


ORIGINAL ARTICLE

Effect of a group-based acceptance and commitment therapy programme on the mental health of clinical nurses during the COVID-19 sporadic outbreak period

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Abstract

Aim: To develop and implement of a group-based acceptance and commitment therapy programme in helping clinical nurses with mental health problems during the sporadic COVID-19 outbreak period.

Background: In the face of the continuing COVID-19 pandemic, clinical nurses have a high risk of mental health issues.

Methods: A quasi-experimental design was used. Two hundred twenty-six nurses were recruited from four general hospitals to receive 10 sessions of acceptance and commitment therapy programme. The Symptom Checklist-90, Perceived Stress Scale and Connor–Davidson Resilience Scale were used to assess nurses' mental health symptom, perceived stress and psychological resilience at pre-intervention and 4-week post-intervention.

Results: The mean attendance sessions was 5.78. The Symptom Checklist-90 score was significantly lower at post-intervention than pre-intervention ($P < 0.01$), and there were no significant changes of perceived stress and psychological resilience. There were significant correlations among the changed rates of mental health, perceived stress and psychological resilience ($P < 0.01$).

Conclusion: The acceptance and commitment therapy programme was effective in relieving mental health symptoms for clinical nurses and could protect clinical nurses' perceived stress and psychological resilience. However, a randomized controlled trial is needed to confirm the findings.

Implication for Nursing Management: To facilitate clinical nurses' psychological health in crisis situation, nursing management team should provide and allocated appropriate resources to support the healthcare providers.

KEYWORDS

acceptance and commitment therapy, COVID-19, mental health, nurse, psychological support

1 | INTRODUCTION

The COVID-19 outbreak has been going on 3 years because it was first detected in Wuhan, China (Li et al., 2020), and has posed a major challenge to the mental health of medical staffs worldwide. As they have struggled to cope with the COVID-19 pandemic, nurses and physicians have been the most affected psychologically (Maben & Bridges, 2020). During the pandemic, a high prevalence of mental health issues among nurses and other medical staff has been reported in the United States, across Europe and in China (Li et al., 2020; Maben & Bridges, 2020; Pierce et al., 2020). A survey carried out in eight European countries reported that 59%–65% of nurses and physicians reported moderate or severe/extreme depression, anxiety and stress (Hummel et al., 2021). Compared with the previous Chinese nurses' mental health status under normal conditions (Xin et al., 2019), nurses who worked at the frontline during the COVID-19 pandemic reported having psychological stress response with more serious mental health symptoms, and 85.37% nurses had psychological problems, such as somatization, obsessive–compulsive, interpersonal sensitivity, anxiety, hostility and phobic anxiety (Xu & Zhang, 2020). And for other healthcare professionals, although they did not work at the frontline, nearly one-third suffered from sleep and mental problems during the COVID-19 pandemic (Zhang et al., 2021; Zheng et al., 2021).

The mental and physical health of nurses is critical in safeguarding the quality of medical service. In the face of the continuing pandemic, nurses have suffered psychosomatic exhaustion, affecting their ability to cope with the problems of work and life in general (Chidiebere Okechukwu et al., 2020; Jiang et al., 2020). If nurses' mental health issues are not treated in time, they could persist for between 1 and 3 years and lead to thoughts of suicide and even suicide itself (Chidiebere Okechukwu et al., 2020; Liu et al., 2020).

The World Health Organization (WHO) has attached great importance to the impact of public health events on the mental health of the public and healthcare professionals. In China, the 'Guidelines on emergency psychological crisis intervention for COVID-19 infection' were promoted in January 2020 (The Central People's Government of the People's Republic of China, 2020). Previous studies have found that psychological support, such as network intervention (Chen et al., 2021; He et al., 2020), stress management (Wang et al., 2020), individual counselling (Kameno et al., 2021) and relaxation training (Liu et al., 2021), can relieve the frontline care providers' mental health issues, such as anxiety, depression and insomnia; decrease the level of stress perception; alleviate psychological fatigue; and improve work efficiency during the COVID-19 outbreak. Considering the arduous, long-term task of COVID-19 prevention, sufficient psychological support should be offered to clinical nurses, with an emphasis on effective coping strategies.

Acceptance and commitment therapy (ACT) is one of the third-generation cognitive behavioural therapy that aims to promote psychological flexibility. The two core skills of ACT are acceptance and mindfulness processes and commitment and behaviour change processes (Hayes et al., 2012). Numerous evidence from systematic

reviews have reported the positive effects of the ACT for depression, anxiety and subjective well-being through improving psychological flexibility among clinical and non-clinical people (Gloster et al., 2020; Stenhoff et al., 2020). Compared with alternative methods, the ACT had supporting findings on the effectiveness on patients' problems, such as depression, anxiety, chronic pain and cancer adaptation (Du et al., 2021; Mathew et al., 2021; Twohig & Levin, 2017). Meanwhile, the ACT showed positive effects in healthcare professionals working with dementia by reducing anxiety and burnout (Montaner et al., 2021) and could reduce perceived stress and improve psychological flexibility of nurses working in psychiatric wards (Zarvijani et al., 2021).

The aim of this study was to evaluate the effectiveness of a group-based ACT support programme in relieving mental health issues among clinical nurses during COVID-19. The study also aimed to provide effect size information for future studies with greater statistical power.

2 | METHODS

2.1 | Study design and settings

This quasi-experimental study was conducted with clinical nurses working in four tertiary general hospitals in Xuzhou City of China from June 2020 to July 2021.

2.2 | Participants

Participants met the following inclusion criteria: (1) nurses providing care to patients in hospital during the COVID-19 pandemic and (2) nurses willing to participate in this study. For this programme would lasted nearly 5 months, nurses that had a plan to leave nursing/the facility within half a year were excluded from the study.

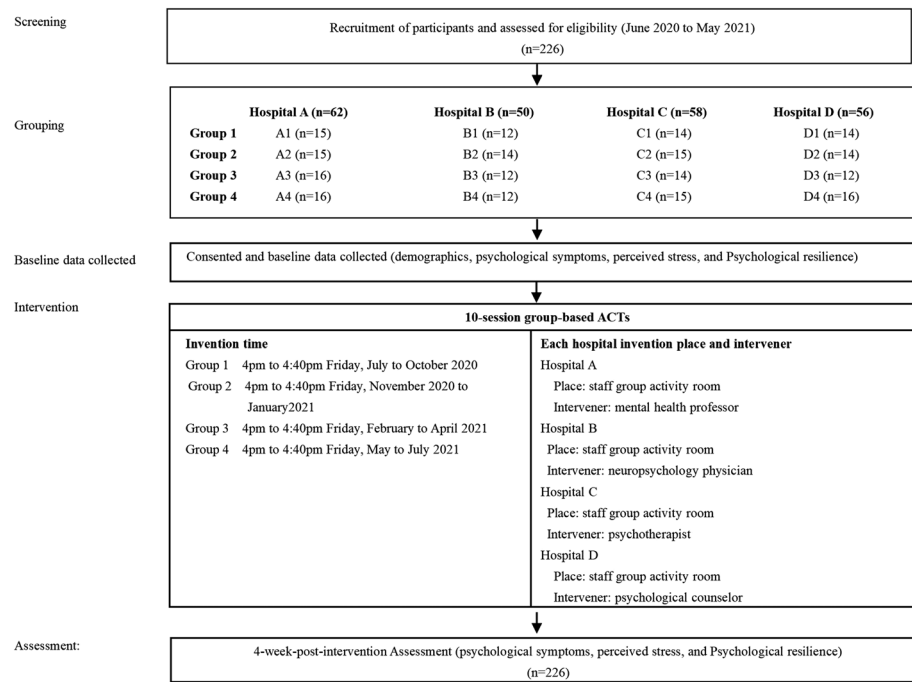
2.3 | Sample size and sampling

In this study, G*Power program version 3.1.9.7 was used to calculate the sample size, and a Cohen's *d* of 0.30, a significance level of 0.05 and power of 0.90 were used for the calculation (Zarvijani et al., 2021), with an estimated sample size of 119. However, more participants were recruited into this study. The participants were selected using the convenience sampling and snowball sampling method. The study flow diagram was shown in Figure 1.

2.4 | Intervention

Following our previous survey results of nurses' psychological support needs and established the skills of ACT (Harris, 2009), we developed

FIGURE 1 Study flow diagram



the group-based ACT programme for clinical nurses, incorporating psychoeducation and ACT techniques. The programme consisted of two modules focused on work and daily life, and each module involved five 40-min sessions (Table 1). Considering the nurses 5-day work schedule, sessions took place every Friday afternoon in the staff activity rooms at the four hospitals. The program lasted 10 weeks. The participants were encouraged to practice mindfulness every day during and after the programme. The ACT sessions were delivered by a psychological-training group, which consisted of a mental health professor, a neuropsychology physician, a psychotherapist and a psychological counsellor. All psychological-training group members were trained in the ACT programme. A checklist detailing the essential components of each session was used to ensure that the sessions were delivered appropriately.

2.5 | Measurements

The data including demographics, mental health issues, perceived stress and psychological resilience were collected. Attendance for each nurse was recorded based on their sign-in times for the sessions.

2.5.1 | Mental health

The Symptom Checklist-90 (SCL-90) (Zhou et al., 2021) was used to assess the mental health issues of the nurses. The SCL-90 covered self-reported symptoms with 90 items, divided into nine subscales: somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism. The items were assessed using a 5-point Likert scale

with 1–5 representing the severity of the symptoms. A higher score reflected a higher frequency and intensity of mental health issues. As a classical scale to evaluate psychological distress and symptoms, the SCL-90 is usually used to assess the psychological impact of a pandemic (Tian et al., 2020). The Cronbach's alpha for the nine subscales ranged from 0.78 to 0.88 among Chinese nurse (Xin et al., 2019), and the alpha reliabilities of the subscales used for this sample were 0.81–0.89.

2.5.2 | Perceived stress

The Perceived Stress Scale (PSS) (Nielsen et al., 2016) was used to assess clinical nurses' stress. The PSS has 14 items and adopts a 5-point Likert scale of 0–4 representing the severity of stress. A higher score reflected higher perceived stress. 0–28 points indicate normal pressure, 29–42 points indicate high pressure, and 43–56 points indicate excessive pressure. The Cronbach's alpha of PSS in adult Chinese population was 0.75 (Yang & Huang, 2004), and the alpha reliability for this sample was 0.79.

2.5.3 | Psychological resilience

The Connor–Davidson Resilience Scale (CD-RISC) was used to measure the psychological resilience—a positive psychological quality in helping individuals adapt to adversity. The CD-RISC comprised 25 items, each rated on a 5-point scale, with higher scores reflecting greater resilience (Connor & Davidson, 2003). The Cronbach's alpha coefficient of CD-RISC for Chinese adults was 0.91 (Lu et al., 2016), and the alpha reliability for this sample was 0.89.

TABLE 1 Content of group-based acceptance and commitment therapy

| Module | Sessions | Key components |
|---------------|--------------------|---|
| Enjoy work | Work value | <ul style="list-style-type: none"> • Introduction: Background of acceptance and commitment therapy; play the game of 'T' puzzle to create and deal with hopelessness • Clearing value in work: Mindfulness practices such as 'imagine your retirement celebration banquet' • Education: Mindfulness and its significance for personal health |
| | Acceptance | <ul style="list-style-type: none"> • Discussion: Conflict caused by communication in work • Acceptance: Psychological games such as 'push folder' • Mindfulness practice: Seven steps of washing hands • Education: Communication skills among colleagues, nurse patient communication skills |
| | Cognitive defusion | <ul style="list-style-type: none"> • Case discussion: Our bad emotion or thoughts and emotion management • Cognitive defusion: 'Thoughts on the card' matrix • Mindfulness practice: Accepting emotions/thoughts • Education: The importance and methods of emotion management |
| | Being present | <ul style="list-style-type: none"> • Discussion: Working stress • Relaxation techniques: Abdominal breathing and muscle relaxation • Being present: Breathing and thinking mindfulness practice • Education: Classification of stress, and its effect on physical and mental health |
| | Acting | <ul style="list-style-type: none"> • Discussion: Reviewing and reflecting on what has been accomplished since the first session • Mindfulness practice: Mindfulness breathing • Education: Patients' psychological problems, influence factors and treatment skills |
| Positive life | Unhooking | <ul style="list-style-type: none"> • Discussion: The conflict between work and family • Self as context: Mindfulness practices such as 'processing of you' • Education: The methods of balancing work and life |
| | Life value | <ul style="list-style-type: none"> • Discussion: The meaning of life • Clearing value in life: Fill in the 'values compass' for identifying values and goals and link those values to action plans • Mindfulness practices: 'Imagine your 80th birthday' • Education: Positive psychology and its importance for nurses' life |
| | Grounding | <ul style="list-style-type: none"> • Discussion: Parent child relationship and parenting style • Awareness present mindfulness practice • Education: Positive upbringing and the process of parent-child interaction |
| | Making room | <ul style="list-style-type: none"> • Discussion: Intimacy relationship and marriage status • Acceptance: Accepting emotions/thoughts • Education: Men and women's different attitudes towards marriage, the skills of establishing intimate relationship |
| | Being kind | <ul style="list-style-type: none"> • Discussion: The influence of interpersonal relationship on personal life and work • Cognitive defusion: 'Checkerboard' matrix, eating raisin mindfulness exercise • Education: How to create a harmony interpersonal relationship |
| | Acting | <ul style="list-style-type: none"> • Values examination: Reviewing and reflecting on what has been accomplished since the first session • Mindfulness practice: ACT mindfulness • Summary and conclusions |

2.6 | Data collection and ethical considerations

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of the Affiliated Hospital of Xuzhou Medical University (XYFY2020-KL048-01). We selected participants by using an online electronic consent form, and a basic information questionnaire was sent to candidate nurses. Subsequently, the researcher reviewed the questionnaire and sent invitations to those who qualified for inclusion. Following agreement, participants completed pre-intervention measurement by online questionnaire and participated in ACT sessions that they needed and interested. The online questionnaire was sent to

participants at 4-week post-intervention. Participants who attended the programme would receive a gift after each session. They were also made aware of their right to withdraw their participation at any time. All participants were anonymous.

2.7 | Statistical analysis

Data were analysed using SPSS Version 22.0. A descriptive analysis, including the percentages, means and standard deviation (SD), was conducted to describe the participants' characteristics, SCL-90, PSS and CD-RISC data. For efficacy analysis, differences in scores were

determined using the paired sample *t*-test for normal data and the Mann–Whitney *U* test for non-normal data. The Pearson correlation coefficient was used to identify relationships between attendance and rates of change for SCL-90, PSS and CD-RISC.

TABLE 2 Demographic information of participants (*n* = 226)

| Variable | No. (%) |
|---------------------------|------------|
| Gender | |
| Female | 215 (95.1) |
| Male | 11 (4.9) |
| Age (year) | |
| ≤30 | 140 (61.9) |
| 31–40 | 67 (29.6) |
| 41–50 | 169 (7.1) |
| 51–60 | 3 (1.3) |
| Marital status | |
| Married | 159 (70.4) |
| Unmarried/divorced | 67 (29.6) |
| Educational level | |
| Diploma | 6 (2.6) |
| Bachelor | 217 (96.1) |
| Master | 3 (1.3) |
| Working experience (year) | |
| ≤5 | 56 (24.8) |
| 6–10 | 115 (50.9) |
| 11–20 | 35 (15.5) |
| >20 | 20 (8.8) |
| Job category | |
| Clinical nurse | 190 (84.1) |
| Nursing manager | 36 (15.9) |

3 | RESULTS

3.1 | Characteristics of the participants

Two hundred twenty-six nurses joined and completed the programme. The mean age of participants was 32.33 (6.82), and 215 (95.1%) participants were female. One hundred fifty-nine (70.4%) nurses were in married status, and 217 (96.0%) had bachelor educational level. The mean working experience was 8.37 (2.61) years, and 190 (84.1%) nurses engaged in clinical nursing. The demographic information of participants is shown in Table 2. The mean number of sessions attended by the nurses was 5.78, ranging from 3 to 10. Eighty-seven (38.5%) nurses attended 10 sessions, and 63 (27.9%) nurses attended from five to nine sessions.

3.2 | Comparison of nurses' psychological state between baseline and post-intervention

The scores of SCL-90 and eight subscales (somatization, obsessive–compulsive, depression, anxiety, hostility, phobic anxiety, paranoid ideation and psychoticism) were significantly lower at 4-week post-intervention than at pre-intervention ($P < 0.01$). The interpersonal sensitivity subscale was significantly higher at the post-intervention compared with the pre-intervention ($t = -7.54$, $P < 0.01$). There were no significant changes of PSS and CD-RISC between pre-intervention and post-intervention (Table 3).

3.3 | Relationship between attendance and the rate of change for SCL-90, PSS and CD-RISC

The rate of change score = absolute (post-intervention score – baseline score)/baseline score. The decrease rate of

TABLE 3 Comparison of clinical nurses' psychological status between baseline and post-intervention (*n* = 226)

| Outcomes | Pre-intervention Mean (SD) | Post-intervention Mean (SD) | <i>t</i> | <i>P</i> | 95%CI |
|---------------------------|----------------------------|-----------------------------|----------|----------|--------------|
| SCL-90 | 156.96 (50.98) | 136.69(44.76) | 4.49 | 0.000 | 11.40, 29.14 |
| Somatization | 1.66(0.57) | 1.49(0.47) | 3.45 | 0.001 | 0.07, 0.27 |
| Obsessive–compulsive | 2.06(0.64) | 1.75(0.67) | 5.07 | 0.000 | 0.19, 0.43 |
| Interpersonal sensitivity | 1.82(0.64) | 2.33(0.91) | –7.54 | 0.000 | –0.70, 0.41 |
| Depression | 1.88(0.68) | 1.58(0.62) | 4.84 | 0.000 | 0.18, 0.42 |
| Anxiety | 1.70(0.60) | 1.50(0.52) | 3.84 | 0.000 | 0.10, 0.31 |
| Hostility | 1.72(0.65) | 1.56(0.62) | 2.76 | 0.006 | 0.05, 0.28 |
| Phobic anxiety | 1.51(0.58) | 1.35(0.48) | 3.26 | 0.001 | 0.06, 0.26 |
| Paranoid ideation | 1.62(0.59) | 1.41(0.47) | 4.12 | 0.000 | 0.11, 0.31 |
| Psychoticism | 1.58(0.58) | 1.38(0.49) | 4.10 | 0.000 | 0.11, 0.31 |
| PSS | 37.38(7.96) | 36.88(7.06) | –0.72 | 0.472 | –1.90, 0.88 |
| CD-RISC | 58.35(18.39) | 59.50(18.18) | –0.67 | 0.506 | –4.53, 2.23 |

SCL-90 = $(156.96 - 136.69) / 156.96 = 0.129$; the decrease rate of PSS = $(37.38 - 36.88) / 36.88 = 0.014$; the increase rate of CD-RISC = $(59.50 - 58.35) / 58.35 = 0.020$. There was no significant relationship between attendance and the rate of change of SCL-90, PSS and CD-RISC score ($P > 0.05$). The Pearson correlation coefficient between the decrease rates of SCL-90 and PSS was -0.501 , between the decrease rate of SCL-90 and the increase rate of CD-RISC was 0.398 , and between the decrease rate of PSS and the increase rate of CD-RISC was 0.512 . These correlations were significant ($P < 0.01$) (Table 4).

4 | DISCUSSION

This quasi-experimental study is one of a few to develop and evaluate a group-based ACT programme for clinical nurses, especially for those who have provided care to patients in hospital during the COVID-19 pandemic. Compared with the pre-intervention, the participants showed lower mental health symptoms at post-intervention. The results of this study are in line with O'Brien et al. (2019) findings. O'Brien et al. (2019) developed a group-based ACT programme and conducted a study in the United States with 71 nurses and nurse aides and concluded that ACT could help reduce mental health symptoms. In this ACT programme protocol, the six key psychological skills (acceptance, cognitive defusion, self-as-context, mindfulness, clearing values and acting) were incorporated in two modules, which directly targeted improving psychological flexibility (Hayes et al., 2012). Furthermore, psychological health education and problem-solving strategies focused on nurses' psychological needs were also included in this ACT programme, which could help clinical nurses learn more psychological knowledge and skills of self-adjustment. This may be the reason for the observed change in mental health symptoms.

Changes in perceived stress and psychological resilience were not found in this study. This was consistent with the previous study, which showed that an employee assistance programme could not relieve the stress of medical staff during the COVID-19 pandemic (Wang et al., 2020). However, this finding was not consistent with Zarvijani et al. (2021), whose study found that ACT could reduce

psychiatric nurses' perceived stress. The reason might be that Zarvijani et al. carried their study in 2018 when the COVID-19 pandemic had not occurred. However, unchanged perceived stress was particularly notable given that it occurred during the COVID-19 pandemic. Our participants' score of perceived stress (pre-intervention: 36.88; post-intervention: 37.38) was lower than the nurses (38.11) who worked at COVID-19 pandemic frontline (Feng et al., 2021).

In the present study, we found that the decrease rate of mental health was positively associated with the decrease rate of perceived stress and positively associated with the increase rate of resilience after the intervention. These results were in accordance with previous research in the therapy of stress among psychiatric nurses (Zarvijani et al., 2021), which reported that the variations in psychological flexibility during. Long-term mental health distress may lead to disruptions in work performance and daily life, and studies have recommended that ACT improving psychological flexibility may cause a decrease of mental health symptoms (Ost, 2014). Our findings demonstrate that the ACT programme might also play a protective role in relieving clinical nurses' stress and improving psychological resilience, and the nurses with symptoms of stress may make a profit from a structured ACT intervention.

This study found that attending time was not related to the change rate of the nurses' psychological status. In this programme, the participants were encouraged to participate in all 10 sessions, but could choose to attend some sessions according to their own needs and interested. Mean attendance of the programme sessions was 5.78, which is comparable with other ACT programme (Jin et al., 2022; McCormick et al., 2022), which showed our programme was feasible and well acceptable. During the intervention, the nurses were not required to accept the content of intervener's thoughts, rather to be encouraged to accept their own thoughts as they were. The major assumption of ACT is that the psychological distress is a normal component of human experience (Hayes et al., 2012). Given that the nurses always face work pressure and confliction between work and daily life (Puspita et al., 2021), unsuitable coping strategy, such as avoidance, could exacerbate distress and reduce the quality of life. The ACT could help nurses find ways to accept their distress and help them to communicate with their experiences in different ways and enable them to fully integrate into meaningful and value-based life. Our findings indicated that nurses could get beneficial by attending their needed and interested sessions. This also suggests that the nursing management team should consider the flexibility and autonomy for participant when providing psychological support.

TABLE 4 Relationship between attending times and the changed psychological status scores rate

| Variables | Pearson correlation coefficient | | | |
|--------------|---------------------------------|-------------|----------|--------------|
| | ASSTs | DR (SCL-90) | DR (PSS) | IR (CD-RISC) |
| | 1 | | | |
| DR (SCL-90) | 0.036 | 1 | | |
| DR (PSS) | 0.063 | 0.501** | 1 | |
| IR (CD-RISC) | 0.039 | 0.398** | 0.512** | 1 |

Abbreviations: ASSTs, attending supporting session times; DR (SCL-90), the decrease rate of SCL-90 score; DR (PSS), the decrease rate of PSS score; IR (CD-RISC), the increase rate of CD-RISC score.

** $P < 0.01$.

5 | LIMITATIONS

The limitations of this study need to be considered. First, the research was undertaken in four general hospitals in the eastern coastal area of China, which may lead to heterogeneity of the sample. Second, different interveners trained the nurses on the same day in different locations, which could reduce the fidelity and consistency of intervention

programme. Third, the use of self-administered subjective questionnaires and lack of objective indicators may lead to bias in the results. Finally, the self-controlled design weakened the internal validity of the study, and a randomized controlled trial is needed to improve internal validity.

6 | CONCLUSION

This study developed a group-based ACT programme for clinical nurses that included 10 sessions focused on work and daily life. The programme provided nurses right to attend the sessions according to their needs and interests, and this study found that the programme was feasible and acceptable. This ACT programme could relieve mental health symptoms for clinical nurses and protect clinical nurses' perceived stress and psychological resilience. The attendance was not related the change of nurses' psychological status. The programme may be adapted not only to pandemics but also to other crisis situations. However, a randomized controlled trial is needed to confirm the findings.

7 | IMPLICATION FOR NURSING MANAGEMENT

This study preliminarily tested the effect of a group-based ACT programme on nurses' mental health, adding new information in the field of psychological intervention in the view of nursing management team. Given COVID-19's infectiousness, high spread speed and long duration, clinical nurses will stay in the 'COVID-19 pandemic' for a long time, which may affect their physical and mental health and then may affect the quality of nursing. The nurses' psychological support programme should be considered as one of managers' routine work. For the support resources, managers should concern the issues related clinical nurses' professional work and daily life, and for the support patterns, managers could provide flexible optional psychological supports for nurses.

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CONFLICT OF INTEREST

None declared.

ETHICS STATEMENT

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Ethics Committee of the Affiliated Hospital of Xuzhou Medical University (XYFY2020-KL048-01). All participants signed an informed consent

form, and those who attended the programme would receive a gift after each session. They were also made aware of their right to withdraw their participation at any time. All participants were anonymous.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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