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IMPLEMENTATION TRAUMA HEALING THROUGH COGNITIVE BEHAVIORAL THERAPY TO OVERCOME ANXIETY IN WOMEN OF REPRODUCTIVE AGE AFTER LANDSLIDE DISASTERS

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ABSTRACT
Indonesia is a disaster-prone country located on the Ring of Fire and frequently experiences hydrometeorological disasters, including landslides. Landslides not only cause physical and economic losses but also lead to psychological impacts, particularly anxiety, which is most often experienced by vulnerable groups such as women of childbearing age (WUS). Anxiety after disasters, if left untreated, can disrupt daily functioning and reduce quality of life. Cognitive Behavioral Therapy (CBT) has been recognized as an effective intervention to reduce anxiety and improve psychological resilience. This study aimed to analyze the level of anxiety in women of childbearing age after a landslide disaster and to evaluate the effectiveness of Cognitive Behavioral Therapy (CBT) in reducing anxiety. This quantitative study used an experimental pretest-posttest control group design. The population consisted of 40 women. The sample is a part of the accessible population that will be used as the subject of research using sampling techniques. The research sample is 20 people in the experimental group and 20 people in the control group. Childbearing age in the Lae Parira Health Center area, Dairi Regency, from April to October 2025. Samples were divided into two groups: 20 respondents in the experimental group receiving CBT and 20 respondents in the control group. Data were collected through interviews, observations, and standardized anxiety assessment. analysis using univariate analysis and bivariate analysis. The CBT group showed a significant decrease in anxiety scores from a median of 16 to 7 ($Z = -4.76$; $p < 0.001$; $r = 1.07$), while the control group experienced only a slight reduction from 17 to 15 ($Z = -3.49$; $p < 0.001$; $r = 0.78$). Between-group comparison confirmed that CBT was significantly more effective ($Z = 5.41$; $p < 0.001$; $r = 0.86$). Cognitive Behavioral Therapy is highly effective in reducing anxiety among women of childbearing age after a landslide disaster. Its implementation in primary healthcare settings can support post-disaster psychological recovery and improve community resilience.

Keywords: cognitive behavioral therapy (CBT); disaster recover; landslide; trauma; women of childbearing age

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INTRODUCTION

Landslides have been categorized as a new national threat, driven by the increasing frequency of extreme rainfall events. Currently, there are two schools of thought in the field of disaster risk reduction: the first, natural disasters, and the second, non-natural disasters, which are a complex combination of socio-economic and socio-cultural aspects 1. In many cases, particularly in South Asia and Latin America, landslide disasters are related to anthropogenic factors such as environmental degradation, unsustainable development planning, cultural barriers and lack of community risk perception and good governance (Ahmed B, 2021).

Indonesia is located at the confluence of three major tectonic plates: the Eurasian, Pacific, and Australian plates, which are colliding with each other. The collisions between these plates have created a subduction zone extending west of Sumatra, south of Java to Bali and the Nusa Tenggara Islands, north of the Maluku Islands, and north of Papua. Other consequences of these collisions

include the formation of ocean trenches, folds, ridges, and faults in island arcs, the distribution of volcanoes, and the distribution of earthquake sources. Indonesia has 129 volcanoes, representing 13% of the world's active volcanoes. Therefore, Indonesia is prone to volcanic eruptions and earthquakes. On some coasts with moderate to steep coastlines, earthquakes originating on the seabed or ocean floor can trigger tsunami (Triany et all., 2022). Indonesia, with its geographical characteristics of highlands and lowlands, relatively high rainfall, and location along the Ring of Fire, is highly susceptible to landslides. There are at least 918 landslide-prone locations in Indonesia. Therefore, Indonesia is at high risk of landslides (Sarkowi, 2018).

Landslides are one of the natural disasters that can affect humans. They pose a potential risk to human life, and their severity increases year by year. The numerous casualties that can occur from these disasters, not only pose a risk to human life, but also the potential destruction of residential buildings, public service buildings, including healthcare facilities, and infrastructure. This can paralyze the activities of communities affected by landslides. This disaster caused significant losses for the community, including loss of homes, blocked road access, paralyzed health and public services, loss of livelihoods, and economic disruption. In addition to these losses, the community also experienced trauma. The majority of those affected by landslides are women, children, and the elderly, due to physical weakness and anxiety. People are constantly haunted by fear, especially during heavy rainfall. This shadow of fear leads to anxiety. Anxiety can be addressed through trauma healing using Cognitive Behavioral Therapy (CBT).

A preliminary survey conducted in the Lae Parira Community Health Center in Dairi Regency in early April 2024 revealed that many women of childbearing age (WUS) were experiencing anxiety due to the landslide. Initial interviews with these women revealed that they had not received trauma healing using Cognitive Behavioral Therapy (CBT) to address their anxiety. The purpose of this study was to analyze the level of anxiety of women of childbearing age after a landslide disaster and the implementation of trauma healing through the cognitive behavioral therapy (CBT) method in overcoming the anxiety of women of childbearing age after a landslide disaster in the working area of the Lae Parira Community Health Center, Dairi Regency in 2025. Natural disasters are unpredictable and can strike at any time, anywhere. Indonesia is a disaster-prone country due to its geographical location between three major tectonic plates, making it highly vulnerable to earthquakes and tsunamis. However, Indonesia is also highly susceptible to hydrometeorological disasters such as floods and landslides. These disasters occur almost annually, and they recur due to the vast majority of Indonesia's mountainous terrain and steep slopes.

Landslides frequently occur in Indonesia, both on a small and large scale. These disasters can have significant impacts and risks. The impacts of these disasters include building damage, infrastructure damage, disrupted transportation routes and resulting in casualties, and psychological disturbances that lead to anxiety among women and children (WUS). WUS are one of the vulnerable groups in the event of a landslide. Therefore, post-landslide solutions need to be provided, namely trauma healing through Cognitive Behavioral Therapy (CBT). The goal of this therapy is to identify, evaluate, and respond to dysfunctional thoughts and beliefs. It is hoped that this therapy will help them manage the anxiety that can disrupt their personal lives. With Cognitive Behavioral Therapy (CBT), they can return to a normal life, similar to what they had before the landslide occurred in their area. The aim analyze the anxiety levels of fertile women after a landslide disaster and the implementation of trauma healing through the Cognitive Behavioral Therapy method.

METHOD

This research is a quantitative study using experimental methods. The research design used was a pretest-posttest control group design. Initial measurements or observations were made before and after treatment was administered to the experimental and control groups. The population in this

study was all women of childbearing age (WUS) at the Lae Parira District Health Center from April to October 2025, totaling 40 individuals. The sample is a subset of the accessible population that will be used as research subjects using sampling technique (Mukhid A, 2021). The research sample consisted of 20 individuals in the experimental group and 20 individuals in the control group. The instruments that will be used in this experiment are interviews, observations, figural creativity tests, experimental data. analysis using univariate analysis and bivariate analysis.

RESULT

Table 1.
Characteristics of Women of Childbearing Age

Karacteristic	Case		Control	
	F	%	F	%
Age				
Late Adolescence : 15–19 years	2	10.0	1	5.0
Young Adult : 20–29 years	11	55.0	10	50.0
Middle Adulthood : 30–39 years	6	30.0	9	45.0
Older Adults : 40–49 years	1	5.0	0	0
Education				
Middle School	2	10.0	1	5.0
High School	14	70.0	16	80.0
University	4	20.0	3	15.0
Work				
Farmer/ Ranchers	13	54.2	9	45.0
PNS	4	16.7	2	10.0
BUMN/BUMD	6	25.0	2	10.0
Self-employed	1	4.2	4	20.0
Not Settled	0	0	3	15.0
Income				
< UMK	10	50.0	13	65.0
>UMK	9	45.0	7	35.0
No Income	1	5.0	0	0

Based on the analysis, it can be concluded that the sociodemographic characteristics of women of childbearing age in the Kentara Community Health Center work area in the case and control groups are relatively similar. Most respondents were of productive age (20–39 years), had secondary education (high school), worked in the informal sector such as farming or livestock farming, and had income levels that tended to be below the minimum wage. These similar characteristics indicate that both groups have comparable socioeconomic backgrounds, so the differences in research results that emerged are likely influenced by factors other than the respondents' basic characteristics.

Tabel 2.
Anxiety Scores in Case and Control Groups

Group	Pre-test (Mean±SD, Median [IQR])	Post-test (Mean±SD, Median [IQR])	Decline Δ (Mean±SD, Median [IQR])
Case (n=20)	15.1 ± 2.9, 16 [13–16]	8.4 ± 2.6, 7 [6–9]	6.7 ± 0.9, 7 [7–7]
Control (n=20)	17.0 ± 2.7, 17 [16–18]	15.5 ± 2.7, 15 [14–17]	1.1 ± 0.9, 1 [1–2]

In the case group, anxiety scores decreased significantly from a median of 16 (IQR 13–16) to 7 (IQR 6–9), with a very large effect size ($Z = -4.76$, $p < 0.001$, $r = 1.07$). In the control group, anxiety scores also decreased slightly from a median of 17 (IQR 16–18) to 15 (IQR 14–17), although statistically significant ($Z = -3.49$, $p < 0.001$, $r = 0.78$), but the magnitude of the change was only about 1 point.

Tabel 3.
Statistical Test Results and Effect Size

Group / Comparison	Statistic Test	Z	p-value	r (Effect Size)	Interpretasi
Case (Pre vs Post)	Wilcoxon	−4.76	<0.001	1.07	Very Big Effect
Kontrol (Pre vs Post)	Wilcoxon	−3.49	<0.001	0.78	Big Effect
Control vs Kontrol (Δ)	Mann–Whitney	5.41	<0.001	0.86	Very Big Effect

Comparison of anxiety score reduction between groups using the Mann–Whitney U test showed a highly significant difference ($Z = 5.41$, $p < 0.001$) with a very large effect size ($r = 0.86$). These findings indicate that the CBT intervention was significantly more effective in reducing anxiety than the control group.

DISCUSSION

The results showed that the Cognitive Behavioral Therapy (CBT) intervention significantly reduced anxiety in the case group, with the median score dropping from 16 (IQR 13–16) to 7 (IQR 6–9), and showed a very large effect ($Z = –4.76$; $p < 0.001$; $r = 1.07$). Although the control group also recorded a decrease in anxiety scores from 17 (IQR 16–18) to 15 (IQR 14–17), the difference was clinically small but statistically significant ($Z = –3.49$; $p < 0.001$; $r = 0.78$). The Mann–Whitney U test between the two groups revealed that the decrease in anxiety in the CBT group was significantly greater ($Z = 5.41$; $p < 0.001$; $r = 0.86$). These findings reinforce the assumption that CBT is an effective intervention with a large effect for reducing anxiety. These results are consistent with a meta-analysis of RCTs showing that CBT has a large pre-post effect (Hedges' $g \approx 1.18$), while control has only a moderate effect (Hedges' $g \approx 0.59$) (Davis et al., 2024). In addition, a recent analysis found that CBT was still effective compared to control, although the effect size was slightly lower for PTSD (Hedges' $g = 0.24$; $p < 0.05$). Overall, the empirical evidence supports that CBT is statistically and clinically highly effective in reducing anxiety, making it a recommended non-pharmacological intervention in primary care.

Cognitive Behavioral Therapy (CBT) is a psychotherapy approach developed based on the understanding that automatic negative thoughts that arise unconsciously, known as "automatic thoughts," play a significant role in influencing a person's mood and behavior. This concept was introduced and developed by Aaron T. Beck, a leading psychiatrist and psychotherapist, who observed that these negative thought patterns are often cognitive distortions, errors in information processing that lead to unrealistic perceptions of oneself, the world, and the future, and tend to lead to feelings of anxiety, depression, and various other psychological disorders. According to Beck (2025), this therapy focuses on systematically identifying negative thoughts, then challenging and evaluating their validity in a logical and objective manner. Thus, individuals undergoing CBT therapy are empowered to develop more adaptive, healthy, and rational thought patterns, which ultimately help improve emotional well-being and change behaviors to be more positive and constructive. This approach has been widely applied in treating various psychological problems, ranging from depression, anxiety, to stress disorders, and continues to develop into an effective and empirical therapy model in the field of clinical psychology (Beck AT, 2025).

Cognitive Behavioral Therapy (CBT) emphasizes the close and interconnected relationship between a person's thoughts, emotions, and behavior. In CBT, the way a person views a particular situation or experience, often characterized by maladaptive or negative thoughts, directly influences the emotional responses that arise, such as feelings of anxiety, sadness, or anger. Therefore, when these thoughts are corrected and transformed into more realistic and constructive ones, unhealthy emotional responses such as anxiety or depression can be significantly reduced. This approach

focuses not only on visible symptoms but also on the internal processes underlying an individual's thought patterns and reactions, thus enabling lasting and adaptive changes in daily life.

Furthermore, CBT is not only used in face-to-face therapy sessions with psychologists or psychiatrists, but is also increasingly popular in the form of bibliotherapy, a form of therapy through reading designed to help individuals understand and independently address psychological issues. One particularly well-known book in this context is David D. Burns's Feeling Good, which has been translated into various languages, including Indonesian (translated in 2014). This book explains the basic principles of CBT in easy-to-understand language and provides practical exercises that can help readers recognize and overcome negative thoughts that contribute to anxiety and depression. Thus, through books and similar resources, CBT has become a widely accessible approach not only in clinical settings but also to the general public who want to improve their mental health without always relying on direct professional therapy. This demonstrates how CBT continues to evolve as a flexible and effective therapy method for managing anxiety. various emotional and psychological disorders (Burns BB, 2014).

In recent decades, Cognitive Behavioral Therapy (CBT) has undergone significant developments, making it more flexible and accessible to a wide range of populations. Modern books and literature emphasize that CBT is not only effective through traditional face-to-face sessions with a therapist, but can also be adapted into online formats and self-help programs based on digital apps and self-paced learning modules. These adaptations allow individuals with limited time, cost, or access to professional mental health services to still benefit from this therapy. The use of digital technology in CBT facilitates structured and interactive psychological interventions, with features such as learning modules, cognitive exercises, progress assessments, and remote support from therapists or support communities.

The success of CBT in managing anxiety disorders is rooted in its ability to help individuals identify and challenge automatic, often irrational, negative thoughts and replace them with more adaptive thought patterns. Furthermore, behavioral techniques such as graded exposure provide patients with opportunities to gradually confront anxiety-provoking situations, thereby systematically desensitizing them and reducing anxiety symptoms. A variety of anxiety disorders, including generalized anxiety disorder, social phobia, and panic disorder, have been shown to respond positively to this approach. However, while considerable evidence supports the short-term effectiveness of CBT, further research is needed to confirm its long-term effectiveness and the applicability of the CBT model to more diverse populations and healthcare contexts (Carlbring et all., 2018).

Research on the effectiveness of Cognitive Behavioral Therapy (CBT) in reducing anxiety and stress in post-natural disaster victims in Indonesia has shown very positive results. A literature review conducted by Alfriyani and Mustikasari (2024) reviewed ten research articles from 2020-2024 that discussed the implementation of CBT in flood disaster victims. The results of this review showed that CBT was consistently effective in reducing anxiety and stress levels, while significantly increasing psychological resilience in survivors. These three aspects—anxiety, stress, and resilience—are key indicators of post-disaster psychological recovery, thus improving in all three it indicates a successful psychological adaptation process (Alfriyani amd Mustikasari, 2024).

In addition to flooding, other research focuses on post-traumatic stress disorder (PTSD) that emerges after natural disasters such as earthquakes. Hayati et al. (2022) found, through a literature review, that CBT is a highly effective approach in reducing trauma and stabilizing the emotional state of earthquake victims, while also helping to increase long-term psychological resilience. These studies confirm that CBT not only targets immediate anxiety symptoms but also contributes to a

more comprehensive psychological recovery process, focusing on cognitive and behavioral components that help victims manage stress and trauma adaptively (Hayati et all., 2022).

The implementation of CBT in post-disaster communities in Indonesia has received support because it can be implemented using various methods. For example, CBT can be conducted face-to-face or in a group format and can also be combined with a mindfulness approach that adds mindfulness to the therapy process to increase the effectiveness of anxiety reduction (Goldin et al., 2021 in a global context). Furthermore, this therapy is flexible for implementation by emergency personnel mental health in health centers and community settings, expanding the reach of psychosocial services for survivors (Rusmana et all., 2017).

Thus, based on a literature review and empirical research in Indonesia, it can be concluded that CBT is an effective, practical, and adaptive intervention for reducing anxiety and stress, and increasing resilience in post-natural disaster victims. Sustained efforts in training therapists and widespread implementation of CBT can have a significant positive impact on the psychological recovery of disaster-affected communities.

CONCLUSION

This study involved 40 women of childbearing age (WUS) at the Kentara Community Health Center in Dairi Regency who were subjected to Cognitive Behavioral Therapy (CBT) intervention, consisting of 20 in the case group (intervention) and 20 in the control group. Anxiety was measured using valid and reliable instruments before and after the implementation of CBT, with the intervention being managed systematically. Detailed participant characteristics provide an overview of the initial conditions and context of therapy implementation, which serve as the basis for evaluating the effectiveness of CBT.

The results showed that CBT significantly reduced anxiety levels in the intervention group, with a median anxiety score decreasing from 16 to 7, indicating a very large and statistically significant change ($Z = –4.76$; $p < 0.001$; $r = 1.07$). In contrast, the control group, which did not receive CBT, experienced only a small, but statistically significant, decrease in anxiety, with a median score changing from 17 to 15. A comparison between the two groups (Mann–Whitney U test) confirmed that the reduction in anxiety in the CBT group was significantly greater, confirming the effectiveness of CBT as a primary psychological intervention in the context of anxiety management in women of childbearing age (WUS) in primary healthcare settings. This study confirms that CBT is highly relevant and effective in reducing anxiety in women of childbearing age after a natural disaster, and is therefore recommended for integration into mental health programs at community health centers and other healthcare facilities. It also underscores the importance of training healthcare workers in CBT techniques to improve the quality and coverage of sustainable anxiety therapy in the community.

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