

Romina Alkier Tomić / Vedran Milojica / Vasja Roblek

Economic Benefits and Ethical Questions of Dental and Aesthetic Tourism in Europe: Thematic and Semantic Analyses of Articles

Abstract

This study reviewed research on dental and aesthetic tourism. The review is based on thematic and sentiment analyses of scientific articles. The results indicate that this type of tourism plays a significant role in the economic development of tourist destinations such as Croatia, Hungary, and Turkey. Lower prices and high-quality services were identified as key factors influencing the decisions of health tourists. Health tourism users not only seek medical services but also take the opportunity to engage in other tourist experiences. However, it is essential to note the significant risks associated with these procedures, which include infections, failed implants, and inadequate postoperative support. Therefore, countries that promote medical tourism must enhance their regulations and ensure that health professionals are adequately monitored and sanctioned in the event of professional complications and substandard postoperative care. It is essential to ensure that ethical marketing practices are adhered to.

Keywords: dental tourism, aesthetic tourism, Europe, thematic analysis, sentiment analysis

1. Introduction

Over the last few decades, dental-aesthetic tourism has emerged as a significant sector of global health tourism (Ancy et al., 2020). Patients primarily seek these services for cost savings, treatment availability, and assurance of quality care (Das & Hammer, 2014). Many patients also combine treatment with travel to enhance the appeal of such services. Nonetheless, these trends have raised significant concerns regarding patient safety, quality of care, local healthcare systems, and sustainability. This study uses a mixed-methods approach, combining quantitative and qualitative analyses, to explore themes within the European dental-aesthetic tourism literature. Thematic analysis reveals key patterns, whereas sentiment analysis captures the emotional tones related to these themes (Alejandro & Zhao, 2024). This review addresses economic, healthcare, ethical, and Sustainability perspectives within this context.

The authors posed the following research questions:

1. What primary themes emerge from European dental and aesthetic tourism analyses?
2. Which emotions and perspectives are associated with these themes?
3. How do economic drivers intersect European ethical and sustainability concerns?
4. What impact does dental and aesthetic tourism have on the healthcare systems of patients' home countries?
5. What marketing strategies promote dental and aesthetic tourism, and what ethical dilemmas arise?
6. How does inadequate postprocedural support affect patient experiences?

Romina Alkier Tomić, PhD, Full Professor, Faculty of Tourism and Hospitality Management, University of Rijeka, Rijeka, Croatia; ORCID ID: <https://orcid.org/0000-0003-2666-8271>; e-mail: rominaa@fthm.hr

Vedran Milojica, PhD Candidate, Corresponding Author, Faculty of Tourism and Hospitality Management, University of Rijeka, Rijeka, Croatia; ORCID ID: <https://orcid.org/0000-0002-0898-2032>; e-mail: vedran.milojica@gmail.com

Vasja Roblek, PhD Candidate, Faculty of Organisation Studies, Novo mesto, Slovenia; ORCID ID: <https://orcid.org/0000-0003-1182-3400>; e-mail: vasja.roblek@gmx.com

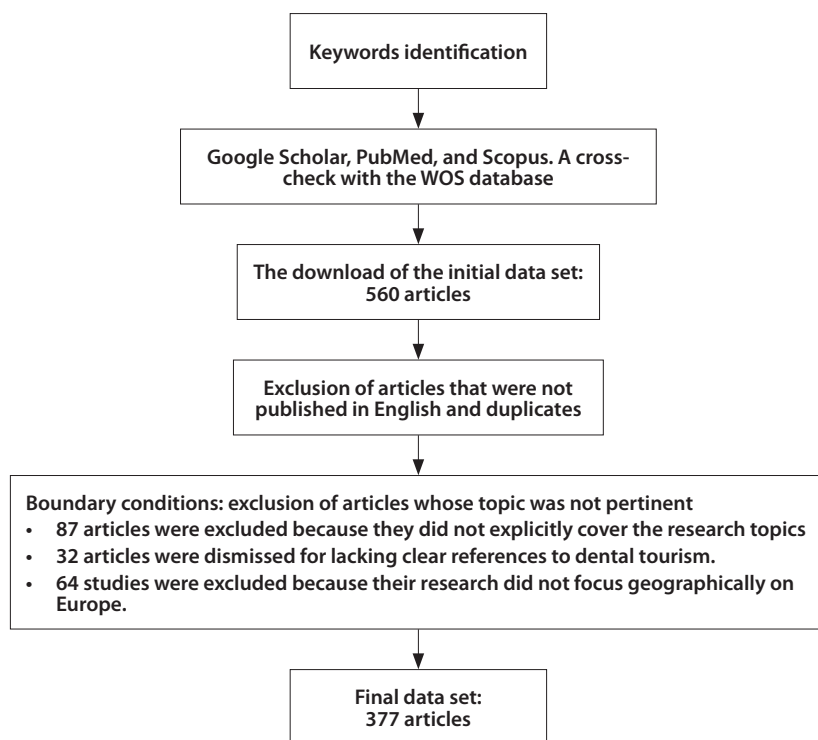
Grounded in strong theoretical foundations, this study highlights the complexities of dental and aesthetic tourism, addressing its societal implications, ethical challenges, and unique factors specific to the European context.

2. Research methodology

2.1. Selection criteria

A semi-systematic method was used to select relevant articles from scientific literature databases, focusing on publications from 2014 to October 31, 2024. The inclusion criteria were peer-reviewed and early-access articles on aesthetic tourism, dental tourism, economic models, social impact, risks, and benefits. The search used key terms such as dental tourism, aesthetic tourism, economic impact, and sustainable development. Initial searches in Google Scholar, PubMed, and Scopus yielded 532 articles, with an additional 28 articles from WOS. After removing duplicates, a total of 478 articles were identified. Titles and abstracts were assessed using the ASReview software, resulting in the rejection of 164 articles for lack of research connections, 23 for insufficient references to dental tourism, and 62 for irrelevance.

Figure 1
Articles search strategy



Source: Authors' research.

This resulted in a final set of 377 articles published between 2014 and October 31, 2024. The top ten primary sources included *Aesthetic Plastic Surgery*, *Sustainability*, *Annals of Tourism Research*, *Journal of Vacation Marketing*, *Tourism*, *Ekonomski Vjesnik*, *Interdisciplinary Description of Complex Systems*, *Journal of Travel Medicine*, *Tourism and Hospitality Management* and *Current Issues in Tourism*.

2.2. Thematic and sentiment analysis

Thematic network and sentiment analyses were conducted using the following seven steps:

First step: Identifying key ideas, themes, and tones

A thematic network and sentiment analysis of a systematic literature review identified 80 themes focused on dental and aesthetic tourism, highlighting key ideas and topics relevant to these industries.

1. Economic Attractiveness and Affordability
 - Dental and aesthetic tourism: The quality of procedures is generally very high compared to those in their home countries, and they are significantly cheaper, attracting many international patients. This affordability is a significant draw for patients seeking these services.
 - For example, affordable dental treatments are available in Croatia and Turkey, often as part of travel packages.
2. Patient-specific risks and complications of the procedure itself
 - A deplorable example of postoperative complications, such as infections, wound dehiscence, and implant failure, has been observed mainly in dental treatment as well as cosmetic surgery abroad. These risks are essential for patients to consider when making their decisions.
 - Example: Reports of multiple drug-resistant infections after surgery performed in less developed countries.
3. Effects on the healthcare systems in their home countries
 - Problems caused by medical tourism often lead to extra costs and difficulties in operating healthcare systems in patients' home countries. This impact on local healthcare systems is a significant consideration in the medical tourism debate.
 - Example: The UK taxpayer will be liable for the costs of complications arising from cosmetic procedures abroad.
4. Marketing and promotion research strategies
 - Aggressive social media marketing for dental and aesthetic procedures is frequently promoted at affordable prices, often without sufficient emphasis on the associated risks.
 - Example: Deceptive advertisements targeting tourists looking for fast, low-cost aesthetic solutions.
5. Tourism Experience with Integration
 - Combining healthcare with travel makes dental and cosmetic tourism an appealing option. For example, Croatia promotes dental tourism more successfully due to its scenic beauty and cultural heritage.
6. Sustainability and Ethical Practices
 - The shortage of regulations in the medical tourism field, combined with the pressure on resources that this type of service uses, creates sustainability issues.
 - Ethical marketing strategies and improving patient education can reduce harm and facilitate informed decision-making, such as contacting licensed dental treatment facilities abroad.
7. In Aesthetic tourism, interests in cultural and aesthetic appreciation
 - Wellness tourism often integrates cultural and natural attractions in the same place to enhance patients' experiences.
 - For example, people receiving aesthetic treatments often desire opportunities for authentic cultural experiences in the countries where they undergo their procedures.

8. Follow-up with Patients after Procedures and Care

- The lack of structured postoperative care and follow-up services is a significant problem that can cause patient deterioration.
- Example: Patients abroad who require dental work or aesthetic surgery often struggle to find a local medical specialist for post-treatment care.

Each theme highlights the interplay among economic opportunities, patient perspectives, and inherent issues in dental/aesthetic tourism.

Second step: Coding

References were retrieved from the literature databases and organised in an Excel spreadsheet, including the title, author, journal name, abstract, keywords, and metadata. Selected articles were reviewed and coded using the framework of Bandara et al. (2015), focusing on medical risks, economic drivers, sustainability, culture and aesthetics, and post-treatment consequences relevant to cosmetic and dental tourism.

1. Key Elements of the Coding Process:

- The frequency of identified terms was analysed to determine main themes, highlighting thematic coherence and recurring patterns.

2. Assignment of Codes:

- Ideas related to similar topics were grouped and uniquely coded (Saldaña, 2009) to facilitate practical understanding of the collected data.

3. Logical Alignment:

- Codes were linked to key concepts to ensure analytical coherence, with overarching goals guiding the refinement of codes (Creswell, 1998).

4. Iteration and Validation:

- The initial coding framework was maintained, and new codes were incorporated as needed. Regular discussions helped clarify discrepancies (Williams & Moser, 2019).

The coding process systematically captured all the relevant ideas. Collaboration among analysts, although not formally measured for inter-rater reliability, enhanced consistency in interpretations. The final codes synthesised the articles' content into meaningful groups that support broader analyses. Table 1 outlines the primary codes and key aspects of the research.

Table 1
Theme and codes

Theme	Codes
Economic Appeal and Cost-Effectiveness	'Affordable treatment', 'High-quality services', 'Cost as a primary motivator', 'Seasonal offers for tourists', 'Competitive pricing in clinics', 'Cost-to-quality ratio', 'Discounted bundled packages', 'Revenue boost for host countries', 'Medical tourism partnerships', 'Economic incentives for providers'
Complications of the procedure itself	'Infection risks', 'Postoperative complications', 'Surgical errors abroad', 'Multidrug-resistant infections', 'Implant failures', 'Lack of access to care', 'Overseas clinic quality issues', 'Under-regulated medical facilities', 'Long-term health impacts', 'Inconsistent patient outcomes'
Impact on Home-Country Healthcare Systems	'Healthcare system strain', 'Resource allocation challenges', 'Revision surgeries at home', 'Financial burden on public health', 'Cross-border infection risks', 'Ethical dilemmas in care prioritization', 'Emergency management of complications', 'Repatriation issues', 'Increased demand for specialists', 'Policy gaps in cross-border care'
Marketing and Promotion Research Strategies	'Social media promotions', 'Misleading advertising', 'Focus on affordability', 'Success testimonials', 'Lack of risk disclosure', 'Partnerships with travel agencies', 'Clinic reputation management', 'Use of influencers for marketing', 'Discount offers on social media.'
Integration with Tourism Experiences	'Cultural attractions', 'Relaxation packages with treatment', 'Natural beauty destinations', 'Post-treatment travel experiences', 'Seasonal tourism campaigns', 'Combining leisure with medical care', 'Destination recovery plans', 'Partnerships with tourism boards', 'Appeal of exotic locations', 'Health-focused tourism events'

Table 1 (continued)

Sustainability and Ethical Practices	'Eco-friendly practices', 'Clinic accreditation', 'Ethical advertising', 'Resource conservation', 'Transparency', 'Sustainable resource use', 'Waste management', 'Carbon footprint reduction', 'Community engagement', 'Fair labor practices'
In Aesthetic tourism, interest in cultural and aesthetic appreciation	Authentic cultural experiences, 'Aesthetic appeal of landscapes', 'Heritage-focused tourism', 'Integration of local culture', 'Culturally rich recovery settings', 'Cultural sensitivity in care', 'Aesthetic labour in clinics', 'Enhanced tourist satisfaction', 'Influence of cultural heritage', 'Visual appeal in tourism.'
Post-procedure follow-up and Patient Support	'Lack of structured follow-up', 'Challenges in accessing care', 'Dependence on home-country systems', 'Unclear follow-up protocols', 'Inadequate post-op resources', 'Communication gaps with surgeons', 'Delayed management of complications', 'Costs of follow-up abroad', 'Patient dissatisfaction post-surgery', 'Limited post-op care standards'

The codes described in Table 1 demonstrate the central concepts connected to each theme (informed by Stage Two of the analysis). These codes enabled a systematic and in-depth review of the recurring elements within the text. They provide clarity in detecting patterns and frameworks that can be applied during the thematic analysis, which takes place at later phases of the third stage.

Third step: Themes design process

Step 3 involved reviewing codes to identify patterns and creating broader thematic groups (Attride-Stirling, 2001). Initially, codes were examined for similarities, and related codes were grouped into meaningful clusters. In the next phase, thematic patterns are established based on these similarities, which helps future analysis (Roblek & Dimovski, 2024). Themes are developed from the repetitive characteristics within the codes (see Table 2).

Table 2**Theme, codes, and theme description**

Theme	Codes	Theme description
Economic Appeal and Cost-Effectiveness	Affordable treatment, Cost savings, Bundled packages, Revenue boost, Competitive pricing	Discusses one of the factors that drives people to travel from their country to another country for medical care: (Economics — affordability & economics).
Complications of the procedure itself	Infection risks, postoperative complications, Surgical errors, Implant failures, Quality concerns	Addresses potential medical complications, infections, and the quality of procedures abroad.
Impact on Home-Country Healthcare Systems	Healthcare system strain, Financial burden, Revision surgeries, Ethical dilemmas, Policy gaps	Explores the complex consequences of medical tourism on home-country healthcare systems, including ethical and resource-based dilemmas.
Marketing and Promotion Research Strategies	Social media promotions, Misleading ads, Testimonials, Influencer marketing, Discount campaigns	Examines marketing techniques to lure visitors, focusing on actionable ethics and advertising effectiveness.
Integration with Tourism Experiences	Cultural attractions, Recovery tourism, Seasonal campaigns, Destination recovery plans, Leisure packages	Focuses on the fusion of travelling experiences and medical options based on cultural and natural attractions.
Sustainability and Ethical Practices	Eco-friendly practices, Clinic accreditation, Ethical advertising, Resource conservation, Transparency	Emphasises the importance of sustainable and responsible tourism to ensure development without compromising environmental preservation.
In Aesthetic tourism, interest in cultural and aesthetic appreciation	Authentic experiences, Aesthetic labour, Cultural heritage, Landscape appeal, Tourist satisfaction	Analyses cultural and aesthetic factors that facilitate the public appeal of tourism and positive experiences for tourists
Post-procedure follow-up and Patient Support	Lack of follow-up, Complication management, Home-country dependence, post-op dissatisfaction, Delayed care	It highlights that once treatment is over, many patients find themselves in the dark due to the lack of clear guidelines on post-treatment care and follow-up protocols.

Group themes help identify key patterns in the text. Each theme consists of several codes representing critical aspects of the analysed material. In the fourth step, these themes are evaluated for relevance and alignment with the initial codes. The codes are then organised under each theme and re-validated to ensure consistency between the themes, their corresponding source codes, and the overall dataset. Furthermore, each theme is refined to minimise any overlaps.

Fourth step: Reevaluating previously discussed themes

The third step involved evaluating the comprehensiveness of the flights and addressing all relevant aspects of the articles. If deemed insufficient, modifications would be necessary. Ensuring the integration of all codes into existing themes and identifying commonalities for theme development was crucial. The themes were elucidated clearly and precisely, facilitating a more comprehensive understanding of the key issues in dental and aesthetic tourism. The authors consulted the most recent literature on this topic. Subsequently, they verified that all topics adequately covered the theme of the paper and that no alterations were necessary.

Fifth step: Identification and definition of themes

Here, the authors appropriately title and descriptively define each theme. This is of utmost importance, as it enables a more detailed and nuanced understanding of the identified themes and their role in explaining the analysed themes. These definitions form the theoretical basis for upcoming analytical procedures, including sentiment analysis.

Identified Themes and Their Definitions:

1. Economic Drivers and Cost-Effectiveness:

The authors analyse which economic incentives are crucial for developing successful aesthetic and dental tourism. Special attention is paid to reducing the costs of medical tourists and achieving benefits for medical tourism destinations by forming adequate medical service packages at competitive prices.

2. Patient Risks and Complications:

Medical patients may encounter risks when using medical services abroad, and the authors emphasised the possibility of infection occurrence and development, errors in surgical procedure performance by medical staff, and the low quality of medical care and support provided after medical procedures.

3. Healthcare System Implications:

The authors analyse how the development of medical tourism affects the home healthcare system, how to successfully respond when complications arise in treating patients, how to address the ethical issues present in the case of allocating resources, and the current regulatory limitations.

4. Marketing and Promotion Practices:

The authors assess the strategies that medical service providers use to motivate patients to visit their facilities and utilise the services. Special attention is paid to advertising activities on social networks, including patient reviews, and ethical issues in cases of false advertisements that prioritise favourable prices over safe and reliable medical services.

5. Integration of Tourism Experiences:

The authors debate a tourism offer that combines medical treatments with other tourist activities that can be practised during a stay at a destination, and how cultural activities contribute to strengthening the appeal of the medical tourism offer.

6. Sustainability and Ethical Challenges:

The authors emphasise the importance of providing medical tourism services while adhering to ethical principles and principles of sustainable development. Emphasis is placed on conserving natural resources and practicing environmentally friendly medical methods.

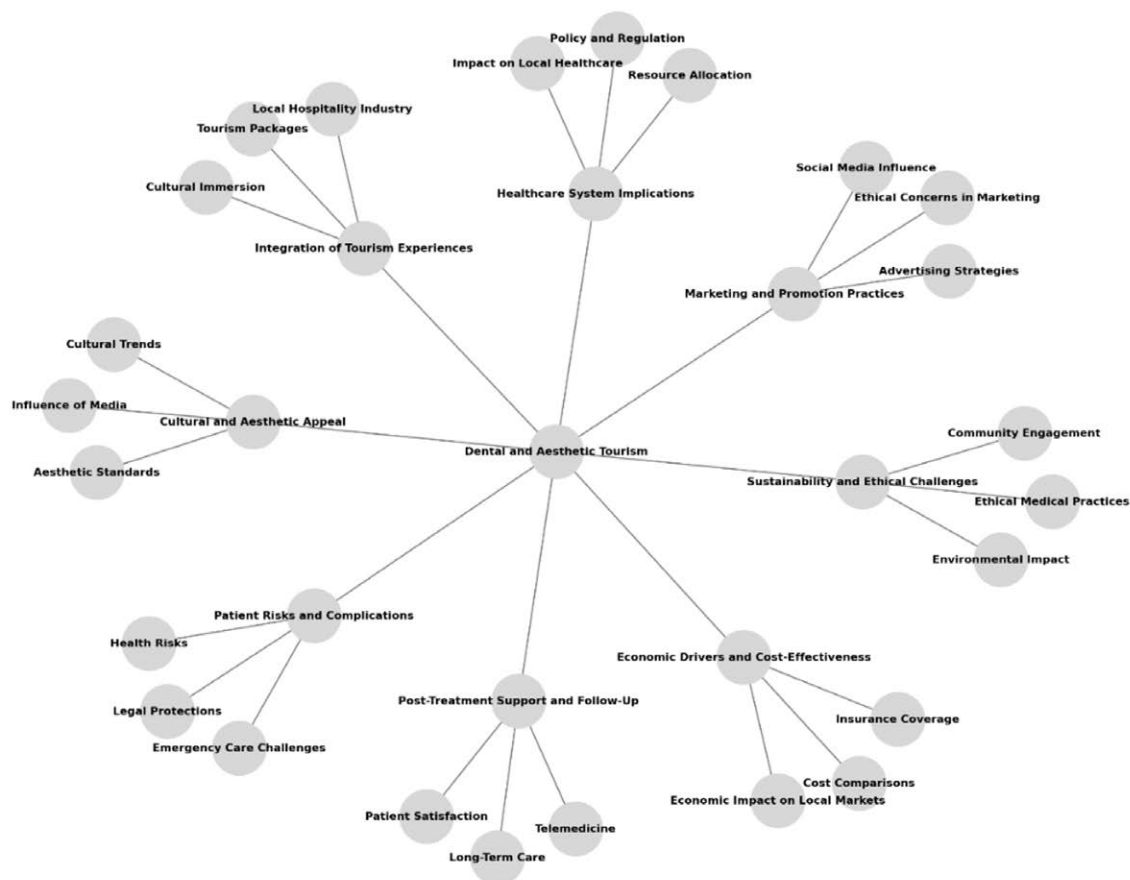
7. Cultural and Aesthetic Appeal:

The authors consider how the influence of a tourist destination's cultural heritage and the beauty of its landscape strengthen the attractiveness of medical tourism offerings.

8. Post-Treatment Support and Follow-Up:

The authors consider how to provide medical care to tourists who have used medical services abroad and returned home. They pay attention to inadequately organised medical protocols and dependence on local medical services.

Figure 2
Hierarchical visualisation of themes and sub-themes in dental and aesthetic tourism



This hierarchical framework categorises key aspects of the main theme, serving as a foundation for evaluation. It provides stakeholders—researchers, policymakers, and industry experts—with a structured approach to addressing the challenges, opportunities, and ethical issues in dental and aesthetic tourism. The sixth step employed thematic definitions to facilitate the analysis phases, presenting codes, frequencies, and citations in a table, followed by sentiment analysis.

Sixth step: Themes, code, frequency and quotes

In Table 3, the authors summarise the main themes identified in the analysis. They provide at least five citations for each theme to ensure a comprehensive understanding, following best practices in qualitative research (Creswell & Poeth, 2018; Wankhade et al., 2022). This approach reveals the complexity of the data by capturing a range of emotions, including strong, neutral, and mild feelings (Patton, 2014; Sandelowski,

1995). While five quotes per theme offer a solid foundation, adding more could highlight nuances and varying tones, ultimately presenting a fuller picture of the data (Braun & Clarke, 2006).

Table 3
Theme, frequency, codes and quotes

Theme	Frequency & frequency category	Associated codes	Illustrative quotes
Economic Drivers and Cost-Effectiveness	45 (high frequency)	Affordable treatment, Cost savings, Bundled packages, Revenue boost, Competitive pricing	- "Lower treatment costs abroad make dental and aesthetic tourism attractive." - "Bundled packages enhance affordability and accessibility." - "Competitive pricing drives medical tourism to emerging destinations." - "Revenue from medical tourism boosts local economies." - "Patients find quality care at lower costs in destinations like Turkey."
Patient Risks and Complications	38 (high frequency)	Infection risks, Postoperative complications, Surgical errors, Implant failures, Quality concerns	- "Postoperative care is often inadequate, leading to increased risks of complications." - "High infection risks are a concern with medical tourism." - "Complications from low-quality implants are prevalent in cosmetic procedures." - "Surgical errors due to under-regulated clinics can harm patients." - "Quality standards in some destinations do not meet global expectations."
Healthcare System Implications	25 (middle frequency)	Healthcare system strain, Financial burden, Revision surgeries, Ethical dilemmas, Policy gaps	- "Home-country healthcare systems face significant strain treating medical tourists' complications." - "Revision surgeries add financial burdens to national health services." - "Ethical dilemmas arise in prioritising medical tourist complications." - "Cross-border care requires better policy frameworks." - "Public health systems are unprepared for imported infections."
Marketing and Promotion Practices	30 (high frequency)	Social media promotions, Misleading ads, Testimonials, Influencer marketing, Discount campaigns	- "Social media heavily promotes affordability, often overlooking critical risks." - "Testimonials are a key factor in influencing patients." - "Discount campaigns attract international patients." - "Influencer marketing is popular in promoting medical tourism destinations." - "Misleading ads exaggerate clinic capabilities."
Integration of Tourism Experiences	28 (middle frequency)	Cultural attractions, Recovery tourism, Seasonal campaigns, Destination recovery plans, Leisure packages	- "Combining medical treatments with leisure tourism increases destination appeal." - "Cultural attractions create memorable recovery experiences." - "Seasonal campaigns offer discounts to medical tourists." - "Post-treatment leisure enhances patient satisfaction." - "Natural beauty boosts medical tourism destinations."
Sustainability and Ethical Challenges	22 (middle frequency)	Eco-friendly practices, Clinic accreditation, Ethical advertising, Resource conservation, Transparency	- "Sustainability practices are essential to balance tourism growth and environmental impact." - "Eco-friendly clinics appeal to conscious tourists." - "Accreditation ensures ethical operations." - "Resource conservation is vital for sustainable medical tourism." - "Transparency builds trust among medical tourists."
Cultural and Aesthetic Appeal	20 (low frequency)	Authentic experiences, Aesthetic labour, Cultural heritage, Landscape appeal, Tourist satisfaction	- "Cultural immersion enhances patient satisfaction during medical tourism." - "Aesthetic appeal of landscapes adds value to tourism destinations." - "Authenticity in cultural experiences attracts patients." - "Local heritage enriches the medical tourism experience." - "Scenic recovery settings improve patient perceptions."
Post-Treatment Support and Follow-Up	18 (low frequency)	Lack of follow-up, Complication management, Home-country dependence, Post-op dissatisfaction, Delayed care	- "Lack of structured follow-up care leaves patients dissatisfied after procedures abroad." - "Delayed complication management worsens outcomes." - "Home-country systems bear the burden of post-op care." - "Clear follow-up protocols are absent in many destinations." - "Patients express frustration with inadequate post-op care."

The first column lists key themes in the analysis related to dental and aesthetic tourism, covering economics, patient injuries, marketing, and post-market surveillance. The second column shows the frequency of each theme, highlighting those that need further investigation. High-frequency themes include economic drivers, Cost-Effectiveness, and Patient Risks and Complications. At the same time, cultural and aesthetic appeal, post-treatment support, and follow-up have lower frequencies but are still significant.

The third column provides codes representing crucial concepts within each theme, such as "misleading promotions" under Marketing and "ethical practices," including "Eco-Friendly Practices," under sustainability. The final column includes five relevant quotes for each theme, reflecting a range of opinions, such as the impact of inadequate post-treatment care on dissatisfaction and the appeal of lower costs overseas.

The authors analytically categorize related topics in Table 3 and provide a more detailed overview using appropriate codes and quotes. This facilitates a deeper understanding of key issues in dental and aesthetic tourism.

Seventh step: Sentiment analysis

As part of the sentiment analysis, the authors analysed the presence of positive, negative or neutral sentiments associated with each identified topic. This assessment aimed to determine the emotional tones (Boukes et al., 2020) and which emotional tone and attitude dominate within the analysed text (Kratzwald et al., 2018). This analysis visually represented the distribution of the identified sentiments by topic (Gandhi et al., 2023). TextBlob (Bonta et al., 2019) was applied, using a defined list of terms to which unique sentiment values are assigned. What needs to be emphasised is that each word influences the final tone of the text (Chandrasekaran & Hemanth, 2022). In Table 4, the authors present the sentiment analysis results by topic.

Table 4
Sentiment analysis

Theme	Sentiment score	Sentiment category	Insights
Economic Drivers and Cost-Effectiveness	0.85	Positive	The overwhelmingly positive sentiment in this section highlights the significant cost savings, affordability, and economic benefits that drive the growth of medical tourism.
Patient Risks and Complications	-0.75	Negative	The negative sentiment in this section serves as a stark reminder of the significant concerns regarding postoperative care, infection risks, and inconsistent quality standards that require immediate attention in the medical tourism sector.
Healthcare System Implications	-0.6	Negative	Sentiments focus on ethical dilemmas, resource strain on home-country healthcare systems, and the lack of international policy frameworks.
Marketing and Promotion Practices	-0.1	Neutral to Slightly Negative	Concerns about misleading advertisements are balanced by the effectiveness of promotional strategies in attracting patients.
Integration of Tourism Experiences	0.7	Positive	The sentiment in this section highlights the potential of combining medical treatments with cultural and leisure tourism to enhance patient satisfaction.
Sustainability and Ethical Challenges	0.05	Neutral	Balanced sentiment highlights the importance of eco-friendly practices and ethical considerations, while acknowledging the challenges in their implementation.
Cultural and Aesthetic Appeal	0.65	Positive	Positive sentiment emphasises the value of cultural immersion, aesthetic labour, and scenic recovery settings in enhancing patient satisfaction.
Post-Treatment Support and Follow-Up	-0.5	Negative	Dissatisfaction arises from a lack of follow-up care, delayed complication management, and dependence on home-country systems for post-op support.

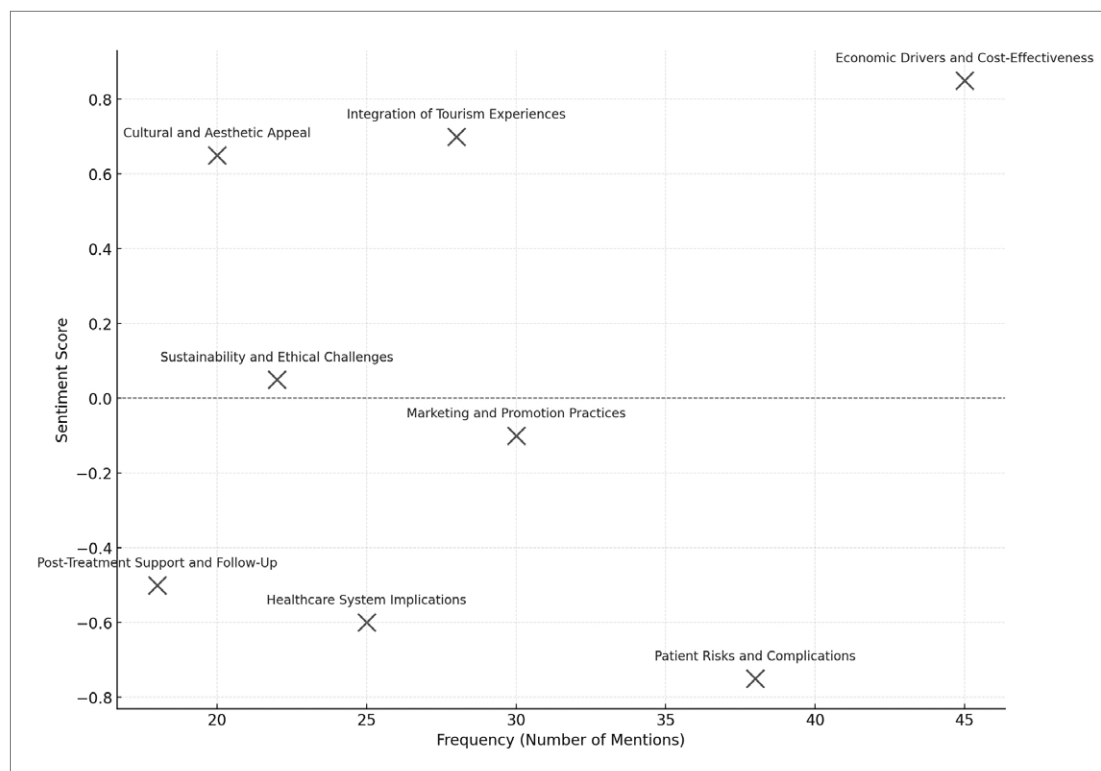
Evaluating the average sentiment of quotes (Taboada et al., 2011) is essential for providing a clearer understanding of the sentiment analysis findings in Table 4. This section outlines key findings about sentimental values and their implications. The sentiment analysis was conducted using a combination of natural language processing techniques and sentiment lexicons, enabling a comprehensive evaluation of the sentiment scores.

Dental and aesthetic tourism, as segments of medical tourism, are experiencing significant growth and development worldwide due to the increased availability of medical services at more favourable or competitive prices and the greater comfort of patients during their stay at the destination. To continue their successful growth, it is necessary to analyse the situation to identify opportunities and challenges for future development. By utilising medical tourism services, patients can access high-quality medical care in developed destinations such as Croatia and Turkey at affordable prices. It is undoubtedly necessary to highlight the creation of new jobs, as well as the improvement of healthcare standards, which have a positive impact on the local economy.

Medical service providers strive to develop their offerings of medical services at prices that are acceptable to patients. This should be approached with great caution, considering potential risks (development of infections, errors in surgical procedures, etc.). Poorly developed quality standards, or their absence, can also significantly contribute to this. Complications arising from the use of medical services abroad can have negative implications for the domestic healthcare system, leading to ethical dilemmas. The importance of marketing activities in medical tourism is twofold: a) they attract the attention of potential users, highlight the advantages and benefits of medical services, and encourage them to use them, and b) they significantly influence how patients perceive the risks involved in using them, which reduces the contrast between their expectations and the outcome. In addition to the standard use of medical services, patients are often interested in new experiences based on the destination's cultural heritage and tradition, contributing to their satisfaction during their stay.

However, there is also the problem of the sustainability of the tourist destination. The growing number of tourist trips motivated by medical services can have negative implications for the destination's economic system and contribute to the development of over-tourism. In such cases, special attention should be paid to developing and implementing ecological strategies that are crucial for establishing a balance between the provision of medical services and the development of tourism in the destination. The expansion of the dental-aesthetic tourism industry must address ethical, social, and environmental factors while maintaining profitability. Stakeholders should prioritise Transparency to build trust. While there are cost advantages and positive cultural interactions, it is crucial to tackle risks associated with post-procedural care. Balancing the appealing benefits, such as affordability and improved patient experiences, against potential risks is essential. By focusing on sustainability and effective follow-up measures, the sector can thrive, benefiting patients and providers while becoming a lucrative global industry. In the final step, a scatter plot was prepared using MATLAB to display the sentiment scores for the different aesthetic and dentist tourism themes, including the main aspects, as shown in Figure 3.

Figure 3
Semantic analysis of themes vs. frequencies



The scatter plot illustrates the relationship between sentiment scores and the frequency of mentions for each theme. Key features include:

1. Frequency + Sentiment - The Themes Placed:
 - Themes have positive sentiment (i.e., placed above the zero horizontal neutral line).
 - Negative Sentiment Themes (e.g. Patient Risks and Complications) are below the neutral line.
2. Text Labels:
 - Each point is labelled with the theme it belongs to.
3. Insights on Frequency and Sentiment:
 - High-frequency themes (on the right-hand side of the chart) are usually more important in conversations.
 - The sentiment scores of the themes are too high (either highly positive or highly negative), so devote more attention.

This is useful for understanding which themes are the most discussed and how they are perceived. Sentiment score and frequency analysis provide valuable insights into the strengths, weaknesses, and opportunities available to dental tourism and aesthetics. Based on these findings, here are the strategic priorities and corresponding recommendations. For instance, based on the high sentiment score and frequency of mentions, it is recommended that the focus be on promoting the financial benefits of medical tourism. Similarly, the negative sentiment themes highlight areas for improvement, such as enhancing patient safety measures and improving post-procedure care.

1. Key Findings
 - a) Top Positive Themes by Impact:
 - Financial considerations, including cost-effectiveness: With a high sentiment score (0.85) and mention frequency (45), consumers appreciate affordability and package deals.
 - Patients travel overseas for treatment primarily due to the cost savings and value for money.
 - Tourism experience integration: Medical Tourism + Leisure (21 mentions) + Culture (7 mentions) = a high positive sentiment score of 0.70, with a moderate frequency of mentioning, which suggests effectiveness in appeal.
 - Psychologically, patients appreciate a better embargo of aesthetic or cultural features to help recover from surgery.
 - b) Sentiment Themes (negative)
 - Patient Factors and Adverse Events: Negative sentiment (-0.75) and frequency (38 mentions); safety-inflexion inconsistency, with a significant potential for infection risk in the field.
 - Follow-Up Support and Treatment: The negative sentiment (-0.50) and low frequency (18 mentions) indicate dissatisfaction with post-procedure care and reliance on healthcare systems within the patient's home country for follow-up support and treatment.
 - c) Neutral and Mixed Sentiments
 - Sustainability of Ethical Problems: Neutral (0.05) and spectrum presence are strong signals, with a mention frequency of 22x, which denotes an acknowledgement of ethical dilemmas regarding the impact of sustainability on anthropocentric needs.
 - Marketing Strategies: A neutral to slightly negative sentiment (-0.10) indicates that marketing is perceived as effective yet elicits thoughts about deceptive advertising.

- d) Emerging Opportunities:
- Appeal of Heritage and Culture: Positive (0.65) but infrequent (20 mentions); opportunity to market cultural heritage and beautiful recovery environments that attract patients.
2. Strategic Insights
- a) Monetise Economic storehouses:
- Focus on cost-effectiveness and competitive pricing in the advertisements.
 - Collaborate with insurance companies to offer policies designed for medical tourism.
- b) Triage the Safety of Patients:
- Establish international standards of accreditation to ensure uniformity in quality and safety.
 - Enhancing education about risks, infection prevention protocols and postoperative care among the patients.
 - Offer insurance that covers complications or revision surgery when needed.
- c) Reinforce Follow-Up Care:
- General measure: develop organized follow-up protocols, remote consultation with telemedicine, and partner with healthcare providers in home countries for appropriate post-surgical care.
 - Identify and document blunt responsibilities for, among others, follow-up care before starting the treatment.
- d) Improve integration of tourism efforts:
- Develop holistic packages that combine natural beauty, art, culture, and recreational options into a comprehensive, unified offering.
 - Collaborate with local tourism and hospitality sectors to promote a flawless patient journey.
- e) Committed to something Sustainable:
- Implement sustainability programs, such as renewable energy initiatives and waste reduction projects, for clinics.
 - Create Transparency to win consumer trust with people-first approaches. Hiring locals and buying materials from local suppliers helps stimulate the regional economy.
- f) Make Marketing Strategies more precise:
- Create an ideal campaign to avoid misleading representation.
 - Collaborate with credible influencers and health professionals for effective marketing campaigns.
 - Make the best use of patient reviews/testimonials to create trustworthiness.
- g) Capitalise on the culturally relevant for expansion:
- Promote destinations that offer a natural environment adequate for healing and integrate the cultural experiences of local or regional communities into individual recovery plans.
 - Picturesque locations such as natural landscapes or historical places.
3. Prioritisation to act upon
- a) Addressing the Immediate Issues:
- Consumer sentiment analysis reveals a strong negative sentiment expressed by consumers regarding "Patient Risks and Complications" and a weak performance in related content. It is necessary to focus on supporting these areas or closely tie them together with "Post-Treatment Support."

- b) Expansion Opportunities:
 - Bring in tools to enhance the integration of Tourism Experiences and cultural heritage, appealing to a broader demographic reach.
- c) Commitment to Sustainable & Ethical:
 - We can lead the effort to normalize industry practices in response to growing global environmental awareness by effectively addressing sustainability-related issues and tackling ethical challenges head-on. By doing so, we can help the industry navigate significant challenges and seize growth opportunities, while providing a more comprehensive experience that better meets patients' needs.

Eighth step: Integration and synthesis of results

The thematic and sentiment analyses provided a comprehensive overview of interactions between dental and aesthetic tourism, linking key themes to sentiments for actionable insights.

1. High-Level Themes and Interrelations:

- Economics-Based Cost Effectiveness: This recurring theme, with a positive sentiment, highlights the appeal of affordable, high-quality care. In a decision-making process, the cost evaluation may outweigh the potential risks to the patient.
- Complications and risks for the patient: This is a significant negative theme, reflecting concerns about regulatory and postoperative issues related to post-treatment support and systemic healthcare challenges.
- Implications for the healthcare system: Medical tourism services can still pose significant challenges for the healthcare system in the countries where tourists reside, as even a favourable outcome may necessitate additional support during the recovery period.
- Marketing and promotional activities: When forming marketing strategies, special attention should be paid to Transparency and adherence to ethical principles (implementation of ethical marketing). Potential patients will be provided with clear and precise information about medical services, which can contribute to reducing feelings of fear and anxiety.
- Combining medical and tourist services during a stay in a destination: After utilising medical services, patients can explore the cultural and historical heritage or engage in recreational activities during their stay at the destination. In doing so, the sustainability of the destination must be considered.
- Challenges related to ethics and sustainability principles: Adhering to ethical practices and sustainability principles is a prerequisite for successfully developing (medical) tourism offerings.
- The importance of culture and aesthetics in a destination: Although under-researched, this topic highlights how exploring cultural and historical heritage increases tourists' sense of satisfaction during their recovery in a destination.
- Providing medical support and monitoring recovery progress: This topic highlights the lack of continuous medical care for a more successful recovery. Monitoring recovery progress needs to be improved to reduce risks for patients.

The interconnectedness of previously linked topics highlights their complexity and the potential for improvements in aesthetic and dental tourism.

2. Synthesis of Sentiments

The authors identified apparent differences between positive and negative topics by conducting sentiment analysis.

- Facilitative aspects imply combining medical services with new experiences related to cultural and historical heritage during a stay in the destination. These trips are financially beneficial for patients and enhance their overall well-being.
- Among the negative topics, the authors identified risks for patients, weak regulation of medical support after medical treatments, and their negative impact on the health system. Ways of improvement must be considered to achieve greater success in the tourism market.
- Ethical and sustainability challenges are neutral or mixed topics. Dealing effectively with these challenges and practicing adequate marketing practices will enable further development of the medical tourism offer.

3. Broader Implications

a) Financial incentives and experience stimuli

The number of medical tourism trips is expected to continue growing significantly, thanks to the ongoing improvement of medical services at more affordable prices. Combining medical services with other forms of offers at the destination (based on cultural and historical heritage, gastronomy, recreation, etc.) will increase the satisfaction of medical tourists and the destination's attractiveness in the tourist market.

b) Systemic Issues

The study's results suggest the need for a more robust regulatory framework and enhanced information exchange among medical service providers at the international level. Utilising state-of-the-art tools for postoperative patient support can mitigate the risks associated with patients seeking medical services abroad.

c) Ethics & Sustainability

To ensure the sustainable growth of the medical tourism industry, it is essential to enhance the quality of communication and management systems while promoting environmental awareness and sustainability. Tourism destination stakeholders must strive to balance profits with positive impacts on the destination's environment and community.

3. Stakeholder Recommendations

a) Healthcare Providers

Healthcare providers must strive to enhance patients' support systems after they have utilised medical services at the destination. This can be achieved by establishing global cooperation to reflect on and improve the quality of medical care over time.

b) Policymakers

Policymakers need to develop a robust and high-quality management system that enables the efficient provision of medical services across borders, while minimising negative implications for the local healthcare system in the patient's country of origin.

c) Tourism Boards

Tourism boards must actively promote the environmental awareness of a destination by using environmentally friendly promotional practices.

3. Discussion

The authors emphasise the complexity of dental and aesthetic tourism research in Europe. To assess the sustainability of the medical tourism industry, various aspects are considered, with a focus on patient safety,

financial factors, and marketing strategies. Thematic and sentiment analysis linked research results with practical industry examples. Key topics identified include finances, healthcare system implications, patient risks, marketing strategies, travel experiences, cultural attractions, environmental challenges, and post-service support. Patient risks, financial factors, challenges, and development opportunities are prominent topics. Economic factors highlight the cost-effectiveness of dental tourism. Due to lower prices, patients from Western Europe often opt for dental and cosmetic services in Croatia, Hungary, and Turkey. This trend benefits patients seeking affordable medical services and boosts the local economy of host destinations. Connell (2015) and Pforr et al. (2020) emphasise the importance of medical service prices in tourists' destination choices. Conversely, Yilmaz and Aktas (2021) argue that low prices may obscure risks, such as service complications and quality concerns, which are exacerbated by patients' limited knowledge of European regulatory practices. Clear information and stricter safety regulations can mitigate these risks. Medical tourism can strain the healthcare system of the patient's home country, especially if complications arise from services abroad (Virani et al., 2020).

Additionally, the social impacts of medical tourism are substantial (Hanefeld et al., 2014). Marketing strategies are essential for promoting dental and aesthetic tourism, but ethical issues must be addressed to prevent false advertisements that exaggerate outcomes and minimise risks. Social media and influencer marketing can erode patient trust. This study found a lack of scientific research on medical services in European tourist destinations, which attract tourists with affordable treatments and unique cultural experiences, enhancing satisfaction. European destinations leverage natural, cultural, and historical resources to develop tourism products alongside medical services. Concerns about sustainability and resource impact necessitate innovative development activities that integrate sustainability into healthcare management and health-motivated travel (Hanefeld et al., 2015; Figueiredo et al., 2024; Gajić et al., 2023; Fritz, 2021). The study emphasises the role of cultural and historical resources in patient satisfaction, with European destinations using these to create a healthy environment and foster connections (Pforr et al., 2020). Sentiment analysis revealed mixed sentiments, with some positive aspects regarding cultural experiences and cost savings from affordable medical services. However, post-service medical care regulation deficiencies force patients to rely on healthcare in their home country. Research by Verra et al. (2016) and Androutsou and Metaxas (2019) suggests that European destinations face challenges in international healthcare coordination, underscoring the need for enhanced cooperation and teamwork.

Sentiment analysis reveals ambivalence towards medical tourism, appreciating its affordability and cultural benefits, but critiquing the risks to patient safety and the burdens on the healthcare system. Profit motives may compromise patient care, and complications from abroad can overtax local health services, particularly those that lack international care standards (Hanefeld et al., 2012; Crooks et al., 2015). Marketing efforts, including social media and celebrity endorsements, risk ethical dilemmas by overstating the affordability and success of products (Crooks et al., 2011). Poor post-treatment support and follow-up also exacerbate problems and increase patient distress (Eissler & Casken, 2013; Snyder et al., 2011).

4. Conclusions

European dental and cosmetic tourism is growing in the international tourism market, primarily due to the affordability of medical services and the opportunity to enjoy additional services during their stay at the destination. However, their development also causes ethical dilemmas and overloads the healthcare system of the tourists' country of origin. Numerous European destinations, such as Croatia and Hungary, have recognised their advantages and are actively developing their medical tourism offers, while offering additional services based on new experiences. Specific challenges have also been identified, including inadequate medical support during the tourist recovery period and poorly formed regulatory frameworks, which increase the risk for tourists when using medical services abroad. At the same time, it makes it

challenging to coordinate the provision of medical care across borders in Europe. It has been determined that offering medical services at lower prices and the attractiveness of the destination's culture create positive sentiments, while concerns about patient safety create negative feelings. The medical tourism sector also faces sustainability issues and ethical challenges, necessitating a more effective regulatory approach. Future development of the destination's tourism policy should focus on enhancing patient safety systems, implementing a more effective management system that adheres to sustainability principles, and engaging in targeted marketing activities. In this study, the authors primarily used secondary data related to Europe, offering insight into the current situation. However, this approach also has its limitations, making it necessary to highlight the lack of quantitative data required for a comparative analysis between regions. The authors believe that future research should focus on examining patients' attitudes and considering their perspectives, investigating regulatory frameworks in more detail, and assessing the implications of medical tourism. It is also advisable to conduct comparative studies between European and non-European destinations to determine which practices best contribute to achieving competitive advantages in the tourism market and to identify the challenges they face. This approach to development would enable the formation of a sustainable medical tourism market that balances the achievement of economic growth for the destination with its ethical responsibilities.

Acknowledgements

This paper presents the results of research conducted as part of the scientific research project initiative of the University of Rijeka (ZIP UNIRI) under the title "Perception of Kvarner as a tourist destination for beauty and health", (project code ZIP-UNIRI-116-3-23), project leader Romina Alkier Tomić, Ph.D., Full Professor at the Faculty of Tourism and Hospitality Management, University of Rijeka. This project was financed by the University of Rijeka.

References

- Alejandro, A., & Zhao, L. (2024). Multi-method qualitative text and discourse analysis: A methodological framework. *Qualitative Inquiry*, 30(6), 461-473. <https://doi.org/10.1177/10778004231184421>
- Ancy, R.J., Shenoy, R.P., Jodalli, P.S., & Pasha, I.M. (2020). Benefits of medical and dental tourism - A review. *Journal of Dental and Medical Sciences*, 19(3), 26-31.
- Androutsou, L., & Metaxas, T. (2019). Measuring the efficiency of the medical tourism industry in EU member states. *Journal of Tourism Analysis: Revista de Análisis Turístico*, 26(2), 115-130. <https://doi.org/10.1108/JTA-02-2019-0006>
- Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative research*, 1(3), 385-405. <https://doi.org/10.1177/146879410100100307>
- Bandara, W., Furtmueller, E., Gorbacheva, E., Miskon, S., & Beekhuizen, J. (2015). Achieving rigour in literature reviews: Insights from qualitative data analysis and tool-support. *Communications of the Association for Information Systems*, 37, 154-204. <https://doi.org/10.17705/1CAIS.03708>
- Bonta, V., Kumaresh, N., & Janardhan, N. (2019). A comprehensive study on lexicon-based approaches for sentiment analysis. *Asian Journal of Computer Science and Technology*, 8(S2), 1-6. <https://doi.org/10.51983/ajcst-2019.8.S2.2037>
- Boukes, M., van de Velde, B., Araujo, T., & Vliegenthart, R. (2020). What's the tone? Easy doesn't do it: analysing performance and agreement between off-the-shelf sentiment analysis tools. *Communication Methods and Measures*, 14(2), 83-104. <https://doi.org/10.1080/19312458.2019.1671966>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Chandrasekaran, G., & Hemanth, J. (2022). Deep learning and TextBlob based sentiment analysis for Coronavirus (COVID-19) using Twitter data. *International Journal on Artificial Intelligence Tools*, 31(01), Article 2250011. <https://doi.org/10.1142/S0218213022500117>

- Connell, J. (2015). From medical tourism to transnational health care? An epilogue for the future. *Social Science & Medicine*, 124, 398-401. <https://doi.org/10.1016/j.socscimed.2014.11.015>
- Creswell, J.W. (1998). *Qualitative inquiry and research design: Choosing among five traditions*. SAGE Publications, Inc.
- Creswell, J.W., & Poth, C.N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications, Inc.
- Crooks, V.A., Turner, L., Snyder, J., Johnston, R., & Kingsbury, P. (2011). Promoting medical tourism to India: Messages, images, and the marketing of international patient travel. *Social Science & Medicine*, 72(5), 726-732. <https://doi.org/10.1016/j.socscimed.2010.12.022>
- Crooks, V.A., Casey, V., Whitmore, R., Johnston, R., Snyder, J. (2015). Examining Canadian medical tourists' interactions with health care workers abroad. In N. Lunt, J. Hanefeld, & D. Horsfall (Eds.), *Elgar Handbook on Medical Tourism and Patient Mobility* (pp. 830-848). Edward Elgar Publishing.
- Das, J., & Hammer, J. (2014). Quality of primary care in low-income countries: Facts and economics. *Annual Review of Economics*, 6, 525-553. <https://doi.org/10.1146/annurev-economics-080213-041350>
- Eissler, L.A., & Casken, J. (2013). Seeking health care through international medical tourism. *Journal of Nursing Scholarship*, 45(2), 177-184. <https://doi.org/10.1111/jnu.12014>
- Figueiredo, N., Abrantes, J.L., & Costa, S. (2024). Mapping the sustainable development in health tourism: A systematic literature review. *Sustainability*, 16(5), Article 1901. <https://doi.org/10.3390/su16051901>
- Fritz, Z. (2021). Solidarity, sustainability and medical ethics. *Journal of Medical Ethics*, 47(2), 63-64. <https://doi.org/10.1136/medethics-2021-107221>
- Gajić, T., Minasyan, L.A., Petrović, M.D., Bakhtin, V.A., Kaneeva, A.V., & Wiegel, N.L. (2023). Travelers' (in)resilience to environmental risks emphasised in the media and their redirecting to medical destinations: Enhancing sustainability. *Sustainability*, 15(21), Article 15297. <https://doi.org/10.3390/su152115297>
- Gandhi, A., Adhvaryu, K., Poria, S., Cambria, E., & Hussain, A. (2023). Multimodal sentiment analysis: A systematic review of history, datasets, multimodal fusion methods, applications, challenges and future directions. *Information Fusion*, 91, 424-444. <https://doi.org/10.1016/j.inffus.2022.09.025>
- Hanefeld, J., Horsfall, D., Lunt, N., & Smith, R. (2012). Medical tourism: A cost or benefit to the NHS? *PLOS ONE*, 8(10), Article e70406. <https://doi.org/10.1371/journal.pone.0070406>
- Hanefeld, J., Lunt, N., Smith, R., & Horsfall, D. (2015). Why do medical tourists travel to where they do? The role of networks in determining medical travel. *Social Science & Medicine*, 124, 356-363. <https://doi.org/10.1016/j.socscimed.2014.05.016>
- Hanefeld, J., Smith, R., Horsfall, D., & Lunt, N. (2014). What do we know about medical tourism? A review of the literature with discussion of its implications for the UK National Health Service as an example of a public health care system. *Journal of Travel Medicine*, 21(6), 410-417. <https://doi.org/10.1111/jtm.12147>
- Kratzwald, B., Ilić, S., Kraus, M., Feuerriegel, S., & Prendinger, H. (2018). Deep learning for affective computing: Text-based emotion recognition in decision support. *Decision support systems*, 115, 24-35. <https://doi.org/10.1016/j.dss.2018.09.002>
- Patton, M.Q. (2014). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). SAGE Publications, Inc.
- Pforr, C., Locher, C., Volgger, M., & Bialk-Wolf, A. (2020). The nexus between medical tourism and health policy: A comparative case analysis of Australia, Germany, Italy and Poland. *International Journal of Tourism Policy (IJTP)*, 10(3), 244-261. <https://doi.org/10.1504/IJTP.2020.111289>
- Roblek, V., & Dimovski, V. (2024). Essentials of 'the Great Reset' through complexity matching. *Systems*, 12(6), Article 182. <https://doi.org/10.3390/systems12060182>
- Saldaña, J. (2009). *The coding manual for qualitative researchers*. SAGE Publications Ltd.
- Sandelowski, M. (1995). Focus on qualitative methods: Sample size in qualitative research. *Research in Nursing & Health*, 18(2), 179-183. <https://doi.org/10.1002/nur.4770180211>

- Snyder, J., Crooks, V.A., Johnston, R., & Kingsbury, P. (2011). What do we know about Canadian involvement in medical tourism? A scoping review. *Open Medicine*, 5(3), 139-148.
- Taboada, M., Brooke, J., Tofloski, M., Voll, K., & Stede, M. (2011). Lexicon-based methods for sentiment analysis. *Computational Linguistics*, 37(2), 267-307. https://doi.org/10.1162/COLI_a_00049
- Verra, S.E., Kroeze, R., & Ruggeri, K. (2016). Facilitating safe and successful cross-border healthcare in the European Union. *Health Policy*, 120(6), 718-727. <https://doi.org/10.1016/j.healthpol.2016.04.014>
- Virani, A., Wellstead, A.M. & Howlett, M. (2020). The north-south policy divide in transnational healthcare: A comparative review of policy research on medical tourism in source and destination countries. *Globalization and Health*, 16, Article,37. <https://doi.org/10.1186/s12992-020-00566-3>
- Wankhade, M., Rao, A.C.S., & Kulkarni, C. (2022). A survey on sentiment analysis methods, applications, and challenges. *Artificial Intelligence Review*, 55(7), 5731-5780. <https://doi.org/10.1007/s10462-022-10144-1>
- Williams, M., & Moser, T. (2019). The art of coding and thematic exploration in qualitative research. *International Management Review*, 15(1), 45-55.
- Yılmaz, V., & Aktas, P. (2021). The making of a global medical tourism destination: From state-supported privatisation to state entrepreneurialism in healthcare in Turkey. *Global Social Policy*, 21(2), 301-318. <https://doi.org/10.1177/1468018120981423>

Submitted: December 17, 2024

Revised: May 21, 2025

Accepted: May 27, 2025