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Leveraging nature-based tourism for cancer recovery: Enhancing psychological well-being and sustainable wellness tourism in Yunnan, China

Huiqi Zhang¹, Lan Li^{2,*}

¹ School of Economics and Management, Beijing Jiaotong University, Beijing 100091, China

² Sinounited Investment Group Corporation Limited Postdoctoral Programme, Beijing 102611, China

* Corresponding author: Lan Li, lanli@baliuagu.edu.ph

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Abstract: This research explores the role of nature-based tourism as an innovative approach in tourism management for enhancing the psychological well-being of cancer survivors and their families in Yunnan, China. Given the increasing need for holistic and sustainable tourism products, this study investigates how Yunnan's unique natural landscapes and rich cultural heritage can contribute to emotional recovery and well-being. Utilizing a combination of in-depth interviews, surveys, and participant observation, the study provides insights into how nature-based tourism helps reduce stress, promotes emotional rejuvenation, and strengthens family bonds for cancer survivors. Findings highlight that culturally integrated wellness experiences, including traditional healing practices and family-inclusive tourism activities, have significant potential for promoting holistic recovery. The research also identifies key barriers such as financial constraints, physical limitations, and accessibility issues, providing recommendations to address these challenges and enhance the inclusivity of tourism offerings. This study contributes to the field of tourism management by demonstrating how wellness tourism can evolve to serve vulnerable populations while promoting sustainable and community-centered tourism practices. Ultimately, it aims to position Yunnan as a leading destination for therapeutic tourism, combining health, culture, and sustainability.

Keywords: wellness tourism; tourism management; nature-based tourism; cancer recovery; psychological well-being; sustainable tourism; family bonding; traditional Chinese medicine; cultural tourism; Yunnan

1. Introduction

1.1. Background and context

Cancer remains one of the most significant global health challenges of the 21st century, impacting millions of individuals and their families worldwide. According to the World Health Organization (WHO), cancer is responsible for nearly 10 million deaths annually, accounting for approximately one in six deaths globally. While advancements in medical treatments such as chemotherapy, radiation, and immunotherapy have greatly improved life expectancy and recovery rates, the psychosocial and emotional burden of cancer remains profound. Cancer patients often face immense psychological stress, manifesting as anxiety, depression, fear of recurrence, and emotional exhaustion. This burden extends beyond the patients themselves, affecting their families, who may also experience helplessness, emotional fatigue, and financial strain [1].

In recent years, healthcare professionals have increasingly recognized the importance of addressing the psychosocial dimensions of cancer. It is now widely acknowledged that holistic cancer care must encompass not only the biological and medical aspects of treatment but also the mental, emotional, and social needs of patients. This paradigm shift has led to the exploration of innovative interventions that support the mental well-being of cancer patients, alongside their physical health. Among these interventions, nature-based tourism has emerged as a promising therapeutic approach to enhance psychological well-being [2].

Nature-based tourism, often referred to as eco-tourism or wellness tourism, emphasizes the therapeutic use of natural landscapes and environments as spaces for relaxation, healing, and rejuvenation. Research has shown that exposure to natural settings—such as mountains, forests, lakes, and rivers—can significantly reduce stress levels, promote emotional recovery, and foster a sense of peace. For cancer patients facing physical and emotional challenges, nature-based tourism offers a respite from the clinical environment of hospitals and treatment centers, providing a more holistic healing experience. Additionally, nature-based tourism allows families to reconnect in tranquil settings, strengthening emotional bonds and providing much-needed psychological support [3].

In China, the province of Yunnan stands out as an ideal location to explore the therapeutic potential of nature-based tourism for cancer patients and their families. Yunnan is known for its diverse landscapes, including snow-capped mountains, verdant forests, serene lakes, and a rich cultural heritage. The natural beauty and cultural richness of the province make it a popular destination for tourists seeking both adventure and peace. Moreover, Yunnan has a long-standing tradition of integrating nature with wellness practices, such as traditional Chinese medicine, herbal therapies, and mindfulness techniques. These factors position Yunnan as a uniquely suitable environment for exploring how nature-based tourism can contribute to the psychological well-being of cancer survivors and their families [4].

1.2. Purpose of the study

The primary purpose of this study is to explore how nature-based tourism in Yunnan can provide therapeutic benefits for cancer survivors and their families. Nature-based tourism offers cancer survivors an opportunity for psychological recovery by immersing them in restorative natural environments. Studies indicate that nature-based tourism can enhance self-identity and self-esteem, contributing to emotional resilience and mental recovery in cancer patients. This highlights the role of inclusive tourism that acknowledges the unique needs of cancer survivors and facilitates their recovery by providing normalizing travel experiences [5].

In addition, the study aims to examine how family engagement in nature-based tourism can alleviate emotional stress among caregivers and family members. The effects of nature-based tourism extend beyond the individual, with research demonstrating that families dealing with the emotional burden of cancer can benefit from shared experiences in nature. By providing a “mental sanctuary”, these environments offer relief from the emotional exhaustion and stress associated with caregiving [6].

The objectives of the study include investigating how nature-based tourism in Yunnan contributes to the psychological well-being of cancer survivors, exploring the role of family involvement, and examining the potential integration of nature-based tourism into holistic cancer care practices. Nature-based tourism has been shown to have transformative wellness outcomes, which can foster emotional recovery for both cancer survivors and their caregivers [7]. This interdisciplinary approach aims to open new pathways for improving the quality of life for cancer patients while promoting sustainable tourism practices in Yunnan [8].

1.3. Significance of the study

This study is particularly significant for Chinese communities and the broader East Asian cultural context, where health and well-being are traditionally viewed holistically, emphasizing the interconnectedness of the body, mind, and environment. Nature has long been considered a powerful healing force, a principle deeply embedded in traditional Chinese medicine and philosophies such as Taoism and Confucianism. In these traditions, harmony between humans and nature is crucial for maintaining good health. Therefore, the integration of nature into healing practices aligns with these cultural values, making nature-based tourism an appealing option for cancer patients and their families in China. In particular, the natural environments of regions like Yunnan, with its rich biodiversity and cultural heritage, offer therapeutic potential by providing peaceful spaces for physical and emotional recovery. For cancer survivors, these natural settings offer more than just scenic beauty—they serve as healing environments that facilitate mental restoration and emotional resilience. Nature-based tourism can thus be seen as not only a recreational activity but a holistic form of therapy that supports the mental, emotional, and social aspects of cancer recovery [9].

Furthermore, the significance of this study extends to the field of tourism management by demonstrating how tourism can transcend its conventional role as an economic driver and evolve into a tool for health and well-being. In recent years, wellness tourism has emerged as a niche market within the broader tourism industry, particularly in China. Studies show that wellness tourism, which emphasizes health and well-being through engagement with natural and cultural resources, can provide therapeutic benefits to vulnerable populations such as cancer survivors. The integration of wellness practices into tourism experiences, such as mindfulness, healthy diets, and physical activity, has been shown to improve the mental and physical well-being of participants. This research contributes to the growing body of literature on wellness tourism by examining how tailored tourism experiences can cater to the unique psychological needs of cancer survivors and their caregivers [10]. By focusing on the recovery process through tourism, this study offers practical insights for tourism operators, healthcare providers, and policymakers, encouraging them to collaborate in developing wellness-oriented tourism products that promote mental health recovery. This can lead to the creation of tourism programs specifically designed for individuals undergoing cancer recovery, which could set new standards for wellness tourism in the country.

Research gap

Despite the growing body of research on wellness tourism and its role in health promotion, particularly for mental well-being, there remains a significant gap in understanding how nature-based tourism can be specifically integrated into cancer recovery frameworks. Existing international studies have predominantly focused on the general benefits of nature exposure for stress relief and mental health recovery, but few have examined the unique needs of cancer survivors, especially in the context of family-centered recovery and community-based tourism interventions [11]. Moreover, much of the current literature is centered on Western countries, where cultural practices and beliefs about health and nature differ substantially from those in East Asia. There is a lack of research that considers the influence of traditional Chinese values, such as the holistic integration of body, mind, and nature, on cancer recovery through nature-based tourism.

This study aims to fill this gap by exploring how nature-based tourism in Yunnan can be tailored to support the psychological well-being of cancer survivors and their families within the Chinese cultural context. By investigating the therapeutic potential of natural environments in China and their alignment with traditional health practices, this research offers a culturally relevant approach to cancer recovery. Furthermore, the study's focus on family involvement in nature-based tourism as part of the recovery process provides a new perspective that addresses the psychosocial needs of not only patients but also caregivers, which has been underexplored in previous research [12].

The broader implications of this study for cancer care are also noteworthy. It highlights the importance of addressing the psychosocial aspects of cancer recovery, which are often overlooked in traditional medical treatments. By demonstrating the potential therapeutic benefits of nature-based tourism, this research encourages healthcare institutions to integrate non-traditional interventions into cancer treatment plans. Nature-based tourism, with its focus on relaxation and emotional rejuvenation, offers a complementary approach to medical treatment, helping patients cope with the psychological stress and emotional fatigue associated with cancer. For instance, wellness tourism destinations like Bama in China have been recognized for their ability to foster recovery through sociability and engagement with natural landscapes, offering cancer patients and their families a chance to regain a sense of normalcy and emotional balance [13].

Additionally, this study's findings have implications for promoting healthy lifestyles among cancer survivors. Research shows that engagement in wellness tourism can lead to positive lifestyle changes, such as improved dietary habits and increased physical activity, both of which are critical for cancer recovery and prevention. Programs like Be Well Communities™, which focus on mobilizing communities to promote wellness, have demonstrated the effectiveness of evidence-based interventions in improving health outcomes, particularly in preventing cancer and supporting recovery [14]. By integrating similar wellness-oriented approaches into tourism, this study provides a framework for enhancing the quality of life for cancer survivors, while also promoting sustainable tourism practices in regions like

Yunnan, where nature-based tourism can play a dual role in health promotion and environmental conservation.

In conclusion, this study is both timely and relevant, as it addresses the growing need for holistic approaches to cancer care in China. By exploring the intersection of tourism and healthcare, this research contributes to a deeper understanding of how nature-based tourism can enhance the psychological well-being of cancer survivors and their families, while also promoting sustainable tourism practices. The findings of this study could inspire future research on the role of natural environments in improving the quality of life for individuals facing chronic illnesses, potentially expanding the scope of wellness tourism to include more diverse and vulnerable populations.

2. Literature review

2.1. Tourism and mental health

Tourism, especially in natural environments, has been widely recognized for its restorative effects on mental health. Restorative environments, which are often found in nature, promote recovery from mental fatigue, reduce stress, and foster a sense of well-being. Studies show that nature tourism contributes to the improvement of cognitive function, emotional resilience, and mood, making it particularly beneficial for individuals undergoing recovery from serious health conditions like cancer [15]. Additionally, multisensory experiences in tourism, particularly those in historical and cultural contexts, have been found to enhance mental restoration by fostering place attachment and providing a perceived restorative environment [16].

A significant aspect of nature-based tourism is its ability to foster mindfulness and emotional recovery. Mindfulness, when practiced in natural settings, enhances the therapeutic effects of the environment, leading to improvements in mood, reduced symptoms of depression and anxiety, and greater overall psychological resilience [9]. For cancer survivors, who often face emotional and cognitive challenges during recovery, the benefits of nature tourism are substantial. It offers an escape from the stressors of daily life and provides a conducive environment for healing and reflection.

Ecotherapy, a practice that combines nature exposure with therapeutic activities, has also demonstrated positive outcomes for mental health. Engaging with nature through hiking, forest bathing, or simply spending time outdoors has been shown to lower cortisol levels, decrease symptoms of stress, and elevate feelings of calmness and happiness [10]. This practice is especially valuable for individuals recovering from cancer, who may be dealing with chronic anxiety and stress. By participating in nature-based tourism, these individuals can experience both physical and psychological benefits.

2.2. Cancer and psychosocial well-being

Cancer patients and their families face numerous psychosocial challenges throughout the treatment and recovery process. Anxiety, depression, fear of recurrence, and emotional exhaustion are common among cancer patients, often

persisting even after treatment has concluded. These psychological burdens extend to family members and caregivers, who experience significant stress as they provide emotional and practical support [17].

Interventions aimed at improving the psychosocial well-being of cancer patients have traditionally focused on counseling, cognitive-behavioral therapy, and support groups. However, there is a growing interest in complementary therapies, including nature-based interventions, that address the emotional and psychological impacts of cancer. Nature-based activities, such as eco-therapy, have been shown to reduce anxiety, improve mood, and enhance the overall quality of life for cancer survivors [18].

Family involvement in the recovery process is essential, and nature-based tourism offers a unique opportunity to strengthen familial bonds while addressing emotional fatigue. Research suggests that cancer survivors benefit from shared experiences in natural environments, which provide not only emotional relief but also a sense of normalcy and connection [19]. Programs that integrate family-centered approaches in natural settings, such as retreats or group therapy in nature, can significantly improve the mental health of both patients and caregivers.

2.3. East Asian cultural perspectives on healing

In East Asian cultures, particularly in China, health is traditionally viewed as a holistic concept, with the body, mind, and spirit seen as interconnected. This belief is rooted in traditional Chinese medicine (TCM), which emphasizes the importance of balance and harmony between individuals and their environment. Nature plays a central role in TCM practices, with natural settings such as mountains, rivers, and forests viewed as essential for promoting health and well-being. Practices like qi gong and tai chi, which are often performed outdoors, align with this cultural understanding of health by enhancing the flow of energy (qi) and promoting mental clarity [20].

Family is another core element of East Asian approaches to health. In Chinese culture, caregiving is often viewed as a family responsibility, and the well-being of the individual is closely tied to the well-being of the family. Cancer treatment, in particular, involves the active participation of family members in caregiving roles. This family-centered approach to health care is evident in the ways that healing practices often involve the entire family unit [21].

The integration of nature-based tourism into cancer recovery is particularly relevant in this cultural context. By participating in tourism that incorporates elements of mindfulness, traditional Chinese healing practices, and nature, cancer survivors can experience a form of therapy that resonates with their cultural values. This approach not only supports mental and emotional recovery but also aligns with traditional beliefs about the role of nature in health and healing.

2.4. Yunnan's potential as a healing destination

Yunnan Province, located in southwestern China, is well known for its stunning natural landscapes, cultural diversity, and rich biodiversity. The province's mountains, forests, lakes, and ethnic cultures make it a prime location for eco-

tourism and wellness tourism. Yunnan has long been a popular destination for tourists seeking adventure and relaxation, but in recent years, it has also gained recognition as a hub for wellness tourism [22].

Yunnan's potential as a healing destination lies in its combination of natural beauty and traditional healing practices. The province is home to a variety of traditional Chinese medicine practices, including herbal medicine and acupuncture, which can be integrated into wellness tourism experiences. These healing traditions, combined with the restorative effects of Yunnan's natural environments, offer a unique opportunity for cancer survivors to engage in tourism that supports both their physical and mental well-being [23]. The region's natural resources are not only valuable for their scenic beauty but also for their role in promoting health and well-being.

Previous research on eco-tourism in China has highlighted the socio-economic benefits of tourism in regions like Yunnan, where tourism has contributed to poverty alleviation and environmental conservation [12]. However, there is growing recognition of the potential for tourism to also play a role in health promotion. By positioning Yunnan as a destination for nature-based wellness tourism, the province can attract visitors seeking therapeutic experiences that promote healing and recovery [24].

In conclusion, Yunnan's natural and cultural resources make it an ideal location for exploring the potential of nature-based tourism to enhance the psychological well-being of cancer survivors and their families. The integration of eco-tourism with traditional healing practices offers a comprehensive approach to wellness that aligns with both cultural values and modern health needs [25].

3. Methodology

3.1. Research design

This study adopts a qualitative research design to explore the perceptions of cancer survivors and their families regarding nature-based tourism in Yunnan. The qualitative approach is particularly well-suited for this research because it allows for a deep understanding of the subjective experiences, emotions, and attitudes of the participants. Through qualitative methods, the research can uncover nuanced insights into how nature-based tourism affects the psychological well-being of cancer survivors and their families.

The research will employ a combination of in-depth interviews, surveys, and observational data to gather comprehensive information from participants. In-depth interviews provide the flexibility to probe deeper into the personal experiences of cancer survivors and their families, allowing them to express their feelings and thoughts about their healing process in natural environments. Surveys will supplement the interviews by providing structured data on the broader perceptions and experiences of the participants, offering quantitative insights that can support the qualitative findings. Observational data will be gathered through direct observation of interactions between participants and natural settings during their visits to nature-based tourism sites in Yunnan, enabling the researcher to contextualize the interview and survey data within real-life experiences.

3.2. Data collection methods

To gain a holistic understanding of the impact of nature-based tourism on the psychological well-being of cancer survivors and their families, the data collection will be multi-faceted, incorporating both primary and secondary data sources.

The primary data will be collected through in-depth interviews with three groups of participants: Cancer survivors, their families, and healthcare professionals. The interviews will focus on personal experiences, challenges, and perceptions of nature-based tourism as a therapeutic tool. Participants will be asked open-ended questions, allowing them to share detailed accounts of their emotional and psychological journeys. The interview process will be semi-structured to ensure that key themes are explored while allowing for flexibility in participants' responses.

Additionally, secondary data will be incorporated into the study, sourced from academic journals, research reports, and governmental tourism data. These sources will provide contextual information, such as the broader impacts of wellness tourism in China, tourism development in Yunnan, and relevant cancer care practices. By combining primary and secondary data, the research will have a strong foundation for comprehensive analysis, ensuring that the findings are not only based on personal accounts but also informed by existing literature and empirical data.

Interviews will take place in multiple locations in Yunnan, including popular nature-based tourism destinations. This location-specific data will help contextualize the therapeutic potential of Yunnan's natural settings, enabling the researcher to draw connections between the local environment and participant experiences.

In addition to qualitative interviews, surveys, and observational data, the study incorporated quantitative measures to assess psychological variables such as stress, anxiety, and depression. Standardized psychological assessments were administered to participants before and after their engagement in nature-based tourism activities.

3.2.1. Quantitative assessments

Perceived Stress Scale (PSS) [26]: A widely used instrument to measure the perception of stress. It assesses the degree to which situations in one's life are appraised as stressful.

Hospital Anxiety and Depression Scale (HADS) [27]: A validated tool used to detect states of anxiety and depression in patients, consisting of two subscales: HADS-Anxiety and HADS-Depression.

3.2.2. Justification for use of scales

The PSS and HADS were chosen for their reliability and validity in assessing psychological distress. Both scales have been translated into Chinese and validated in Chinese populations, ensuring cultural relevance and accuracy in measurement [28,29]. Utilizing these standardized instruments allowed for a quantitative evaluation of the psychological benefits of nature-based tourism, complementing the qualitative insights from interviews and surveys.

3.2.3. Procedure

Participants completed the PSS and HADS assessments at two time points:

Before engagement in nature-based tourism: Baseline measurements were taken to assess initial stress, anxiety, and depression levels.

After engagement in nature-based tourism: Follow-up assessments were conducted immediately after the tourism activities to measure any changes in psychological well-being

3.3. Study participants

The study participants will be selected based on their relevance to the research questions. The primary group of participants will be cancer survivors who have engaged in nature-based tourism in Yunnan. In addition, the study will include their family members, who often play a crucial role in the emotional recovery process, and healthcare professionals involved in cancer treatment and recovery.

To ensure that the findings are representative, the participant selection will aim for diversity in terms of age, gender, and cancer stages. This approach ensures that the study captures a wide range of perspectives, reflecting the varying needs and experiences of cancer survivors at different points in their recovery journeys. Participants will be recruited through cancer support organizations, wellness tourism operators, and healthcare institutions in Yunnan.

For inclusion in the study, cancer survivors must meet specific criteria:

- **Experience with nature-based tourism:** Participants must have engaged in nature-based tourism activities during their cancer recovery process.
- **Geographical focus:** Participants must have participated in these activities in Yunnan, ensuring that the study is regionally relevant.
- **Diverse demographics:** The study will aim for a diverse group, including survivors from different age groups, genders, and cancer stages to capture varied experiences.

Additionally, tourism operators and healthcare providers involved in cancer care and wellness tourism will be interviewed to gather their perspectives on the role of nature-based tourism in supporting cancer recovery. This will help provide a more comprehensive view of how tourism and healthcare sectors can collaborate to offer holistic care.

3.4. Data analysis techniques

Once the data is collected, the research will use thematic analysis as the primary method for analyzing the qualitative data. Thematic analysis is ideal for identifying common themes and patterns in participant responses, allowing the researcher to understand the shared experiences of cancer survivors and their families in relation to nature-based tourism. This method will help to pinpoint key themes such as psychological well-being, emotional resilience, the benefits of nature-based tourism, and the challenges associated with engaging in these activities during recovery.

Thematic analysis will follow a structured approach:

- 1) **Familiarization with the data:** The researcher will transcribe the interviews and survey responses and review the observational notes, ensuring a deep understanding of the data.
- 2) **Coding:** The data will be systematically coded to identify recurring themes and patterns. The codes will represent meaningful units of information related to the

study's objectives, such as stress reduction, emotional bonding within families, and the perceived restorative qualities of natural settings.

- 3) Theme development: Based on the codes, the researcher will group related data points into themes that reflect the broader concepts emerging from the data.
- 4) Reviewing and refining themes: The themes will be reviewed to ensure they accurately represent the data and are relevant to the research questions. Any redundant or overlapping themes will be merged or refined.

To assist with this process, NVivo, a qualitative data analysis software, will be used to manage and organize the large volume of data collected from interviews, surveys, and observations. NVivo will facilitate the coding process by allowing the researcher to categorize data efficiently, track connections between themes, and visualize relationships within the data.

The use of NVivo will help ensure a rigorous and systematic approach to data analysis, improving the validity and reliability of the findings. Additionally, the software's ability to manage and analyze large datasets will be critical in synthesizing insights from diverse participant groups, ensuring that the analysis reflects a comprehensive view of the role of nature-based tourism in cancer recovery.

3.5. Ethical considerations

Participants provided written informed consent prior to their involvement in the study, acknowledging their voluntary participation and understanding of the research purpose. They were informed of their right to withdraw from the study at any time without any consequences. Since the research involved collecting personal experiences and opinions on nature-based tourism and psychological well-being—without any invasive procedures or medical interventions—formal ethical approval from a medical ethics board was not required. No sensitive health data, personal medical records, or work with vulnerable populations were involved.

To maintain confidentiality, all personal identifiers were removed from interview transcripts and reports. Participants' privacy was ensured throughout the data collection and analysis process, adhering to established ethical standards in qualitative research.

4. Results

This chapter presents the findings of the study, incorporating data collected from interviews and surveys conducted with local cancer survivors, their families, and members of anti-cancer support groups in the community. Given that the data was gathered outside of hospital settings and with informed consent from participants, ethical considerations were duly observed in line with community research practices. The results are organized according to the thematic areas outlined: Participant demographics and sample analysis, psychological benefits of nature-based tourism, cultural and spiritual significance, challenges and barriers, and comparisons with other regions.

4.1. Participant demographics and sample analysis

Understanding the demographic characteristics of the participants is fundamental to effectively contextualize the results of this study. Primary data collection was conducted through in-depth interviews and surveys targeting community-based cancer survivors, their family members, and individuals associated with local anti-cancer support groups in Yunnan.

4.1.1. Sample composition

A total of 50 participants were included in the study, categorized into three main groups: Cancer survivors, family members of survivors, and active members of anti-cancer support groups. The demographic details of the participants are presented in **Table 1**. This table illustrates the breakdown of participants according to their roles, gender, age group, cultural/ethnic background, cancer stage, and educational level, which helps to provide a comprehensive understanding of the diverse population involved in the research.

Table 1. Demographic characteristics of participants.

| Characteristic | Subcategory | Number of Participants | Percentage (%) |
|----------------------------|---|------------------------|----------------|
| Role | Cancer Survivors | 30 | 60% |
| | Family Members | 15 | 30% |
| | Support Group Members | 5 | 10% |
| Gender | Male | 22 | 44% |
| | Female | 28 | 56% |
| Age Group | 18–30 | 8 | 16% |
| | 31–45 | 18 | 36% |
| | 46–60 | 16 | 32% |
| | 61 and above | 8 | 16% |
| Cultural/Ethnic Background | Han Chinese | 32 | 64% |
| | Ethnic Minorities (Yi, Bai, Naxi, etc.) | 18 | 36% |
| Cancer Stage | Early Stage | 12 | 24% |
| | Mid Stage | 20 | 40% |
| | Late Stage | 18 | 36% |
| Education Level | Primary Education | 10 | 20% |
| | Secondary Education | 20 | 40% |
| | Higher Education | 20 | 40% |

Source: Field data, 2024.

4.1.2. Analysis of demographics

The majority of participants were cancer survivors (60%), followed by family members (30%) and support group members (10%). The presence of support group members offered valuable insights into community perspectives on cancer recovery. Female participants (56%) slightly outnumbered males (44%), possibly indicating greater involvement by women in community wellness and support activities. The most represented age groups were 31–45 years (36%) and 46–60 years (32%),

suggesting that middle-aged individuals are the most engaged in nature-based therapeutic tourism, balancing family, work, and health. A significant proportion (36%) of participants were from Yunnan's ethnic minority groups (e.g., Yi, Bai, Naxi), highlighting their deep-rooted connections to natural and cultural healing practices. Most participants were in the mid-stage (40%) or late-stage (36%) of cancer, with a smaller portion in the early stage (24%), allowing for an understanding of different needs across the stages of cancer recovery. Participants had balanced education levels, with 40% having secondary education, 40% higher education, and 20% primary education, which may correspond to greater openness to nature-based therapies. These demographic insights provide essential context for understanding how nature-based tourism can benefit cancer survivors and their families in Yunnan, considering cultural, social, and health-related factors.

4.1.3. Cultural perspectives

The inclusion of participants from different cultural backgrounds enriched the study, offering diverse insights into their relationships with nature and healing practices.

Table 2 provides a detailed breakdown of the cultural backgrounds of the study participants, highlighting the diversity within the sample. The majority of participants were Han Chinese (64%), followed by individuals from the Yi (16%), Bai (12%), and Naxi (8%) ethnic groups. This distribution reflects the cultural richness of Yunnan province, where a variety of ethnic groups coexist, each with distinct traditions and healing practices. The significant representation of ethnic minorities is crucial, as it brings in diverse cultural insights, particularly regarding traditional relationships with nature and community-based healing practices. These varied cultural backgrounds offered unique perspectives that enriched the understanding of how nature-based tourism can serve as a therapeutic tool for cancer recovery.

Table 2. Cultural background of participants.

| Ethnic Group | Number of Participants | Percentage (%) |
|--------------|------------------------|----------------|
| Han Chinese | 32 | 64% |
| Yi | 8 | 16% |
| Bai | 6 | 12% |
| Naxi | 4 | 8% |

Source: Field data, 2024.

Participants from ethnic minority groups often shared unique perspectives on the healing properties of nature, influenced by their traditional beliefs and practices. For example, Yi participants frequently emphasized the role of ancestral lands and natural rituals in their well-being, while Bai and Naxi individuals highlighted the importance of natural elements like water and mountains as integral to their cultural identity and healing processes. Such contributions underscored the holistic role of nature in promoting both physical and mental health across different cultural settings.

4.1.4. Gender perspectives

Understanding the differing perspectives between female and male participants is essential for tailoring nature-based tourism experiences to meet their diverse needs. The key themes reported by each group are summarized in **Table 3**.

Table 3. Gender-based perspectives on nature-based tourism.

| Gender | Percentage (%) | Key Emphases |
|---------------------|----------------|--|
| Female Participants | 56% | Emotional Healing, Family Relationships, Spiritual Experiences |
| Male Participants | 44% | Physical Improvements, Stress Relief, Personal Reflection |

These differences in gender perspectives highlight the need to offer a range of nature-based tourism options that cater to both emotional and physical aspects of healing. For example, programs for female participants might include more guided meditation or family-oriented activities, while those for male participants could feature more physically engaging or solitary reflective experiences. Recognizing and respecting these differences allows for the creation of more personalized and effective tourism programs that support diverse pathways to well-being.

4.2. Psychological benefits of nature-based tourism

The psychological benefits of nature-based tourism were significant for the participants of this study. Engaging with the natural environment helped foster a sense of tranquility and provided respite from the daily stressors associated with living with cancer. The interaction with natural landscapes—such as forests, lakes, and mountains—not only helped participants improve their physical health but also promoted emotional and psychological well-being. This section delves into the psychological advantages reported by participants, supported by qualitative data from interviews that highlight their personal experiences and sentiments.

4.2.1. Enhancement of psychological well-being

Table 4. Psychological benefits reported by participants.

| Psychological Benefit | Number of Participants Reporting | Percentage (%) |
|--------------------------------|----------------------------------|----------------|
| Stress Reduction | 43 | 86% |
| Improved Mood | 40 | 80% |
| Increased Emotional Resilience | 35 | 70% |
| Enhanced Self-esteem | 32 | 64% |
| Reduction in Anxiety Symptoms | 38 | 76% |
| Better Sleep Quality | 30 | 60% |

Source: Field data, 2024.

A significant majority of participants experienced improvements in their psychological health as a result of nature-based tourism. Many participants highlighted the direct impact that Yunnan's natural landscapes had on their emotional well-being, describing feelings of stress relief, emotional rejuvenation, and overall improvements in mental health. These improvements are quantitatively

represented in **Table 4**, which summarizes the key psychological benefits reported by participants.

Participants from all age groups and cultural backgrounds noted these benefits, demonstrating the universal appeal of nature-based tourism for psychological recovery. The testimonials collected during interviews further emphasize the profound impact of nature on participants' mental well-being.

Participant testimonials:

- *"Being in the mountains allowed me to breathe freely, both physically and emotionally."* (Female, 45, Han Chinese)
- *"Nature helped me find peace amidst the chaos of my illness."* (Male, 52, Yi ethnicity)
- *"The forests and rivers were like a refuge to me. I felt like I was reconnecting with myself and leaving behind the constant worry of my treatments."* (Female, 38, Bai ethnicity)
- *"I never realized how much I needed this until I was standing by the lake, feeling completely calm for the first time in months."* (Male, 61, Naxi ethnicity)

These testimonials highlight the diverse ways in which nature-based tourism contributed to participants' well-being. Stress reduction was one of the most frequently mentioned benefits, with participants describing how the natural surroundings helped alleviate their constant anxiety. A middle-aged participant explained: "The sounds of the forest and the fresh air made me forget my struggles, even if only for a short while. It was like a reset for my mind." (Male, 47, Han Chinese).

Improved mood and increased emotional resilience were also key outcomes. One participant shared how spending time outdoors brought unexpected moments of joy: "Watching the sunset from the hilltop, I felt happy for the first time in a long while. It reminded me that there's still beauty in the world, despite everything." (Female, 54, Yi ethnicity).

Enhanced self-esteem and a reduction in anxiety symptoms were closely tied to participants' sense of achievement during nature-based activities. Whether it was completing a hike or simply walking along a riverbank, these activities provided a sense of accomplishment. "I felt proud of myself for completing the trail. It made me realize that I'm still capable of so much, even with my illness." (Male, 50, Bai ethnicity).

Lastly, several participants noted that exposure to natural settings helped them achieve better sleep quality. One participant reflected: "I slept soundly after our trip to the mountains. It was the first time in a long time that I didn't wake up with my mind racing." (Female, 42, Han Chinese).

These personal stories, combined with the data in **Table 3**, demonstrate the significant psychological benefits of engaging in nature-based tourism for cancer survivors and their families. The experience provided participants with not only a physical escape from their daily routines but also a profound emotional and mental reprieve, contributing to an overall sense of well-being.

4.2.2. Stress reduction and emotional healing

Nature-based tourism emerged as a powerful tool for stress reduction and emotional healing among participants. Many participants described how the serene environments of Yunnan's natural landscapes helped alleviate their anxiety and gave them a sense of peace that they had not experienced during their medical treatments. Participants consistently reported that being immersed in nature—surrounded by lush greenery, fresh air, and the sounds of water—created an environment that was conducive to relaxation and mental rejuvenation.

One participant, a cancer survivor in the mid-stage of recovery, expressed: “When I was in the forest, I could finally breathe freely. It felt as though the weight of my diagnosis had lifted, even if just for a while. The sound of the river and the wind through the trees made me feel alive again”. This reflection captures the essence of how the natural environment played a critical role in providing emotional relief.

Another participant, a family member, described the effect of nature on her emotional state: “Seeing my husband smile and relax while we walked through the mountains was incredibly meaningful. It was one of the first times I saw him truly let go of his stress since his diagnosis. It gave me hope that we could still have these moments of joy together”. This demonstrates how nature-based tourism not only aids in the emotional recovery of cancer survivors but also positively impacts their caregivers, who also bear a significant emotional burden.

Several participants highlighted that the sense of connection with nature made them feel more grounded and helped shift their focus away from their illness. A participant from the Yi ethnic group mentioned: “In our culture, we believe that the mountains and rivers have spirits. When I walked among them, I felt protected and watched over. It was like I was receiving strength from nature itself”. This perspective underscores the cultural dimension of emotional healing, where nature is seen not just as a physical place but as a source of spiritual comfort and resilience.

The emotional healing facilitated by nature also helped participants find a renewed sense of purpose. One participant in the late stage of cancer said: “After spending time by the lake, I started to think less about my illness and more about what I could still do—how I could still enjoy life. It gave me a new perspective that I hadn't had in a long time”. This illustrates the transformative potential of nature-based experiences, which can foster a sense of hope and reframe participants' outlook on their journey with cancer.

The psychological benefits of nature-based tourism are further amplified when considering the communal aspects of these experiences. Participants often engaged in activities such as hiking, group meditation, and traditional rituals together, which helped strengthen bonds with their families and fellow survivors. A family member shared: “We did a small prayer by the river, just as our ancestors did. It was such a powerful moment, not just for my mother but for all of us. It brought us closer together, and we left feeling united in her fight against cancer”. This highlights how communal experiences in natural settings can foster emotional resilience and enhance the overall well-being of both patients and their families.

These personal narratives emphasize the profound impact that nature-based tourism can have on the psychological health of cancer survivors and their families. The natural settings of Yunnan, with their rich biodiversity and cultural heritage, offer a unique environment that supports stress relief, emotional recovery, and a renewed sense of purpose.

4.2.3. Sense of peace and mindfulness

Participants frequently reported that the natural settings in Yunnan significantly facilitated mindfulness and provided them with a profound sense of inner peace. Being immersed in nature allowed them to disconnect from daily worries and focus on the present, which played a crucial role in enhancing their mental well-being.

Mindfulness practices: Participants found that activities such as meditation and mindful breathing were greatly enhanced by the serene and natural surroundings. The sounds of flowing water, rustling leaves, and the fresh air created an environment conducive to practicing mindfulness, which helped them achieve a deeper state of relaxation and focus. One participant described the experience of meditating in nature as deeply restorative: *“Meditating by the lake made me feel connected to something larger than myself, which was comforting.”* (Female, 38, Bai ethnicity).

Spiritual connection: Many participants also expressed feeling a deeper spiritual connection to the natural world, which fostered a sense of acceptance and helped them cope with their illness. For some, the landscapes of Yunnan were not only a physical setting but also held spiritual significance, providing emotional strength and comfort. A participant from the Naxi ethnicity shared: *“Being surrounded by the mountains felt like being embraced by a protective force. It helped me accept my condition and gave me the strength to keep going.”* (Male, 55, Naxi ethnicity).

The testimonials highlight that the sense of peace derived from these natural settings was both emotional and spiritual. Participants from various cultural backgrounds emphasized that being in nature helped them reconnect with themselves and the world around them. This deep connection to nature served as a powerful tool for fostering mindfulness, enhancing their ability to remain present, and supporting emotional healing.

4.2.4. Role of family involvement and bonding

Family involvement significantly amplified the psychological benefits of nature-based tourism for participants. The presence of family members provided emotional support, facilitated shared coping strategies, and enhanced the overall experience of engaging with natural environments. **Table 5** summarizes the impact of family involvement on various psychological outcomes, comparing participants who experienced nature-based tourism with their families versus those who participated alone.

Table 5. Impact of family involvement on psychological outcomes.

| Outcome | Participants with Family (N = 35) | Participants Alone (N = 15) |
|---------------------------------|-----------------------------------|-----------------------------|
| Increased Emotional Support | 32 (91%) | 10 (67%) |
| Enhanced Communication | 28 (80%) | 8 (53%) |
| Shared Coping Strategies | 26 (74%) | 7 (47%) |
| Greater Enjoyment of Activities | 30 (86%) | 9 (60%) |

Source: Field data, 2024.

Families reported that shared experiences in natural settings significantly strengthened relationships, provided mutual emotional support, and helped in developing shared coping mechanisms. These collective experiences in nature not only enhanced individual well-being but also fostered a sense of unity and resilience within families.

Participant testimonials:

- *“Sharing these moments with my family reminded us of our strength together.”* (Male, 50, Han Chinese)
- *“Walking through the forest with my children made me realize how much we could still enjoy life together, despite the challenges we face.”* (Female, 45, Han Chinese)

These testimonials emphasize that nature-based tourism experiences are more impactful when shared with loved ones. Family involvement played a key role in reducing the emotional burden of illness, as the presence of supportive companions provided comfort and joy. Participants also highlighted how these shared moments helped them reconnect on a deeper level, reinforcing bonds that may have been strained during periods of medical treatment and stress. The natural environment thus served not only as a setting for individual recovery but also as a catalyst for family cohesion and mutual support.

4.3. Cultural and spiritual significance

Yunnan’s cultural and spiritual heritage enriched the healing experience for participants, providing a deeper, more meaningful context for their psychological and emotional recovery. The natural landscapes, combined with cultural practices and spiritual landmarks, played a significant role in fostering well-being.

4.3.1. Influence of Yunnan’s cultural heritage

The influence of Yunnan’s rich cultural heritage on participants’ well-being was profound, as they engaged with the traditions and practices of local ethnic groups. The integration of cultural experiences during nature-based tourism helped to provide participants with a sense of enrichment and belonging.

As shown in **Table 6**, learning about the different traditions of Yunnan’s ethnic minorities, such as the Yi, Bai, and Naxi, broadened participants’ perspectives. These cultural experiences allowed participants to see the deep connection between health, nature, and community, which enhanced their overall sense of well-being. **Table 6** also illustrates how the opportunity to interact with local people and participate in cultural activities fostered a feeling of belonging among participants. One participant expressed: “The warmth of the local people and their stories inspired

me.” (Female, 40, Naxi ethnicity). These interactions helped participants feel welcomed and connected, contributing to emotional healing by reducing feelings of isolation and building a sense of solidarity. Moreover, participants reported that these cultural engagements broadened their perspectives, providing new insights into the importance of community in personal well-being and deepening their appreciation of Yunnan’s cultural richness.

Table 6. Impact of cultural engagement on participants.

| Cultural Impact | Number of Participants Reporting | Percentage (%) |
|------------------------|----------------------------------|----------------|
| Cultural Enrichment | 36 | 72% |
| Sense of Community | 30 | 60% |
| Broadened Perspectives | 32 | 64% |

Source: Field data, 2024.

4.3.2. Buddhist temples and spiritual healing

Visits to Buddhist temples in Yunnan were profoundly impactful for many participants, as summarized in **Table 7**. The temples provided a space for spiritual reflection and emotional release, which were crucial for participants coping with the stress and uncertainty of their illness.

Table 7. Activities enhancing spiritual well-being.

| Activity | Number of Participants Engaged | Percentage (%) |
|------------------------------------|--------------------------------|----------------|
| Temple Visits | 38 | 76% |
| Participation in Religious Rituals | 25 | 50% |
| Spiritual Reflection | 33 | 66% |

Source: Field data, 2024.

As shown in **Table 7**, participants engaged in temple visits, participation in religious rituals, and spiritual reflection, which significantly enhanced their spiritual well-being. The tranquil atmosphere of the temples provided participants with an opportunity to reflect on their lives and health, offering a sense of peace away from medical treatments and daily pressures. Many participants found solace in this environment, which allowed them to meditate and find emotional relief. Additionally, participation in Buddhist rituals, such as lighting incense and offering prayers, helped participants feel spiritually uplifted, offering an outlet for their hopes and fears. One participant mentioned: “The simple act of lighting incense and offering prayers gave me a sense of hope and a connection to something greater than myself.” (Male, 48, Han Chinese). These activities collectively fostered a deep spiritual connection, providing comfort and enhancing participants’ ability to cope with their illness.

4.3.3. Integration of traditional Chinese medicine

The integration of Traditional Chinese Medicine (TCM) practices into nature-based tourism experiences was highly valued by participants, as shown in **Table 8**. TCM practices such as herbal treatments, acupuncture, Tai Chi, and mindfulness

meditation were seen as complementary to participants' medical treatments and enhanced their overall sense of well-being.

Table 8. Traditional Chinese medicine practices utilized.

| TCM Practice | Number of Participants Utilizing | Percentage (%) | Perceived Effectiveness |
|------------------------|----------------------------------|----------------|-------------------------|
| Herbal Treatments | 28 | 56% | High |
| Acupuncture | 22 | 44% | Moderate |
| Tai Chi/Qi Gong | 30 | 60% | High |
| Mindfulness Meditation | 35 | 70% | High |

Source: Field data, 2024.

As illustrated in **Table 8**, participants reported that TCM practices complemented their ongoing medical treatments by providing both physical and emotional relief. Herbal treatments were often used to alleviate symptoms such as nausea and fatigue, while acupuncture was particularly helpful in reducing pain. Additionally, engaging in TCM practices provided participants with a greater sense of control over their own healing journey. Tai Chi and Qi Gong, in particular, were described as empowering practices that allowed participants to actively contribute to their recovery. One participant shared: "Practicing Tai Chi every morning made me feel like I was taking control of my health. It gave me strength and energy." (Female, 50, Yi ethnicity). The use of TCM also aligned with participants' cultural beliefs about health and nature. Many participants expressed comfort in engaging with healing practices that were deeply rooted in their cultural heritage, which enhanced the emotional and psychological benefits of their overall recovery process.

4.4. Challenges and barriers

Despite the numerous psychological, physical, and social benefits associated with nature-based tourism, participants faced several significant challenges that hindered their ability to fully engage in these experiences. These challenges can be broadly categorized into financial constraints, physical limitations, lack of awareness and accessibility, and sustainable development concerns. Understanding these barriers is crucial for developing comprehensive strategies to make nature-based tourism more inclusive and accessible for all cancer survivors and their families.

4.4.1. Financial constraints

Table 9. Financial barriers to participation.

| Financial Constraint | Number of Participants Affected | Percentage (%) |
|----------------------|---------------------------------|----------------|
| Medical Expenses | 30 | 60% |
| Travel Costs | 25 | 50% |

Source: Field data, 2024.

Economic barriers were a major limitation that prevented some participants from accessing the full benefits of nature-based tourism. Many participants highlighted that the costs associated with both medical treatment and tourism experiences were significant hurdles to participation. As shown in **Table 9**, financial

barriers such as medical expenses and travel costs significantly impacted participants' ability to engage in such activities.

The ongoing costs of cancer treatment, including medications, hospital visits, and follow-up care, consumed much of the disposable income that participants could otherwise have used for engaging in therapeutic travel experiences. As noted by one participant, "I wish such healing experiences were more affordable." (Female, 55, Han Chinese). Travel costs, including accommodation and transportation, were similarly prohibitive for many participants, who expressed a desire for subsidized programs or more affordable options to make these experiences feasible. For many, the financial burden created a stark choice between essential medical care and potentially beneficial activities like nature-based tourism.

4.4.2. Physical limitations

Physical health conditions were another significant barrier that restricted participants' engagement with nature-based tourism. Many cancer survivors faced various physical limitations, ranging from fatigue and pain to more severe mobility issues and immunocompromised conditions, which made participation in physically demanding activities challenging. As shown in **Table 10**, these physical barriers significantly impacted participants' ability to engage in nature-based tourism.

Table 10. Physical barriers to participation.

| Physical Limitation | Number of Participants Affected | Percentage (%) |
|------------------------------|---------------------------------|----------------|
| Fatigue | 34 | 68% |
| Mobility Issues | 20 | 40% |
| Immunocompromised Conditions | 15 | 30% |
| Pain and Discomfort | 28 | 56% |

Source: Field data, 2024.

Fatigue was the most frequently reported issue, with 68% of participants citing it as a primary limitation. This highlights the importance of designing tailored activities that take into account the varying physical abilities of participants. Participants expressed the need for options such as shorter trails, resting areas, and activities that could be adjusted according to their physical capacities. One participant suggested, "If there were more activities designed for people with limited mobility, it would have been easier for me to join." (Male, 61, Han Chinese). Furthermore, many participants stressed the importance of having medical support available during tourism activities, such as ensuring the presence of medical professionals or adequate first-aid facilities, to alleviate concerns about safety during travel.

4.4.3. Lack of awareness and accessibility

Another key barrier identified was the lack of awareness and accessibility of nature-based tourism opportunities for cancer survivors. Information gaps regarding available programs and accessibility issues further hindered participants from taking advantage of these beneficial experiences. As shown in **Table 11**, awareness and accessibility issues significantly impacted participants' ability to engage in these programs.

Table 11. Awareness and accessibility issues.

| Barrier | Number of Participants Affected | Percentage (%) |
|----------------------|---------------------------------|----------------|
| Limited Promotion | 22 | 44% |
| Accessibility Issues | 18 | 36% |

Source: Field data, 2024.

Nearly half of the participants (44%) reported that they were simply unaware of the programs available. “I didn’t know such programs existed until a friend told me.” remarked one participant (Male, 60, Yi ethnicity), emphasizing the need for better outreach and targeted promotion. Accessibility was also a challenge for participants with disabilities or mobility issues, with 36% indicating that the sites lacked adequate facilities such as wheelchair ramps or accessible pathways. Ensuring that sites are accessible for individuals with different physical abilities is crucial for promoting inclusive tourism experiences. Participants emphasized that increased visibility of these programs through healthcare providers and local community centers could enhance awareness and participation.

4.4.4. Sustainable development challenges

Lastly, sustainable development challenges were highlighted as concerns by participants and local community members alike. The increase in tourism has raised issues of environmental degradation and cultural commodification, posing risks to the very environments that participants find healing. As shown in **Table 12**, these sustainable development challenges were significant.

Table 12. Sustainable development challenges.

| Challenge | Number of Participants Affected | Percentage (%) |
|-----------------|---------------------------------|----------------|
| Over-tourism | 18 | 36% |
| Cultural Impact | 15 | 30% |

Source: Field data, 2024.

Over-tourism was a concern for 36% of participants, who noted that the influx of visitors could potentially harm the pristine natural landscapes they sought to enjoy. This sentiment was reflected in comments such as, “If too many people visit, the environment won’t be as peaceful or clean.” (Female, 45, Bai ethnicity). Additionally, 30% of participants expressed concerns about the cultural impacts of tourism, particularly the risk of cultural commodification. They noted that an increase in tourism could lead to the commercialization of local traditions, thereby diminishing their authenticity and meaning.

To address these challenges, participants suggested implementing eco-friendly practices, such as limiting the number of visitors to certain areas, ensuring waste management, and promoting environmentally responsible behavior among tourists. They also emphasized the importance of involving local communities in tourism planning to foster responsible tourism development that benefits both the environment and local cultures. One participant suggested, “Local communities should have a say in how tourism develops here, so that it doesn’t damage our culture or environment.” (Male, 50, Naxi ethnicity).

In summary, while nature-based tourism presents significant opportunities for enhancing the well-being of cancer survivors and their families, several barriers must be addressed to maximize its accessibility and sustainability. Financial constraints, physical limitations, lack of awareness, and concerns regarding sustainable development are all challenges that require collaborative solutions involving healthcare providers, local authorities, and tourism operators. By addressing these issues, the potential for nature-based tourism as a therapeutic intervention can be fully realized, providing a holistic approach to healing for cancer survivors and their families.

4.5. Comparison with Himachal Pradesh

Comparing Yunnan's approach with other regions provides valuable insights into how wellness tourism can be expanded and improved. By analyzing the practices in Himachal Pradesh, India, we can identify both strengths and areas for development in Yunnan's wellness tourism model.

Himachal Pradesh, India, presents an interesting comparison with Yunnan due to their shared natural beauty and cultural depth. Both regions possess mountainous landscapes that create serene environments ideal for healing and relaxation, and both offer a rich tapestry of cultural traditions that greatly enhance the tourism experience. The natural landscapes of these regions are not only visually appealing but also serve as therapeutic spaces, which is a common theme in wellness tourism. Additionally, both Yunnan and Himachal Pradesh integrate their diverse cultural traditions and spiritual sites into the wellness experience, making cultural richness a core component of their tourism offerings. This shared focus on leveraging natural and cultural resources makes Himachal Pradesh an ideal benchmark for evaluating and enhancing Yunnan's wellness tourism initiatives. **Table 13** provides a comparative analysis of the key aspects of wellness tourism between these two regions.

Table 13. Comparative analysis of wellness tourism.

| Aspect | Yunnan, China | Himachal Pradesh, India |
|----------------------|--|---------------------------------------|
| Natural Landscapes | Mountains, forests, lakes | Himalayas, rivers, valleys |
| Cultural Elements | Ethnic minorities, Buddhism, TCM | Hinduism, Buddhism, Ayurveda |
| Wellness Practices | Herbal treatments, Tai Chi, meditation | Yoga, meditation, Ayurvedic therapies |
| Accessibility | Developing infrastructure | Established tourist facilities |
| Marketing Strategies | Domestic focus | International outreach |

Sources: Comparative tourism studies, 2023.

Lessons for Yunnan:

To enhance the competitiveness of Yunnan's wellness tourism, several lessons can be drawn from the comparative analysis with Himachal Pradesh:

- **Infrastructure Improvement:** It is essential for Yunnan to enhance its facilities to cater to a broader and more diverse audience. By developing accessible routes, improving accommodation options, and upgrading general infrastructure, Yunnan can make wellness tourism more inclusive and convenient. Himachal Pradesh's well-established tourist facilities serve as an exemplary model of how

infrastructure improvements can position a destination as a more accessible wellness hub [29].

- **Marketing Enhancement:** Expanding promotional activities to target an international audience is crucial for increasing tourism inflow. Himachal Pradesh has successfully leveraged diverse marketing campaigns that focus on cultural richness and wellness practices, effectively attracting global tourists. By adopting similar marketing strategies, Yunnan can enhance its visibility on the international stage and appeal particularly to Western tourists seeking both cultural and nature-based wellness experiences [29].

Sharma and Singh highlighted that the success of Himachal Pradesh in increasing tourism is largely attributed to its well-developed infrastructure and extensive international marketing efforts [29]. These approaches have enabled the region to attract significant tourism inflows, which Yunnan could replicate to achieve comparable growth. Specifically, targeting Western countries that have a growing interest in both cultural and wellness tourism could provide Yunnan with a substantial opportunity to expand its international appeal.

The comparisons with Himachal Pradesh highlight several opportunities for Yunnan to evolve its wellness tourism model. Himachal Pradesh serves as a model of how robust infrastructure and targeted international marketing can lead to significant tourism growth. Addressing existing infrastructure gaps and enhancing international marketing strategies could help Yunnan position itself as a premier wellness tourism destination in East Asia.

Moreover, a multi-dimensional approach that involves local community collaboration, partnerships with research institutions, and strategic international outreach is essential for achieving sustainable and inclusive growth in Yunnan's wellness tourism sector. This comprehensive approach can ensure that Yunnan's wellness tourism offerings are both culturally resonant and globally competitive, fostering a sustainable model that benefits local communities and international visitors alike.

4.6. Quantitative analysis of psychological benefits

Table 14. Mean scores of psychological scales before and after nature-based tourism.

| Scale | Pre-Intervention Mean \pm SD | Post-Intervention Mean \pm SD | Mean Difference | t-value | p-value |
|------------------------------|--------------------------------|---------------------------------|-----------------|---------|---------|
| Perceived Stress Scale (PSS) | 25.6 \pm 5.2 | 18.3 \pm 4.7 | -7.3 | -12.45 | < 0.001 |
| HADS-Anxiety | 12.4 \pm 3.1 | 8.7 \pm 2.9 | -3.7 | -9.87 | < 0.001 |
| HADS-Depression | 13.0 \pm 3.5 | 9.2 \pm 3.0 | -3.8 | -10.23 | < 0.001 |

Source: Statistical analysis.

To quantitatively assess the psychological benefits of nature-based tourism, participants completed standardized psychological assessments before and after their engagement in the tourism activities. The instruments used were the Perceived Stress Scale (PSS) and the Hospital Anxiety and Depression Scale (HADS). The quantitative data were analyzed to determine any significant changes in stress, anxiety, and depression levels among participants. As shown in **Table 14**,

significant improvements were observed in the psychological well-being of participants.

The results indicate significant reductions in perceived stress, anxiety, and depression levels among participants following the nature-based tourism activities:

Perceived Stress Scale (PSS): There was a substantial decrease in perceived stress levels, with the mean score reducing by 7.3 points from 25.6 before the intervention to 18.3 after the intervention. The paired sample t-test confirmed that this reduction is statistically significant ($t = -12.45, p < 0.001$).

Hospital Anxiety and Depression Scale (HADS):

- **Anxiety subscale:** Participants experienced a significant decrease in anxiety symptoms, with the mean score dropping by 3.7 points from 12.4 to 8.7 post-intervention ($t = -9.87, p < 0.001$).
- **Depression subscale:** There was also a significant reduction in depression symptoms, as evidenced by a 3.8-point decrease in the mean score from 13.0 to 9.2 ($t = -10.23, p < 0.001$).

The statistical analyses confirm that these reductions are not due to chance but are associated with the nature-based tourism intervention. The significant p -values (all < 0.001) across the PSS and both HADS subscales provide strong empirical evidence of the psychological benefits.

These quantitative findings corroborate the qualitative data presented earlier, where participants reported experiencing stress reduction, emotional healing, and enhanced well-being after engaging in nature-based tourism. The alignment between the quantitative and qualitative results strengthens the validity of the study's conclusions, demonstrating that nature-based tourism has a positive impact on the psychological well-being of cancer survivors and their families.

In summary, the integration of quantitative assessments with qualitative insights offers a comprehensive understanding of the therapeutic effects of nature-based tourism. The significant improvements in stress, anxiety, and depression levels highlight the potential of such interventions as complementary therapies in cancer recovery programs.

5. Discussion and recommendation

5.1. Implications of findings

This study investigated the role of nature-based tourism in enhancing the psychological well-being of cancer survivors and their families in Yunnan, China. The findings underscore the significant therapeutic benefits of engaging with natural environments, cultural heritage, and traditional healing practices. Participants reported substantial psychological improvements, including stress reduction, emotional healing, and enhanced family bonds. Quantitative data showed significant decreases in perceived stress, anxiety, and depression levels after participation in nature-based tourism activities. Specifically, the Perceived Stress Scale (PSS) scores decreased by an average of 7.3 points ($p < 0.001$), while the Hospital Anxiety and Depression Scale (HADS) indicated mean reductions of 3.7 points in anxiety ($p < 0.001$) and 3.8 points in depression ($p < 0.001$). These results align with previous

research indicating the restorative effects of natural environments on mental health [15].

Moreover, the cultural and spiritual significance of Yunnan's heritage enhanced the healing experience. Engagement with local traditions and spiritual practices, such as visits to Buddhist temples and participation in Traditional Chinese Medicine (TCM), provided participants with a deeper sense of peace and belonging. Family involvement amplified these benefits, strengthening emotional support networks and fostering shared coping strategies. However, several challenges were identified that limit the accessibility and sustainability of these benefits. Financial constraints, physical limitations, lack of awareness, and sustainable development concerns were significant barriers. These findings highlight the need for targeted interventions to address these obstacles.

5.2. Recommendations

Based on the findings, several recommendations are proposed to enhance the psychological well-being of cancer survivors through nature-based tourism, directly addressing the challenges identified in the results.

Firstly, enhancing financial accessibility is crucial. Developing partnerships between government agencies, healthcare providers, and tourism operators can facilitate subsidized nature-based tourism programs specifically for cancer survivors and their families. This approach can alleviate financial burdens and make therapeutic experiences more accessible. Implementing flexible pricing models, such as tiered pricing or sliding scale fees based on participants' income levels, can further reduce costs. Additionally, encouraging businesses to sponsor wellness tourism programs as part of their corporate social responsibility efforts can provide financial support for participants in need.

Secondly, accommodating physical limitations is essential to make nature-based tourism inclusive. Investing in the development of accessible facilities, such as wheelchair-friendly trails, resting areas, and transportation options suitable for individuals with mobility challenges, can greatly enhance participation. Designing nature-based activities that cater to varying physical abilities, including low-impact options like guided nature walks, meditation sessions, and interactive cultural experiences, can also make these programs more accessible. Ensuring the availability of medical personnel or first-aid facilities at tourism sites addresses health concerns promptly, providing reassurance to participants with health vulnerabilities.

Thirdly, increasing awareness and accessibility is vital for wider participation. Collaborations with hospitals and cancer support organizations can disseminate information about nature-based tourism programs, integrating them into cancer care plans as complementary therapies. Organizing informational sessions and workshops in local communities raises awareness of the benefits and availability of nature-based tourism for cancer recovery. Developing user-friendly websites and mobile applications that provide detailed information about wellness tourism options, booking processes, and accessibility features can further enhance visibility and engagement.

Promoting sustainable tourism practices

A critical aspect of enhancing nature-based tourism for cancer recovery involves addressing the environmental and cultural challenges identified in Section 4.4 through the promotion of sustainable tourism practices.

Firstly, implementing environmental conservation initiatives is essential to mitigate the negative impacts of increased tourism on Yunnan's natural landscapes. This includes adopting eco-friendly practices such as limiting visitor numbers in sensitive areas to prevent over-tourism and environmental degradation. Establishing guidelines for responsible tourist behavior, such as promoting "leave no trace" principles, can minimize the ecological footprint of tourism activities. Supporting conservation projects and involving tourists in environmental stewardship programs can foster a sense of responsibility and connection to the natural environment.

Secondly, cultural preservation efforts are necessary to protect Yunnan's rich cultural heritage from the risks of commodification and cultural dilution due to tourism. Promoting respectful engagement with local cultures by providing education on cultural sensitivities ensures that interactions between tourists and local communities are mutually beneficial and culturally appropriate. Encouraging authentic cultural experiences, rather than staged or commercialized representations, helps maintain the integrity of local traditions. Involving local communities in the development and management of tourism programs empowers them to control how their culture is presented and shared.

Thirdly, sustainable infrastructure development supports both environmental conservation and cultural preservation. Investing in sustainable infrastructure, such as eco-friendly accommodations, renewable energy sources, and efficient waste management systems, minimizes the environmental impact of tourism facilities. Utilizing sustainable building materials and designs that harmonize with the local environment reduces ecological disruption. Sustainable infrastructure also includes the development of accessible facilities that consider both environmental sustainability and the needs of visitors with physical limitations.

Moreover, fostering community involvement and empowerment is key to sustainable tourism development. Involving local residents in tourism planning and decision-making processes ensures that development aligns with community values and priorities. This participatory approach promotes social sustainability by providing economic benefits to local communities through job creation and revenue sharing. It also encourages the preservation of cultural heritage, as communities have a vested interest in maintaining their traditions and environments.

Establishing sustainability certifications and standards for tourism operators can incentivize responsible practices. Recognizing and rewarding businesses that adhere to environmental and cultural preservation guidelines encourages the adoption of sustainable practices across the industry. Certifications can guide tourists in choosing operators committed to sustainability, thereby promoting a market-driven approach to environmental and cultural stewardship.

Finally, promoting sustainable tourism practices aligns with global efforts to support sustainable development goals (SDGs), particularly those related to good health and well-being (SDG 3), sustainable cities and communities (SDG 11), and

responsible consumption and production (SDG 12). By integrating sustainability into nature-based tourism for cancer recovery, Yunnan can contribute to these broader objectives while enhancing the therapeutic experiences of participants.

5.3. Addressing challenges and limitations

Addressing the challenges requires mitigating financial and physical barriers. Expanding insurance coverage to include nature-based therapy programs can reduce out-of-pocket expenses for participants. Developing volunteer programs where community members assist participants with physical limitations during tourism activities enhances safety and inclusivity. Enhancing awareness and cultural sensitivity is also important. Designing culturally tailored tourism experiences that consider the cultural backgrounds of participants, incorporating multilingual guides and culturally appropriate activities, can make programs more effective. Providing training for tourism staff on cultural competency and the specific needs of cancer survivors ensures respectful and supportive interactions.

Promoting sustainable development addresses environmental and cultural challenges. Investing in sustainable infrastructure, such as renewable energy sources, waste management systems, and sustainable building materials for tourism facilities, minimizes environmental impact. Facilitating cultural exchange programs that promote mutual learning between tourists and local communities fosters respect and understanding.

5.4. Integrating lessons from other regions

Comparing Yunnan's approach with regions like Himachal Pradesh, India, offers valuable insights. Improving transportation networks, accommodation options, and healthcare facilities in tourism areas can accommodate a broader range of visitors, including international tourists. Developing targeted marketing campaigns that highlight Yunnan's unique blend of natural beauty, cultural richness, and wellness opportunities can attract global audiences. Engaging in international collaborations allows for knowledge exchange and adaptation of successful wellness tourism strategies to fit the local context.

Implementing sustainable tourism practices observed in other regions can enhance Yunnan's approach. For instance, adopting community-based tourism models that involve local residents in decision-making processes has been successful in promoting sustainability and cultural preservation in other destinations. Learning from regions that have effectively balanced tourism development with environmental conservation can guide Yunnan in addressing its own sustainability challenges.

5.5. Recommendations for future research

Building upon the findings and addressing limitations, future research should consider conducting long-term studies to assess the sustained impact of nature-based tourism on psychological well-being and cancer recovery outcomes. Expanding research to include diverse populations across different regions and cultural backgrounds can enhance generalizability. Incorporating a broader range of validated psychological and physiological assessments can capture the multifaceted benefits of

nature-based tourism. Implementing standardized protocols for interventions and data collection improves consistency and reliability.

Exploring the integration of virtual reality technologies to provide nature-based experiences for those unable to travel due to physical or financial constraints is another area for future research. Conducting policy impact studies to evaluate the effectiveness of integrating nature-based tourism into healthcare systems and developing guidelines for implementation can further advance the field.

Additionally, investigating the long-term environmental and cultural impacts of increased tourism in Yunnan is crucial. Research should assess the effectiveness of sustainable tourism practices and identify areas for improvement. Engaging in interdisciplinary studies that involve environmental scientists, cultural anthropologists, and tourism experts can provide a comprehensive understanding of sustainability challenges and solutions.

5.6. Conclusion

By aligning recommendations with the findings, this study provides a coherent and actionable framework for leveraging nature-based tourism to enhance the psychological well-being of cancer survivors and their families, while emphasizing sustainable tourism practices. Addressing the identified challenges through targeted strategies can make wellness tourism more accessible, inclusive, and environmentally and culturally sustainable.

Implementing environmentally friendly initiatives and involving local communities are essential for preserving the natural and cultural resources integral to these therapeutic experiences. These efforts not only enhance the quality of the tourism experience but also contribute to the long-term viability of wellness tourism in the region. By integrating these recommendations, Yunnan has the potential to establish itself as a leading destination for therapeutic tourism, offering holistic healing experiences that are culturally rich, environmentally sustainable, and accessible to those in need.

6. Conclusion

This study highlights the significant psychological benefits of nature-based tourism for cancer survivors and their families in Yunnan. By engaging with the natural environment, cultural heritage, and traditional healing practices, participants experienced enhanced well-being, greater emotional resilience, and improved family relationships. Addressing challenges related to financial accessibility, physical limitations, and awareness can further enhance these benefits. Furthermore, incorporating lessons from successful wellness tourism models in other regions, alongside a commitment to ethical research practices, will support the development of effective, sustainable wellness tourism programs that contribute meaningfully to holistic cancer care. Ultimately, these efforts can help establish Yunnan as a leading destination for nature-based wellness tourism, offering an inclusive, culturally rich, and therapeutic experience for those in need.

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