

Research Paper

Exploring the Psychological and Physiological Impact of a Nature-Based Therapy Activities on Individuals with Severe Stress in Sri Lanka

Welimada Gedara Chamara Mahesh^{1*}, DDKS Karunanayake²

ABSTRACT

Despite global research emphasizing the benefits of nature-based therapy, particularly for stress conditions, there is a notable lack of attention to this approach within the Sri Lankan context. This study aims to bridge this gap by evaluating the physiological and psychological effects of a one-day (6hrs) forest retreat on individuals experiencing higher stress levels through nature-based therapy activities. This is a cross-sectional study. A sample of a hundred participants were selected through convenient sampling by employing a mixed method. The stress levels of these participants were assessed using the Perceived Stress Scale (PSS-10). Ten participants were chosen based on their high-stress levels. Then again, perceived stress and physiological measures such as blood pressure, and pulse rate were collected before and after the nature-based therapy activities. The intervention produced important physiological changes in the participants as reflected by changes in a number of cardiovascular parameters. There was positive shifting in the pulse rate variability which reduced to 87.4 from 92.0 beats per minute (bpm) immediately after the intervention. Likewise, the cardiovascular measurements also had positive changes with the systolic blood pressure decreasing by 2.1 mmHg to 132.9 mm Hg and the diastolic blood pressure also having a slight decrease from 84.9 to 84.0 mm Hg. Another particularly interesting result was the large decrease in the participants' self-reported stress levels which decreased from 34.3 to 26.9 on the perceived stress scale, thus moving from high to moderate stress categories. These results support the potential of nature-based interventions as a therapeutic approach that targets not only the psychological dimensions of stress but also its physiological markers and thus suggest their potential as a holistic treatment approach.

Keywords: *Physiological Effects, Psychological Effects, Nature therapy, Stress, Sri Lanka*

Psychological stress represents a normal reaction to environmental demands (American Psychological Association), yet chronic or severe stress has emerged as a significant global public health concern with wide-ranging psychophysiological and psychopathological consequences. Psychologically, it is associated with anxiety, depressive

¹BA (Hons) in Psychology (PDN); MA in Buddhist Ayurvedic Counselling (PIPBS); PGDip in Counselling and Psychosocial Support (UOC); MSc in Developmental and Educational Psychology (UniPD-Reading)

²Professor in Psychology, Department of Psychology, University of Peradeniya, 20400, Sri Lanka

*Corresponding Author

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symptoms, cognitive fatigue, and emotional dysregulation. Physiologically, stress can result in elevated heart rate, increased blood pressure, and dysregulated cortisol levels, increasing the risk of long-term cardiovascular and immune system dysfunction. While pharmacological and cognitive-behavioral treatments remain standard approaches, complementary and holistic strategies, such as nature-based interventions, are increasingly being recognized for their potential to regulate both the body and mind.

The concept of *shinrin-yoku* ("森林浴"), formally introduced in 1982, denotes "forest bathing" with "yoku" emphasizing the holistic dimension of health maintenance. Subsequently integrated into Japanese clinical practice (Hansen et al., 2017), *shinrin-yoku* constitutes a therapeutic approach that facilitates psychophysiological restoration through multisensory engagement (visual, olfactory, auditory, tactile, and gustatory) with forest environments (Wen et al., 2019). This practice is culturally embedded within Japanese Shinto traditions, characterized by reverence for natural elements, and Buddhist philosophical frameworks, which emphasize contemplative communion with natural environments, reflecting Japan's enduring ecological-spiritual interconnectedness (Davis, n.d.). Buddhism is consistently characterized in academic literature as an ecologically-oriented philosophical system with an expanded ethical framework encompassing non-human entities and ecological systems (Keown, 2022).

Sri Lanka, a predominantly Buddhist nation, exhibits comparable nature-reverent traditions deeply embedded within its religious and cultural frameworks. Previous research has established that ritualistic practices, both religious and secular, demonstrate significant therapeutic efficacy, suggesting potential applicability within psychotherapeutic contexts contingent upon client characteristics and therapeutic requirements (Al-Krenawi & Graham, 1997; Wyrostok, 1995). Ritual behaviors, irrespective of typology, constitute formalized actions that elicit specific emotional responses (Denzin, 1974) and provide symbolic representation of cognitive and affective processes (Rando, 1985). Despite the prevalence of nature-oriented rituals within Sri Lankan cultural practices, structured nature therapy methodologies remain insufficiently recognized. Therefore, this investigation seeks to introduce systematized nature therapy approaches to the Sri Lankan population while examining cross-cultural validity parameters.

Contemporary nature therapy practice is substantively informed by various professional organizations that contribute significantly to methodological development and empirical validation. Notable entities include the International Society of Nature and Forest Medicine (INFOM), the Association of Nature & Forest Therapy (ANFT), and the Wilderness Therapy Association (WTA), which collectively establish evidence-based frameworks legitimizing nature therapy as a therapeutic modality. Concurrently, academic institutions such as the University of British Columbia, through its Multidisciplinary Institute of Nature Therapy (Faculty of Forestry), disseminate scientific knowledge that further validates nature therapy within scholarly discourse. Conversely, Sri Lankan academic institutions have demonstrated minimal engagement with forest therapy research and implementation. Consequently, this investigation holds significant implications for policy formulation, potentially facilitating institutional recognition and subsequent implementation of nature therapy modalities within Sri Lankan communities.

The imperative for nature therapy promotion is underscored by contemporary environmental metrics. Recent data indicate that Brazil and Colombia experienced 36% and 49%

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reductions in primary forest loss between 2022-2023, respectively (Weisse et al., 2024). Within the Sri Lankan context, while 3.28 Mha of natural forest constituted approximately 50% of territorial coverage in 2020, the nation experienced 11.9 kha of natural forest depletion in 2023, corresponding to 5.02 Mt of CO₂ emissions (Global Forest Watch, n.d.). Within this ecological context, nature therapy serves dual functions: providing therapeutic benefits while simultaneously fostering environmental consciousness and conservation ethics. By facilitating recognition of fundamental human-nature interconnectedness, nature therapy functions as an effective mechanism in addressing deforestation challenges. Research indicates that individuals who directly experience the restorative properties of natural environments demonstrate increased propensity to support and engage in conservation initiatives.

This investigation represents a pioneering endeavor within the Sri Lankan context to examine structured nature therapy interventions for psychophysiological well-being enhancement. Through systematic evaluation of a one-day forest retreat protocol, this study aims to address current gaps in both scholarly literature and therapeutic practice, while concurrently promoting environmental awareness and conservation engagement.

REVIEW OF LITERATURE

Physiological Effects

Research has established significant physiological connections between occupational stress and human health outcomes, with nature-based therapeutic interventions emerging as a potential countermeasure. Job stress, characterized as detrimental physical and emotional responses occurring when occupational demands exceed worker capabilities, resources, or needs, has been linked to deteriorating health conditions and increased injury risk (STRESS...At Work, 2024).

Despite the Japanese origins of nature therapy, workplace stress remains prevalent in Japan, with 60.9% of workers reporting occupational stress (Labour and Welfare, 2012). The Karoshi syndrome, "death by overwork", has been a significant public health concern in Japan since the 1980s (Al-Madhagi, 2023). The global impact of this phenomenon was highlighted in 2021 when the World Health Organization (WHO) and International Labour Organization (ILO) jointly reported approximately 750,000 worldwide deaths attributable to Karoshi syndrome (Al-Madhagi, 2023). In response, the Japanese government has implemented various countermeasures, including the cultural practice of Inemuri—brief, intentional napping in public settings such as meetings or transportation (Japanese work napping ritual - Inemuri, 2024).

Several investigations have examined the relationship between occupational stress and nature-based interventions. Song et al. (2017) evaluated the sustained effects of a single-day forest therapy program on office workers' cardiovascular parameters. In this study, twenty-six participants (mean age 35.7 years) had their systolic and diastolic blood pressure measured before meals at three distinct time points: three days pre-intervention, during the program, and at three and five days post-intervention. Results demonstrated a significant reduction in both systolic and diastolic measurements during the program, with these beneficial effects persisting through the five-day follow-up period. A systematic review of 26 studies, including 15 meta-analyses, found that nature-based interventions resulted in significant reductions in diastolic blood pressure (MD -3.73 mmHg) and heart rate (MD -7.44 bpm) in individuals with cardiovascular conditions, decreased fatigue (SMD -0.50) in

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those with central nervous system conditions, and a reduction in body fat percentage (MD - 3.61%) in individuals with endocrine conditions (Struthers et al., 2024). These findings highlight the substantial impact of nature-based therapy on physical health and overall well-being.

Forest bathing has been shown to increase anti-cancer proteins, with studies highlighting its effects in female participants (Li et al., 2008). Both male and female subjects demonstrated significant physiological benefits, including enhanced immune function and stress reduction, underscoring the therapeutic potential of nature exposure (Li et al., 2007). These findings emphasize the broader health advantages of forest environments across genders.

A systematic search across PubMed, CINAHL, PsycINFO, and Scopus, incorporating seven studies, suggests that nature-based rehabilitation may be beneficial for individuals with acquired brain injury, leading to significant improvements in motor, sensory-motor, and cognitive functions (Vibholm et al., 2020).

One study, which introduced a nature-based intervention on the work floor to alleviate stress, found that salivary cortisol levels (a biological marker of stress) decreased by 29.3% in the intervention group, indicating a reduction in physiological stress (Daniels et al., 2022). A comprehensive systematic review analyzing 49 peer-reviewed publications revealed significant associations between nature-based interventions and enhanced physical well-being among young people (children, adolescents, and youth) (Obeng et al., 2023). The investigation encompassed diverse intervention modalities, including wilderness therapy, animal-assisted programs, outdoor adventure experiences, and horticultural activities, demonstrating their collective potential to cultivate robust physical engagement within natural environments. The findings indicate that these interventions facilitate sustainable health outcomes by strategically promoting physical movement, exercise participation, and environmental interaction. Such approaches not only address immediate physical activity needs but also contribute to long-term health trajectories, potentially bolstering individual resilience and comprehensive developmental wellness among youth populations.

A growing body of scientific literature has investigated the intricate relationship between nature therapy and physiological parameters such as Heart Rate Variability (HRV) and pulse rate. In healthy adult populations, the established baseline for average heart rate variability is approximately 42 milliseconds, with a normative range spanning from 19 to 75 milliseconds. Notably, athletes and individuals with exceptional physical fitness demonstrate substantially higher HRV measurements (King, 2024). Emerging empirical evidence, exemplified by the research of Borito et al. (2020), provides compelling insights into the cardiovascular implications of environmental context during physical activity. Their study demonstrated that walking in green environments elicited significantly more pronounced improvements in Heart Rate Variability compared to suburban walking contexts. These findings suggest that nature exposure facilitates enhanced autonomic nervous system regulation and potentially mitigates physiological stress responses. Additionally, the research revealed that both natural and suburban walking environments contributed to reductions in systolic blood pressure, underscoring the broader cardiovascular benefits associated with ambulatory activities.

These findings underscore the potential of nature-based interventions as a holistic, non-discriminatory strategy for enhancing individual physical well-being. The consistent positive

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outcomes observed across male and female participants, spanning young to adult populations, emphasize the transformative potential of nature-based therapeutic approaches in supporting comprehensive physical well-being.

Psychological Effects of Nature Therapy

Psychological effects refer to the impact of psychological interventions on mental health, both at individual and community levels. Nature therapy has emerged as a promising approach for addressing various mental health challenges. According to the World Health Organization (2023) Stress, a complex and universal human response characterized by mental tension, can significantly impact an individual's overall well-being. As stated by the Centre for Addiction and Mental Health (2025), while stress is not formally classified as a mental health disorder, stress can bring both positive and negative impacts, with prolonged and overwhelming stress potentially escalating health complications, including mental health disorders like anxiety and depression.

The modern urban environment has contributed to increased stress levels, as humans have spent over 99.99% of their evolutionary history in natural settings, yet the industrial revolution and urbanization have confined them to artificial surroundings, disrupting physiological functions and inducing a persistent "stress state" (Song et al., 2016).

Multiple studies have demonstrated the profound psychological benefits of nature therapy across various contexts. During the COVID-19 pandemic, a study in Tokyo with 3,000 participants explored the relationship between nature experiences and mental health. The research assessed key mental health outcomes including life satisfaction, depression, self-esteem, subjective happiness, and loneliness. Findings indicated that individuals with frequent greenspace exposure and green window views exhibited higher self-esteem, life satisfaction, and subjective happiness, alongside lower levels of depression, anxiety, and loneliness (Soga et al., 2021).

Research has also highlighted nature therapy's potential in specific psychological interventions. A workplace study found that nature-based interventions resulted in a 14.9% reduction in burnout levels and improved cognitive functions, including a 7.4% increase in visual information processing speed and a 10.6% improvement in selective attention (Daniels et al., 2022).

Anxiety management is another crucial area where nature therapy shows promise. A study investigating nature-based guided imagery revealed statistically significant reductions in state anxiety levels, suggesting it as a particularly effective intervention, especially in contexts with limited direct access to natural environments (Nguyen & Brymer, 2018).

Specialized populations have also benefited from nature therapy. A quasi-experimental study with children with Autism Spectrum Disorder (ASD) demonstrated significantly improved parent-child relationships through nature therapy (Ramshini et al., 2018). Similarly, studies with veterans suffering from Post-Traumatic Stress Disorder (PTSD) have shown promising results, with participants developing improved coping tools and experiencing noticeable symptom improvements through nature-based therapy programs (Poulsen et al., 2023; Shorer et al., 2023).

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The American Psychological Association (2020) supports these findings, noting that spending time in nature can act as a "balm for our busy brains," with both correlational and experimental research demonstrating significant cognitive benefits. Collectively, these studies underscore the potential of nature therapy to positively effect on human mental health and well-being, transcending barriers of gender, age, and mental state.

Objective

General Objective:

- To explore the psychological and physiological impact of nature-based therapy activities on individuals with severe stress in Sri Lanka.

Specific Objectives:

- To develop and implement a systematic framework for introducing nature therapy as an innovative intervention strategy for holistic mental and physical health enhancement in the Sri Lankan context.
- To explore the potential of nature-based interventions as a mechanism for environmental conservation awareness, investigate how direct experiential engagement with natural environments may cultivate increased ecological consciousness and conservation-oriented behaviors among participants.

Hypotheses

- **Physiological Hypothesis:** Participants will exhibit significant improvements in physiological stress markers, including reductions in blood pressure and pulse rate, following the Nature-based therapy activities.
- **Psychological Hypothesis:** Participants will demonstrate a significant decrease in perceived stress levels after participating in the Nature-based therapy activities.
- **Holistic Hypothesis:** Nature-based therapy activities provide combined physiological and psychological benefits, supporting the effectiveness of such interventions in stress management.

METHODOLOGY

Sample

This study involved 100 participants (50 males, 50 females) from the Kandy District, aged 18-60 years, selected through convenience sampling. This approach was chosen for its practicality as a pilot study, cost-effectiveness regarding transportation and meal provision, and feasibility in coordinating participants within the same district as the therapy location. The gender-balanced sample ensured diverse representation across the adult age spectrum.

Participants were assessed using the Perceived Stress Scale (PSS-10), with the 10 individuals exhibiting highest stress levels (3 males, 7 females, aged 23-42 years) selected for in-depth analysis. This focused subgroup was chosen based on clinical relevance, prioritizing those most likely to benefit from nature-based interventions, and practical constraints related to the intensive follow-up assessments required. Eligibility criteria required participants to reside in the Kandy District, have no physical or mental ailments, and be capable of actively participating in nature-based therapy activities.

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Ethical Considerations

All participants provided written informed consent after being fully informed about the study's purpose. Confidentiality was maintained by identifying participants only through unique study identification codes. Data was stored securely on password-protected systems, and participants retained the right to withdraw at any time without explanation.

Tools Used

- **Perceived Stress Scale (PSS-10):** A set of easily administered questions that assess self-described stress for use in a variety of psychological studies. It is referred to as the "S-PSS-10" and has been validated for use within the Sri Lankan Sinhalese-speaking population.
- **Physiological Measures:** Sphygmomanometer and Stethoscope: Systolic and diastolic blood pressure (BP) for each patient were recorded on these equipment in millimeters of mercury (mmHg) by the doctor.
- **Pulse Rate Monitor:** Expresses cardio reactions in terms of beats per minute. Measured by the doctor using a Stethoscope.
- **A semi-structured questionnaire,** designed by the researcher to explore the qualitative aspects within this research domain, as this represents the first intervention of its kind conducted in Sri Lanka.

Location:

The intervention site was meticulously selected within the Bowalawatta region of the Hanthana Lowland, Kandy, strategically positioned in proximity to a Buddhist Forest Monastery. Through comprehensive environmental assessment, the site was rigorously evaluated to optimize ecological parameters, ensuring minimal anthropogenic acoustic disturbance and maximizing natural sensory stimulation. This deliberate site selection provided an empirically refined context for facilitating immersive ecological engagement and implementing evidence-based mindfulness interventions.

Procedure

Pre-Intervention Assessment: Cohort data on stress levels (as derived from S-PSS-10) and physiological factors (Systolic and Diastolic Blood Pressure, Pulse Rate) were elicited on enrolment.

Intervention: Participants engaged in a structured series of sensory-based nature therapy interventions designed to promote mindful ecological interaction. These interventions included:

1. **Barefoot grounding:** Participants were instructed to walk barefoot on soft grassland, focusing on the tactile sensations of ground texture and grass interaction.
2. **Auditory immersion:** Participants were guided to stand amidst mature forest environments, attentively experiencing ambient soundscapes, including wind dynamics and arboreal acoustics.
3. **Acoustic environmental engagement:** Participants were encouraged to perceive intricate soundscapes, specifically the melodic patterns of avian vocalizations and the rhythmic flow of water currents.
4. **Hydrotherapeutic interaction:** Participants were instructed to immerse their feet in a cool stream, experiencing the physiological and sensory stimulation of water contact.

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5. Meditative stone arrangement: Subjects were guided to carefully collect and strategically balance stones, emphasizing proprioceptive awareness, balance, and mindful concentration.

Additional mindfulness practices included:

- Mindful walking
- Structured breathing exercises
- Nature-based journaling

The intervention protocol emphasized sustained present-moment awareness and deliberate sensory attune throughout all activities, promoting a comprehensive mind-body ecological connection.

Post-Intervention Assessment: After completing the nature therapy session, stress and other physiological parameters were measured using identical instruments to those employed during the pre-intervention assessment. Subsequently, participants were administered a semi-structured questionnaire that had been developed by the researcher.

Study Design and Methods of Data Analysis

The research utilized a comprehensive cross-sectional mixed-methods research design, integrating both quantitative and qualitative methodological approaches to facilitate a holistic assessment of intervention outcomes. The quantitative component employed Microsoft Excel for statistical analysis, with a focused comparative examination of physiological and psychological metrics, including:

- **Pre- and post-intervention:**
 - Blood Pressure measurements
 - Pulse Rate variability
 - Perceived Stress Scale (PSS) score transformations
- **A semi-structured questionnaire**, designed by the researcher under the supervision of the supervisor, complemented the quantitative data collection. The questionnaire incorporated four key domains:
 1. Demographic data
 2. Subjective experiential assessment of intervention session
 3. Participant willingness for future nature-based engagement
 4. Participant perspectives on environmental conservation, specifically deforestation

This methodological approach enabled a nuanced, multidimensional exploration of the intervention's impacts, bridging objective physiological measurements with subjective experiential insights.

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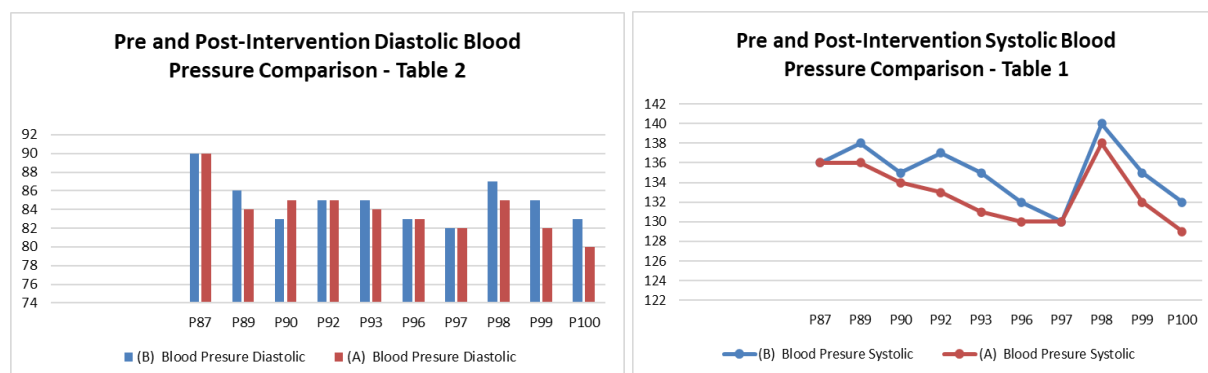
RESULTS AND DISCUSSION

Table A.

Participant ID	Gender	Marital Status	Studying	Working	Age	(B) PSS Score (perceived stress scale)	(B) Pulse Rate (BPM)	(B) Blood Pressure Systolic	(B) Blood Pressure Diastolic	(A) PSS Score (perceived stress scale)	(A) Pulse Rate (BPM)	(A) Blood Pressure Systolic	(A) Blood Pressure Diastolic
P87	Male	Married	Yes	Yes	26	38	98	136	90	28	93	136	90
P89	Female	Unmarried	No	Yes	34	28	96	138	86	20	94	136	84
P90	Female	Unmarried	No	Yes	38	27	90	135	83	21	88	134	85
P92	Female	Married	Yes	Yes	23	36	95	137	85	26	87	133	85
P93	Female	Married	No	Yes	29	36	88	135	85	30	85	131	84
P96	Female	Married	No	Yes	39	35	91	132	83	28	88	130	83
P97	Male	Married	Yes	Yes	33	34	87	130	82	26	83	130	82
P98	Female	Married	Yes	Yes	42	39	96	140	87	30	90	138	85
P99	Male	Married	Yes	Yes	27	38	94	135	85	32	85	132	82
P100	Female	Married	No	Yes	31	32	85	132	83	28	81	129	80

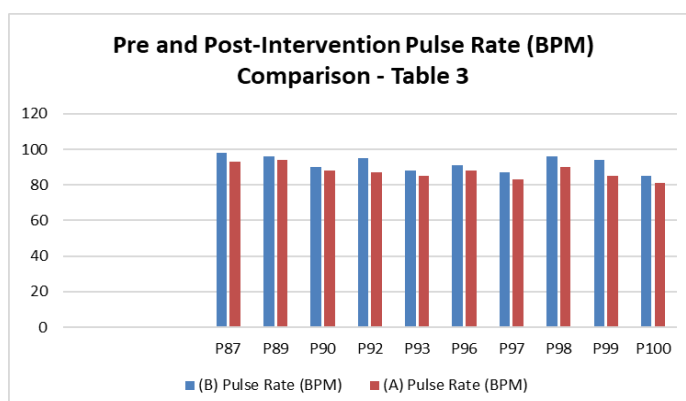
Figures obtained from this study show positive changes in both the physiological and psychological parameters after the one-day forest retreat.

Physiological Measures, Blood Pressure:



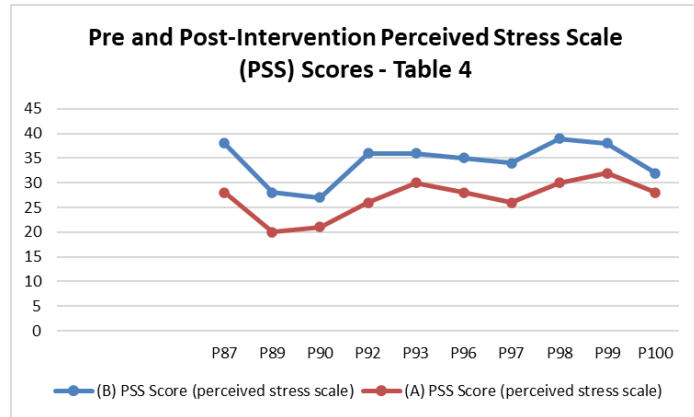
Our cardiovascular measurements revealed consistent improvements across the participant cohort following the forest retreat intervention. Initial baseline readings showed mean systolic (see Table 1) and diastolic (see Table 2) blood pressures of 135.0 mmHg and 84.9 mmHg respectively. Post-retreat measurements indicated a reduction in systolic blood pressure of 2.1 mmHg, reaching 132.9 mmHg, alongside a modest decrease in diastolic blood pressure to 84.0 mmHg. These findings demonstrate a universal trend of blood pressure reduction among study participants.

Pulse Rate: (see Table 3) A notable improvement was observed in pulse rate variability following the intervention. The mean pulse rate decreased from an initial 92.0 beats per minute (bpm) to 87.4 bpm, representing a reduction of 4.6 bpm. This downward shift in pulse rate suggests enhanced cardiovascular regulation post-intervention.



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Psychological Measures (Perceived Stress Scale - PSS): Analysis of psychological outcomes (*see Table 4*) revealed a significant reduction in participants' perceived stress levels, as measured by the Perceived Stress Scale. The mean stress scores demonstrated a substantial decrease from 34.3 (indicating high stress) to 26.9 (indicating moderate stress), representing a clinically meaningful shift between stress categories. This marked improvement in self-reported stress levels suggests the intervention's effectiveness in promoting psychological well-being.



Custom-developed semi-structured questionnaire: Regarding the subjective experiential assessment of the intervention session, participants demonstrated a remarkably consistent and positive response across multiple dimensions. Unanimously, participants reported experiencing a comprehensive sense of bodily and psychological comfort during the nature-based intervention. Moreover, participants exhibited a robust and unequivocal desire for future nature-based engagement, indicating a profound resonance with the intervention's experiential framework. Critically, all participants articulated a strong stance against deforestation, simultaneously expressing an urgent need to develop and promote environmental conservation programs within the Sri Lankan context, suggesting a transformative impact of direct nature exposure on ecological consciousness.

DISCUSSION

The comprehensive evaluation of nature therapy interventions among individuals experiencing stress conditions revealed notable physiological and psychological benefits. Empirical evidence consistently demonstrates significant reductions in physiological stress markers, with multiple studies reporting statistically significant decreases in both systolic and diastolic blood pressure, as well as reduced pulse rates following nature-based therapeutic interventions.

A growing body of scientific literature has investigated the intricate relationship between nature therapy and physiological parameters, with a particular focus on Heart Rate Variability (HRV) and pulse rate dynamics. Emerging empirical evidence, particularly the research by Borito et al. (2020), provides compelling insights into the cardiovascular implications of environmental context during physical activity. Specifically, forest therapy programs have been substantiated as an effective approach to stress management. Research by Song et al. (2017), Struthers et al. (2024), and Borito et al. (2020) collectively provide robust evidence of the intervention's efficacy, particularly in mitigating cardiovascular stress responses through targeted nature exposure protocols.

The psychological outcomes were equally compelling, with participants demonstrating a significant reduction in perceived stress levels, effectively transitioning from severe to moderate stress states. This transformation underscores the potent therapeutic potential of nature-based interventions in managing psychological distress. Multiple research studies, including those by Soga et al. (2021), Song et al. (2016), and Nguyen and Brymer (2018),

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have comprehensively documented the efficacy of nature therapy in alleviating stress and addressing underlying mental health challenges. These findings substantiate our holistic hypothesis that nature-based therapy interventions provide integrated physiological and psychological benefits for individuals experiencing stress, offering a promising approach to comprehensive mental wellness.

The study successfully developed and implemented a systematic framework for introducing nature therapy as an innovative intervention strategy for holistic mental and physical health enhancement in the Sri Lankan context. The empirical evidence generated supports the intervention's efficacy and potential for broader application.

A critical secondary objective was to explore nature-based interventions as a mechanism for environmental conservation awareness. The custom-developed semi-structured questionnaire revealed transformative outcomes. Participants reported comprehensive bodily and psychological comfort, demonstrating a profound experiential resonance with the intervention. Moreover, the study elicited a robust desire for future nature-based engagement and an unequivocal stance against deforestation.

Critically, participants unanimously expressed an urgent need to develop and promote environmental conservation programs within Sri Lanka. This finding suggests that direct nature exposure can catalyze significant shifts in ecological consciousness, potentially bridging individual well-being with broader environmental stewardship.

Research Limitations and Future Directions:

The present study encompasses several methodological limitations that warrant consideration when interpreting the results. The sample size, while adequate for a preliminary investigation, was limited to ten individuals with high-stress levels, potentially restricting the generalizability of findings across different stress profiles and populations. Furthermore, the cross-sectional design of this study precludes our ability to evaluate the long-term effects of nature-based therapeutic interventions on physiological and psychological parameters.

Recommendations for future research,

1. Implementation of longitudinal study designs to assess the durability and sustainability of stress-reduction benefits over extended periods.
2. Comparative analysis of various nature-based activities to identify interventions that yield optimal stress reduction outcomes.

These methodological enhancements would strengthen the evidence base and provide more comprehensive insights into the effectiveness of nature-based therapeutic interventions for stress management.

CONCLUSION

This study provides compelling evidence for the effectiveness of nature-based therapy interventions in addressing stress and promoting holistic well-being within the Sri Lankan context. The research reveals significant physiological and psychological benefits, demonstrating reductions in blood pressure, pulse rate, and perceived stress levels among participants. Beyond individual health outcomes, the study illuminates the broader potential of nature therapy as a catalyst for environmental consciousness and cultural integration. Key

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findings highlight the multifaceted impact of nature-based interventions, showcasing their potential to address both mental health challenges and ecological awareness. While acknowledging methodological limitations such as a small sample size and cross-sectional design, the research provides valuable insights into the potential of structured nature engagement as an evidence-based approach to stress reduction. Ultimately, the study contributes to a growing understanding of nature therapy's potential to foster individual well-being and environmental consciousness, presenting a innovative approach to addressing the complex interplay between human health and natural environment.

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Conflict of Interest

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