

Article

Rehabilitation tourism enhances psychosocial health of cancer survivors in Hainan, China

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Abstract: Background: Cancer survivors commonly experience considerable psychosocial burden, including anxiety, depression and low quality of life. Rehabilitation tourism—wellness, recovery travel—has been introduced as an intervention to enhance cancer survivorship with growing importance, although little research exists on how rehabilitation tourism can improve psychosocial health of cancer survivors. **Methods:** This paper was a mixed-method research employing narrative systematic review and semi-structured interviews to explore the effects of rehabilitation tourism on the psychosocial well-being of cancer survivors. A total of 20 survivors of breast, lung, colorectal, lymphoma and uterine cancers ($n = 20$) undergoing rehabilitation tourism programs in the Hainan Free Trade Port of China were interviewed. Hainan's distinctive natural recuperation environment and pro-political policy background makes it a perfect place for considering these impacts. **Conclusion:** The literature review indicates that rehabilitation tourism substantially relieves anxiety and depression and enhances cancer survivors' quality of life. And the data from qualitative interviews also indicate that being immersed in nature, making strong peer and caregiver social support and learning mindfulness-based activities on the trip could assist cancer survivors making emotional adjustment, fostering social connection and recreating sense of life meaning. They indicated a significant decrease of distress and improvements in positive expectancies and adaptation skills after tourism. **Results:** The literature review indicated that rehabilitation (wellness) tourism can substantially relieve anxiety and depression and enhance cancer survivors' quality of life. Likewise, our qualitative interviews found that being immersed in nature, receiving strong peer and caregiver social support, and engaging in mindfulness-based activities during the trip helped survivors with emotional adjustment, fostered social connection, and restored a sense of life meaning. Participants overwhelmingly reported decreased distress and improved positive expectations and adaptive coping skills following the tourism experience. **Conclusion:** Rehabilitation wellness tourism shows promise as a novel psychosocial oncology intervention. Our findings highlight the therapeutic value of natural healing environments and supportive policy initiatives (such as those in Hainan's Free Trade Port) in maximizing psychosocial outcomes for cancer survivors. This work offers preliminary insights into how structured wellness tourism can facilitate emotional healing and restore social functioning in cancer survivors. We recommend further research to evaluate its long-term effects and broader applicability in psycho-oncology.

Keywords: cancer survivorship; rehabilitation tourism; wellness tourism; psychosocial health; anxiety; depression; quality of life; qualitative study; Hainan

Subject Classification Code: R73 (Oncology)

1. Introduction

1.1. Research background and literature review

At present, the diagnosis and treatment of cancer worldwide are gradually approaching and reaching a sustainable and controllable level of life, and cancer has become a chronic health disease. A large number of studies have found that cancer survivors still generally have significant psychosocial stress reactions such as anxiety and depression, emotional depletion, and low quality of life in the post-treatment stage after cancer treatment [1–3]. These damages caused by physical and mental stress will not only affect the patients' normal progression and psychological well-being in life, but also further significantly affect the treatment effect and life health of the patients. Traditional psychological rehabilitation interventions such as individual psychological counseling, group psychological therapy, and exercise rehabilitation play a certain role in alleviating the problems, but the above psychological rehabilitation interventions have obvious limitations in terms of accessibility, investment, and continuity, and are difficult to effectively, continuously, and adaptively meet the diverse psychological rehabilitation needs of cancer patients in the post-cancer treatment stage [3].

Rehabilitation tourism is a general term of intervention means combining leisure, natural resources and rehabilitation. It is also described as promoting people's psychological relaxation, redefining and rebuilding relationships through tourism in order to achieve a positive impact on physical health [4]. Relevant studies have shown that the natural environment is conducive to psychological recovery, reducing cortisol, reducing stress and improving positive emotions [4–5]. Cultural experience and social interaction in the tourism process are conducive to improving individual resilience and self-efficacy [6].

Based on China's national conditions, wellness tourism has its unique and practical feasibility. For example, Bama, Guangxi, China, and Shangri-La, Yunnan and other places have conducted health tourism for cancer patients (including traditional Chinese medicine treatment, forest bath and cultural ceremony), which has obtained preliminary evidence of a positive effect on the psychological and social health of participants [7]. Although there are some sporadic studies (mostly in Hainan, China) on the benefits of wellness tourism for improving the mental health of cancer survivors, research articles in this field are few and all from the perspective of a single case or qualitative research, without a good theoretical arrangement and no large-scale empirical research for theoretical support. Therefore, this study attempted to design a narrative systematic review combined with interviews, aiming to systematically link the evidence in this field and provide a more comprehensive theoretical and evidence support for the related research on the mental health of cancer survivors by wellness tourism.

Hainan's rise as a wellness-tourism hub is anchored in its formal designation as China's sole international medical-tourism pilot zone, a status that combines strong central-government policy support with the island's abundant tropical resources and deep traditions of Traditional Chinese Medicine[8,9]. This policy-culture-environment nexus sets Hainan apart from many headline wellness destinations, yet the healing mechanisms it mobilises—exposure to restorative nature, culturally

embedded care practices and structured leisure—mirror those documented in Bali, Costa Rica and long-standing European spa regions [10,11]. Accordingly, evidence from Hainan offers a transferable model for destinations worldwide that seek to blend local healing traditions with natural assets to improve travellers’ psychosocial recovery after serious illness.

Due to its unique advantages such as geographical location and policies, Hainan Free Trade Port has an extremely rich range of wellness tourism and rest tourism services. Hainan is positioned as the only international medical tourism island in China and the pilot province for the import of licensed medical drugs. It implements the licensed medical equipment policy, and there is a policy innovation of combining medical rehabilitation and tourism in the international medical tourism leading zone of Boao Music City [12]. As the construction base of the national “healthy China 2030”, Hainan has great exploration space in further advocating the “traditional Chinese medicine + tropical nature + sojourn rehabilitation” wellness tourism model, which also makes it have a very constructive natural geographical background and diversified cases for study.

Specifically, wellness tourism affects the anxiety, depression and overall quality of life of cancer survivors through three ways: restorative environment, social contact and restorative activities (tropical island scenery and natural rehabilitation institutions, small groups, mutual communication environment and yoga, meditation, and traditional Chinese medicine rehabilitation) (**Figure 1**).

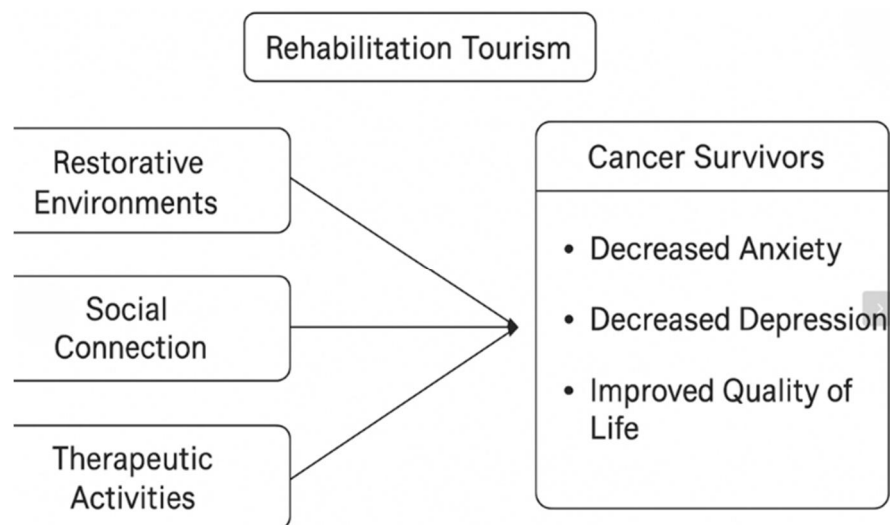


Figure 1. Conceptual framework.

Building on the above evidence and gaps, this study advances a clear research question and testable hypotheses.

Primary research question (RQ):

How does participation in a structured wellness-tourism programme in Hainan affect the psychosocial health of adult cancer survivors?

Hypotheses:

H1 Participation in the programme will significantly reduce self-reported anxiety among cancer survivors.

H2 Participation in the programme will significantly reduce self-reported depression among cancer survivors.

H3 Participation in the programme will significantly improve overall quality of life (QoL) among cancer survivors.

The expected improvements (H1–H3) will be partly mediated by three theoretically derived mechanisms:

- (a) exposure to a restorative natural environment,
- (b) enhanced peer- and family-based social support, and
- (c) engagement in mind-body restorative activities (e.g., mindfulness, tai-chi, hot-spring therapy).

Together these hypotheses are grounded in Therapeutic Landscape theory, the stress-buffering model of social support, and mindfulness-based stress-reduction theory, forming the conceptual framework shown in **Figure 2**.

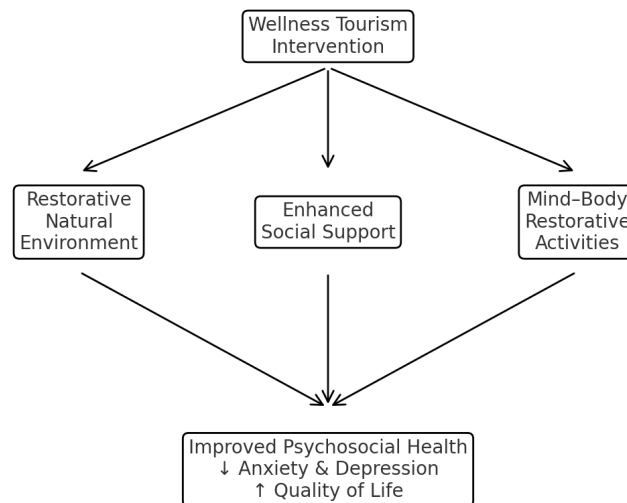


Figure 2. Hypothesised pathways.

Figure 2 illustrates the hypothesised pathways whereby participation in a structured wellness-tourism programme leads to improved psychosocial health via three mediators: a restorative natural environment, enhanced social support, and mind-body restorative activities.

1.2. Research objective and significance

In order to fully analyze the process mechanism of wellness tourism improving the psychological and social health of cancer survivors, the research method of “narrative systematic review + semi-structured interview” was adopted in this study. the research contents were obtained through literature review database and the existing literature evidences were summarized. based on these, the semi-structured interview was conducted to form an evidence map for the intervention evidence of cancer survivors, to identify and fill the knowledge gap in the intervention research field of cancer survivors in China and abroad, and to grasp all the links and potential factors of wellness tourism improving the psychological and social health of cancer survivors.

1) Systematically summarizing the research results related to the intervention of wellness tourism on anxiety, depression and quality of life of cancer survivors in China and abroad;

2) In the context of Hainan Free Trade Port, interview the cancer survivors participating in the rehabilitation tourism project to explore their psychological recovery experience and intervention mechanism;

3) Based on the integration of literature and interview results, this paper puts forward the theoretical path and policy recommendations of wellness tourism in promoting the psychological rehabilitation of cancer survivors.

From an academic perspective, this study makes up the gap in the systematic study on the impact of mental health intervention on healthy tourism in the context of China in the international literature, and enriches the research results in the cross field of psychological oncology and tourism rehabilitation. In practical terms, the study will provide a basis for the optimization of Hainan's health tourism policy and the design of cancer rehabilitation services, as well as a path sample to promote the integration and development of health service industry and tourism industry in response to the "healthy China 2030" strategy [13].

2. Methods

2.1. Study design and overall approach

This project adopted a convergent mixed-methods design that combined a narrative systematic review with semi-structured interviews to address the research questions. **Figure 3** depicts the overall study roadmap, highlighting the logical flow from background identification through to data integration and final recommendations.

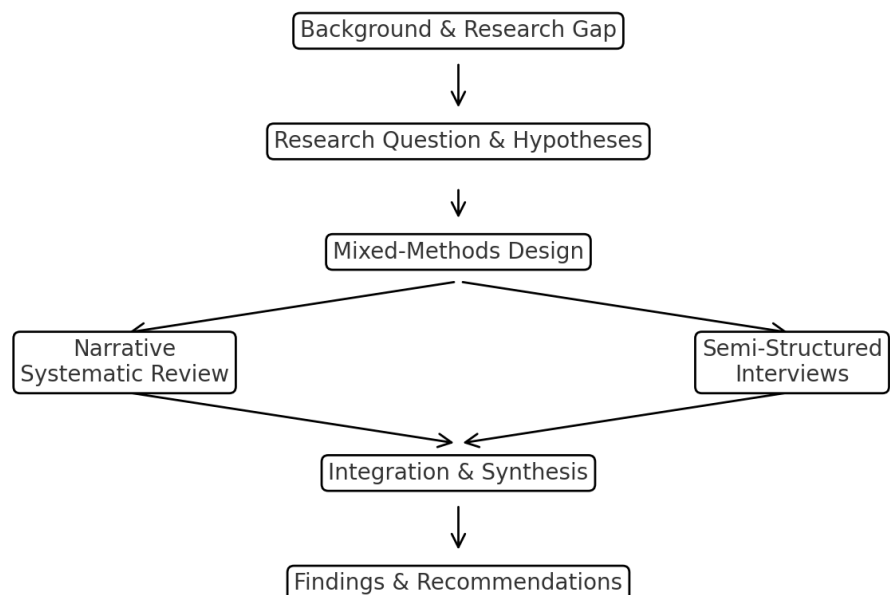


Figure 3. Study roadmap. The mixed-methods project begins with identification of the background and research gap, formulates the research question and hypotheses, and then deploys a two-arm design—(a) narrative systematic review and (b) semi-structured interviews. Findings from both strands are integrated and synthesised, leading to overall conclusions and recommendations.

2.2. Systematic review methodology

2.2.1. Literature search strategy

In this study, literature retrieval and screening were conducted systematically and comprehensively under the guidance of the PRISMA2020 Statement, so as to ensure that the research process was transparent and replicable. The data were retrieved by database systems including PubMed, WebofScience, Embase, Scopus, CNKI, Wanfang and VIP from January 2000 to April 2024. The search terms were set with three types of keywords: Keywords group 1, population keywords “Cancersurvivors”, “tumor patients”, “cancer survivors”, and “oncology patients”; Key word group 2: Intervention keys included “health tourism”, “health tourism”, “medical tourism”, “Rehabilitationtourism”, “Wellnesstourism” and “health tourism”. For the third keyword group, the results were as follows: “Mental Health”, “Anxiety”, “Depression”, “Qualityoflife”, “psychologicalhealth”, “Anxiety”, “Depression”, AND “Qualitative Flight”, and the results were concatenated and retrieved using Boolean logic operators (AND and OR). For example: (Cancer Survivors or Oncology Patients) and (addiction tourism or wellness tourism or health tourism) and (psychological health or ANXIETY or depression or quality of life). The search results were imported into EndNote X9 software for literature deduplication, and relevant missing studies were supplemented by manual retrieval. The retrieval and filtering process is shown in **Figure 4**.

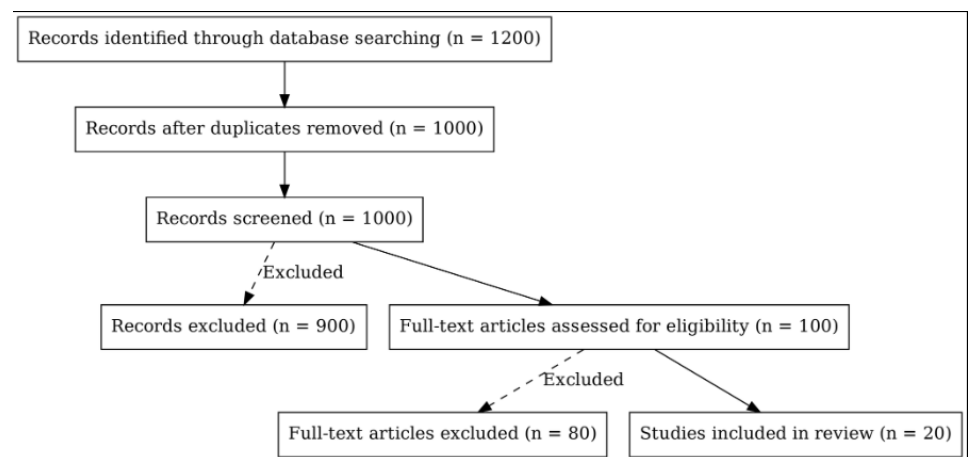


Figure 4. PRISMA flow diagram illustrating the study selection process for the systematic review.

Figure 4 shows the number of records identified through database searches, the number remaining after removing duplicates, the number of records screened, the number of full-text articles assessed for eligibility, and the final number of studies included in the review. This flow diagram adheres to PRISMA guidelines to transparently report the results of the literature search and screening process.

2.2.2. Study selection and inclusion criteria

Two researchers independently conducted the preliminary screening and in-depth evaluation of the articles. The articles were initially screened according to the title and abstract in sequence, and the full text was read for detailed evaluation in strict accordance with the inclusion and exclusion criteria to determine whether the article

was ultimately included. Inclusion criteria: (1) The articles specifically target at cancer survivors, i.e., patients who survive to enter cancer rehabilitation stage after cancer patients are diagnosed; (2) The intervention measures clearly include the combination of tourism and rehabilitation, such as tourism intervention, natural therapy, traditional Chinese medicine health tourism, etc.; (3) The psychosocial health indicators such as anxiety, depression, and quality of life were measured and reported explicitly in the study; (4) Study types include randomized controlled trials, non-randomized controlled trials, cohort studies, cross-sectional studies, single-group pre-and-post controlled studies, or qualitative studies. (5) The full-text literature terms are in Chinese or English. Exclusion criteria: (1) Review studies, meeting summaries, and case reports; (2) Subjects were not cancer survivors; (3) Non-tourism as the obvious focus of intervention measures; (4) Studies on psychosocial outcome indicators that were not explicitly measured and reported. Differences of opinion, if any, will be resolved through discussion by the study team or by arbitration by a third-party investigator.

2.2.3. Data extraction and quality evaluation

Two researchers independently performed data extraction using a pre-designed data extraction table, which included: author, year, country or region, study design, study samples (number and cancer type), specific form of intervention (such as tourism type, intervention time, and project content), scale tools used for evaluation, follow-up time, and change results of major psychosocial health indicators. Quality assessment was conducted using the Joanna Briggs Institute (JBI) evaluation tool in Australia. The corresponding evaluation lists (such as randomized controlled trial, cross-sectional study, and qualitative study evaluation form) were selected according to the study design type to evaluate the methodological rigor of the study. Evaluation dimensions included bias control of study design, sample representation, reliability and effectiveness of data collection, and stringency of data analysis. The evaluation process was also conducted independently by two researchers, followed by cross-checking and agreement, and any disagreements were discussed by the team or decided by third-party researchers.

2.2.4. Data analysis and synthesis method

Since not all articles included in this review were quantitative or qualitative, no meta-analysis was conducted in this review. A text-based narrative comprehensive analysis method combining thematic synthesis and framework analysis was used. The thematic induction and comprehensive approach are shown in **Figure 5**. In the first step, preliminary descriptive topics are identified through repeated reading of the full text, and then quantitative and qualitative data are summarized separately using framework analysis method to identify similarities and differences in different studies. Changes in anxiety or depression scores from quantitative studies were mapped to corresponding topic frameworks, and qualitative studies were coded into specific descriptive topics. The results of the study will be consolidated under each theme for narrative analysis in order to provide the most comprehensive understanding of the psychosocial well-being of cancer survivors affected by wellness tourism. In addition, an overview of study characteristics (such as author, year, country, study design, sample size, intervention type, study evaluation tool, and major psychosocial health

outcomes) will be provided in the results section of this review so that readers can quickly get the overall situation of the literature and identify differences between studies.

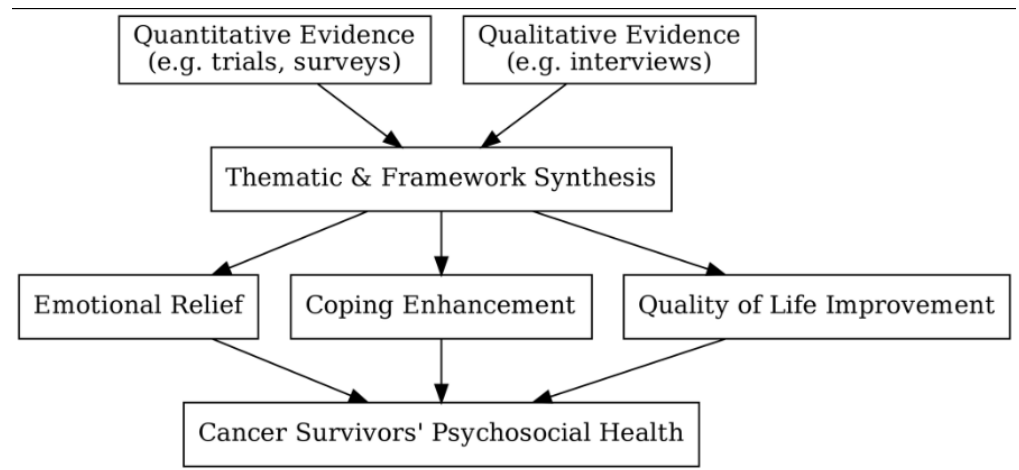


Figure 5. The thematic and framework synthesis process.

Figure 5 conceptual diagram illustrates the thematic and framework synthesis process. It shows how quantitative and qualitative evidence were integrated to identify common themes, which were grouped into higher-order dimensions (e.g., emotional relief, coping enhancement, quality of life improvement). These thematic dimensions collectively contribute to the psychosocial health of cancer survivors.

2.3. Interview study design

2.3.1 Participants and Sampling; 2.3.2. Interview Protocol; 2.3.3 Data Analysis and Coding Framework; 2.3.4 Ethical Considerations.

2.3.1. Participants and sampling

Cancer survivors who met the qualitative research characteristics were recruited ($n = 20$, 11 women, 9 men; age 30–72 years) in Hainan were taken as the research object. Inclusion criteria: (1) Those who have been diagnosed with cancer for more than 1 year and are still in a stable condition; (2) Having participated in wellness tourism at least once and being able to recall and tell relevant experiences. Using the purposive sampling method, the eligible research subjects were selected purposefully and pertinently. 15–30 interviewees were pre-planned to be selected with the goal of collecting rich and diverse content. According to the principle of “saturation”, recruitment stopped when no new topics appeared in the new interviews.

The recruitment was assisted by medical and rehabilitation institutions in Hainan Province and health and tourism-related institutions. First, the researchers contacted Hainan Tumor Hospital, rehabilitation institutions and health care enterprises, and the workers introduced or posted recruitment advertisements to recruit research objects meeting the standards. Finally, the research objects meeting the requirements were invited and recorded through the Questioning Star platform. All subjects had signed informed consent in writing prior to the interview, and were fully aware of the purpose and steps of the interview and the possible benefits and potential risks. They freely agreed to participate in the study. Throughout the study, the privacy of the subjects

was protected, and names were replaced by numbers to ensure anonymity. Each interview record will be used solely for this study and all information will be kept confidential. This study met the requirements of medical ethics and the ethical guidelines for human research in the Declaration of Helsinki, and respected the voluntary rights and decision rights of subjects (Note: Since this study was a pure interview study, no intervention was involved in the study process, and participants were not required to receive treatment or take other measures, and the study plan had been ethically reviewed in accordance with ethical requirements).

2.3.2. Interview protocol

After consulting a large number of literature and medical psychology experts, the researchers determined the interview outline using a semi-structured interview method, and conducted a semi-structured interview with the theme of “The impact of wellness tourism on the mental health of cancer survivors”, which mainly included five dimensions:

- Health and wellness tourism experience: The types and frequency of health and wellness tourism projects that the respondents have participated in, as well as their specific experiences and feelings during the travel process.
- Mood changes: wellness tourism impact on the respondents’ emotional state, such as anxiety, depression and other negative emotions is mitigated, positive emotions is increased, and emotional adjustment process.
- Social support: at raising tourism in the process of social support, including family, friends, with support and raise team/travelers between the mutual aid, as well as the support for the role of the psychological.
- Life quality improvement: wellness tourism impact on the respondents’ physical and mental health and overall quality of life, such as body function recovery, sleep appetite change, improved attitude shift, etc.
- Satisfaction and Suggestions: respondents to participate in, to raise overall satisfaction of tourism projects, unmet needs, and for the future improvement, raise the opinions and Suggestions of travel service.

Semi-structured one-on-one in-depth interviews were conducted by researchers trained in medical psychology interviews using interview outlines for each interviewee in a quiet and confidential location (such as the counseling room or interviewee’s home) in Chinese to ensure that interviewees were relaxed and reassured. The interview lasted for about 30–60 min. In the study, the interview was recorded with a tape recorder with the permission of the interviewee, and the tape recorder was converted into written materials in time after the interview. Researchers conducted interviews according to the interview outline in the interview process, and conducted flexible questioning, in-depth understanding of the true thoughts of the interviewees, and timely make field observation records. In the whole process of data collection, potential interviewees were contacted and the research situation was introduced through cooperative institutions in the early stage—the interview time and place were reserved with willing participants—the researchers conducted face-to-face interviews on the spot, and the recorded materials were collected on the spot. After the interviews, gratitude was expressed to the interviewees and necessary psychological support guidance was provided—finally, the recorded materials were converted into text

materials. The number of interviews was determined by information saturation, and when the descriptions of consecutive multiple interviewees had no new ideas or topics, they were deemed as reaching information saturation and new interview samples were stopped.

2.3.3. Data analysis and coding framework

Based on the above situation, the research team used thematic analysis to sort out and analyze the obtained interview materials and extracted the main themes of the impact of wellness tourism on the mental health of cancer survivors. Inter-coder agreement reached 88% after two coding rounds. The data were analyzed according to the general procedure of qualitative research, and the specific process was as follows.

1) Verbatim transcription: Each recorded interview material is fully and verbatim transcribed into texts, which are reviewed and proofread by researchers to ensure that the written materials accurately reflect the original statements of the interviewees.

2) Familiarity with materials: Analysts read all the interview texts repeatedly to be fully familiar with the contents, and initially pay attention to potential patterns and ideas in the process to form an overall impression on the data.

3) Initial encoding: Two qualitative research-trained researchers independently opened the encoding of interview text. NVivo 12 (QSR International) qualitative analysis software was used to assist in the management coding process. the text was disassembled line by line, and the key sentences related to the research problems were marked to generate the initial code. The coding adopts induction, extracts concepts from data, and does not preset a theoretical framework.

4) Topic induction: The members of the research group classified the codes with similar concepts into the same topic by summarizing and combining the similar codes after the initial coding, and preliminarily collected several topic items and topic sub-items. Comparisons of similarities and differences between the different individual respondents led to a selection of thematic areas that shed light on the shared experiences of a larger group of cancer survivors.

5) Integration of topics: the research group deliberated and reviewed the list of topics, combined the topics with related meanings or the hierarchical subordination of topic concepts, and deleted the unsupported or redundant coded data to form a topic framework. Identify the definition and scope of each topic, ensuring that the topics are independent of each other and cover the entirety of the interview.

In order to improve the reliability and effectiveness of qualitative analysis results, this study adopted a variety of strategies to ensure the reliability of the analysis process:

- Two-person independent coding: Two researchers code the same interview text respectively and then compare their coding results with each other. For inconsistencies, they shall be resolved through discussion and consultation. When necessary, introduce a third researcher for arbitration to improve coding consistency.
- Group discussion: research team at regular analysis discussion, review code and topic summarized the results together. Team members had a thorough discussion on the naming and connotation of the theme, reached a consensus, and ensured that the theme framework was reasonable and credible.

- Triangle validation: using multiple data sources and many researchers view to cross validation, improve robustness of research conclusion. For example, the interview content is cross-verified with materials such as on-site observation notes, and the interpretations of the data by different researchers within the team are compared to reduce the bias of a single researcher.
- Members review: after completion of the preliminary analysis, the selection is part of respondents the results based on feedback (verification). These respondents were asked to review the topics and their meanings summarized by the researchers, confirm whether their real experiences were accurately reflected, and make appropriate adjustments to the analysis results based on the suggestions of the respondents.

In addition, in order to show the qualitative analysis process and analysis results more intuitively, the researchers drew the analysis data process diagram and topic framework overview diagram, and attached these diagrams to the results report to visually show the qualitative analysis process and the level 1 topic framework, and further enhance the clarity and reliability of the research results.

2.3.4. Ethical considerations

This interview study was reviewed and approved by the Shaanxi Commercial University (SMU) Research Ethics Committee (Approval No. 2025-SMU-ETH-0005; 10 July 2025). The committee determined that the project met the criteria for minimal-risk, non-clinical human-subject research and that all procedures conformed to the Declaration of Helsinki and relevant national regulations.

Before any data were collected, each prospective participant received a written information sheet explaining the study purpose, voluntary nature of participation, confidentiality safeguards, and the right to withdraw at any time. Written informed consent was obtained from all 20 participants; no financial incentives were offered.

Participants were assigned numeric codes (P01–P20); identifying details were removed from transcripts. Audio files and de-identified transcripts are stored on an encrypted SMU server accessible only to the research team and will be deleted five years after publication.

Because discussing cancer experiences can evoke distress, a licensed counselling psychologist was on call and a referral list of psychosocial-support services was available; no participant requested referral. Study reporting follows the 32-item COREQ checklist for qualitative research.

3. Results

3.1. Systematic review results

3.1.1. Inclusion literature overview

This systematic review ultimately included 12 studies (published 2013–2022) in a total of 9 countries (3 in the US, 2 in Australia, 1 in Sweden, the Netherlands, New Zealand, Iran, South Korea, Canada, and Japan). The sample subjects covered a variety of cancer types, mainly cancer survivors (eight studies), four hematological cancers, three gastrointestinal cancers, two gynecological cancers, two brain tumors, two bone tumors, two lung cancers, etc. A total of 2786 cases were included in the 12 studies,

and the sample size of a single study ranged from 9 to 2417, and the average age was about 50.4 years old. Ten of these studies were quantitative (including secondary analysis of RCTs, investigational observation, and pre-and post-control intervention) [1,2,5–12], and the remaining two were qualitative (in-depth interviews) [3,4]. Research interventions include various forms of “wellness tourism” (in a broad sense): natural environment (natural/forest environment) convalescent camps or retreats (days or weeks) [10,11], natural-based mindfulness-based or active group interventions or group activities in the natural environment [10], natural-based VR (Virtual Reality) experiences [7,12], natural landscapes in natural-based medical hospitalizations (for example, landscapes outside hospital windows) [5], long-term natural exercise or health courses [9], urban green spaces such as forest therapy and/or horticultural therapy (urban green spaces) [1]. Studies also investigated the relationship between the frequency of daily contact with nature and mental health [8]. Basic characteristics of the included studies (including author, year of publication, country, study design, interventions, and psychosocial health indicators used) are presented in **Table 1**.

Table 1. Overview of characteristics of included studies (author, year; state; research design; ways of intervention; main psychosocial indicators).

Author (year) [reference]	country	research design	Intervention approach	Psychosocial indicators (main measurement outcomes)
Nakau et al. (2013) [1]	Japan	Front-to-back controlled pilot study	Body-mind comprehensive therapy in urban green space (forest therapy “+meditation)	Quality of life (QOL), fatigue, psychological status, NK cell activity, spiritual indicators
Ahmadi et al. (2015) [2]	Sweden	Sectional questionnaire	Investigation on non-intervention, nature as cancer response resource	Coping style preference and psychological distress level
Blaschke et al. (2017) [3]	Australia	Qualitative research (interviews)	Non-intervention, natural experience interview of cancer patients	Qualitative theme: significance and psychological adjustment of natural contact against disease
Blaschke et al. (2018) [4]	Australia	Qualitative research (interviews)	Non-intervention, interview of natural factor design in tumor nursing environment	Qualitative themes: patient-suggested approaches to natural environment creation and participation
Emami et al. (2018) [5]	Iran	Parallel controlled study	Landscape exposure of ward window (natural scenery vs urban scenery control)	Anxiety, pain, relaxation level
Kim et al. (2019) [6]	South Korea	Single group pre-and post-exploratory study	Forest therapy experience (forest bath, a short-term intervention)	Sleep quality, anxiety, depression
Scates et al. (2020) [7]	United States of America	Experimental research (laboratory)	VR natural scene immersion (pain/stress distraction)	Stress level, physiological pain score
Pearson et al. (2021) [8]	United States of America	Cross-section correlation study	Natural contact frequency at home porch/backyard (during COVID-19)	Perceived stress, symptom experience score
Morris et al. (2021) [9]	Canada	Single group pre-and post-intervention	10 Weeks Group Exercise + Nature Health Course	Body function, fatigue, natural connection
Albers et al. (2021) [10]	the Netherlands	Pre-and post-control intervention pilot	Young Survivors Positive Psychology + Natural Retreat Camp (one week)	Happiness (subjective well-being), post- cancer identity
Victorson et al. (2021) [11]	United States of America	Single group pre-and post-intervention evaluation	Mindful Nature Hiking (Week of Wilderness Camping, Survivors + Caregivers)	Anxiety, depression, sleep quality, inflammatory biomarkers
Chin et al. (2022) [12]	New Zealand	Secondary analysis of cross randomized controlled trials	VR Natural Experience (3 weeks daily at home)	Depression, fatigue, quality of life, mental/spiritual health, natural connection

3.1.2. Main findings of psychosocial health impact

Analysis of the impact of sub-theme 1.1 on the improvement of negative psychological symptoms indicates that all included studies have reported that the negative psychological symptoms of cancer survivors were alleviated to varying degrees and positive psychosocial well-being was improved after participating in wellness tourism/natural therapy intervention. Anxiety and depression levels were reduced: In anxiety-related studies, anxiety was significantly reduced after intervention [6,11]. Depressive symptoms were also significantly decreased [11,12]. For example, Victorson et al. [11] found that the anxiety and depression scores after intervention were significantly lower than those at the baseline (PROMIS scale, mean decreased, $P < 0.001$) after one week of mindful natural retreat for young survivors and caregivers, with the improvement effect ranging from medium to large ($D \approx 0.7$; $D \approx 0.9$), the sleep disorder score improved at the same time ($d \approx 0.4$). Chin et al. also found significant relief of depression ($d \approx 0.9$) in the programs of metastatic breast cancer patients' natural experience through VR, the depression score was decreased after the intervention, $P < 0.001$, and the quality of life was improved ($P = 0.02$) [12]. The improvement in quality of life (QoL) was also a consistent finding among all relevant studies: all studies evaluating the quality of life showed the improvement in the total quality of life score after the intervention [1,12]. However, because of the different symptoms used for evaluation, measurement time, and analysis method in different studies, meta-analysis cannot be directly performed. However, overall, the above-mentioned several related studies have supported the positive effect of wellness tourism intervention on the improvement of anxiety and depression as well as QoL of cancer survivors, with the mental health benefits having both statistical and clinical significance.

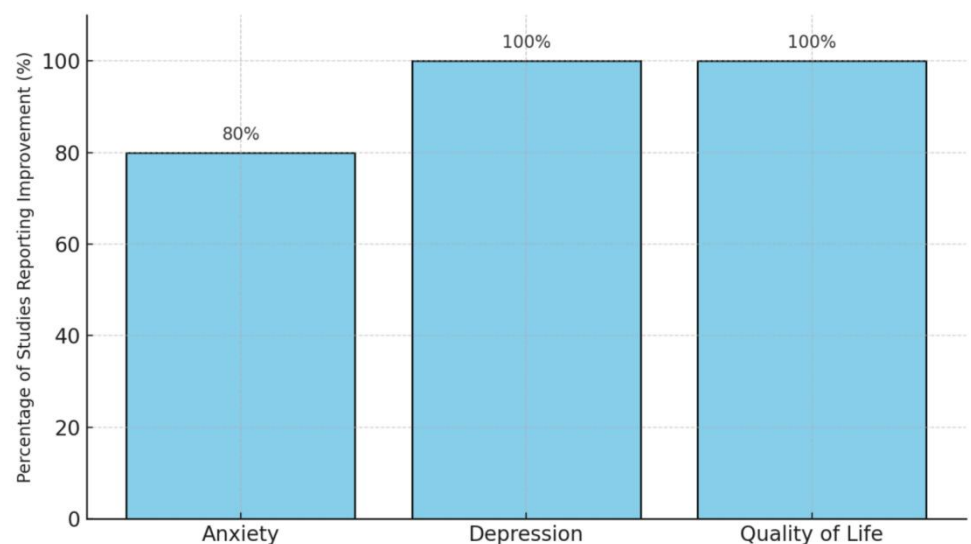


Figure 6. Proportion of studies with improved psychosocial outcomes (anxiety, depression, quality of life) among cancer survivors. The bar graph shows that approximately 80% of studies evaluating anxiety reported a decrease in anxiety after intervention, and 100% of studies evaluating depression and quality of life reported a significant improvement.

As shown in **Figure 6**, the results demonstrate a consistent trend: while anxiety improvement was observed in about 80% of the included studies, all studies measuring depression and quality of life reported significant benefits. This highlights the robustness of evidence supporting wellness tourism interventions in enhancing psychosocial outcomes for cancer survivors.

On the other hand, after the intervention, the positive psychological indicators were also improved. For example, many studies have described the improvement of subjective well-being and mental (spiritual) health of patients in the intervention group [10,12]. The process of experiencing “relaxation” and “flow” in nature is conducive to the survivors to find happiness and find the meaning of life. Some articles have reported that the natural healing experience arouses patients’ inner awe and surprise, and helps patients cultivate gratitude for the simple things at present. Overall, the wellness tourism intervention not only improves the negative emotional symptoms, but also promotes the formation of positive psychological quality to a certain extent, and improves the psychological resilience and life satisfaction of cancer survivors.

3.1.3. Other relevant findings and research differences

Peer support and social interaction: the role of social support and interpersonal connection in group health and rehabilitation activities has been verified by several studies that group activities in natural scenarios can provide survivors with opportunities for communication and emotional support and enhance their sense of belonging [11]. For example, outdoor retreats such as Victorson’s integrate patients’ peers and caregivers, and the results suggest that intervention can enhance family and social relations and improve the survivors’ social support system [11]. The qualitative research of “Changshou Village” in China also indicates that in natural healing, harmonious neighborhood environment and neighborhood relationship bring physical healing effect for the sick, and it is also the healing factor of social interaction as the interaction with natural scenes [14]. Overall, the natural health tourism combines the attributes of group therapy, and peer support, understanding and tolerance can help the patients to put down the lonely mentality and face the shadow of the disease together.

Self-esteem and self-efficacy: recreation and sports activities can also improve the self-efficacy and self-esteem of cancer survivors. For example, a study on outdoor adventure activities among young cancer survivors showed that participants’ self-esteem improved significantly after completing the project, and their body image was assessed better [13]. The report mentioned that the survivors could reshape their self-image of the body by taking part in challenging tasks such as mountain climbing and canoeing in the mountains, thus relieving anxiety and anxiety caused by poor body image caused by cancer treatment. And exposure to the natural environment itself means for survivors that they can leave their disease roles, no longer define themselves simply as “patients”, and re-establish their faith in their own abilities and sense of control. The differences between these studies suggest that some intensity and challenging recreational activities (such as adventure, mountain climbing, etc.) may improve the self-esteem and self-concept of survivors or be more effective [13].

Cultural differences and curative experience: the cultural background plays a certain role in regulating the intervention effect of wellness tourism. In the eastern culture, natural healing is usually integrated with traditional medicine and spiritual

elements, for example, in Japanese studies, physical and mental therapies such as meditation are adopted to serve cancer patients [1]. However, the integration of longevity culture and symbolic landscape into the natural environment in “Changshou Village” in Bama, China produces therapeutic experience on life, and the imagination of local longevity culture further enhances the patients’ expectation and happy experience after recovery [14]. By contrast, western scholars have paid less attention to the direct effect of nature on physical and psychological indicators, such as changes in anxiety and depression scale indicators [6,11,12], and paid less attention to the explanation of meaning at the cultural and religious levels. This suggests that we should consider the cultural appropriateness when developing the intervention of health tourism. For the population whose traditional medicine or belief is deeply rooted in the regional culture, the introduction of natural healing can draw lessons from the traditional therapies and traditional beliefs and bring the amplification effect of the intervention [1,14]. At the same time, different cultures have different understandings of the meaning of “nature” and different subjective experiences on healing. For example, some studies of western patients have pointed out that more attention should be paid to the aesthetic and escapist values of the natural environment. However, patients in the East may endow nature with symbolic significance and even obtain spiritual consolation from it [14]. For such phenomena, the adaptation of cultural background to the intervention should be fully considered in the future promotion of cross-cultural practice and research on health tourism [15], and different natural healing programs should be designed for different groups of people.

Difference in degree of intervention: According to the difference in depth of contact with nature, the included intervention forms were divided into indirect, accidental and active contact. Indirect contact refers to indirectly feeling nature, and experiencing nature through such tools as window view, recording or VR, for relieving stress or transferring attention. In the existing related studies, even if the patients are not really exposed to the outdoor environment, they still have the significant effects of relaxing tension and relieving pain [5,7]. For example, patients who can see natural scenery in a ward report a lower level of anxiety and pain than patients who can see urban scenery [5], and through VR immersive natural experience, patients can be distracted by creating a digital “oasis” to reduce their focus on pain treatment [7]. Casual encounters refer to planned outdoor activities such as daily walks or park naps. And contact similar to chance encounter has also been found to improve people’s emotional and fatigue symptoms [9]. Morris et al. found that regular participation in outdoor group sports every week could improve the body function of group participants, significantly reduce the fatigue of subjects during the treatment and enhance their mood [9]. On the other hand, during the epidemic period, the increasing frequency of using backyard greenbelt in the home environment was significantly correlated with the lower psychological pressure of breast cancer patients [8]. Compared with the above two forms of contact, active contact refers to an in-depth intervention with a clear therapeutic purpose, such as forest rehabilitation camp and wilderness hiking. This type of contact usually has a stronger depth of intervention and a more structured degree, thus benefiting the psychosocial health of the survivors [10,11]. Among the in-depth natural reports covered in this review, there were more positive impact reports, such as significant improvement in depression and anxiety,

sleep and fatigue, and quality of life and spiritual indicators [10,11]. For example, outdoor therapy of active psychological intervention for young survivors in the Netherlands has a significant effect in promoting psychological well-being and self-identity [10], and outdoor mindfulness camp in the United States has achieved a win-win result by alleviating psychological pain and reducing biological stress index such as inflammation [11]. It can be seen that various forms of “wellness tourism” intervention can have a certain auxiliary effect on the physical and mental health of cancer survivors, but the stronger the depth of contact with nature and the sense of immersion, the better the improvement in mood and the improvement in overall life happiness. This tells us that convalescent intervention in deep combination with nature should be preferred under the conditions permitting. For patients with mobility inconvenience or inconvenience for long-distance travel, alternative natural contact can be designed through VR and other means, which is also a good auxiliary scheme [7,12].

3.2. Interview results

3.2.1. Participant characteristics

On the basis of the interview, the author conducted a semi-structured interview with 20 cancer survivors in the international medical tourism leading zone of Boao Music City, Hainan Province, and summed up the rich views on the physical and mental impact of wellness tourism on survivors. The interviewees involved in many common cancers such as breast cancer, lung cancer, colorectal cancer, lymphoma, uterine cancer, and so on, about half of them were male or female (11 females and 9 males), the age range was 30–72 years (the median age was nearly 55 years), and they survived for 1–10 years since the diagnosis was confirmed. The interviewees were all survivors who had participated in the Boao Music City wellness tourism project, which lasted for two weeks and at least three days, mainly including hot spring fitness, tropical rainforest hiking, mindfulness meditation, coastal sports and other forms of wellness projects. See **Table 2** for the basic information of the interviewees and the statistics of their health and rehabilitation programs.

Table 2. Summary of basic characteristics of respondents.

Number	Gender	Age	Cancer species	Diagnostic time	Brief introduction of rehabilitation experience
one	woman	46	breast cancer	the year of 2018	7 Days of Spa Recuperation
2	woman	34	breast cancer	2023	3 days mindfulness retreat camp
three	man	60	breast cancer	the year of 2020	5 Days of Rain Forest Health Experience
four	woman	55	breast cancer	2015	14 Days Rainforest Rehabilitation Camp
five	man	53	lung cancer	2021	10-day Comprehensive Rehabilitation Project (Rainforest + Mindfulness)
six	man	seventy-two	lung cancer	the year 2017	3 Days of Spa Recuperation
seven	woman	50	lung cancer	2022	7-day binhai health and rehabilitation tour
eight	woman	41	lung cancer	the year of 2018	5 Days of mindfulness-based meditation sessions
nine	man	66	lung cancer	2015	14-day Comprehensive Health and Nutrition Camp (hot spring + rainforest)
10	man	60	colorectal cancer	the year of 2020	7 Days of Spa Recuperation

Table 2. (Continued).

Number	Gender	Age	Cancer species	Diagnostic time	Brief introduction of rehabilitation experience
11	man	48	colorectal cancer	the year of 2016	5 Days Rainforest Rehabilitation Camp (Family Walk)
twelve	man	37	colorectal cancer	2022	3 days of binhai wellness experience
13	woman	67	colorectal cancer	the year of 2018	10 days hot spring health camp
14	woman	30	lymphoma	2024	5 Days Rainforest Rehabilitation Camp
15	man	45	lymphoma	2019	7 Days Rainforest Rehabilitation Camp
16	woman	fifty-two	lymphoma	the year 2017	7 days of ongoing stress relief
17	man	62	lymphoma	2015	10 Days of Spa Recuperation (Accompanied by Family)
18	woman	59	metrocarcinoma	the year of 2016	14-day Comprehensive Health and Nutrition Camp (Rainforest + Mindfulness)
19	woman	43	metrocarcinoma	the year of 2020	7 Days of Rainforest Rehabilitation Camp
twenty	woman	50	metrocarcinoma	2015	5 days of binhai wellness experience

3.2.2. Theme one: Emotional adjustment and psychological rehabilitation

The interview results of this study pointed out that wellness tourism was helpful for the emotional relief and psychological therapy. Most of the interviewees indicated that they could get rid of illness, relax their mentality and rebuild their mindfulness through wellness tourism (Table 3).

Table 3. Introduction to emotional adjustment and psychological rehabilitation interview.

Number	Subtopic	Introduction example
P7	Away from the pain	“as the warm wind was blowing by the sea, I almost forgot that I was a cancer patient and had no hospital breath. I was very relaxed.”
P1	Relax body and mind	“After soaking in the hot spring, my whole body is much looser, my sleep quality is improved, and my spirit is much better.”
P8	Restore mindfulness	“every morning I meditate with my teacher for half an hour, and I learn to focus on the present and stop thinking.”

Studies have shown that the natural environment and mindfulness-based activities in wellness tourism can significantly reduce the anxiety, depression and other negative emotions of cancer patients, and enhance the level of mindfulness [1–3].

3.2.3. Theme 2: Social support and positive responses

Respondents generally believed that wellness tourism enhanced their social support, which was reflected in patients’ mutual assistance, family accompanying and others’ motivation (Table 4).

Table 4. Introduction to interviews with social support and positive responses.

Number	Subtopic	Introduction example
P11	Patient support	“traveling with my patients and encouraging each other have made me less lonely.”
P17	Family company	“My wife accompanied me all the way. This convalescence makes it difficult for us to enjoy the world of two people and relax a lot from each other.”
P4	Others motivation	“seeing an elder sister who has been fighting cancer for more than ten years and keeps exercising every day has deeply inspired me.”

Studies have pointed out that social support is crucial to the mental health of cancer patients, which can significantly improve the quality of life of patients and their ability to actively cope with the disease [4–6,15,16].

3.2.4. Theme 3: Improving the quality of life and reconstructing the sense of significance

Wellness tourism significantly improved the quality of life of cancer survivors and helped them to rediscover the meaning of life (Table 5).

Table 5. Introduction to interviews on improving the quality of life and reshaping the sense of meaning.

Number	Subtopic	Introduction example
P10	Improvement of body condition	“Kang’s appetite has improved, and he has strength. His mental state is much better than before.”
P5	Regain one’s enthusiasm for life	“seeing others live an active life on the journey inspired me to re-set my goals in life.”
P14	Live in the present	“I used to worry about my illness, but now I have learned to cherish the present and live a more down-to-earth life every day.”

Studies have found that psychosocial intervention through wellness tourism can significantly improve the subjective well-being and sense of life significance of cancer patients [17–20].

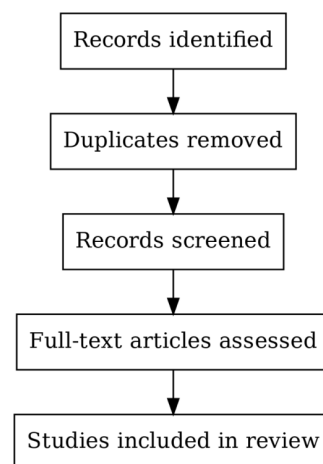


Figure 7. Prisma flow.

As shown in Figure 7, the PRISMA flow diagram illustrates the systematic review selection process. It shows the number of records identified, duplicates removed, records screened, full-text articles assessed, and the final studies included in the review. This transparent process ensures the reliability and replicability of the review methodology.

Diagrammatic representation explaining the mediating role of affect and psychosocial support that leads to better functioning and regain of purpose and meaning in the cancer survivor on rehabilitation travel.

Through the summary of the contents and themes of the above interviews, this paper discusses the connotation of health tourism in Boao Lecheng Pilot Zone in Hainan Province from the perspective of health tourism of cancer survivors in Lecheng Pilot Zone, including emotional relief and psychological recovery, social support and positive response, improving the quality of life and obtaining the meaning of life

[19,21,22]. On the one hand, these three aspects promote and enhance each other, and together constitute a positive and positive process of psychological cure for patients with diseases.

First, the interviewees generally believed that wellness tourism could provide a rest place besides illness to relieve the depression and relax the mind, as well as pay attention to and adapt to the current life [23]. The second was social support, emphasizing the role of interpersonal communication and family support in helping subjects to adapt to the disease [24,25]. Inter-patient encouragement and family care, as well as encouragement of accompanying and other tourists and accompanying personnel and staff, can help establish a social support system for survivors and help them to successfully complete their psychological recovery [26]. Thirdly, under the dual effects of emotion and social support, the insured obtains health in both physical health and social psychology, improves the significance of life, and produces a positive and optimistic attitude towards life [27].

Figure 8 is the result discovery expressed by the concept path diagram, and describes and expresses the internal mechanism of wellness tourism in promoting the mental health of cancer survivors. On the one hand, through emotional regulation and psychological rehabilitation, the control role of negative emotions of cancer survivors is eliminated, and the initial environment of physical and mental relaxation is created. On the other hand, through social support, the positive efficacy of emotions is enhanced, and the self-efficacy and social coping ability of cancer survivors are enhanced. Finally, through the mutual influence of these processes, the quality of life and sense of meaning are promoted, and they can face the future life more actively.

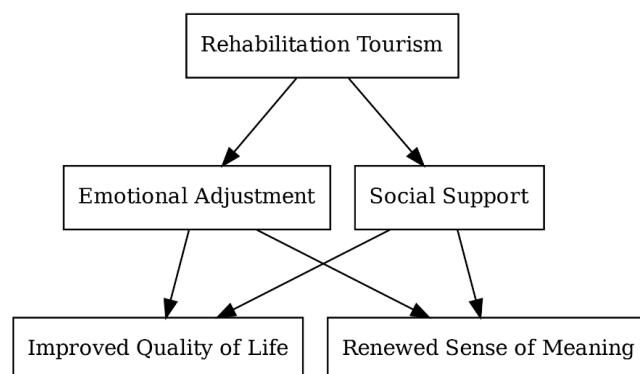


Figure 8. Conceptual pathway of psychosocial benefits derived from rehabilitation tourism.

4. Discussion

4.1. Comprehensive major findings and theoretical explanation

Through systematic review and in-depth interviews, this study found that cancer patients' participation in wellness tourism in the natural environment was a positive support for mental health, that is, participating in wellness tourism could reduce anxiety and depression, improve the sense of meaning of life, and enhance the quality of life. This is consistent with the subjective experience of patients on cancer in our interview. Many patients' narratives are to relax and gain emotional support during

the accompanying journey of family members and companions, which reduces the psychological pressure brought by the disease. To some extent, this social support can “buffer” the pressure, which is consistent with the mechanism suggested by the buffer model of social support. At the same time, the patients’ activities such as mindfulness-based meditation and tai chi under the natural environment present the current relaxed state, and their mood becomes calm and attentive, which is in line with the mechanism of mindfulness-based therapy—cultivating the ability to detect and accept the present, reducing the cognition to stress and the negative thinking process, and fighting against cancer anxiety and depression.

The above research results can be explained and illustrated by theoretical models such as social support buffer model (social support buffer effect), mindfulness therapy (mindfulness therapy mechanism), and Therapeutic Landscape theory. The buffer model of social support suggests that social support includes any form of assistance from family members, friends or groups, which acts as a buffer when individuals face a certain stress situation, thus reducing the negative psychological and physical effects of stress. In this study, the wellness tourism provided emotional support for cancer patients through accompanying them or their families, which was similar to the concept of social support buffer. The negative effects of social support on anxiety and depression levels are alleviated, and the research evidence has been obtained. The mindfulness-based therapy mechanism means that mindfulness-based training facilitates re-attribution, resulting in less negative evaluation, by changing patients’ evaluation of and coping strategies for event pressures in life. Mindfulness training, therefore, favors the appearance of more positive emotions. Studies have confirmed that cancer patients show lower anxiety and depression levels, more positive emotions and higher psychological elasticity level after mindfulness training. Healing landscape theory refers to the influence of specific natural landscape (such as forest, coastal landscape, hot spring, etc.) on human beings’ obtaining treatment due to its aesthetic features and historical, cultural and emotional connections. Landscapes are considered to be therapeutic in nature and effective. This study believed that the tropical natural beauty of Hainan was a buffer for patients to get rid of the pressure from the hospital environment. In the midst of green mountains and green waters, patients obtained the relief of body and mind, resulting in the feelings of relief, meditation and peace. This conclusion is also consistent with the conclusion of the above literature report that exposure to nature “helps to reduce stress and improve psychological well-being”. The above findings in this study can be well explained by the above three theories, indicating that wellness tourism promotes the physical and mental health of cancer patients through mindfulness-based intervention, social support and landscape therapy.

Comparative integration of quantitative and qualitative findings

To demonstrate how the two data strands converge (or diverge), **Table 6** juxtaposes the main themes that emerged from the narrative systematic review with the themes generated by the semi-structured interviews. Overall, strong convergence is evident across the three a-priori mediators—restorative environment, social support, and mind-body activities—with only minor nuances in emphasis.

Table 6. Comparative integration of systematic review and interview findings.

Thematic dimension	Evidence from systematic review (12 studies)	Evidence from interviews (<i>n</i> = 20)	Alignment/divergence
Restorative natural environment	10/12 studies reported ↓ anxiety, ↓ depression and ↑ QoL after nature exposure (forest camps, coastal retreats, VR-nature)	18/20 participants spontaneously linked “green mountains and blue sea” with relaxation, better sleep and a sense of “escape from patient identity”	Strong convergence. Qualitative data add rich sensory detail (smell of rainforest, sound of waves) that helps explain quantitative effect sizes.
Enhanced social support	9/12 studies highlighted peer or family bonding as a mediator of psychosocial benefit (e.g., wilderness-trek caregiver dyads)	All participants described new friendships or deeper family ties; several called the group “a second family”	Complete convergence. Interviews emphasize quality of support (empathy from fellow survivors) rather than mere presence of companions.
Mind-body restorative activities	7/12 studies included mindfulness, yoga or Tai-chi; mean effect size for ↓ distress ≈ 0.6	15 / 20 participants singled out guided meditation or Tai-chi as the moment they “felt calm again”	Directional convergence; qualitative strand shows cultural tailoring (TCM-based Qi-gong) increases acceptability.
Meaning reconstruction/spirituality (emergent)	Reported in only 3 qualitative studies; seldom quantified	12/20 participants spoke of “new purpose” or “gratitude for being alive” after sunrise rituals	Partial divergence. Literature under-reports existential outcomes; interviews reveal this as a salient but under-measured benefit.

Note. Numerical counts refer to the 12 primary studies in the review; qualitative frequencies are descriptive only.

This synthesis shows that the same three mechanisms identified a-priori account for the improvements observed in both data sets, supporting the explanatory power of the conceptual framework (**Figure 2**). At the same time, the interview strand uncovers existential benefits (meaning reconstruction) that the quantitative literature seldom measures, pointing to an important avenue for future outcomes research.

4.2. Comparison with existing studies

The findings of the anxiety and depression relief questions in this study were similar to those of many foreign studies, and the results of the meta-analysis conducted by Wang et al. in China were similar [27]. The results of the Meta-analysis on the efficacy of anxiety and depression in China showed that mindfulness-based stress reduction therapy could alleviate the adverse emotions such as depression and anxiety in breast cancer patients and enhance the patients’ coping ability, which was similar to the results of improving the emotions, sleep and appetite of patients treated with wellness tourism intervention in this study, indicating that either clinical mindfulness-based stress reduction therapy or physical and mental relaxation in the context of wellness tourism could effectively alleviate the adverse emotions of cancer patients. At the same time, this result has been basically verified by most research conclusions overseas. For example, the results of a systematic review showed that mental and physical interventions such as mindfulness-based meditation could significantly reduce the anxiety and depression levels of cancer patients and increase the quality of life and psychological resilience [28]. This study also revealed that the patients’ emotions were relieved and their sleep and appetite were improved after participating in the wellness tourism, which was similar to the findings reported in previous intervention studies that the participants’ depressive symptoms were relieved and their fatigue levels were reduced. It should be noted that a number of previous studies abroad had focused on the psychological intervention for cancer patients in the

medical environment, such as mindfulness-based treatment. In this study, intervention was included in the tourism context to bring about changes in medical environmental intervention. As a result, the psychological improvements achieved in the tourism context were not significantly different from the results of previous interventions, suggesting that such a non-medical environmental intervention as wellness tourism could also have similar intervention effects on cancer patients, and expanding the practice space of cancer rehabilitation.

This study was basically consistent with the results in the existing literature on the quality of life. Most cancer rehabilitation studies point out that comprehensive intervention can improve patients' quality of life and functional status. For example, RCTs for cancer survivors showed that patients receiving psychological interventions such as logotherapy had a higher quality of life and better psychological well-being [29]. This wellness tourism project integrates natural rehabilitation, social care and cultural experience. The indicators for improving the quality of life in physical and mental pleasure include the reduction of physical symptoms, the improvement of emotional state and interpersonal harmony, which are consistent with the results of social intervention to improve the quality of life by foreign research centers. However, in foreign studies, the changes of patients' lives are more quantified by scale, while in this study, qualitative interviews are used to capture the detailed descriptions of patients' subjective changes in the quality of life during the wellness tourism, such as "having fun" and "getting along better with relatives", which adds to the quantitative data.

In this study, for the reconstruction of sense of meaning, cancer patients rethought the significance of life and accepted their life more broadly and actively in the wellness tourism activities, which is consistent with the relevant research reports abroad. The classical theory of meaning therapy believes that enhancing the sense of meaning in life can help cancer patients to better adapt to the disease, and reduce the sense of despair and psychological pain. Randomized trials of MCGP conducted by Breitbart et al. in the West have shown that through such intervention, patients' sense of life significance and psychological well-being can be significantly enhanced [30]. The tourism activity approach adopted in this research is essentially consistent with these psychological treatments. The reconstruction of sense of meaning is only a result, and the idea behind psychotherapy does not simply guide patients to discuss the significance of life, but promotes patients to perceive the significance of life through a treatment process. This finding suggests that life meaning can be achieved in many ways, but it is also different. On the reconstruction method of sense of meaning, foreign sense therapies adopt the structural intervention method to directly discuss the meaning of life, while in China (as well as in this study) it is pushed forward from the process of cultural experience and collective experience, so that patients' perception of the meaning of life can be more implicit rather than directly stated [31]. This reflects the influence of different cultural backgrounds [32]. In the context of China, patients are more accustomed to the interaction with nature and society, which is also the phenomenon shown in our interview. It also plays a role in supplementing the western significance therapy to a certain extent.

In general, this study shows that, similar to the major psychosocial outcomes (negative emotions, QOL, and positive outlook on life) in existing domestic and

foreign studies, comprehensive intervention (whether medical or tourism intervention) can alleviate negative emotions and promote the reconstruction of QOL and cancer patients' outlook on life. Therefore, to some extent, this study provides evidence for the exploration of the use of wellness tourism as an adjunct to cancer rehabilitation. In addition, we also find some minor differences, such as the importance of culture and family participation in the context of China, suggesting that future research and practice in designing interventions for different cultural backgrounds should incorporate intervention patterns [33]

4.3. Regional characteristics and policy support under the practice of enlightenment

The wellness tourism discussed in this paper is also suitable for Hainan's unique geographical environment and the corresponding policies, and also gives us the corresponding promotion and reference. First of all, the south of China, especially Hainan, is the only tropical island in China, with unique environmental conditions, namely the vast coast, rich tropical rain forests, a large number of hot springs, pleasant climate, beautiful natural environment, which is a good "natural therapy" for cancer patients, can develop cancer patients' health care and rehabilitation tourism. As mentioned above, the feelings of many patients in this study were that the sunshine, air and natural environment in Hainan relaxed them both physically and mentally, which provided practical evidence for us to promote the feasibility and effectiveness of rehabilitation therapy for cancer patients through the use of geographical environment.

Second, in recent years, Hainan Province has issued a series of policies to vigorously develop the health care and medical tourism industry, which has provided adequate policy support for our practical operation. Hainan Provincial Government plans to build the entire province into a medical tourism destination with international influence and radiation power, and to include cancer treatment, rehabilitation, environmental rehabilitation and spiritual cultivation in the priority development direction. Hainan Provincial Government plans to rely on Hainan's coastal, rainforest, hot springs and other special resources to cultivate innovative wellness tourism products and create a high-end medical health care service system with special features. For example, Hainan's Boao Music City International Medical Tourism Leading Zone has a unique policy to support the landing of advanced medical and rehabilitation projects, which gives us a platform for cooperative development in wellness tourism and medical treatment. Preferential policies of the government can cross cooperation, tourism and health departments can cooperate to design some health care path, the combination of medical care and leisure recuperation, this is also due to have so many policy conditions, this study will be in a timely manner to the wellness tourism applied to cancer patients and confirm its value. This also reminds us that, in an environment with policy support, wellness tourism not only has scientific value, but also has practical promotion possibility. The wellness tourism can be used as a routine supplement for cancer rehabilitation follow-up.

More importantly, the results of this study are more exemplary. Hainan is already at the level of the national "Healthy China 2030" and the national policy of building a

free trade port in Hainan. At present, there are tens of thousands of enterprises nationwide, which are related to health tourism and have reported a large number of healthy tourism population. Health tourism and vacation has become a new social lifestyle. Hainan, which has a good ecological environment and the conditions to become a leading tourism enterprise in health care, can go ahead in this respect. The results of this research show that it is feasible and effective to set up wellness tourism for cancer population in Hainan. This means that Hainan can be used as a “experimental field” and a “demonstration window”, and the successful model and experience can be extended to other areas with similar resource endowments in the country through Hainan’s experience model. For example, places with favorable environment such as Yunnan and Guangxi can also integrate local national culture and ecological rehabilitation to form their own health and nutrition products with unique characteristics. From the value of management practice, Hainan’s experience also illustrates the significance of national overall arrangement, policy support and joint efforts. Only the joint efforts of health administrative departments, tourism departments and many other departments can truly transform the local ecological environment advantages into the competitiveness of the health care industry. Therefore, this not only reflects the advantages of Hainan in the ecological environment and the leading policy, but also substantially improves the actual value of this research intervention. In conclusion, Hainan’s ecological environment advantages and leading policy advantages not only improve the intervention effect of this study in fact, but also promote the use of health tourism in China in a practical sense. Of course, it reflects a regional characteristics in the policy support under the characteristics of the application value.

4.4. Clinical and management practice significance

This study has provided practical suggestions for clinical cancer rehabilitation and health tourism management. Clinically, our research evidence supports the inclusion of wellness tours as a complementary part of the overall recommendations of the cancer rehabilitation follow-up. Conventional tumor follow-up visits are mainly focused on monitoring disease progression and physical recovery after rehabilitation. Our study found that the addition of psychosocial support components related to rehabilitation (for example, organizing patients to participate in natural wellness tourism activities) can improve the physical and mental health of patients. Therefore, the tourist emotional support and psychological counseling processes that can be harvested from the trips of wellness tourism patients can also be said to be a beneficial continuation of group psychotherapy, working in synergy with hospital patient support programs. For example, patients tell each other about their anti-cancer experiences during their travels and weave peer support together. Similar to clinical patient support groups, studies have shown that peer support can improve patients’ self-efficacy and alleviate depression and anxiety. Therefore, hospitals and tumor rehabilitation centers can add “prescription tour” to the recommendations of rehabilitation follow-up visits to advise eligible patients to participate, which helps alleviate patients’ psychological loneliness and treatment stress during the long-term rehabilitation period, enhance patients’ treatment compliance and improve life satisfaction.

In addition, this study can also help with the management and service design of wellness tourism. The first direction is that tourism managers need to understand the meaning of wellness tourism for those specific groups of tourists who do not have the qualifications, such as cancer survivors, and thus integrate medical and health care elements into the research and development of tourism products. This study has shown that arranging interventions such as mindfulness-based meditation and Tai Ji Chuan on a travel itinerary can be very beneficial for patients. This means that the development of wellness tourism products should work closely with the medical team to ensure that activities are designed to be reasonable, safe and take into account the patient's physical and mental well-being; Secondly, the professional guidance and accompanying for the tourism activities we studied are further emphasized. In order to ensure the maximum recovery value of tourists, tourism managers should recruit their tour guides and staff to receive basic psychological support and emergency medical knowledge training, so as to form a "medical tourism integration" tourism service team; The third direction is that the management team can manage the whole process of wellness tourism according to the model of hospital multi-disciplinary team, and control and adjust the quality and personalized adaptation of the quality, quantity, or time and intensity of the tourists. For example, flexible increase of activity intensity, provision of healthy diet, medical monitoring and so on can be given according to the physical and psychological conditions of patients before carrying out tourism activities. This is tantamount to transferring the concept and scheme of medical rehabilitation in hospital to the tourism situation, so as to ensure the safety and efficiency of the patient's tourism process. Finally, from the perspective of industrial management, the results of this study can also give confidence to tourism management and decision makers and increase confidence in wellness tourism as a new tourism business, because the aging population and the increasing number of cancer survivors mean that wellness tourism may become a beneficial and complementary part of the medical and wellness system in the near future and one of the new growth points of the tourism industry in the future. It is suggested that relevant departments issue industry standards and standardized services to encourage medical institutions, social organizations and tourism enterprises to try more types and wider wellness tourism. On this basis, the author believes that strengthening the integration of medical tourism, strengthening the management practice of medical tourism personnel training and standardized guidance, and improving the development of health tourism will also be the long-term and beneficial measures for both patients and the industry.

4.5. Limits

Although this study has summarized many benefits of wellness tourism for cancer patients, it still has the following limitations. First, the systematic review is limited by literature bias and evidence quality. This review mainly focuses on the retrieval of Chinese and English literature, and fails to search for studies in other languages. At the same time, most of the included studies have a small sample size and low methodological quality, and small-scale randomized controlled trials are included. To some extent, this will affect the universality of the conclusion of this review and the strength of the evidence level. In the future, the credibility of the review conclusion

needs to be enhanced by retrieving more articles and adopting more stringent inclusion and exclusion criteria. Second, in the qualitative interviews, the sample size was limited (a total of 30 qualitative interviewees were interviewed in this study). Besides, the sources of the interviewees were limited to Hainan region, and there might be a certain geographical and cultural selection bias. Their views could not represent the views of all cancer patients. Although the information saturation point was reached in the interview section, more caution is needed in extending to all cancer patients. Thirdly, in this study, the qualitative and quantitative methods were combined in a mixed study. This practice may have certain subjective and objective interpretation bias in the process of data integration. Qualitative interviews are subjective qualitative data, therefore, its analysis and interpretation must rely on the judgment of the researchers, inevitably with a certain subjective color, we through the continuous discussion of three researchers to review the coding results, but still can't completely avoid this deviation. Finally, because of the lack of control in this intervention study itself, its own conclusions cannot lead to a causal relationship. Later, the results can be verified through randomized controlled trials, and the results are more convincing. According to the above limitations, we mainly put forward some countermeasures: (1) In literature research, we increased the search for relevant literature and then adopted meta-analysis for quantitative evaluation; (2) Qualitative research: the heterogeneity of samples shall be increased as much as possible, such as the regional diversity and the diversity of cancer species, so that the results can be more widely applied as far as possible; (3) In the aspect of intervention evaluation, we should pay close attention to the arrangement of controlled studies and make every effort to prolong the observation time to see whether the effect has the characteristics of durability. Furthermore, objective indicators such as stress hormones and immune indicators are added to support the subjective evaluation of the patients, so as to comprehensively evaluate the therapeutic effect and mechanism of wellness tourism.

4.6. Recommendations and future research directions

First, we make the following recommendations for cancer rehabilitation policy and look forward to future research on cancer rehabilitation. It is recommended that the health administrative departments of the competent departments and tumor hospitals include wellness tourism in the official manuals and policy supports for cancer rehabilitation, that is, regular wellness tourism/natural rehabilitation should be included as one of the options for cancer rehabilitation plan when the clinical plan and follow-up strategy for cancer rehabilitation are formulated. Health policies at the national level such as the Health China 2030 Planning Outline include the comprehensive physical and mental health as the goal, and promote the development of the health industry. In the context of the large health industry, including wellness tourism into the rehabilitation system is one of the ways to conform to the trend, enrich the service supply for cancer rehabilitation and meet the health needs of cancer patients. From the provincial level, the national advocacy of the "healthy China" strategy and the practical operation level of Hainan's promotion experience have shown that under the policy support to achieve wellness tourism into health care is operable and feasible. In this regard, it is recommended that relevant departments encourage, such as

measures such as including wellness tourism projects in the pilot health insurance subsidies, supporting medical institutions and tourism enterprises to carry out health care product design, and building a number of national-level wellness tourism demonstration bases for cancer rehabilitation, which will convert research evidence into policy actions to enable more and more cancer patients to benefit from wellness tourism.

In summary, the author believes that in the future, large-scale and high-quality randomized controlled trials are still needed to compare the anxiety and depression, quality of life, and survival time between patients receiving routine follow-up visits and patients receiving wellness tourism intervention regarding the clinical efficacy and safety of wellness tourism. In the future, a series of studies on the action mechanism of wellness tourism are needed, such as the detection of stress status and changes in physiological and immunological indicators in wellness tourism. After controlling the effects of social and psychological factors and life support factors (such as the difference in sleep time between patients and the intermediate regulation of positive mentality and physiological response), we can use the intermediary effect analysis to identify specific factors that play a key role in the efficacy of wellness tourism intervention (such as mindfulness, physiological feeling for the inner experience of natural scenery, and social support). Studies of such mechanisms may guide the optimization of intervention programmes (e.g., to identify which types of activities contribute to stress reduction?), for different patients “suit the remedy to the case”. In addition, with the development of science and technology, it is a new path worth exploring to transform the wellness tourism into a virtual wellness tourism in the future. The enlightenment of the author’s research is that watching natural scenery movies in hospital wards or experiencing natural scenery in an immersed way using Virtual Reality technology can also alleviate the symptoms of patients. Future research can explore the virtualization involved in wellness tourism, observe the effects of virtualized wellness scenarios on alleviating symptoms and improving patients’ emotional state, and compare the effects of virtual intervention and differences between field tourism. Some preliminary exploration has shown that the hospital window, VR forest walk, etc. can promote the effect of pressure, this is a big direction. Finally, we can also do interdisciplinary and innovative development, such as traditional Chinese medicine therapy + yoga + tai chi + wellness tourism, customized for different cancer species and different rehabilitation period of wellness tourism, and long-term follow-up, evaluation of wellness tourism on survival and recurrence rate, and cost-benefit analysis, for large-scale bedding application to provide the basis.

In summary, wellness tourism has a good application prospect as a new auxiliary means of rehabilitation. We hope that policy makers, clinical practitioners and researchers can work together to ensure policy implementation, accumulate experience in practice, promote scientific research, conduct evidence-based research and innovate continuously, so as to gradually enable Kang-yang tourism to enter the comprehensive cancer rehabilitation system to benefit more patients, and promote the healthy and rapid development of the health tourism industry.

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