese were carried out by an independent research assistant. Following data analysis, different categories and subcategories were developed, and the research findings were translated into English. This approach sought to reduce the loss of meaning during translation, thereby bolstering the credibility of the findings (Chen & Boore, 2010).

To ensure dependability, a comprehensive audit trail and analytical memos were kept on record, documenting each step of the study. Comprehensive data regarding demographic and clinical attributes, as well as the study context, were provided to enhance the transferability of the findings (Anney, 2014). The researcher engaged in self-reflection to determine whether any unintentional cues were provided to participants that could have been misleading. At the same time, a research assistant scrutinised video recordings of the interviews to pinpoint potential situations in which the researcher may have exerted an impact on the participants' answers. Peer-debriefing was utilised to evaluate the data analysis process. Two proficient research assistants reviewed the discussions and analysis methods, enhancing the data's confirmability (Elo et al., 2014).

4.2.8 Ethical issues and data safety

Written informed consent was acquired from individuals who met the criteria before commencing data collection. Prior to completing the information sheet, the participants were given a reminder of the voluntary nature of their participation in the study and their right to withdraw at any time without affecting their clinical placement. The confidentiality of all participant information was maintained, and the records will be securely destroyed 3 years subsequent to the study's conclusion. Each participant was offered 50 Chinese yuan to compensate them for giving their time to take part in the focus group interviews.

4.3 The second-phase pilot study

This phase was a pilot RCT designed based on the findings presented in the preceding chapters. The trial followed the Medical Research Council (MRC)'s phased approach for creating and assessing intricate interventions, with a specific emphasis on the first two stages: development and feasibility testing.

4.3.1 Study aim and objectives

The second phase of this study aimed to evaluate the feasibility, acceptability, and preliminary efficacy of a Chinese-culture-specific intervention, developed based on the findings from the first phase, in reducing schizophrenia stigma among fourth-year nursing students. This feasibility study yielded insights into the intervention's feasibility and acceptability to facilitate the planning of a fully powered RCT in the

future.

The precise objectives of the second phase of this study were as follows.

1. To assess the feasibility of the intervention developed in the previous stage, which involved literature and systematic reviews, as well as focus group interviews

   This assessment included participant recruitment, compliance, the recruitment rate, the eligibility rate, and the practicality of the measurement tools used.
2. To assess the acceptability of the intervention, including its prospective and concurrent acceptability, and overall acceptability
3. To assess the initial impact of the Chinese-culture-specific intervention on the experimental group, compare the preliminary effects between the experimental and control groups, and determine its effectiveness at reducing stigma against people with schizophrenia

4.3.2 Methods and analysis of this phase

The Chinese-culture-specific intervention for reducing stigma towards individuals with schizophrenia among fourth-year nursing students was guided by transformative learning theory and the KAP paradigm. The intervention incorporated elements of education and contact, as well as cultural and empathy factors. The goal was to target all three domains of stigma – knowledge (ignorance), attitude (prejudice), and behaviour (discrimination) –to transform fourth-year nursing students' understanding of schizophrenia knowledge, attitudes towards schizophrenia, and intentional behaviour towards individuals with schizophrenia. The theoretical framework is depicted in

Figure 2.

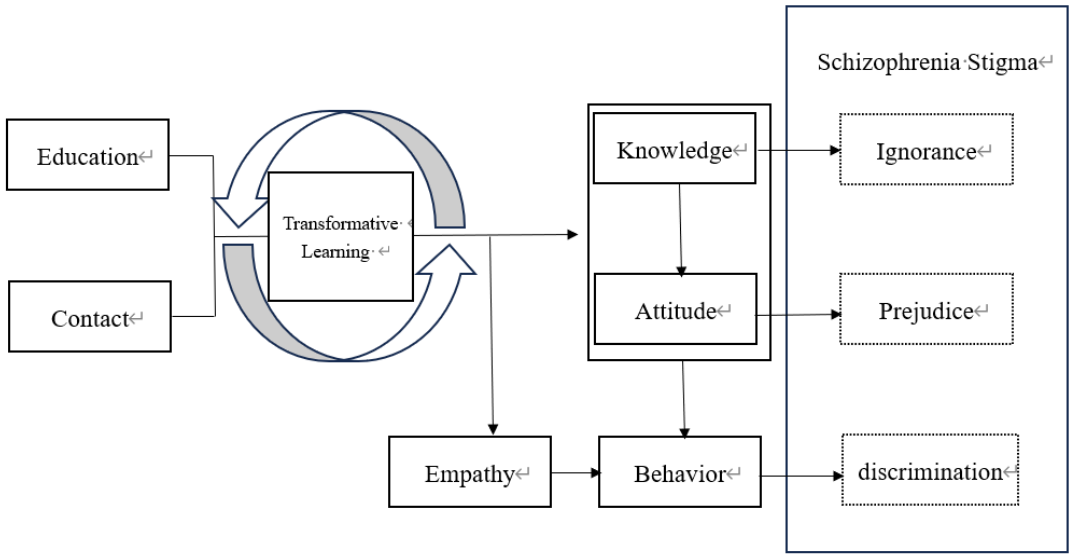

Figure 2: Theoretical framework of the intervention for decreasing schizophrenia stigma

4.3.3 Trial design

This pilot RCT was a single-centre, two-armed, open-label study. Sixty fourth-year nursing students were assigned randomly to either the experimental group or the control group, with an equal distribution of individuals within each group. The experimental arm (n = 30) underwent a 4-week training programme. The design of this programme was derived from a literature review and systematic review of effective interventions, the findings from the focus group interviews, and consultations with fourth-year nursing students and experts. The intervention content of the pilot RCT related to the findings of the phase 1 study.

For example, misconceptions about schizophrenia that were noted during the first-phase focus group interviews were corrected by the nursing students during the first week of the pilot RCT. Some of these misconceptions were closely related to Chinese culture. For instance, in rural areas, individuals with schizophrenia are often shunned by members of the community because, in their eyes, it is not seen as an illness but rather, is believed to be possession by spirits. Mental illnesses are considered as if the sufferer was haunted by demons, or going insane. Furthermore, believers in Buddhism sometimes view schizophrenia as a form of spiritual trial or karmic challenge. These misconceptions about schizophrenia were addressed by the nursing students themselves through information searches during the first week of the intervention.

The second week of the intervention focused on correcting misconceptions about schizophrenia propagated through social media under the influence of Chinese culture. For example, the findings from the first-phase focus group interview showed that the nursing students had obtained information about schizophrenia from the Internet, literary works, novels, films, and TV shows. The third week of the intervention involved the nursing students interviewing psychiatry department nurses and people with schizophrenia. During these interviews, the psychiatry department nurses and individuals with schizophrenia were asked questions that were raised in the first week related to Chinese culture. For instance, as mentioned during the first week, the nursing students observed that individuals with schizophrenia could encounter stigma due to the influence of Chinese culture. In the subsequent interviews, the psychiatry department nurses and individuals with schizophrenia were asked whether they had

experienced similar situations and, if so, how they coped with them. In the final week of the intervention, the nursing students created a concept map and engaged in critical thinking to consider the cultural impact on people with schizophrenia and the coping strategies that individuals may employ if they themselves were to suffer from schizophrenia in Chinese society. The intervention programme comprised educational and contact components. The control group (n = 30) was instructed to read a book titled *The Center Cannot Hold: My Journey Through Madness* within the same 4-week period.

4.3.4 Participant timelines

The training programme lasted for 4 weeks, and its efficacy was assessed at three time points: initial measurement (T1), immediately after the intervention (T2), and after the 3-month follow-up (T3). The trial procedure is presented as a flow diagram (Figure 2) in accordance with the CONSORT guidelines (Turner et al., 2012).

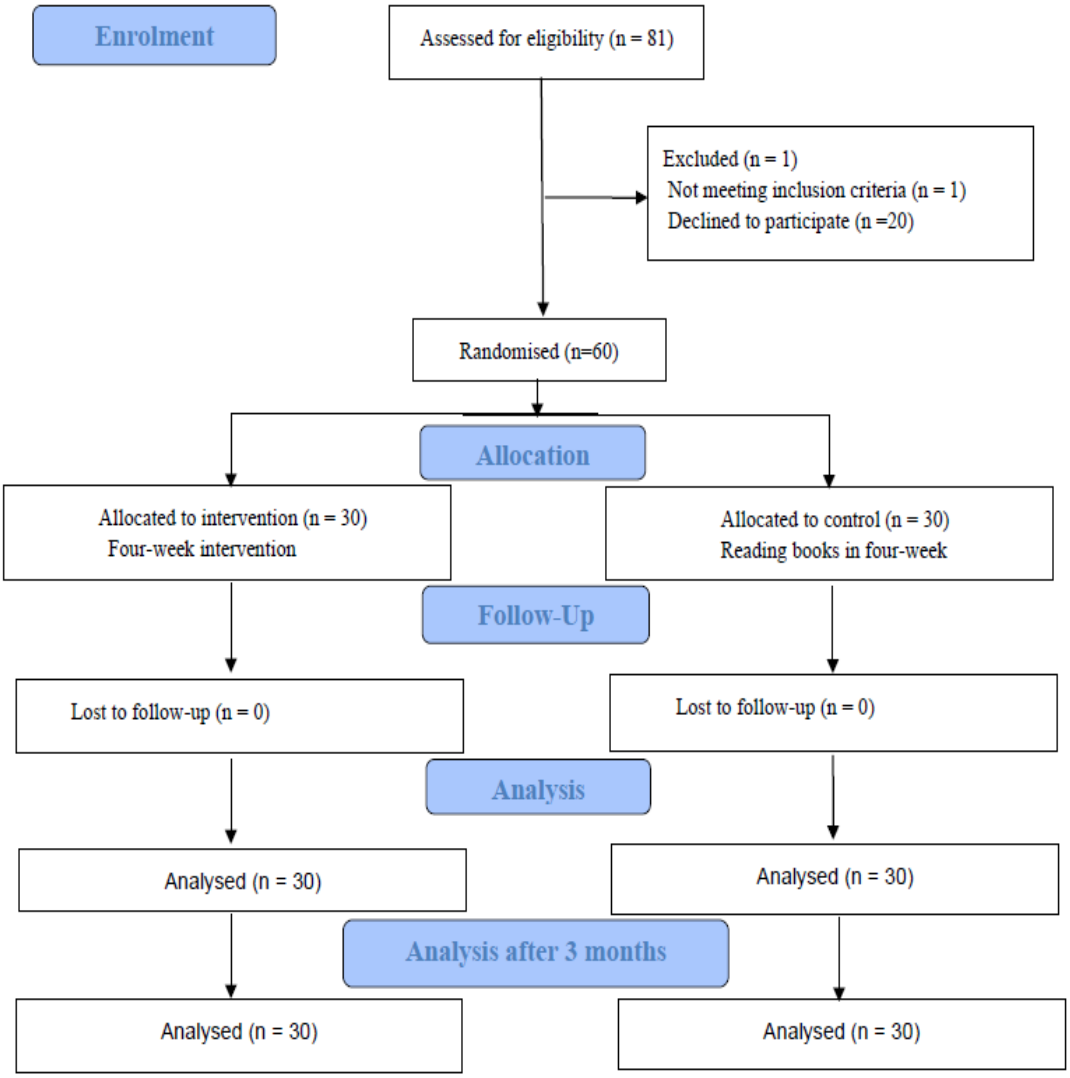

Figure 3: The trial procedure presented as a flow diagram

4.3.5 Study setting

This study was conducted at a single hospital, and all of the interventions were delivered online via the Tencent conference platform.

4.3.6 Participants

The participants were fourth-year nursing students undertaking their clinical placement at the hospital.

4.3.7 Sampling

Convenience sampling was utilised to obtain the study sample.

4.3.8 Sample size

A review of the literature regarding sample size calculations for feasibility studies indicated that the sample size for the present study should range from 24 to 50 participants (Julious, 2005; Sim, 2012). Given that a 20% attrition rate is commonly observed in psychosocial intervention studies (Van Daele et al., 2012), the sample size was set to 60, with 30 participants in each group (experimental and control groups).

4.3.9 Eligibility criteria

4.3.9.1 Inclusion criteria

Eligible individuals were those who:

(1) were aged 18 years or older;

(2) had completed all the necessary courses in their nursing programme and thus,

possessed comparable theoretical knowledge in the field of psychiatric nursing;

(3) were able to converse in Mandarin;

(4) voluntarily agreed to participate in this research;

(5) were undertaking their clinical placement at Xiangya Hospital, Changsha, Hunan Province (as this hospital does not have a psychiatry department, such students do not undertake their clinical placement in a psychiatry department); and

(6) were in the final (i.e., fourth) year of their university studies (Some nursing students receive 3 years of college education, whereas others receive 5 years of university education. These nursing students have different educational schedules from those of fourth-year university nursing students).

4.3.9.2 Exclusion criteria

Ineligible individuals were those who:

(1) were undergoing an episode of schizophrenia or other mental illness and were receiving medication;

(2) lacked the necessary equipment to participate in an online interview;

(3) had maintained regular personal contact with an individual diagnosed with schizophrenia or other mental health condition (e.g., had provided care for individuals with mental health disorders, as previous studies have shown that regular contact with individuals with a mental disorder can decrease the contacts' stigma towards mental illness); or

(4) had participated previously in a similar intervention.

The target hospital did not have a psychiatry department and all potential participants had no clinical experience in psychiatric nursing.

4.3.10 Participant recruitment procedure

Sixty fourth-year nursing students who were undertaking their clinical placement in the target hospital were recruited. The recruitment procedure followed the CONSORT guidelines (Cuschieri, 2019), as shown in Figure 3. A research assistant was responsible for screening the students and collecting written informed consent from eligible participants.

4.3.11 Recruitment and preliminary screening

4.3.12 Informed consent and screening

During recruitment, the researcher provided an explanation of the study procedure to prospective participants. A research assistant then screened the participants based on the inclusion and exclusion criteria. All participants who met the eligibility criteria were mandated to furnish written informed consent prior to the initiation of the study. The study's information sheet is presented in Appendix 8 (in English) and Appendix 9 (in Chinese). The consent form to participate in the research is provided in Appendix 10 (in English) and Appendix 11 (in Chinese), both of which contain supplementary information.

4.3.13 Random allocation and allocation concealment

Sixty eligible subjects were allocated randomly to either the experimental group or the control group. Block randomisation using randomly permuted block sizes of 4, 6, and 8 was conducted through a website (https://www.sealedenvelope.com/simple-randomiser/v1/lists). After the baseline assessment, the first research assistant sequentially numbered opaque envelopes to enclose a unique code without any grouping information and dispensed one for each participant. This research assistant was blinded to the study arms, and the principal investigator did not participate in the three sessions of data collection.

4.3.14 Blinding

This was an open-label study, as it was impossible in practice to conceal information from both the participants and the implementer of the intervention. There were two research assistants in this study. To minimise allocation bias, the first research assistant was blinded, as mentioned above. The second research assistant had access to the grouping and unique code information and directed the participants to join the indicated group. Thereafter, the second research assistant withdrew from the study and did not contact the study researchers until after the study had finished. The first research assistant responsible for gathering and inputting data for analysis was blinded to the group allocations. To further minimise bias, a third research assistant was involved in

the data analysis and was blinded to the group allocation.

4.3.15 Interventions

4.3.15.1 Experimental group: 4-week training programme

The 30 participants in the experimental group were split into two subgroups, each comprising 15 participants. To enhance cooperation and facilitate the completion of the intervention, these 15 participants underwent the intervention concurrently and were further divided into three sub-subgroups, each comprising five participants. The participants in the experimental group received 4-week training programme interventions, with these training programmes incorporating culturally specific elements. The detailed process of implementing the interventions is displayed in Table 4.2. The Chinese version of the specifics regarding the process of implementing the intervention is displayed in Appendix 12.

Table 4.2 The intervention implementation process

	Aim of the intervention	Intervention contents	Intervention methods and activities	Intervention time
First week	The intervention in the first week aimed to improve the knowledge and understanding of schizophrenia.	A. Knowledge about the aetiology, pathophysiology, clinical manifestations, treatment, nursing, and prognosis of schizophrenia The aim was to correct the following misconceptions: 1) People with schizophrenia often hurt others. 2) People with schizophrenia have no ability to work and cannot be employed. 3) Schizophrenia is difficult to cure. 4) People with schizophrenia have no self-care ability. 5) People with schizophrenia are homicidal maniacs. 6) Mental illness does not exist, or is not neglected, or has a low incidence rate, and can be healed by oneself. 7) People with schizophrenia behave	In week 1, all five students in each subgroup worked as a team (collaborative learning activity) to investigate knowledge (investigative learning activity). They reported their findings through presentations, discussions, and debates (interactive learning activity). These groups of five students analysed, constructed, and evaluated the information to make sense of their acquired knowledge. The students were engaged in (higher-order thinking) activity when analysing this information. At this stage, higher-order thinking skills went beyond understanding and recall of information, and involved critical analysis and evaluation of the obtained information.	Each group had 35 minutes to report, and 15 minutes for Q&A, discussion, and comment. The total duration was 2.5 hours.

differently from others when they are young.
8) People with schizophrenia are time bombs.
9) People with schizophrenia have abnormal thinking.
10) Locking people with schizophrenia in their homes is done to protect them.
11) People with schizophrenia are hopeless.
12) People with schizophrenia are always happy.
13) People with schizophrenia belong to another population group.
14) People with schizophrenia don't have normal moments.
15) Mental illness is shameful.
16) People with schizophrenia do not feel discriminated against.
17) Nurses who work in the psychiatry department will develop a mental illness or be affected.

B. Differences between schizophrenia and other mental illnesses, such as multiple personality disorder, autism,

depression, and psychopathy

C. Schizophrenia-related legal issues

The aim was to correct the following misconceptions:

1) People with schizophrenia or mental illness do not need to take legal responsibility after hurting others.
2) It is difficult for courts to convict people with schizophrenia when they hurt others or commit murder.
3) People's sentences can be commuted if they commit a crime and have a mental illness.
4) There are protective laws for people with mental illness.

D. The influence of cultural factors on the recognition of schizophrenia

The understanding of schizophrenia in Chinese traditional culture and religion: the understanding and views of Buddhism, Taoism, and Confucianism

		on schizophrenia Drawing a concept map of perspectives on schizophrenia		
Second week	The intervention in the second week aimed to correct the misconceptions about schizophrenia obtained from social media.	Hyperbolic reports about schizophrenia on the Internet and in literary works, novels, films, and TV plays	In week 2, groups of five students worked as a team (collaborative learning activity) to collect materials from the Internet, literary and artistic works, novels, films, and TV series with exaggerated reports about schizophrenia (investigative learning activity). Each group found 10 items containing exaggerated propaganda about the abnormal behaviour and actions of people with schizophrenia (higher-order thinking). These groups also needed to establish the truth about misconceptions of schizophrenia and discuss or debate them (interactive learning activity). As the students needed to provide relevant materials and make comments, the activity involved the higher-order thinking skills of applying, analysing, and creating.	Each group was required to find 10 items and explain them. Each group had 35 minutes to report, and 15 minutes for Q&A, discussion, and comment. The total duration was 2.5 hours.

Third week	The intervention in the third week aimed to contact people recovering from schizophrenia and psychiatric nurses.	Nursing students interacted with people recovering from schizophrenia. These people shared their experiences of the overall treatment and rehabilitation period, including whether they were affected by stigma linked with traditional culture during and after treatment and rehabilitation. Nursing students had interactive communication with psychiatric nurses. The nurses shared their working experiences and their feelings about working in the psychiatric department to reduce the students' fearful attitude towards schizophrenia.	In week 3, groups of five students worked as a team (collaborative learning activity) to prepare 10 questions (investigative learning activity) before meeting clients who were recovering from schizophrenia and psychiatric nurses. The clients and nurses shared their experiences and feelings to correct the students' misconceptions. Higher-order thinking skills were involved. There was Q&A, discussion, and debate during or after the interview (interactive learning activity).	The total duration was 3 hours, including the interview with two people recovering from schizophrenia and two psychiatric nurses, and a Q&A session.

Fourth week	The interventions in the fourth week involved self-reflection and concept mapping to deal with stigma. An understanding of schizophrenia in Chinese traditional culture and religion, and the understanding and views of Buddhism, Taoism, and Confucianism regarding schizophrenia were achieved through nursing students' self-reflection and thinking.	Nursing students were required to undertake reflective critical and imaginative thinking autonomously on the following assigned topics -If I suffered from schizophrenia, how would I live, get treatment, recover, and reintegrate into Chinese society? -How would I face the stigma towards schizophrenia in Chinese culture? -How would I feel when I encountered stigma? Students used the official WeChat account to summarise everyone's reflections, and all participants were able to read it and give comments. The total duration was 1.5 hours. Nursing students were engaged in a teamwork exercise using a concept map to identify strategies to reduce schizophrenia stigma. The students drew a concept map of perspectives on schizophrenia.	In week 4, nursing students were asked to write down their feelings (Subjects: 'If I suffered from schizophrenia, how would I live, get treatment, recover, and reintegrate, how would I face the stigmatisation of schizophrenia by Chinese traditional culture and religion, and how would I feel when I encountered stigma?') (investigative learning activity), read other nursing students' opinions, and hold discussions or debates (interactive learning activity). After that, groups of five students worked as a team (collaborative learning activity) to develop concept maps for the identified problems and solutions (higher-order thinking activity).	The total duration was 3 hours.

4.3.15.2 Control group

The control group participants were given a book titled *The Center Cannot Hold: My Journey Through Madness* (Chinese version) by Elyn Saks, and were instructed to read it fully within a 4-week period. This book is the account of an accomplished professor living with schizophrenia, describing her symptoms, her efforts to hide the severity of the condition, her journey through therapy and marriage, and the obstacles she had to overcome.

4.3.16 Intervention adherence

Both groups of participants were able to seek guidance or ask any questions about the study by contacting the research assistant via WeChat or QQ. Additionally, the research assistant promptly reminded the participants to complete the required interventions before the end of each week. For instance, the participants in the control group were gently reminded twice each week to read 25% of the book before the end of the week.

4.3.17 Outcome measures

4.3.17.1 Feasibility, acceptability, and preliminary efficacy

The outcomes of this study were mainly assessed in terms of the feasibility and acceptability of the intervention. A condensed overview of the outcome assessments that were used to determine the feasibility, acceptability, and preliminary efficacy of the

intervention is shown in Table 4.3. The tools used to assess the preliminary efficacy are described below and will also be used in a future full-sized trial.

Table 4.3 Outcome measures to assess the feasibility of the intervention

Primary outcome	Feasibility outcomes	Subject recruitment -achievable recruitment rate -consent rate -eligibility rate Feasibility of the measurement tools
	Acceptability outcomes	Prospective acceptability -recruitment rate Concurrent acceptability -dropout rates -intervention attendance rates -retention rates -intervention completion rates Acceptability of randomisation
Preliminary efficacy	Knowledge about Schizophrenia Test Mental Illness Clinicians' Attitudes Scale Reported and Intended Behaviour Scale Jefferson Scale of Empathy – Nursing Students' version R	

The Chinese version of the Knowledge about Schizophrenia Test (KAST) (Zhou & Li, 2020) was utilised to evaluate the participants' understanding of schizophrenia. The KAST consists of 18 items and possesses a reliable coefficient of 0.68, which is deemed acceptable (Zhou & Li, 2020). The Chinese version of the KAST uses dichotomous variables, to which scores of 0 or 1 are assigned. Participants receive one point for each correct answer, and zero points for incorrect answers. The total attainable score spans from 0 to 18, with a lower score indicating less knowledge of schizophrenia. The content validity index (CVI) for the items varies between 0.83 and 1.00, while the CVI

for universal agreement among experts and the average CVI of the scale are 0.83 and 0.97, respectively (Zhou & Li, 2020). The validity of this tool is satisfactory. Appendix 13 and Appendix 14 present the English and Chinese versions, respectively.

The Chinese version of the Mental Illness Clinicians' Attitudes Scale (MICA) (Kassam et al., 2011; Li et al., 2014) was employed to measure the participants' stigma-related attitudes towards mental disorders. The MICA consists of 16 items assessed using a 6-point scale, with response choices ranging from 1 (totally agree) to 6 (totally disagree). A higher score indicates more severe negative stigma. The Chinese version of the MICA has shown strong internal consistency (0.72–0.75) and test–retest reliability (0.76–0.87) (Li et al., 2014; Pan et al., 2013). Appendix 15 and Appendix 16 present the English and Chinese versions, respectively.

The Chinese version of the Reported and Intended Behaviour Scale (RIBS) (Li et al., 2014) was used to assess the stigma-related behaviours exhibited by the participants towards mental illness. The RIBS consists of eight items that are evaluated using a 5-point scale, where the response choices extend from 1 (completely disagree) to 5 (completely agree). The total score is calculated by summing the scores for the responses to items 5 to 8, and ranges from 4 to 20, with a higher score indicating a greater inclination to engage with individuals who have a mental illness. The internal consistency of the RIBS is 0.82, and its test–retest reliability is 0.68 (Li et al., 2014). Appendix 17 and Appendix 18 present the English and Chinese versions, respectively.

The Chinese version of the Jefferson Scale of Empathy – Nursing Students' version R (JSE-NSR) (Qiu, 2010) was utilised to assess the participants' empathy level for people

with schizophrenia. The JSE-NSR consists of 20 items assessed using a 7-point scale, with response choices spanning from 1 (completely disagree) to 7 (completely agree). The potential overall score varies from 20 to 140, with a higher score signifying a greater degree of empathy. The JSE-NSR exhibits an internal consistency of 0.74, and the Chinese version of the JSE-NSR demonstrates a test–retest reliability of 0.84 (Hsiao et al., 2013). Appendix 19 and Appendix 20 present the English and Chinese versions, respectively.

4.3.18 Intervention fidelity

In an intervention study, ensuring consistent methodological procedures and appropriate assessment methods is crucial, as all participants are required to receive the same intervention (Piamjariyakul et al., 2021). The success of interventions is closely tied to intervention fidelity, which is recognised as a key element of interventions (Nelson et al., 2012; Perez et al., 2016). Poor fidelity can lead to undesirable intervention effects (Sarmento et al., 2017), underscoring the importance of assessing implementation fidelity for all interventions (Robbins-Welty et al., 2018). To ensure the rigour of this pilot RCT, it adhered to the treatment fidelity guidelines outlined by the National Institutes of Health Behaviour Change Consortium, encompassing the study design, conceptual framework, content of the intervention, intervention delivery, participant recruitment, and enactment of the intervention (Bellg et al., 2004).

A fidelity checklist developed by Borrelli was employed to assess the intervention fidelity (Borrelli et al., 2005). This checklist has been applied in numerous research

studies to evaluate intervention fidelity (Armstrong et al., 2021; Falk et al., 2020; Henshaw et al., 2018). Each item on the checklist is rated as ‘present’, ‘absent, but should be present’, or ‘not applicable’.

4.3.19 Data collection

The online platform Wen Juan Xing was used to administer study-related surveys and collect data on intervention outcomes for this pilot RCT. The data were collected from March to June 2023. The login credentials for the platform were restricted to the principal investigator of this study, and all of the data were used solely for research purposes.

4.3.20 Data analysis and management

The demographic traits of the participants were condensed into descriptive statistics, including means, SDs, and percentages, where appropriate. The feasibility and acceptability outcomes are presented as percentages. Differences in demographic and outcome variables between the intervention and control arms were calculated at T1. We employed independent Student’s t-tests for continuous variables, chi-square tests for nominal variables, and Wilcoxon signed rank tests for data that did not meet the assumptions for parametric tests. The effectiveness of the intervention compared with the control treatment at T1, T2, and T3 was analysed using generalised estimating equations (GEEs). All data were analysed using SPSS Statistics 26.0 software (IBM,

Armonk, NY, USA), with the significance threshold set at $P < 0.05$ (Duricki et al., 2016). The scores of the participants were gathered, coded, and entered into SPSS 26.0 to create a database. Raw data were double-checked to ensure accuracy. The confidentiality of the data was maintained, and the participants remained anonymous, as only a code represented their identity. Personal information was excluded from the analysis, and all of the electronic files were stored using U-disk encryption and were only accessible to the researcher via a password or to others who were authorised to access them.

4.3.21 Ethical issues and data safety

The participants were furnished with an information sheet and reminded of the voluntary nature of the research. All participant information remained confidential and will be securely disposed of 3 years following the study's conclusion. The participants were able to exit the study at any point without facing any consequences or influence on their clinical placement. All participants received a concise written and verbal overview of the study, and they were requested to sign a written consent form before the study's initiation. The training programme ensured the safety of all participants. If at any point during the training the participants felt uncomfortable, they were able to withdraw from the training without any consequences. Additionally, if any of the participants required professional psychological assistance, it was provided to them promptly. Each participant involved in the study was offered 100 Chinese yuan to compensate them for their time.

4.4 The third-phase process evaluation

This phase involved a process evaluation, which used mixed methods to assess the intervention delivered in the pilot RCT.

4.4.1 Purposes of the process evaluation

The purposes of the process evaluation were to identify the feasibility, acceptability, and preliminary effectiveness of the pilot RCT conducted in the second phase, gather insights and recommendations for refining the study's second phase, and furnish substantial evidence to support the future development and execution of a comprehensive RCT.

4.4.2 Process evaluation plan

The process evaluation of the pilot RCT encompassed both quantitative and qualitative components to assess its effectiveness. The evaluation utilised key indices, including the implementation process, number, reach, adaption, and fidelity of the intervention (Moore et al., 2015). To evaluate the intervention's implementation process in the pilot RCT, the participants were engaged via self-administered questionnaires and group discussions.

4.4.3 Self-report questionnaire for process evaluation

A self-report questionnaire was utilised to collect feedback on the participants'

experiences with the intervention and to collect their suggestions for its future application. All intervention group participants were encouraged to voluntarily complete the questionnaire after the intervention concluded. This approach aimed to alleviate any pressure on the participants and encouraged them to provide valuable suggestions for refining the intervention implementation in the future. The questionnaire collected the participants' opinions regarding the intervention's implementation and design, serving as evidence to support potential adjustments to the intervention and facilitating subsequent intervention deliveries. Additionally, it gathered the participants' perspectives on the intervention's feasibility, acceptability, and their level of satisfaction with the intervention.

4.4.3.1 Development of the questionnaire

First, a literature review was conducted to develop a self-report questionnaire aimed at assessing the feasibility, acceptability, and preliminary efficacy of the intervention. Relevant literature was searched in the Web of Science, PubMed, CNKI, and WanFang databases up to 30 June 2022. The search terms used were ('Pilot RCT') AND ('process evaluation') AND 'questionnaire' OR 'questionnaire survey'. For the Chinese-language databases (CNKI and WanFang), corresponding Chinese terms were used as search criteria. After developing the questionnaire, an assistant professor working in mental health education provided feedback, leading to the revision of the questionnaire, resulting in the first version of the process evaluation questionnaire. Subsequently, an

associate professor of mental health education reviewed the first version of the questionnaire, provided additional feedback, and collaborated in its further revision, resulting in the development of the second version of the process evaluation questionnaire.

To assess the comprehensibility of the questionnaire, two fourth-year nursing students were invited to fill it out and offer recommendations for enhancement. Based on their feedback and revisions, the final version of the process evaluation questionnaire was established. The questionnaire utilised an 11-point Likert scale from 0 to 10 and consisted of 27 items.

The questionnaire was distributed through a link shared in the WeChat group. The participants in the intervention group had the choice to click the link and fill out the questionnaire voluntarily. To ensure a candid assessment of the intervention and to alleviate any concerns about the unprofessionalism of their perspectives, the participants were not required to provide any personal information. Each participant was assigned a code to represent their identity, and the research assistant who knew the codes did not participate in the data collection and analysis. The privacy, confidentiality, and anonymity of the participants were upheld.

4.4.4 Focus group interviews for process evaluation

Based on the focus group interviews conducted to explore the feasibility, acceptability, barriers, facilitators, and implementation suggestions regarding the intervention, the goal was to optimise the intervention design for a future full RCT. This study report

adhered to the guidelines for reporting qualitative studies in a consolidated manner Consolidated criteria for reporting qualitative research (COREQ), a 32-item checklist (Tong et al., 2007). Before commencing the study, all participants received written information about the study. All members of the intervention group were extended an invitation to take part in the focus group interviews, and no one withdrew during the interview process. Thirty participants willingly participated in the focus group interviews. Before the commencement of each focus group interview, verbal consent was reaffirmed, and the interviewees were apprised of their entitlement to withdraw from the study at any time. The method of focus group interviews was chosen as they enable group interactions that can generate rich data (Rabiee, 2004). An interview guide was developed according to a comprehensive review of the existing literature and discussions within the research group. Details of the interview guide are provided in Table 4.4. The Chinese version of the interview guide is shown in Appendix 17.

Table 4.4. Interview guide for the process evaluation

1	How do you feel about the intervention programme? [Which week of the intervention did you like the most or least, and why?]
2	Did you encounter any difficulty or challenges in completing the intervention programme? (Time cost). [Why do you think adhering to the interventions is easy or difficult? What factors affect your compliance? How do you feel about the frequency and duration of the interventions? What do you think is the optimal frequency and duration of the intervention?]
3	What do you think about the acceptability of the intervention programme? [Why do you think it is easy or difficult to accept? What factors affect the acceptance? What kind of intervention do you think is easier to accept?]
4	How do you view the online intervention method? [How effective do you think the online intervention is (compared with face-to-face), and why?]
5	What do you think about the scales used in the study? [Are these scales appropriate for measuring knowledge, attitudes, empathy, and intentional behaviour towards schizophrenia? Why?]
6	How was your experience participating in this intervention study? [What are the benefits you gained from joining the programme? Has the programme influenced your knowledge, attitudes, empathy, intentional behaviour or other perspectives towards people with schizophrenia? How has the programme changed your knowledge, attitudes, empathy, intentional behaviour or other perspectives towards people with schizophrenia?]
7	What could be improved about the programme? [What kind of intervention is most suitable for nursing students? At which stage do you think it is most appropriate to carry out this intervention? Why?]
8	Do you have any other suggestions about the study that you want to discuss with us?

The focus group questions were designed to delve into various aspects of the intervention, including its feasibility, acceptability, advantages, and disadvantages, and the participants' suggestions for the future full-powered RCT. XC, a male PhD student in his third year who had received training in conducting focus group interviews and data analysis, took on the role of the moderator for all the focus group sessions. XC played a crucial role in organising, conducting, and overseeing the interview process. Assisting XC as an assistant moderator was YTZ, who was responsible for taking notes during the discussions and managing the recording equipment throughout the interviews. The entire programme was under the supervision of two researchers, SFL and another experienced researcher with a wealth of expertise in conducting focus group qualitative interviews. Together, the team ensured the smooth and effective execution of the focus group sessions.

To ensure confidentiality, all participants were informed that the interviews would be audio-taped without recording any names or identifying information. It was stated that after the completion of the entire study and the publication of the research findings, all interview materials would be destroyed. Both the audio recordings and transcriptions were free of any information that could identify the participants. The transcriptions were performed word-for-word by a skilled research assistant, and after each interview transcription, the data were reviewed by XC.

Data analysis was conducted using a combination of extended tables, cutting tools, and coloured markers. The analysis process involved the following consecutive stages.

(1) Two duplicate transcripts were created and organised in a specific order.

(2) The transcripts were briefly read and reread to obtain a comprehensive understanding of the data.

(3) Multiple large sheets of paper were set aside for every question or potential theme.

(4) Distinctive coloured markers were employed to identify and mark quotes associated with various possible sub-themes.

(5) The quotes that were marked were then cut out and affixed onto the appropriate locations on the large sheets.

(6) The quotes were summarised and grouped into relevant sub-themes or themes to reveal their underlying meanings.

To guarantee the accuracy of the data analysis, the researcher revalidated the question clusters and sub-themes by reviewing the original transcripts. Furthermore, another project team member validated the identified themes, further enhancing the reliability of the findings.

4.5 Summary of this chapter

This chapter described a research project aiming to create and preliminarily execute a pilot RCT. The study consisted of three distinct phases. The first phase involved pre-intervention focus group interviews. Building upon the first-phase results, the second phase entailed a pilot RCT of an intervention to diminish schizophrenia-related stigma among nursing students. Following the pilot RCT, the third phase involved a process evaluation aimed at evaluating the second-phase pilot RCT, which consisted of self-

report questionnaires and focus group interviews. The overarching purpose of this phase was to evaluate the execution, feasibility, acceptability, and efficacy of the intervention undertaken in the second phase.

CHAPTER FIVE: RESULTS.

5.1 Introduction

Section 5.2 provides an overview of the outcomes of the first-phase focus group interviews, Section 5.3 offers an exposition of the outcomes of the second-phase pilot RCT, and Section 5.4 describes the outcomes of third-phase study process evaluation. Section 5.5 provides a summary of this chapter.

5.2 Results of the first-phase focus group interviews

5.2.1 Demographics and other characteristics of the participants

As the nursing students were undergoing clinical placements in hospitals, they were supervised by nurses with varying working periods, making it difficult to fix the number of participants for simultaneous participation in the focus group interviews. Consequently, these focus group interviews consisted of two groups with five participants, one group with six participants, and two groups with seven participants. No new information or themes emerged during the fifth focus group interview, indicating that data saturation had been reached. Additionally, no participants withdrew from this study, suggesting their interest in the study and belief in its significance. The length of the focus group interviews varied from 74 minutes to 102 minutes, with a median duration of 83 minutes. The participants' ages ranged from 19 to 22 years, and approximately 83% were female. The participants represented six universities or colleges, and only two participants belonged to ethnic minorities (Tujia and Dong

nationality). Further details of the participants' demographic characteristics are displayed in Table 5.1.

Table 5.1. Demographic characteristics of participants (n = 30)

Characteristics	n (%)
Sex	
Male	5 (16.7)
Female	25 (83.3)
Nationality	
Han	28 (93.3)
Ethnic minority	2 (6.7)
Age	
19 years	2 (6.7)
20 years	10 (33.3)
21 years	13 (43.3)
22 years	5 (16.7)
Marital status	
Unmarried	30 (100)
University or College	
Hunan University of Chinese Medicine	15 (50)
Central South University	1 (3.3)
Shaoyang University	10 (33.4)
JiShou University, ZhangJiajie College	2 (6.7)
Xiangnan University	1 (3.3)
Hainan Medical University	1 (3.3)
Province	
Hunan	27 (90.1)
Hebei	1 (3.3)
Shanxi	1 (3.3)
Zhejiang	1 (3.3)
Religion	
No religion	29 (96.7)
Buddhism	1 (3.3)
Do you have friends or family members with mental illness issues?	
Yes	11 (36.7)
No	19 (63.3)
Have you had contact with groups or individuals with schizophrenia?	
Yes	12 (40.0)
No	18 (60.0)
Have you had a mental illness before?	

No	30 (100.0)
Have you participated in similar studies before?	
No	30 (100.0)

5.2.2 New themes from this study

Four new themes and eight sub-themes were derived from the focus group interviews. Because each focus group interview provided sufficient information about the research topic, there were no repeated interviews in this study. The coding tree of the first-phase focus group interviews is shown in Table 5.2.

Table 5.2 Coding tree of the first-phase focus group interviews

Theme	Sub-theme	Code units
The recognition status of schizophrenia	Knowledge misconceptions	They harm others and are not legally responsible. They are like time bombs when they have an episode. Their thinking is different from ours. Schizophrenic episodes are temporary and can be self-healing.
	Knowledge lacking	Don't know schizophrenia could be cured Don't know the difference between depression and schizophrenia Not familiar with mental illnesses
Attitudes towards schizophrenia	Multiple attitudes	Fear Curiosity Sympathy
	Influence of culture on attitude formation	Attitudes are related to our culture to some extent. Traditional culture influences our perception of schizophrenia. Believers in Buddhism tend to view individuals with compassion.

Nursing students' coping strategies for schizophrenia	Development of public stigma towards schizophrenia	Recognise that discrimination is normal Recognise that bias is normal Stay away from people with schizophrenia Unwilling to work in the psychiatry department
	Coping with schizophrenia within the context of traditional culture	Filial piety Clan honour
Perspectives of individuals with schizophrenia	Understanding the suffering	People with schizophrenia experience excruciation.
	Indications of unfair treatment	Discrimination in daily life

Theme 1. The recognition status of schizophrenia

Sub-theme 1. Knowledge misconceptions

The nursing students had several misconceptions about schizophrenia. For example, they stated:

'*From what I read in literary and artistic novels in high school, I know that people with schizophrenia have 22 personalities.*' (Participant 11)

'*The symptoms of schizophrenia are temporary, and patients can be cured by themselves even without medical treatment.*' (Participant 9)

'*People with schizophrenia do not know they are being treated differently or being discriminated against.*' (Participant 10)

Sub-theme 2. Knowledge lacking

The nursing students expressed a lack of knowledge about schizophrenia. For example, they mentioned:

'*Even as an intern nursing student, I didn't know that schizophrenia can be cured.*' (Participant 7).

'*I read the textbook and memorised this knowledge before the exam. But after the exam, I forget it completely. Now I don't know what medicine people with schizophrenia should take.*' (Participant 1)

'*Because I don't have much knowledge about this illness, I am afraid to communicate with them.*' (Participant 18)

'*I don't know the difference between depression and schizophrenia.*' (Participant 9)

Theme 2. Attitudes towards schizophrenia

Sub-theme 1. Multiple attitudes

The nursing students expressed various attitudes towards schizophrenia. For instance, they said:

'*I feel fear towards individuals with mental illnesses because I feel people with schizophrenia may appear different from other normal people.*' (Participant 5)

'*Without prior understanding of caring for individuals with schizophrenia, I may be curious to engage and interact with them in a caregiving role.*' (Participant 27)

'*I can sympathise with people with schizophrenia, as there is little interaction with them. I can only offer some encouraging words to them online. When I encounter them in the*

real world, I will not treat them as a special group but rather as ordinary individuals. I will not view them as freaks.' (Participant 8)

Sub-theme 2. Influence of culture on attitude formation

The nursing students stated that their attitudes towards schizophrenia were culturally influenced.

For instance, they mentioned:

'*The attitude towards people with schizophrenia to some extent is influenced by our culture. Looking back 20–30 years, in rural areas, people despised individuals with mental illnesses because they didn't consider it an illness. In the feudal context of rural areas, it was believed to be possession by ghosts. Mental illnesses are intertwined with China's ghost and deity culture.*' (Participant 1)

'*Traditional Chinese culture can influence our perspective on schizophrenia.*' (Participant 2)

'*Monsters and demons are related to Taoism. The ancients emphasised the concept of "three souls and seven spirits", which also stems from Taoist ideology. The way the ancients perceived individuals with schizophrenia could be described as losing their souls and spirits. In a normal person, the harmony and unity of the three souls and seven spirits exist within us. When the three souls and seven spirits are in a state of disorder, it can manifest as that kind of mental abnormality, even what we call schizophrenia.*' (Participant 10)

Theme 3. Nursing students' coping strategies for schizophrenia

Sub-theme 1. Development of public stigma towards schizophrenia

The nursing students mentioned that stigmatising behaviour exists towards people with schizophrenia. For instance, they mentioned:

'*Human nature is inherently selfish, always striving to pursue one's own interests. There is a tendency to exhibit exclusionary behaviour, where people tend to distance themselves from those who are perceived as different or do not fit into their own social group. Therefore, people often have this inclination to distance themselves from individuals who are different, such as those with schizophrenia.*' (Participant 10)

'*It is quite normal to feel that individuals with schizophrenia face discrimination.*' (Participant 4)

'*People tend to keep their distance from individuals with mental illness.*' (Participant 5)

'*For example, when we are out on the street and encounter someone who appears to have mental health issues, we tend to say, "Keep some distance".*' (Participant 22)

Sub-theme 2. Coping with schizophrenia within the context of traditional culture

The nursing students mentioned that the way they coped with schizophrenia was also affected by traditional culture. For example, they mentioned:

'*Traditional culture can influence our perception of schizophrenia. Filial piety is highly valued, and if my own parents were diagnosed with schizophrenia, regardless of their condition, I would take care of them.*' (Participant 19)

'*Personally, I would definitely not have any discriminatory mindset towards individuals with schizophrenia, especially if they were my closest loved ones.*' (Participant 1)

Theme 4. Perspectives of individuals with schizophrenia

Sub-theme 1. Understanding the suffering

The nursing students mentioned that they felt the pain of people with schizophrenia. For example, they said:

'*Because I am certain that regardless of the illness, anyone who is diagnosed with a condition will undoubtedly experience hardship.*' (Participant 6)

'*In rural areas, it is understood that even if it is not one's own family member who is affected by the illness, individuals who are diagnosed with an illness do not wish to be in that condition. They also experience significant distress and excruciation.*' (Participant 1)

'*I feel like he must be in a lot of excruciation. It's like his expression shows that he is aware that his previous behaviour was wrong, but the damage has already been done.*' (Participant 18)

Sub-theme 2. Indications of unfair treatment

The nursing students mentioned that they knew and felt that people with schizophrenia encountered unfair treatment. For example, they said:

'*After schizophrenia has been treated, I think they can work normally. Otherwise, it is impossible, just because he has this kind of mental illness, society abandons him!*' (Participant 9)

'*Many people with schizophrenia lived in the psychiatry department for more than 10 years, 20 years, or even 40 years, and the longest was apparently 42 years. Is there not a little bit of a chance for their reintegration into society? Actually, I think it's because*

of our stereotypes towards them that we treat them differently.' (Participant 7)

'*I think those who bully people with mental disorders are very hateful. I despise them in my heart.*' (Participant 20)

5.3 Results of the second-phase pilot RCT

5.3.1 Demographics

This pilot RCT included 60 participants, with an equal allocation to the intervention and control groups. There were 48 female and 12 male participants. Thirty-four participants were aged from 20 to 21, and 26 participants were aged from 22 to 23. Only two participants belonged to ethnic minorities. The detailed demographic information of the participants is shown in Table 5.3. There were no notable differences in the demographic traits of the participants between the intervention and control groups. Moreover, encouragingly, there were no dropouts during the study, and the final sample size remained at 60. The participants' baseline scores for the four scales are shown in Table 5.4.

Table 5.3. Demographic characteristics of participants (N = 60)

	Baseline demographics of study participants, n (%)/mean ± SD			Group difference	
Demographic characteristics	All participants n (%)	Intervention n (%)	Control n (%)	χ^2	P value
Sex					
Female	48 (80.00)	23 (76.67)	25 (83.33)	0.417[a]	0.519
Male	12 (20.00)	7 (23.33)	5 (16.67)		
Age (Years)					
20–21	34 (56.67)	15 (50.00)	19 (63.33)	1.086[a]	0.297
22–23	26 (43.33)	15 (50.00)	11 (36.67)		
Ethnicity					
Han	55 (91.67)	27 (90.00)	28 (93.33)	0 (1)	1.000
Other	5 (8.33)	3 (10.00)	2 (6.67)		
University of Hunan Province					
Yes	7 (11.67)	4 (13.33)	3 (10.00)	0.000[b]	1.000
No	53 (88.33)	26 (86.67)	27 (90.00)		
Marital status					
Married	0	0	0	0 (1)	1.000
Unmarried	60 (100.00)	30 (100.00)	30 (100.00)		
Other	0	0	0		
Province					
Hunan	40 (66.67)	20 (66.67)	20 (66.67)	0 (1)	1.000
Other	20 (33.33)	10 (33.33)	10 (33.33)		
Grade					
4	60 (100.00)	30 (100.00)	30 (100.00)	0 (1)	1.000
3	0	0	0		
Other	0	0	0		
Religious beliefs					
Yes	3 (5.00)	2 (6.67)	1 (3.33)	0.000[b]	1.000
No	57 (95.00)	28 (93.33)	29 (96.67)		
Do you have friends or family members with mental illness issues?					
Yes	13 (21.67)	4 (13.33)	9 (30.00)	2.445[a]	0.117
No	47 (78.33)	26 (86.67)	21 (70.00)		
Have you had contact with groups or individuals with schizophrenia?					
Yes	26 (43.33)	11 (36.67)	15 (50.00)	1.086[a]	0.297
No	34 (56.67)	19 (63.33)	15 (50.00)		

Have you had a mental illness before?					
Yes	0	0	0	0 (1)	1.000
No	60 (100.00)	30 (100.00)	30 (100.00)		
Have you participated in similar studies before?					
Yes	0	0	0	0 (1)	1.000
No	60 (100.00)	30 (100.00)	30 (100.00)		

Note: a: Pearson's chi-square test; b: Fisher's exact test

Table 5.4. Comparison of baseline scores for the four scales between the intervention and control groups using an independent-samples Student's t-test

	Baseline demographics of study participants, n (%)/mean ± SD			Group difference	
Scale	All Participants n (%)	Intervention n (%)	Control n (%)	t	P value
KAST	11.17 (2.40)	11.53 (2.53)	10.80 (2.25)	1.187	0.240
MICA	45.88 (6.30)	45.87 (6.47)	45.90 (6.23)	-0.020	0.984
RIBS	12.83 (2.74)	12.80 (2.89)	12.87 (2.62)	-0.094	0.926
JSE-NSR	111.82 (8.83)	111.57 (10.19)	112.07 (7.39)	-0.218	0.829

Note:

KAST: Chinese version of the Knowledge about Schizophrenia Test

MICA: Mental Illness Clinicians' Attitudes Scale

RIBS: Reported and Intended Behaviour Scale

JSE-NSR: Jefferson Scale of Empathy – Nursing Students' version R

5.3.2 Primary outcomes of the feasibility and acceptability of this study

5.3.2.1 Feasibility outcomes

The subject recruitment for this study was successfully conducted with the assistance of the Nursing Department of Xiangya Hospital. It took 26 days (26 January 2023 to 20 February 2023) to recruit participants from Xiangya Hospital of Central South University. The overall recruitment rate for this project was approximately three participants per day. Out of the 81 participants recruited, one third-year nursing student did not meet the inclusion criteria, resulting in an eligibility rate of 98.77% (80 out of 81). Among the screened participants, the recruitment rate was 75.00% (60 out of 80). Eighty fourth-year nursing students showed interest in participating in this research, but only 60 nursing students finally participated. The achievable recruitment rate was 15.38% (60 out of 390), as the total number of nursing students in their fourth year who engaged in clinical placements at the specified hospital was 390. The response rate for the scales used in the study was 100.00%, and the participants completed the scales within 2 days at T1, T2, and T3, with no missing values on any of the scale items, which indicated good feasibility of the measurement tools. The retention rate for participants in both the intervention and control arms was 100.00%.

5.3.2.2 Acceptability outcomes

The prospective acceptability was good, as the recruitment rate was 75%, with 60 nursing students participating in the intervention among the total of 80 fourth-year

nursing students who had shown interest in participating. The concurrent acceptability was good, with all nursing students adhering to the programme and actively engaging in the intervention. There were no dropouts in any intervention session, resulting in a 100% intervention attendance rate, retention rate, and intervention completion rate. The acceptability of randomisation was also good, as all participants expressed willingness to comply with the randomisation process and be allocated to either the intervention or control arms.

5.3.3 Preliminary efficacy of the intervention

5.3.3.1 The effect of the intervention at decreasing nursing students' schizophrenia stigma

Table 5.5 lists the outcome information regarding the four scales (KAST, MICA, RIBS, and JSE-NSR) that were used to compare the efficacy of the intervention between the intervention and control arms at three time points (baseline, post-intervention, and 3-month follow-up) using paired Student's t-tests or Wilcoxon signed rank tests. Table 5.5 shows that, in the experimental and control groups, the KAST scores increased significantly at T2 and T3 ($P < 0.05$). Additionally, in the experimental group, the MICA scores decreased significantly at T2 and T3 ($P < 0.05$), the RIBS scores increased significantly at T2 and T3 ($P < 0.05$), and the JSE-NSR score increased significantly at T3 ($P < 0.05$). However, there were no significant changes in the control group in the MICA, RIBS, or JSE-NSR scales across the three time points.

Table 5.5 Comparison between experimental and control groups regarding the changes in knowledge about schizophrenia, attitudes towards mental illness, intentional behaviour, and empathy using a paired Student's t-test or Wilcoxon signed rank test (N = 60)

	Experimental group (n = 30)			t value	
	T1	T2	T3	t^1	t^2
		Mean (SD)			
KAST	11.53 (2.53)	12.97 (1.79)	13.30 (2.02)	-3.053b**	-3.154b**
MICA	45.87 (6.47)	40.40 (6.55)	38.57 (6.14)	3.807***	5.967***
RIBS	12.80 (2.89)	15.07 (2.59)	14.73 (2.41)	-4.025***	-3.417b***
JSE-NSR	111.57 (10.19)	115.27 (8.91)	116.33 (10.52)	-1.951	-2.491*

	Control group (n = 30)			t value	
	T1	T2	T3	t^3	t^4
		Mean (SD)			
KAST	10.80 (2.25)	12.43 (2.01)	12.83 (1.84)	-3.642**	-3.671b***
MICA	45.90 (6.23)	44.13 (5.36)	44.30 (7.12)	1.946	1.264
RIBS	12.87 (2.62)	13.90 (2.01)	13.53 (2.43)	-2.014	-1.262
JSE-NSR	112.07 (7.39)	111.90 (7.33)	110.20 (8.28)	0.121	1.016

T1: baseline; T2: post-intervention; T3: 3-month follow-up. b: Wilcoxon signed rank comparisons. *P < 0.05; **P < 0.01; ***P < 0.001.

t^1: t-value of experimental group at baseline and post-intervention comparison

t^2: t-value of experimental group at baseline and 3-month follow-up comparison

t^3: t-value of control group at baseline and post-intervention comparison

t^4: t-value of control group at baseline and 3-month follow-up comparison

KAST: Chinese version of the Knowledge about Schizophrenia Test; MICA: Mental Illness Clinicians' Attitudes Scale; RIBS: Reported and Intended Behaviour Scale; JSE-NSR: Jefferson Scale of Empathy – Nursing Students' version R.

Table 5.6 presents the results of the GEE analysis, assessing the group, time, and group × time interaction effects on knowledge about schizophrenia, stigma-related attitudes, intentional behaviour towards people with schizophrenia, and empathy towards people with schizophrenia.

The effect of time showed that the stigma-related knowledge score of the two groups was significantly higher at T2 (Wald $\chi^2 = 13.723$, $P < 0.001$) and T3 (Wald $\chi^2 = 24.012$, $P < 0.001$) than at T1. The interaction between group and time revealed that the increase in the stigma-related knowledge score of the experimental group was not significantly different from that in the control group (Wald $\chi^2 = 0.115$, $P = 0.734$ and Wald $\chi^2 = 0.179$, $P = 0.673$) at T2 or T3.

The effect of time showed that the stigma-related attitude score of the two groups was significantly lower at T2 (Wald $\chi^2 = 3.916$, $P = 0.048$), but not at T3 (Wald $\chi^2 = 1.654$, $P = 0.198$), than at T1. The interaction between group and time revealed that the reduction in the stigma-related attitude score of the experimental group was significantly greater than that in the control group when comparing T2 (Wald $\chi^2 = 4.907$, $P = 0.027$) and T3 (Wald $\chi^2 = 10.848$, $P = 0.001$) with T1.

The interaction between group and time revealed that the reduction in the stigma-related behaviour score of the experimental group was not significantly different from that of the control group when comparing T2 (Wald $\chi^2 = 2.712$, $P = 0.100$) or T3 (Wald $\chi^2 = 3.018$, $P = 0.082$) with T1. The effect of time demonstrated that the stigma-related behaviour score was significantly lower at T2 (Wald $\chi^2 = 4.197$, $P = 0.040$) than at T1, but there was no significant change at T3 (Wald $\chi^2 = 1.648$, $P = 0.199$).

Furthermore, the interaction between group and time indicated that the experimental group showed a significant improvement in the level-of-empathy score compared with the control group (Wald $\chi^2 = 6.466$, P = 0.011) at T3, but no significant change at T2 (Wald $\chi^2 = 2.808$, P = 0.094), compared with T1. The effect of time showed that the level-of-empathy score of the two groups did not significantly change at T2 (Wald $\chi^2 = 0.015$, P = 0.902) or T3 (Wald $\chi^2 = 1.076$, P = 0.302) compared with T1. Detailed information regarding the GEE analysis is presented in Table 5.6. In the context of this project, intervention fidelity was examined across five aspects using a 25-item checklist. The fidelity of 18 items was reported and analysed, while data for 7 items were not applicable. The research team ensured adherence to all the intervention implementation items. The specific details regarding the intervention fidelity are presented in Table 5.7.

Table 5.6 Generalised estimating equation (GEE) models assessing the intervention outcomes of knowledge about schizophrenia, stigma-related attitudes, stigma-related behaviour, and level of empathy for people with schizophrenia (experimental group = 30 and control group = 30)

Measures	Mean (SD)			Tests of GEE model effects										Effect size (95% CIs)	
	T1	T2	T3	Time effect				Group effect		Group-by-time effect					
				T2		T3				T2		T3		T2	T3
				Wald χ^2	P	Wald χ^2	P	Wald χ^2	P	Wald χ^2	P	Wald χ^2	P	d	
KAST score				5.121	**< 0.001**	7.640	**< 0.001**	2.082	0.227	0.819	0.734	0.766	0.673	0.2837 (-0.2249-0.7923)	0.2433 (-0.2647-0.7512)
Intervention group	11.53 (2.53)	12.97 (1.79)	13.30 (2.02)												
Control group	10.80 (2.25)	12.43 (2.01)	12.83 (1.84)												
MICA score				0.171	**0.048**	0.202	0.198	0.967	0.984	0.025	**0.027**	0.003	**0.001**	-0.6233 (-1.1415-0.1051)	-0.8619 (-1.3909-0.3329)
Intervention group	45.87 (6.47)	40.40 (6.55)	38.57 (6.14)												
Control group	45.90 (6.23)	44.13 (5.36)	44.30 (7.12)												
RIBS				2.810	**0.040**	1.948	0.199	0.936	0.924	3.433	0.100	3.549	0.082	0.5047	0.4959

score														(-0.0094-	(-0.0179-
Intervention	12.80	15.07	14.73											1.0188)	1.0096)
group	(2.89)	(2.59)	(2.41)												
Control	12.87	13.90	13.53												
group	(2.62)	(2.01)	(2.43)												
JSE-NSR				0.846	0.902	0.155	0.302	0.607	0.852	47.783	0.094	760.011	**0.011**	0.4131	0.6475
score														(-0.0984-	(0.1284-
Intervention	111.57	115.27	116.33											0.9245)	1.1667)
group	(10.19)	(8.91)	(10.52)												
Control	112.07	111.90	110.20												
group	(7.39)	(7.33)	(8.28)												

T1: baseline; T2: post-intervention; T3: 3-month follow-up
d: effect size, based on the between-group differences in the mean change and the pooled baseline standard deviation (SD) of the two groups
KAST: Chinese version of the Knowledge about Schizophrenia Test;
MICA: Mental Illness Clinicians' Attitudes Scale;
RIBS: Reported and Intended Behaviour Scale;
JSE-NSR: Jefferson Scale of Empathy – Nursing Students' version R.

Table 5.7 Intervention fidelity checklist (25-item)

Treatment fidelity strategies Treatment design	present	absent but should be present	not applicable
1.Provided information about treatment dose in the intervention condition			
Length of contact session(s)	√		
Number of contacts	√		
Content of treatment	√		
Duration of contact over time	√		
2.Provided information about treatment dose in the comparison condition			
Length of contact session(s)	√		
Number of contacts	√		
Content of treatment	√		
Duration of contact over time	√		
3. Mention of provider credentials			√
4. Mention of a theoretical model or clinical guidelines on which the intervention is based	√		
Training providers			
1.Description of how providers were trained			√
2.Standardized provider training			√
3.Measured provider skill acquisition posttraining			√
4. Described how provider skills maintained over time			√
Delivery of treatment			
1. Included method to ensure that the content of the intervention was being delivered as specified (e.g., treatment manual, checklist, computer program)	√		
2. Included method to ensure that the dose of the intervention was being delivered as specified (e.g., records number of contact minutes.	√		

3. Included mechanism to assess if the provider actually adhered to the intervention plan (applies to human providers only?) (e.g., audiotape, observation, self-report of provider, exit interview with participant)	√	
4. Assessed nonspecific treatment effects		√
5. Used treatment manual		√
Receipt of treatment		
1. Assessed subject comprehension of the intervention during the intervention period	√	
2. Included a strategy to improve subject comprehension of the intervention above and beyond what is included in the intervention	√	
3. Assessed the subject's ability to perform the intervention skills during the intervention period	√	
4. Included a strategy to improve subject performance of intervention skills during the intervention period	√	
Enactment of treatment skills		
1. Assessed subject performance of the intervention skills assessed in settings in which the intervention might be applied	√	
2. Assessed strategy to improve subject performance of the intervention skills in settings in which the intervention might be applied	√	

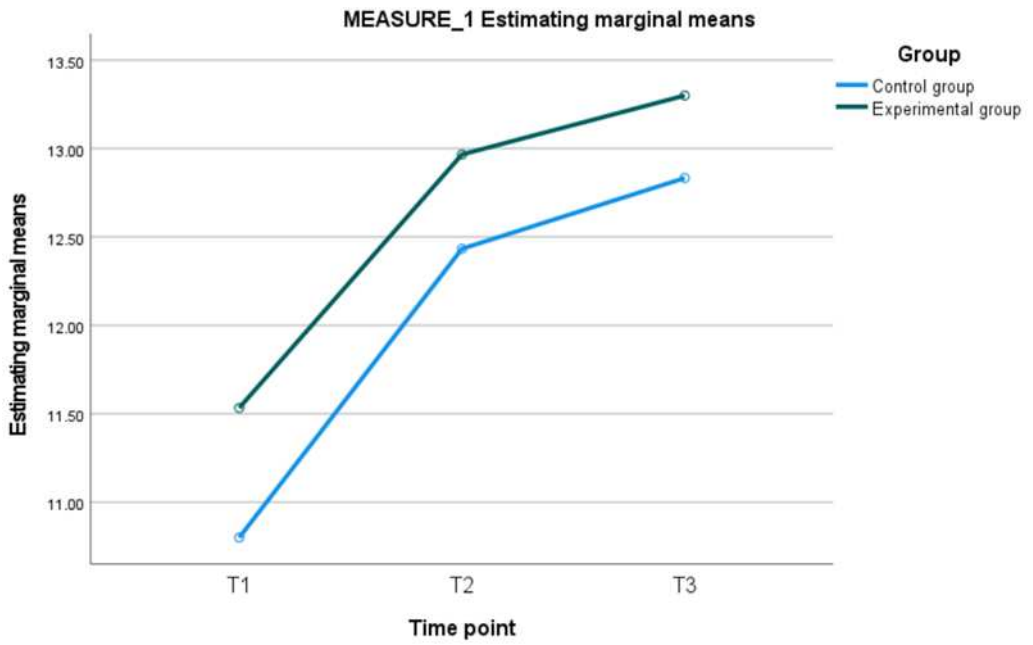

Figure 4: Comparison of knowledge scores between the two groups at three time points

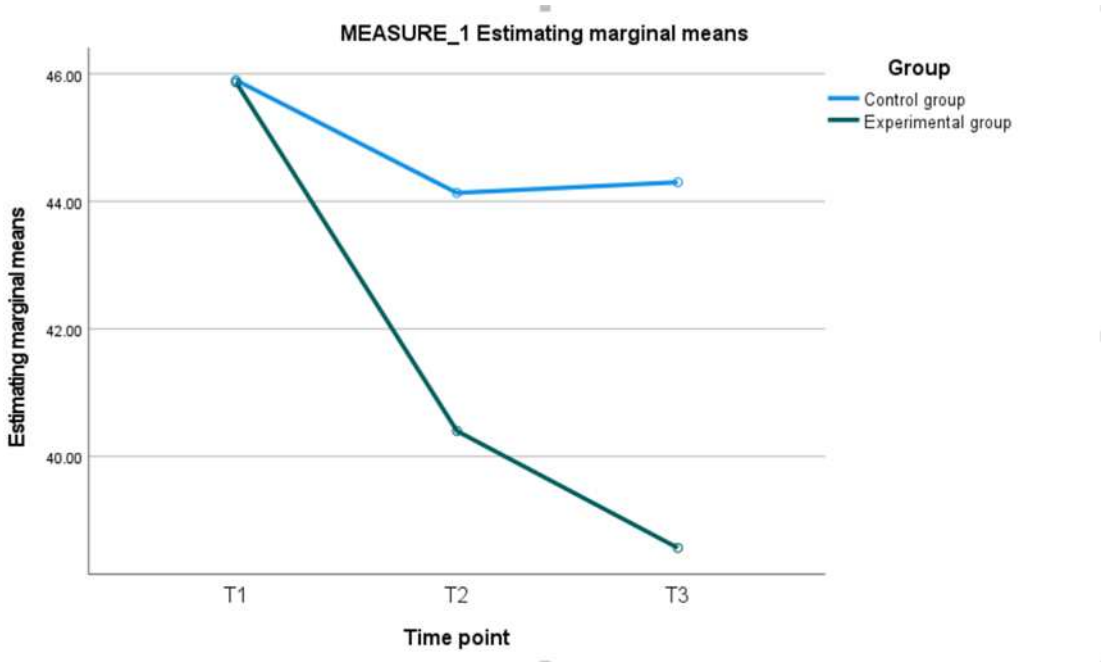

Figure 5: Comparison of attitude scores between the two groups at three time points

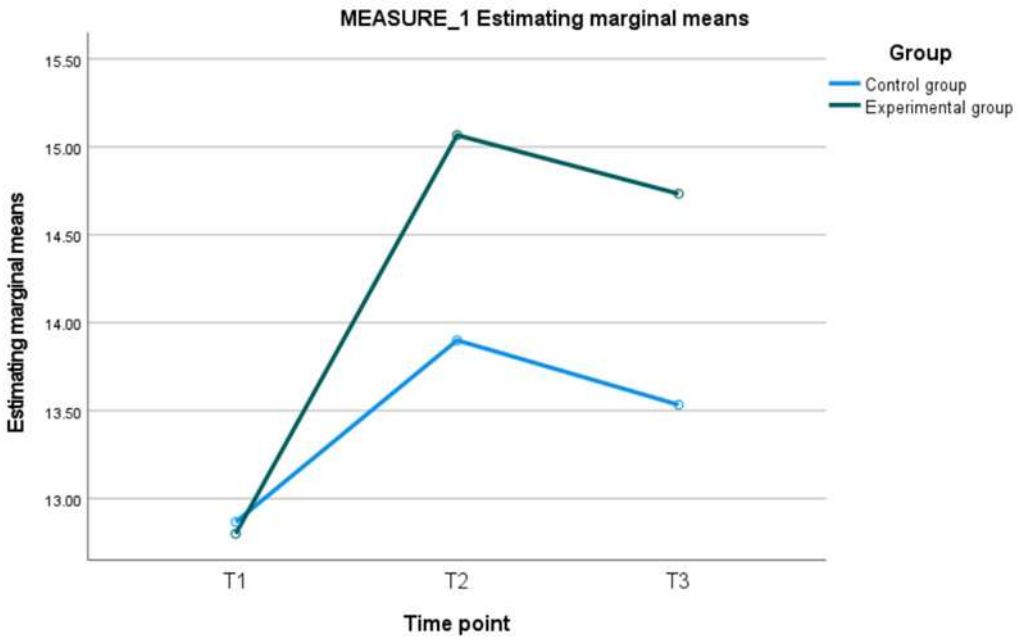

Figure 6: Comparison of behaviour scores between the two groups at three time points

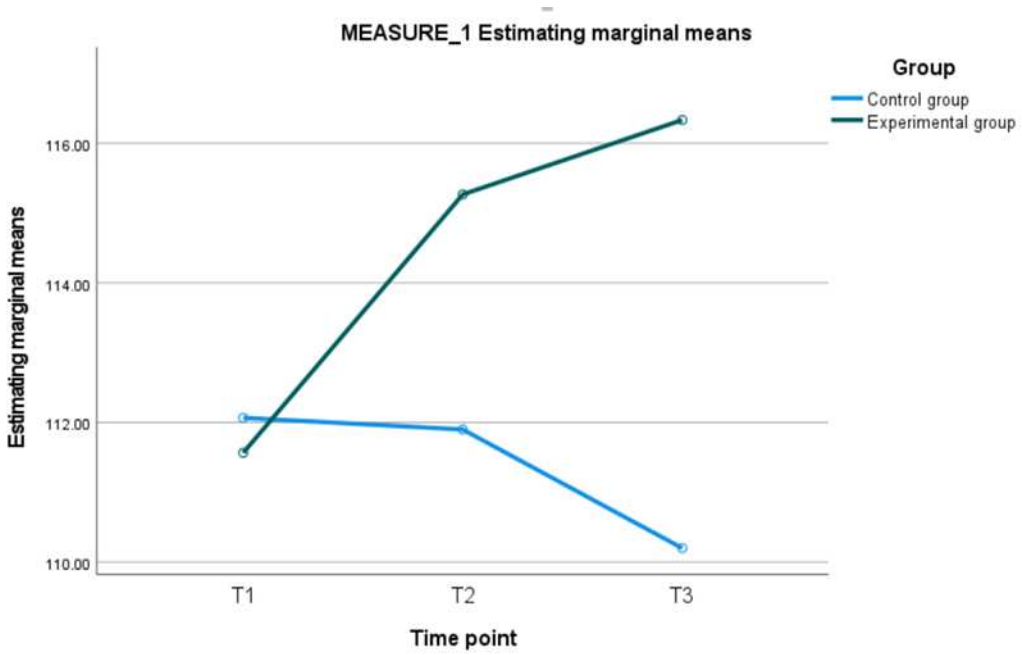

Figure 7: Comparison of empathy scores between the two groups at three time points

5.4 Results of third-phase study process evaluation

The sample characteristics of the participants in the focus group interview were similar across the intervention group. Thus, detailed information about the participants is provided in Table 5.3.

5.4.1 Quantitative findings

Quantitative data were collected through a self-report questionnaire. The participants expressed a high level of satisfaction with their overall experience in this project, as demonstrated by an average score of 9.83 (SD = 1.09), with possible scores ranging from 0 to 10. Additionally, they indicated a willingness to recommend this study to other nursing students, with a mean score of 9.83 (SD = 1.21), with possible scores ranging from 0 to 10. Further details of the mean scores for other items on the self-report questionnaire are provided in Table 5.8.

Table 5.8 Questionnaire of the process evaluation

No.	Items	Mean ± SD
1	How feasible do you think the first week of the intervention (correction of knowledge misconceptions) would be to complete within 1 week?	9.40 ± 1.329
2	How feasible do you think the second week of the intervention (exaggerated reports of people with schizophrenia) would be to complete within 1 week?	9.53 ± 1.106
3	How feasible do you think the third week of the intervention (contacting people recovering from schizophrenia and psychiatric nurses) would be to complete within 1 week?	9.67 ± 1.124
4	How feasible do you think the fourth week of the intervention (concept mapping and reflection) would be to complete within 1 week?	9.53 ± 1.332
5	How feasible do you think the overall intervention would be to complete within 4 weeks?	9.53 ± 1.137
6	How acceptable did you find the first week of the intervention (correction of knowledge misconceptions)?	9.17 ± 1.724
7	How acceptable did you find the second week of the intervention (exaggerated reports of people with schizophrenia)?	9.43 ± 1.278
8	How acceptable did you find the third week of the intervention (contacting people recovering from schizophrenia and psychiatric nurses)?	9.93 ± 1.048
9	How acceptable did you find the fourth week of the intervention (concept mapping and reflection)?	9.40 ± 1.380
10	How acceptable did you find the four-week intervention?	9.50 ± 1.075
11	Do you think the first week of the intervention (correction of knowledge misconceptions) affected your perception of people with schizophrenia?	9.50 ± 1.196
12	Do you think the second week of the intervention (exaggerated reports of people with schizophrenia) affected your perception of people with schizophrenia?	9.47 ± 1.137
13	Do you think the third week of the intervention (contacting people recovering from schizophrenia and psychiatric nurses) influenced your view of people with schizophrenia?	9.93 ± 1.230
14	Do you think the fourth week of the intervention (concept mapping and reflection) influenced your perception of people with schizophrenia?	9.23 ± 1.455
15	Do you think the 4-week intervention has affected your perception of people with schizophrenia?	9.70 ± 0.952
16	How much do you think you know about schizophrenia after	8.93 ± 1.337

	the 4-week intervention?	
17	What do you think is your attitude towards people with schizophrenia after the 4-week intervention?	9.37 ± 1.189
18	In your opinion, after the 4-week intervention, how is your intentional behaviour towards people with schizophrenia?	8.90 ± 1.242
19	What do you think is your empathy for people with schizophrenia after the 4-week intervention?	8.93 ± 1.413
20	What do you think of the method of online intervention in this study?	9.03 ± 1.273
21	Did you have difficulty in understanding the scales?	9.13 ± 1.408
22	Do you think the scales used in the study were appropriate to measure the effect of the corresponding intervention?	9.10 ± 1.517
23	Is this an appropriate time for this intervention at this stage of your internship?	8.67 ± 2.123
24	Is it appropriate to conduct this intervention in clinical practice?	8.77 ± 1.794
25	Overall, do you think the content of this intervention is appropriate?	9.47 ± 1.224
26	How satisfied are you with this intervention study?	9.83 ± 1.085
27	Will you recommend this intervention programme to other nursing students?	9.83 ± 1.206

5.4.2 Qualitative findings

Five focus group interviews were conducted from 22 March 2023 to 27 March 2023, after the fourth week of intervention training. All interviews were conducted using the Tencent video conference platform, and audio recordings were made and transcribed verbatim. The number of participants in the five groups varied, with group sizes of 7, 8, 6, 5, and 4. The decision to have smaller group sizes was based on the need to explore the topics in greater depth, as the participants had had 4 weeks of experience with the intervention, which allowed them to provide valuable insights. Throughout the five interview sessions, a substantial amount of new information was gathered, but no further new information was obtained in the fifth focus group interview. On average,

each interview session lasted approximately 68 minutes.

Focus group interviews

The following four themes associated with the participants' experience of participating in this study were identified: (1) feasibility of the intervention, (2) acceptability of the intervention, (3) efficacy of the intervention, and (4) suggestions for future intervention implementation. Table 5.9 presents the coding tree of the focus group interviews.

Table 5.9 Coding tree of the focus group interviews

Theme	Sub-theme	Code units
Feasibility of the intervention	Duration and frequency of the intervention were appropriate	Frequency and time cost were acceptable
	Time taken for the intervention reports was appropriate	Reporting time was suitable
	The online intervention delivery was appropriate	Online intervention was good
		Online intervention was convenient
		Liked the online intervention
Acceptability of the intervention	The intervention was acceptable	Liked the intervention content
		Felt the novelty of the intervention
		The intervention made sense
		The content of the intervention was well accepted
		Felt like the intervention paid off
		The intervention was easy to complete
	The measuring tools were appropriate	Moderate number of scales
		Scales were suitable for measuring the intervention effects
		Could understand the content of the scales
Effect of the intervention	Knowledge increase	Acquired accurate knowledge
		Recognise that stigma exists

	Negative attitude decrease	Change in attitude
		Change in stereotypes
	Positive coping behaviour	Treated well
		Know how to cope
		Corrected misguided thinking by others
		Non-discrimination
		Won't make fun of
		Willing to work in psychiatry department
	Empathy improvement	Increased empathy
		From the patient's point of view
		Understand people with schizophrenia
Recommendations for future interventions	Sections of the intervention that can be improved	Teaching students to draw concept maps
		Limit the reporting time and reduce duplication
		Reduce workload
		Extend preparation time
		Increase participant communication
		Intervention should be face-to-face
		Elect a team leader, a person responsible for
		Everyone should report their own content separately
		Prepare well to intervene
		Adjust the sequence of interventions
		Unpack content that is too interfering
		Increase the number of contacts in the intervention
	Selection of the intervention measurement tools	Increase the number of scales
		Choose a scale that can be measured in more depth

Theme 1: Feasibility of the intervention

This theme consisted of three sub-themes: (1) the duration and frequency of the intervention were appropriate; (2) the time taken for the intervention reports was appropriate; and (3) the online intervention delivery was appropriate.

Sub-theme 1: The duration and frequency of the intervention were appropriate

The participants considered the duration and frequency of the intervention to be appropriate. For example, they mentioned:

'*Intervention frequency and time duration are acceptable.*' (Participant 1)

'*Appropriate frequency and timing of the intervention.*' (Participant 2)

'*I don't think there is any problem with the frequency of the intervention. If the intervention is just once a week, it's actually fine. Once a week is equivalent to having a small task per week; it is not difficult, and it feels like having a small task to complete.*' (Participant 3)

'*Once a week is okay, but once every two weeks is too long, and it's easy to forget.*' (Participant 16)

Sub-theme 2: Time taken for the intervention reports was appropriate.

The participants considered the time taken to complete the report during the intervention to be appropriate. For example, they mentioned:

'*The reporting time is enough.*' (Participant 16)

'*The time for each report is about 2 hours, and I feel that the duration of time is good.*' (Participant 26)

'*It feels like 2 hours for the report was fine. You may feel a little tired because if you listen to this on a mobile phone for a long time, it may be like attending a class. Although we may just attend an intervention, we may just learn it casually. But I feel that too much content at once may not be good.*' (Participant 27)

'*The reporting time is fine.*' (Participant 29)

Sub-theme 3: Intervention delivery online was appropriate

The participants considered that online intervention was appropriate in this study. For example, they said:

'*Online intervention was pretty good, but in the third week, people recovering from schizophrenia may not be so good to choose face-to-face. It is very convenient and saves a lot of time.*' (Participant 1)

'*I think online intervention is very good. Well, anyway, I think the benefits of this kind of intervention far outweigh the disadvantages.*' (Participant 3)

'*Online intervention was very good. I cook dinner after getting off work late. I can listen to lectures and eat at the same time. I find it very convenient and much better than face-to-face.*' (Participant 11)

Theme 2: Acceptability of the intervention

This theme consisted of two sub-themes: (a) intervention was acceptable and (b) measuring tools were appropriate.

Sub-theme 1: Intervention was acceptable

The intervention was well accepted by the participants. For instance, they reported:

'*I enjoyed communicating directly with the psychiatry nurses in the third week and listening to their experience sharing. It felt real to me. However, as time went on, I gradually became more comfortable with the intervention. After the preparation in the first week, I became familiar with our teammates, and the pressure decreased, making it easier to handle the intervention, and my acceptance of it increased.*' (Participant 1)

'*I enjoyed communicating with people recovering from schizophrenia and psychiatry nurses in the third week, which felt more intuitive, and I enjoyed the novelty in the second week. I believe it's beneficial for research acceptance.*' (Participant 7)

Sub-theme 2: Measuring tools were appropriate

The participants considered the tools used to measure the intervention outcomes to be appropriate. For instance, they said:

'*The scales were pretty good. When filling them out, the content of the scale was relatively moderate, and the length of the scales didn't feel too long. Maybe I didn't fill them out too seriously, but I still think these scales were pretty good.*' (Participant 24)

'*These scales were very suitable; the content was not too much, just enough to fill them out carefully. I have encountered scales in the past that took more than 20 minutes to fill out. There was no difficulty in filling out these scales.*' (Participant 26)

'*I think the scales are quite fitting, and there is no difficulty in filling them out. The process was smooth.*' (Participant 2)

'*Well, I believe the scales are suitable for assessing the intervention outcome, and there are no issues at all.*' (Participant 5)

'*Uh, there is basically no problem with understanding these scales.*' (Participant 6)

'*Filling in these scales was very smooth. I think they are relatively simple, and there is no difficulty in filling them out.*' (Participant 8)

Theme 3: Efficacy of the intervention

This theme consisted of four sub-themes: (a) knowledge increase; (b) negative attitude decrease; (c) positive coping behaviour; and (d) empathy improvement

Sub-theme 1: Knowledge increase

The participants reported that their knowledge of schizophrenia increased after the intervention. For example, they said:

'*I have gained a lot from this intervention. One thing was a better understanding of schizophrenia, and there was also a change in my attitude towards life.*' (Participant 14)

'*I gained some knowledge about mental illness during the intervention.*' (Participant 16)

'*The biggest gain was a better understanding of people with schizophrenia.*' (Participant 20)

'*I learned a lot about mental illness in the first week.*' (Participant 22)

'*I feel that the effect was pretty good, and I have a more comprehensive understanding of schizophrenia.*' (Participant 23)

Sub-theme 2: Negative attitude decrease

The participants reported that their negative attitude towards people with schizophrenia decreased after the intervention. For example, they mentioned:

'*This intervention has greatly affected me. I feel that my attitude towards schizophrenia has changed a lot now.*' (Participant 2)

'*I have changed my stereotype of mental illness. I am not as resistant and afraid to contact people with mental illness, and I approach them with a more peaceful and normal state of mind.*' (Participant 5)

'*After a month, I feel very good. Not only do I have a better understanding of schizophrenia, but the biggest impact was on my attitude towards life.*' (Participant 8)

'*There has been a significant change. I was influenced by the media before, which formed a stereotype of mental illness in my mind. I used to think that mental illness may be associated with violent behaviour, beating people at every turn. However, after receiving the intervention, I feel better. Mental illness is not so abstract and scary; individuals in the stable period are just like normal people.*' (Participant 22)

Sub-theme 3: Positive coping behaviour

The participants reported that they developed intentional positive coping behaviour towards people with schizophrenia after the intervention. For example, they said:

'*I will look at people with schizophrenia with empathy. I feel a sense of pity for them and a responsibility towards society. When encountering such individuals, I will treat them well and take care of them.*' (Participant 1)

'*I have changed my stereotypes about mental illnesses. I am less resistant and afraid when I come into contact with them. I will approach them with a more peaceful and normal attitude. I will also correct the misconceptions of friends and classmates around*

me, combining theory with practice.' (Participant 5)

'*I will pay more attention to people with schizophrenia now because I also understand that they often face psychological pressure. I will also be attentive to the release of psychological pressure. First, I will take measures to prevent myself from getting sick and actively communicate my situation with my family members. I used to have a certain understanding of the mental illness stigma in society, but now I will not discriminate against people with mental illness as much.*' (Participant 17)

'*I think I will be more cautious in my words and deeds, especially when it comes to mental illness. I will be more sensitive to my language and avoid making jokes or talking nonsense about mental illness. I won't laugh at people with mental illness anymore.*' (Participant 11)

'*I was reluctant to get close to people with schizophrenia before, thinking that they were irritable and violent, but now I understand that not all people with schizophrenia are like this. If I were assigned to work in the psychiatric department, I wouldn't be so afraid. In fact, I still yearn to work in the psychiatric department.*' (Participant 15)

Sub-theme 4: Empathy improvement

The participants reported that their empathy towards people with schizophrenia improved after the intervention. For example, they stated:

'*Oh, that classmate who just spoke and I were the same, the feeling is deeper, and my empathy has increased, even though I do not have a mental illness. Having that sense of happiness is precious. I look at people with schizophrenia with empathy. It is very*

pitiable, and it gives rise to a sense of social responsibility. When encountering such individuals, I should treat them well and take care of them.' (Participant 1)

'*I feel that I have more empathy towards people with schizophrenia. Previously, I used to keep my distance from people with mental illness, but now, if my relatives make insulting remarks about someone having a mental illness, I will argue with them and ask them not to describe people like that. I will educate them about the knowledge of schizophrenia in a scientific way.*' (Participant 7)

'*In the third week, I felt empathy towards the person recovering from schizophrenia when he shared that his parents supported him. I had compassion and felt happy to see that he actively sought treatment and eventually recovered, leading to a better life.*' (Participant 9)

'*In the third week, I developed stronger empathy for people with mental illness when I interacted with individuals who had recovered.*' (Participant 10)

Theme 4: Suggestions for future intervention implementation

This theme consisted of two sub-themes: (a) sections of the intervention that can be improved and (b) selection of intervention measurement tools.

Sub-theme 1: Sections of the intervention that can be improved

The participants provided some suggestions to improve the implementation of the intervention for future studies. For example, they mentioned:

'*Would it be better if we knew and communicated with each other more? If there is more communication, will the intervention's effect be better?*' (Participant 2)

'*The content of the first week is a bit too much, and some topics are repeated. It might be better to combine some topics.*' (Participant 12)

'*It would be more attractive for the three groups of students to do different things, as you would be able to see many different aspects. If the three groups do the same thing, you might feel that the content is similar, and there wouldn't be many differences.*' (Participant 16)

Sub-theme 2: Selection of intervention measurement tools

The participants provided some suggestions for intervention measurement tools that could be used in future studies. For instance, they mentioned:

'*The questions in the scales could be a little more in-depth. I feel that the questions are somewhat superficial. You could delve deeper and inquire about more knowledge or content related to schizophrenia.*' (Participant 8)

'*I feel that the answers to the scale are ambiguous. I am not sure if it's just my own problem, but the responses related to schizophrenia are rather vague. I believe that the knowledge assessment of schizophrenia in the previous assessment could be more comprehensive.*' (Participant 12)

'*The number of questions related to measuring symptoms could be increased in the knowledge assessment.*' (Participant 30)

Moreover, the participants provided some valuable suggestions for the future development of a full RCT. Details of the participants' suggestions are shown in Table 5.10.

Table 5.10 Participants' suggestions for future studies

No.	Intervention week	Suggestions
1	1	Teach students to draw concept maps
2	1	Limit the reporting time and reduce duplication
3	1	Reduce the workload
4	1	Extend the preparation time
5	1	Separate into two sessions for the report
6	2	Disaggregate excessive intervention content
7	3	Increase the number of contacts in the intervention
8	1–4	Adjust the sequence of the interventions
9	1–4	Ensure good preparation before implementing the intervention
10	1–4	Increase participant communication
11	1–4	Intervention implementation should be face-to-face
12	1–4	Select a leader to take responsibility for organising the teamwork

Meanwhile, the participants also suggested adding more assessment scales to measure knowledge about schizophrenia in greater depth.

5.5. Summary of this chapter

In this chapter, we presented the results of the three-phase study, with the findings from the first phase serving as the basis for developing the second-phase pilot RCT. The third-phase study results were used to assess the feasibility, acceptability, and preliminary efficacy of the second-phase study results. Moreover, the third-phase study results provided suggestions for the future development and implementation of a full RCT.

CHAPTER SIX: DISCUSSION.

6.1 Introduction

This chapter presents a discussion of the three-phase study described in the previous chapters. The chapter discusses the study's overarching design and outcomes, presenting the results of the three phases of the study, which include the first-phase qualitative study (focus group interviews), the pilot RCT conducted in the second phase, and the third-phase process evaluation. The chapter concludes by discussing the contribution of the study, which focused on a Chinese culture-specific intervention aimed at reducing stigma associated with schizophrenia. It discusses the study's constraints and the implications for prospective studies addressing the reduction of stigma associated with schizophrenia or other mental health conditions. Section 6.2 presents a discussion of the focus group interviews conducted during the initial phase. Section 6.3 presents a discussion of the second-phase pilot RCT. Section 6.4 provides an overview of the process evaluation discussion. Section 6.5 present the intervention mode of the study implementation. Section 6.6 present the study data collection and assessment. Section 6.7 present the contributions to the body of knowledge. Section 6.8 present the strengths and limitations of this study. Section 6.9 provides summary of this chapter.

6.2 Discussion of the first-phase focus group interviews

The first-phase focus group study aimed to explore the knowledge, attitudes, empathy, and intentional behaviour of fourth-year nursing students in mainland China regarding individuals with schizophrenia. All participants were provided with the study findings

after the data analysis was completed and the coding tree was constructed, and no disagreements were indicated in the feedback received.

Theme 1 revealed that nursing students lacked sufficient knowledge about schizophrenia, and many misconceptions were identified. The findings regarding the inadequate knowledge of nursing students about schizophrenia were consistent with previous research conducted in Burkina Faso, Africa, where 36% (45/125) of nursing students exhibited a general deficiency in mental health knowledge (Sawadogo et al., 2019). Similarly, a study conducted in Australia with 114 nursing students reported that nearly 40% of the students felt they lacked sufficient understanding of mental health (Saito & Creedy, 2021). Misconceptions regarding schizophrenia are not uncommon, as similar findings have been reported in prior research (Cadge et al., 2019). The main finding of our study is that knowledge misconceptions about schizophrenia were influenced by traditional Chinese culture. For instance, participant 28 stated '*the student with schizophrenia committed a sin in his past life (Zao Nie)*'. Therefore, future studies should address and rectify these knowledge misconceptions by incorporating culturally specific guidance during mental health education. According to a study conducted in Lebanon involving 2,289 participants, there is a positive association between attitudes regarding mental disorders and mental health knowledge. Furthermore, supportive and open-minded behaviour is likely to follow a positive attitude (Abi Doumit et al., 2019). Thus, in the second-phase pilot RCT, we aimed to develop culture-specific interventions to change nursing students' knowledge misconceptions regarding schizophrenia and enrich their schizophrenia knowledge. All of the knowledge

misconceptions addressed in the second-phase pilot RCT were based on statements made by the nursing students in the first phase. Our study, along with previous research, highlights the importance of emphasising mental health education. Improving nursing students' knowledge of mental health could foster positive attitudes and behaviour towards individuals with mental illness.

Theme 2 of our study revealed that nursing students hold diverse attitudes towards schizophrenia, and the formation of these attitudes is influenced to some extent by culture. A previous study that examined the attitudes of 306 nursing students towards schizophrenia in Taiwan found that they held negative attitudes towards people with schizophrenia (Chen et al., 2022). In our study, we delved deeper into nursing students' attitudes towards schizophrenia.

We found that nursing students' fear of individuals with mental illness had been reported in previous studies (Asik & Albayrak, 2022; Yamauchi et al., 2010), and this fear was also evident in our study. Besides the multiple attitudes observed in nursing students towards schizophrenia, previous studies have also identified curiosity and sympathy among nursing students towards people with the condition (Brown, 2008; Kidd et al., 2015). These findings are consistent with the outcomes of our study, indicating that nursing students' attitudes towards schizophrenia are not strictly negative or positive. Instead, their attitudes are multifaceted.

A negative attitude among nursing students towards individuals with schizophrenia may impact the quality of care for this population in the future (Yuan et al., 2017). It is crucial to address how to transform negative attitudes into positive ones. As previously

mentioned, future studies should aim to decrease negative attitudes while leveraging positive attitudes, such as sympathy, to decrease the stigma surrounding mental disorders. Curiosity could also be harnessed to encourage nursing students to learn more about schizophrenia, and a deeper understanding of mental health could contribute to reducing negative attitudes and stigma towards people with mental illness.

Considering that nurses themselves are among the groups facing mental health challenges from caring for people with mental illness with little optimism (National Academies of Sciences et al., 2021), fostering a positive attitude towards mental illness among nursing students could benefit their future nursing careers, making them more willing to seek help when they encounter mental health issues (Rüsch et al., 2011). In our study, we found that nursing students' attitudes towards schizophrenia were influenced by culture; as participant 1 stated, '*part of our attitude towards people with schizophrenia is associated with our culture*'. Therefore, in the second-phase pilot RCT, we aimed to design interventions to transform nursing students' negative attitudes to positive ones, improve their sympathy towards people with schizophrenia, and encourage their curiosity to learn more about schizophrenia. Meanwhile, following the findings of this theme, it is essential to consider the culture-specific influences that shape nursing students' attitudes.

Theme 3 uncovered that nursing students may stigmatise individuals with schizophrenia. During our focus group interviews, the participants expressed that people with schizophrenia encounter stereotypes, and stigma is often considered normal by participants due to instances in which sufferers may have harmed others. The

participants also mentioned a tendency to keep their distance from individuals with schizophrenia and showed a reluctance to work in psychiatric departments. These findings align with a previous study that reported a noticeable social distance among nursing students towards people with schizophrenia (Asik & Albayrak, 2022). Similar reluctance to work in psychiatric settings has been observed in previous studies (Duman et al., 2017; Gu et al., 2021; Taylor & Barling, 2004), indicating that this issue is prevalent in mainland China and deserves attention. Additionally, our study revealed that nursing students exhibit diverse intentional behaviours towards people with schizophrenia, particularly when the condition affects their own families. They may be less likely to discriminate against or stigmatise their family members with schizophrenia, suggesting the absence of stigma in such situations. For instance, one participant mentioned '*For the sake of clan honour, family members with schizophrenia will not be allowed to contact outsiders and will be hidden for fear of losing face*'. This finding further supports the conclusion from previous studies that stigma is expressed differently within Chinese culture than within other cultures (Yang & Kleinman, 2008). Chinese nursing students may still hold some stigma towards individuals with schizophrenia, but they display different behaviours when those individuals are their family members. This phenomenon is closely related to the concept of filial piety, a core principle in Chinese Confucianism (Chan, 2004). Filial piety entails genuine affection and positive interactions with one's parents in daily life, encompassing emotional, spiritual, and physical care for ageing parents (Bedford & Yeh, 2019). For example, the participants displayed very positive intentional behaviours towards people

with schizophrenia when the patient was a family member, particularly a parent. Future interventions to reduce mental illness stigma could employ metaphors that prompt participants to imagine individuals with schizophrenia as their own family members, potentially lessening the stigma associated with mental illness. To change nursing students' stigmatising behaviour towards people with schizophrenia, based on the findings of this theme, we could establish communication between nursing students, people with schizophrenia, and nurses working in psychiatry departments. When nursing students have real contact with people recovering from schizophrenia and nurses working in psychiatry departments, their stereotyping or stigmatisation of people with schizophrenia, and their willingness to work in psychiatry departments, could be changed. Furthermore, following the finding of this theme, cultural factors also affected nursing students' intentional behaviour towards people with schizophrenia. Providing nursing students with metaphors to help them consider the fact that individuals with schizophrenia could be anyone, for example, family members, may be a way to decrease the stigma of nursing students towards individuals with schizophrenia.

Theme 4 emphasised that nursing students possess the ability to empathise with people with schizophrenia, even though individuals with schizophrenia may also encounter stigma. Notably, the nursing students demonstrated an understanding of the suffering experienced by people with schizophrenia, indicating their empathy towards them. Additionally, the nursing students acknowledged the unfair treatment faced by individuals with schizophrenia, further highlighting their empathy. These findings are consistent with those of earlier studies that have reported nursing students' empathy

towards individuals with schizophrenia (Eren & Gürhan, 2020; Ergün et al., 2019; Ferri et al., 2017; Pazar et al., 2017). A study conducted in Germany also found that increased levels of empathetic emotions resulted in decreased stigma surrounding mental health, fostering more positive attitudes towards individuals with mental illness (Hecht et al., 2022). This suggests that empathetic emotions can stimulate reflective cognitive processes, prompting individuals to reevaluate their stereotypical and stigmatising views of individuals with mental illness. These findings imply that future studies aimed at reducing schizophrenia stigma could focus on developing participants' reflective thinking skills, thereby promoting a re-evaluation of their preconceived notions and fostering empathy towards individuals with schizophrenia. Thus, based on the second-phase pilot RCT intervention, we could ask nursing students to undertake reflective thinking about how they would feel and what they would do if they had schizophrenia and encountered stigma. Nursing students could also be asked to explore how individuals with schizophrenia may encounter stigma, and in which aspects of their daily lives, and consider in which aspects of their own lives people with schizophrenia face exaggerated reports and stigmatisation. Following these steps could improve nursing students' empathy and decrease their stigma towards people with schizophrenia.

6.2.1 Implications for future research

The outcomes of this study carry some implications for future research. First, the study highlights the significant role of cultural factors in influencing nursing students' knowledge, attitudes, and intentional behaviour towards schizophrenia. However, it is

notable that these factors have often been overlooked in prior studies (Fokuo et al., 2017; Martínez-Martínez et al., 2019; Moxham et al., 2016; Sherwood & Learning, 2019). Therefore, future studies should take cultural considerations into account when designing interventions aimed at reducing mental illness stigma among nursing students. Second, addressing nursing students' misconceptions and knowledge gaps regarding schizophrenia is crucial. Prioritising knowledge education can effectively bring about changes in nursing students' attitudes and behaviours towards individuals with schizophrenia. Third, interventions should focus on decreasing nursing students' negative attitudes, while reinforcing positive attitudes, towards schizophrenia. Targeted interventions could help shift nursing students' negative perceptions and encourage more empathetic and supportive behaviours towards individuals with schizophrenia. Lastly, fostering empathy among nursing students is vital. Encouraging individuals to challenge their preconceived stereotypes and stigmatising perceptions of individuals with schizophrenia could contribute to increasing empathy. Future interventions should aim to promote reflective thinking and empathy-building strategies to reshape nursing students' attitudes towards schizophrenia. By addressing these implications in future research, we can work towards reducing mental disorder stigma among nursing students and enhancing the nursing and support provided to individuals with schizophrenia.

6.3 Discussion of the second-phase pilot RCT

6.3.1 Feasibility and acceptability of the intervention

This phase of the study aimed to assess the feasibility, acceptability, and effectiveness of a culturally specific intervention focused on reducing stigma associated with schizophrenia among fourth-year nursing students in China. The findings revealed that the online mode of this intervention was both feasible and well-received by nursing students, with no dropouts. Participant recruitment was efficiently completed within 1 month, despite time constraints and the pilot nature of the RCT, which could have hindered recruitment rates. Engaging participants in disseminating study information facilitated rapid recruitment and could potentially reduce the time and cost expenditure in future full-scale trials. Moreover, all participants completed the assessment scales at each designated time point without any missing data, indicating the good feasibility of the measurement tools used. Meanwhile, the average time spent filling out the scales was 12.41 minutes among the 60 participants (744.45 seconds, ranging from 328 to 2,891 seconds). Therefore, these measurement tools may be suitable for future full-scale RCTs. Notably, there were no dropouts throughout the study's duration. A similar study conducted in the United States, aiming to decrease stigma towards schizophrenia through simulation, involved 145 nursing students and, remarkably, also had no dropouts (Sideras et al., 2015).

In this study, the recruitment rate fell short of our initial expectations, with prospective participants citing various reasons for non-participation. These reasons included being occupied with tasks such as preparing their graduation thesis, searching for jobs,

undergoing postgraduate re-examinations, and participating in nursing skill competitions. This finding emphasises the importance of careful planning for future full-scale RCTs involving nursing students engaged in clinical placements, which typically last at least 10 months, from July to April of the following year. To optimise participation, it may be beneficial to implement the study during the middle of the clinical placement period. This timing would allow nursing students to become familiar with clinical work and gain experience, while also alleviating concerns about future job prospects or post-placement plans.

This study yielded favourable results for acceptability. All participants attended every session of the intervention, resulting in an impressive 0% dropout rate and 100% attendance, retention, and completion rates. Additionally, no participants expressed a desire to switch groups after randomisation, indicating a high level of acceptability of the randomisation process. Overall, the study's outcomes underscore the intervention's strong acceptability, making it a valuable reference for future full-scale intervention RCTs. The high feasibility and acceptability of the intervention suggest that the design and implementation were effective, potentially making it applicable to other trainee health professionals or staff members in the future. In general, the nursing students expressed their acceptance and endorsement of the intervention.

The intervention's satisfactory acceptability can be linked to the enhancements in knowledge and the promotion of a positive attitude. The feasibility and acceptability outcomes of this study, along with the feedback from the nursing students, indicated that the intervention was both feasible and acceptable for fourth-year nursing students.

The high adherence rate among our participants may be attributable to the implementation approach. The participants in the third-phase focus group interviews noted that their commitment to participating in this study was not solely due to the 100 Chinese yuan incentive. One participant stated '*In fact, since all the interventions were conducted online, even after I finished my day's clinical work at the hospital and felt very tired, all I had to do was log in to the platform and listen to the reporter's presentation without any other requirements. Additionally, I could ask questions if I wanted to. I could comfortably lie down on my bed, cook, eat, and listen to the report simultaneously. This convenience was remarkable. If I had been asked to return to the hospital classroom to attend these presentations, I believe I would have chosen to withdraw*'.

6.3.2 Effectiveness of the intervention

Through paired Student's t-tests and Wilcoxon signed rank tests, this study demonstrated that the participants in the experimental arm demonstrated notable enhancements in their knowledge, attitudes, intentional behaviour, and empathy towards schizophrenia compared with the baseline. In contrast, the control arm only indicated improvements in knowledge regarding schizophrenia compared with the baseline. These findings strongly suggest that the intervention effectively reduced the nursing students' stigma towards schizophrenia in the experimental group. The intervention in this study integrated education and contact to combat schizophrenia stigma. This approach aligns with a meta-analysis by Griffiths (2014) that found

education and contact to be effective at decreasing stigma towards mental illness (Griffiths et al., 2014). When comparing the experimental arm with the control arm, it appears that the former performed better at reducing schizophrenia stigma. These findings align with a prior research study by Sharif (2015), which also highlighted the effectiveness of a multicomponent approach compared with other methods for reducing stigma towards mental illness (Sharif, 2015). As a result, future full trials should consider adopting a combination of education and contact methods based on the findings of the aforementioned studies to effectively decrease schizophrenia stigma (Griffiths et al., 2014; Sharif, 2015). The intervention fidelity checklist in Table 5.7 was utilised to summarise the implementation of intervention fidelity strategies in this study (Bellg et al., 2004). Intervention fidelity was examined across five facets using this 25-item checklist, although 7 items were not applicable to this study. The research team adhered to all the items during the implementation of the intervention, which indicates that this pilot RCT followed a rigorous scientific process and the results of this study are reliable.

6.3.2.1 Effectiveness of the intervention at schizophrenia knowledge improvement

Drawing from the outcomes of the GEE analysis, Wilcoxon signed rank tests, and paired Student's t-tests, both the experimental and control groups showed improvements in schizophrenia knowledge following the intervention, despite the relatively small effect size, variations of 0.2, 0.5, and 0.8 SDs are classified as 'small,'

‘medium,’ and ‘large’ effect sizes, respectively (Lipsey & Wilson, 2001). This is in accordance with the observed values of 0.28 at T2 and 0.24 at T3 for the experimental group. Notably, there was no significant difference in schizophrenia knowledge improvement between the experimental and control arms. Despite the experimental group receiving the intervention and the control group reading a book, it appears that both approaches were equally effective at enhancing schizophrenia knowledge. Additionally, the positive effects of the intervention persisted for 3 months, as shown in Figure 4. Previous studies have also reported significant improvements in mental health knowledge through interventions such as standardised patient simulation (Speeney et al., 2018) and the Mental Health First Aid programme (Hung et al., 2021). In comparison, reading a book seems to be a more cost-effective option for reducing schizophrenia stigma. The book used in this study offered a personal account of schizophrenia by a law professor, vividly describing her mental journey, including both pain and moments of happiness. This personal narrative was more engaging than a typical textbook presentation of symptoms and treatments for schizophrenia. Furthermore, concept maps played a role in improving schizophrenia knowledge, with some students reporting that creating concept maps prompted them to research schizophrenia online, helping them to learn the correct answers for the schizophrenia knowledge scale used in the study.

‘Mental health literacy’, the ability to recognise mental disorders, can be enhanced by reading books or materials related to mental health (Jorm et al., 1997). Therefore, encouraging nursing students to read more could be a low-cost and effective way to

increase their knowledge of schizophrenia. Considering that nursing students often have limited time due to clinical placements, providing them with interesting and attractive reading materials could encourage their engagement. The study's recruitment of participants from 12 different universities or colleges across 12 provinces or municipalities enhanced the applicability of its findings. Subsequent studies can use our findings as a reference and focus on collecting refined and captivating reading materials to implement interventions aimed at improving participants' mental health knowledge.

6.3.2.2 Effectiveness of the intervention at changing attitudes towards schizophrenia

Drawing from the outcomes of the GEE analysis and paired Student's t-tests, the experimental group showed a noteworthy reduction in stigmatising attitudes towards schizophrenia after the intervention compared with the baseline. This effect size was large, being 0.62 and 0.86 at T2 and T3 respectively, and remained consistent for 3 months following the intervention, as shown in Figure 5. These findings demonstrate that the study's intervention was effective at positively influencing nursing students' attitudes towards schizophrenia. This could serve as a valuable reference for future studies aiming to reduce mental-illness-stigmatising attitudes among different groups.

Simulation has been proven to be effective at reducing nursing students' negative attitudes towards schizophrenia (Gu et al., 2021). This study developed a culturally specific intervention involving education and contact to effectively decrease nursing students' stigmatising attitudes towards schizophrenia, and achieved a notable effect

size. Compared with previous studies focused on decreasing nursing students' schizophrenia-stigmatising attitudes, this study stands out by including a 3-month follow-up period, suggesting that the intervention's long-term efficacy may be even better. Future studies should consider using this study's design as a reference and extending the follow-up time to 6 or 12 months to assess the intervention's long-term impact.

The theory of KAP highlights the importance of attitude changes at reducing stigmatising behaviours towards schizophrenia. This study provides a valuable reference for future research aiming to address attitudes in studies of mental illness stigma. Contact with individuals who have recovered from mental disorders has been recognised as an effective method of decreasing mental disorder stigma (Clement et al., 2012; Kerby et al., 2008). Education also plays a crucial role in decreasing negative attitudes towards mental disorders (Mino et al., 2001; Roberts et al., 2008; Uçok et al., 2006). In the present study, successfully combining contact and education proved effective at decreasing nursing students' stigmatising attitudes towards schizophrenia, providing evidence that the combination of these approaches can effectively combat stigma related to schizophrenia. Interestingly, while reading books improved the schizophrenia knowledge of the control group, it did not lead to a change in their attitudes towards schizophrenia. This may suggest that merely reading about others' experiences of living with a diagnosis of schizophrenia may have a limited impact on stigmatising attitudes towards the condition.

6.3.2.3 Effectiveness of the intervention at changing intentional behaviour towards schizophrenia

Drawing from the outcomes of the GEE analysis and paired Student's t-tests, the experimental group's intentional behaviour towards schizophrenia showed an improvement after the intervention compared with the baseline, with medium effect sizes of 0.50 and 0.50 at T2 and T3, respectively. The stigma-related behaviour scores significantly increased at T2 compared with the baseline score at T1. However, this change did not persist until T3. No notable difference was observed in intentional behaviour improvement between the experimental and control arms after the intervention. Figure 6 illustrates that both the experimental and control arms exhibited a positive trend in intentional behaviour towards schizophrenia between the T1 and T2 time points following the intervention. However, these changes did not persist until T3. In a pilot study conducted in Hong Kong with 49 participants, which differs from our study, a significant improvement in mental illness knowledge was reported, but no change in intentional behaviour towards mental illness was observed (Wong et al., 2019). It is possible that the lack of significant change in our control group participants might be linked to the limited sample size and the relatively brief follow-up duration. Both the experimental and control groups showed a trend towards decreased intentional behaviour after the intervention, but this improvement did not persist until T3. A change in stigmatising behaviour was the target of the intervention. However, in the real world, measuring actual stigmatising behaviour can be quite challenging (Corrigan et al., 2012). Therefore, this study focused on measuring intentional behaviour towards

schizophrenia as a proxy for stigmatising behaviour. Changing behaviour is a complex process, and previous research indicates that it can be unstable and inconsistent (Bouton, 2014). As a result, a 4-week intervention may not have been potent enough to sustain significant changes in participants' intentional behaviour after 3 months in this study. In terms of research implications, future studies may consider using larger sample sizes and longer-term interventions with extended follow-up periods to effectively reduce intentional stigmatising behaviour towards individuals with schizophrenia. This approach could provide more robust and reliable results in assessing the impact of interventions on stigmatising behaviour.

6.3.2.4 Effectiveness of the intervention at promoting empathy towards schizophrenia

Drawing from the outcomes of the GEE analysis and paired Student's t-tests, the experimental group showed improved empathy towards schizophrenia at the 3-month follow-up after the intervention compared with the baseline, with medium to large effect sizes of 0.41 and 0.65 at T2 and T3, respectively. Empathy, which involves understanding and compassionately connecting with others, while maintaining one's own identity and emotions, can play a crucial role in reducing stigma (McCall & T., 2013). A cross-sectional study in Spain involving 750 nurses reported that empathy is connected to more favourable attitudes towards people with mental disorders, leading to reduced stigma (Román-Sánchez et al., 2022). In the present study, the participants in the experimental arm demonstrated improved empathy, while the control group did

not show the same improvement. This implies that the intervention proved to be effective at enhancing empathy towards individuals with schizophrenia in the experimental group. In contrast, reading books about people's experiences of recovering from schizophrenia did not lead to improved empathy towards schizophrenia.

A scoping review that included 16 studies highlighted that augmented- and virtual-reality-based interventions significantly improved participants' empathy towards people with mental illness (Tay et al., 2023). Similarly, in this study, the participants' empathy towards people with schizophrenia increased 3 months after the intervention was conducted. Figure 7 illustrates the rising trend in empathy scores for the experimental arm following the intervention. While the change in scores did not immediately reach statistical significance after the intervention, it appears that the intervention had a long-term beneficial effect on the participants' empathy towards people with schizophrenia.

In terms of research implications, subsequent research endeavours might find advantages in employing larger sample sizes and extending the follow-up duration to thoroughly assess the efficacy of interventions at improving empathy towards people with schizophrenia. Additionally, considering augmented- and virtual-reality-based interventions as a reference in designing future studies could provide insights into further enhancing empathy towards individuals with schizophrenia.

It is possible that a larger sample size might be necessary to make conclusive determinations regarding the effectiveness of the intervention in these areas. This study

introduced novel elements of cultural and empathy factors into the intervention design, setting it apart from previous research. People may not always be fully aware of how their cultural background influences them, leading them to perceive their choices as natural and instinctive (Cutri et al., 2021). However, in reality, culture and beliefs exert a substantial influence on an individual's decision-making process (Cutri et al., 2021). As a result, the experimental group in this research was prompted to consider the traditional cultural factors that impact their cognition, attitudes, and behavioural intentions concerning schizophrenia. The participants actively engaged in exploring, understanding, and reflecting on these traditional Chinese cultural factors and religious views that impact their perspectives, with the goal of gaining a new understanding of the stigma surrounding schizophrenia.

To the best of our knowledge, prior studies conducted in mainland China to decrease mental disorder stigma among nursing students did not incorporate cultural and empathy factors (Gu et al., 2021). Therefore, this study devised a unique intervention strategy specifically tailored to the population in mainland China, integrating cultural and empathy elements with the aim of effectively reducing stigma towards schizophrenia. Furthermore, most of the studies mentioned earlier lacked a theoretical framework to guide their interventions. Specifically, only two studies employed the KAP paradigm to guide their interventions (Kassam et al., 2011; Papish et al., 2013). In contrast, our intervention aimed to reduce stigma towards schizophrenia among mainland Chinese nursing students and was guided by both transformative learning theory and the KAP paradigm. Moreover, there have been very few RCTs targeting the

reduction of mental disorder stigma among healthcare professionals or students. Thus, this study contributes valuable evidence supporting the importance of such RCTs, and its findings will be included in future systematic reviews and utilised to guide the design of future studies. The significance of this study lies in the execution of an online-based intervention programme designed to decrease schizophrenia stigma among fourth-year mainland Chinese nursing students. This online programme offers participants flexibility regarding their participation time, effectively helping to decrease dropout rates. Additionally, the online nature of the programme improves participant retention compared with face-to-face programmes.

6.3.2.5 The theoretical framework of the intervention

This study employed the KAB framework and transformative learning theory to develop an intervention aimed at reducing schizophrenia stigma among fourth-year nursing students. According to the KAB framework's theoretical basis, improved knowledge can lead to shifts in attitudes and subsequently lead to changes in behaviour (Bettinghaus, 1986; Schrader et al., 2004). The KAB continuum holds a significant position in contemporary interpretations of mental health literacy, with supporting evidence indicating that enhanced knowledge and reduced stigma can lead to an increase in seeking help and improved mental health outcomes (Wei et al., 2015). Furthermore, a meta-analysis study reported that educational programmes have the potential to modify stigma associated with mental illness (Corrigan et al., 2012).

Stigma has been defined as a multifaceted issue comprising three elements: a lack of knowledge leading to ignorance, negative attitudes resulting in prejudice, and stigmatising behaviours causing discrimination (Thornicroft et al., 2007). There are three strategies for addressing stigma, which can be understood through the theoretical lenses of knowledge, attitude, and behaviour. First, educational initiatives aim to rectify inaccurate knowledge and eliminate stereotypes, with the goal of transformation. Second, establishing contact with members of stigmatised populations seeks to reduce prejudicial attitudes and encourage changes in discriminatory behaviours. Third, public protests against individuals who stigmatise other groups aim to induce behavioural changes in those individuals (Corrigan et al., 2012).

Hence, the KAB theoretical framework is an ideal and commonly employed guide for devising interventions aimed at reducing the stigma associated with mental illness. In this study, the KAB theoretical framework was also applied as a guiding principle to combat schizophrenia stigma. Building upon the results of previous systematic reviews recommending the utilisation of the 'education and contact' approach (Corrigan et al., 2012; Lien et al., 2021), our objective was to enhance fourth-year nursing students' understanding of schizophrenia and foster positive attitudes and empathy towards individuals with schizophrenia, ultimately resulting in reduced stigmatising behaviour by nursing students towards individuals with schizophrenia.

Previous studies rarely provided comprehensive explanations regarding why and how they employed specific education and contact methods to reduce the stigma associated with mental illness, nor did they elucidate the theoretical frameworks underpinning

their intervention development (Zhang et al., 2022; Lanfredi et al., 2019; Douglass & Moy, 2019; Gonçalves et al., 2015). They typically employed brief descriptions, mentioning the use of lectures, group discussions, or watching films to enhance participants' knowledge and alter negative attitudes and stigmatising behaviours towards individuals with mental illness. However, these studies often lacked clarity regarding the intricate workings of these interventions (Zhang et al., 2022; Lanfredi et al., 2019; Douglass & Moy, 2019; Gonçalves et al., 2015).

For instance, they did not delve into the specifics of how lectures were conducted or whether participants engaged in passive listening, active discussions, or question-and-answer interactions, and the precise goals and effectiveness of each component remained unclear. It is crucial to elucidate the mechanisms behind interventions, as this clarity can offer valuable support for fellow researchers seeking to replicate or analyse these interventions. In our study, we designed interventions based on the KAB framework and transformative learning theory. We provided a comprehensive account of the implementation process of the education and contact approach, enabling other researchers to replicate and evaluate our interventions. Transformative learning theory, which has also gained popularity in nursing studies, involves investigative, collaborative, interactive, and higher-order thinking activities (Morris, 2012).

Investigative learning encompasses a wide range of learning and teaching approaches that connect research with instruction (Sota & Peltzer, 2017). Research-based activities empower nursing students to independently explore information as they tend to acquire knowledge more effectively when actively engaged in its development. Collaborative

learning, which serves as another strategy to facilitate transformative learning (Keevy, 2015), involves structured small-group work that relies on positive interdependence, individual accountability, appropriate team composition, group processing, and social skills. These skills are essential in nursing clinical practice, given that nurses often collaborate with other nurses, physicians, and even patients when delivering care in a hospital setting.

Transformative learning is inherently interactive, offering nursing students opportunities to actively engage with their learning experiences (Tsimane & Downing, 2020). Concept analysis highlights that interactive learning is fostered by involving nursing students in critical discussions, argumentation, and dialogue (Tsimane & Downing, 2020). Interactive learning has been defined as a learning process that nurtures reciprocal relationships among students or individuals seeking knowledge (Fahrutdinova et al., 2014). Building on this concept analysis, transformative learning in nursing education should also incorporate higher-order thinking activities. Higher-order cognitive processes have been described as skills such as analysis, synthesis, prediction, and evaluation (Giacumo et al., 2012). In accordance with the critical cross-field outcomes outlined in the National Qualifications Framework, students should possess the ability to identify and solve problems through critical and creative thinking skills (South African Gazette, 2008). Therefore, higher-order thinking activities should encompass critical reflection and the cultivation of imaginative, creative, innovative, and inventive skills (Madhuri et al., 2012). Nursing is not a purely mechanical profession; it requires adaptability and fluidity as nurses encounter diverse patient

situations that cannot be learned solely from textbooks in academic settings. Consequently, once the nursing students in this study acquire transformative learning skills, they stand to gain substantial benefits in their future careers. Fourth-year nursing students stand at the threshold of becoming new nurses as they prepare to graduate after completing their clinical placements. Upon graduation, these nursing students must transition to a self-directed learning mode in their careers, as they will no longer have teachers guiding them step by step as they did at university. Consequently, transformative learning theory proves exceptionally valuable for nursing students in developing their learning skills for their nursing careers. In this study, the implementation process of each week's intervention was aligned with the principles of transformative learning theory.

Throughout the intervention, we introduced four distinct learning activities: investigative, collaborative, interactive, and higher-order thinking activities. The objectives of these activities in each week's intervention were to enhance the participants' knowledge about schizophrenia, cultivate positive attitudes and empathy towards individuals with schizophrenia, and alter the participants' stigmatising behaviour towards schizophrenia. To the best of our knowledge, this study represents the first instance in which the KAB framework and transformative learning theory have been combined to create interventions to reduce schizophrenia stigma among nursing students in mainland China. The outcomes indicated that the KAB framework and transformative learning theory successfully empowered the intervention study to produce positive outcomes. Although this study was conducted as a pilot RCT, and the

effectiveness of the interventions should be interpreted cautiously, the successful implementation of the interventions suggests that the guidance of these two theories in reducing schizophrenia stigma is appropriate. Future studies focusing on diminishing mental illness stigma or schizophrenia stigma could consider adopting the KAB and transformative learning theoretical frameworks when developing their interventions.

6.3.2.6 Implications for future research

This online intervention aimed at reducing schizophrenia stigma among fourth-year mainland Chinese nursing students offers flexible options for participants, proving particularly advantageous in situations where face-to-face interaction is limited, such as during the COVID-19 pandemic. Additionally, the study's findings could add to our comprehension of the effectiveness of educational and contact interventions at reducing stigma towards various mental disorders among different population groups in mainland China. Furthermore, this study could provide valuable evidence to support the development of culturally specific interventions targeting the reduction of schizophrenia and other forms of mental illness stigma in different countries. We anticipate that the empirical evidence regarding the effect size of our intervention could facilitate the calculation of the required sample size for a full-scale study of culture-specific intervention programmes aimed at reducing the stigmatisation of individuals with schizophrenia. Future studies seeking to address mental illness stigma in diverse populations can draw upon the lessons learned from this pioneering research.

6.4 Discussion of the process evaluation

A process evaluation was carried out to assess the feasibility, acceptability, and efficacy of the intervention, and recommendations for modifying the execution of the intervention. To explore the execution of the intervention, a blend of quantitative and qualitative approaches was employed. Given that this was a pilot RCT, the primary objectives of the evaluation were to gather feedback and insights from the participants, as well as to investigate any challenges encountered during the pilot RCT. The ultimate goal was to refine the intervention to facilitate its implementation in a full RCT, with a focus on increasing diversity in future studies. Quantitative data, such as time and protocol measurements, helped identify potential issues that warranted further investigation using qualitative methods. In turn, qualitative data, such as perceived effects and suggestions for intervention implementation, played a complementary role by providing explanations for the quantitative findings and shedding light on additional matters.

The results of the pilot RCT demonstrated positive outcomes regarding its feasibility, acceptability, and efficacy. Additionally, these results offer valuable insights and innovative approaches to enhance the implementation of the intervention in future full RCTs. This process evaluation's findings serve as supplementary evidence, reinforcing the feasibility, acceptability, and effectiveness of the pilot RCT. This is particularly important as traditional assessment tools may have limitations in evaluating the practicability and acceptability of interventions.

This online intervention aimed at reducing schizophrenia stigma proved advantageous

for participants in various ways, such as saving time, being cost-effective, and overcoming distance barriers. This was particularly valuable during the COVID-19 outbreak, as gathering many participants in a physical setting poses potential infection risks. A systematic review and meta-analysis indicated that individuals within online intervention arms experienced a noteworthy decrease in public stigma compared with those in non-online groups, waiting list groups, and groups without any intervention (Goh et al., 2021). The process evaluation in this study demonstrated the efficacy of the online intervention in mitigating schizophrenia-related stigma. The results of the self-report questionnaire, which consisted of 22 items with a maximum score of 10, indicated that the feasibility, acceptability, and effectiveness of the pilot RCT were positive, with a mean score of more than 9. However, there were five items with mean scores less than 9, suggesting that adjustments should be made to the intervention based on the outcomes of these items to improve its efficacy in future studies. Further details of these five items are presented in Table 6.1.

Table 6.1 Five items with mean scores less than 9

NO.	Items	Mean ± SD
16	What do you think you know about schizophrenia after the 4-week intervention?	8.93 ± 1.337
18	In your opinion, after the 4-week intervention, how is your intentional behaviour towards people with schizophrenia?	8.90 ± 1.242
19	What do you think is your empathy for people with schizophrenia after the 4-week intervention?	8.93 ± 1.413
23	Is this an appropriate time for this intervention at this stage of your clinical placement?	8.67 ± 2.123
24	Is it appropriate to conduct this intervention in clinical practice?	8.77 ± 1.794

Item 16 revealed that the participants did not achieve sufficient understanding of

schizophrenia even after the 4-week intervention. To address this, future studies could consider allocating more time to enhancing participants' knowledge of schizophrenia. This finding can be integrated with the outcomes of the pilot RCT and the focus group interviews conducted during the process evaluation. Both the pilot RCT and focus group interviews indicated an improvement in the participants' knowledge of schizophrenia compared with the baseline. However, the participants still expressed a desire for further learning, indicating the need for more attention to the knowledge education aspect in future interventions. One suggestion put forth by participants was to combine traditional teaching methods with self-learning. After the teacher imparts knowledge about schizophrenia, participants could engage in self-learning activities, such as creating concept maps, to reinforce their understanding. This approach holds potential for improving the efficacy of knowledge acquisition in the intervention.

Item 18 revealed that the participants did not perceive a significant change in their intentional behaviour towards people with schizophrenia. This finding aligns with the outcomes of our pilot RCT, which also showed no significant change in the participants' intentional behaviour towards schizophrenia in the intervention or control arms after the 4-week intervention. In a previous multi-centre RCT conducted in the Czech Republic, 499 nursing students received brief video-based interventions to reduce mental disorder stigma (Winkler et al., 2017). The results of that study demonstrated a significant change in the nursing students' intentional behaviour towards mental health stigma after the intervention. This comparison suggests that reducing intentional behaviour stigma towards schizophrenia, as one of the most stigmatised mental

illnesses, may be particularly challenging. Future studies could consider utilising short videos as an intervention method to attempt to decrease intentional behaviour stigma towards schizophrenia.

Item 19 revealed that the participants did not perceive a significant change in their empathy towards people with schizophrenia after the 4-week intervention. Although the nursing students in our study showed a trend of improvement in empathy towards people with schizophrenia, there were no significant differences in scores between the intervention and control arms. However, it is noteworthy that the focus group interviews conducted during the process evaluation did reveal some improvements in empathy among the nursing students. This discrepancy might be attributable to the relatively short duration of the intervention. A study conducted in Korea with 63 nursing students, in which a 5-week psychiatry department clinical placement was provided as anti-stigma training, found a significant improvement in the nursing students' empathy towards mental illness (Choi et al., 2016). This suggests that exposure to clinical placements in psychiatry departments may enhance nursing students' empathy towards people with mental illness. Therefore, future interventions could consider incorporating psychiatric clinical placements to improve nursing students' empathy towards individuals with schizophrenia.

Items 23 and 24 revealed that some participants did not view receiving the intervention to decrease schizophrenia stigma as a favourable idea during their clinical placement. This observation was consistent with the feedback obtained during the focus group interviews conducted as part of the process evaluation. The participants mentioned

feeling overwhelmed with various tasks during their clinical placement, making it difficult to fully engage with the intervention. They suggested that implementing the intervention during their time at university might be more suitable. This valuable suggestion could be utilised to adjust the timing of the intervention, which is crucial for achieving better intervention outcomes. The focus group interview findings indicated that the study showed good feasibility, acceptability, and efficacy in reducing stigma towards individuals with schizophrenia among fourth-year nursing students. The suggestions obtained from the interviews could be employed to modify the intervention when developing future interventions aimed at decreasing schizophrenia stigma. Furthermore, the qualitative data highlighted the need for ongoing modifications to the intervention to achieve better efficacy. In conclusion, the results of the study emphasise the significance of carefully considering the time at which an intervention is implemented and making necessary adjustments to enhance its effectiveness.

6.5 Implementation mode of the study intervention

The three phases of the study were all conducted online, and the online implementation proved to be successful. Using an online approach for interventions offers numerous irreplaceable advantages, especially during specific situations like epidemic outbreaks or for participants in remote or inaccessible areas, enabling large-scale interventions at a low monetary cost. As all the participants in this study were nursing students engaged in clinical placement at hospitals, their schedules varied, making it challenging to gather

them together for in-person sessions. Moreover, the COVID-19 outbreak further emphasised the importance of online implementation. The participants highlighted that during the focus group interviews for process evaluation that the online implementation was convenient and flexible. They could easily participate in the intervention sessions using their smartphones from the comfort of their own space, which was particularly appealing after a long day of work. However, they also acknowledged some drawbacks, as multitasking during online sessions was possible without anyone knowing. To enhance the intervention and explore its effects further, the plan is to conduct a fully powered RCT. To increase the applicability of the findings, a hybrid approach involving both online and face-to-face implementation could be considered to diversify the participant pool in future experiments. Some participants mentioned in the three-phase focus group interviews that face-to-face implementation could be more engaging and foster interactive communication, potentially increasing the intervention's efficacy. Future studies could compare the effects of online versus face-to-face implementation, or even a mixed approach, to determine the most effective mode for intervention delivery.

6.6 Study data collection and assessment

Data collection for the study was carried out using an online format, utilising various online measurements, and the rate of response for all evaluation items was found to be satisfactory. Three online apps were used for data collection. Wen Juan Xing was used to collect self-report questionnaires, Tencent video conference platform was used to

conduct focus group interviews, and the WeChat messaging app was employed to post messages and reminders during the intervention implementation.

The participants could conveniently access all these online tools using their WeChat accounts. However, there were some limitations associated with online data collection. For instance, conducting focus group interviews online may result in neglect of non-verbal cues like facial expressions or body language. Despite this, the online format provided a sense of privacy for the participants, particularly for individuals recovering from schizophrenia, making them feel more at ease in sharing their experiences and perceptions (Woodyatt et al., 2016). Indeed, online data gathering offered significant advantages in terms of time-saving and safety, particularly during the COVID-19 outbreak. The participants were able to conveniently participate in assessments and receive interventions without the need to travel to specific locations. The flexibility in timing for filling out questionnaires and attending interviews further added to the convenience for participants.

An important aspect worth noting is that there were no instances of missing data throughout the study. This reflects the effectiveness of the data collection methods used and the high level of engagement and cooperation from the participants. Moreover, the focus group interviews conducted during the process evaluation did not yield any suggestions for improvements in outcome assessment, indicating that the data collection methods were well received by the participants.

Overall, online data collection was demonstrated to be effective and well suited to the research objectives and the participants' needs, demonstrating the efficiency and

effectiveness of this approach during the intervention phase.

6.7 Contributions to the body of knowledge

The systematic review of previous studies on efforts to reduce stigma associated with schizophrenia among healthcare students, as presented in Chapter 3, focused on assessing the efficacy of these interventions. Various studies have utilised different scales to measure knowledge, attitudes, empathy, and intentional behaviour towards schizophrenia. However, these measures provided limited information to researchers, as they did not consider the implicit influence of culture on stigma formation and promotion, despite previous studies highlighting the importance of cultural factors in stigma development. Cultural influence is challenging to quantify as it is implicit rather than explicit.

To address this limitation, the current study chose to quantitatively evaluate knowledge, attitudes, empathy, and intentional behaviour towards schizophrenia using valid rating scales, while also gathering additional information through carefully designed questions in the focus group interviews. Although the primary aim of this pilot investigation was to assess the feasibility and acceptability of the research design and interventions, initial positive outcomes of the interventions in decreasing schizophrenia stigma were observed. Future research should be formulated and executed to quantitatively assess the impacts of the intervention on decreasing schizophrenia stigma. Alternatively, researchers may consider using mixed methods to comprehensively

assess intervention efficacy. The present research could function as a valuable reference for future investigations endeavouring to explore cultural influences on mental illness stigma. The design and findings of this study could be referenced to help design and develop training curricula for nursing students and nurses in intervention programmes tailored to Chinese-specific culture aimed at reducing the stigma associated with mental illness, particularly schizophrenia, in mainland China. The study's findings indicate the importance of emphasising mental health education in nursing programmes throughout mainland China, and show that the fourth-year nursing students in this study were eager to attain mental health education. There is an obvious need to increase nursing students' mental health knowledge and practicum experience in psychiatry.

6.8 Recommendations

It would be highly desirable to assess the significance of the cultural relevant component of the intervention. In the future study we can compare the intervention outcomes of the two groups using a full-sized randomized controlled trial (RCT) design, with one group incorporating a culturally relevant component and the other without it. If the group incorporating the culturally relevant component shows a significant decrease in schizophrenia stigma compared to the control group it may suggest the importance of including such component in interventions. Another approach could involve individual or focus group interviews to explore further the significance of incorporating culturally relevant component. After the intervention, participants from

the intervention group can be invited to discuss their perspectives on the intervention component. If the majority of participants acknowledge that incorporating culturally relevant component is more effective in reducing schizophrenia stigma compared to intervention without this component, it would underscore the significance of such inclusion.

Furthermore, the design of the full-sized RCT can be improved in several aspects. A waitlist control can be considered as this pilot study proved the effectiveness of the intervention in decreasing schizophrenia stigma among nursing students. To facilitate knowledge learning, each group can be given more preparation time to report on different topics. The number of contacts with people recovering from schizophrenia and psychiatric nurses can be increased as participants found such contact most interesting and successful in changing their original attitudes towards schizophrenia. The sequence of the intervention programme can be adjusted to start with some teaching which enables the participants to become familiar with schizophrenia and understand what they are facing. Group leaders can also be selected in each small group to foster better communication, relationship and collaboration among group members.

6.9 Strengths and limitations of this study

6.9.1 Study strengths

This study successfully devised and assessed a feasible, online implementation approach for an intervention tailored to Chinese culture aimed at decreasing stigma associated with schizophrenia among nursing students in their fourth year of study. This

mode of implementation proved to be effective even during challenging situations such as the onset of the COVID-19 pandemic, which made in-person interventions conducted within hospital settings impractical due to policies related to infection control (Nicastri et al., 2020). Adapting to the circumstances, the entire study seamlessly transitioned from a face-to-face mode to an online mode, resulting in good feasibility, acceptability, and preliminary efficacy. This approach demonstrated numerous advantages, including a low cost, high adherence rates, and minimal dropout. The successful implementation of this intervention through an online platform sets a valuable precedent for future studies seeking to decrease mental illness stigma or other forms of stigma. As Internet technology and online platforms continue to advance, more interventions can be implemented through the Internet, potentially reaching larger populations in different regions.

The first-phase focus group interviews contribute to the current body of literature by examining the influence of traditional culture on fourth-year nursing students' knowledge, attitudes, intentional behaviours, and empathy regarding individuals with schizophrenia in mainland China. The findings highlight the significant role of culture in shaping these factors among nursing students.

Notably, the second phase of the study was the first RCT to evaluate the consequences of an online intervention tailored to Chinese culture at reducing stigma related to schizophrenia among nursing students in their fourth year. The inclusion of a process evaluation provided deeper insights into the study's mechanism, context, and intervention implementation.

The qualitative data from the third-phase process evaluation captured evolving developments in the research and generated fresh insights or theories to modify the intervention, which may not have been apparent through quantitative outcome assessment alone. By using information from the process evaluation, the study's design and implementation could be refined in future studies to improve the intervention's performance and achieve better effects. The process evaluation also identified obstacles to executing the intervention, such as the preparation time of report sessions and the optimal frequency of receiving the intervention. These challenges will be addressed and refined in future modified studies. Combining the outcome evaluation with the process evaluation offered a plethora of information on the effects of the intervention at decreasing schizophrenia stigma. This approach of using process evaluation alongside outcome evaluation should be employed in future studies to comprehensively investigate the impacts of interventions and acquire a more profound comprehension of intervention execution (Oakley et al., 2006). The primary robust aspect of this process evaluation is found in its comprehensive approach, combining both quantitative and qualitative methods, involving all those who implemented the intervention. This amalgamation of data sources provided the researchers with a profound understanding of the pilot RCT's feasibility, acceptability, and preliminary efficacy, as well as the facilitators and barriers encountered during implementation. Notably, there were no dropouts in this pilot RCT, which is a positive aspect. Furthermore, the findings from the process evaluation served as a valuable supplement to the outcome evaluation, allowing for a thorough examination of the intervention's preliminary efficacy and

uncovering additional issues that warrant investigation in a fully powered study in the future. The insights gained from the process evaluation contributed to improvements in the study design, particularly concerning intervention delivery.

In this study, both qualitative and quantitative research methods were employed. Utilising mixed methods, which combines the advantages of both methodologies, enables one to obtain a more comprehensive understanding than relying solely on either quantitative or qualitative research (Fetters et al., 2013). The initial and final phases encompassed focus group interviews, specifically with fourth-year nursing students. These sessions were instrumental in unveiling the participants' perspectives on schizophrenia and gauging their perspectives and suggestions on the pilot RCT in the intermediate phase. Utilising focus group interviews proved advantageous as they allowed for the swifter and more cost-effective collection of comprehensive information compared with individual interviews (Parsons & Greenwood, 2000). The RCT design, considered the gold standard for evaluating effectiveness in medical research, was applied in the second phase to eliminate selection bias by removing the element of choice (Kane et al., 2007). This approach facilitated a direct and unbiased comparison between the intervention and control groups during the trial, offering an authentic representation of how the intervention interacted with the population in the experimental group to decrease their schizophrenia stigma after group distribution. By integrating these diverse methodologies, the study rigorously addressed the research goal, namely, to decrease fourth-year nursing students' schizophrenia stigma in a scientific manner. The findings can serve as a valuable reference for future studies,

particularly those focusing on the design and implementation of strategies to diminish stigma related to schizophrenia or mental illnesses among nursing students, trainee health professionals, or medical staff.

6.9.2 Study limitations

First, in the initial and final phases of the study, focus group interviews were conducted to gather qualitative data. However, it is acknowledged that such interviews may not capture the depth of individual experiences to the same extent as one-to one individual interviews. In future studies, one-to-one qualitative interviews could be employed to gain a more thorough and in-depth understanding of the improvements linked to the intervention. Second, the low representation of ethnic minorities (only two participants) and individuals with religious beliefs (only one participant) in the study sample limits the ability to fully understand the influence of nationality and religious beliefs on nursing students' stigma towards people with schizophrenia. A larger and more diverse sample would have provided a more comprehensive understanding of these factors. Third, conducting interviews online introduced technical issues and disruptions due to unstable Internet connections, resulting in interruptions and potentially affecting the quality of audio recordings. These challenges might have influenced the data collection process and the overall reliability of the findings. It is essential to consider these limitations when analysing the findings of this research. Future research could aim to address these limitations by offering a variety of interview options, including individual interviews, to allow for more in-depth exploration of participants' perspectives.

Additionally, efforts should be made to ensure a more diverse and representative sample to better understand the influence of nationality and religious beliefs on nursing students' stigma towards individuals with schizophrenia. Moreover, measures should be taken to mitigate technical issues associated with online interviews to improve the quality of data collection.

The second phase was a pilot RCT, and while it provided valuable insights, the results on the efficacy of the intervention should be carefully interpreted. The study's target population was Chinese fourth-year nursing students, limiting the generalisability to other populations. To enhance the applicability of the intervention, future studies should include a more diverse range of participants. To improve generalisability, future full-scale RCTs could be conducted in multiple centres. The study's duration was just under 1 year, and although the efficacy was evaluated at 3-month follow-up assessments, the long-term effects remain unclear. Future studies should consider conducting long-term follow-up assessments to monitor the intervention's sustained effectiveness, and plan for potential reinterventions. The second-phase study examined the combined effects of all the active components, but future studies could be designed to identify the most effective individual components. Additionally, exploring various delivery methods, such as face-to-face or a hybrid approach involving both online and face-to-face modalities, could be considered to enhance intervention delivery. Regarding the control arm, due to the pilot nature of this research, reading a book about schizophrenia was selected as the control condition. This prevented blinding of the participants, and the potential impact of the Hawthorne effect cannot be ignored. Future studies could

incorporate control conditions with parallel number of the intervention to address this concern. Also, there might be some potential problems in assigning the control group to read the book about schizophrenia. It was challenging to monitor their quality and completion of reading materials. Reminders were sent to the control group, but variations in reading quality and completion remained uncertain. To address this in future studies, participants could be asked to keep a logbook to record their daily reading progress and assess the quality of their reading. This would provide more precise data on participants' engagement in reading. Furthermore, the workload and active involvement of the intervention group exceeded that of the control group simply reading a book which could potentially diminish the motivation of the control group. Moreover, the biography provided to the control group about a person with schizophrenia may not be fully representative, leading to misunderstandings and potentially affecting their level of empathy towards people with schizophrenia. For instance, if the protagonist of a biography achieves great success, it may not accurately reflect the typical experiences of individuals with schizophrenia as many of them still struggle in their careers. Reading can vary significantly among participants and over time, reflecting their diverse preferences and different interpretations according to the saying "there are a thousand Hamlets for a thousand readers."

It is also worth noting that all measures of interest relied on self-report questionnaires, which introduced subjectivity into the results. Future studies may benefit from incorporating objective measures or other assessment methods. A combination of subjective and objective measures could enhance the study's findings and provide a

more comprehensive evaluation of the intervention's efficacy.

6.10 Summary of this chapter

The entire study comprised three phases. This chapter provided a comprehensive discussion of the three phases. This chapter also discussed the implementation mode of the intervention, data gathering and assessment, contributions to existing knowledge, and the strengths and limitations of this study.

CHAPTER SEVEN: CONCLUSIONS.

The outcomes of the first-phase study emphasised the role of culture in shaping the knowledge, attitudes, intentional behaviours, and empathy of fourth-year nursing students towards schizophrenia. The second-phase study aimed to develop and implement an online Chinese-culture-specific intervention based on the findings of the first-phase focus group interviews.

The second-phase intervention was crafted using the principles of transformational learning theory and the KAP paradigm. The aim was to develop and implement culturally specific interventions to reduce schizophrenia stigma among nursing students in the second-phase pilot RCT. By addressing cultural influences, interventions can be developed to target and mitigate stigma associated with mental disorders among nursing students. The outcomes of the second-phase study suggested that the Chinese-culture-specific online intervention was both feasible and well received by the fourth-year nursing students as a means of reducing schizophrenia stigma. Positive trends were observed in the experimental group when comparing their knowledge of schizophrenia and attitudes, empathy, and positive intentional behaviour towards individuals with schizophrenia with the baseline. However, these trends weakened over time. The results of the study provided high-quality preliminary evidence of the intervention's feasibility, acceptability, and primary efficacy.

The third-phase process evaluation assessed the implementation of the second-phase pilot RCT, utilising self-report questionnaires and focus group interviews. The findings of the third phase highlighted the positive aspects of the second-phase pilot RCT, indicating good feasibility, acceptability, and preliminary efficacy. The focus group

interviews for process evaluation also generated numerous suggestions for refining the pilot study's design and implementation, which will undoubtedly benefit future full-scale RCTs and interventions aimed at decreasing schizophrenia stigma or mental disorder stigma. A fully powered RCT with a substantial sample size is essential for conducting a more comprehensive examination and quantification of the intervention's effects. Such future research could provide a more definitive understanding of the intervention's impact and contribute to advancing knowledge in this area. Future research and practice should continue to investigate the role of culture in shaping attitudes towards mental disorders and develop evidence-based interventions that consider cultural nuances. Moreover, the design and findings of this study could serve as a good reference to help develop training curricula for nurses and intervention programmes tailored to Chinese-specific culture aimed at reducing the stigma associated with mental illness, particularly schizophrenia, in mainland China. The study's findings indicate the importance of emphasising mental health education in nursing programmes throughout mainland China. There is a clear need to increase nursing students' mental health knowledge and practicum experience in psychiatry. Furthermore, the findings of this study could inform the development of training programmes within psychiatry departments for new nurses and other healthcare professionals, helping them reduce stigma towards schizophrenia and other types of mental disorders. This could foster a more inclusive and supportive healthcare environment for individuals with schizophrenia and promote positive attitudes and behaviours among nursing students.

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APPENDIX

Appendix 1. Search strategy of databases

Database	Search strategy
PubMed	((Health student) AND (Schizophren*) AND (Stigma* OR discriminat* OR attitude* OR behav* OR social distance* OR knowledge OR belief* OR stereotyp* OR bias* OR prejudice*)) in all fields.
Embase	'health student' AND 'schizophren*' AND ('stigma*' OR 'discriminat*' OR 'attitude*' OR 'behav*' OR 'social distance*' OR 'knowledge' OR 'belief*' OR 'stereotyp*' OR 'bias*' OR 'prejudice*') in Broad search.
CINAHL	(Health student) AND (Schizophren*) AND (Stigma* OR discriminat* OR attitude* OR behav* OR social distance*OR knowledge OR belief*OR stereotyp*OR bias* OR prejudice*)
PsycINFO	(Health student) AND (Schizophren*) AND (Stigma* OR discriminat* OR attitude* OR behav* OR social distance*OR knowledge OR belief*OR stereotyp*OR bias* OR prejudice*)
MEDLINE	(Health student) AND (Schizophren*) AND (Stigma* OR discriminat* OR attitude* OR behav* OR social distance*OR knowledge OR belief*OR stereotyp* OR bias* OR prejudice*)
Web of Science	“Health student” AND “Schizophren*” AND (“Stigma*” OR “discriminat*” OR “attitude*” OR “behav*” OR “social distance*” OR “knowledge” OR “belief*” OR “stereotyp*” OR “bias*” OR “prejudice*”) in all fields.
Scopus	“Health student” AND “Schizophren*” AND (“Stigma*” OR “discriminat*” OR “attitude*” OR “behav*” OR “social distance*” OR “knowledge” OR “belief*” OR “stereotyp*” OR “bias*” OR “prejudice*”) in Article Title, Abstract, Keywords.

Appendix 2 Ethical approval of Hong Kong Polytechnic University

THE HONG KONG POLYTECHNIC UNIVERSITY
香港理工大學

To	Leung Sau Fong (School of Nursing)		
From	Leung Yee Man Angela, Chair, Departmental Research Committee		
Email	angela.ym.leung@	Date	24-Feb-2022

Application for Ethical Review for Teaching/Research Involving Human Subjects

I write to inform you that approval has been given to your application for human subjects ethics review of the following project for a period from 21-Feb-2022 to 30-Jun-2023:

Project Title:	Chinese Culture-Specific Intervention to Decrease the Stigma of Nursing Students towards Schizophrenia——A Pilot Randomized Controlled Trial
Department:	School of Nursing
Principal Investigator:	Leung Sau Fong
Project Start Date:	21-Feb-2022
Project type:	Human subjects (non-clinical)
Reference Number:	HSEARS20220127002

You will be held responsible for the ethical approval granted for the project and the ethical conduct of the personnel involved in the project. In case the Co-PI, if any, has also obtained ethical approval for the project, the Co-PI will also assume the responsibility in respect of the ethical approval (in relation to the areas of expertise of respective Co-PI in accordance with the stipulations given by the approving authority).

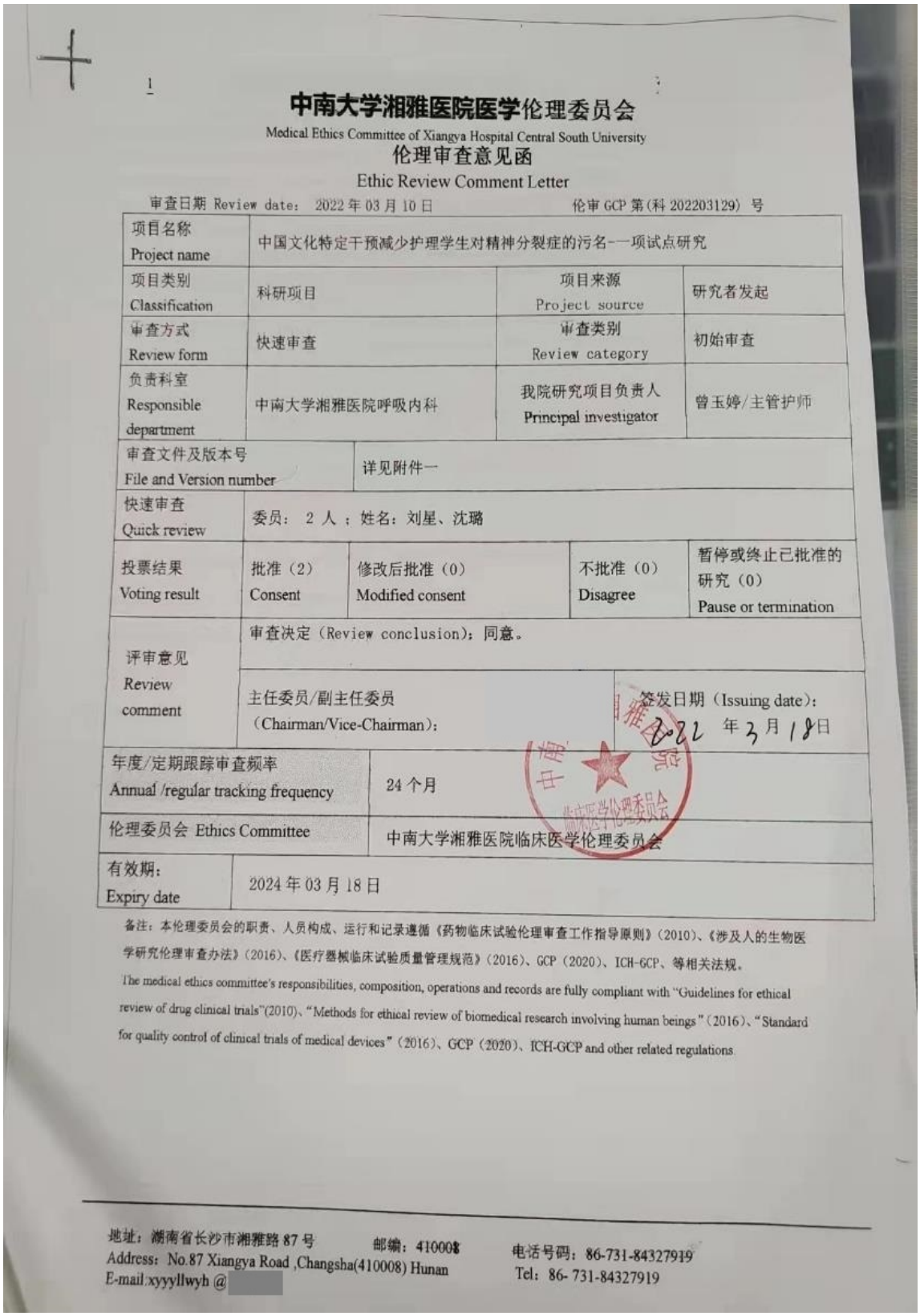
You are responsible for informing the PolyU Institutional Review Board in advance of any changes in the proposal or procedures which may affect the validity of this ethical approval.

Leung Yee Man Angela

Chair

Departmental Research Committee (on behalf of PolyU Institutional Review Board)

Appendix 3 Ethical approval of Xiangya Hospital of Central South University



中南大学湘雅医院医学伦理委员会

Medical Ethics Committee of Xiangya Hospital Central South University

伦理审查意见函

Ethic Review Comment Letter

审查日期 Review date： 2022 年 03 月 10 日　　伦审 GCP 第(科 202203129) 号

项目名称 Project name	中国文化特定干预减少护理学生对精神分裂症的污名--项试点研究		
项目类别 Classification	科研项目	项目来源 Project source	研究者发起
审查方式 Review form	快速审查	审查类别 Review category	初始审查
负责科室 Responsible department	中南大学湘雅医院呼吸内科	我院研究项目负责人 Principal investigator	曾玉婷/主管护师
审查文件及版本号 File and Version number	详见附件一		
快速审查 Quick review	委员： 2 人 ；姓名：刘星、沈璐		
投票结果 Voting result	批准（2） Consent	修改后批准（0） Modified consent	不批准（0） Disagree	暂停或终止已批准的研究（0） Pause or termination
评审意见 Review comment	审查决定（Review conclusion）：同意。		
	主任委员/副主任委员（Chairman/Vice-Chairman）：	签发日期（Issuing date）：2022 年 3 月 18 日	
年度/定期跟踪审查频率 Annual /regular tracking frequency	24 个月		
伦理委员会 Ethics Committee	中南大学湘雅医院临床医学伦理委员会		
有效期： Expiry date	2024 年 03 月 18 日		

备注：本伦理委员会的职责、人员构成、运行和记录遵循《药物临床试验伦理审查工作指导原则》(2010)、《涉及人的生物医学研究伦理审查办法》(2016)、《医疗器械临床试验质量管理规范》(2016)、GCP (2020)、ICH-GCP、等相关法规。

The medical ethics committee's responsibilities, composition, operations and records are fully compliant with "Guidelines for ethical review of drug clinical trials"(2010)、"Methods for ethical review of biomedical research involving human beings"(2016)、"Standard for quality control of clinical trials of medical devices"(2016)、GCP (2020)、ICH-GCP and other related regulations.

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Appendix 4 Information sheet of the first phase study

INFORMATION SHEET

(Perspectives of Nursing Students towards Schizophrenia Stigma: A Qualitative Study)

Dear students,

We cordially invite you to participate in a research project on the knowledge, attitudes, empathy, and behavioral intentions towards schizophrenia among mental health nursing students in the context of exploring traditional Chinese culture. This study is supervised by Dr. Sau fong Leung and conducted by Mr. Xi Chen. The research will be carried out through online focus group interviews using the Tencent Meeting platform.

If you agree to participate in this project:

① You will need to fill out a questionnaire regarding your personal background information.

② We will ask you questions related to schizophrenia through Tencent Meeting.

③ The interviews will be recorded (video with your face visible).

④ The interview will be scheduled at a time convenient for you and will last approximately 60-90 minutes.

⑤ You have the right to terminate or withdraw from the interview at any time and for any reason, without any consequences.

⑥ After the interview, you will receive a compensation of 50 Chinese Yuan as a token of appreciation for your time costing in the study.

Participating in this research involves no risks or inconveniences. Your information will be assigned a code, and any identifiable information will be kept confidential (your name will not be recorded or appear in any other research materials). The recorded interviews will be securely stored and accessible only to the project supervisor. Adequate measures will be taken in case of any harm. Your participation in this project does not bring direct benefits to you, but it may contribute to reducing the stigma associated with schizophrenia in the future.

This research project has been approved by the Hong Kong Polytechnic University Human Subjects Ethics Application and Review System (HSEARS20220127002) and the Ethics Committee of Xiangya Hospital, Central South University (KE202203129).

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Appendix 5 Information sheet of the first phase study（Chinese Version）

研究说明

(护生对精神分裂症污名化看法：一项定性研究)

亲爱的同学：

诚邀您参加由梁秀芳博士负责监督,陈熙先生负责执行的探索中国传统文化下护生对精神分裂症知识，精神分裂患者的态度，同理心及意向行为的研究。该项目将通过腾讯会议平台对实习护生进行在线的焦点访谈。

如果您同意参加此项目：①您需要填写一份有关您个人背景资料问卷；②我们将通过腾讯会议问您有关精神分裂症相关问题；③访谈会被录屏（需要露脸）；④根据您的时间预约访谈，时间大概 60-90 分钟。⑤您有权在任何时刻以任何理由终止访谈或者退出，并且不会受到任何影响。⑥访谈结束后，您将获得 50 元人民币的津贴，补偿您在研究中所花之时间。

参与此研究不会给您带来风险和不便。我们将对您的资料进行编号，任何可识别您身份的信息都会被屏蔽。您所提供的信息我们将会严格保密（您的姓名将不会被录音或者出现在其他研究材料上）。访谈录屏将被锁起来，除了项目负责人外，其他人均无法接触。如果出现伤害，将会得到合适的处理。参与此项目对你没有直接收益，但是对未来降低对精神分裂的污名化可能会有帮助。

该研究项目已获得香港理工大学研究伦理委员会（HSEARS20220127002）及中南大学湘雅医院伦理委员会（KE202203129)的批准。

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Appendix 6 First phase focus group interview guide (Chinese Version)

您对精神分裂症有何了解？（探究：病因、表现、预后；您从哪里获得这些信息？）
您对精神分裂症患者的生活有何看法？（探讨：社会支持>亲密关系>教育>工作）
您与精神疾病患者或精神疾病患者互动的经历如何？（如果没有亲身经历，你听过什么故事吗？）[什么时候>发生了什么>谁>你说什么>你感觉如何]？
与西方国家相比，您认为中国人如何看待精神分裂症？
您如何看待中国传统文化和宗教对精神分裂症的看法？[儒家、道家、佛家如何看待和对待精神分裂症>根据中国传统文化和宗教的思想，精神分裂症的病因是什么以及如何处理？]
您如何看待精神分裂症患者经常遇到的污名化？
您认为造成精神分裂症污名化的主要因素是什么？
您对照顾精神分裂症患者有何看法？
在您看来，如何利用干预来减少精神分裂症的污名化？
如果您需要参加与精神分裂症康复者的接触活动，您会推荐哪种活动？
您对成为一名精神科护士有何看法？（动机和障碍是什么？）
对于吸引护生到精神科工作，您有什么建议？

Appendix 7 Third phase focus group interview guide (Chinese Version)

您如何评价这个干预项目［最喜欢哪周或最不喜欢哪周干预，为什么？］
您如何评价完成这些干预难易程度？（时间成本）。［为什么您认为坚持完成容易或困难？>影响依从性的因素是哪些>您觉得干预的频率及每次干预的时间怎么样？>您觉得最好干预频率及时间是多长为宜？］
您如何评价对这些干预接受程度？［为什么您认为容易接受或很难接受？>影响接受的因素是哪些>您觉得怎么样的干预更好接受？］
您如何看待在线干预的方法？[在线干预效果您觉得怎么样，为什么?]
您如何评价在研究中填写的问卷？[这些问卷对于测量精神分裂知识，态度，行为，同理心，污名化意向行为合适吗？为什么？］
您参加本次干预研究的总体体验如何？[您参与这个研究获得了哪些收益？“该研究是否影响了您对精神分裂症患者的知识、态度、同理心、意向行为或其他观点”“该研究如何改变了您对精神分裂症患者的知识、态度、同理心、意向行为或其他观点”］
您对改进研究设计有何建议？[怎么样的干预更适合护生]
您是否还有其他未讨论的与研究相关的内容想和我们聊聊？

Appendix 8 Information sheet

INFORMATION SHEET

(Chinese Culture-Specific Intervention to Decrease the Stigma of Nursing Students towards Schizophrenia-A Pilot Study)

You are invited to participate in a study supervised by Dr.Sau Fong LEUNG and conducted by ___CHEN XI_____. The project has been approved by the PolyU Institutional Review Board (PolyU IRB) (or its Delegate) (HSESC Reference Number: HSEARS20220127002).

The purpose of this study is to explore the effects of interventions based on traditional Chinese culture, such as education and exposure, on reducing nursing students' stigma towards schizophrenia. You will be invited to complete questionnaires before the intervention begins, after the intervention is completed, and three months after the intervention is completed. These questionnaires will take approximately 20 minutes to complete.

This project is an online intervention activity based on the Knowledge-Attitude-Behavior theory and the Theory of Transformative learning, and it falls under the category of a randomized controlled trial. There will be 30 participants in both the intervention group and the control group. The intervention will be conducted in two rounds, with 30 participants in each round. Each round will consist of 15 participants in both the intervention and control groups. Within the intervention group, five participants will form a small group. Each intervention round will last for four weeks, with one intervention activity per week for the intervention group. The control group will be asked to read a book titled "My Journey through Madness" within the four-week period. If you are assigned to the intervention group, you will undergo a four-week intervention. You will participate in one intervention activity per week. In the first week, there will be a change in nursing students' inherent misconceptions about schizophrenia. In the second week, there will be a critique of misconceptions about schizophrenia on social media. In the third week, you will have contact people with schizophrenia in recovery and psychiatric nurses. In the fourth week, you will engage in self-reflection and create concept maps to address stigmatization. The weekly time commitment for reporting will be approximately 2.5-3 hours.

If you are assigned to the control group, you will not participate in the aforementioned intervention activities. However, if you wish, we can provide you with relevant intervention materials after the completion of this study, hoping it will be helpful for you. The study will last for three months, and if you experience any discomfort during the research process, you can contact Mr. Chen Xi at any time for assistance. In addition, before you start to participate and after you complete this intervention, you may also be invited to participate in a semi-structured interview. The interview is in the form of a group discussion. During this interview, Mr. Chen Xi will also participate. The purpose

of this interview is to understand some of your views on the stigma toward schizophrenia and share your experience in participating in this research. You have right to withdraw from the study before or during the measurement without penalty of any kind. All information related to you will remain confidential and will be identifiable by codes known only to the researcher. After the research is concluded, you will receive an allowance of 100 Chinese Yuan as compensation for the time you spent in the study. Different groups of students will receive detailed information about the implementation of intervention processes for each group after signing the informed consent form. This study is divided into two major groups, each receiving different interventions. If you are willing to participate in this study, please refrain from communicating with students from different groups to prevent any impact on the research effectiveness.

In the event you have any questions about the conduct of this research study, you may contact the Secretary of the PolyU Institutional Review Board in writing (rohsesc@polyu.edu.hk) stating clearly the responsible person and department of this study as well as the HSESC Reference Number.

If you would like more information about this study, please contact _CHEN XI____at telephone number ____86-1366735_____ or his supervisor _____ at telephone number _852-6177_____.

Thank you for your interest in participating in this study.

Principal Investigator

___CHEN XI_____

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Appendix 9 Information sheet（Chinese Version）

研究说明

（中国文化特定干预减少护理学生对精神分裂症的污名--一项试点研究）

诚邀您参加 梁秀芳博士负责监督，陈熙先生 负责执行的研究计划。该项目已获得香港理工大学研究伦理委员会（或其代表）的批准 （参考编号：HSEARS20220127002）

这项研究的目的是_____采用教育及接触等干预方法，探索基于中国传统文化的干预措施对降低护生对精神分裂症污名的作用_，您将被邀请于干预开始前，干预完成后，干预完成后三个月，填写一些问卷，每次约需要 20 分钟左右，此项目属于一个通过网络在线的基于知识-态度-行为理论和转化学习理论构建的一个干预活动，属于随机对照研究。干预组和对照组各 30 人。干预将分两轮进行，每轮 30 名参与者。每轮干预组和对照组都是 15 名参与者。干预组中每 5 名参与者将组成一个小组。每轮干预将持续 4 周，干预组每周参与一次干预活动。对照组将被要求在四周内完成阅读一本书《我穿越疯狂的旅程》。

如果您被分配到干预组，您将接受为期 4 周的干预。您将每周参加一次干预活动。第一周改变护生对精神分裂固有错误的认识，第二周批判社交媒体上对精神分裂症的误解，第三周接触精神分裂症康复者和精神科护士，第四周自我反思和画概念图以应对污名化。每周汇报时间大约为 2.5-3 小时。如果您被分配入对照组，将不会参与上述干预活动，如果您需要，我们可以在完成此次研究后将相关干预活动资料寄给您，期望对您有一定帮助。此次研究持续 3 个月，在研究过程中如果出现任何不适，可以随时和陈熙先生联系，以获得帮助。

除此之外，在您开始参与及完成此项干预前后，您还可能会被邀请参加一个半结构式的访谈，该访谈是采用小组讨论的形式，此次访谈期间，陈熙先生也会参与，该访谈的目的主要是了解您对精神分裂污名化的一些看法及参与此次研究的经验分享。

您享有充分的权力在研究开始之前或之后决定退出这项研究，而不会受到任何对您不正常的待遇或被追求责任，凡有关您的资料将会被保密，一切资料的编码只有研究人员知晓。研究结束后，您将获得 100 元人民币的津贴，补偿您在研究中所花之时间。不同组同学会在签署知情同意书后收到关于每组干预过程实施的详细介绍资料。本研究分为两大组，接受不同干预，如果您愿意参与此研究，请不同组的同学不要互相沟通，以免影响研

究效果。
如果阁下对这项研究有任何的不满，可随时与香港理工大学伦理委员会秘书联络（电邮：rohsesc@polyu.edu.hk），清楚说明负责人、部门以及参考编号。
如果阁下想获取更多有关这项研究的资料，请与 陈熙先生 联络，电话：86-1366735 ___ ，或联络他的导师 梁秀芳博士， 电话 852-6177____
谢谢阁下有兴趣参与这项研究。
主要研究员（PI）
陈熙

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Appendix 10 Consent to participate in research (Chinese Culture-Specific Intervention to Decrease the Stigma of Nursing Students towards Schizophrenia-A Pilot Study)

CONSENT FROM
(Chinese Culture-Specific Intervention to Decrease the Stigma of Nursing Students towards Schizophrenia-A Pilot Study)

I _____ hereby consent to participate in the captioned research Conducted by MR. XI CHEN, PhD student of The Hong Kong Polytechnic University, School of Nursing. Mr. XI CHEN is under the supervision of Dr. Sau Fong LEUNG, associate professor, of The Hong Kong Polytechnic University, School of Nursing.

I understand that information obtained from this research may be used in future research and published. However, my right to privacy will be retained, i.e., my personal details will not be revealed.

The procedure as set out in the attached information sheet has been fully explained. I have read the above information, understood the project, and the research supervisor has addressed my questions. I have been informed of the possible risks, inconveniences, and benefits of participating in this project. I am also aware of the alternative measures available to me. I understand that my participation is voluntary, and I am free to decline or withdraw from the project without any penalty or impact on my rights, at any time.

I understand my rights as a research participant. I willingly agree to participate in this study. I understand the purpose of this research, why it is being conducted, and what will be done. If you have any questions about this research, please clearly state the name of the research supervisor, department, and the HSESC ethics number, and contact the Secretary of the PolyU Institutional Review Board (rohsesc@polyu.edu.hk). If you wish to learn more about this research, you can contact Xi Chen at phone number （86-1366735) or his supervisor at phone number (852-6177). Thank you for your interest in participating in this study.

Name of participant _____

Signature of participant _____

Name of Parent or Guardian (if applicable) _____

Signature of Parent or Guardian (if applicable) _____

Name of researcher _____

Signature of researcher _____

Date _____

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Appendix 11 Consent to participated in research（Chinese Version）

知情同意书

中国文化特定干预减少护理学生对精神分裂症的污名--一项试点研究

本人_____ 同意参加上述由香港理工大学护理学院博士生陈熙先生负责的研究。陈熙先生是由香港理工大学护理学院副教授梁秀芳指导。本人知悉此研究所得的资料可能被用作日后的研究及发表，但本人的隐私权力将得以保留，即本人的个人资料不会被公开。

研究人员已向本人清楚解释列在所附资料卡上的研究程序。我已阅读上述内容，了解此项目，研究负责人回答了我所提出的问题。我已被告知参与此项目可能存在的风险和不便之处，及可能带来的好处。我也被告知除此项目所提供的措施外其他我可采用的措施。我明白我可以不参加此项目，如果我拒绝参加将不会有任何惩罚或影响我应有的权利，我也可以随时退出此项目。我明白作为一个研究对象我该享有的权利。我自愿参加此研究。我明白此研究是干什么的，为什么要进行此研究以及将要怎么做。如果您对本研究有任何投诉，请明确说明本研究的负责人和部门，及 HSESC 伦理编号，并书面联系理大机构审查委员会秘书（rohsesc@polyu.edu.hk）。如果您想了解有关本研究的更多信息，请拨打电话号码（86-1366735 ）联系 陈熙 或拨打电话号码（852-6177 ）联系他的导师。感谢您有兴趣参与这项研究。

参加者姓名: _____

参加者签名: _____

父母姓名或监护人姓名（如需要） _____

父母或监护人签名: （如需要） _____

研究人员姓名: _____

研究人员签名: _____

日期: _____

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Appendix 12 intervention implementation process（Chinese Version）

	干预的目的	干预内容	干预方法和活动	干预时间
第一周	第一周的干预是为了增加精神分裂症的知识和促进理解	A. 了解精神分裂症的病因、病理生理、临床表现、治疗、护理及预后。纠正以下错误观念： 1）精神分裂症患者经常伤害他人 2）精神分裂症患者没有工作能力，不会被雇用 3）精神分裂症很难治愈 4）精神分裂症患者没有自理能力 5）精神分裂症患者是杀人狂 6）精神疾病不存在，或被忽视，发病率低，可自愈。 7）精神分裂症患者年少时的行为与其他人不同 8）精神分裂症患者是定时炸弹 9）精神分裂症患者思维异常 10）把精神分裂症患者锁在家里是为了保护他 11）精神分裂症患者是没有希望的 12）精神分裂症患者总是快乐的 13）精神分裂症患者属于另一个人群 14）精神分裂症患者没有正常的时刻 15）精神疾病是可耻的 16）精神分裂症患者不会感到受到歧视 17）在精神科工作的护士会患有精神疾病或受到影响 B. 精神分裂症与其他精神疾病（例如多重人格障碍、自闭症、抑郁症和精神病患者）之间的差异。	在第一周，每五个学生组成一个小组，作为一个团队（协作学习活动）来调查知识（调查学习活动）。他们报告了他们通过演示、讨论和辩论（互动学习活动）所获得的成果。这 5 名学生进行了分析、构建和评估，以理解所学知识。护生在分析这些信息时正在进行（高阶思维）活动。 在这个阶段，高阶思维技能超越了对信息的理解和回忆，而是对所获得的信息进行批判性的分析和评价。	每组有 35 分钟的报告时间，15 分钟的问答、讨论和评论时间。总时长为 2.5 小时。

		C. 精神分裂症相关的法律问题。纠正以下错误观念： 1）精神分裂症或精神疾病患者伤害他人后无需承担法律责任。 2）当精神分裂症患者伤害他人或犯下谋杀罪时，法院很难对他们定罪。 3）犯罪并患有精神疾病的，可以减刑。 4）对于精神疾病患者犯罪有一些保护法。 D、文化因素对精神分裂症认知的影响： 中国传统文化和宗教对精神分裂症的认识：佛、道、儒三家思想对精神分裂症的认识和看法。 画出关于精神分裂的概念图。		

第二周	第二周的干预旨在纠正从社交媒体获得的关于精神分裂症的误解	网络、文学作品、小说、电影、电视剧中关于精神分裂症的夸张报道。	第 2 周，5 名学生以小组为单位，共同从网络、文学艺术作品、小说、电影、电视剧等夸大报道中收集素材（调查学习和协作学习活动）。每组找到十份材料，表明哪里比较夸张，宣传精神分裂症的异常行为和表现（高阶思维）。此外，这些团体还需要找出关于精神分裂症的误解的真相并进行讨论或辩论（互动学习活动）。当学生需要提供相关材料并发表评论时，该活动涉及应用、分析和创造的高阶思维技能。	每组找出 10 份材料并自行解释。 每组报告时间 35 分钟，问答、讨论、点评时间 15 分钟。 总时长 2.5 小时

第三周	第三周的干预旨在接触精神分裂症康复者和精神科护士	护理学生与精神分裂症康复者互动； 这些人分享了他们在整个治疗和康复期间的经历，在治愈期间和之后是否受到传统文化污名化的影响。 护生与精神科护士进行互动交流。 这些护士分享了自己在精神科工作的经历和感受，以减少护生对精神分裂症的恐惧态度。	在第 3 周，五名学生作为一个团队（协作学习活动）一起准备 10 个问题（调查学习活动），然后与康复的服务对象和精神科护士会面。这些精神分裂症康复者和精神科护士分享了自己的经历和感受，纠正了同学们的误解。涉及（高阶思维能力）。采访期间或采访结束后进行问答、讨论和辩论（互动学习活动）。	总时长为 3 小时，包括分别访谈两名精神分裂症康复者和两名精神科护士，以及问答环节。

第四周	干预的第四周是自我反思和概念图，以应对污名化。通过护生的自我反思和思考，了解中国传统文化和宗教中对精神分裂症的认识，以及佛、道、儒三家思想对精神分裂症的认识和看法。	护生被要求完成反映了对几个指定主题的批判性和想象力的思考： -如果我患有精神分裂症，我该如何生活、治疗、康复并重新融入中国社会？ -我该如何面对中国文化中精神分裂症的污名化？ -当我遇到污名化时我会有什么感觉？ 同学们可以通过公众号（微信）总结大家的反思，大家可以阅读并发表评论。 1.5 小时 护理专业的学生利用概念图进行了团队合作练习，以确定减少精神分裂症污名化的策略。 护理专业的学生绘制了一幅关于精神分裂症概念图。	第四周，要求护生写下自己的感受（主题：如果我患有精神分裂症，我如何生活、治疗、康复和重新融入，面对中国传统文化和宗教对精神分裂症的污名，以及当我遇到污名时我的感受如何）（调查学习活动），阅读其他护生的意见，并进行讨论或辩论（互动学习活动）。 之后，五名学生以团队形式合作（协作学习活动） 为已识别的问题和解决方案开发概念图（高阶思维活动）。	总时长为 3 小时

Appendix 13 Knowledge about Schizophrenia Test (KAST)

1. Schizophrenia is most likely caused by:
A. Brain problem
B. Drug use
C. Evil spirits
D. Pollution
E. Stress

2. A common symptom of schizophrenia is:
A. Being overly happy and having extra energy
B. Overeating and weight gain
C. Sudden anxiety attacks
D. Thinking that others are watching or following
E. Violence, theft, or physical attacks toward others

3. The best person to decide if someone has schizophrenia is a(n):
A. Emergency room doctor
B. Family member
C. Preacher or Minister
D. Psychiatrist
E. School teacher

4. With treatment, the most common long-term outcome for schizophrenia is:
A. Complete cure
B. Dementia
C. Mild to moderate mental retardation
D. Relief of symptoms, with possibility of relapse
E. Severe mental deterioration

5. Medicines that are used for hearing voices are called:
A. Antibiotics
B. Anti-depressants
C. Anti-psychotic
D. Sedatives
E. Tranquilizers

6. The best place to get information about schizophrenia is from:
A. Books or websites
B. Friends
C. Neighbors
D. Newspapers
E. Preachers or ministers

7. To help deal with stress, most patients with schizophrenia benefit from:

A. Alcohol use
B. Counseling or psychotherapy
C. Cutting back on social activities
D. Pain-relief medications
E. Physical therapy

8. The cause of schizophrenia is most likely related to:
A. Biology
B. Environment
C. Family
D. Personality
E. Society

9. A person strongly believes that the FBI has put a computer chip in his/her body. This symptom is called a:
A. Daydream
B. Delusion
C. Hallucination
D. Phobia
E. Worry

10. A doctor usually makes a diagnosis of schizophrenia by a(n):
A. Blood test
B. CAT scan
C. Interview
D. Reading test
E. Urine test

11. Most people who have schizophrenia need to be in some sort of treatment for:
A. Days
B. Weeks
C. Months
D. Years
E. Not at all

12. The best treatment for the symptoms of schizophrenia is:
A. Medicine
B. Operation
C. Relaxation
D. Strict diet
E. Vitamins

13. People with Schizophrenia benefit most from:
A. Being put into a hospital for years

B. Having fun or exercising
C. Strict schedules with full-time employment
D. Support from family/friends and low stress
E. Vitamins, minerals, or herbs

14. A 19-year-old begins to hear voices and act paranoid several months after graduating from high school. The most
likely causes of his symptoms is:
A. Drinking alcohol
B. Genetic tendency toward developing an illness
C. Graduating high school
D. Personality weakness
E. Puberty and adolescence

15. The symptoms of schizophrenia usually begin in which stage of life?
A. As a baby
B. Elementary school years
C. Late teen-age years or young adulthood
D. 40–50 years old
E. 60–70 years old

16. Which of the following is one of the new “atypical” medicines for schizophrenia?
A. Chlorpromazine (Thorazine)
B. Haloperidol (Haldol)
C. Fluphenazine (Prolixin)
D. Trifluoperazine (Stelazine)
E. Quetiapine (Seroquel)

17. Which group is the best source of information and support for family members of People with Schizophrenia?
A. Chinese Medical Association
B. Psychiatrists Branch of Chinese Medical Doctor Association
C. Centers for Disease Control and Prevention
D. Chinese Mental Health Association
E. Community health service center

18. After hospitalization, a patient with schizophrenia would benefit most from:
A. Constant observation by family
B. Eating more meats and breads
C. Follow-up with a preacher or minister
D. Follow-up with an outpatient psychiatrist
E. Getting a full-time job and staying busy

Appendix 14 Knowledge about Schizophrenia Test (KAST) （Chinese Version）

1. 最有可能导致精神分裂症的原因是 。

A.脑部问题 B.使用毒品 C.罪恶的灵魂 D.污染 E.压力

2. 精神分裂症的常见症状是 。

A.过度兴奋、精力过剩 B.暴饮暴食、体重增加 C.突然的焦虑发作 D.认为他人监视或尾随自己 E.暴力、偷窃或攻击他人

3. 判断一个人是否患精神分裂症的最合适人选是 。

A.急诊科医生 B.家属 C.街道/社区工作人员 D.精神科医生 E.学校老师

4. 经治疗后，精神分裂症最常见的长期结局是 。

A.彻底治愈 B.痴呆 C.轻度到中度的智力低下 D.症状缓解，伴复发的可能 E.严重的精神衰退

5. 治疗“凭空听到声音”的药物叫做 。

A.抗生素 B.抗抑郁药 C.抗精神病药 D.镇静剂 E.安定剂

6. 获取精神分裂症相关信息的最佳来源是 。

A.网站 B.朋友 C.邻居 D.医院的医务人员 E.街道/社区工作人员

7. 为有效应对压力，大多数精神分裂症患者得益于 。

A.饮酒 B.心理咨询或心理治疗 C.减少社会活动 D.缓解疼痛的药物 E.物理疗法

8. 精神分裂症的病因与——最相关。

A.生物因素 B.环境 C.家庭 D.个性 E.社会

9. 一个人坚信公安部门的人将一个电脑芯片放入他（她）的体内，这种症状被称为 。

A.白日梦 B.妄想 C.幻觉 D.恐惧 E.忧虑

10. 医生通常通过 方法确诊精神分裂症。

A.血液学检查 B.电脑断层扫描（CT） C.访谈 D.阅读测试 E.尿液检查

11. 大多数精神分裂症患者接受药物治疗需要持续 。

A.数天 B.数周 C.数月 D.数年 E.根本不需要治疗

12. 精神分裂症症状的最佳治疗措施是 。

A.药物 B.手术 C.放松 D.严格控制饮食 E.维生素

13. 以下选项中，对精神分裂症患者的康复最有益处的是 。

A.住院数年 B.玩乐或锻炼 C.全职工作，严格遵循工作安排 D.家庭或朋友的支持和低水平压力 E.维生素、矿物质或中草药

14. 某人 19 岁，高中毕业几个月后开始出现凭空听到声音和行为偏执。最有可能导致该症状的原因是 。
A.饮酒　B.发展这种疾病的遗传倾向　C.高中毕业　D.个性弱点　E.青春期

15. 精神分裂症的症状通常开始于以下哪一年龄段 。
A.婴儿　B.小学　C.青春期末期或成年早期　D. 40-50 岁　E .60-70 岁

16. 抗精神病药物的常见副作用不包括 。
A.头晕　B.乏力　C.困倦　D.焦虑　E.体重增加

17. 对于精神分裂症患者家属来说，最佳的信息和支持来源是哪一团体组织：
A.中华医学会　B.中国医师协会精神科医师分会 C.中国疾病预防控制中心
D.中国心理卫生协会 E.社区卫生服务中心

18. 出院后，精神分裂症患者将最受益于 。
A.家庭的持续观察　B.多吃肉类食物　C.街道/社区工作人员的随访
D.定期去医院门诊复查　E.获取一份全职工作，保持忙碌

量表的记分：
中文版 KAST 是一个二分变量的研究工具，评分为“0”或“1”。 参与者每个正确答案得一分，错误答案得零分。 总分范围为 0 至 18，分数较低表明对精神分裂症的了解有限。

Appendix 15 Clinicians, attitudes to people with mental illness (healthcare students and professionals)

Instruction: For each question of 1-16, please tick √ in the appropriate box. The mental illness (illness) referred to here refers to an illness that requires a visit to a psychiatrist.

	strongly agree	agree	somewhat agree	somewhat disagree	disagree	strongly disagree
1. I just learn about mental health when I have to and would not bother reading additional material on it.						
2. People with severe mental illness can never recover enough to have a good quality of life.						
3. Working in the mental health field is just as respectable as other fields of health and social care.						
If I had a mental illness, I would never admit this to any of my friends because I would fear being treated differently						
People with mental illness are dangerous more often than not						
6. Health/social care staff know more about the lives of people treated for a mental illness than do family members and friends						
7. If I had a mental illness, I would never admit this to my colleagues for fear of being treated differently.						
8. Being a health/social care professional in the area of mental health is not like being a real health/social care professional.						
9. If a senior colleague instructed me to treat people with mental illness in a disrespectful manner, I would not follow their instructions.						
10. I feel as comfortable talking to a person with mental illness as I do talking to a person with physical illness.						

11. It is important that any health/social care professional supporting a person with mental illness also ensures that their physical health is assessed.						
12. The public does not need to be protected from people with mental illness.						
13. If a person with a mental illness complained of physical symptoms (such as chest pain), I would attribute it to their mental illness.						
14. General practitioners should not be expected to complete a thorough assessment for people with psychiatric symptoms because they can be referred to a psychiatrist.						
15. I would use the terms “crazy”, “nutter”, “mad”, etc., to describe colleagues of people with mental illness that I have seen in my work.						
16. If a colleague told me they had a mental illness, I would still want to work with them.						

Appendix 16 Clinicians, attitudes to people with mental illness (healthcare students and professionals)（Chinese Version）

说明：对于 1-16 的每个问题，请在恰当的方框内打√。此处涉及的精神疾患（病）是指需要去看精神科医生的疾病。

	非常同意	同意	有些同意	有些不同意	不同意	非常不同意
1. 我仅在必要时才去了解精神卫生知识，并且，不愿意费工夫阅读更多的相关资料。						
2. 严重精神疾病患者绝不会恢复到拥有良好的生活质量。						
3. 与其他卫生和社会服务领域一样，在精神卫生领域工作同样会受到尊敬。						
4 .如果我患有精神疾病，我绝不会向我的朋友承认，因为我担心会受到不同的对待。						
5. 严重精神疾病患者比其他人常常更具有危险性。						
6. 对于接受治疗的精神疾病患者，卫生/社会服务工作者比其家庭成员或朋友更了解患者的生活。						
7. 如果我患有精神疾病，我绝不会向我的同事承认，因为我担心会受到不同的对待。						
8. 成为心理健康领域的护理专业人员并不像成为真正的护理专业人员						
9. 如果一位资深同事指示我以不尊重的方式对待患有精神疾病的人，我不会遵循他们的指示						
10. 与患有精神疾病的人交谈就像与患有身体疾病的人交谈一样自在。						
11. 重要的是，任何为精神疾病患者提供支持的社会护理专业人员也应确保对其身体健康状况进行评估。						
12. 公众不需要受到免受精神疾病患者的侵害保护。						
13. 如果一个患有精神疾病的人抱怨身体症状（例如胸痛），我会将其归因于他们的精神疾病。						
14. 不应期望全科医生对有精神症状的人完成彻底的评估，因为他们可以被转介给精神科医生。						
15. 我会用“疯狂”、“疯子”、“疯狂”等词语向同事描述我在工作中看到的患有精神疾病的人。						
16. 如果一位同事告诉我他们患有精神疾病，我仍然想和他们一起工作。						

量表的记分：
MICA 量表由 16 个条目组成，采用用李克特 6 点评分制进行评估，回答选项范围从 1（完全同意）到 6（完全不同意）。分数越高，污名化态度越严

Appendix 17 Reported and Intended Behaviour Scale （RIBS）

Instructions: The following questions ask about your experiences and views in relation to people who have mental health problems (for example, people seen by healthcare staff), For each of questions1-4, please respond by taking one box only.

	Yes	No	Don't know
Are you currently living with, or have you ever lived with, someone with a mental health problem?			
Are you currently working with, or have you ever worked with, someone with a mental health problem?			
Do you currently have, or have you ever had, a neighbour with a mental health problem?			
Do you currently have, or have you ever had, a close friend with a mental health problem?			

Instructions: For each of the questions 5-8, please respond by ticking one box only.

	Agree strongly	Agree slightly	Neither agree nor disagree	Disagree slightly	Disagree strongly	Don't know
In the future, I would be willing to live with someone with a mental health problem						
In the future, I would be willing to work with someone with a mental health problem						
In the future, I would be willing to live nearby to someone with a mental health problem						
In the future, I would be willing to continue a relationship with a friend who developed a mental health problem						

Appendix 18 Reported and Intended Behaviour Scale（RIBS）(Chinese Version)

说明：以下是有关您与精神卫生问题者（例如，卫生服务者服务的对象）相处的问题及对其的看法。对于 1-4 的每个问题，请在您认为合适的方框内打√。

	有	没有	不知道
1. 目前或曾经，您是否与有精神卫生问题的人一起生活？			
目前或曾经，您是否与有精神卫生问题的人一起工作？			
目前或曾经，您有邻居有精神卫生问题吗？			
目前或曾经，您有密友有精神卫生问题吗？			

说明：对于 5-8 的每个问题，请在您认为合适的方框内打√。

	非常同意	有些同意	既不同意也不反对	有些不同意	非常不同意	不知道
5. 将来，我愿意与有精神卫生问题的人一起生活。						
6. 将来，我愿意与有精神卫生问题的人一起工作。						
7. 将来，我愿意在有精神卫生问题的人附近生活。						
8. 将来，我愿意与出现精神卫生问题的朋友继续保持关系。						

量表的记分：

RIBS 由 8 个条目组成，使用 5 分制进行评估，其中回答选项范围从 1（完全不同意）到 5（完全同意）。 总分是通过将第 5 至 8 项的回答分数相加计算得出的，范围为 4 至 20 分，分数越高表明与分数较低的人相比，更倾向于与患有精神疾病的人交往。

Appendix 19 Jefferson Scale of Empathy-Nursing Students

Answer instructions: Please circle the answer that best suits your opinion according to the following questions.

The evaluation method of each question adopts a 7-point method, 1 point means very disagree, 7 points means very agree

1_____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7_____

Strongly disagree strongly agree

Items	Item content	1	2	3	4	5	6	7
1	Nurses understanding of their patients' feelings and the feelings of their patients' families does not influence treatment outcomes							
2	Patients feel better when their nurses understand their feelings							
3	It is difficult for a nurse to view things from patients' perspectives							
4	Understanding body language is as important as verbal communication in nurse–patient relationships							
5	A nurse's sense of humour contributes to a better clinical outcome							
6	Because people are different, it is difficult to see things from patients' perspectives							
7	Attention to patients' emotions is not important inpatient interview							
8	Attentiveness to patients' personal experiences does not influence treatment outcomes							
9	Health care providers should try to stand in their patients' shoes when providing care to them							
10	Patients value a nurse's understanding of their feelings which is therapeutic in its own right							
11	Patients' illness can be cured only by targeted treatment; therefore, nurses emotional ties with their patients do not have a significant influence in treatment outcomes							
12	Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints							
13	Nurses should try to understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language							
14	I believe that emotion has no place in the treatment of medical illness							
15	Empathy is a therapeutic skill without which a nurse's success is limited							
16	Nurses' understanding of the emotional status of their patients, as well as that of their families is one important							

	component of the nurse–patient relationship							
17	Nurses should try to think like their patients in order to render better care							
18	Nurses should not allow themselves to be influenced by strong personal bonds between their patients and their family members							
19	I do not enjoy reading non-medical literature or the arts							
20	I believe that empathy is an important factor in patients' treatment							

Appendix 20 Jefferson Scale of Empathy-Nursing Students （Chinese Version）

作答说明： 请您依照下列问题，圈选最符合您意见之答案。每项问题的评估方式采 7 分法，1 分表示非常不同意，7 分表示非常同意

1_____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____

非常不同意 非常同意

题目		1	2	3	4	5	6	7
1	护士对病人的个人感受和对其家属感受的了解不影响临床治疗。-							
2	如果护士非常了解病人的感受的话，病人感觉会更好。							
3	对于一名护士来说，很难从病人的角度来考虑问题。							
4	在护患关系中，对身体语言的理解与言语交际是一样重要的。							
5	护士的幽默感，有助于更好地临床治疗。							
6	因为人是不同的，所以很难从病人的角度来看待事情。							
7	在观察病情与询问病史时,我试着不注意病人的情绪变化							
8	关注病人的个人经历不影响治疗效果。							
9	在对病人进行治疗时，护士应尽力站在病人的角度来为其考虑。							
10	病人看重护士理解他们的情绪，这种理解本身有助于治疗。							
11	疾病只有通过药物或手术才能治愈，因此护士与病人的情感联系在其治疗过程中不会有很重要的影响。							
12	询问病人个人的生活细节无助于护士对他们所描述症状的了解。							
13	护士应尽力通过病人的非言语行为与肢体动作了解病人的想法。							
14	我认为情感因素无助于医治疾病。							
15	共情是一种治疗技巧，没有它，护士的成功是受限制的。							
16	护士了解病人及家属的情感状态是护患关系中很重要的组成部分							
17	护士应尽力站在病人的角度进行思考以便更好地医治病人。							
18	护士不应受病人及其家属之间强烈的亲情影响。							

19	我不喜欢阅读非医学类文学或艺术作品。							
20	我相信在医疗过程中共情是一种很重要的治疗因素。							

量表的记分

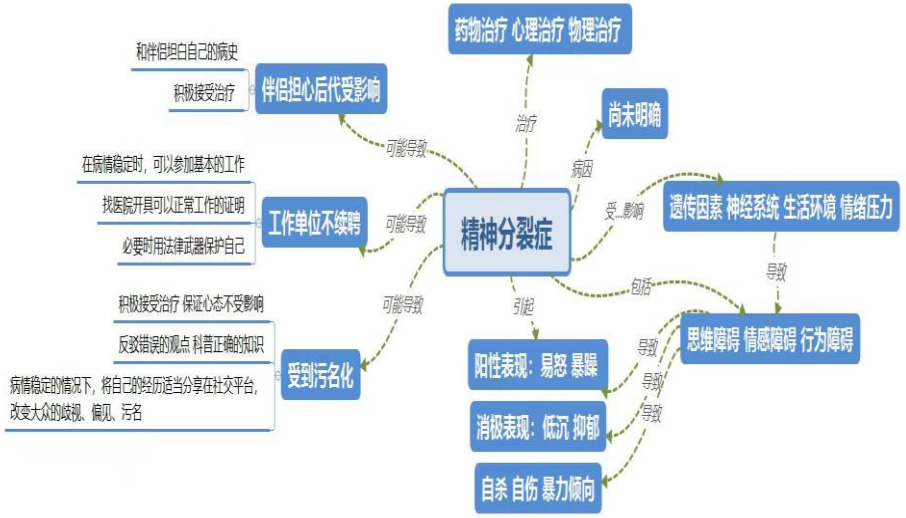
1 该量表采用李克特 7 点评分制，应答者可以在 5 到 10 分钟内完成。记分过程中，在每一份问卷的 20 个条目中，应答者至少应对 16 个条目作答；否则，该问卷应视为未完成，在资料分析时应予以剔除。

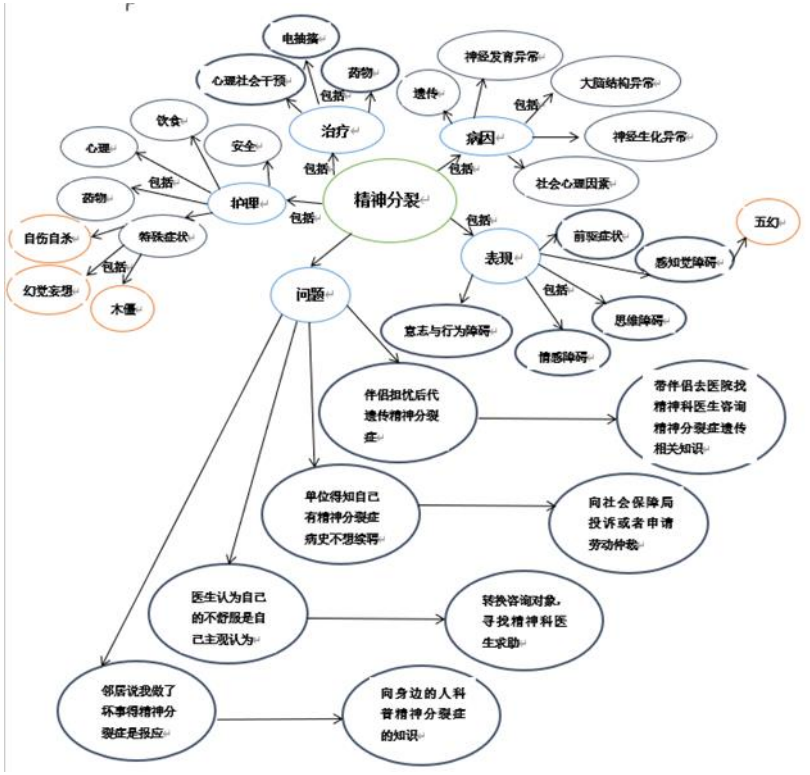
2 如果应答者有 4 个或者更少的条目未作答，缺失值应以应答者完成条目的平均得分予以代替。

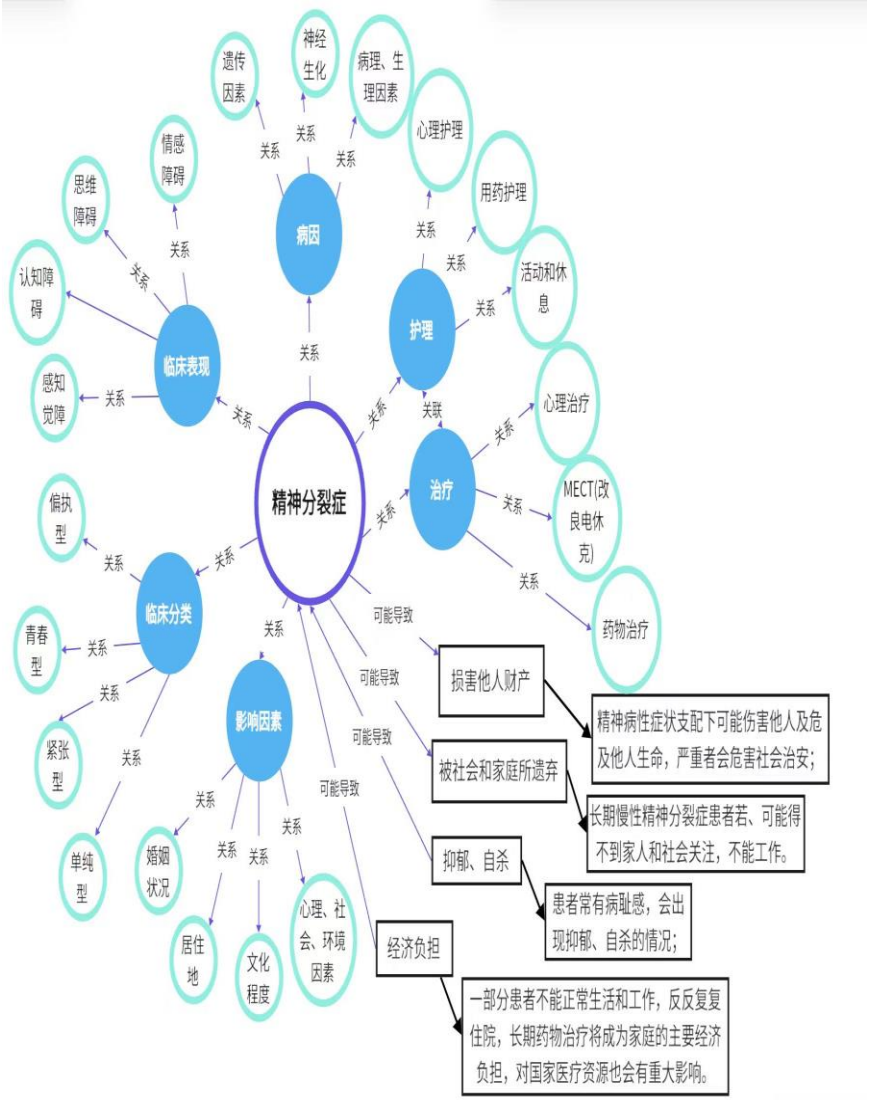
3 在量表中，条目 1, 3, 6, 7, 8, 11, 12, 14, 18 和 19 为反向记分，即完全同意=1 分，同意=2 分，部分同意=3 分，依次类推，完全不同意=7 分；而其余的条目可直接根据其在里克特量表中的权重直接记分，即完全同意=7 分，同意=6 分，依次类推，完全不同意=1 分。

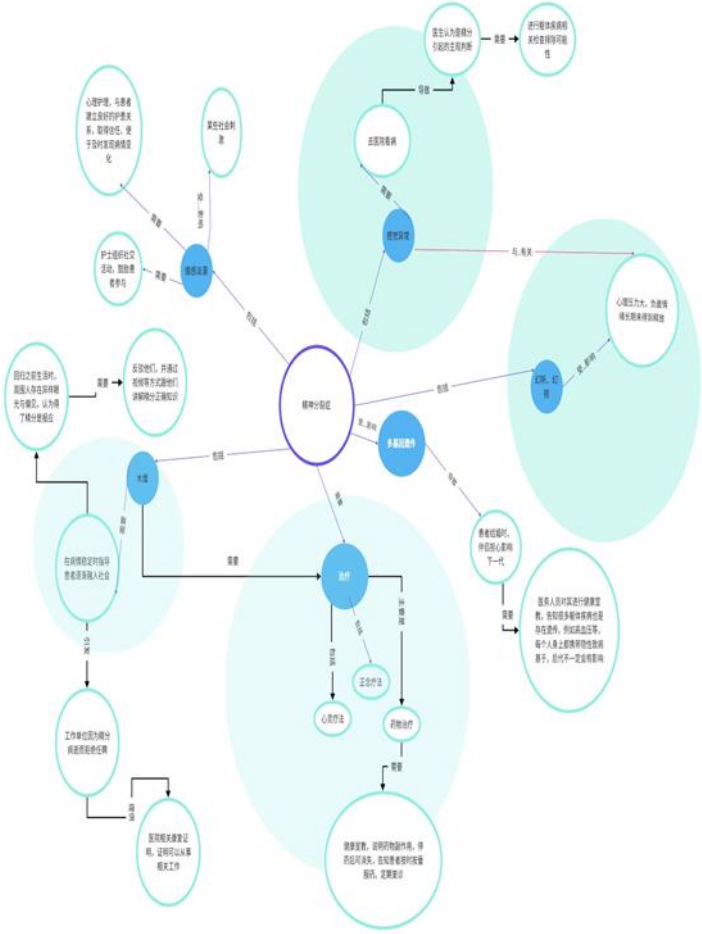
4 量表总得分即为全部条目得分总和，得分越高，共情反应水平越高。

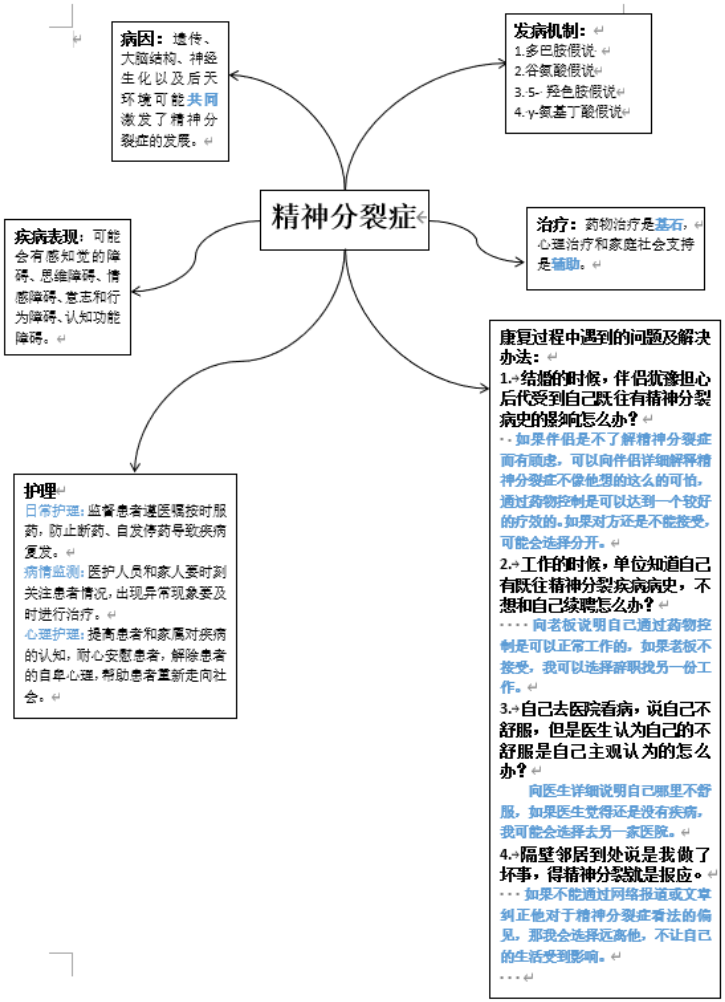
Appendix 21 Some concept maps of the experimental group （N=6）

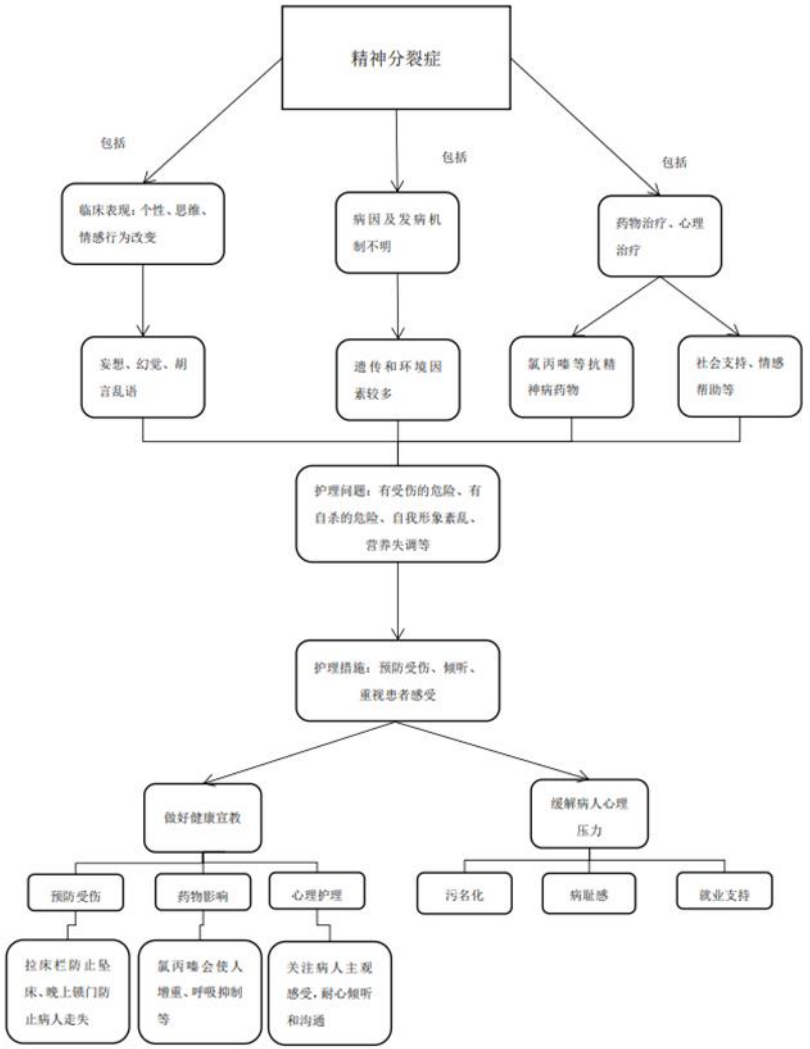





精神分裂症
病因
遗传因素
神经生化
病理、生理因素
关系
临床表现
思维障碍
情感障碍
认知障碍
感知觉障
临床分类
偏执型
青春型
紧张型
单纯型
影响因素
婚姻状况
居住地
文化程度
心理、社会、环境因素
护理
心理护理
用药护理
活动和休息
治疗
心理治疗
MECT(改良电休克)
药物治疗
可能导致
损害他人财产
精神病性症状支配下可能伤害他人及危及他人生命，严重者会危害社会治安；
被社会和家庭所遗弃
长期慢性精神分裂症患者若、可能得不到家人和社会关注，不能工作。
抑郁、自杀
患者常有病耻感，会出现抑郁、自杀的情况；
经济负担
一部分患者不能正常生活和工作，反反复复住院，长期药物治疗将成为家庭的主要经济负担，对国家医疗资源也会有重大影响。




精神分裂症
病因：遗传、大脑结构、神经生化以及后天环境可能共同激发了精神分裂症的发展。
发病机制：
1.多巴胺假说
2.谷氨酸假说
3.5- 羟色胺假说
4.γ-氨基丁酸假说
疾病表现：可能会有感知觉的障碍、思维障碍、情感障碍、意志和行为障碍、认知功能障碍。
治疗：药物治疗是基石，心理治疗和家庭社会支持是辅助。
护理
日常护理：监督患者遵医嘱按时服药，防止断药、自发停药导致疾病复发。
病情监测：医护人员和家人要时刻关注患者情况，出现异常现象要及时进行治疗。
心理护理：提高患者和家属对疾病的认知，耐心安慰患者，解除患者的自卑心理，帮助患者重新走向社会。
康复过程中遇到的问题及解决办法：
1.结婚的时候，伴侣很担心后代受到自己既往有精神分裂病史的影响怎么办？
如果伴侣是不了解精神分裂症而有顾虑，可以向伴侣详细解释精神分裂症不像他想的这么的可怕，通过药物控制是可以达到一个较好的疗效的。如果对方还是不能接受，可能会选择分开。
2.工作的时候，单位知道自己有既往精神分裂疾病病史，不想和自己续聘怎么办？
向老板说明自己通过药物控制是可以正常工作的，如果老板不接受，我可以选择辞职找另一份工作。
3.自己去医院看病，说自己不舒服，但是医生认为自己的不舒服是自己主观认为的怎么办？
向医生详细说明自己哪里不舒服，如果医生觉得还是没有疾病，我可能会选择去另一家医院。
4.隔壁邻居到处说是我做了坏事，得精神分裂就是报应。
如果不能通过网络报道或文章纠正他对于精神分裂症看法的偏见，那我会选择远离他，不让自己的生活受到影响。


精神分裂症
包括
包括
包括
临床表现：个性、思维、情感行为改变
病因及发病机制不明
药物治疗、心理治疗
妄想、幻觉、胡言乱语
遗传和环境因素较多
氯丙嗪等抗精神病药物
社会支持、情感帮助等
护理问题：有受伤的危险、有自杀的危险、自我形象紊乱、营养失调等
护理措施：预防受伤、倾听、重视患者感受
做好健康宣教
缓解病人心理压力
预防受伤
药物影响
心理护理
污名化
病耻感
就业支持
拉床栏防止坠床、晚上锁门防止病人走失
氯丙嗪会使人增重、呼吸抑制等
关注病人主观感受，耐心倾听和沟通

Appendix 22 Some Critical thinking of nursing students of the experimental group（N=6）

如果我患有精神分裂症，我可能会先害怕，但是不会一直这样持续下去，我会积极找到原因，积极地去生活，积极去治疗，按时遵医嘱服药及定期复诊，在自己不影响到别人的情况下参与社交活动，与朋友、家人多沟通交流，向他们诉说自己的感受与变化，毕竟我相信他们是最愿意理解我的，会在病情稳定时找一份适合自己，不影响他人的工作。当我因为精神分裂被别人歧视的时候，我起初肯定会很难受，因为疾病的治疗本身就很痛苦了，还遭遇别人的歧视让我更加失望，也许会有崩溃的时候，但是我还是想振作起来，在家人与朋友的帮助下，我也相信这些都不算什么。隔壁邻居到处和别人说我是因为前世作了孽，这辈子才要受这个罪，这些都是迷信的说法，我要反驳他，给大家科普，精神分裂和其他躯体疾病一样，也是由于环境因素或者其他因素引起的心理上的问题，虽然现在致病因素不明确，但是我确定我的其他方面没有问题，是能在社会上正常生活的，如果实在有人不愿意理解我，我也会做好我自己的，有家人和朋友理解支持我，我相信我能打败疾病。

If I have schizophrenia, I might initially feel scared, but I won't let that persist. I will actively seek the reasons, live positively, and pursue treatment. I'll take my medication as prescribed and attend regular check-ups. I'll engage in social activities as long as it doesn't affect others. I'll communicate and share my feelings and changes with my friends and family members, as I believe they are willing to understand me. I'll find a suitable job that doesn't affect others when my illness condition stabilizes. When I face discrimination due to schizophrenia, it will undoubtedly be tough initially because managing the illness itself is painful. Encountering discrimination adds to the disappointment, and there may be moments of breakdown. However, I want to bounce back with the support of my family and friends, and I believe these challenges are surmountable. If my neighbors spread superstitious beliefs about my condition, attributing it to past life wrongdoings, I'll counter their claims and educate people. Schizophrenia, just like other physical illnesses, stems from environmental or other factors affecting mental health. While the exact causes are not yet clear, I'm sure there's nothing wrong with my other aspects, and I can lead a normal life in society. If someone refuses to understand, I'll focus on taking care of myself, knowing I have the support and understanding of family and friends. I believe I can overcome this illness.

如果我患有精神分裂症，首先我会积极到精神卫生机构进行治疗，到正规的医院，不听信封建迷信的谣言，勇敢面对，不信谣不传谣，正视疾病，不因为是精神疾病而感到羞耻，正大光明走进正规医院进行系统治疗。治疗的时候遵医嘱，按疗程，不擅自停药，也不欺瞒家属和医务人员，遵守医院规章制度。其次，我会坚持服药，服药对治疗是至关重要的，规律地按医嘱服药是治疗精神分裂症的重中之重。再一个，我会进行自我治疗 ，心理减压，不多想，健康永远是最重要的，不再纠结得失，减少焦虑情绪。我会花时间锻炼和步行，做一些力所能及的帮助他人的事情，锻炼本身就可以使人心生愉悦，可以恢复人的满足感；帮助他人可以让我多跟人接触和沟

通，可以减少病耻感和无用感。要相信，就这样慢慢的生活也挺好的，人活在世上总要做些什么吧，我虽然生病了，但是我也可以帮助到别人的。

If I were to suffer from schizophrenia, here's how I would approach it: Firstly, I would proactively seek treatment at a mental health institution, choosing reputable hospitals and not falling for superstitious rumors. I would bravely confront the situation, avoid spreading or believing in baseless rumors, and face the illness head-on. I wouldn't feel ashamed just because it's a mental health issue. Instead, I would enter a reputable hospital for treatment. During treatment, I would follow the doctor's advice, stick to the prescribed treatment plan, avoid discontinuing medication without consultation, and be honest with my family and healthcare professionals. I would also adhere to the hospital's rules and regulations. Secondly, I would be diligent about taking my medication. Medication compliance is crucial for schizophrenia treatment, and taking medication regularly as prescribed is of utmost importance. Furthermore, I would engage in self-care and stress reduction. I'd try not to overthink, prioritize my health, and not dwell on gains or losses to reduce anxiety. I would spend time exercising and walking, doing things I'm capable of that help others. Exercise itself can bring joy and restore a sense of satisfaction, while helping others can increase social interactions and communication, reducing feelings of shame and worthlessness. I would believe that living life slowly and doing something positive is still worthwhile. Even though I'm ill, I can still make a difference in other people's lives.

如果我患有精神类疾病，我的目标是：配合医生的治疗，遵医嘱按时不间断服药，积极地生活，认真平静地度过我的一生。在病情稳定期的时候，我会找到一份工作，养活自己；空闲时我会探索自己喜欢的东西，去学习插花，以后希望开一家花店，只卖鲜切花的那种；同时我会珍惜与家人朋友一起的时光，多陪伴，努力的生活。我会认识到这个治疗的过程是有困难的，需要耐心的，我要接受别人的帮助，为的是和自己一起找寻一个我自己。在我可以坦然得面对他人、社会对我的偏见的时候，我会帮助他人，为改变由来已久的精神疾病患者的困境献出自己的一份力量。我会告诉别人精神疾病就是一种和躯体疾病一样的疾病，是可以治疗的，是可以有好的效果的，这跟鬼神没有关系，也不是病人的错，他不应该背负整个社会无端的指责，作为旁观者，可以不支持，但一定不可以伤害。我会希望在以后，像我一样有精神疾病的患者可以勇敢、自由地生活在这片土地上。

If I were to suffer from a mental health condition, my goals would be as follows: First and foremost, I would cooperate with my doctors and follow their treatment plans diligently, including taking prescribed medications consistently. I would strive to live actively and approach life calmly. During stable periods of my condition, I would seek employment to support myself. In my free time, I would explore my interests, perhaps learning

flower arranging, with the hope of eventually opening a flower shop that sells fresh flowers. Simultaneously, I would cherish the time spent with family and friends, make an effort to be present and work towards a fulfilling life. I would acknowledge that the treatment process is challenging and requires patience. I would be open to accepting help from others in order to discover my true self. When I am able to face the prejudice and biases of others and society without hesitation, I will help others and contribute to improving the situation for long-standing people with mental health issues. I would educate people that mental health conditions are just like physical illnesses, treatable with positive outcomes. These conditions have nothing to do with the supernatural and are not the fault of the people with mental illness. They should not bear undue blame from society. As bystanders, people can choose not to support, but they must never harm. I would hope that in the future, individuals with mental health conditions, like myself, can live bravely and freely in this land.

如果我患有精神分裂症，我一定先告诉我的爸爸妈妈，因为他们是我最信任的人，我很确定他们很爱我，通过对这个疾病的了解，我觉得此疾病的治愈社会家庭支持是特别重要的，在不能确保外界是否会对我有歧视伤害的情况下，我优先选择多与父母沟通，积极配合医院的治疗，遵医嘱定期服药检查，在病情好转一些后，再选择告诉最亲近的朋友，踏出与外界交流的第一步，在朋友的陪伴帮助下，去参与一些社交活动，要想别人认可自己，首先要克服自己内心的恐惧，战胜自己对疾病的害怕。在我能够坦然面对自己的疾病并且积极享受生活时，我会选择出去找一份工作，因为没有人可以一辈子活在父母朋友的保护伞下，我要自信的去面对这些外界的眼光，因为我知道我与他们没什么不同，享受生活认真工作，从中获取社会价值感。因为有了前面踏入社会前的铺垫，所以我很清楚别人会有偏见、会歧视，而当出现这种污名化时，第一反应我肯定是难过的，谁也不想被他人误解或可怜，但我会给予自己积极的心理暗示，更勇敢的去面对生活。对于邻居的非议，我会向起科普精神分裂并不是你想象中的“神经病”，这个疾病愈后是可以回归到正常生活的，这就和躯体上的疾病一样，只是身体上的某个小零件受损了。我只是生病了，但是并没有做伤天害理的事，希望您通过我的解释可以了解一下这个疾病。如果邻居后续还是持有原本的态度，那我更会过好自己的生活，毕竟日子是自己的，时间长此以往，在潜移默化中，对其看法未必不是一种正向的影响。

If I were to be diagnosed with schizophrenia, I would follow a carefully considered plan for disclosing my condition to different people in my life. First and foremost, I would share this information with my parents. They are the people I trust the most, and I am confident in their love and support. I believe that family support is crucial in the treatment and recovery of this illness. While I cannot guarantee how the outside world might react, my priority would be to communicate with my parents, cooperate actively with the hospital's treatment plan, and adhere to medication and checkup schedules. After making some progress in managing my condition, I would then choose to disclose my condition to my closest friends.

This would mark the first step in opening up to the outside world. With the support of my friends, I would engage in social activities, overcoming my internal fears and conquering my fear of the illness itself. When I reach a point where I can confidently face my condition and actively enjoy life, I will seek employment. No one can rely on their parents and friends' protection forever. I would face the judgment of society with confidence, knowing that I am no different from anyone else. I would focus on enjoying life and working earnestly, finding a sense of social value in the process.

In anticipation of potential prejudice and discrimination, I would prepare myself emotionally. While the initial reaction to such stigmatization would undoubtedly be sadness, nobody wants to be misunderstood or pitied, I would give myself positive affirmations and bravely face life. If my neighbors were to make negative comments, I would educate them about schizophrenia, explaining that it's not what they might imagine as "crazy." I would emphasize that this illness can have a positive prognosis, just like physical illnesses, and it's merely a small part of the body that's affected. I would stress that I'm just ill and haven't done anything wrong. I would hope that through my explanations, they could gain a better understanding of the condition. If my neighbors continued to hold their original negative beliefs, I would focus on living my life to the fullest. After all, it's my life, and over time, my positive influence might gradually change their perspective.

如果我患有精神分裂症，我首先会把自己的心态往良好的方向发展，去做一些自己喜欢的兴趣爱好或者是一些放松心态的事情，让自己的内心平静下来，让自己的心态豁然开朗。在患病初期，我会去一些向往的地方旅行，看一些风景，尝一些美食，然后将他们记录下来。我也会去主动和自己的朋友和家人分享自己的困惑和悲伤，与他们进行倾诉，如果可以的话，我也会去找一些素未谋面的笔友，通过笔尖的交流彼此的灵魂。如果病情还是很不稳定，我会去寻求医院的帮助，遵医嘱按时服药，定期做专业的心理治疗。在病情稳定时找一份工作，让自己的生活充实起来，从而慢慢的回归到正常的生活。如果当我遭受污名化时，我第一反应肯定是愤懑，但是我会耐心的向他们介绍精神分裂，精神分裂是一种疾病，和其他躯体疾病一样，是可以通过医院治疗得到治愈康复的，而且精分并不是那么的恐怖，其实和正常人也是差不多的，只是在心理方面遇到了一些绊脚石无法释怀，如果通过正规的治疗也是会恢复如初的。总之，希望所有患有精神分裂症的朋友们都能够积极乐观的面对生活，通过正规的治疗和心理护理来缓解病情，同时也要让自己的生活忙碌起来，多发展一些自己喜欢的兴趣，从而让内心更加充实和快乐！

If I were diagnosed with schizophrenia, here's how I would approach it: First and foremost, I would work on cultivating a positive mindset and engaging in activities I enjoy or that help me relax. This would help calm my inner self and bring clarity to my mindset. In the early stages of my illness, I would embark on trips to places I've always wanted to visit, enjoying the scenery and tasting different cuisines, documenting my experiences along the way. I would also actively share my concerns and sorrows with my friends and family, engaging in open conversations with

them. If possible, I might seek out pen pals with whom I can exchange thoughts and feelings through writing, connecting with them on a deeper level. If my condition remained unstable, I would seek professional help at a hospital, following their treatment plans, taking medication as prescribed, and participating in regular psychological therapy sessions. Once my condition stabilized, I would look for employment to make my life more fulfilling, gradually reintegrating into a normal routine. If I encountered stigma or discrimination, my initial reaction might be frustration, but I would patiently educate others about schizophrenia. I would explain that it's a treatable illness, just like other physical conditions, and it's not as frightening as it might seem. People with schizophrenia are not fundamentally different from others; they simply face certain psychological challenges that can be overcome with proper treatment. In summary, I hope that all individuals with schizophrenia can approach life with positivity and optimism. Through proper treatment and psychological care, along with engaging in fulfilling activities and pursuing personal interests, I believe we can find happiness and fulfillment in our lives.

如果我患有精神分裂症，我会坚持进行日常生活技能训练，做好自己的卫生管理，培养良好洗漱习惯，积极控制自我进食量，制定个人合理的作息时间表，保证睡眠时间；根据自己的实际情况，参加适当的社会活动，逐渐树立自我价值观念，并在活动中获得快乐和价值感，提高人际交往和社会适应能力；与周围朋友家人建立良好的关系，可以约一起看电影等；根据自己的能力、技巧和兴趣，积极配合医生重新建立、发展自己独立有效解决问题的能力。当我因为精神分裂被别人歧视的时候，我觉得的自尊肯定会受到严重的打击，对我的情绪和健康行为产生强烈的负性作用，慢慢的我可能很难在生活中找到归属感，逐渐对社会产生疏远感，甚至逃离。但如果我碰到别人在我面前说我是被鬼附身等迷信说法，我会勇敢的站出来并反驳他，精神分裂是一种疾病，和其他躯体疾病一样，是可以通过医院治疗得到治愈康复的。

If I were to be diagnosed with schizophrenia, I would focus on maintaining daily life skills and personal hygiene. This would include developing good grooming habits, actively managing my food intake, establishing a reasonable daily schedule, and ensuring adequate sleep. I would also participate in appropriate social activities based on my abilities, gradually building my self-esteem, finding happiness and a sense of purpose in these activities, and improving my social and adaptive skills. Building strong relationships with friends and family, such as watching movies together, would be important to me. I would also actively cooperate with doctors to rebuild and develop my ability to independently and effectively solve problems based on my skills and interests. This would empower me to navigate life with greater independence.
If I were to experience discrimination due to schizophrenia, it would undoubtedly impact my self-esteem and have negative effects on my emotional

and behavioral well-being. Over time, it might become challenging to find a sense of belonging and I might feel increasingly alienated from society, or even tempted to withdraw. However, if I encountered superstitious beliefs like being possessed by supernatural spirits or other unfounded claims, I would bravely speak up and counter them. I would explain that schizophrenia is a medical condition, just like other physical illnesses, and it can be treated and lead to recovery through medical intervention.