# The Effectiveness of Combination Mindfulness Spiritual-Based Cognitive Therapy plus Hypnosis vs Mindfulness-Based Cognitive Therapy on Depression Scores and Cortisol Levels in HIV Patients with Depression: A Randomized Controlled Trial

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## Abstract

A holistic approach to health services should take care of psychological factors of disease impact. Depression is a major psychiatric problem in patients with HIV/AIDS (PLWHA), characterized by depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-esteem, disturbed sleep or appetite, and poor concentration. In the context of HIV, depression is a condition that often goes unnoticed and can affect the quality of life, adherence to medical care, additional comorbidities, disability, unemployment, and suicide, and is one of the leading causes of morbidity and mortality among PLWHA.

**Objectives**: This study aimed to determine the difference in the effectiveness of the MSBCT plus Hypnosis compared to MBCT on depression scores and cortisol levels in HIV patients with depression.

M**ethod:** A randomized controlled trial. The subjects were all HIV patients with depression who are taking antiretroviral (ARV) therapy at the VCT clinic of the RA. Kartini Hospital, Jepara Regency, using a consecutive sampling method. A total of 62 participants were randomly allocated into 2 groups, consisting of the treatment group with MSBCT plus Hypnosis (n=31) and the control group with MBCT treatment (n=31). Bivariate analysis using a t-dependent test ( paired sample t-test ) if the data is normally distributed (> 0.05) and using the Wilcoxon test if the data is not normally distributed ( < 0.05).

**Results**: The study showed the two groups had a significant effect in reducing depression scores and cortisol levels. The reduction in depression scores and cortisol levels was greater in the MSBCT plus Hypnosis group than in the control group.

**Conclusions:** There was a difference in the effectiveness of the MSBCT plus Hypnosis treatment versus the MBCT on reducing depression scores and cortisol levels in HIV patients with depression.

**Keywords:** MSBCT plus Hypnosis, MBCT, depression scores, cortisol levels, HIV patients with depression.

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## Introduction

A holistic approach to health services should take care of psychological factors of disease impact. Depression is the main psychiatric problem in patients with HIV/AIDS (PLWHA). The prevalence of depression in PLWHA varies from 5% to 79% worldwide.(Bernard, Dabis, & De Rekeneire, 2017),(Dejman et al., 2015),(Nanni, Caruso, Mitchell, Meggiolaro, & Grassi, 2015),(Feuillet et al., 2017),(Obadeji, O Ogunlesi, & O Adebowale, 2014) Results A 2018 meta-analysis of 74 studies in China reported that the prevalence of depression among PLWHA was 50.8 % and a 2014 meta-analysis of low, middle, and high-income countries by 12.8% to 78%.(Wang et al., 2018),(Uthman et al., 2015) The prevalence of depression in untreated PLWHA in Sub-Saharan Africa is 19%, and for those on anti-retroviral therapy is 12% while in Indonesia was 21.8% in 2018, women (22.3%) had higher rates of depression than men (21.4%).(Bernard et al., 2017),(Peltzer & Pengpid, 2018) Cases of depression in PLWHA are estimated to reach 60% of the total cases of depression and are three times higher than the general population.(Leserman, 2008),(Winsor et al., 2013)

Depression is the number one cause of disability in developed countries, is ranked second in the global burden of disease by 2020, and is predicted to be the leading cause of the global burden of disease by 2030.(Mental & Collaborators, 2022) In the context of HIV, depression is a condition that often goes unnoticed and can affect the quality of life, adherence to medical care and survival and even suicidal behavior. Every year about 800,000 people die by suicide.(*World Health Organization: Depression and Other Common Mental Disorders: Global Health Estimates*, 2017) Patients with major depression were 30 times more likely to commit suicide.(Nyirenda, Chatterji, Rochat, Mutevedzi, & Newe, 2013) Depression in PLWHA is associated with poor quality of life, additional comorbidities, disability, and unemployment, and is one of the leading causes of morbidity and mortality among PLWHA.(Asangbeh, Sobngwi, Ekali, Eyoum, & Msellati, 2016),(Bezatu Mengistie, 2015)

The hypothalamic axis pituitary adrenal (HPA-axis), plays a key role in maintaining homeostasis and the body's response to stress. In times of stress, the cerebral cortex and amygdala receive signals and the hypothalamus increases production and releases corticotropin-releasing hormone (CRH) and arginine vasopressin (AVP). Through the portal venous system, CRH, AVP, stimulates the pituitary to produce adrenocorticotropic hormone (ACTH), then enters the bloodstream and activates the adrenal glands to release glucocorticoids.(Jennifer Keller, Ph.D.1, Rowena Gomez, Ph.D.1,2, Gordon Williams, M.D.3, Anna Lembke, M.D.1, Laura Lazzeroni, Ph.D., Greer M. Murphy Jr, M.D., Ph.D.1, and Alan F. Schatzberg, 2017) Glucocorticoids stimulate the release of cortisol into the blood as a response to the body's defense against inflammation, stimulate gluconeogenesis and are responsible for protecting the body from excessive immune responses.(Iob, Kirschbaum, & Steptoe, 2020) Glucocorticoids also exert a negative feedback effect on the HPA-axis by inhibiting the synthesis and secretion of CRH and ACTH.(Jennifer Keller, Ph.D.1, Rowena Gomez, Ph.D.1,2, Gordon Williams, M.D.3, Anna Lembke, M.D.1, Laura Lazzeroni, Ph.D., Greer M. Murphy Jr, M.D., Ph.D.1, and Alan F. Schatzberg, 2017),(Iob et al., 2020) The fact that there is involvement of the HPA-axis in the pathogenesis of neuropsychiatric disorders.

The efficacy of depression therapy against a combination of antidepressant drugs and cognitive behavioral therapy is 60% effective, less than 25% of depressed patients have access to effective treatment and 40% are at risk of developing resistance to treatment.(S. Evans-Lacko1, 2, S. Aguilar-Gaxiola3, A. Al-Hamzawi4, J. Alonso5, C. Benjet6, 2018)·(Voineskos, Daskalakis, & Blumberger, 2020)However, antidepressant therapy also produces unwanted side effects such as sedation, decreased blood pressure, weight gain, indigestion or sexual dysfunction. This results in low patient compliance, drug withdrawal, recurrence of depressive symptoms, and an increased risk of suicide. Even today, depressed patients switch from medical therapy to psychotherapy because of the side effects and high cost of treatment so that patients are interested in complementary medicine.(Kuyken et al., 2015)

An innovative and effective psychotherapeutic intervention to reduce depression is mindfulness-based cognitive therapy (MBCT) which integrates aspects of cognitive behavioral therapy (CBT) with the characteristics of focusing on the current state and emphasizing the acceptance of thoughts, emotions, and behaviors.(Zindel Segal, Mark W., 2018) MBCT is an approach to treating depression for patients with acute depressive symptoms and remission, as an alternative for patients who are unwilling to antidepressant treatment, given in a group format so that it has the potential to reduce costs, MBCT targets multiple mechanisms of psychopathological conditions.(Goldberg et al., 2019)·(Feliu-Soler et al., 2018)·(Saha, Jarl, Gerdtham, Sundquist, & Sundquist, 2020)·(Alsubaie et al., 2017) There is empirical evidence supporting the effectiveness of MBCT in reducing depression and improving quality of life of patients with chronic diseases including PLWHA.(Tovote et al., 2017)·(Mackenzie, Abbott, & Kocovski, 2018) However, studies are not always consistent in reporting their results and MBCT for clinical interventions is still evolving. (Amanda J. Shallcross, James J. Gross Stanford , Niketa Kumar and Amy Palfrey, Brett Q. Ford, Boulder Stephen Shirk, Jill Holm-Denoma, Kari M. Goode, and Erica Cox, 2015)·(Williams et al., 2014)

One of the approaches used in mentoring PLWHA is the spiritual approach. The results of a meta-analysis of 97 spiritual intervention studies reported that patients with spiritually integrated psychotherapy interventions showed greater improvement than patients treated with psychotherapy alone.(Captari et al., 2018) Positive self-capacity can occur if you have the basic principles of positive living in your subconscious mind and this can be given through hypnosis. Hypnosis has been shown to be significant in reducing stress, anxiety and depression scores.(Alladin, 2010) Even hypnosis acts as the first step in treating depression.(Alladin, 2010) Considering the importance of knowing the effectiveness of the two interventions in generalizing the interventions and outcomes for the population in a concrete way, there are reports of study results that are not always consistent, and there is no comparison study to examine the effectiveness of the two treatment interventions , the aim of this study is to know the difference in the effectiveness of the MSBCT plus Hypnosis compared to MBCT treatments on reducing of depression scores as well as serum cortisol levels in HIV patients with depression.

## Methods

### 1. Subjects and Study design

This study used a randomized controlled trial (RCT) design. Subjects were HIV patients who were taking antiretroviral (ARV) therapy at

the VCT clinic at the RA. Kartini Hospital, Jepara Regency. The subjects were screened, and fulfilled the inclusion criteria as follows: HIV patients with mild-moderate depression, receiving ARV therapy, Muslim, aged 18-60 years, not taking steroid drugs, and willing to participate in the study. The exclusion criteria were having a history of immune disorders or allergies, currently undergoing hormonal or corticosteroid therapy, patients who used herbal medicine 2 weeks before the study, patients with psychiatric comorbidities, and having an emergency condition.

After informed consent, subjects were randomized to receive treatment with MSBCT plus Hypnosis or MBCT. Simple randomization was conducted by opening sealed envelopes containing one of the two types treatments, 31 subjects in the MSBCT plus Hypnosis group and 31 in MBCT treatment as control group. Assessment of depression scores and serum cortisol levels were carried out before and after the interventions, in both groups.

## 2. Procedures

The diagnosis of depression in HIV patients was performed by a psychiatrist at the RA. Kartini Hospital, Jepara Regency based on the DSM-V diagnostic criteria. Instrument characteristics of participants using a questionnaire include information about age, gender, marital status, education, occupation, income, family support, and the response to the COVID - 19 pandemic.

Mindfulness spiritual-based cognitive therapy (MSBCT) plus Hypnosis is a mindfulness-based intervention that embraces spiritual values of gratitude, patience, and sincerity by giving treatment using a set of intervention packages MSBCT plus Hypnosis. This intervention based on stress reduction is the result of a modified spiritual mindfulness-based cognitive therapy technique using the mindfulness concept of Kabat Zinn and the Five-Step Model of Mindfulness developed by Vidyamala Burch.(Kabat-Zinn, 2003),(Burch, 2010),(White, 2014),(Cockell & Mcsherry, 2012) MSBCT plus Hypnosis intervention has been compiled through expert review stages by psychologists, spirituality/religious experts, mindfulness experts, and hypnosis experts. The control group was given a set of MBCT intervention packages developed by Teasdale, 2014.(Ng, 2014)

MSBCT plus Hypnosis combination treatment was given to the intervention group with a frequency of once a week through groups (consisting of 10-15 people) for eight weeks, each session for 120 minutes or 2 hours. The program curriculum consists of: First, intentions and psychoeducation (depression and its management); Second, formal practice consists of mindfulness (awareness of breathing mindfulness; mindfulness breath; mindfulness of body; mindfulness of daily activity for example eating mindfulness, walking mindfulness, mindfulness sleeping, mindfulness with family; desire release mindfulness; self-compassion; and independent healthy behavior). Third, informal practice, namely presenting awareness of every moment in daily activities. The intervention was divided into eight components in eight sessions, namely (1) psychoeducation and intention, (2) awareness of breathing mindfulness / awareness cultivation, (3) body scan, (4) comfort training through daily activity / comfort exercises, (5) self-compassion / having great soul with acceptance, gratitude and sincerity, (6) planning happiness through independent healthy behavior targets, (7) independent healthy behavior (8) independent healthy behavior evaluation. Each therapeutic component of each session is further divided into three sub-components, namely psychoeducation, training, and

hypnosis. This program is accompanied by homework assignments to practice the techniques given to the subjects and provided with a diary to record the homework done as well as MSBCT technique guides to make it easier to do it. On average, to the subjects spend between 45 and 60 minutes per day at home, 6 days a week on retreats one day. Checks are carried out daily online and WAG ( Whatsapp Group ) is coordinated by the peer support coordinator. After completion of the intervention for 8 weeks re-measurement of depression scores and cortisol levels in HIV patients to see the effectiveness of therapy before and after the program.

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MBCT treatment was administered once a week in groups (10-15 people) for eight weeks, each session lasting 90 minutes or 1.5 hours with MBCT materials developed by Teasdale, 2014. The program curriculum consists of the automatic pilot; living in our heads; gathering the scattered mind; recognizing aversion; allowing and letting be; thoughts as thoughts; kindness in action; maintaining and extending new learning. This program is accompanied by homework assignments to practice the techniques given to the subjects and provided with a diary to record the homework done as well as MBCT technique guidelines for making it easy to do it. On average, to the subjects spend about 45 minutes per day at home, 6 days a week on retreats one day. Checks are carried out daily via online and WAG coordinated by the peer support coordinator. After completion of the intervention for 8 weeks re-measurement of depression scores and cortisol levels in HIV patients to see the effectiveness of therapy before and after the program.

Provision of intervention and data collection for subjects was carried out by 3 (three) enumerators for the intervention group and 3 (three) enumerators for the control group with a master nurse education background, have a registration certificate (STR), and have received mindfulness training, while for the hypnosis intervention assisted by 2 (two) enumerators with a nursing education background and have participated in the CH (Certified Fundamental Hypnosis and Hypnotherapy) and CHt (Certified Advanced Hypnotherapy) programs.

Blood samples were collected before the intervention and after the eighth week of intervention, collected in a red vacutainer tube without anticoagulant (EDTA) at 06.30 - 09.00 AM. After centrifugation, serum was stored at a temperature of -20 degrees Celsius in the laboratory of the hospital before sending to Diponegoro University Laboratory in Semarang. Serum cortisol was measured by ELISA (Catalog kit no. CO103S).

## Data Management and Statistical Analysis

The statistical analysis method used the SPSS for Windows version 2 computer program 4. Univariate analysis is a descriptive analysis carried out with the aim of describing all data. Numerical data such as age and cortisol levels were used to mean, standard deviation, minimum, and maximum, while categorical data such as gender, education, occupation, income, marital status, family support, and

the response to the COVID-19 pandemic were analyzed by frequency distribution. Bivariate analysis was carried out after the normality test, if the data were normally distributed (> 0.05) then the t- dependent test was used ( paired sample t-test) and if the data was not normally distributed ( < 0.05) then the Wilcoxon test was used. All statistical tests were computerized.

## Ethical Consideration

Ethical Clearance approval by the Commission on Ethics for Health and Medical Research, Faculty of Medicine, Diponegoro University, Semarang with No.19/EC/KEPK/FK-UNDIP/II/2021.

## Research result

### Characteristics of research subjects

This research was conducted from January to April 2021 at the VCT service clinic of the RA. Kartini Hospital Jepara Regency, Central Java, Indonesia with a total of 62 subjects consisting of 31 in the group who received a combination treatment of MSBCT plus Hypnosis and 31 subjects in the control group who received MBCT treatment.

**Table 1.** Baseline Characteristics of the subjects

| Characteristics of subjects | MSBCT plus Hypnosis | MBCT | *p* |
|---|---|---|---|
| Age (years) | 35.10 ± 6.01 | 33.35 ± 7.06 | 0.200 |
| Gender | | | 0.794 |
| - Male | 11 (45.8%) | 13 (54.2%) | |
| - Female | 20 (52.6%) | 18 (47.4%) | |
| Education | | | 1,000 |
| - High level | 3 (42.9%) | 4 (57.1%) | |
| - Low level | 28 (50.9%) | 27 (49.1%) | |
| Income Level | | | 0.730 |
| - High | 0 (0%) | 0 (0%) | |
| - Moderate | 4 (40.0%) | 6 (60.0%) | |
| - Low | 27 (51.9%) | 25 (48.1%) | |
| Marital status | | | 0.799 |
| - Married | 15 (53.6%) | 13 (46.4%) | |
| - Not married | 16 (47.1%) | 18 (52.9%) | |
| Work | | | 0.786 |
| - Working | 20 (47.6%) | 22 (52.4%) | |
| - Unemployed | 11 (55.0%) | 9 (45.0%) | |
| Family support | | | 1,000 |
| - Supportive | 18 (48.6%) | 19 (51.4%) | |
| - Unsupportive | 13 (52.0%) | 12 (48.0%) | |
| Response to the Pandemic | | | 0.799 |
| - Normal | 0 (0%) | 0 (0%) | |
| - Mild Psychosomatic | 15 (53.6%) | 13 (46.4%) | |
| - ModeratePsychosomatic | 16 (47.1%) | 18 (52.9%) | |
| - Severe Psychosomatic | 0 (0%) | 0 (0%) | |

In table 1, the baseline characteristics of the subjects such as age, gender, education, income, marital status, occupation, family support, and response to the pandemic showed no statistically significant differences between both groups (p> 0.05).

**Table 2.** Depression scores before and after intervention in the MSBCT plus Hypnosis, and MBCT treatment groups

| Depression Scores Level | | | | | |
|---|---|---|---|---|---|
| Group | Before | | After | | *p* |
| | Mean* | SD** | Mean* | SD** | |
| MSBCT plus Hypnosis | 35.0 | 5.1 | 22.9 | 5.4 | 0.000 |
| MBCT | 34.3 | 4.8 | 29.3 | 4.9 | 0.000 |

Note: * mean = average value
** sd (standard deviation) = standard error of the mean

In table 2, mean depression scores in the MSBCT plus Hypnosis group has a greater decrease from 35.0 to 22.9 than the depression scores in the MBCT group from 34.3 to 29.3 after interventions.

**Table 3.** Cortisol levels before and after interventions in the MSBCT plus Hypnosis, and MBCT treatment groups

| Serum Cortisol Levels (ng/ml) | | | | | |
|---|---|---|---|---|---|
| Group | Before | | After | | *p* |
| | Mean* | SD** | Mean* | SD** | |
| MSBCT plus Hypnosis | 266.55 | 57.97 | 160.42 | 51.79 | 0.000 |
| MBCT | 213.13 | 67.66 | 189.45 | 58.23 | 0.001 |

Note: * mean = average value
** sd (standard deviation) = standard error of the mean

In table 3, mean cortisol levels in the MSBCT plus Hypnosis group had a greater decrease from 266.55 to 160.42 ng/ml than the cortisol levels in the MBCT group from 213.13 to 189.45 ng/ml after interventions.

**Table 4.** Differences Depression scores and Cortisol levels before and after intervention in the MSBCT plus Hypnosis, and MBCT treatment groups

| | MSBCT plus Hypnosis | MBCT | *p* |
|---|---|---|---|
| Depression scores | | | |
| • Before intervention | 35.0* ± 5.1** | 34.3* ± 4.8** | |
| • After intervention | 22.9* ± 5.4** | 29.3* ± 4.9** | |
| • *p* | 0.000 | 0.000 | |
| • Delta | -12.06* ± 2.16** | -5.03* ±0.87** | 0.000 |
| Cortisol levels | | | |
| • Before intervention | 266.5* ± 57.9** | 213.1* ± 67.6** | |
| • After intervention | 160.4* ± 51.5** | 189.5* ± 58.2** | |
| • *p* | 0.000 | 0.001 | |
| • Delta | -106.13* ± 67.62** | -23.68 *± 32.73** | 0.000 |

Note: * mean = average value
** sd (standard deviation) = standard error of the mean

In table 4, mean that the intervention group and the control group experienced a significant decrease in depression scores ($p<0.001$) and cortisol levels ($p<0.001$). There was a significant difference in the reduction of depression scores and cortisol levels between the two groups.

## Discussion

This study showed a significant difference in the effectiveness of the MSBCT plus Hypnosis combination treatment vs MBCT on depression scores and cortisol levels of HIV patients with depression. The MSBCT plus Hypnosis combination treatment is an intervention that combines mindfulness and hypnosis. This treatment intervention is combined because it can stimulate the hippocampus and amygdala which has an impact on reducing distress, namely through increasing the activity of the anterior cingulate cortex (ACC ) and prefrontal cortex (PFC) and decreasing hippocampus and amygdala activity.(Marchand, 2014) The combination of these treatments also causes changes in brain wave activity, namely the prefrontal cortex, limbic system, and hypothalamus which increase emotional regulation, increase neurotransmitters and affect positive emotional states such as melatonin, serotonin, endorphins, and acetylcholine, and decrease neurotransmitters that increase stress such as norepinephrine and cortisol.(Jensen et al., 2015)

Mindfulness and hypnosis-based treatment approaches can be used together to create adaptive response circuits and to deautomate maladaptive response sequences.(Lynn, Das, Hallquist, & Williams, 2006)·(Lynn, Barnes, Deming, & Accardi, 2010) Mindfulness serves as a template for generating a set of suggestions that provide cognitive strategies for coping with problems, ameliorating stress and negative influences, and as a powerful delivery vehicle for mindfulness.(Lynn et al., 2006)·(Lynn et al., 2010) Hypnosis as a medium that allows mindfulness to be absorbed and integrated more easily, efficiently, effectively and a way to explore the subconscious mind with the aim of suggesting positive sentences through penetrating the critical factors of the conscious mind into the subconscious mind.(Lynn et al., 2010)·(Alladin, 2014)·(Elkins, Roberts, & Simicich, 2018) The program consists of: (1) psychoeducation and intention (2) awareness of breathing mindfulness / awareness cultivation, (3) body scan, (4) comfort training through daily activity / comfort exercises, (5) self-compassion / having great soul with acceptance, gratitude and sincerity, (6) planning happiness through independent healthy behavior targets, (7) independent healthy behavior (8) independent healthy behavior evaluation. Each therapeutic component of each session is further divided into three sub components, namely psychoeducation, training, and hypnosis. Integrating mindfulness and hypnosis is a complementary, synergistic, and therapeutic intervention who reported that mindfulness integrated hypnosis significantly reduced psychological distress and stress, increased psychological awareness and flexibility.(Olendzki, Elkins, Slonena, Hung, & Rhodes, 2020)·(Otani, 2016)

This study proves that the intervention group got a higher decrease in score depression and cortisol levels than in the control group. Although both groups were equally significant in reducing score depression and cortisol levels, the MSBCT plus Hypnosis combination intervention group was more effective than the MBCT control group. The difference in the effectiveness of the intervention in this study with the control

group was probably due to the type of mindfulness used, namely MSBCT plus Hypnosis, while the control group was only given MBCT intervention. The material differences in the sessions that were not given to the MBCT control group were psychoeducation and intention; self-compassion; big-hearted with acceptance, gratitude, patience, and sincerity; and planning happiness through independent healthy behavior targets and positive life behavior suggestions given through hypnosis by enumerators. Likewise, the duration of time in the session given to the intervention group was longer, namely 120 minutes compared to the control group, which was 90 minutes. There is evidence of a tendency for study results to show a better effect if the intervention is carried out with a higher number of sessions and hours of training. The results of the study with an intervention of 20 hours in 8 weeks were more effective in reducing score depression and cortisol levels compared to the results of studies with a duration of 6 – 10.5 hours in 6 to 7 weeks.(Lisa Flook, Simon B. Goldberg, Laura Pinger, Katherine Bonus, 2013)(O'Leary, O'Neill, & Dockray, 2016)

The mindfulness intervention received by the intervention group was mindfulness integrated with spirituality. Spirituality involves belief, practice, and ritual related to transcendent or absolute truth(Koenig, 2012)(Koenig, 2012)<sup>47</sup>.(Koenig, 2012) Patients with depression experience failure or dysfunction spiritually, where conditions are usually difficult for lived, producing flavor failure, and guilty. Religious practice or spirituality (R/S) could be used to resolve and adapt to the situation in life which is full of stress, giving meaning and hope, and placing depressed patients within a supportive community.(Raphael Bonelli, Rachel E. Dew, Harold G. Koenig, David H. Rosmarin, 2012) Spiritual role is important in the life of the person with mental disorders (skizofrenia, stress, anxiety, depression), spirituality also improves integrity so damn, reduces suicide risk, and increases the quality of life.(Grover, Davuluri, & Chakrabarti, 2014)(Akbari & Hossaini, 2018) The results of the study reported that integrating patient's spiritual and religious beliefs into psychotherapy was as effective and beneficial for patients in overcome psychological problems, including in reducing depression.(Rosmarin, Salcone, Harper, & Forester, 2019) Spirituality is associated with decreased depression scores and cortisol levels in HIV patients.(Bormann, Aschbacher, Wetherell, Roesch, & Redwine, 2009)

One of the techniques for interacting with the effects of stressors on the human body is hypnosis.(Scardino, 2014) Hypnosis has been shown to significantly increase the total lymphocyte count and increase the total number of T and CD-4 cells.(Ruzyla-Smith, Barabasz, Barabasz, & Warner, 2014) Combination of hypnosis with meditation, progressive muscle relaxation, and relaxation biofeedback showed an increase in T cells in HIV-positive subjects with low T cell counts.(Brown & Vanable, 2011)Cortisol was significantly lower after the well-being and happiness suggestions were suggested as compared to the emotional states before hypnosis namely anger and depression.(Scardino, 2014) Hypnosis also has an effect on decreasing cortisol levels in stressed and anxious patients after cesarean section.(Rizkiani, Hari Respati, Sulistyowati, Retno Budihastuti, & Prasetya, 2021)This suggests that hypnosis has the potential to modulate the HPA-axis.(Scardino, 2014)

The treatment given to the intervention group obtained a greater decrease in score depression and cortisol levels than the control group but the approach used by the

MBCT control group was the same, namely focusing on developing effective methods by connecting thoughts and feelings of depression rather than challenging or changing cognitions. MBCT teaches patients to treat unpleasant thoughts, feelings, and bodily sensations as temporary, unintentional events in the mind, rather than identifying or treating them as accurate facts. Study results have reported MBCT as an augmentative treatment for acute depression. There is empirical evidence supporting the effectiveness of MBCT in reducing depression and improving the quality of life and health of people with chronic illnesses.[21,23,27,28]

## Conclusions

The treatment combination of MSBCT plus Hypnosis showed a significant difference in reducing depression scores and cortisol levels versus MBCT treatment alone.

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