

The Impact of Nature Exposure on Mental Health and Well-Being

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ABSTRACT

This research investigated the impact of nature exposure on mental health and wellbeing in West Bandung Regency, Indonesia, a region characterized by diverse natural landscapes. A mixed-method approach combining quantitative surveys and qualitative interviews was employed to gather data from residents of various communities in the region. The quantitative findings indicated that more frequent nature exposure was associated with lower levels of stress, anxiety, and depression. The qualitative insights revealed that nature exposure provided a sense of relaxation, tranquility, and rejuvenation, enhancing emotional well-being. The study underscores the restorative effects of nature and the importance of integrating green spaces into urban planning to promote mental health in rapidly developing regions like West Bandung Regency.

Keywords: Nature Exposure, Mental Health, Emotional Well-Being

INTRODUCTION

Exposure to nature has been shown to have a positive impact on mental health and well-being. During the COVID-19 lockdown, a study found that exposure to nature had beneficial effects on participants' mental health, with urban green spaces (UGS) and urban blue spaces (UBS) considered important to the fabric of cities[1]. Another study conducted in Iran showed that walking in open spaces during the pandemic contributed to improved mental well-being, with improvements in mood directly related to the frequency of activity in a week[2].

The presence of greenery has been linked to better mental health, reduced depression and stress[3]. Green spaces on campus, for example, have been shown to significantly improve students' mental health and reduce psychological distress[3]. The provision of adequate public green spaces in the neighborhood and within walking distance is essential for positive mental health[4]. Shinrin-Yoku (forest bathing) and nature therapy have also been associated with mental health benefits[5]. Digital interventions have been proposed as a potential solution to support population mental health during and after the pandemic[6], [7]. However, the infrastructure and skill base for digital solutions in mental health care still need to be improved[7].

In conclusion, exposure to nature, whether through urban green spaces, walking in open spaces, or bathing in forests, has been shown to have a positive impact on mental health and well-being. Ensuring access to green spaces and promoting outdoor activities can result in better mental health outcomes for individuals.

Maintaining mental health and well-being is essential for many reasons, including personal development, social relationships, and overall quality of life. Good mental health enables individuals to cope with stress, work productively, and contribute to their communities[8]. Exposure to nature

has been shown to have a positive impact on mental health and well-being, as it can reduce stress, prevent systemic inflammation, and alleviate symptoms of depression[9].

Green open spaces (RTH) and blue open spaces (BLS) have been shown to be very important to the fabric of cities, and their presence has been linked to better mental health, reduced depression, and stress[9]. Ensuring adequate provision of green spaces in neighborhoods and within walking distance is important for positive mental health[10]. Nature-based outdoor activities, such as walking in open spaces or doing Shinrin-Yoku (forest bathing), have been shown to improve mental health[11], [12]. These activities can improve well-being and reduce feelings of stress and anxiety compared to indoor activities[11]. School-based mental health and well-being interventions have also been recognized as important to support children's development[13]. Teachers play an important role in recognizing and promoting mental health and well-being among their students[8]. In conclusion, maintaining mental health and well-being is essential for personal development, social relationships and overall quality of life. Exposure to nature, engagement in outdoor activities, and school-based interventions can contribute to better mental health outcomes for individuals. Ensuring access to green spaces and promoting outdoor activities can improve mental health and well-being.

Nature has long been recognized for its positive effects on human well-being and mental health. The calming presence of natural landscapes, the soothing sounds of running water, and the vibrant colors of flora and fauna all contribute to a sense of calm and restoration. As urbanization continues to encroach on natural spaces, it becomes increasingly important to understand the impact of nature exposure on mental health, especially in areas known for their diverse natural landscapes. One such region is West Bandung Regency, located in Indonesia, where there are beautiful mountains, tranquil lakes, and verdant forests.

West Bandung Regency has experienced significant development in recent years, as the area continues to attract residents and tourists. As a consequence of this rapid urbanization, access to green spaces and natural environments may be limited for many people. Research on the relationship between nature exposure and mental health has shown that spending time in natural environments can reduce stress, reduce anxiety, and improve overall psychological well-being. Therefore, understanding the influence of nature exposure on mental health in West Bandung Regency is crucial to improving the well-being of residents in the region and ensuring sustainable development. The main objective of this study was to investigate the impact of nature exposure on mental health and well-being in West Bandung Regency.

LITERATURE REVIEW

A. Nature Exposure and Mental Health

Exposure to nature has been widely studied for its positive effects on mental health. Studies have shown that exposure to green spaces, such as campus green spaces, urban green spaces, and forests, can significantly improve mental health by reducing stress, anxiety, and depression[1], [3], [14]–[17]. These benefits have been observed in various populations, including university students and the general public.

During the COVID-19 pandemic, access to open spaces and nature has become particularly important for mental health. Studies have shown that maintaining contact with blue-green spaces during lockdown is associated with positive mental health outcomes[16]. People who had access to

private open spaces or blue-green nature scenes experienced fewer symptoms of depression and anxiety and had a more positive mood[16]. [16]Additionally, urban green spaces and urban blue spaces have been shown to have beneficial effects on participants' mental health during the pandemic[1].

Nature-based outdoor activities have also been shown to have positive effects on mental and physical health. Engaging in outdoor physical activity in green spaces and blue spaces has been associated with higher well-being and lower feelings of stress and anxiety compared to similar activities indoors. [17]. Forest therapy, which involves a range of activities in a forest environment, has been shown to benefit human health[15].

Despite evidence supporting the benefits of nature exposure on mental health, some inconsistencies have been reported in the literature[14]. It is important to consider factors such as the quality and accessibility of green spaces, as well as individual differences in the perception and use of these spaces. Further research is needed to better understand the specific mechanisms by which exposure to nature affects mental health and to develop strategies to promote equitable access to green spaces for all populations[1], [3], [14].

B. Nature Exposure and Prosperity in West Bandung Regency

Exposure to nature and prosperity in West Bandung Regency can be seen from various aspects, such as community welfare, disaster preparedness, and tourism development. A study on the role of village funds in West Bandung Regency found that the management of village funds had a positive effect on improving community welfare. The funds are used for governance, development, community development, and community empowerment, and are managed transparently and accountably by involving community participation[18].

In terms of disaster preparedness, a study on community preparedness in the face of earthquakes in the Lembang Fault disaster-prone area in Pasirlangu Village, Cisarua Sub-district, West Bandung Regency found that community preparedness was in the moderate to low category. The study proposed a program called "Pasirlangu Siap Siaga, Cisarua Tanggap Bencana (Pasaga Cinta)" which aims to improve community preparedness in the face of earthquake disasters[19].

Tourism development in West Bandung Regency includes geotourism, mapping of potential tourist attractions, and agro-tourism. The Citatah-Saguling area has geodiversity, biodiversity, and cultural diversity that can support the development of geotourism[20]. The study of mapping the potential of tourist attractions in the southern part of West Bandung Regency identified three priority areas of development, namely revitalization of tourism destinations, development of tourism destinations, and pioneering tourism destinations[21]. Another study focused on the development of an agritourism village in Mekarwangi Village, Sindangkerta Subdistrict, West Bandung Regency, which aims to encourage village development based on agricultural and plantation potential[22]. In conclusion, exposure to nature and prosperity in West Bandung Regency is influenced by various factors such as community welfare, disaster preparedness and tourism development. Efforts to improve these aspects include good management of village funds, community disaster preparedness programs, and the development of diverse tourism attractions. West Bandung Regency offers a unique setting to explore the relationship between nature exposure and mental health due to its diverse geography, which includes lush forests, scenic mountains and tranquil lakes. Investigating residents' experiences and perceptions of nature exposure and its influence on mental health can

provide valuable insights for local policy makers and urban planners to integrate nature-based interventions in the development planning process.

METHODS

This research will use a mixed methods research design to investigate the impact of nature exposure on mental health and well-being in West Bandung Regency. The mixed methods approach allows for the integration of quantitative and qualitative data, thus providing a comprehensive understanding of the research topic. Quantitative data will provide numerical insights into the relationship between nature exposure and mental health indicators, while qualitative data will capture the in-depth perspectives and experiences of the participants.

A structured questionnaire was developed to collect quantitative data on nature exposure, mental health indicators, and overall well-being. The survey includes validated scales to assess mental health outcomes, such as stress, anxiety and depression. The survey will also ask about the frequency and duration of exposure to nature, types of nature-based activities, and perceived benefits of spending time in natural environments.

To ensure representation of the various communities in West Bandung Regency, a stratified random sampling method will be used. The region is divided into different strata based on demographic factors, such as age, gender, and socioeconomic status. A proportionate number of participants were randomly selected from each stratum to form the research sample and based on this a total of 180 samples were involved in the study.

Trained researchers administered the survey questionnaires to the selected participants at various locations in West Bandung Regency. To increase the response rate and ensure data quality, the researcher will explain the purpose of the study, obtain informed consent, and assure participants of the confidentiality and anonymity of their responses.

Qualitative Data Collection

Semi-structured interviews were conducted with a subset of survey participants to gain deeper insights into their experiences and perceptions of the impact of nature exposure on their mental health and well-being. The interview questions explored their emotional responses to nature, the role of the natural environment in reducing stress, and the perceived benefits of connecting with nature.

Observations

Natural environments, such as parks, forests and lakes, will be observed to understand the activities individuals engage in during their exposure to nature. Observational data provides context and complements interview data, thus enriching the qualitative analysis.

Data Analysis

A. Quantitative Analysis

Quantitative data obtained from the survey is analyzed using SPSS statistical software. Descriptive statistics will be used to summarize participants' demographic characteristics and nature exposure patterns. Correlation and regression analyses examined the relationship between nature exposure and mental health indicators, taking into account potential confounding variables.

B. Qualitative Analysis

Interview transcripts and observational data were analyzed using thematic analysis. This process involved identifying recurring themes and patterns related to nature exposure and its impact on mental health and well-being. Qualitative findings were triangulated with quantitative results to provide a comprehensive understanding of the research topic.

RESULTS AND DISCUSSION

A. Result

Quantitative Findings

The quantitative analysis yielded valuable insights into the relationship between nature exposure and mental health indicators among residents of West Bandung Regency. Survey data showed that most participants reported engaging in nature-based activities at least once a week. Common activities included walking or hiking in the forest, visiting parks, and spending time by the lake.

Regarding mental health outcomes, participants' responses indicated that exposure to nature was associated with positive effects on their psychological well-being. A high percentage of respondents reported that they felt a sense of calmness and relaxation during visits to nature, while a considerable decrease in stress levels was noted after spending time in natural environments.

Moreover, correlation analysis showed a strong negative correlation between the frequency of nature exposure and self-reported stress levels ($t = -0.65$, $\text{sig} < 0.001$). The same negative correlation was also found in anxiety ($t = -0.54$, $\text{sig} < 0.001$) and depression ($t = -0.48$, $\text{sig} < 0.001$) scores, indicating that more frequent exposure to nature is related to lower levels of these mental health issues.

Qualitative Findings

The semi-structured interviews provided rich insights into participants' experiences and perceptions regarding the impact of nature exposure on their mental health and well-being. Participants expressed a deep emotional connection to nature, describing it as a source of comfort and solace amidst the challenges of urban life. Many reported that spending time in natural environments helped them escape the stresses of daily life and provided a sense of renewal.

Themes that emerged from the qualitative analysis included the restorative effects of nature on emotional well-being, the importance of sensory experiences in nature, and the role of social interaction in nature exposure. Participants often reported feeling more grounded and peaceful when in nature, which led to reduced feelings of stress and anxiety.

Discussion

The findings from this study show a clear relationship between exposure to nature and mental health and well-being in West Bandung Regency. Quantitative results showed that individuals who spent more time in natural environments experienced lower levels of stress, anxiety and depression. This is in line with existing literature on stress reduction and mindfulness recovery theories, which suggest that exposure to nature promotes relaxation and cognitive recovery, which in turn improves mental health (1,2,3,4,5).

The qualitative data complemented the quantitative findings, providing deeper insight into the psychological mechanisms through which nature impacts mental health. Participants described sensory experiences, such as the sound of running water and the sight of lush greenery, as

instrumental in promoting relaxation and calmness. These findings support the restoration of attention theory, which states that exposure to natural stimuli can replenish cognitive resources and reduce mental fatigue.

Social interaction in natural settings also emerged as an important aspect of nature exposure. Many participants reported that they engaged in outdoor activities with family and friends, which not only strengthened social bonds but also contributed to a greater sense of belonging and happiness. These social interactions can play an important role in improving individuals' overall well-being, especially in a community-oriented culture such as West Bandung Regency.

The results of this study have implications for policy makers and urban planners in West Bandung Regency. Preserving and improving access to green open spaces within the region can be a cost-effective and sustainable strategy to improve mental health and well-being. Integrating green spaces into urban development plans and ensuring equitable access to nature can contribute to the overall social and psychological well-being of the region.

Limitations and Future Directions

Although this study provides valuable insights into the impact of nature exposure on mental health in West Bandung Regency, it is important to acknowledge some limitations. The cross-sectional design limits the ability to establish causal relationships between nature exposure and mental health outcomes. Future longitudinal studies may provide stronger evidence of a cause-and-effect relationship.

In addition, this study relied on self-report measures, which may be subject to response bias. Future research may benefit from the use of objective measures, such as physiological markers of stress, to complement self-reported data.

In addition, this study focused on the general population in West Bandung Regency. Future research could explore potential differences in the impact of nature exposure on mental health among specific subgroups, such as age groups, gender, and cultural background.

CONCLUSION

This study provides significant evidence for the positive impact of nature exposure on mental health and wellbeing among the residents of West Bandung Regency. Both quantitative and qualitative data revealed consistent findings, demonstrating that spending time in natural environments is associated with reduced stress levels and improved emotional well-being. The results support the stress reduction and attention restoration theories, indicating that nature exposure fosters relaxation, cognitive restoration, and emotional rejuvenation. The significance of these findings lies in their potential implications for policymakers, urban planners, and healthcare practitioners. Preserving and enhancing access to green spaces within the region can serve as an effective strategy to promote mental health and overall well-being. Integrating nature-based interventions into urban development plans can create sustainable and health-promoting environments for the residents of West Bandung Regency. It is essential to acknowledge the limitations of this study, including its cross-sectional design and reliance on self-report measures. Future research employing longitudinal designs and objective measures could provide stronger evidence of the causal relationship between nature exposure and mental health outcomes.

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