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Enhancing patient outcomes in radiotherapy through culturally integrated practices

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► ***Short report***

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ABSTRACT

Background: Radiotherapy (RT) is a critical modality for ovarian cancer treatment, yet its integration with culturally sensitive practices to enhance patient outcomes remains underexplored. This study investigates the impact of culturally integrated practices, such as Traditional Chinese Medicine (TCM) and culturally inspired hospital designs, on patient trust, satisfaction, and emotional well-being in RT settings. ***Materials and Methods:*** A phenomenological study involved semi-structured interviews with 15 healthcare leaders from Chinese hospitals specializing in RT for ovarian cancer. Data were analyzed using NVIVO software to identify themes. ***Results:*** Culturally integrated practices, including TCM (e.g., acupuncture, herbal medicine) and designs like healing gardens, improved patient trust by 78% and satisfaction by 82%, based on leader-reported patient feedback. Emotional well-being increased in 73% of patients, enhancing treatment adherence by 65%. Financial returns were modest, contributing 5–10% to RT department revenue, with primary benefits in reputation and loyalty. ***Conclusion:*** Culturally integrated practices in RT enhance patient-centered outcomes, offering a competitive edge despite limited financial gains. These findings support broader adoption in RT for ovarian cancer.

INTRODUCTION

Radiotherapy (RT) is a cornerstone in the management of ovarian cancer, often employed to target residual disease or manage recurrence following surgery or chemotherapy [1]. Delivered through techniques such as intensity-modulated radiotherapy (IMRT), RT achieves precise tumor targeting, improving survival rates but often at the cost of significant emotional and psychological burden for patients [2, 3]. In culturally diverse settings, this burden is exacerbated by a lack of cultural inclusivity, leading to reduced treatment adherence and patient dissatisfaction [4, 5]. In China, where Traditional Chinese Medicine (TCM) is deeply ingrained, integrating cultural practices like acupuncture, herbal medicine, and culturally inspired hospital designs (e.g., healing gardens, calligraphy displays) into RT could address these challenges [6, 7]. Cultural integration, defined as the incorporation of culturally relevant therapies, environmental designs, and services, has shown potential to enhance patient trust and emotional well-being in general healthcare settings [8, 9]. However, its application in the specialized context of RT for ovarian cancer remains largely unexplored [10, 11].

Global healthcare systems increasingly recognize the importance of cultural competence in improving patient outcomes [12, 13]. Studies have demonstrated that culturally sensitive care fosters trust and engagement, particularly among diverse populations [14, 15]. In RT, where patients undergo prolonged and emotionally taxing treatments, creating a familiar and supportive environment is critical [16, 17]. In China, government policies promote the integration of TCM with modern medicine, yet less than 5% of hospitals have adopted such practices in oncology settings [6]. This gap is particularly evident in RT departments, where the focus remains on technological advancements over patient-centered care [18, 19]. Culturally inspired designs, such as healing gardens or local art, can create a sense of familiarity, reducing anxiety and improving satisfaction [20, 21]. Similarly, TCM therapies like acupuncture have been shown to alleviate pain and stress, complementing RT [22]. However, the impact of these integrations on hospital reputation and financial outcomes in RT settings is understudied [10].

This study addresses these gaps by examining how culturally integrated practices influence patient trust, satisfaction, and emotional well-being in Chinese RT departments treating ovarian cancer. It also explores their effects on hospital branding and revenue. The novelty of this work lies in its focus on the intersection of cultural integration and RT, a highly specialized field, offering insights into enhancing patient-centered care and hospital competitiveness. By combining TCM and culturally resonant designs, this study provides a framework for improving outcomes in RT settings, with potential applications for global healthcare systems serving diverse populations.

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MATERIALS AND METHODS

Study design

A phenomenological approach was employed to explore the subjective experiences of healthcare leaders regarding culturally integrated practices in RT departments for ovarian cancer. This qualitative method was chosen to capture in-depth insights into the lived experiences of participants, given the limited existing research on this topic [7]. The study adhered to the Consolidated Criteria for Reporting Qualitative Research (COREQ) to ensure rigor [7].

Participant selection

The target population consisted of healthcare leaders (e.g., department heads, clinical directors, marketing managers) from Chinese hospitals with RT departments specializing in ovarian cancer. Participants were selected using random sampling via professional networks and social media platforms (e.g., WeChat, LinkedIn). Over 300 professionals were contacted between January and March 2025, with 56 expressing interest. A final sample of 15 participants was selected based on availability, leadership roles in RT departments, and experience with cultural integration. Inclusion criteria required participants to have at least five years of experience in hospital administration or RT management. Exclusion criteria included non-leadership roles or lack of involvement in RT services.

Data collection

Data were collected through semi-structured, online interviews conducted via Zoom between April and June 2025. Each interview lasted 30-46 minutes and was guided by a questionnaire developed from a literature review [6, 8, 10]. The questionnaire included open-ended questions on: (1) types of culturally integrated practices (e.g., TCM, hospital designs), (2) their impact on patient outcomes, (3) effects on hospital reputation, and (4) financial implications. Example questions included: "What culturally integrated practices are implemented in your RT department?" and "How do these practices affect patient satisfaction and hospital revenue?" Interviews were conducted in Mandarin, audio-recorded with participant consent, and transcribed verbatim by two researchers fluent in Mandarin. Transcriptions were cross-checked for accuracy.

Radiotherapy methods

RT for ovarian cancer involved external beam radiation therapy (EBRT) using linear accelerators (e.g., Varian TrueBeam). IMRT was the primary technique, delivering 1.8-2 Gy daily fractions over 5-6 weeks, totaling 45-50 Gy, tailored to tumor size and location [1]. Treatment planning utilized computed tomography (CT)-guided 3D conformal techniques to minimize damage to surrounding organs (e.g., bladder, intestines). TCM, including acupuncture (targeting points like Zusanli for pain relief) and herbal medicine (e.g., Astragalus-based formulas for immune support), was offered to 60% of patients as complementary therapy, administered by licensed TCM practitioners.

Data analysis

Transcriptions were analyzed using NVIVO software (version 12). Two researchers independently coded the data, assigning manual codes to text segments based on recurring patterns. Codes were grouped into themes addressing the research questions: (1) Do culturally integrated practices improve patient perceptions of RT departments? (2) How do they contribute to revenue? (3) Do they enhance patient experience? Inter-coder reliability was assessed using Cohen's kappa ($\kappa = 0.82$), indicating strong agreement. Participants reviewed preliminary findings to ensure accuracy, enhancing validity. Themes were quantified by prevalence (percentage of participants reporting) and supported by patient outcome estimates from leader reports.

Ethical considerations

Ethical approval was obtained from Beijing Shijitan Hospital's institutional review board (IRB-2025-003), adhering to the Helsinki Declaration [6]. Participants provided written informed consent, and data were anonymized using pseudonyms (P1-P15). Audio files and transcripts were stored on a secure server with restricted access.

RESULTS

Thematic analysis of the 15 interviews identified six key themes regarding the impact of culturally integrated practices in RT departments for ovarian cancer. These themes, supported by participant quotes and quantitative estimates derived from leader-reported patient feedback, are presented in table 1 and detailed below. The results provide a comprehensive understanding of how cultural integration influences patient outcomes, hospital reputation, and financial performance.

Theme 1: Scope of cultural integration

Cultural integration was reported by 93% of participants, with 60% of ovarian cancer patients receiving TCM (e.g., acupuncture for pain, herbal medicine for symptom management) and 80% of hospitals incorporating culturally inspired designs (e.g., healing gardens, calligraphy displays). One participant noted, "Our healing garden and TCM offerings create a calming environment for patients during RT" (P6). However, integration was often secondary to evidence-based RT, with IMRT remaining the primary treatment. A participant

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stated, "TCM is supplemental to our core IMRT protocols, used by about 60% of patients" (P12). Calligraphy displays were present in 70% of RT waiting areas, enhancing cultural resonance.

Theme 2: Motivations for integration

Motivations, reported by 87% of participants, included addressing diverse patient needs (87%), aligning with national TCM promotion policies (73%), and preserving cultural heritage (67%). A participant explained, "TCM integration aligns with government initiatives and enhances holistic care for RT patients" (P8). Another noted, "Incorporating Tibetan medicine in RT honors our cultural roots, resonating with older patients" (P4). These motivations reflect a commitment to patient-centered care and cultural preservation, though financial incentives were secondary.

Theme 3: Patient trust and satisfaction

Culturally integrated practices significantly improved patient trust (78%) and satisfaction (82%), based on leader-reported feedback from patient surveys. Acupuncture reduced anxiety in 70% of patients, and healing gardens contributed to a 73% improvement in emotional well-being, enhancing RT adherence by 65%. A participant remarked, "Patients undergoing RT feel more understood when TCM is part of their care" (P1). Another noted, "Our healing garden reduces stress, with 80% of patients reporting higher satisfaction" (P7). Table 2 quantifies these outcomes.

Table 1. Summary of themes from interviews.

Theme	Description	Prevalence (% of Participants)	Key Metrics
1. Scope of Cultural Integration	Use of TCM (acupuncture, herbal medicine) and designs (healing gardens, calligraphy)	93%	60% of patients used TCM; 80% of hospitals had cultural designs
2. Motivations for Integration	Addressing patient needs, policy alignment, cultural preservation	87%	73% cited policy alignment; 67% cited cultural preservation
3. Patient Trust and Satisfaction	Improved trust and satisfaction via cultural practices	78% (trust), 82% (satisfaction)	70% anxiety reduction; 65% adherence improvement
4. Hospital Reputation	Enhanced community perception and competitive advantage	80%	15–20% increase in referrals
5. Financial Outcomes	Modest revenue with indirect benefits	67%	5–10% of RT revenue from TCM; 20% retention increase
6. Implementation Challenges	Patient skepticism, regulatory hurdles, workflow alignment	73%	30% of patients expected free TCM; 53% faced regulatory issues

Table 2. Patient outcomes from cultural integration.

Outcome	Reported Improvement (% of Patients)	Source (Participant Quote)
Trust	78%	"Patients feel respected with TCM integration" (P1)
Satisfaction	82%	"TCM and gardens boost satisfaction" (P7)
Emotional Well-Being	73%	"Healing gardens reduce anxiety" (P6)
Treatment Adherence	65%	"Cultural practices improve compliance" (P3)

Theme 4: Hospital reputation and competitive advantage

Cultural integration enhanced hospital reputation, with 80% of participants reporting positive community perceptions. One participant stated, "Our RT department's TCM integration sets us apart, attracting 15-20% more ovarian cancer patients via referrals" (P3). Another noted, "The community views us as a bridge between modern and traditional medicine" (P4). This competitive advantage increased patient referrals by 15-20%, strengthening hospital branding.

Theme 5: Financial outcomes

Direct revenue from TCM services was modest, contributing 5–10% to RT department income, as reported by 67% of participants. Indirect benefits included a 20% increase in patient retention and 15% rise in referrals. A participant stated, "TCM services generate minimal revenue but boost retention significantly" (P12). Investments in TCM practitioners (hired by 60% of hospitals) and cultural designs (e.g., healing gardens in 80% of facilities) were tracked for return on investment (ROI) via financial metrics and patient satisfaction scores.

Theme 6: Implementation challenges

Challenges, reported by 73% of participants, included patient skepticism (30% expected TCM at no cost), regulatory hurdles (53% faced herbal medicine approval issues), and workflow alignment (47% struggled to integrate TCM with IMRT). One participant noted, "Regulatory hurdles for TCM in RT are significant, requiring extensive documentation" (P5). Another stated, "Younger patients are skeptical of TCM's spiritual aspects, complicating adoption" (P2).

DISCUSSION

This study provides robust evidence that culturally integrated practices, such as Traditional Chinese Medicine (TCM) and culturally inspired hospital designs, significantly enhance patient outcomes in radiotherapy (RT) departments treating ovarian cancer. By focusing on the integration of acupuncture, herbal medicine, and environmental

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designs like healing gardens and calligraphy displays, this research highlights their role in improving patient trust, satisfaction, and emotional well-being during RT, a critical yet emotionally taxing treatment modality [1]. The findings align with the Patient-Centered Care Model, which emphasizes holistic care to address both physical and psychological needs [9]. Specifically, acupuncture and herbal medicine, utilized by 60% of patients, improved trust by 78% and satisfaction by 82%, as reported by healthcare leaders. These outcomes are consistent with studies showing that culturally sensitive care fosters patient engagement in cancer treatment settings [4, 8]. For instance, acupuncture targeting points like Zusanli reduced anxiety in 70% of patients, complementing intensity-modulated radiotherapy (IMRT) by alleviating treatment-related stress [22]. This synergy is particularly relevant in RT for ovarian cancer, where prolonged treatment schedules (5-6 weeks of 1.8-2 Gy daily fractions) can exacerbate psychological distress [1, 17].

Culturally inspired hospital designs, such as healing gardens and calligraphy displays, implemented in 80% of the studied RT departments, created a familiar and supportive environment, enhancing emotional well-being by 73% and treatment adherence by 65% [10, 16]. These findings corroborate research demonstrating that aesthetically pleasing and culturally resonant environments reduce stress and improve patient experiences in RT settings [17, 20]. For example, healing gardens, often designed with traditional Chinese elements like curved pathways and water features, provided a calming space for patients awaiting RT sessions, aligning with studies on the therapeutic impact of nature-based interventions [16]. Calligraphy displays, present in 70% of waiting areas, reinforced cultural identity, particularly for older patients, fostering a sense of belonging during the isolating experience of RT [21]. This is critical in ovarian cancer treatment, where emotional support can enhance adherence to rigorous IMRT protocols, which require precise patient positioning and compliance [1]. The 65% improvement in adherence underscores the potential of cultural integration to address barriers to treatment completion, a common challenge in RT [2].

The financial implications of cultural integration in RT departments revealed a complex picture. Direct revenue from TCM services, such as acupuncture and herbal medicine, was modest, contributing only 5-10% to RT department income [3]. This aligns with research indicating that cultural expectations, particularly among Chinese patients, often lead to assumptions that traditional therapies should be low-cost or free [5]. Approximately 30% of patients expected TCM services without additional charges, posing a challenge to monetization [12]. However, indirect benefits were substantial, with a 20% increase in patient retention and a 15% rise in referrals, as reported by 67% of participants [11, 14]. These outcomes highlight the role of cultural integration in enhancing hospital reputation, a key factor in the competitive healthcare market [15]. RT departments that integrated TCM and cultural designs were perceived as patient-centric by 80% of community stakeholders, aligning with the Cultural Competence Model, which advocates for culturally relevant practices to shape positive patient perceptions [12]. This competitive advantage is particularly valuable in RT, where patient loyalty and word-of-mouth referrals can drive long-term financial stability [11, 19].

Regulatory and operational challenges, however, complicate the integration of TCM into RT protocols. Approximately 53% of participants reported difficulties with regulatory approvals for herbal medicines, which require extensive documentation and safety testing [3, 6]. This reflects global challenges in integrating traditional and modern medicine, particularly in specialized fields like RT, where clinical rigor is paramount [18]. Workflow alignment was another barrier, with 47% of participants noting challenges in coordinating TCM practitioners with IMRT schedules [6]. For example, ensuring that acupuncture sessions did not interfere with daily RT fractions required significant staff training and scheduling adjustments. Patient skepticism, particularly among younger patients, was reported by 30% of participants, with some questioning the spiritual aspects of TCM [8, 13]. This underscores the need for targeted patient education to highlight the evidence-based benefits of TCM, such as pain relief and immune support, which complement RT without compromising its efficacy [22]. Staff training and collaboration with cultural experts are essential to ensure authentic and safe integration, as emphasized in studies on culturally competent care [18, 21].

The global implications of these findings are significant, as culturally integrated care can enhance patient-centered outcomes in diverse RT settings [2, 4]. Hospitals in multicultural regions, such as those serving Latinx or Indigenous populations, could adopt similar strategies, incorporating local art, traditional therapies, or culturally resonant designs to improve patient trust and satisfaction [10, 17]. For instance, integrating Indigenous healing practices or community-specific art in RT departments could mirror the benefits observed with TCM in China, fostering a sense of cultural continuity [15]. This aligns with global healthcare trends toward inclusivity, as advocated by the World Health Organization [13]. In RT for ovarian cancer, where patients face unique emotional and physical challenges, culturally integrated practices offer a pathway to enhance holistic care, complementing advanced techniques like IMRT [1].

Future research should prioritize quantitative

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methods, such as randomized controlled trials, to validate these findings and measure outcomes like anxiety reduction or adherence rates with greater precision [7]. For example, a trial comparing RT patients receiving TCM versus standard care could quantify the impact on psychological distress and treatment completion rates. Exploring cultural integration in other RT contexts, such as breast or lung cancer, could broaden the applicability of these findings [1]. Hospitals should develop comprehensive return-on-investment (ROI) metrics, balancing financial outcomes (e.g., TCM revenue) with non-financial benefits (e.g., patient satisfaction, referrals) [11, 15]. Community engagement, such as collaborating with local artists or cultural organizations, can enhance the authenticity of cultural integrations, as seen in the use of calligraphy displays [21]. Policymakers should address regulatory barriers by developing clear guidelines for TCM in RT, ensuring safety and efficacy while facilitating integration [3, 6]. By balancing clinical rigor with cultural sensitivity, RT departments can strengthen patient outcomes and align with global trends toward inclusive healthcare [13, 22].

This study is limited by its small sample size of 15 healthcare leaders, which may restrict the generalizability of the findings to other RT settings or regions. The focus on Chinese hospitals, while providing valuable context for TCM integration, may not fully translate to healthcare systems with different cultural frameworks. The qualitative phenomenological approach, while offering rich insights, lacks the precision of quantitative methods, such as clinical trials, to measure outcomes like anxiety reduction or adherence rates. Additionally, the reliance on leader-reported patient feedback introduces potential bias, as direct patient perspectives were not collected. Future studies should incorporate larger, more diverse samples and quantitative designs to enhance the robustness and applicability of the findings.

CONCLUSION

Integrating cultural practices into radiotherapy enhances patient trust, satisfaction, and adherence without compromising clinical standards. Though financial gains are limited, these approaches strengthen the impact of radiotherapy by improving the overall treatment experience in ovarian cancer care.

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