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- **Yuliana** (**Dafroyati**)

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Cordially, Prof. Dr Mirko Spiroski	

SettingsDear Editor I send proof of payment of the article, Yuliana Dafroyati et al...   Thank you Suparjipay-oamjms-20220425-yuliana dafroyati.pdf

Dear corresponding author,

Thank you very much for your transfer of the Publication Fee. Your manuscript was sent for preparation of Galley Proof and you will receive it very soon.

Best regards,
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yuliana dafroyati

2022-04-24 08:25 PM
mspiroski
2022-05-02 12:25 PM

Cognitive Behavior Therapy (CBT) lowers Anxiety Levels of Pregnant Women during the Covid 19 Pandemic in Health Centers

[1]Yuliana Dafroyati, [2]Ririn Widyastuti, [3]Suparji, Suparji

[1] Department of Nursing, Health Polytechnic Ministry of Health Kupang, Indonesia;
yulianambedon@gmail.com
[2]Department of Midwifery, Health Polytechnic Ministry of Health Kupang, Indonesia;
ririenwidyastuti@gmail.com
[3]Department of Midwifery, Health Polytechnic Ministry of Health Surabaya, Indonesia;
suparjiyozabri@gmail.com

*Correspondence: [1]Yuliana Dafroyati, Department of Nursing, Health Polytechnic Ministry of Health Kupang, Indonesia; yulianambedon@gmail.com

Abstract

Background: Corona virus disease (Covid 19) is an infectious disease caused by the SARS-CoV-2 virus. Pregnant women are considered a vulnerable or at-risk group during covid-19. Pregnancy during the covid-19 pandemic can cause high anxiety for pregnant women. Cognitive behavior therapy (CBT) interventions used can prevent the occurrence of anxiety and depression of pregnant women. **Aim:** to find out the influence of cognitive behavior therapy (CBT) of pregnant women who experience anxiety during the covid 19 pandemic at Sikumana Health Center, Kupang City, East Nusa Tenggara Province, Indonesia. **Methods:** Quasi experimental design with pre design and post test design at Sikumana Health Center, Kupang City, East Nusa Tenggara Province, Indonesia. The sample of 80 respondents consisted of 40 intervention group respondents and 40 respondents of the control group. Taylor Minnesota Anxiety Scale (TMAS) questionnaire was used as an instrument in this study. Intervention was held by giving CBT therapy for 10 sessions of meetings in an hour. The control group was given treatment in the form of minimum midwifery standard care (10T) while the intervention group was given therapy in the form of CBT and minimum midwifery standard care (10T). The control group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction and mind notes. The Mann Whitney Test was used as data analysis techniques in this research. Thus, SPSS was used as a data analysis application. **Results:** There was a significant difference between the pretest TMAS score and after the CBT intervention. There was a decrease in the level of anxiety, namely from the TMAS pretest score of 44.49 to 28.70 and the value Z pretest -1,769, Z post test -5,204 and p = 0.000 (p<00.005). In the control group, there was no meaningful difference between the TMAS pretest and posttest scores. **Conclusion**: Cognitive Behavior Therapy (CBT) effectively lowers anxiety levels in pregnant women during the Covid 19 pandemic at Sikumana Health Center, Kupang City, Indonesia.

Introduction

Corona virus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. WHO raised the status of covid-19 globally to a worldwide pandemic including Indonesia [1]. The Covid 19 pandemic causes global impacts including general health and

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Comment [A1]: COVID-19

Comment [A2]: You only picked 1 location. Why mention here "centers"?

Comment [A3]: Try to reduce the words in abstract.
Make it more concise and informative!

Comment [A4]: Coronavirus

Comment [A5]: Covid 19

Please be consistent to use this term for the whole manuscript!

Comment [A6]: as

Comment [A7]: Should improve the English expression.
Use the common terms in research article.
You may use "To investigate" or "To examine", etc.

Comment [A8]: COVID-19

Comment [A9]: It's unnecessary to put the specific location.

Comment [A10]: It'd be better to preceed with "**This study** used quasi experimental design with …."

Comment [A11]: You don't have to put specific location in detail.
Instead, you may write "at a Health Center located in East Nusa Tenggara Province, Indonesia".

Comment [A12]: Be consistent, just use "study" rather than "research".

Comment [A13]: No need to write down the software in the abstract.

Comment [A14]: If the p-value as shown in the SPSS 0.000, just write down p < 0,001.

A p-value of 0.000 may indicates an error.

Comment [A15]: 00.005?

Comment [A16]: No need to mention specific location and too repetitive.

Comment [A17]: Coronavirus

Comment [A18]: COVID-19

Be consistent!

mental health. The high cases of Covid 19 increase the risk of depression and anxiety [2]. Pregnant women are considered a high-risk population of Covid 19 [3], [4]. Pregnancy is a natural process that occurs in women, ranging from conception to birth with physical, emotional and social changes [4]. During pregnancy there are physiological changes and hormonal changes that decrease immunity so that they are susceptible to get infected [2]. Covid 19 pandemic has a psychological impact on pregnant women. It increases anxiety during pregnancy [3].

Some studies report that the period of pregnancy is a time characterized by an increased risk of emotional disorders such as depression, anxiety and trauma-related disorders [5]. About 21% of pregnant women suffered from anxiety during the Covid 19 and significant predictors of anxiety during the pandemic included the number of pregnancies, practices regarding Covid 19, Covid 19 anxiety, depression, and social support [4]. During pandemic, pregnant women in the second and third trimesters of pregnancy were more worried; the total health anxiety score was significantly higher among pregnant women in the third trimester of pregnancy [6]. The prevalence of anxiety of pregnant women in China is higher during Covid 19 than before Covid 19. During pandemic, pregnant women in the second and third trimesters were more worried about the condition. Thus, the anxiety score was highest in the third trimester pregnant women [3].

One way to deal with mental health problems such as anxiety and depression is ~~to use~~ behavioral cognitive therapy (CBT). CBT intervention is effectively given to postpartum mothers to prevent the occurrence of depression and anxiety. CBT was done in 9 weeks, carried out every week with one hour, can meaningfully reduce the incidence of depression in post partum mothers [7]. Other studies showed that the effect of Mindfulness-integrated Cognitive Behavior Therapy in pregnant women showed significantly lower reductions in the average scores of anxiety and depression in the experimental group than the control group [8].

The purpose of this study was to find out the effect of cognitive behavior therapy (CBT) on anxiety in pregnant women during the Covid 19 pandemic at Sikumana Health Center, Kupang City, East Nusa Tenggara Province, Indonesia.

Methods

This study used a ~~Quasi~~ quasi experimental design with pre ~~design~~ and post test ~~design at Sikumana Health Center, Kupang City, East Nusa Tenggara Province, Indonesia~~. The population in this study was pregnant women in the working area of Sikumana Health Center, Kupang City, East Nusa Tenggara, Indonesia which amounted to 508 respondents. This study was held from January to May 2021. Purposive random sampling was used as a sampling technique. The inclusion criteria in this study were pregnant women trimester I, II and III in the working area of Sikumana Health Center, Kupang City and they were willing to be studied. The exclusion criteria in this study were pregnant women with a history of previous mental disorders and a history of psychotropic substance use. The sample count was determined based on Slovin's 80 respondents consisting of 40 control groups and 40 intervention groups. The independent variable in the study was cognitive behavior therapy (CBT). Dependent variables were anxiety levels and outside variables were maternal age, education, gestational age and gravida. Researchers used a questionnaire as an instrument. Taylor Minnesota Anxiety Scale (TMAS) was used in this study. The questionnaire consists of 50 questions with alternative answers of 1 for 'yes' and 0 for 'no'. A respondent expressed anxious when the TMAS score ≥ 21 and was not anxious when TMAS ≤ 21. The category of anxiety level was divided into 3, namely low anxiety with a TMAS score of ≤ 20, moderate

Comment [A19]: COVID-19

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Comment [A21]: COVID-19

Comment [A22]: Elaborate the mechanism how COVID-19 increases the anxiety among this population.

Comment [A23]: COVID-19

Comment [A24]: COVID-19

Comment [A25]: COVID-19

Comment [A26]: How about the prevalence of anxiety in Indonesian pregnant women before and during the pandemic still happening?

Comment [A27]: Why? Please explain it more detail.

Comment [A28]: Try to rewrite the result from previous study more propery.

Comment [A29]: So why don't you measure this variable in this study?

Comment [A30]: What is the significance of this study, since there were studies showing that CBT have found effective to lower anxety among pregant women?

Comment [A31]: Please begin the last paragraph with a summary of the introduction above.

Comment [A32]: Find other terms to replace it!

Comment [A33]: No need to put the location specifically.

Comment [A34]: No need to put the specific location. Please follow the suggestion in the abstract above.

Comment [A35]: Please rewrite the sentence.

Comment [A36]: No need to specify the location!

Comment [A37]: Rewrite the sentence, Make it more clearly!

Comment [A38]: Please mention it more detail! How to get 80 respondents ffrom 508 population? ...

Comment [A39]: What is outside variables

Comment [A40]: Make it in one sentence!

anxiety with a TMAS score of 20 - 35 and severe or high anxiety with a TMAS score of ≥ 25. Procedure:

Ethical clearance was obtained before the collection of data based on the research permission letter no LB.02.03/1/0113/2020 dated December 16, 2020 from the Health Polytechnic Ministry of Health Kupang. Data collection was done by giving information to the respondents directly at the time of visit to the health center. Once the respondent met the criteria of inclusion and exclusion, the respondent signed an inform concern as a sign of approval that they agreed to participate in research activities for 10 sessions of meetings in an hour. Respondents were randomly selected as many as 80 respondents. Then, respondents filled out the TMAS questionnaire. After completing the TMAS questionnaire, respondents were divided into two groups, namely the intervention group and the control group. The control group was given treatment in the form of minimum midwifery standard care (10T) while the intervention group was given therapy in the form of CBT and minimum midwifery standard care (10T). The intervention group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction and mind notes. The data analysis technique in this study quantitatively analyzed differences in anxiety of pregnant women during the Covid 19 period in pretest and post test collection using the Mann Whitney Test. SPSS software was used in analyzing the data.

Results

Table 1 The Frequency distribution characteristics of demographic data intervention and control group at Sikumana Health Center, Kupang City, East Nusa Tenggara (n=80)

Variable	Intervention/CBT (n=40)	Control (n=40)
Age		
High risk (<20 years old)	2 (5.0%)	0 (0.0%)
Normal (20-35 years old)	28 (70.0%)	33 (82.5%)
High risk (> 35 years old)	10 (25.0%)	7 (17.5%)
Education		
Junior high school	6 (15%)	6 (15%)
Senior high school	24 (60%)	23 (57.5%)
Diploma	1 (2.5%)	1 (2.5%)
Bachelor	9 (22.5%)	10 (25%)
Occupation		
Housewife/unemployed	27 (67.5%)	27 (67.5%)
Civil servant	4 (10%)	5 (12.5%)
Self employed/entrepreneurial	9 (22.5%)	8 (20%)
Gestational age		
Trimester I	5 (12.5%)	6 (15.0)
Trimester II	16 (40%)	15 (37.5%)
Trimester III	19 (47.5%)	19 (47.5%)
Gravida		
Primigravida	20 (50%)	18 (45%)
Multigravida	19 (47.5%)	20 (50%)
Grand multipara	1 (2.5%)	2 (5.0%)

Table 1 shows that most of the respondents' ages were 20-35 in either the intervention or control group. In education aspect, most of them were graduated from high school. Thus,

Comment [A41]: How to get the score?
Explain the scoring system of this instrument.

Comment [A42]: Merge the sentence!

Comment [A43]: Have you mention it in detail before?

Comment [A44]: You did mention the bivariate test.
How about the descriptive statistics such as frequency, percentage, and mean as written in the results section?

Comment [A45]: Why did you use this kind of non parametric test? Have you done the normality test prior to use this bivariate statistic?

Comment [A46]: Alpha significance?

Comment [A47]: Too repetitive!

Comment [A48]: Have you mention in the method section that <20 years old respondents were at high risk?

Comment [A49]: Use 1st Trimester, 2nd, 3rd ....

in occupation aspect; most of the respondents were unemployed. Most gestational ages were in the second and third trimesters and belong to the primigravida and multigravida groups.

Tabel 2 Anxiety Level of Pregnant Women ~~at Sikumana Health Center, Kupang City, East Nusa Tenggara, Indonesia~~ (n =80)

Variabel	Intervention/CBT (n=40)	Control (n=40)
Pre-Test		
No anxiety	5 (12.5%)	0 (0.0%)
Low anxiety	17 (42.5%)	2 (5.0%)
Moderate anxiety	18 (45%)	31 (77.5%)
High anxiety		7 (17.5%)
Post Test		
No anxiety	4 (10%)	0 (0.0%)
Low anxiety	21 (52.5%)	2 (5.0%)
Moderate anxiety	14 (35.0%)	31 (77.5%)
High anxiety	1 (2.5%)	7 (17.5%)

Table 2 shows that 18 respondents (45%) experienced moderate anxiety in the intervention group. While 7 respondents (17.5%) and 31 respondents (77.5%) are highly and moderately anxious in the control group. Post-test results shows that there is a decrease in stress levels in the intervention group / CBT, namely high anxiety to 1 respondent (2.5%). Thus, there is no change of anxiety level in control group.

Table 3 Cognitive behavior therapy lowers Anxiety Levels of Pregnant Women during Covid 19 ~~at Sikumana Health Center in Kupang City, East Nusa Tenggara Province, Indonesia~~

Characteristic	TMAS Pretest		TMAS Posttest		Z		p-value	
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Pretest	Posttest	Pretest	Posttest
CBT	44.49	1779.50	28.70	1148.00	-1.769	-5.204	0.077	0.000
Kontrol	36.51	1460.50	52.30	2092.00				

Table 3 shows that there is a meaningful difference between the TMAS pretest score and after being given CBT treatment. There is a decrease in the level of anxiety, namely from the TMAS pretest score of 44.49 to 28.70 and the value Z pretest -1,769, Z post test -5,204 and p = 0.000 (p<~~0~~0.005). However, in the control group, there is no meaningful difference between the TMAS pretest and posttest scores.

Discussion

Table 2 shows that most pregnant women experience low and moderate anxiety during pandemics in both the intervention group and the control group. Low anxiety levels are 17 respondents (42.5%) and moderate 18 respondents (45%) in the intervention group. The control group showed moderate anxiety 31 respondents (77.5%) and 7 respondents (17.5%) with high anxiety. This is in accordance with the results of research that shows that 93% of pregnant women experience anxiety and stress infected with Covid 19. The mother was

worried about being infected with Covid 19 and worried about her pregnancy [2]. A cross-sectional study of 205 pregnant women in Tabris Iran showed that the average anxiety score was 3.79 (3.39). Anxiety among pregnant women during the Covid 19 is influenced by the level of education, partner support, and gravida [9]. The study showed that most of the respondents' education was high school, with 24 respondents (60%) in the intervention group and 23 respondents (57.5%) in the control group. Most of the respondents were primigravida and multigravida in the second trimester and third trimester in both the intervention group and the control group. The average of total anxiety score was 22.3 ± 9.5, 24.6 ± 9.3 and 25.4 ± 10.6 in the first, second and third trimesters of pregnancy, respectively. 9, 13 and 21% of women experience high anxiety in the first, second and third trimesters of pregnancy. During Covid 19, pregnant women in the second and third trimesters were more worried and anxious during the pandemic. Pregnant women in trimesters II and III were more anxious and worried about getting sick and got infected, thus had more concerns about the disease [10].

Table 3 shows that there are differences in anxiety levels of pregnant women in the intervention group before and after CBT intervention. The anxious score before being given CBT was 44.49, after therapy was given became to 28.70. So it can be concluded that CBT can reduce anxiety of pregnant women during the covid 19. The results of the post-test score difference analysis shows a coefficient of z of -5,204, p=0.000 (p<0.005). This means that there is a difference in anxiety levels of pregnant women during covid 19 in the intervention group after being given CBT therapy. In the intervention group that got CBT interventions, they had lower anxious scores than in the control group that did not get therapy. This means that the research hypothesis is proven.

Pregnancy, childbirth and postnatal can cause stress, hence increase anxiety of the mother and her partner. Anxiety is a whole psychological process that causes changes in cognitive, affective, psychological and behavioral levels [11]. Anxiety disorders are a form of mental disorder. Anxiety disorders often occur during pregnancy up to 12 months after delivery and can have a negative impact on the mother, fetus and baby [12].

Anxiety disorders are influenced by genetic factors, environmental factors and epigenetic factors [12]. Evidence-based psychotherapy (particularly cognitive behavioral therapy) and psychoactive medications (particularly serotonergic compounds) are both effective, facilitating patients' choices in therapeutic decisions [12]. This statement is supported by the results of previous research explained that CBT interventions are effectively given to postpartum mothers to prevent the occurrence of depression and anxiety. CBT is done in 9 weeks, carried out every week with 1 hour session can meaningfully reduce the risk of depression in post partum mothers [7]. The results of another study showed that the administration of the effects of Mindfulness-integrated Cognitive Behavior Therapy of pregnant women showed significantly lower reductions in the average scores of anxiety and depression in the experimental group than in the control group [8]. Anxiety disorders during pregnancy can cause serious consequences for both the mother and fetus. CBT therapy is a psychosocial treatment that has been empirically proven to reduce anxiety disorders [13].

Conclussion

Cognitive behavior therapy (CBT) effectively lowers anxiety of pregnant women during Covid 19 at Sikumana Health Center, Kupang City, Indonesia. The recommendation of this study is that a further research related to emotional support for pregnant women by family and health workers is needed.

Comment [A56]: Try to reduce the use of statistical numbers (results) in the discussion section.

Comment [A57]: Try to reduce the use of statistical numbers (results) in the discussion section.

Comment [A58]: Elaborate.

Comment [A59]: You should mention the limitation of the study in a new paragragh.

Comment [A60]: It the CBT has showed a good effectiveness, why didn't you recommend it to be used in clinical settings?

Ethical considerations

The authors have completely observed ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy).

References

1. WHO. Responding to community spread of COVID-19. Interim Guid 7 March [Internet]. 2020;(March):1–6. Available from: https://www.who.int/publications/i/item/responding-to-community-spread-of-covid-19

2. Dewi A, Safaria T, Wenang S, Dewanto I, An AD, Tri D, et al. The COVID-19 Pandemic : How Does it Affect Pregnant Women ? Open Access Maced J Med Sci [Internet]. 2022;9(T5):60–9. Available from: https://oamjms.eu/index.php/mjms/article/view/7838

3. Cui C, Zhai L, Sznajder KK, Wang J, Sun X, Wang X, et al. Prenatal anxiety and the associated factors among chinese pregnant women during the COVID-19 pandemic-a smartphone questionnaire survey study. BMC Psychiatry [Internet]. 2021;21(1):1–10. Available from: https://doi.org/10.1186/s12888-021-03624-1

4. Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M. Pregnancy-related anxiety and its associated factors during COVID-19 pandemic in iranian pregnant women: A web-based cross-sectional study. BMC Pregnancy Childbirth. 2021;21(1):1–10.

5. Ahmad M, Vismara L. The psychological impact of COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. Int J Environ Res Public Health. 2021;18(13):7112.

6. Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E. Health anxiety and related factors among pregnant women during the COVID-19 pandemic: A cross-sectional study from iran. BMC Psychiatry [Internet]. 2021;21(1):1–7. Available from: https://www.proquest.com/docview/2491418712/fulltextPDF/A199C42D03B44448PQ/35?accountid=208627

7. Cho HJ, Kwon JH, Lee JJ. Antenatal cognitive-behavioral therapy for prevention of postpartum depression: A pilot study. Yonsei Med J [Internet]. 2008;49(4):553–62. Available from: https://synapse.koreamed.org/articles/1030344

8. Yazdanimehr R, Omidi A, Sadat Z, Akbari H. The Effect of Mindfulness-integrated Cognitive Behavior Therapy on Depression and Anxiety among Pregnant Women: a Randomized Clinical Trial. J Caring Sci [Internet]. 2016;5(3):195–204. Available from: http://dx.doi.org/10.15171/jcs.2016.021

9. Effati-Daryani F, Zarei S, Mohammadi A, Hemmati E, Ghasemi Yngyknd S, Mirghafourvand M. Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. BMC Psychol. 2020;8(1):99.

10. Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E. Health anxiety and related factors among pregnant women during the COVID-19 pandemic: a cross-sectional study from Iran. BMC Psychiatry. 2021;21(1).

11. Domínguez-Solís E, Lima-Serrano M, Lima-Rodríguez JS. Non-pharmacological interventions to reduce anxiety in pregnancy, labour and postpartum: A systematic review. Midwifery [Internet]. 2021;102(June). Available from: https://www.sciencedirect.com/science/article/pii/S0266613821002060

12. Penninx BW, Pine DS, Holmes EA, Reif A. Anxiety disorders. In: The Lancet. www.thelancet.com; 2021. p. 914–27.
13. Arch JJ, Dimidjian S, Chessick C. Are exposure-based cognitive behavioral therapies safe during pregnancy? Arch Womens Ment Health. 2012;15(6):445–57.

Cognitive Behavior Therapy (CBT) Lowers Anxiety Levels of Pregnant Women During the COVID-19 Pandemic at Sikumana Health Center

[1]Yuliana Dafroyati, [2]Ririn Widyastuti, [3]Suparji, Suparji

[1] Department of Nursing, Health Polytechnic Ministry of Health Kupang, Indonesia.
[2]Department of Midwifery, Health Polytechnic Ministry of Health Kupang, Indonesia.
[3]Department of Midwifery, Health Polytechnic Ministry of Health Surabaya, Indonesia.

*Correspondence: [1]Yuliana Dafroyati, Department of Nursing, Health Polytechnic Ministry of Health Kupang, Indonesia; yulianambedon@gmail.com

Abstract

Background: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Pregnant women are a vulnerable group or at risk for COVID-19. Pregnancy during the covid-19 pandemic can cause high anxiety for pregnant women. Cognitive behavior therapy (CBT) interventions used can prevent the occurrence of anxiety and depression of pregnant women. **Aim:** knowing the effect of cognitive behavioral therapy (CBT) on the anxiety of pregnant women during the COVID-19 pandemic. **Methods:** This study uses a quasi-experimental design with pre-design and post-test designs. Research location at Sikumana Health Center, Kupang City Indonesia. The sample of 80 respondents consisted of 40 intervention group respondents and 40 respondents of the control group. Taylor Minnesota Anxiety Scale (TMAS) questionnaire was used as an instrument in this study. Intervention was held by giving CBT therapy for 10 sessions of meetings in an hour. The control group was given treatment in the form of minimum midwifery standard care (10T) while the intervention group was given therapy in the form of CBT and minimum midwifery standard care (10T). The control group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction and mind notes. The Mann Whitney Test was used as data analysis techniques in this research. **Results:** There was a significant difference between the pretest TMAS score and after the CBT intervention. There was a decrease in the level of anxiety, namely from the TMAS pretest score of 44.49 to 28.70 and the value Z pretest -1,769, Z post test -5,204 and p-value = 0.001 (p<0.05). In the control group, there was no meaningful difference between the TMAS pretest and posttest scores. **Conclusion**: Cognitive Behavior Therapy (CBT) effectively lowers anxiety levels in pregnant women during the COVID-19 pandemic.

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. WHO raised the status of covid-19 globally to a worldwide pandemic including Indonesia [1]. The COVID-19 pandemic causes global impacts including general health and mental health. The high cases of COVID-19 increase the risk of depression and anxiety [2]. Pregnant women are considered a high-risk population of COVID-19 [3],[4]. Pregnancy is a natural process that occurs in women, ranging from conception to birth with physical, emotional and social changes [4]. During pregnancy there are physiological changes and hormonal changes that decrease immunity so that they are susceptible to get infected [2].

COVID-19 pandemic has a psychological impact on pregnant women. This increases anxiety during pregnancy, the impact of the effects caused by the corinavirus that can cause health problems during pregnancy, to cause death [3].

Some studies report that the period of pregnancy is a time characterized by an increased risk of emotional disorders such as depression, anxiety and trauma-related disorders [5]. About 21% of pregnant women suffered from anxiety during the COVID-19 and significant predictors of anxiety during the pandemic included the number of pregnancies, practices regarding COVID-19, COVID-19 anxiety, depression, and social support [4]. During pandemic, pregnant women in the second and third trimesters of pregnancy were more worried; the total health anxiety score was significantly higher among pregnant women in the third trimester of pregnancy [6]. The prevalence of anxiety of pregnant women in China is higher during COVID-19 than before COVID-19. During pandemic, pregnant women in the second and third trimesters were more worried about the condition. Thus, the anxiety score was highest in the third trimester pregnant women [3].

One way to deal with mental health problems such as anxiety and depression is behavioral cognitive therapy (CBT). CBT intervention is effectively given to postpartum mothers to prevent the occurrence of depression and anxiety. CBT was done in 9 weeks, carried out every week with one hour, can meaningfully reduce the incidence of depression in post partum mothers [7]. Other studies showed that the effect of Mindfulness-integrated Cognitive Behavior Therapy in pregnant women showed significantly lower reductions in the average scores of anxiety in the experimental group than the control group [8]. Another study showed that the effects of Mindfulness Integrated Cognitive Behavioral Therapy on pregnant women showed significantly lower mean scores of anxiety and depression in the experimental group than the control group. This study aims to identify the incidence of maternal anxiety during the COVID-19 pandemic, from the level of anxiety, gestational age, and characteristics of pregnant women.

Methods

This study uses a quasi-experimental design with pre-design and post-test designs. Research location at Sikumana Health Center, Kupang City Indonesia. The sample of 80 respondents consisted of 40 intervention group respondents and 40 respondents of the control group. The independent variable is CBT, the dependent variable is anxiety. The research instrument was the TMAS questionnaire. respondents were divided into two groups, namely the intervention group and the control group. Taylor Minnesota Anxiety Scale (TMAS) questionnaire was used as an instrument in this study. Intervention was held by giving CBT therapy for 10 sessions of meetings in an hour. The control group was given treatment in the form of minimum midwifery standard care, while the intervention group was given therapy in the form of CBT and minimum midwifery standard care. The control group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction and mind notes. In accordance with the research objectives, statistical analysis used the Mann Whitney U-Test statistical test, the error rate was set $< \alpha$ 0.05.

Results

Table 1 The Frequency distribution characteristics of demographic data (n=80)

Variable	Intervention/CBT (n=40)	Control (n=40)
Age		
Normal (20-35 years old)	28 (70.0%)	33 (82.5%)
High risk (<20year > 35 years)	12 (30.0%)	7 (17.5%)
Education		
Junior high school	6 (15%)	6 (15%)
Senior high school	24 (60%)	23 (57.5%)
Diploma	1 (2.5%)	1 (2.5%)
Bachelor	9 (22.5%)	10 (25%)
Occupation		
Housewife/unemployed	27 (67.5%)	27 (67.5%)
Civil servant	4 (10%)	5 (12.5%)
Self employed/entrepreneurial	9 (22.5%)	8 (20%)
Gestational age		
Use1st	5 (12.5%)	6 (15.0)
Use2nd	16 (40%)	15 (37.5%)
Use3rd	19 (47.5%)	19 (47.5%)
Gravida		
Primigravida	20 (50%)	18 (45%)
Multigravida	19 (47.5%)	20 (50%)
Grand multipara	1 (2.5%)	2 (5.0%)

Table 1 shows that most of the respondents' ages were 20-35 in either the intervention or control group. In education aspect, most of them were graduated from high school. Thus, in occupation aspect; most of the respondents were unemployed. Most gestational ages were in the second and third trimesters and belong to the primigravida and multigravida groups.

Tabel 2 Anxiety Level of Pregnant Women (n =80)

Variabel	Intervention/CBT (n=40)	Control (n=40)
Pre-Test		
No anxiety	5 (12.5%)	0 (0.0%)
Low anxiety	17 (42.5%)	2 (5.0%)
Moderate anxiety	18 (45%)	31 (77.5%)
High anxiety		7 (17.5%)
Post Test		
No anxiety	4 (10%)	0 (0.0%)
Low anxiety	21 (52.5%)	2 (5.0%)
Moderate anxiety	14 (35.0%)	31 (77.5%)
High anxiety	1 (2.5%)	7 (17.5%)

Table 2 shows that 18 respondents (45%) experienced moderate anxiety in the intervention group. While 7 respondents (17.5%) and 31 respondents (77.5%) are highly and moderately anxious in the control group. Post-test results shows that there is a decrease in stress levels in the intervention group / CBT, namely high anxiety to 1 respondent (2.5%). Thus, there is no change of anxiety level in control group.

Table 3 Cognitive behavior therapy lowers Anxiety Levels of Pregnant Women during COVID-19

Characteristic	TMAS Pretest		TMAS Posttest		Z		p-value	
	Mean Rank	Sum of Ranks	Mean Rank	Sum of Ranks	Pretest	Posttest	Pretest	Posttest
CBT	44.49	1779.50	28.70	1148.00	-1.769	-5.204	0.077	0.000
Kontrol	36.51	1460.50	52.30	2092.00				

Table 3 shows that there is a meaningful difference between the TMAS pretest score and after being given CBT treatment. There is a decrease in the level of anxiety, namely from the TMAS pretest score of 44.49 to 28.70 and the value Z pretest -1,769, Z post test -5,204 and p-value = 0.001 ($<α$ 0.05). However, in the control group, there was no significant difference between the TMAS pretest and posttest scores.

Discussion

Based on the results of this study, it was found that many pregnant women experienced low anxiety during the COVID-19 pandemic, both in the intervention group and the control group. There is a difference in the average number of mothers who experience anxiety due to the COVID-19 pandemic, between the treatment group and the control group. The results of another study show that around 93% of pregnant women experience anxiety and stress due to being infected with COVID-19. Pregnant women are worried about being infected with COVID-19 and worried that it will have an impact on their pregnancy [2]. A cross-sectional study of 205 pregnant women in Tabris Iran showed that the mean anxiety score was 3.79 (3.39). Anxiety of pregnant women during COVID-19 is influenced by the level of education, partner support, and gravida. The results showed that most of the respondents' education was high school, with 24 respondents (60%) in the intervention group and 23 respondents (57.5%) in the control group. Most of the respondents were primigravida and multigravida in the second and third trimesters in both the intervention group and the control group.During COVID-19, pregnant women in the second and third trimesters were more worried and anxious during the pandemic. Pregnant women in trimesters II and III were more anxious and worried about getting sick and got infected, thus had more concerns about the disease [10].

The results of this study indicate that there are differences in the level of anxiety of pregnant women in the intervention group before and after being given the CBT intervention. There was a decrease in the level of maternal anxiety after the CBT intervention. The picture concludes that CBT intervention can reduce the anxiety of pregnant women during the COVID-19 period. The results of statistical analysis obtained significant results p-value = 0.000 (<0.05). This means that there are differences in the level of anxiety of pregnant women during the COVID-19 pandemic from the intervention group after being given CBT therapy. These results can be concluded that the CBT intervention is quite effective in reducing the anxiety of pregnant women during the COVID-19 pandemic.

Pregnancy, childbirth and postnatal can cause stress, hence increase anxiety of the mother and her partner. Anxiety is a whole psychological process that causes changes in

cognitive, affective, psychological and behavioral levels [11]. Anxiety disorders are a form of mental disorder. Anxiety disorders often occur during pregnancy up to 12 months after delivery and can have a negative impact on the mother, fetus and baby [12].

Anxiety disorders are influenced by genetic factors, environmental factors and epigenetic factors [12]. Evidence-based psychotherapy (particularly cognitive behavioral therapy) and psychoactive medications (particularly serotonergic compounds) are both effective, facilitating patients' choices in therapeutic decisions [12]. This statement is supported by the results of previous research explained that CBT interventions are effectively given to postpartum mothers to prevent the occurrence of depression and anxiety. CBT is done in 9 weeks, carried out every week with 1 hour session can meaningfully reduce the risk of depression in post partum mothers [7]. The results of another study showed that the administration of the effects of Mindfulness-integrated Cognitive Behavior Therapy of pregnant women showed significantly lower reductions in the average scores of anxiety and depression in the experimental group than in the control group [8]. Anxiety disorders during pregnancy can cause serious consequences for both the mother and fetus. CBT therapy is a psychosocial treatment that has been empirically proven to reduce anxiety disorders [13].

Conclussion

The conclusion of this study is that CBT intervention has proven to be effective in reducing anxiety in pregnant women during the COVID 19 pandemic. Recommendations from this study integrate CBT interventions in every health care facility in ante natal care services for pregnant women.

Ethical considerations

The authors have completely observed ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy).

Ethical clearance

Ethical clearance was obtained before the collection of data based on the research permission letter no LB.02.03/1/0113/2020 dated December 16, 2020 from the Health Polytechnic Ministry of Health Kupang.

References

1. WHO. Responding to community spread of COVID-19. Interim Guid 7 March [Internet]. 2020;(March):1–6. Available from: https://www.who.int/publications/i/item/responding-to-community-spread-of-covid-19
2. Dewi A, Safaria T, Wenang S, Dewanto I, An AD, Tri D, et al. The COVID-19 Pandemic : How Does it Affect Pregnant Women ? Open Access Maced J Med Sci [Internet]. 2022;9(T5):60–9. Available from: https://oamjms.eu/index.php/mjms/article/view/7838
3. Cui C, Zhai L, Sznajder KK, Wang J, Sun X, Wang X, et al. Prenatal anxiety and the

associated factors among chinese pregnant women during the COVID-19 pandemic-a smartphone questionnaire survey study. BMC Psychiatry [Internet]. 2021;21(1):1–10. Available from: https://doi.org/10.1186/s12888-021-03624-1

4. Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M. Pregnancy-related anxiety and its associated factors during COVID-19 pandemic in iranian pregnant women: A web-based cross-sectional study. BMC Pregnancy Childbirth. 2021;21(1):1–10.

5. Ahmad M, Vismara L. The psychological impact of COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. Int J Environ Res Public Health. 2021;18(13):7112.

6. Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E. Health anxiety and related factors among pregnant women during the COVID-19 pandemic: A cross-sectional study from iran. BMC Psychiatry [Internet]. 2021;21(1):1–7. Available from: https://www.proquest.com/docview/2491418712/fulltextPDF/A199C42D03B44448PQ/35?accountid=208627

7. Cho HJ, Kwon JH, Lee JJ. Antenatal cognitive-behavioral therapy for prevention of postpartum depression: A pilot study. Yonsei Med J [Internet]. 2008;49(4):553–62. Available from: https://synapse.koreamed.org/articles/1030344

8. Yazdanimehr R, Omidi A, Sadat Z, Akbari H. The Effect of Mindfulness-integrated Cognitive Behavior Therapy on Depression and Anxiety among Pregnant Women: a Randomized Clinical Trial. J Caring Sci [Internet]. 2016;5(3):195–204. Available from: http://dx.doi.org/10.15171/jcs.2016.021

9. Effati-Daryani F, Zarei S, Mohammadi A, Hemmati E, Ghasemi Yngyknd S, Mirghafourvand M. Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. BMC Psychol. 2020;8(1):99.

10. Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E. Health anxiety and related factors among pregnant women during the COVID-19 pandemic: a cross-sectional study from Iran. BMC Psychiatry. 2021;21(1).

11. Domínguez-Solís E, Lima-Serrano M, Lima-Rodríguez JS. Non-pharmacological interventions to reduce anxiety in pregnancy, labour and postpartum: A systematic review. Midwifery [Internet]. 2021;102(June). Available from: https://www.sciencedirect.com/science/article/pii/S0266613821002060

12. Penninx BW, Pine DS, Holmes EA, Reif A. Anxiety disorders. In: The Lancet. www.thelancet.com; 2021. p. 914–27.

13. Arch JJ, Dimidjian S, Chessick C. Are exposure-based cognitive behavioral therapies safe during pregnancy? Arch Womens Ment Health. 2012;15(6):445–57.

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"Cognitive Behavior Therapy (CBT) lowers Anxiety Levels of Pregnant Women during the Covid 19 Pandemic in Health Centers" [oamjms.2022.9585]

Cognitive Behavior Therapy Lowers Anxiety Levels of Pregnant Women during the COVID-19 Pandemic at Sikumana Health Center

Yuliana Dafroyati[1]*, Ririn Widyastuti[2], Suparji[3]

[1]*Department of Nursing, Health Polytechnic Ministry of Health Kupang, Indonesia;* [2]*Department of Midwifery, Health Polytechnic Ministry of Health Kupang, Indonesia;* [3]*Department of Midwifery, Health Polytechnic Ministry of Health Surabaya, Indonesia*

Abstract

BACKGROUND: Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. Pregnant women are a vulnerable group or at risk for COVID-19. Pregnancy during the COVID-19 pandemic can cause high anxiety for pregnant women. Cognitive behavior therapy (CBT) interventions used can prevent the occurrence of anxiety and depression of pregnant women.

AIM: This study aims to know the effect of cognitive behavioral therapy (CBT) on the anxiety of pregnant women during the COVID-19 pandemic.

METHODS: This study uses a quasi-experimental design with pre-design and post-test designs. Research location at Sikumana Health Center, Kupang City Indonesia. The sample of 80 respondents consisted of 40 intervention group respondents and 40 respondents of the control group. Taylor Minnesota Anxiety Scale (TMAS) questionnaire was used as an instrument in this study. Intervention was held by giving CBT therapy for 10 sessions of meetings in an hour. The control group was given treatment in the form of minimum midwifery standard care (10T) while the intervention group was given therapy in the form of CBT and minimum midwifery standard care (10T). The control group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction, and mind notes. The Mann–Whitney U-test was used as data analysis techniques in this research.

RESULTS: There was a significant difference between the pretest TMAS score and after the CBT intervention. There was a decrease in the level of anxiety, namely, from the TMAS pretest score of 44.49−28.70 and the value Z pre-test −1,769, Z post-test −5,204, and p = 0.001 (p < 0.05). In the control group, there was no meaningful difference between the TMAS pre-test and post-test scores.

CONCLUSION: Cognitive behavior therapy (CBT) effectively lowers anxiety levels in pregnant women during the COVID-19 pandemic.

Introduction

Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. The WHO raised the status of COVID-19 globally to a worldwide pandemic including Indonesia [1]. The COVID-19 pandemic causes global impacts including general health and mental health. The high cases of COVID-19 increase the risk of depression and anxiety [2]. Pregnant women are considered a high-risk population of COVID-19 [3], [4]. Pregnancy is a natural process that occurs in women, ranging from conception to birth with physical, emotional, and social changes [4]. During pregnancy, there are physiological changes and hormonal changes that decrease immunity so that they are susceptible to get infected [2]. COVID-19 pandemic has a psychological impact on pregnant women. This increases anxiety during pregnancy, the impact of the effects caused by the coronavirus that can cause health problems during pregnancy, to cause death [3].

Some studies report that the period of pregnancy is a time characterized by an increased risk of emotional disorders such as depression, anxiety, and trauma-related disorders [5]. About 21% of pregnant women suffered from anxiety during the COVID-19 and significant predictors of anxiety during the pandemic included the number of pregnancies, practices regarding COVID-19, COVID-19 anxiety, depression, and social support [4]. During pandemic, pregnant women in the second and third trimesters of pregnancy were more worried; the total health anxiety score was significantly higher among pregnant women in the third trimester of pregnancy [6]. The prevalence of anxiety of pregnant women in China is higher during COVID-19 than before COVID-19. During pandemic, pregnant women in the second and third trimesters were more worried about the condition. Thus, the anxiety score was highest in the third trimester pregnant women [3].

One way to deal with mental health problems such as anxiety and depression is behavioral cognitive therapy (CBT). CBT intervention is effectively given to postpartum mothers to prevent the occurrence of

depression and anxiety. CBT was done in 9 weeks, carried out every week with 1 h, and can meaningfully reduce the incidence of depression in postpartum mothers [7]. Other studies showed that the effect of mindfulness-integrated cognitive behavior therapy in pregnant women showed significantly lower reductions in the average scores of anxiety in the experimental group than the control group [8]. Another study showed that the effects of mindfulness-integrated cognitive behavioral therapy on pregnant women showed significantly lower mean scores of anxiety and depression in the experimental group than the control group. This study aims to identify the incidence of maternal anxiety during the COVID-19 pandemic, from the level of anxiety, gestational age, and characteristics of pregnant women.

Methods

This study uses a quasi-experimental design with pre-design and post-test designs . Research location at Sikumana Health Center, Kupang City Indonesia. The sample of 80 respondents consisted of 40 intervention group respondents and 40 respondents of the control group. The independent variable is CBT, the dependent variable is anxiety. The research instrument was the TMAS questionnaire. Respondents were divided into two groups, namely, the intervention group and the control group. Taylor Minnesota Anxiety Scale (TMAS) questionnaire was used as an instrument in this study. Intervention was held by giving CBT therapy for 10 sessions of meetings in an hour. The control group was given treatment in the form of minimum midwifery standard care, while the intervention group was given therapy in the form of CBT and minimum midwifery standard care. The control group was given CBT treatment twice a month in 10 encounters with stages of identification, cognitive restructuring, identification and correction, and mind notes. In accordance with the research objectives, statistical analysis used the Mann–Whitney U-test statistical test, the error rate was set $<\alpha$ 0.05.

Results

Table 1 shows that most of the respondents' ages were 20–35 in either the intervention or control group. In education aspect, most of them were graduated from high school. Thus, in occupation aspect; most of the respondents were unemployed. Most gestational ages were in the second and third trimesters and belong to the primigravida and multigravida groups.

Table 1: The frequency distribution characteristics of demographic data (n = 80)

Variable	Intervention/CBT (n = 40) (%)	Control (n = 40) (%)
Age		
Normal (20–35 years old)	28 (70.0)	33 (82.5)
High risk (<20 years >35 years)	12 (30.0)	7 (17.5)
Education		
Junior high school	6 (15)	6 (15)
Senior high school	24 (60)	23 (57.5)
Diploma	1 (2.5)	1 (2.5)
Bachelor	9 (22.5)	10 (25)
Occupation		
Housewife/unemployed	27 (67.5)	27 (67.5)
Civil servant	4 (10)	5 (12.5)
Self-employed/ entrepreneurial	9 (22.5)	8 (20)
Gestational age		
Use 1st	5 (12.5)	6 (15.0)
Use 2nd	16 (40)	15 (37.5)
Use 3rd	19 (47.5)	19 (47.5)
Gravida		
Primigravida	20 (50)	18 (45)
Multigravida	19 (47.5)	20 (50)
Grand multipara	1 (2.5)	2 (5.0)

Table 2 shows that 18 respondents (45%) experienced moderate anxiety in the intervention group, while 7 respondents (17.5%) and 31 respondents (77.5%) are highly and moderately anxious in the control group. Post-test results show that there is a decrease in stress levels in the intervention group/CBT, namely, high anxiety to 1 respondent (2.5%). Thus, there is no change of anxiety level in the control group.

Table 2: Anxiety level of pregnant women (n = 80)

Variable	Intervention/CBT (n = 40) (%)	Control (n = 40) (%)
Pre-test		
No anxiety	5 (12.5)	0 (0.0)
Low anxiety	17 (42.5)	2 (5.0)
Moderate anxiety	18 (45)	31 (77.5)
High anxiety		7 (17.5)
Post-test		
No anxiety	4 (10)	0 (0.0)
Low anxiety	21 (52.5)	2 (5.0)
Moderate anxiety	14 (35.0)	31 (77.5)
High anxiety	1 (2.5)	7 (17.5)

Table 3 shows that there is a meaningful difference between the TMAS pre-test score and after being given CBT treatment. There is a decrease in the level of anxiety, namely, from the TMAS pre-test score of 44.49 to 28.70 and the value Z pre-test −1,769, Z post-test −5,204, and p = 0.001 ($<\alpha$ 0.05). However, in the control group, there was no significant difference between the TMAS pre-test and post-test scores.

Discussion

Based on the results of this study, it was found that many pregnant women experienced low anxiety during the COVID-19 pandemic, both in the intervention group and the control group. There is a difference in the average number of mothers who experience anxiety due to the COVID-19 pandemic, between the treatment group and the control group. The results of another study show that around 93% of pregnant women experience anxiety and stress due to being infected with

Table 3: Cognitive behavior therapy lowers anxiety levels of pregnant women during COVID-19

Characteristic	TMAS pre-test		TMAS post-test		Z		p-value	
	Mean rank	Sum of ranks	Mean rank	Sum of ranks	Pre-test	Post-test	Pre-test	Post-test
CBT	44.49	1779.50	28.70	1148.00	−1.769	−5.204	0.077	0.000
Control	36.51	1460.50	52.30	2092.00				

COVID-19. Pregnant women are worried about being infected with COVID-19 and worried that it will have an impact on their pregnancy [2], [9]. A cross-sectional study of 205 pregnant women in Tabriz, Iran, showed that the mean anxiety score was 3.79 (3.39). Anxiety of pregnant women during COVID-19 is influenced by the level of education, partner support, and gravida. The results showed that most of the respondents' education was high school, with 24 respondents (60%) in the intervention group and 23 respondents (57.5%) in the control group. Most of the respondents were primigravida and multigravida in the second and third trimesters in both the intervention group and the control group. During COVID-19, pregnant women in the second and third trimesters were more worried and anxious during the pandemic. Pregnant women in trimesters II and III were more anxious and worried about getting sick and got infected, thus had more concerns about the disease [6].

The results of this study indicate that there are differences in the level of anxiety of pregnant women in the intervention group before and after being given the CBT intervention. There was a decrease in the level of maternal anxiety after the CBT intervention. The picture concludes that CBT intervention can reduce the anxiety of pregnant women during the COVID-19 period. The results of statistical analysis obtained significant results p = 0.000 (<0.05). This means that there are differences in the level of anxiety of pregnant women during the COVID-19 pandemic from the intervention group after being given CBT therapy. These results can be concluded that the CBT intervention is quite effective in reducing the anxiety of pregnant women during the COVID-19 pandemic.

Pregnancy, childbirth, and postnatal can cause stress, hence increase anxiety of the mother and her partner. Anxiety is a whole psychological process that causes changes in cognitive, affective, psychological, and behavioral levels [10]. Anxiety disorders are a form of mental disorder. Anxiety disorders often occur during pregnancy up to 12 months after delivery and can have a negative impact on the mother, fetus, and baby [11].

Anxiety disorders are influenced by genetic factors, environmental factors, and epigenetic factors [12]. Evidence-based psychotherapy (particularly cognitive behavioral therapy) and psychoactive medications (particularly serotonergic compounds) are both effective, facilitating patients' choices in therapeutic decisions [11]. This statement is supported by the results of previous research explained that CBT interventions are effectively given to postpartum mothers to prevent the occurrence of depression and anxiety. CBT is done in 9 weeks, carried out every week with 1 h session, and can meaningfully reduce the risk of depression in postpartum mothers [7]. The results of another study showed that the administration of the effects of mindfulness-integrated cognitive behavior therapy of pregnant women showed significantly lower reductions in the average scores of anxiety and depression in the experimental group than in the control group [8]. Anxiety disorders during pregnancy can cause serious consequences for both the mother and fetus. CBT therapy is a psychosocial treatment that has been empirically proven to reduce anxiety disorders [12].

Conclusion

The conclusion of this study is that CBT intervention has proven to be effective in reducing anxiety in pregnant women during the COVID-19 pandemic. Recommendations from this study integrate CBT interventions in every health-care facility in antenatal care services for pregnant women.

Ethical Considerations

The authors have completely observed ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, and redundancy).

Ethical Clearance

Ethical clearance was obtained before the collection of data based on the research permission letter no LB.02.03/1/0113/2020 dated December 16, 2020, from the Health Polytechnic Ministry of Health Kupang.

References

1. WHO. Responding to Community Spread of COVID-19. Interim Guid. 2020;???:1-6.

2. Dewi A, Safaria T, Wenang S, Dewanto I, An AD, Tri D, *et al*. The COVID-19 pandemic: How does it affect pregnant women ? Open Access Maced J Med Sci. 2022;9:60-9.

3. Cui C, Zhai L, Sznajder KK, Wang J, Sun X, Wang X, *et al*. Prenatal anxiety and the associated factors among chinese pregnant women during the COVID-19 pandemic –A smartphone questionnaire survey study. BMC Psychiatry. 2021;21(1):619. https://doi.org/10.1186/s12888-021-03624-1
   PMid:34893043

4. Hamzehgardeshi Z, Omidvar S, Amoli AA, Firouzbakht M. Pregnancy-related anxiety and its associated factors during COVID-19 pandemic in iranian pregnant women: A web-based cross-sectional study. BMC Pregnancy Childbirth. 2021;21(1):208. https://doi.org/10.1186/s12884-021-03694-9
   PMid:33722198

5. Ahmad M, Vismara L. The psychological impact of COVID-19 pandemic on women's mental health during pregnancy: A rapid evidence review. Int J Environ Res Public Health. 2021;18(13):7112. https://doi.org/10.3390/ijerph18137112
   PMid:34281049

6. Saadati N, Afshari P, Boostani H, Beheshtinasab M, Abedi P, Maraghi E. Health anxiety and related factors among pregnant women during the COVID-19 pandemic: A cross-sectional study from Iran. BMC Psychiatry. 2021;21(1):95. https://doi.org/10.1186/s12888-021-03092-7
   PMid:33588794

7. Cho HJ, Kwon JH, Lee JJ. Antenatal cognitive-behavioral therapy for prevention of postpartum depression: A pilot study. Yonsei Med J. 2008;49(4):553-62. https://doi.org/10.3349/ymj.2008.49.4.553
   PMid:18729297

8. Yazdanimehr R, Omidi A, Sadat Z, Akbari H. The effect of mindfulness-integrated cognitive behavior therapy on depression and anxiety among pregnant women: A randomized clinical trial. J Caring Sci. 2016;5(3):195-204. https://doi.org/10.15171/jcs.2016.021
   PMid:27752485

9. Effati-Daryani F, Zarei S, Mohammadi A, Hemmati E, Ghasemi Yngyknd S, Mirghafourvand M. Depression, stress, anxiety and their predictors in Iranian pregnant women during the outbreak of COVID-19. BMC Psychol. 2020;8(1):99. https://doi.org/10.1186/s40359-020-00464-8
   PMid:32962764

10. Domínguez-Solís E, Lima-Serrano M, Lima-Rodríguez JS. Non-pharmacological interventions to reduce anxiety in pregnancy, labour and postpartum: A systematic review. Midwifery. 2021;102:103126. https://doi.org/10.1016/j.midw.2021.103126
    PMid:34464836

11. Penninx BW, Pine DS, Holmes EA, Reif A. Anxiety disorders. Lancet. 2021;397(10277):914-27. https://doi.org/10.1016/S0140-6736(21)00359-7
    PMid:33581801

12. Arch JJ, Dimidjian S, Chessick C. Are exposure-based cognitive behavioral therapies safe during pregnancy? Arch Womens Ment Health. 2012;15(6):445-57. https://doi.org/10.1007/s00737-012-0308-9
    PMid:22983422

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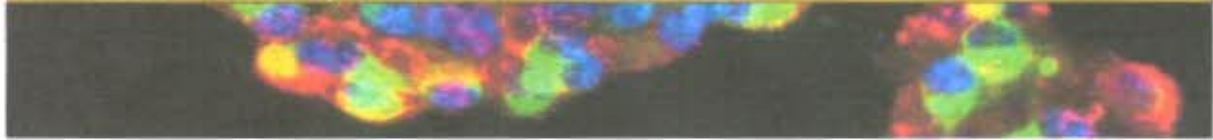
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