The Effect of Hypnotherapy Methods on The Modification Scale of Menopause-Specific Quality of Life (Menqol) and Cortisol in Menopausal Women

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Hypnotherapy; MenQoL; Cortisol; EEG Muse-2

ABSTRACT
A decrease in stressors will be followed by a decrease in cortisol, a basic principle used by researchers to apply hypnotherapy to menopausal women who experience complaints. Judging from treatment techniques, hypnotherapy is very far from pharmacological treatment. The role of the new instrument in measuring the quality of life of menopausal women uses a modified menopause quality of life scale. The general objective of this study is to prove the improvement of the scale of modification of menopausal quality of life with the influence of hypnotherapy through cortisol changes in menopausal women. The design of this study uses quasi-experimental, which is almost similar to the actual experimental method. The approach with the pretest-posttest control group was by comparing between two groups, namely the control group and the treatment group, and analyzed to see the effect of hypnotherapy on the quality of life of menopausal women through the MenQoL modification scale in accordance with the hypothesis that had been proposed previously. Both groups observed changes in the MenQoL modification scale through questionnaire collection and blood serum collection for cortisol examination (during the trance state cessation phase of the hypnotherapy group). After 4 weeks, both groups were again given hypnotherapy and healthy living education script (in the hypnotherapy group) and only given a healthy living education script (control group), then the cortisol test and the second MenQoL modification scale were repeated. The hypothesis is expected to have significant differences.

1. Introduction

The WHO in 2030 said that the number of women worldwide entering menopause is estimated to reach 1.2 billion. In Indonesia, in 2016 it reached 14 million or 7.4% of the total number of women. By 2025, it is estimated that as many as 60 million women in Indonesia will experience menopause. Some of the complaints that often occur in menopause according to Abrams, 2013, identified in 4 symptoms, namely: 1). *Vasomotor* like *The heat reddened.* 2). Psychological: irritable, Difficulty sleeping, Fast Reach, depression, mood swingsanxiety. 3). Physical: *Incontinence urin*, *osteoporosis*, *breast pain*. 4). Sexual: *dyspareunia*. Koeryaman, 2018, complaints that occur in menopause can cause psychological changes as long-term symptoms in the form of stress, depression, *Post-Power Syndrome, Void Syndrome.*

Sociodemographic factors also influence changes in the quality of life of menopausal women, as evidenced by several studies suggesting this. Menopause research, which looks at the relationship with sociodemographic factors (age, religion, ethnicity, education level, occupation (income), found that there was a significant difference between sociodemographic factors and quality of life (Juliana & Anggraini, 2021). Use Questionnaire *Menopause-Specific Quality of Life* (MenQoL) version of Hilditch (1996), developed as a measurement and information tool in the research and evaluation of treatment success assessment through the completion of a comprehensive questionnaire, by assessing the rate of change in the MenQoL scale in the clinical practice and epidemiology of menopausal women (Sydora, 2016).. The researchers conducted an assessment of hormonal factors and

biomarkers to assess changes in Cortisol as part of their biological factors. Scale assessment *Menopause Quality of Life* from Hilditch, 1996 it is necessary to add several bio-psycho-socio-economic and cultural supporting factors, so that the assessment carried out is more precise and closer to the conditions in Indonesia. By assessing the quality of life in accordance with conditions in Indonesia, a new form of measuring the quality of life of menopause in the form of a modified scale is needed *Menopause Quality of Life* (MenQoL modification scale*).*

Current treatment options turn to *Complementary* and *Alternative therapies* with an approach to relieve excessive stress (*Mindfulness* and relaxation) in the form of hypnotherapy (Johnson, 2019) and (Hickey Martha, 2017)**.** Researchers choose treatment *Complementary & Alternative Therapies* menopause using the hypnosis method which is better known as hypnotherapy.

Hypnotherapy treatment, as well as proving the hypothesis as far as the benefits of using modified scales and the potential of hypnotherapy are useful as a measuring tool and treatment to improve the quality of life of menopausal women through the influence of HPA axis interaction in lowering cortisol levels. This study proves the improvement of the scale of menopause modification *of quality of life* with the influence of hypnotherapy through changes in Cortisol in menopausal women.

Literatur Review

Definition of menopause

According to *World Health Organization* Menopause (WHO) is defined as the permanent cessation of menstruation for 12 consecutive months due to the progressive failure of the ovaries to produce the hormone Estrogen due to the aging process (Kumar, 2018). Menopause (45 – 60 years) (Velez, 2019), starting from the premenopausal phase; perimenopause and postmenopause. According to Melmed (2017), a person is said to be menopausal if they don't get their period for 12 months and it's a physiological process of the ovaries that no longer respond to FSH and LH signals from the pituitary gland. Shortly before menopause, FSH and LH will continue to be produced by the pituitary gland normally. As we age, the ovaries are unable to respond to FSH and LH as they should, so the Estrogen and progesterone produced by the ovaries decrease.

Changes in the reproductive organs and other organs during menopause.

The ovaries shrink (atrophy) and are followed by a decrease in hormonal function. The fallopian tubes thin, tangle, shrink, the mucosal folds become shorter, the endosalping thins and the cilia disappear. The uterus shrinks due to *myometrial atrophy*, reduced to the loss of the endometrial lining that forms menstrual blood and changes in the shape of the interstitial connective tissue. The vagina experiences atrophy in the epithelium so that only a layer of basal cells remains, the loss of the vaginal lubricating glands causes dryness in the surrounding area causing pain during sexual intercourse. Bladder: the control activity of the sphincter and the strength of the detrusor muscles decreases and even disappears, (by Macedo Dantas, 2019). Osteoporosis and *osteopenia* are symptoms of reduced bone life, bones become weak and brittle, resulting in the risk of fractures (Mulyani, 2013). Most menopausal women experience weight gain (Lizcano & Guzmán, 2014). Brain Tissue: the effect of the hormone Estrogen decreases on the structure of brain cells and psychologically causes sustained mood swings into stress and even depression. Changes and systemic effects of protein metabolism, carbohydrates, fats, water-electrolyte balance and blood clotting, causing excessive fatigue, weakness, pain in the joint muscles which eventually lead to stress and end

in sleep disorders (insomnia) (Horn & McArdle, 2012). Dizziness is a complaint/condition related to low blood pressure, fluctuations in blood sugar levels, and hypoglycemia (Lauritsen, 2018). Irregular heartbeat, heart palpitations caused by the effects of hormone-lowering on the cardiovascular system (Lizcano & Guzmán, 2014).

Emotional changes

According to Friday, 2020, during menopause will experience emotional changes, including**:** Mood swings such as irritability, anxiety and depression. Anxiety is actually a natural response to a stimulus that will or has been encountered. It takes the form of unwarranted feelings of worry and fear. The impact that occurs is in the form of rapid heartbeat, sweating, muscle tremors, nausea, and tension that will be disturbing (Gava, 2019). Stress will strain interactions with the environment, including difficulties in adapting to psychological, social, cultural and quality of life changes. Prolonged stress is one of the most common signs and symptoms in menopausal women (The 2019, 2019). Causes of prolonged stress panic disorder and deep feelings of sadness (Chen, 2020). Short-term and long-term memory aberration disorders are *Dementia* and *Alzheimer*, characterized by a decrease in metabolic activity (glucose and mitochondrial function) in the brain (Scheyer, 2018). Sleep disorders (Imsonia) occur in 40-50% of cases from the beginning of the transition period to menopause. Sleep disorders give rise to new problems that lead to psychiatric disorders.

Sexual changes

Sexual disorders occur multi-complex, due to the decrease in Estrogen affecting the external and internal genital organs, resulting in decreased mucus and vaginal atrophy. Unpleasant effects (pain) occur during sexual intercourse (*dyspareunia*). The pain during sex will add to the sense of hopelessness and guilt for the partner. Jarvis, 2018, a decrease in Estrogen due to stress will worsen the changes in the sensation of heat on the face and body (*hot flushes)*, vaginal mucus dryness. Prolonged stress will alter ACTH-Cortisol and Serotonin, which ultimately leads to vasomotor, psychosocial, physical and sexual disorders (Sydora, 2016).

Grouping of clinical manifestations of menopause (Abrams, 2013)

Vasomotor: hot flushes in the face, neck and chest that last for several minutes, dizziness, weakness, headaches, night sweats, heart palpitations (increased heart rate) and difficulty sleeping. Psychological: irritability, depression, anxiety, mood swings, frequent forgetfulness and difficulty concentrating. Physical: desire to urinate more frequently, discomfort when urinating, inability to control urination (*urinary incontinence).* Sexual: vaginal dryness that causes discomfort during sexual intercourse, as well as decreased libido.

The basic concept of the effect of stress on Cortisol via *the hypothalamic-pituitary-adrenal* axis (HPA axis).

Output of steroid exposure due to the effect of stress on the HPA axis

Cortex *Cingulate* consists of four zones: anterior (ACC), posterior (PCC), Middle (MCC) and *retrosplenial* (RSC) (Palomero-Gallagher, 2009). One of the complex systems models that is important to explain the incorporation of emotional processing and cognitive function is through the evaluation of the division of stimulus pathways and the regulation of emotions into ventral and dorsal brain systems. The structure of the ACC in the ventral fission system is the amygdala and the ventral

orbital prefrontal area, while the dorsal division of the ACC includes the hippocampus, the cortex *Cingulate* anterior, subgenual, and dorsal lateral prefrontal cortex. The ventral system allows for rapid assessment of emotional stimuli, while the dorsal system provides the capacity for mood regulation by modulating the affective, physiological, cognitive pathways of the ventral excretory pathway and the visual system received from the SCN (*Retino-Hypotalamic-Tract=RHT) as described in figure 2.3.* (Phillips, 2008).

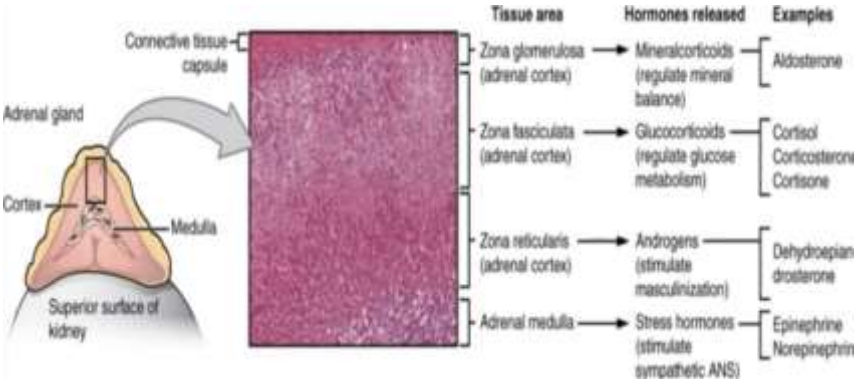
Mechanism of the brain's glucocorticoid feedback process

Glucocorticoids also play a role in Positive feedback in some areas of the brain, especially in conditions of chronic stress. Stimulus, stress, and increased glucocorticoid levels will increase CRH expression in *central amygdaloid nucleus,* which is expected to increase the core output of CeA (*Central amygdaloid*) then increases the reactivation of the HPA axis. Generally, measurements of total cortisol in plasma provide information about free cortisol (*Terlepas*) and *CBG bound* glucocorticoids, so that the interpretation of data related to the HPA axis is dynamic, so it is necessary to observe several cases related to changes in the HPA axis. Due to some pathological disorders such as hypoampal lesions or *Insufficiency* The adrenal glands also affect the HPA axis even without being preceded by exposure to stress. The best measurement for identifying the HPA axis as an informed form of stress response is to identify ACTH and glucocorticoid levels simultaneously (Herman, McKlveen, 2016) & (Spencer & Deak, 2017). A representative biomarker for measuring HPA axis activity after receiving a stress stimulus is actually circulating ACTH, in contrast to slower-onset cortisol. The release of ACTH shortly after a stress stimulus or hypnotherapy indicates that the dynamics of the HPA axis are ongoing. The description of the dynamics of the HPA axis reflected in the expenditure of ACTH, by the researcher is used as a benchmark for this study (Spencer & Deak, 2017).

Cortisol Dynamics

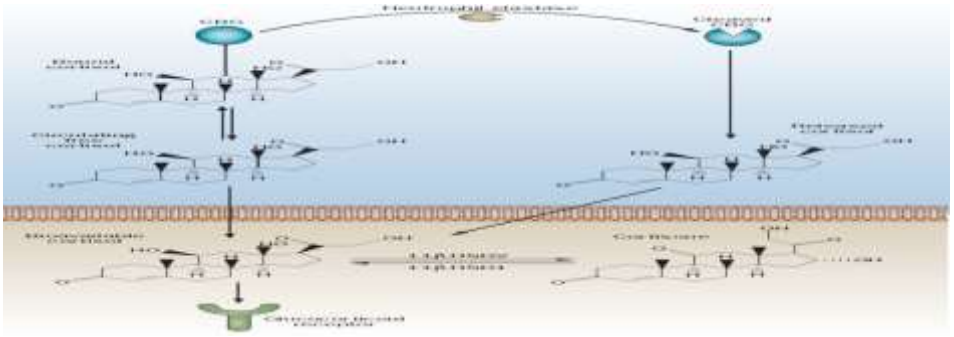
Stress stimuli are received and passed from the cerebral cortex to the hypothalamic-pituitary axis to the adrenal glands by secreting CRH and ACTH which is the cleavage of acid peptides *39-amino-proopiomelanocortin* (POMC) (Oyola & Handa, 2017) and (Soto-rivera & Majzoub, 2017).

The resulting fluctuations in biomarkers from the regulatory system are greatly influenced by biological clocks: ultradian, infradiant and especially circadian rhythms involved in the dynamics of the HPA axis due to changes in the basal state and external stress. The ACTH that comes out will further stimulate the adrenal glands to synthesize and secrete the mineralocorticoid hormone (Aldosterone) from the adrenal cortex of the glomerulosic zone, which functions for the regulation of mineral balance; glucocorticoid hormones (Cortisol; corticosterone and cortisone) or cortical cortical adrenal cortex of the phasicular zone (regulation of glucose metabolism); androgen hormone (*Dehidroepiandrosteron*) adrenal cortex of the reticular zone (precursor of the extragonadal hormone Estrogen); and stress hormones (Epineprin-norepineprin) of the adrenal medulla (sympathetic-parasympathetic nerve stimulation) (Figure 2.5). ACTH also acts on melanocortin 2 receptors (MC2R) in the phasicular zone in producing intracellular cyclic AMP for cholesterol biosynthesis (steroid precursors: mineralocorticoids and glucocorticoids). Along with glucocorticoid synthesis, at which point the anterior pituitary will modulate the expression of the POMC gene (mRNA) to the target of activation of the euphoric circuit, through the cleavage of POMC and the β END (*β Endorphins),* activation directly or through an increase in Serotonin (Melmed, 2017).



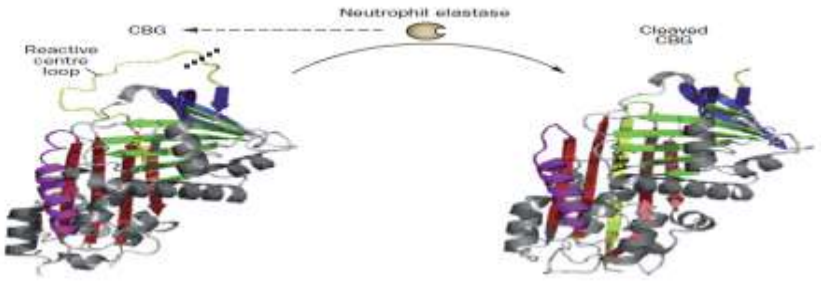
Activation of Adrenal Node Target (Remarks: effects of the Stress response – HPA axis, (revised: Pituitary: Melmed, 2017).

About 95% of the cortisol secreted by the adrenal cortex will bind to a large protein called *Corticosteroid-binding globulins* (CBG) to carry blood throughout the body. CBG is considered a buffer, binder, carrier, and release protein. CBG is also called *Transkortin* or *Serpin A6*, which is a proteinase inhibitor (I. Perogamvros, 2011).



CBG Regulation (Description: Regulation of cortisol bioavailability prereceptors (revised: Pituitary: Melmed, 2017).

Let go *Bioavailable cortisol* into cells at the site of inflammation, affected by the circulation of free cortisol (*Free cortisol*), cortisol which is in constant equilibrium (*cortisol bound*), and release cortisol *(cortisol is released*) from the CBG separation process by *Elastas neutrofil*. Inside inflammatory cells, *Bioavailable cortisol* produced from cortisone with the help of *11β-HSD1* (corticosteroid 11β-dehydrogenase1), and some experienced activity-assisted conversion to cortisone *11β-HSD2*. Power *Bioavailable cortisol* In contrast to free cortisol levels in circulation, sites of inflammation, and in other tissues. CBG and 11β-HSD (are specific modulators of cortisol availability for glucocorticoid receptors in areas of inflammation (Ilias Perogamvros, 2012).



Manifestations of CBG Separation (Description: CBG is formed before and after being cleaved by neutrophil elastase in inflammatory conditions. The cleavage of CBG results in the release of Cortisol at the site of inflammation. (rewritten: Ilias Perogamvros, 2012). Only a small fraction of unbound or free cortisol is considered biologically active, with lower molecular weight and lipophilic properties. This free cortisol will enter the cell by passive diffusion so that it is still possible to measure the amount of free cortisol from all body fluids, including in blood (serum), saliva and urine (Agha-Hosseini, 2012).

Cortisol has several roles in the body, first as a glucocorticoid in helping the process of glucose metabolism as well as protein and fat metabolism through increasing the gluconeogenensis process in the liver and secondly playing a role in the process of adaptation to stimulation/stress. In this process of glucooneogenensis, there is an increase in the secretion of glucose in the liver and the conversion of other non-carbohydrate sources (i.e. amino acids) into carbohydrates. Cortisol also causes lipolysis so that the release of free fatty acids increases and centripetal fat deposits occur (Sherwood, 2016).

Another function of Cortisol is to regulate arterial tone and maintain blood pressure (stimulating angiotensin II secretion), increasing *Glomerular filtration rate* (GFR), water excretion, potassium excretion, sodium retention and suppressing calcium absorption in the renal and intestinal tubules. This situation is caused by the significant permissive effect of Cortisol on epinephrine activity, where Cortisol must be present in sufficient quantities for epinephrine to work causing vasoconstriction (narrowing of blood vessels), increased heart frequency and blood pressure (Baritaki, 2019).

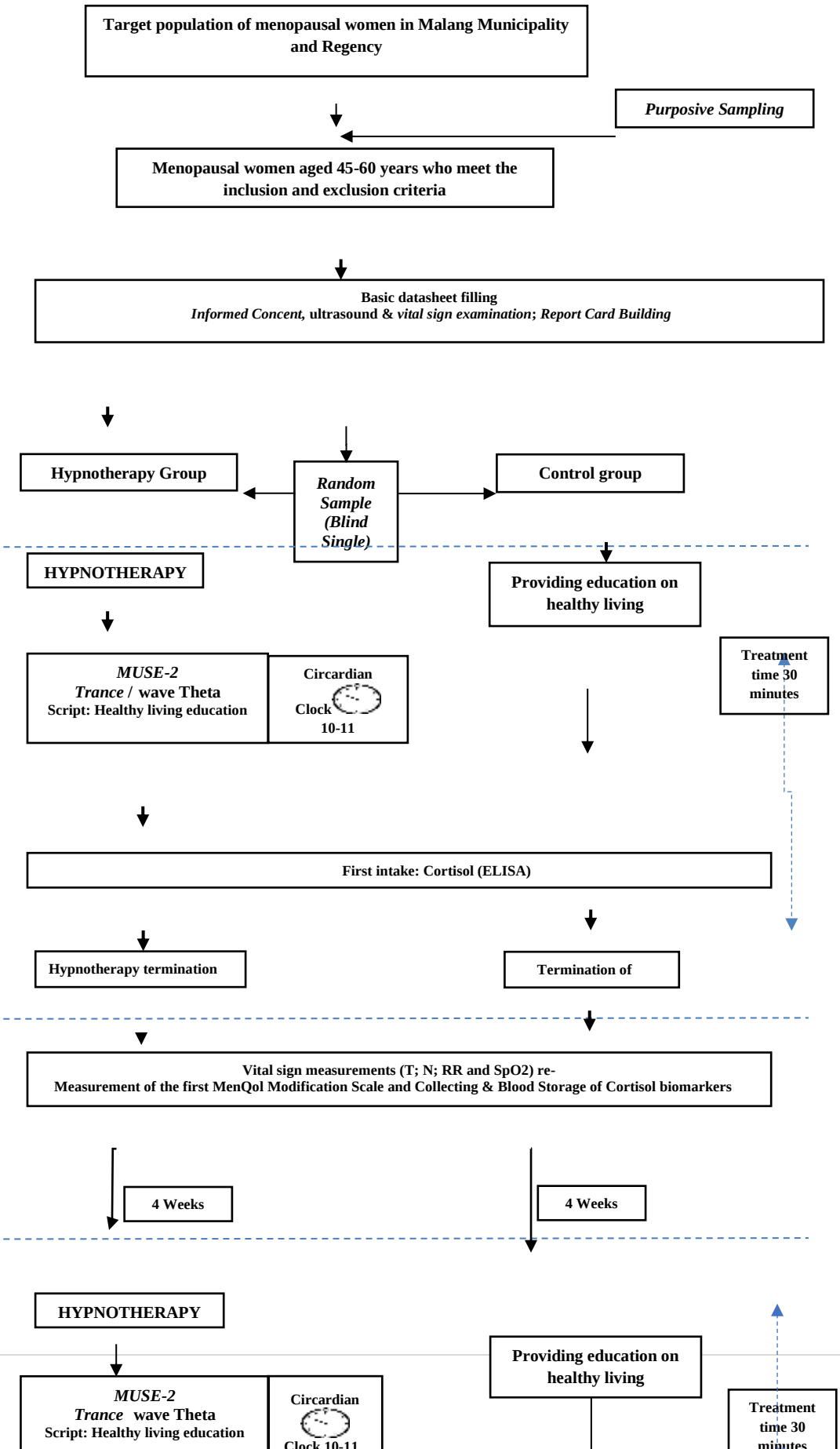
Continuous cortisol secretion is followed by the formation of a maladaptive response (decrease in CBG) to the stressor including persistent pain or entering a state of hypercortiolism, which will eventually fall into chronic stress that will cause symptoms *pain somatic disorder* such as muscle pain, fatigue in the morning, aches and pains (Hannibal & Bishop, 2014).

The basis for the use of hypnotherapy will reduce brain waves at the level of Theta waves (3.5 – 7.5 Hz), this will change from a conscious state to a *trance* which is followed by a decrease in the brain's electrical system. By changing the situation to *trance*, will evoke the response of the HPA axis path to immediately change dynamically and open the RAS, which then all instructions that come in through healthy living education will be stored and can be used when needed to better adjust to the state of homeostasis (Faymonville, 2006) & (Melmed, 2017). Eventually, circulating cortisol levels will also decrease, followed by an improvement in the quality of life of menopausal women (Jiang, 2017) & (Jensen, 2015).

Increased cortisol will also stimulate the HPA axis (through negative feedback) and interfere with Serotonin metabolism through modulation of gene expression that encodes the Serotonin transporter

(Melmed, 2017). The availability of Cortisol is used to maintain an adequate fuel supply and regulate blood pressure during times of stress (Soto-Rivera & Majzoub, 2017) & (Fridmanis, 2017).

Research flow

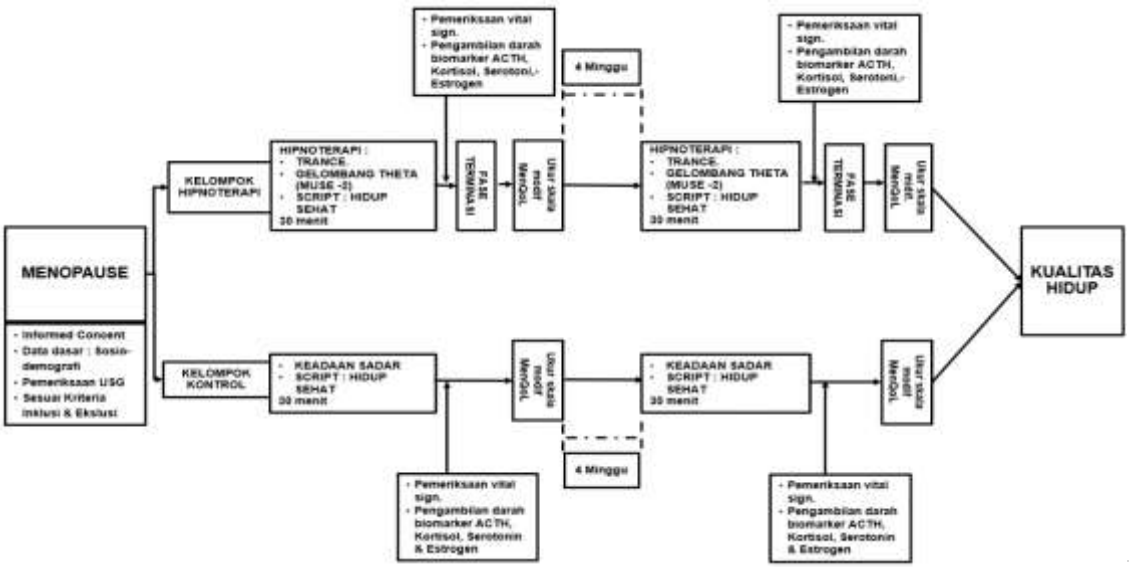


Research design

The design of this study uses a quasi-experimental design, which is similar to the actual experimental method. Using the quasi-method, the researcher must provide treatment and research changes from the treatment that has been given. However, the samples used were not randomized and the researchers were unable to manipulate the subjects. In this quasi-method there must be an experimental group and a control set using a random group. Quasi-experimental research aims to find out between the variables involved in the control group and the experimental group, therefore, quasi-experimental can be used for research that wants to investigate the relationship between variables and clarify the cause of the relationship. The difference lies in the use of research subjects. In the quasi-experimental method, the determination of subjects is not carried out randomly, but rather using existing groups (Suggestion, 2023), however, in the context of this study, these considerations are adapted to the objectives and hypotheses proposed earlier. This is done so that the research can more accurately test the hypothesis that has been put forward previously regarding the influence of hypnotherapy on the quality of life of menopausal women.

Therefore, this study uses a quasi-experimental design with an approach *Pretest-posttest control group* to test the previously proposed hypothesis (Azwar, 2017). A parallel design is used to compare between two groups, namely the control group and the treatment group, according to the hypothesis that has been formulated previously. In this study, there are two groups of respondents, namely the control group and the treatment group, which will be analyzed to see the effect of hypnotherapy on the quality of life of menopausal women according to the hypothesis that has been proposed previously.

Technically, the *pretest-posttest control group design* approach is a quasi-experimental type of design that involves two groups, namely the experimental group and the control group, in which samples are selected non-randomly from the same population. Both groups were given a pretest to determine the level of quality of life of menopausal women before treatment. Then, the experimental group was given hypnotherapy, while the control group was not given hypnotherapy. After that, both groups were given a posttest (final measurement) to find out the level of quality of life of menopausal women after treatment.



Design a grouping model for each variable given the intervention.

2. Results And Discussion

Analysis and descriptive description of supporting data (Socio-demographic). Descriptive description of respondents based on Age of the experimental and control groups.

Age	Eksperimen		Control	
	f	%	f	%
40-45 years old	0	0,0%	1	1,3%
> 45-50 years old	10	13,3%	9	12,0%
> 50-55 years old	34	45,3%	39	52,0%
>55 years	31	41,3%	26	34,7%
Total	**75**	**100%**	**75**	**100%**

Descriptive description of respondents by religion.

Religion	Eksperimen		Control	
	f	%	f	%
Islam	75	100,0%	75	100,0%
Protestant	0	0,0%	0	0,0%
Catholic	0	0,0%	0	0,0%
Hindu	0	0,0%	0	0,0%
Buddhist	0	0,0%	0	0,0%
Confucianist	0	0,0%	0	0,0%
Total	**75**	**100%**	**75**	**100%**

Descriptive description of respondents based on Education

E	Eksperimen		Control	
ducation	f	%	f	%
Not going to school/not graduating from elementary school	0	0,0%	2	2,7%
Elementary - Junior High School	3	4,0%	2	2,7%
Senior High School - S1	72	96,0%	69	92,0%
S2- S3	0	0,0%	2	2,7%
Total	**75**	**100%**	**75**	**100%**

Descriptive description of respondents by Ethnicity.

Ethnic group	Eksperimen		Control	
	f	%	f	%
Javanese	75	100,0%	75	100,0%
Sundanese	0	0,0%	0	0,0%
Madura	0	0,0%	0	0,0%
Bali	0	0,0%	0	0,0%
Other	0	0,0%	0	0,0%
Total	**75**	**100%**	**75**	**100%**

Descriptive description of respondents based on Marital Status.

Marital Status	Eksperimen		Control	
	f	%	f	%
Married	75	100,0%	75	100,0%
Unmarried	0	0,0%	0	0,0%
Widow	0	0,0%	0	0,0%
Polygamous Husband	0	0,0%	0	0,0%
Total	**75**	**100%**	**75**	**100%**

Descriptive description of respondents based on Income

Income	Eksperimen		Control	
	f	%	f	%
500 thousand - < 3 million.	0	0,0%	0	0,0%
3 million – <5 million.	12	16,0%	12	16,0%
5 million - < 10 million.	38	50,7%	38	50,7%
10 million - < 50 million.	25	33,3%	25	33,3%
>50 million - 100 million.	0	0,0%	0	0,0%
Total	**75**	**100%**	**75**	**100%**

Recapitulation of test results compared before and after treatment in the Experimental group and the Control group with the Test (Wilcoxon graded mark)

Comparison of Pre Vs Post On Data	**Group**	**Tes Wilcoxon Z**	**P value**	**Conclusion**
MeQoL	Eksperimen	-6,023	0,000	Significantly Different
	Control	-0,922	0,357	No Significant Difference
Kortisol	Eksperimen	-7,277	0,000	Significantly Different
	Control	-4,753	0,000	Significantly Different

MenQoL hypothesis test *Mann-Whitney U-test statistics*

Testing	**Group Comparison**	**Number of Ranks**	**Mann-Whitney**	**P value**	**Information**
MenQoL_Pre	Eksperimen	6563,5	1911,5	0,001	Valid
	Control	4761,5			
MenQoL_Post	Eksperimen	4321,5	1471,5	0,000	Valid
	Control	7003,5			

Uji hipotesis test cortisol statistic Mann-Whitney-U test

Testing	**Group Comparison**	**Number of Ranks**	**Mann-Whitney**	**P value**	**Information**
Kortisol_ Pre	Eksperimen	6814	1661	0,000	Signi Fikan
	Control	4511			
Kortisol _Post	Eksperimen	3676	826	0,000	Signi Fikan
	Control	7649			

Test the hypothesis of comparing the mean difference (Δ) in the experimental group (Pre-Post) and control (Pre-Post)

Variable	**Average difference (Δ)**		**Average Difference Comparison Results (Δ)**
	Eksperimen	**Control**	
MenQoL	-31,59	3,95	Experiment < Control
Kortisol	-8.255,80	6.680,20	Experiment < Control

Descriptive statistical analysis of modified menopausal quality of life scale (MenQoL) data from the experimental group

Date Group	X Min	X Max	Mean	SD	n
MenQoL_Pre	55	236	141,28	38,82	75
MenQoL_Post	26	261	109,69	53,96	75

Descriptive Statistical Analysis of the Modified Men's Quality of Life (MenQoL) data of the control group

Date Group	X Min	X Max	Mean	SD	n
MenQoL_Pre	60,00	200,00	126,68	26,65	75
MenQoL_Post	54,00	200,00	130,63	28,41	75

Descriptive statistical analysis of cortisol data in the experimental group

Date Group	X Min	X Max	Mean	SD	n
Kortisol_Pre	0,48	99.382,00	11.317,88	14.581,53	75
Kortisol_Post	0,22	56.317,00	3.062,08	8.671,90	75

Descriptive statistical analysis of cortisol data in the control group

Date Group	X Min	X Max	Mean	SD	n
Kortisol_Pre	0,42	14.646,00	5.295,77	3.095,56	75
Kortisol_Post	6,98	40.931,00	11.975,97	9.791,19	75

Change in N-Gain value in MenQoL after Treatment

N-Gain (Trend) on MenQoL Data	Experiment		Control	
	f	%	f	%
Declining - High	10	13,3%	11	14,7%
Declining - Medium	19	25,3%	10	13,3%
Declining - Low	36	48,0%	10	13,3%
Unchanged (fixed)	2	2,7%	1	1,3%
Up – Low	1	1,3%	19	25,3%
Increasing – Medium	3	4,0%	22	29,3%
Up - High	4	5,3%	2	2,7%
Entire	**75**	**100%**	**75**	**100%**

Overview of N-Gain values of changes in Cortisol after Treatment

N-Gain (Trend) on Cortisol Data	Experiment		Control	
	f	%	f	%
Declining - High	5	6,7%	0	0,0%
Declining - Medium	6	8,0%	1	1,3%
Declining - Low	61	81,3%	16	21,3%
Unchanged (fixed)	0	0,0%	0	0,0%
Up – Low	2	2,7%	34	45,3%
Increasing – Medium	0	0,0%	21	28,0%
Up - High	1	1,3%	3	4,0%
Entire	**75**	**100%**	**75**	**100%**

The results of the study were obtained almost entirely, the Kolmogorov-Smirnov normality test data did not show a normal distribution with *a p-value* of less than 0.05 (significant in non-parametric tests/non-distributed normal data). except for control cortisol (pre) with a p value of 0.200.

The MenQoL (Menopause-Specific Quality of Life) modification scale is an instrument to evaluate and measure the quality of life in women who experience menopause. The MenQoL modification scale includes four domains: vasomotor symptoms (such as hot flashes), somatic symptoms (such as joint pain), psychological symptoms (such as anxious feelings), sexual dysfunction and by researchers developed with additional socio-demographic modifications. This scale was first introduced by JR Hilditch in 1996. The deterioration of the scale of MenQoL modification during menopause actually reflects the changes that are common to women's bodies and psychological well-being during this period, and will worsen if she already gives a lot of complaints.

The results of the study with *the Wilcoxon Rank Test* were obtained on the MenQoL Variable there was a significant difference with a p-value of 0.000, meaning that the Hypnotherapy group had a significant effect on the reduction (improvement) of the modification scale (MenQoL), so that there was an improvement in the quality of life of menopause.

The gain (strength) test that hypnotherapy treatment tends to result in a decrease in the value of the MenQoL modification scale in most respondents (86.6%), while the control group tends to experience an increase in the value (57.3%).

The Mann-Whitney MenQoL (pre-experimental-pre-control) and (post-experimental-post-control) tests all show significant differences.

The difference comparison test (Δ) between the mean MenQoL (pre-post) of the hypnotherapy group and the control group (pre-post), the value of the hypnotherapy group was smaller than that of the control group (hypnotherapy < control), which means that hypnotherapy would reduce the value of the MenQoL modification scale.

The mean MenQoL (Xmin-Xmax) comparison test in the hypnotherapy group showed a decreasing trend (141.28 to 109.69), on the other hand, the average MenQoL (Xmin-Xmax) in the control group showed an increasing trend (126.68 to 130.63)

The decrease in the MenQoL modification scale in the experimental group reflected positive changes in the quality of life of menopausal women (vasomotor, somatic symptoms, psychological symptoms and sexual disorders), as lower MenQoL modification scale values indicated that the quality of life would be better. In contrast, an increase in the value of the MenQoL modification scale in the control group did not show a beneficial change in quality of life, and it would even worsen. In line with research conducted by Diem et al. (2020) that uses therapy, especially *mindfulness-based stress reduction* (MBSR) training, it has been shown to significantly reduce the value of the MenQoL modification scale in menopausal women. Another study found that MBSR training resulted in an average decrease in the total MenQoL scale of 0.3 to 0.5 points from baseline, indicating significant changes in the quality of life of menopausal women (van Driel *et al.*, 2019). This suggests that hypnotherapy and MBSR can be an effective approach to lowering the MenQoL Scale, which is used to assess the impact of menopausal symptoms on women's quality of life. Although different in techniques and approaches, this study shows a role in improving women's quality of life during menopause. While hypnotherapy tends to result in a decrease in the MenQoL modification scale, which reflects an improvement in quality of life with a decrease in levels of anxiety, stress, and other disorders. Thus, hypnotherapy shows the potential to be a very valuable treatment method in relieving symptoms and improving women's quality of life during menopause. Although more research and refinement studies are needed to better understand the mechanisms and long-term effects of hypnotherapy treatment methods, these findings highlight the wide range of treatments available as one of the many treatment options for the holistic management of menopausal symptoms.

The results of this study with *the Wilcoxon sign rating test* obtained on the Cortisol variable there was a significant difference with a p-value of 0.000 each in the hypnotherapy group and the control group, so the conclusion was that the administration of hypnotherapy in the hypnotherapy group had a significant effect on the decrease (increase) of cortisol levels

The gain test (strength) that hypnotherapy treatment tended to result in a decrease in cortisol levels in most respondents (96%), on the contrary, the control group tended to experience an increase in the value by (77.3%).

Mann-Whitney (pre-experimental-pre-control) and (post-experimental-post-control) cortisol comparisons all showed significant differences.

The test compared the difference (Δ) of the mean Cortisol (pre-post) of the hypnotherapy group with that of the control group (pre-post), finding that the value of the hypnotherapy group was smaller than that of the control group (hypnotherapy < control), which means that hypnotherapy would lower cortisol levels.

The average cortisol (Xmin-Xmax) comparison test in the hypnotherapy group showed a decreasing trend (11,317.88 to 3,062.08), on the other hand, the average cortisol (Xmin-Xmax) in the control group showed an increasing trend (5,296.77 to 11,975.97).

Based on this study, it can be concluded that in the hypnotherapy group there will be a decrease in

the average value of cortisol, this leads to an increase in the scale of MenQol modification and finally an improvement in the quality of life of menopausal women.

Based on these findings, it is known that hypnotherapy treatment tends to have a greater effect in lowering cortisol levels compared to the control group. The impact of this decrease in cortisol levels for patients can be significant, because cortisol is the main stress hormone in the body. Decreased cortisol levels may indicate an improvement in overall well-being for patients, by reducing the impact of stress and the risk of stress-related diseases such as anxiety, depression, sleep disturbances, digestive disorders, and cardiovascular problems.

These findings are in line with the results of a study presented by Kendrick et al., (2015) which stated that hypnotic relaxation therapy was proven to reduce *hot flashes* in postmenopausal women. Another study stated that there was a significant hypnotherapeutic effect in lowering cortisol, where cortisol had been shown to decrease significantly at very low levels during prolonged hypnosis in highly hypnotized subjects.

Therefore, the psychological intervention applied in this study, namely hypnotherapy, has been shown to be effective in lowering stress levels and helping menopausal women manage stress, which in turn also reduces cortisol levels.

3. Conclusion

Based on the research that has been conducted, it is known that some: The MenQoL Modified Scale Questionnaire can be used, as it has high validity and reliability**.** Validity test = 0.998 > r (0.958) Reliability test: *Alpha 1,000* Cronbach. Almost all hypnotherapies have an effect on the MenQoL Modified Scales and Cortisol biomarkers. Hypnotherapy provides an increase in the value of the MenQoL modification scale Hypnotherapy provides an improvement in the quality of life of menopausal women. Nearly half of the controls had an effect on Cortisol, except: MenQoL modification scale The Control Group (education only) provides a decrease in the value of the MenQoL Modification Scale. Control group (education only) provided a worsening quality of life for menopausal women

Suggestion

Based on the research that has been conducted, some suggestions that can be considered are: The MenQoL modification scale can be widely used to assess the quality of life of menopausal women. The use of hypnotherapy is more beneficial to improve the quality of life if it continues to be used independently. Independent hypnotherapy training to the community will help improve the quality of life of women. The development of clinical practice guidelines outlining the indications, techniques, and protocols for the use of hypnotherapy in menopausal management can help standardize treatment and ensure its effective and safe use.

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Conflict of interest

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Author contribution

All authors have contributed to all processes in this research, including preparation, data gathering and analysis, drafting and approval for publication of this manuscript

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