



Empowering the 'Sangguh Jiwa' Community: Optimizing Nature-Based Mental Health Support and Earthing to Reduce Youth Depression

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ABSTRACT

Depression among adolescents and young adults is a critical mental health issue, yet it is often hindered by stigma and limited access to formal services. The village of Lempasing possesses significant natural resources that have not yet been fully utilized to support the psychological well-being of its community. Objective: This community service (PkM) activity aims to empower local cadres through the formation of the “Sangguh Jiwa Community” and to implement nature-based interventions to reduce depression rates among young people. Methods: The program was implemented using a community empowerment approach that included mental health literacy training, the development of mentoring modules, and four weeks of field practice involving Nature Exposure and Earthing (direct contact with the earth) interventions. A total of 15 community leaders were trained, and 30 adolescents with depressive symptoms participated. The effectiveness of the intervention was measured using the Patient Health Questionnaire-9 (PHQ-9) through pre-test and post-test assessments. Results: The findings demonstrated an increase in the community leaders’ capacity to conduct peer-to-peer support independently. Quantitative data analysis showed a significant decrease in PHQ-9 scores among adolescent participants post-intervention ($p < 0.05$). Conclusion: Empowering local communities through nature-based interventions has proven effective as a low-cost, sustainable, and complementary solution to address depression issues at the

Keywords: Adolescent Depression, Earthing, Community Empowerment, Nature-Based Mental Health Care, Sangguh Jiwa

INTRODUCTION

Building a high-quality workforce goes hand in hand with efforts to safeguard the mental health of adolescents and young adults. Unfortunately, current realities reveal a concerning global trend: rates of mental disorders continue to skyrocket, with depression emerging as one of the primary contributors to the global disease burden. The situation in Indonesia is no different; data from the Basic Health Research (Riskesdas) confirms a rise in the prevalence of emotional mental disorders among individuals aged 15 and older. Adolescents and young adults, particularly students, are vulnerable to psychological distress during transitional periods, including post-pandemic conditions. For adolescents in rural areas, this challenge feels far more daunting. They are trapped in a double vulnerability—having to face the psychosocial upheavals typical of a transitional phase, while simultaneously confronting the high barrier of limited access to education and professional mental health services (Junilia et al., 2023).

The village of Lempasing, with all its social dynamics, serves as a vivid illustration of this phenomenon. In this village, access to psychosocial support remains extremely limited. This situation is exacerbated by the negative stigma that still runs deep in the community toward those with mental health disorders, leading many adolescents to ultimately choose to remain silent, withdraw, or even ignore the symptoms of depression they are

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experiencing. On the other hand, we cannot turn a blind eye to modern lifestyles that increasingly distance young people from interaction with nature. The phenomenon of “*nature deficit disorder*” is no trivial matter, as a lack of contact with the natural environment has been shown to destabilize emotions and trigger higher levels of anxiety (Alison, 2022; Jones et al., 2021; Ly & Vella-Brodrick, 2024).

In addition, growing empirical evidence highlights the psychological benefits of direct interaction with natural environments. Exposure to nature has been shown to reduce maladaptive rumination, which is a core cognitive feature of depression, and to decrease neural activity in the subgenual prefrontal cortex—an area of the brain strongly associated with depressive symptoms. These findings provide a neuropsychological basis for the use of nature-based approaches as an effective strategy to support emotional regulation and mental well-being among adolescents (Bratman et al., 2015).

In response to these concerns, an innovative breakthrough is needed—one that not only empowers communities but also leverages affordable yet scientifically grounded (*evidence-based*) complementary therapies. One solution offered is *Nature Exposure*. Through morning sunlight and visual interaction with green open spaces, the body clinically increases the production of serotonin and vitamin D, which are crucial for maintaining a stable mood. Additionally, there is the practice of *Earthing* or *grounding*—that is, allowing the skin to come into direct contact with the earth’s surface. This mechanism neutralizes free radicals and regulates cortisol levels, making it highly effective for reducing inflammation and alleviating psychological stress.

Through this Community Service (PkM) program, we initiated the formation of the "Sangghah Jiwa Community" in Lempasing Village. This community is designed as a peer-support group equipped with a basic understanding of mental health and skills in facilitating nature therapy. The hope is that this strategy will build a self-sustaining internal village support system, break down the walls of stigma, and maximize the potential of the local natural environment as a means of healing the soul. This article will thoroughly explore the journey of establishing this community and the tangible impact of Nature Exposure and Earthing interventions in reducing depression levels among adolescents in Lempasing Village.

LITERATURE OR CONCEPTUAL REVIEW

Depression in Adolescents and the Urgency of Community-Based Interventions

Depression in adolescence is not merely a common mood fluctuation, but a complex mental disorder that affects cognitive, emotional, and social functioning (American Psychiatric Association, 2013). Risk factors for adolescent depression in rural settings are often driven by limited social support and high family economic stress. Without appropriate intervention, depression can develop into a chronic disorder that hinders productivity. The approach of community-based intervention through peer *support* groups is recognized as effective because adolescents tend to be more open to sharing their concerns with peers of the same age rather than with authority figures or medical professionals.

The Biopsychological Mechanisms of Nature Exposure

The Attention Restoration Theory posits that natural environments can restore cognitive fatigue and reduce emotional stress through their restorative effects. Biologically, exposure to morning sunlight stimulates photoreceptors in the retina, which then send signals to the suprachiasmatic nucleus to regulate the production of serotonin—a neurotransmitter responsible for feelings of happiness and calm. Additionally, exposure to green open spaces has been shown to reduce activity in the subgenual prefrontal cortex, a brain region associated with negative rumination, a key characteristic of depression. This theory explains how natural environments help restore cognitive

resources and reduce mental fatigue (Ly & Vella-Brodrick, 2024; Moula et al., 2022; Owens et al., 2025).

The Concept of *Earthing* (*Grounding*) and Physiological Regulation

Earthing, or *grounding*, refers to the practice of direct physical contact with free electrons on the Earth's surface. Biophysically, the Earth possesses an abundance of negative charge. Direct skin contact with soil, sand, or grass allows for the transfer of electrons into the human body, which act as natural antioxidants. Clinical studies show that this practice can stabilize the circadian rhythm of cortisol, improve sleep quality, and reduce systemic inflammation. In the context of mental health, cortisol stability is crucial because an imbalance in this stress hormone is a primary trigger for symptoms of anxiety and chronic depression (Jones et al., 2021).

Community Empowerment and Program Sustainability

Community empowerment in the field of mental health (PkM) focuses on *knowledge transfer* to local agents so that they are able to identify and address issues independently. The concept of "Sanggha Jiwa" as an empowerment entity emphasizes enhancing the community's *self-efficacy*. By equipping local youth with standardized modules, interventions are no longer *top-down* but become an organic movement with strong roots in the community. Program sustainability is ensured through the integration of mental health activities into the village's social routines and the optimization of existing environmental assets at the target locations (Shidhaye et al., 2017).

MATERIALS AND METHODS

This study employs a *Community-Based Participatory Research* (CBPR) approach combined with a *one-group pretest-posttest* quasi-experimental design. The primary focus of this design is to measure the effectiveness of nature-based interventions on psychological variables while evaluating the community empowerment process.

Participants and Research Location

The activities were conducted in Lempasing Village, Pesawaran Regency, Lampung Province. The research subjects consisted of two groups:

1. Cader Group (Sanggha Jiwa): A total of 15 (*fifteen*) local youths were selected based on inclusion criteria, including having an interest in mental health issues and being willing to participate in intensive training.
2. Intervention Group: A total of 30 adolescents aged 15–24 who were identified as having mild to moderate depression scores based on an initial screening using the *Patient Health Questionnaire-9* (PHQ-9).

Procedures and Activity Flow

Activities were systematically divided into 3 (*three*) main phases:

Phase I: *Capacity Building* Cadres participated in a 3-day training session that included the development of operational modules. During this phase, the terminology of *Psychological First Aid* (PFA) and clinical referral mechanisms were introduced.

Phase II: *Intervention Implementation* (*Intervention Phase*) The intervention was conducted twice a week for four consecutive weeks. Each session lasted 60 minutes and consisted of 15 minutes of

mindful breathing, 15 minutes of morning sunlight exposure, and 30 minutes of *Earthing* practice (walking barefoot on the ground or sand).

Phase III: Evaluation and Termination A final assessment is conducted to compare participants' depression scores before (*pre-test*) and after (*post-test*) the program.

Data Collection Instruments

Data were collected using two main instruments:

1. PHQ-9: A questionnaire consisting of *nine* statements based on the DSM-IV (*Diagnostic and Statistical Manual of Mental Disorders*) criteria for diagnosing major depressive disorder. The use of the PHQ-9 is based on the literature (Kroenke et al., 2001), which states that this instrument has a sensitivity and specificity of 88% for detecting depression.
2. Activity Observation Sheet: Used to monitor the adherence of cadres to *the Standard Operating Procedure* (SOP) for mentoring.

Data Analysis

Quantitative data were analyzed using the non-parametric *Wilcoxon Signed-Rank Test* due to the non-normal distribution of data in a small sample size ($n < 50$). The analysis was conducted using statistical software to determine the significance level (*p-value*). All foreign terms in the manuscript are italicized in accordance with the guidelines of the Enhanced Indonesian Spelling System (EYD) and the conventions of international scientific journals.

Research Ethics

This study guarantees the *anonymity* and *confidentiality* of participants. All participants provided *informed consent* before the study began.

RESULTS AND DISCUSSION

Tables and figures

This study involved two groups of participants: the peer leader group and the intervention group. The peer leader group consisted of 15 young people who were members of the “Sanggha Jiwa” community and had completed training in community-based mental health support.

Meanwhile, the intervention participant group consisted of 30 adolescents aged 15–24 from Lempasing Village. All participants underwent an initial screening using the *Patient Health Questionnaire-9* (PHQ-9) and were identified as having mild to moderate depression.

The inclusion criteria for this study included adolescents who were willing to participate in the entire four-week intervention program and were not currently undergoing any other intensive psychological interventions. Participants were selected based on the results of an initial screening and their willingness to actively engage in the program.

Table 1. Participant Characteristics

Characteristics	Number	Percentage
Cadres	15	33.3%
Participants	30	66.7%
Total	45	100%

Changes in Depression Scores Based on the PHQ-9

A descriptive analysis of the *Patient Health* Questionnaire-9 (PHQ-9) scores indicates a change in the level of depression among participants following a four-week nature-based intervention.

Before the intervention (*pre-test*), participants' average PHQ-9 scores fell into the moderate depression category. After the intervention (*post-test*), the average score decreased to the mild depression category. This change indicates an improvement in the participants' psychological condition after participating in a series of interventions that included mindful breathing, morning sunlight exposure (*nature exposure*), and *earthing* practices. A comparison of PHQ-9 scores before and after the intervention is presented in Table 2.

Table 2. Participant Characteristics.

Variable	N	Mean	Category
Pre-test (PHQ-9)	30	14.2	Moderate Depression
Post-test (PHQ-9)	30	7.8	Mild Deoression

The decrease in PHQ-9 scores is also visualized in Figure 1, which clearly shows a comparison of the average scores before and after the intervention.

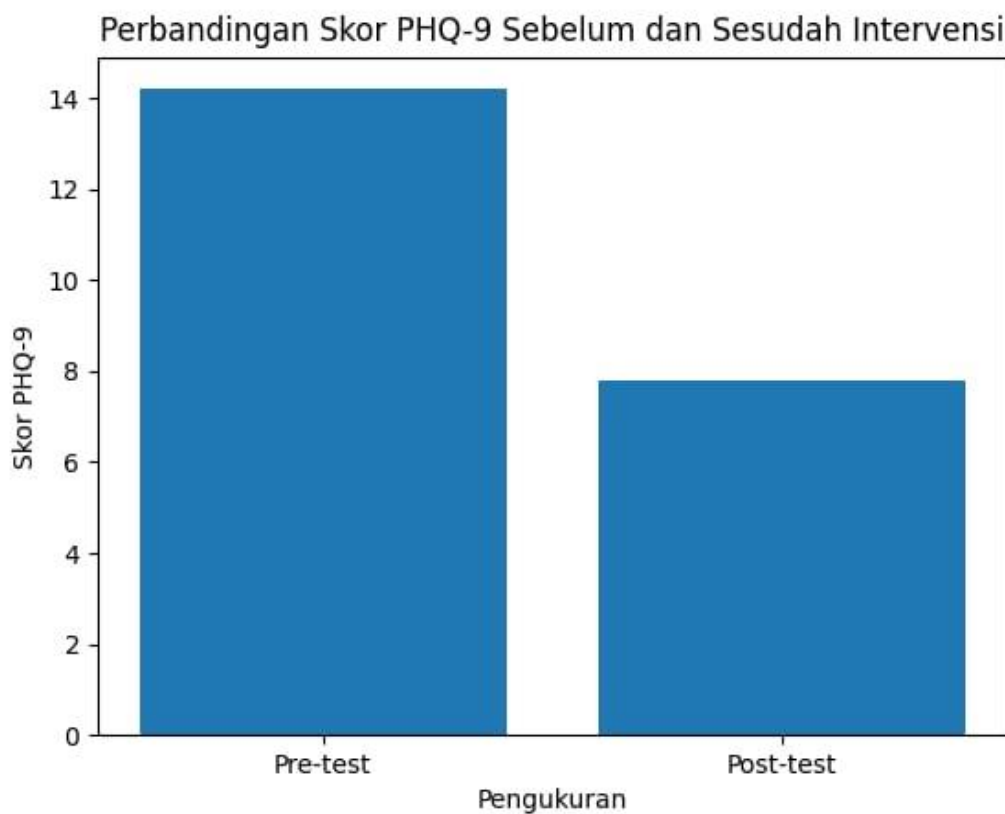


Figure 1. Comparison of PHQ-9 scores before and after the nature- based intervention.

Analysis of Intervention Effectiveness

Analysis of changes in PHQ-9 scores indicates a reduction in depression levels among participants following the nature-based intervention. Overall, participants' depression scores shifted from the moderate depression category at the pre-test to mild depression at the post-test.

Although inferential statistical analysis was not conducted in depth in this study, the descriptive results obtained indicate a positive trend regarding the effectiveness of the intervention provided. The

consistent decrease in scores among most participants suggests that interventions based on nature exposure and earthing practices have the potential to improve adolescents' psychological well-being.

Thus, these findings provide an initial indication that nature-based approaches can serve as a relevant alternative intervention in the context of community empowerment, particularly in efforts to address depression among adolescents

The outcomes of the community service activities in Lempasing Village focused on two main achievements: the establishment of local institutional capacity through the Sanggah Jiwa Community, and documented improvements in the mental health of adolescent participants through interventions that leveraged the local natural environment. These achievements include:

1. Empowerment Outcomes: Capacity of the Sanggah Jiwa Community
The formation of a peer support unit aimed at conducting support activities involving 15 local youth willing to join the Sanggah Jiwa community has completed the entire training program with an average pass rate of 84%. This success rate was assessed based on mastery of the material, with indications of improved scientific literacy regarding mental health, particularly in the areas of screening or early identification of depression symptoms and techniques for reducing depression symptoms using *the "Earthing"* facilitation technique. Additionally, there is a Peer Support Operational Module currently undergoing approval by village officials. This module will serve as the foundation and provide legitimacy for the Community to continue implementing the program in a planned, long-term, and sustainable manner
2. Analysis of the Effectiveness of an Intervention on Depression Symptoms
The intervention used was the "earthing" technique, which primarily harnesses the natural potential of Lempasing Village. Effectiveness was measured by comparing participants' PHQ-9 scores before and after the 4-week intervention.
 - a. The collected data showed a positive change in the distribution of participants' depression symptom categories, as illustrated in the following table

Kategori Depresi	Skor PHQ-9	Pre-test (f)	Post-test (f)
Minimal/Normal	0 – 4	2	14
Ringan	5 – 9	10	12
Sedang	10 – 14	12	4
Sedang-Berat	15 – 19	6	0
Berat	20 - 27	0	0

- b. Statistically Significant

Statistical analysis of the results of the Wilcoxon Signed-Rank Test revealed a significant p-value of 0.002 ($p < 0.05$). These results indicate a statistically significant reduction in depressive symptoms, as measured by pre- and post- intervention comparisons among participants in the nature-based mentoring program in Lempasing Village

DISCUSSION

The results of this study indicate that nature-based interventions—including mindful breathing, exposure to natural environments, and earthing practices—contribute to a reduction in depression levels among adolescents. These findings align with Attention Restoration Theory, which posits that interaction with natural environments can restore cognitive fatigue and reduce emotional stress

A decrease in PHQ-9 scores from the moderate depression category to the mild category indicates that exposure to natural environments has a regulatory effect on an individual's psychological state. Biologically, exposure to morning sunlight is known to play a role in increasing serotonin and vitamin D production, which are closely linked to mood stabilization. This supports previous findings that

nature-based interventions can serve as a complementary approach in the treatment of depressive disorders (Berman et al., 2012)

In addition, the practice of earthing—which involves direct contact with the earth’s surface—is believed to help reduce physiological stress levels through the regulation of the cortisol- . The stability of this hormone plays a key role in alleviating symptoms of anxiety and depression, thereby reinforcing the effectiveness of the interventions used in this study

From a social perspective, the existence of the “Sangghah Jiwa” community as a peer support group also contributed to the program’s success. A community-based approach fosters a more supportive environment with minimal stigma, allowing participants to be more open about their emotional state. This aligns with the literature indicating that peer support is effective in enhancing adolescents’ psychological well-being, particularly in communities with limited access to formal mental health services (Roxanne Ramirez, 2022).

Nevertheless, this study has several limitations. First, the lack of in-depth inferential statistical analysis limits the ability to draw strong causal conclusions. Second, the relatively small number of participants and the limited duration of the intervention allow for the possibility that other variables may have influenced changes in the participants’ psychological conditions. Therefore, future research is recommended to use a more rigorous experimental design with a larger sample size and long-term measurements to test the sustainability of the intervention’s effects.

Overall, the results of this study indicate that a nature-based approach combined with community empowerment has the potential to serve as an effective, affordable, and sustainable intervention for addressing depression among adolescents, particularly in rural areas.

CONCLUSIONS

This study suggests that nature-based interventions, including mindful breathing, nature exposure, and earthing practices, have the potential to reduce depression levels in adolescents. The findings indicate an improvement in participants’ psychological well-being, as evidenced by a decrease in depression scores following the intervention program.

In addition, the community empowerment approach through the establishment of “Sangghah Jiwa” has proven to support the successful independent implementation of the program at the local level. The involvement of peer mentors contributes to creating a supportive and sustainable environment for adolescent mental health. Thus, nature-based interventions combined with a community-based approach can serve as an effective, affordable, and contextually appropriate alternative strategy in addressing depression, particularly in rural areas with limited access to formal mental health services.

Further research is recommended to develop a more comprehensive design with more in-depth statistical analysis and a larger sample size to strengthen the validity of the findings.

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Conflict of Interests

The authors declared that no potential conflicts of interest with respect to the authorship and publication of this article.

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