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The effect of emotion regulation training on the level of emotion regulation of patients with chronic diseases

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ABSTRACT

Introduction: Chronic diseases pose significant challenges for individuals, including reduced life expectancy, increased economic burden, and heightened risk of psychological distress such as depression and anxiety. The interplay between chronic illness and negative emotions is bidirectional, where emotional distress can exacerbate physical symptoms through inflammatory processes, while the illness itself can contribute to emotional dysregulation. Emotion dysregulation is a major factor influencing stress responses, self-management adherence, and overall well-being in individuals with chronic diseases. Given this, interventions aimed at improving emotion regulation are essential to help patients manage their condition more effectively.
Aim: This study aims to examine the effect of emotion regulation training therapy on improving the emotion regulation ability of individuals with chronic diseases.
Methods: This study employed a quasi-experimental design with a one-group pretest-posttest approach. A total of 50 participants were recruited using purposive sampling. The intervention consisted of four emotion regulation training sessions conducted over two weeks. Data were collected using the Emotion Regulation Questionnaire (ERQ) and analyzed using a paired t-test to determine the effect of the intervention on emotion regulation levels.
Results: The findings revealed a significant improvement in emotion regulation ability after the intervention, with a mean difference of 7.980 ± 3.605 (p-value = 0.000) based on the paired t-test analysis. This indicates that the emotion regulation training had a substantial impact on enhancing participants' ability to manage their emotions.
Conclusion: Emotion regulation training significantly improves emotion regulation levels in patients with chronic diseases. These findings highlight the importance of integrating psychological interventions into chronic disease management to enhance patients' emotional well-being and self-management abilities. Future studies should explore the long-term effects and sustainability of emotion regulation training in diverse patient populations.

Keywords: chronic disease, emotion regulation, mental health, psychological intervention, self-management

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INTRODUCTION

Chronic diseases are among the leading causes of morbidity and mortality worldwide, significantly reducing life expectancy. Cardiovascular diseases alone contribute to a 17.4% to 22% reduction in life expectancy among men and women (1). Similarly, individuals diagnosed with hypertension also experience decreased life expectancy due to complications such as stroke, heart failure, and kidney disease (2). The burden of chronic diseases has been escalating over the past decades, with mortality rates attributed to these conditions increasing by nearly 90% since 2019. This trend poses serious challenges not only to individual patients and their families but also to the broader socioeconomic and healthcare systems (3). The growing prevalence of chronic illnesses highlights the urgent need for comprehensive interventions that address both the physical and psychological burdens associated with these conditions.

Beyond the physical impact, individuals with chronic diseases often face profound psychological distress due to the long-term and progressive nature of their conditions. The prolonged course of treatment, uncertainty surrounding disease progression, frequent relapses, side effects of therapy, and financial burdens contribute to heightened emotional strain. These stressors increase the risk of developing depression and anxiety, further complicating disease management and reducing overall quality of life (4). Previous research has indicated that individuals suffering from musculoskeletal disorders, cardiac conditions, and chronic respiratory diseases experience the highest prevalence of depression and anxiety (5). Moreover, the severity of these psychological symptoms tends to correlate with the duration of illness, indicating that long-term exposure to chronic disease-related stress can exacerbate mental health problems (6).

The physiological effects of stress in individuals with chronic diseases are well-documented. Psychological distress is known to trigger inflammatory responses, which can worsen disease symptoms and hinder recovery. The biological mechanisms underlying this relationship involve the activation of the hypothalamic-pituitary-adrenal (HPA) axis and increased levels of pro-inflammatory cytokines, both of which contribute to disease progression. Chronic stress and negative emotions, such as anxiety and depression, not only affect mental well-being but also directly impact physical health by increasing inflammation, elevating blood pressure, and impairing immune function (7). The bidirectional nature of this relationship suggests that while chronic illness contributes to psychological distress, unmanaged negative emotions can also exacerbate the severity of the disease, creating a vicious cycle that negatively affects patient outcomes (8).

One of the key underlying factors contributing to psychological distress in individuals with chronic illnesses is emotion dysregulation. Emotion dysregulation refers to the inability to manage and modulate emotional responses effectively, leading to heightened stress, anxiety, and maladaptive coping behaviors. Effective emotion regulation requires individuals to develop metacognitive awareness of their emotions and to apply appropriate coping strategies, such as problem-solving, cognitive reappraisal, and acceptance (9). Studies have demonstrated that poor emotion regulation is associated with adverse health outcomes. For example, individuals with diabetes who exhibit poor emotion regulation skills tend to have higher HbA1C levels, indicating poor glycemic control (10). Furthermore, difficulties in emotion regulation have been linked to lower adherence to medical treatments and self-care behaviors, which can further compromise disease management and overall health status (11).

Emotion regulation plays a critical role in self-management for individuals with chronic diseases. It influences how individuals perceive their illness, cope with symptoms, and adhere to treatment regimens. According to Gross and John (2003), emotion regulation is the process by which individuals modify their emotional responses to better adapt to environmental demands (12). In the context of chronic illness, effective emotion regulation can help patients maintain a positive outlook, manage stress more effectively, and engage in healthier behaviors, such as medication adherence, lifestyle modifications, and regular medical check-ups (13). Given the significant impact of emotion regulation on both psychological and physical well-being, there is a growing need for targeted interventions that help individuals with chronic diseases develop effective emotion regulation skills (14).

This study aims to examine the effect of emotion regulation training therapy on improving emotion regulation abilities in individuals with chronic diseases. By providing structured training in emotion regulation, this intervention seeks to enhance patients' ability to manage stress, reduce psychological distress, and improve overall well-being. Given the established link between emotion regulation and health outcomes, it is hypothesized that individuals who receive emotion regulation training will demonstrate significant improvements in their ability to regulate emotions compared to their baseline levels. The findings of this study are expected to contribute to the development of holistic interventions for chronic disease management, emphasizing the importance of integrating psychological support into routine healthcare practices.

RESEARCH METHOD

Design

This study employs a quantitative research method with a quasi-experimental design using a one-group pre-test and post-test approach. This design allows researchers to evaluate the effectiveness of the intervention by comparing emotion regulation scores before and after treatment. By applying this approach, changes in participants' emotional regulation abilities resulting from the intervention can be measured directly.

Population and Sample

The population of this study consists of patients receiving treatment at the cardiology, internal medicine, and neurology outpatient clinics of Diponegoro National Hospital (RSND), Indonesia. Sampling was conducted using a non-probability sampling technique with a purposive sampling method, where participants were selected based on predefined criteria relevant to the study objectives.

Inclusion and Exclusion Criteria

The inclusion criteria for this study were patients who had been diagnosed with a chronic disease, including diabetes mellitus, stroke, or heart disease, for more than three months. Participants had to be 18 years or older, possess a fully intact level of compositional awareness during the study, and be able to communicate in Bahasa Indonesia. The exclusion criteria included patients with cognitive impairments that could interfere with their understanding of the intervention or those with medical conditions preventing them from completing all intervention sessions. Based on these criteria, a total of 50 participants were selected for this study.

Intervention

The intervention implemented in this study was an emotion regulation training program, designed to enhance participants' ability to recognize, manage, and adaptively cope with emotions. The training was based on Gross's Emotion Regulation Theory (2003) and was delivered in four sessions over two weeks, with two sessions per week. Each session lasted 60–90 minutes and was facilitated by trained mental health nurses professionals.

The first session focused on awareness and acceptance of emotions. Participants were guided to identify their emotions, understand their impact on health, and practice mindfulness and self-reflection techniques, including emotion journaling. The second session emphasized emotional release and forgiveness, where participants were introduced to breathing relaxation techniques, guided imagery, and expressive writing exercises to help them release negative emotions. Additionally, the concept of forgiveness as an emotional regulation strategy was introduced through discussions and letter-writing exercises, where participants wrote letters as an emotional expression without necessarily sending them.

The third session centered on spiritual coping strategies, integrating prayer, meditation, and gratitude practices to strengthen emotional resilience. Participants explored how spirituality could aid in coping with emotional distress related to chronic illnesses. The fourth session focused on emotional evaluation and cognitive restructuring, where participants learned cognitive reappraisal techniques to modify their perspectives on stressful situations. They were presented with real-life scenarios relevant to their conditions and were trained to apply cognitive techniques to reduce negative emotional impacts. At the end of the fourth session, participants reflected on their emotional changes, discussed challenges they faced, and developed action plans to maintain their emotion regulation skills beyond the intervention period.

Data Collection

Data collection was conducted in July 2024 using the Emotion Regulation Questionnaire (ERQ) developed by Gross (2003). This questionnaire consists of 10 items measuring two key aspects of emotion regulation: cognitive reappraisal (6 items) and expressive suppression (4 items). Participants' responses were recorded on a Likert scale ranging from 1 to 7, where higher scores indicated stronger use of emotion regulation strategies.

Ethical Considerations

This study was conducted following ethical principles in research, including autonomy, beneficence, non-maleficence, and justice. Before participation, all participants were provided with comprehensive information regarding the study's purpose, procedures, potential benefits and risks, and their right to withdraw at any time without consequences. Written informed consent was obtained from all participants before the intervention began. This study received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Diponegoro University, with Ethical Clearance No. 256/EC/KEPK/FK-UNDIP/V/2024.

Data Analysis

Data analysis in this study was conducted using both descriptive and inferential statistical approaches. The first step was testing data normality using the Kolmogorov-Smirnov test to determine whether the data followed a normal distribution. The results indicated that the data were normally distributed ($p > 0.05$), allowing for further analysis using parametric tests.

To compare pre-test and post-test emotion regulation scores, a paired t-test was used with a significance level of $\alpha = 0.05$ and a 95% confidence interval. Additionally, Cohen's d effect size was calculated to assess the magnitude of the intervention's impact. The effect size was interpreted as small ($d = 0.2$), moderate ($d = 0.5$), or large ($d = 0.8$ or higher).

Through this methodological approach, this study aims to provide empirical evidence on the effectiveness of emotion regulation training for patients with chronic illnesses and contribute to the development of psychological-based interventions in healthcare settings.

Table 1. Data Normality Test

Variables	Kolmogorov - Smirnov		
	N	P-value	Conclusion
Emotional Regulation Before Training	50	0,160	Data is normally distributed
Emotional Regulation After Training	50	0,176	Data is normally distributed

Based on these results, the comparative analysis used to determine the difference in emotional regulation scores before and after treatment in both groups uses a paired T test.

RESULTS OF STUDY

Demographic Data

Table 2: General Characteristics of Respondents

No	Karakteristik	N	F	%
1	Gender:			
	Male	50	26	52
	Women		24	48
2	Education:			
	Primary Education	50	6	12
	Secondary Education		15	30
	Higher Education		29	58
3	Long Suffering:			
	<1	50	5	10
	1-5		21	42
	> 5		24	48
4	Age	N	Mean ± **SD**	Min – Max
	Age of Responden	50	58,56 ± 9,190	32 – 78
5	Emotion Regulation			
	Before Regulation	50	25,90 ± 4,042	

Based on table 2, the characteristics of respondents in this study were found to be more than half of the respondents' gender, namely male as many as 26 (52%), more than half of the education was higher education as many as 29 (58%), the length of suffering was mostly > 5 years as many as 24 (48%), the average age of respondents was 59 years old and the respondents' emotional regulation before treatment obtained an average score of 25.90 ± 4.042.

The Effect of Emotion Regulation on the Level of Emotion Regulation

Table 3. Paired T Test

No	Variables	N	Mean ± SD	Mean Different ± SD	P-Value
1	Emotional Regulation Before Training	50	25,90 ± 4,042	7,980 ± 3,605	0,000
2	Emotional Regulation After Training		33,88 ± 2,265		

Based on table 3, it is known that there is a difference before and after being given an emotional regulation intervention of 7.980 ± 3.605 with a P-Value of 0.000 or P-Value <0.005. This means that there is a significant difference.

DISCUSSION

This study explores the effect of emotion regulation training on the level of emotion regulation of patients with chronic diseases. The results of this study showed that the level of emotion regulation ability of patients with chronic diseases increased after regular emotion regulation exercises were carried out by patients. Emotion regulation skills are important for patients with chronic diseases because emotion regulation is able to reduce stress and anxiety levels (15,16) improve quality of life (17), increase adherence to treatment (11), and can improve the immune system in patients by reducing inflammation (18).

Emotion regulation training in people with chronic diseases can help improve emotion regulation abilities through increasing self-awareness, developing adaptive coping strategies, and modifying individual mindsets towards their illness.

Emotion regulation strategies that have been developed by Gross (2002) consist of selecting situations, modifying situations, focusing attention, changing cognition, and modulating responses to situations (12). Previous studies have shown that emotion regulation moderates the relationship between chronic illness and depressive symptoms in Chinese adolescents (19). Emotion regulation training is able to improve emotion regulation ability by training patients to describe, observe, and name the emotions they feel. Emotion regulation training is also able to increase individual emotion awareness so that they can choose appropriate emotional responses (20).

Emotion regulation exercises carried out by people with chronic diseases can increase their acceptance of chronic diseases. This is because mindfulness skills integrated in emotion regulation interventions can increase individuals' focus on perceived emotions and accept their circumstances (20). Maladaptive emotion regulation strategies in individuals can lead to negative consequences in the long run and will cause more negative effects (20). The goal of emotion regulation in individuals can be achieved by increasing or decreasing aspects of individual positive and negative emotions. In positive emotion regulation strategies, the process of reappraisal of events is expected to produce greater activation of positive affect so that individuals are able to feel positive emotions. Conversely, negative affect activation in positive emotion regulation strategies becomes lower (21,22).

Poorly regulated emotions are the basis for psychopathology across a range of conditions. Emotion dysregulation in individuals is associated with a wide range of mental disorders such as bipolar, ADHD, PTSD, depression, anxiety, substance use, eating disorders and addictions (23). Reappraisal of a situation or event in the emotion regulation training process can reduce negative affect by activating the lateral and medial prefrontal cortex, which are responsible for cognitive control. In addition, effective reappraisal can also reduce activation of the medial orbital frontal cortex and amygdala, which are involved in emotion processing (24). Mindfulness-based emotion regulation strategies are promising strategies to improve the ability to regulate emotions in individuals. This awareness is also related to the proinflammatory status associated with emotion dysregulation (25). Acceptance in the emotion regulation training process has also been shown to have a significant effect on emotion regulation (26). Acceptance in the emotion regulation process is done to accept the emotions felt with openness and without trying to control them. Acceptance is related to higher tolerance for unpleasant emotional states so that individuals do not avoid negative emotions that are felt (27).

This study expands the literature data on how the practice of emotion regulation exercises can affect the level of emotion regulation in people with chronic diseases. The ability of emotion regulation in chronic disease sufferers can affect the ability of sufferers to manage chronic conditions experienced and can affect how disease management in chronic disease sufferers (28). The findings of this study underscore the significance of emotion regulation training as an essential psychological intervention for patients with chronic diseases.

Chronic illness is often accompanied by persistent stress, uncertainty, and emotional burdens that can negatively impact mental health and overall well-being. Emotion regulation training provides patients with structured strategies to navigate these emotional challenges, helping them modulate negative affect while enhancing positive emotional responses. The process of cognitive reappraisal, a key component of emotion regulation, has been widely recognized for its ability to alter maladaptive thought patterns and foster a more adaptive perception of chronic illness (29,30). Studies indicate that patients who actively engage in cognitive reappraisal report lower levels of depressive symptoms, greater life satisfaction, and improved emotional stability (31). In this context, emotion regulation not only reduces psychological distress but also enhances coping efficacy, enabling patients to maintain a better quality of life despite their illness. This aligns with prior research emphasizing that effective emotion regulation is linked to better psychological resilience, improved interpersonal relationships, and greater emotional intelligence (14,32,33).

Additionally, integrating emotion regulation interventions into healthcare settings could lead to broader clinical and public health benefits by improving patient adherence to medical treatments and enhancing overall disease management. Poor emotional regulation has been associated with lower adherence to prescribed treatments, unhealthy lifestyle behaviors, and increased healthcare utilization due to frequent hospital visits and complications (34). Emotion regulation training could help address these issues by promoting greater self-awareness, emotional acceptance, and adaptive coping mechanisms (16,35). The application of mindfulness-based emotion regulation techniques, for instance, has been shown to reduce stress-related inflammation, enhance immune function, and mitigate the physiological burden of chronic stress on the body (36). Furthermore, from a healthcare system perspective, incorporating emotion regulation training into routine patient care may contribute to cost reduction by decreasing the incidence of mental health comorbidities, such as depression and anxiety, which are common among individuals with chronic illnesses. Future research should explore the longitudinal impact of emotion regulation training on disease outcomes, healthcare costs, and patient-reported experiences to establish a more robust evidence base for its integration into multidisciplinary chronic disease care models. By addressing both the emotional and physical dimensions of chronic illness, emotion regulation interventions have the potential to transform conventional healthcare approaches, leading to more holistic, patient-centered care.

CONCLUSION

This study demonstrates that emotion regulation training significantly improves emotion regulation abilities in patients with chronic diseases. The results of the paired T-test indicate a substantial difference in emotion regulation levels before and after the intervention, confirming the effectiveness of emotion regulation practices in enhancing patients' ability to

manage their emotions. Emotion regulation practices facilitate increased self-awareness, acceptance, and adaptive coping strategies, which are crucial for individuals managing the psychological burden of chronic illness.

The findings of this study have important clinical implications. Integrating emotion regulation training into routine healthcare for patients with chronic diseases may contribute to better emotional well-being, improved treatment adherence, and enhanced overall quality of life. Healthcare professionals, particularly nurses and mental health practitioners, should consider incorporating structured emotion regulation interventions into patient education and support programs. Furthermore, policymakers should recognize the value of psychological interventions in chronic disease management and support their inclusion in holistic healthcare models.

Future research should explore the long-term effects of emotion regulation training on disease outcomes, including its impact on stress-related biomarkers, inflammation, and overall health status. Additionally, further studies could investigate the effectiveness of different emotion regulation techniques, such as cognitive reappraisal and mindfulness-based interventions, across diverse chronic disease populations. Implementing larger, multicenter trials with extended follow-up periods will provide stronger evidence for the integration of emotion regulation training into standard chronic disease care.

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CONFLICT OF INTEREST STATEMENT

The authors declare that no conflicts of interest in this study.

HUMAN ETHICS AND CONSENT TO PARTICIPATE

This study received ethical approval from the Research Ethics Committee of the Faculty of Medicine, Diponegoro University, with Ethical Clearance No. 256/EC/KEPK/FK-UNDIP/V/2024.

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