

Findings on Visitors' Wellbeing through Intervention Experiments: A Ten-Year Systematic Review

Zoe Jiabo Zhang^{1,2}, Mohd Hafizal Bin Ismail¹, Noor Jalilah Binti
Jumaat¹, Zhu Zhu¹

¹Department of Nature Parks and Recreation, Universiti Putra Malaysia, 43400 Serdang,
Selangor, Malaysia, ²Wudalianchi UNESCO Global Geopark, Heilongjiang Province, China
Email: m_hafizal@upm.edu.my, n_jjalilah@upm.edu.my, gs61146@student.upm.edu.my
Corresponding Author Email: wdlc.zoe@163.com,

To Link this Article: <http://dx.doi.org/10.6007/IJARBS/v14-i9/22882> DOI:10.6007/IJARBS/v14-i9/22882

Published Date: 30 September 2024

Abstract

Nowadays, shortly thereafter the pandemic, wellbeing is an area of concern that is being talked about frequently. It is also an extremely significant matter for everyone. New studies show that mental health is one part of wellbeing, which is a multidimensional idea that is important for overall health and wellbeing. Many research studies have shown that studying tourism in particular has the ability to greatly improve the psychological wellbeing and mental health of tourists. However, there are still not a lot of studies on how effective it is to improve the wellbeing of visitors through intervention measures in the tourism field. This study aims to report a comprehensive systematic review investigating the intervention measures to improve visitors' wellbeing. A thorough search was conducted on PubMed, Web of Science, EBSCOhost and Scopus to select relevant literature. Intervention measures associated with visitors' wellbeing are the primary focus of the chosen literatures. Only studies that used an experimental design were selected. The wellbeing outcomes were assessed using a variety of instruments in the investigations. Randomised controlled trials (RCTs) and non-randomized controlled trials (nRCTs) are among the study designs that employ pre-test and post-test comparisons to assess changes in wellbeing. The majority of interventions were conducted for a brief period. The interventions consistently demonstrated positive effects on wellbeing in all of the investigations. The available research indicates that a range of activities have a substantial positive impact on the wellbeing of visitors. Even brief treatments have significant positive impacts on emotional and psychological states, indicating the potential of such activities to enhance general wellbeing in various populations and environments. Although there may be differences in the methods used and limitations in the studies, the consistent results across various situations emphasise the ability of these therapies to improve overall wellbeing.

Keywords: Visitor, Wellbeing, Intervention, Systematic Review

Introduction

Wellbeing is currently a prominent and widely discussed issue that is of great importance to everyone in our era following the pandemic. Wellbeing is sometimes defined as the state of happiness, which is a primary objective of society (Lyubomirsky & Lepper, 1999). Wellbeing is a concept that originated in ancient Greek periods and is believed to consist of two aspects: hedonia and eudaimonia. These dimensions, as described by Rahmani et al. (2018) and Ryan and Deci (2001), are both interconnected and separate from each other. Recent studies have shown that wellbeing encompassing mental health is a multidimensional concept crucial for overall health and happiness (Kumar, 2022). It is an integral component of health and wellbeing that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in (World Health Organisation, 2024). Several studies have demonstrated that research specifically targeting tourism has the potential to significantly enhance the overall wellbeing and mental health of visitors (Ebejer, 2022; Gkinton et al., 2022). There are other studies mention that tourism is a way to go beyond mere leisure and entertainment, and it can become a powerful tool for spiritual recovery, the capacity of tourism is to reduce depressive symptoms, and even proposes its use as a non-pharmacological solution for dementia, even further has the potential to enhance the wellbeing and overall quality of life for individuals dealing with mental disorders (Hu et al., 2023; Levi et al., 2018; Wen et al., 2022). One study calculated that the economic benefits \$/QALY generated by tourism-based interventions were substantial (Buckley et al. 2019).

A wide range of organized travel experiences and products common to visitors seeking health, wellbeing and regeneration include forest-therapy tourism, parks and nature tours and coastal and maritime tourism (Mammadova et al., 2021; Ohe et al., 2017; Foley et al., 2019). Previous research has demonstrated that high-quality and meaningful exposure to nature can play a vital role in promoting people's health and wellbeing (Wolf & Wohlfart, 2014; Rosa et al., 2018; Cervinka et al., 2020; Lv et al., 2023). Research on wellbeing and health in the public health field involves a large number of applied interventions, such as therapeutic gardening, spatial exposure, animal assistance, physical activity, or forest fruit harvesting.

While, tourism research has the potential to enhance these therapies, since it includes detailed data on the effects of program design and guiding, and individual personalities, interests, capabilities, motivations, experiences, emotions, and satisfaction. A previous systematic review encompassing 82 research papers indicated that there are strategies available that leverage well-being to achieve more favorable results for tourism marketers and managers. (Vada et al., 2020). Furthermore, experimental research with interventions can improve the wellbeing of tourists and visitors, as such research usually focuses on the positive impact of the tourist experience on their psychological state, including aspects of satisfaction, pleasure, and personal growth (Yang & Zhang, 2024; Zhang & Xiao, 2024). The experimental approach allows researchers to control for variables and test specific hypotheses, leading to a more accurate understanding of how travel experiences contribute to wellbeing. In addition, experimental research can provide the travel industry with practical strategies to help tourism marketers and managers enhance visitor happiness by creating positive travel experiences.

This field is widely studied because it relates to one of the core objectives of the travel industry - providing a satisfying customer experience (Yang et al., 2024; Liu et al., 2023; Bagheri et al., 2023). As people pay more attention to the quality of life and happiness, the tourism industry begins to pay attention to how to improve the happiness of tourists through tourism products and services. Moreover, the sustainable development of the tourism industry also depends on the positive experience and satisfaction of visitors.

However, the research on the effective improvement of visitors' wellbeing by intervention measures in the field of tourism is still limited. Therefore, the current study reviews each key intervention measures in visitors' wellbeing field, aim at presenting intervention measures on the enhancement of visitors' wellbeing in recent ten years and identifying future directions for research. The future needs of this field include interdisciplinary research methods, a deep understanding of the tourist experience, and innovative tourism products and services. Researchers need to apply the theories and methods of psychology, sociology and marketing to comprehensively analyze the wellbeing of tourists and visitors. Meanwhile, the tourism industry needs to constantly innovate to provide personalized and meaningful travel experiences to meet the diverse needs of tourists.

Methodology

The review's reporting adheres to the PRISMA procedure (Moher et al., 2015), using the preferred reporting items checklist. It involved three steps: 1) a search on existing literature; 2) a screening based on title; 3) a screening based on the abstract. The search included published articles from the inception dates of these databases up until January 2024 (see Appendix A). A comprehensive literature search was conducted using four primary databases: PubMed, Web of Science, EBSCOhost, and Scopus. The search terms were ("wellbeing" OR "wellbeing" OR "well being") AND ("visitor" OR "visitors" OR "tourist" OR "tourists"). The process of data retrieval was facilitated by experienced librarians, who guaranteed the dependability of the methodology.

Eligibility Criteria

The PICO approach was employed to select the literature (Table 1). The literature chosen must also be accessible in the English language and published in a peer-reviewed journal. More precisely, the studies were considered eligible if they incorporated any type of intervention that affected the wellbeing of visitors, which is the outcome of this review. The population exclusively consisted of visitors. Furthermore, the research methodology should include randomised controlled trials (RCTs), non-randomized controlled trials (nRCTs), and non-randomized non-controlled trials (nRnCTs).

Table 1

PICO (Population, Intervention, Comparison, Outcome)

PICO	Criteria
Population	Visitors
Intervention	Any form of intervention
Comparison	Different type of intervention
Outcome	Any form of wellbeing
Study designs	RCTs, nRCTs and nRnCTs

Data Analysis

For a more in-depth investigation, the current qualitative review will take visitors' wellbeing as the outcome, mainly examining several aspects such as demographic characteristics, geographical distribution, interventions, wellbeing instrument, etc.

Search Strategy and Selection of Literature

The search in four databases (Appendix A) utilised the terms "truncation" and "Boolean operators" both separately and in combination. The PICO approach was utilised to ascertain the inclusion or exclusion of the articles (Table 1). Figure 1 provides a concise overview of the selecting procedure based on PRISMA (Tan et al., 2020). The reviewer held a cautious attitude in the screening process and then the review process was carefully re-examined by the two supervisors.

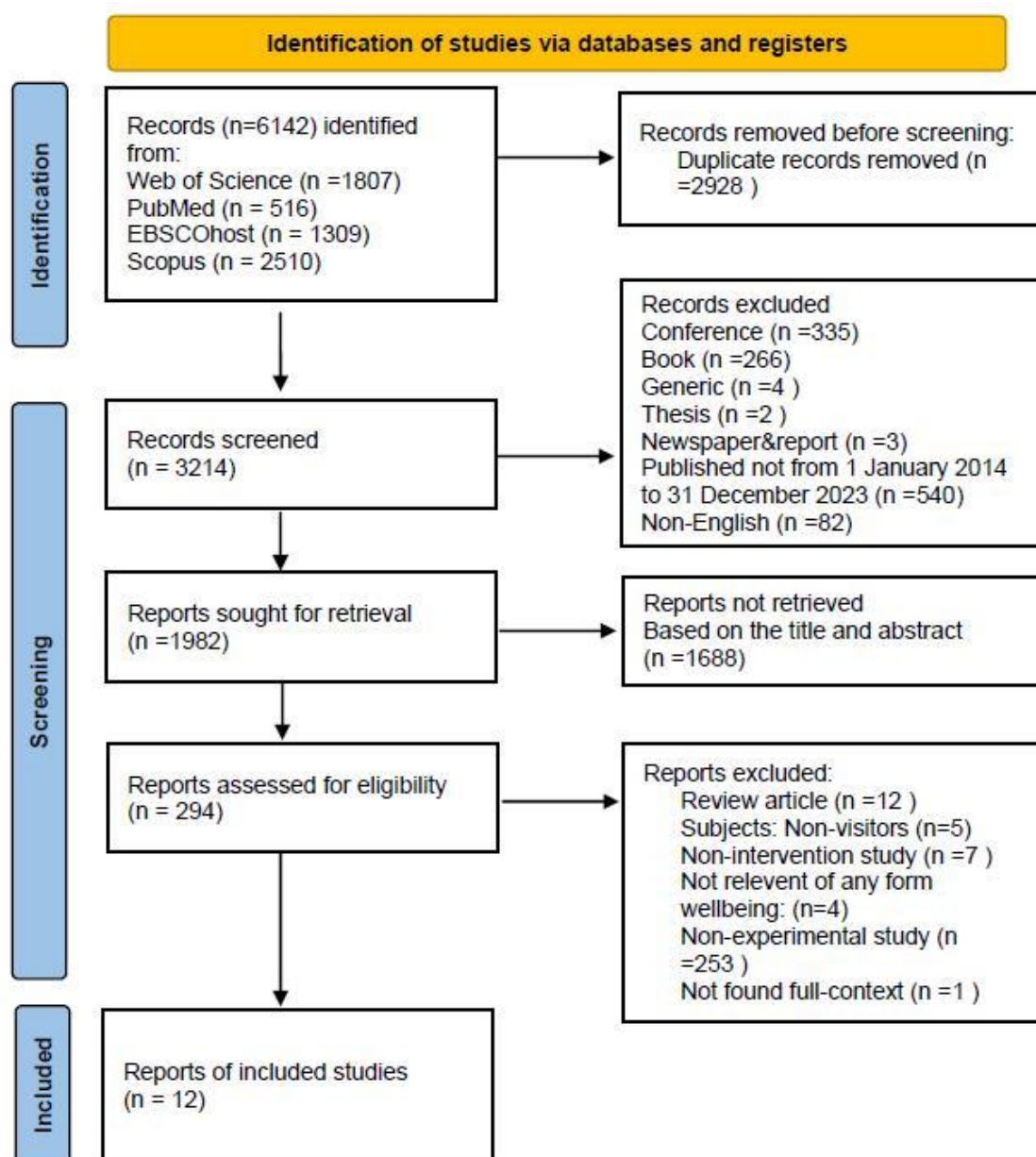


Figure 1. PRISMA summary of the study selection process

Quality Assessment

A systematic review is necessary for assessing pertinent studies. Similarly, a summary should provide a concise evaluation of the quality of the chosen systematic reviews (Pieper et al., 2012). Furthermore, it is crucial to treat the data cautiously in order to avoid a situation where inaccurate or unreliable data is used, resulting in flawed outcomes. This principle forms the foundation of conducting a systematic review, as highlighted by Naseri (2006). The technique employed in this work was evaluated using the quantitative assessment tool "Quallsyst" (Kmet et al., 2004), which consists of 14 items (Table 2). The scoring is determined by the extent to which a particular criterion is fulfilled (no = 0, partial = 1, yes = 2). The abbreviation "NA" denotes elements that are irrelevant to the research design and are hence disregarded when calculating the summary score. The summary score for each research was determined by summing the entire score achieved and dividing it by the maximum achievable score. The scores, $\leq 55\%$, $55\text{--}75\%$, and $\geq 75\%$, indicate low, medium, and high quality, respectively. Any low-quality study should be excluded from the systematic review.

Table 2. "Quallsyst" of quality assessment

No.	Title	Criteria	Question/objective described	Appropriate study design	Appropriate subject selection	Characteristic sufficiently described	Random allocation	Researchers blinded	Subjects blinded	Outcome measures well defined and robust to bias	Appropriate sample size	Analytic methods well described	Estimate of variance reported	Controlled for confounding	Results reported in detail	Conclusion supported by results	Rating	%
1	Investigating the Qualities of a Recreational Forest: Findings from the Cross-Sectional Hallenwald Case Study	Cervinka, et al. (2020)	2	2	0	0	1	0	0	2	1	2	2	2	2	2	Medium	0.64
2	Promoting meaningful and positive nature interactions for visitors to green spaces	Colleney, et al. (2020)	2	2	2	1	2	2	1	2	2	2	2	1	2	2	High	0.89
3	Eudaimonic and hedonic well-being pattern changes: Intensity and activity	Su, et al. (2020)	2	2	2	0	2	0	0	2	1	2	1	1	2	2	Medium	0.68
4	Re-evaluating well-being outcomes of social tourism: Evidence from Finland	Vento, et al. (2020)	2	2	2	2	1	0	0	1	1	2	2	2	2	2	High	0.75
5	Evaluating the Mental-Health Positive Impacts of Agritourism: A Case Study from South Korea	Rezaei, et al. (2021)	2	2	2	2	2	0	0	2	2	2	2	2	2	2	High	0.86
6	How tourism activity shapes travel experience sharing: Tourist well-being and social context	Su, et al. (2021)	2	2	0	0	1	0	0	0	1	2	1	0	2	2	Weak	0.46
7	Urban blue space renovation and local resident and visitor well-being: A case study from Plymouth, UK	van den Bogaerd, et al. (2021)	2	2	0	0	2	0	0	0	2	2	1	0	2	2	Weak	0.54

(to be continued)

No.	Title	Criteria	Question/objective described	Appropriate study design	Appropriate subject selection	Characteristic sufficiently described	Random allocation	Researchers blinded	Subjects blinded	Outcome measures well defined and robust to bias	Appropriate sample size	Analytic methods well described	Estimate of variance reported	Controlled for confounding	Results reported in detail	Conclusion supported by results	Rating	%
8	Prolonging the influence of a vacation experience on consumers' well-being - Is there a role for virtual reality?	Aldossary & McLain (2022)	2	2	2	2	2	0	0	0	2	2	2	1	2	2	High	0.75
9	The companion effect on adventure tourists' satisfaction and subjective well-being: the moderating role of gender	Su, et al. (2022)	2	2	2	2	2	0	0	0	1	2	2	2	2	2	High	0.75
10	Changes in cortisol and dehydroepiandrosterone levels immediately after urban park visits	Gao, et al. (2023)	2	2	0	0	1	0	2	2	1	2	2	2	2	2	Medium	0.71
11	A Three-Day Forest-Bathing Retreat Enhances Positive Affect, Vitality, Optimism, and Gratitude: An Option for Green-Care Tourism in Italy?	Guardini, et al. (2023)	2	2	0	0	2	0	0	0	1	2	2	1	2	2	Medium	0.57
12	Will tourists' pro-environmental behavior influence their well-being? An examination from the perspective of warm glow theory	Li, et al. (2023)	2	2	2	2	2	0	0	0	2	2	2	0	2	2	Medium	0.71

Note: 0 indicates no quality, 1 indicates partial, 2 indicates yes, NA: not applicable; Quality score: $\geq 75\%$ high, $55\% - 75\%$ medium, $\leq 55\%$ low.

Result

Selection of Literature

There were initially 6142 identified from PubMed, Web of Science, EBSCOhost and Scopus. All duplicates were removed, and then screening the title and abstract, the whole text was read; twelve literatures were chosen for this study (Figure 1). However, 2 out of the 12 were deemed to be of low quality and were excluded from this review. Thus, this systematic review was based on 10 studies that focused on visitors' wellbeing through intervention experiments. The details are presented in Table 3.

Table 3
Overview of literatures details

No.	Title	Authors (Year)	Population	Geographical distribution	Intervention	Duration	Comparison	Wellbeing instrument	Study designs	Outcome
1	Investigating the Qualities of a Recreational Forest: Findings from the Cross-Sectional Hallarvold Case Study	Cervinka, et al., (2020)	64FM;35M	Austria (Europe); [Age=43.15; SD:17.11]	Guided forest tour = 10-minute sensory exploration in four distinct places	1 day	Pre-test and post-test	Positive Negative Affect Schedule (PANAS)	nRnCTs	Positive affect (wellbeing) ↑ in pre-vs.post-visit Negative affect ↓ in pre-vs.post-visit
2	Promoting meaningful and positive nature interactions for visitors to green spaces	Colleary, et al., (2020)	158FM;145 M	Israel (Asia); [Age=25.65; SD:3.72]	Cues to experience nature with varying psychological distances	1 day	With psychological distance cues and no cues	Positive Negative Affect Schedule (PANAS)	RCTs	Positive affect (wellbeing) ↑ in I vs. C
3	Eudaimonic and hedonic well-being pattern changes: Intensity and activity	Su, et al., (2020)	22FM;20M	China(Asia); [Age=N/A]	Five scenario-based experiments	1 day	Pre-trip, during-trip, post1-trip, post2-trip, and post3-trip	Self-developed questionnaire	nRnCTs	Eudaimonia and hedonia wellbeing ↑ then ↓ over the course of the vacation
			33FM;28M	China (Asia); [Age=34.5]	Five scenario-based experiments of tourism activity descriptions (challenging vs. relaxing) – corresponding pictures	1 day	Pre-trip, during-trip, post1-trip, post2-trip, and post3-trip = challenging vs. relaxing activity	Self-developed questionnaire	RCTs	Eudaimonia and hedonia wellbeing ↑ then ↓ = Eudaimonia more ↑ in challenging activities vs. relaxing activities = Eudaimonia lower change vs. hedonia
4	Re-evaluating well-being outcomes of social tourism: Evidence from Finland	Vento, et al., (2020)	302FM;69M	Finland (Europe); [Age=55.75;SD = 17.33]	Social holiday-taking	N/A	Pre-test and post-test	Self-developed questionnaire	nRCTs	Subjective wellbeing ↑ in I vs. C
5	Evaluating the Mental-Health Positive Impacts of Agritourism: A Case Study from South Korea	Rezaei, et al., (2021)	98FM;102M	South Korea (Asia); [Age=31-40]	Visiting agritourism sites = engaging in activities	1 day	Visiting agritourism sites = staying at home	WHO Wellbeing Index	RCTs	Wellbeing ↑ in I vs. C
6	Prolonging the influence of a vacation experience on consumers' wellbeing - Is there a role for virtual reality?	Aldossary & McLain (2022)	206FM;156 M	UK (Europe); [Age=31]	Vacation and no vacation	N/A	Pre-vacation, post-vacation1, post-vacation2 and post-vacation3 = vacation & no vacation	Self-developed questionnaire	nRCTs	Eudaimonia and hedonia wellbeing ↑ in I vs. C
			241	UK (Europe); [Age=N/A]	VR experience and no-VR experience = a related video experience	1 day	Post-vacation 3 stages = VR experience & no-VR experience = a related video experience	Self-developed questionnaire	nRCTs	Eudaimonia wellbeing ↑ in I vs. C Hedonia wellbeing more ↑ in I vs. C A related video on wellbeing → in I vs. C

(to be continued)

No.	Title	Authors (Year)	Population	Geographical distribution	Intervention	Duration	Comparison	Wellbeing instrument	Study designs	Outcome
7	The companion effect on adventure tourists' satisfaction and subjective well-being: the moderating role of gender	Su, et al., (2022)	36FM;39M	China (Asia); [Age=28.89]	Presence or absence of a travel companion	1 day	with and without a travel companion	Subjective Well-being	RCTs	Subjective wellbeing ↑ in I vs. C
			Greater: 23FM;40M Comparable: 31FM;36M Lower: 41FM;32M	China (Asia); [Age=N/A]	(female vs male) = (greater vs comparable vs lower relative ability) = skydiving	1 day	companion relative ability (greater/comparable/lower)	Subjective Well-being	RCTs	Female companion on subjective wellbeing ↑ in I vs. C
			Greater: 47FM;47M Comparable: 22FM;46M Lower: 46FM;51M	China (Asia); [Age=N/A]	(female vs male) = (greater vs comparable vs lower relative ability) = bungee jumping trip	1 day	companion relative ability (greater/comparable/lower)	Subjective Well-being	RCTs	Female companion on subjective wellbeing ↑ in I vs. C
8	Changes in cortisol and dehydroepiandrosterone levels immediately after urban park visits	Geo, et al., (2023)	60 (38FM)	United States (North America); [Age=31.8;SD = 13.4]	A short-term visit to urban parks = no-detract: passive stroll = a pedometer	1 day	Pre-test and post-test	Subjective Well-being	nRnCTs	Subjective wellbeing ↑ in I vs. C
9	A Three-Day Forest-Bathing Retreat Enhances Positive Affect, Vitality, Optimism, and Gratitude: An Option for Green-Care Tourism in Italy?	Guardini, et al., (2023)	38FM;6M	Italy (Europe); [Age=45.13]	A three-day guided forest-bathing sessions	3 days	Pre-test and post-test	(SAM), (SVS), (LOT-R), (GQ-6)	nRnCTs	Positive affect, vitality, optimism, and gratitude (Eudaimonia and hedonia wellbeing) ↑ in I vs. C
10	Will tourists' pro-environmental behavior influence their well-being? An examination from the perspective of warm glow theory	Lv, et al., (2023)	201FM;160 M	China (Asia); [Age=30.42]	Tourists' engagement in pro-environmental behavior (PEB)	1 day	Tourists engaging in PEB vs. not engaging in PEB	Wellbeing eight-item scale	nRnCTs	Wellbeing ↑ in I vs. C
			156FM;107 M	China (Asia); [Age=34.62]	Tourists' engagement in pro-environmental behavior (PEB)	1 day	Post-test = (PEB: high vs. low) = (perceived outcome efficacy: salient vs. control)	Wellbeing eight-item scale	nRCTs	Perceived outcome efficacy and social worth (wellbeing) ↑ in I vs. C

Higher↑; lower↓; no significant difference →; PANAS: Positive Negative Affect Schedule; SAM: Self-Assessment Manikin; SVS: Subjective Vitality Scale; LOT-R: Life Orientation Test-Revised Scale; GQ-6: Gratitude Questionnaire.

Overview of Visitors' Wellbeing

Table 3 shows information on the study of visitors' wellbeing, which based on follow aspects: 1) population (male and female); 2) geographical distribution; 3) intervention measures; 4) duration; 5) comparison; 6) instruments; 7) study designs and 8) outcome. Wellbeing is indeed a comprehensive concept that can be effectively assessed through various scales, including the PANAS (Positive Affect Negative Affect Schedule) and other instruments. Different research papers have highlighted the importance of measuring various dimensions of

wellbeing to provide a holistic understanding (Diener et al., 2009; Jovanović, 2015; TOV et al., 2022; Dixit & Sinha, 2023). These findings collectively support the idea that wellbeing is a multifaceted construct that can be effectively captured through a combination of scales and measures.

General Study Characteristics

In terms of gender, the majority of studies included both female and male participants, with some studies such as those by Aldossary & McLean (2022), and Lv et al (2023), having a higher number of female participants. The age range of participants varied widely, with studies like Colleony et al (2020), focusing on younger individuals (average age 25.65 years) and Vento et al (2020), involving older adults (average age 55.75 years). This demographic diversity helps in understanding the impact of nature-based interventions on wellbeing across different age groups and genders.

Geographically, the studies covered a wide range of locations across Europe, Asia, and North America, reflecting a global interest in the effects of nature-based interventions on wellbeing. European countries like Austria, Finland, Italy, and the UK were well-represented, while several studies were also conducted in Asian countries including China, Israel, and South Korea. One study was conducted in the United States, representing North America. This geographical distribution indicates a cross-cultural applicability of nature-based interventions for enhancing wellbeing.

Visitors' Wellbeing Interventions and Instruments

These interventions include guided forest tours (Cervinka et al., 2020), cues to experience nature (Colleony et al., 2020), scenario-based experiments (Su et al., 2020), social holiday-taking (Vento et al., 2020), agritourism activities (Rezaei et al., 2021), virtual reality experiences (Aldossary & McLean, 2022), presence or absence of a travel companion (Su, et al., 2022), a short-term visit to urban parks (Gao et al., 2023), guided forest-bathing sessions (Guardini, et al., 2023) and tourists' engagement in pro-environmental behavior (Lv, et al., 2023). The study designs vary from randomized controlled trials (RCTs) to non-randomized controlled trials (nRCTs), utilizing both pre-test and post-test comparisons to measure changes in wellbeing. Most interventions were conducted over a short duration, typically lasting one day, with some exceptions like the three-day forest-bathing sessions in Italy (Guardini et al., 2023). Comparison groups often involved pre-test and post-test measurements or comparisons between intervention and control groups, such as visitors with or without psychological distance cues or those engaging in pro-environmental behavior versus those who did not (Lv et al., 2023). The studies used various instruments to measure wellbeing outcomes. The Positive and Negative Affect Schedule (PANAS) was commonly used to assess emotional changes in response to nature-based interventions (Cervinka et al., 2020; Colleony et al., 2020). Other studies developed their own questionnaires (Su et al., 2020; Aldossary & McLean, 2022) or used established scales like the WHO Wellbeing Index (Rezaei et al., 2021) and subjective wellbeing measures (Vento et al., 2020). Specific studies also employed unique instruments tailored to their interventions, such as the Self-Assessment Manikin (SAM), Subjective Vitality Scale (SVS), Life Orientation Test-Revised (LOT-R), and Gratitude Questionnaire-6 (GQ-6) (Guardini et al., 2023).

Effect of Visitors' Wellbeing

The results across the studies consistently showed positive impacts on wellbeing due to the interventions. For instance, guided forest tours and sensory explorations in Austria significantly increased positive affect and decreased negative affect in participants (Cervinka et al., 2020). Similarly, cues to experience nature in Israel enhanced positive affect among visitors (Colleony et al., 2020). In China, scenario-based experiments revealed that eudaimonic and hedonic wellbeing initially increased during vacations and then declined post-vacation (Su et al., 2020).

Social holiday-taking in Finland improved subjective wellbeing (Vento et al., 2020), while visiting agritourism sites in South Korea led to increased wellbeing compared to staying at home (Rezaei et al., 2021). A study in the UK demonstrated that both actual vacations and virtual reality experiences significantly boosted eudaimonic and hedonic wellbeing (Aldossary & McLean, 2022).

Additional findings highlighted the role of companions in adventure tourism, with subjective wellbeing improving more in the presence of travel companions, particularly for female participants (Su et al., 2022). Urban park visits in the United States led to immediate increases in subjective wellbeing (Gao et al., 2023), and a three-day forest-bathing retreat in Italy enhanced positive affect, vitality, optimism, and gratitude (Guardini et al., 2023). Lastly, engaging in pro-environmental behavior among tourists in China was associated with increased wellbeing (Lv et al., 2023).

Discussion

This study aims to sum the current extent of knowledge on the visitors' wellbeing intervention measures. The researchers synthesize findings from ten studies investigating the impact of various tourism and recreational interventions on wellbeing. These studies encompass a wide range of geographical locations, populations, and interventions, employing different wellbeing measurement instruments. Overall, the review underscores the positive impact of different types tourism interventions on wellbeing.

Visitors' Wellbeing Interventions

In this study, the ten articles analyzed used different intervention measures to influence wellbeing. Forest and nature interventions have shown promising results in enhancing wellbeing. Cervinka et al (2020), found that a guided forest tour and sensory exploration significantly increased positive affect and reduced negative affect among participants in Austria. Similarly, Colleony et al (2020), reported increased positive affect in Israeli participants when exposed to cues designed to enhance their nature experience. Guardini et al (2023), demonstrated that a three-day forest-bathing retreat in Italy improved positive affect, vitality, optimism, and gratitude. Scenario-based and social tourism activities also contributed to wellbeing improvements. Su et al (2020), noted changes in eudaimonic and hedonic wellbeing during and after scenario-based tourism activities in China, with challenging activities boosting eudaimonia more than relaxing ones. Vento et al (2020), observed an increase in subjective wellbeing among Finnish participants following social holiday-taking. In the realm of agritourism and virtual reality (VR), Rezaei et al (2021), showed that visiting agritourism sites in South Korea led to higher wellbeing compared to staying at home. Aldossary & McLean (2022), found that vacations and VR experiences in the UK positively affected eudaimonia and hedonia, with VR experiences having a particularly

significant impact. The presence of travel companions in adventure tourism was another factor influencing wellbeing. Su et al (2022), found that having a travel companion positively affected subjective wellbeing during adventure tourism activities in China, with female companions, especially those with greater relative ability, having a more significant impact. Urban park visits and engagement in pro-environmental behavior (PEB) were also beneficial. Gao et al (2023), reported increased subjective wellbeing after short-term urban park visits in the United States. Lv et al (2023), found that engagement in PEB among Chinese tourists improved wellbeing, with perceived outcome efficacy enhancing the effect.

The robust evidence supporting the positive impact of various nature-based and tourism interventions on wellbeing, many studies have geographically limited samples (e.g., China, Europe, Asia), which may not represent global populations. However, future research should aim for more diverse and inclusive sampling to enhance generalizability. The interventions in most studies are short-term (1 day to 3 days). Long-term studies with extended follow-up periods are needed to assess the enduring impact of these interventions on wellbeing. Additionally, the studies employed various wellbeing instruments, such as the Positive Negative Affect Schedule (PANAS), subjective wellbeing measures, and self-developed questionnaires. Standardizing these instruments would allow for better comparison and synthesis of results across studies.

The rigor of control conditions and randomization varied among the studies. While many used pre-test and post-test designs, improved methodological rigor, including more randomized controlled trials (RCTs), would strengthen the validity of findings. Moreover, the psychological mechanisms underlying the observed wellbeing improvements are not always clearly elucidated. Future research should aim to uncover the specific pathways through which these interventions exert their effects, such as stress reduction, increased physical activity, or enhanced social interactions.

Limitations

There are a few significant limitations to this systematic review. Initially, this systematic review exclusively comprised published articles. Consequently, the results may be influenced by publication bias. Additionally, the systematic review exclusively concentrates on intervention measures, disregarding other wellbeing studies. Because one of the most prevalent methods of evaluating the wellbeing of visitors is to request that they complete an autonomous report scale. However, researchers have discovered that the utilisation of randomised experimental research methods in the field of mental health and wellbeing can provide a more profound comprehension of the wellbeing of tourists as research methods continue to evolve. Lastly, the representation of the results may be further restricted by selecting only articles that are written in English.

Conclusion

The evidence suggests that various nature-based and socially interactive interventions significantly enhance visitors' wellbeing. These interventions, even when short-term, have notable positive effects on emotional and psychological states, demonstrating the potential of such activities to improve overall wellbeing in diverse populations and settings. Despite methodological variations and limitations, the consistent findings across diverse settings highlight the potential of these interventions to enhance wellbeing. Future research should

aim to address current limitations, explore long-term effects, and standardize measurement approaches to build a more comprehensive understanding of how tourism and recreational activities can foster wellbeing.

Data Availability Statement

The original contributions presented in the study are included in the supplementary materials (Appendix A & B), further inquiries can be directed to the corresponding authors.

Disclosure

The authors report no conflicts of interest in this work.

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