

Ethics in Healthcare Marketing: A Bibliometric Analysis

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Abstract. *The purpose of this article is to identify how the main themes and theoretical foundations regarding ethics in healthcare marketing have evolved. This paper presents a bibliometric analysis of the specialized literature, considering the spatial and temporal dimensions of the works analyzed. To conduct the study, data were collected from the Web of Science Core Collection using the search terms $S=$ ("healthcare"), $TS=$ ("ethical marketing"), and $TS=$ ("marketing") for the period 2010–2025, limited to works published in English. The final set included 500 articles with complete metadata, such as authors, keywords, affiliations, and cited references, following the screening of titles and abstracts. The analyses were conducted in VOSviewer using the following tools: (1) a citation network of references to identify foundational and recently influential works; (2) a bibliographic coupling at the country level to describe international connectivity; (3) WoS descriptive indicators on disciplinary categories, document types, and index coverage; and (4) co-occurrence maps of terms and keywords overlaid on the average year of publication to highlight conceptual structure and trends. The findings suggest a complex conceptual framework focused on marketing, ethics, and trust, based on the idea that trust serves as a bridge between consumers' purchasing decisions or actions and effective marketing communication. As a result of the development of artificial intelligence and digitalization, in recent years there has been a shift in focus toward governance-related concerns, such as privacy, security, accountability, and informed consent. With concentrated contributions in Europe and recent expansion in Asia/the Middle East, the US serves as a major global hub. In terms of patient vulnerability, manipulation, and data control in digital marketing, the study identifies future directions.*

Keywords: Healthcare, Marketing, Ethics, Digital Transformation, Artificial Intelligence.

Introduction

Digital transformation and the integration of artificial intelligence have driven the evolution of healthcare marketing as a key pillar for communicating with and informing patients about their health. However, there is a fine line between the benefits of integrating artificial intelligence into healthcare marketing and the numerous ethical issues it raises. This is because consumers are vulnerable, and the health information communicated has a powerful and direct impact on their health and well-being. Thus, ethics is an essential component of health marketing practices, which is why it is necessary to ensure transparency of information, protect personal data, and maintain trust between healthcare providers and patients.

Literature review

Definition of ethics in healthcare marketing

Marketing in the healthcare sector differs from other industries, mainly due to its sensitive and vulnerable nature, but also because of its purpose. The healthcare sector is concerned with protecting and improving the physical and mental well-being of individuals. This leads to much stricter regulation of ethical policies in health marketing. The objective of marketing in this case is to promote medical services and products in a fair, honest, and responsible manner to inform and educate the population, thus diminishing commercial interest.

Ethics serves an important role in maintaining social responsibility in health marketing. Through a set of moral principles, ethics is essential in health marketing to protect and prevent manipulation, misinformation, or exploitation of individuals' vulnerabilities.

In the healthcare industry, consumers are predominantly vulnerable because they are often dependent on information and driven by necessity, not necessarily desire. Parkinson and Davey (2023) reinforce the role of health marketing by defining it as a field that uses science-based strategies to protect and promote the health of individuals and communities for their benefit. Another perspective presented by the two authors focuses on the emergence of new ethical challenges with the development and integration of new technologies based on artificial intelligence in medical processes and health marketing.

To analyze compliance with ethical standards, four fundamental principles are considered: respect for autonomy, non-maleficence, beneficence, and justice. Each of these has an important role in respecting the individual and their autonomy in making informed decisions in accordance with their own wishes and needs. Respect for autonomy means recognizing a person's right to make their own decisions and choices. Non-maleficence means respecting the obligation not to intentionally cause harm to others. Beneficence expresses the obligation to act for the benefit of others, including preventing and eliminating harm. And justice requires a legal framework so that benefits, risks, and costs are distributed fairly. Health marketing professionals are required to consider these principles when planning marketing strategies (Beauchamp & Childress, 2020).

Another key element in health marketing, besides compliance with ethical principles, is the involvement of medical staff in marketing processes. Malshe et al. (2025) conducted qualitative research in 40 health organizations. As a result, they identified three main obstacles to the implementation of the marketing strategy. The first obstacle is idea dilution, more specifically the way in which the message loses its clarity and power once it is transmitted and adapted by several parties. Another obstacle is tactical disconnect, which highlights the importance of the discrepancy between the formulated strategy and the tactics used to implement it. In addition to this, there is also enactment discord, which highlights the difference between the theoretical objectives of the organization and what actually happens in practice. Most of these obstacles arise when medical staff hesitate to get involved in promoting hospital services because they feel that this compromises patient trust and prioritizes the commercial interests of the organization over the well-being of patients.

A systematic review of empirical literature from 1990 to 2021 conducted by Limbu and Huhmann (2022) confirms that there is a difference in perception of health marketing between marketing specialists and medical specialists. Thus, while doctors believe it is necessary to focus on individual non-maleficence, marketing specialists target general benefit and utilitarianism.

Ultimately, ethics in medical marketing is essential to balance an organization's commercial objectives with their responsibility to the health and well-being of patients. The medical field is

sensitive, and beneficiaries are very susceptible to marketing tactics. For this reason, it is necessary to use appropriate, clear, and responsible communication practices.

Transparency and trust in healthcare marketing

For marketing to be effective in healthcare, it is important to focus on consumer perceptions. This is why transparency of information and consumer trust are fundamental in creating marketing strategies and strengthening the relationship between healthcare providers and patients.

In this regard, Horoszko et al. (2025) demonstrate in their article how the degree of patient trust is directly influenced by the transparency and accuracy of the information provided by healthcare organizations. Doctors have an important role in strengthening consumer trust by informing them based on science and improving their well-being. This aspect is explored in depth in the work of Bruns and Kim (2025), which notes that contradictory recommendations from experts generate confusion among consumers. The same thing happens when there are discrepancies between the information communicated in marketing messages and that provided by medical specialists. The two authors' paper presents an example in which, due to a lack of sufficient information about cancer screening and a need for clarity, consumers searched for information on social media. Subsequently, a much greater intention to engage in preventive behaviors (such as cancer screening) was also observed.

Given the significant development of the digital environment, healthcare organizations have adapted the way they communicate with the public. Digital marketing tools, as well as social media, have become essential means by which organizations can inform, promote, and interact with patients. Social media has become a solid foundation for communicating medical information, educating the public, and strengthening relationships between healthcare providers and consumers. As a result, marketing messages become more widely known and have an impact on consumers' decision-making.

However, the speed at which information spreads, the contribution of algorithms to content prioritization, and the difficulty of distinction between promotion and information are some of the main ethical issues associated with the use of social media in healthcare marketing. Digital marketing practices can contribute both to increased transparency and trust, as well as to the spread of incomplete or misleading information in an environment characterized by information asymmetry and consumer vulnerability.

In this direction, to draw attention to the importance of ethical principles in health marketing, Baldassarre and Palmer (2025) analyzed 31 TV commercials from 2019-2024 from leading cancer centers in the US, comparing them with the ethical guidelines of US medical organizations (American Medical Association and American Society of Clinical Oncology). It was found that more than half (52%) of the advertisements explicitly violated ethical guidelines. The most common ethical issues were creating unrealistic expectations (36%), suggesting treatment exclusivity (13%), and unclear eligibility criteria (13%). The conclusion is that commitment to ethical standards is crucial; they are insufficient on their own. This is especially true when it comes to the marketing of fragile medical specialties such as oncology, where advertisements target emotionally and epistemically vulnerable patients. These unethical practices may affect the informed consent process and cause patients to make choices that do not align with their needs or intentions.

Furthermore, through technology, platforms are able to collect data about the preferences and behavior of online users, which they then use in their marketing strategies. These practices violate patient autonomy and ignore the limits of informed consent (Mühlhoff and Willem, 2023).

The integration of technology in healthcare is beneficial for diagnosis and treatment, but it raises major ethical challenges regarding the massive collection of health data that may end up in the control of entities outside the formal healthcare system (Mennella et al., 2024). Many hospitals do not have the necessary documentation to obtain proper informed consent for patient stories that are used for online promotion (69% of hospitals do not have documentation). Also, it was discovered that 89% of hospital websites did not provide explicit consent to share user data with third-party marketers (Famila et al., 2025). To properly balance business objectives with medical ethics and sustain patient trust, hospitals must establish flexible regulations that protect the integrity of the patient-provider relationship.

Regarding consumer attitudes toward the integration of AI in healthcare, patients face uncertainty when technologies are used in clinical decisions or interventions, being more comfortable with the use of AI for administrative tasks (Witkowski et al., 2024). Thus, there is a need to communicate through advertising materials that AI is a support tool for doctors, not an independent decision-making factor, respecting the principle of patient autonomy.

Extra attention should be paid to the use of AI in digital health marketing. Abby Sen et al. (2025) argue that digital marketing needs to address a hybrid human-AI moderation approach because AI cannot make distinctions within the complex context of health. This allows it to promote false and misleading advertisements with information that is harmful to health, which affects consumer confidence.

Therefore, ethical marketing in the health field requires active collaboration between health organizations and social media sites in an effort to transform these online platforms into positive mediators of medical information. Since algorithms have a big influence on content visibility, material should come from reliable sources like the scientific community, government agencies, and medical practitioners. This strategy can lessen the dissemination of false information and raise public awareness of health-related issues.

In the end, social media marketing for health can be used responsibly to boost public confidence in medical practitioners. This can help promote preventive behaviors and informed health decisions.

Manipulation and vulnerability in healthcare marketing

Healthcare marketing often focuses more than it should on the commercial aspect, taking advantage of consumers' emotional state, lack of information, or patient fear increasing sales. In this case, marketing communications exaggerate the benefits, omit the risks or limitations of products or services, falsely invoke studies, or apply emotional and time pressure.

In this regard, it is important to clearly distinguish between illegal manipulation and legitimate persuasion. Trzaskowski (2024) differentiates between the two in his study, noting that both aim to influence consumer behavior or purchasing decisions. However, manipulation uses techniques such as dark patterns, where the advertising interface is designed in such a way as to compromise the user's autonomy, forcing them to act against their own reasoning or give consent that is not honest (e.g., forcing a choice through unnecessary complexity or by exploiting cognitive biases).

Furthermore, algorithms can be used to target advertising; more specifically, algorithms predict users' characteristics based on their online consumption behavior and display ads according to their needs and preferences. Although this can be beneficial because the information is transmitted to users who are interested in it at that moment, it can also raise questions about its ethical standards. For example, marketers can exploit individuals' vulnerabilities to increase sales.

This happened in the case of Uber, which adjusted its offers for users with low phone battery, creating a greater need for the service (Strycharz et al., 2025).

Another important point is the use of the metaverse in health marketing. The metaverse is a digital virtual space based on technologies such as virtual reality and augmented reality. Its objective is to improve the efficiency of the educational and medical process, but it is most often used in marketing and medical communication. The metaverse collects highly sensitive biometric data and can influence subconscious behaviors, thus increasing the risk of commercial manipulation. This raises questions about compliance with ethical principles (Bhatt & Jhavar, 2025).

This perspective opens the discussion to the use of mental health chatbots (MHCBS) that mimic human therapists and can lead to user overload and deception. Chatbot companies (MHCBS) use advertising to present themselves as immediate solutions in therapy, as other general wellness products do, so that they can avoid strict regulations. This difference raises a significant ethical issue: aggressive promotion combined with anthropomorphic design can affect user autonomy and lead to poorly informed mental health decisions (Leis, 2025).

Although ethics provides the moral framework for protecting individuals, there are a few challenges in determining which marketing techniques are acceptable and which are not.

Regulations and privacy in marketing

To limit manipulation and violations of consumer autonomy, major organizations have imposed strict regulations regarding privacy, communication, and consumer protection.

To comply with personal data protection standards, there is a set of rules such as the GDPR (General Data Protection Regulation) in Europe, the CCPA (California Consumer Privacy Act) in the US, and the POPIA (Protection of Personal Information Act) in South Africa. These rules require organizations to collect only necessary data, explain the clear purpose for which the data is being collected, obtain the explicit consent of the individual, protect the data from unauthorized access, and allow the individual to access, correct, and delete the data. In addition, in the US there is a law named HIPAA (Health Insurance Portability and Accountability Act) that establishes how a person's medical data can be used, accessed, and protected to prevent its disclosure or misuse (Conduah et al., 2025).

Furthermore, in Europe, there is a regulation named the ePrivacy Directive which, to protect user privacy, sets rules for the use of cookies, electronic communications, and direct marketing (Usercentrics, 2025).

In addition, at the European Union level, the transparency of artificial intelligence use is regulated by the European Code of Conduct for Research Integrity, which considers the concealment of artificial intelligence use to be incompatible with scientific integrity.

Bibliometric analysis

Bibliometric analysis is often used in scientific research to discover research trends, collaboration patterns, and emerging directions in chosen topics. It is a quantitative research method and is based on the application of statistical methods to scientific publications, such as academic articles and their citations, with the purpose of analyzing the evolution, structure, and impact of a research field. The main objectives of bibliometric analysis are to identify research trends, assess the impact of the literature, and strengthen an objective basis for supporting academic and strategic decisions in each field (Öztürk et al., 2024).

The Scopus and Web of Science (WoS) databases are the most used for bibliometric studies, due to their broad coverage of scientific literature and the quality of the bibliographic information

they contain. Many specialized software tools have also been developed for bibliometric mapping and analysis, including Bibliometrix (Biblioshiny), VOSviewer, CitNetExplorer, and CiteSpace – Citation Analysis (Kara et al., 2025). These tools allow the processing and visualization of large volumes of scientific data, facilitating the analysis of connections between authors, publications, and research topics.

Bibliometric analysis has many advantages, including the ability to gain fast overview of a field, identify knowledge gaps, generate new ideas for future investigations, and clearly position their own contributions within the existing literature (Donthu et al., 2021). With its ability to manage large volumes of scientific data, this method helps increase the impact of research and support conclusions.

Comparing to systematic analyses of research literature, which are primarily based on qualitative techniques and may be influenced by interpretative biases, bibliometric analysis, being a quantitative research method, can reduce or minimize interpretative biases, offering more objective and replicable results. In this context, VOSviewer is one of the most widely used bibliometric tools, being a program developed for creating and visualizing bibliometric maps (Van Eck & Waltman, 2010). Its features are particularly useful for clearly and easily interpreting large bibliometric maps.

Research Methodology

Purpose of the study

The study applies a bibliometric research analysis to map and evaluate literature on ethics in healthcare marketing. The purpose is to map the literature, identify key ethical themes, clarify how they shape healthcare marketing practices, and describe the field's evolution. Moreover, the study examines the intellectual foundations of the field through influential cited references, explores geographical patterns of scholarly activity and relatedness, and outlines the dataset's disciplinary and publication profile (using Web of Science indicators) of the dataset using Web of Science indicators. Overall, the analysis supports the identification of emerging directions and research gaps in ethics-oriented healthcare marketing research.

Research objectives

To develop a comprehensive understanding of the role that ethics plays in healthcare marketing and how the academic field has evolved, the following specific objectives have been formulated:

- O1:** Map the main themes using term and keyword co-occurrence with overlay visualization
- O2:** To analyze the scholarly base of the field by creating an overlay visualization of a citation network of cited references, highlighting foundational and recently leading works.
- O3:** Analyze geographical distribution identified through bibliographic coupling at the country level
- O4:** To characterize the dataset's disciplinary and publication characteristics obtained from the Web of Science (WoS) Core Collection allow reproducing bibliometric analyses and reliable network mapping with VOSviewer

Data source

The dataset was retrieved from the Web of Science (WoS) Core Collection, selected for its standardized bibliographic metadata (titles, abstracts, author keywords, cited references,

affiliations) and broad coverage. These features ensure replicable bibliometric analyses and enable reliable network mapping in VOSviewer.

Search query and time span

To capture publications positioned at the intersection of healthcare, marketing, and ethics, the WoS Topic field was used:

- **Query:** TS=("healthcare") AND TS=("ethical marketing") AND TS=("marketing")
- **Language:** English
- **Time span:** 2010–2025

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Screening and final dataset

The first retrieval was screened at the level of titles and abstracts to ensure relevance to ethics in healthcare marketing, publications were excluded if they focused on healthcare ethics without a marketing or communication connection, or on marketing ethics without a clear healthcare context. After screening, the final dataset consisted of 500 documents, these records formed the basis for all analyses and visualizations presented in the study.

WoS (web of science) records were exported including: titles, abstracts, author keywords, publication year, source titles, authors, affiliations/countries, and cited references. Basic preprocessing was performed to improve map readability, such as harmonizing term variants (e.g., singular/plural forms) and ensuring consistent country naming across affiliation data where necessary.

Bibliometric tools

Analyses were conducted using VOSviewer, which supports the construction of bibliometric networks, clustering of items into thematic groups, and overlay visualization based on time-related indicators (e.g., average publication year).

To identify the conceptual structure of ethics in healthcare marketing and track its thematic evolution, a co-occurrence analysis was conducted using terms derived from titles and abstracts, complemented by author keywords. Co-occurrence mapping assumes that concepts which repeatedly appear together in the same publications represent related thematic areas.

Unit of analysis: extracted terms (titles/abstracts) and author keywords

Node size: represents occurrence frequency

Links: co-occurrence strength (frequency of joint appearance in documents)

Clusters: thematic groupings of related concepts

Overlay color: average publication year, used to distinguish earlier foundational topics from more recent research fronts

This type of analysis is relevant for ethics-focused research because it reveals how ethical concerns such as privacy, consent, trust, regulation and accountability are connected to healthcare marketing practices and how their importance changes over time.

Term co-occurrence network overlay analysis (VOSviewer)

Keyword co-occurrence analysis is a type of bibliometric analysis technique which is used to identify the conceptual structure of the research field by examining how frequently keywords appear together within publications. When two keywords repeatedly co-occur (appear at the same time), it indicates a thematic relationship and suggests that scholar research is linking those concepts in the same line of inquiry. Unlike narrative approaches, co-occurrence mapping provides

To support interpretability, VOSviewer complements terms networks with overlay visualization options that assign colors based on average publication year. This allows not only to see the main themes, but also to distinguish between foundational topics (older publications) and recent research fronts (newer publications). As a result, overlay co-occurrence analysis is especially useful in fast-developing interdisciplinary domains, such as healthcare marketing, where technological change (AI), healthcare governance, and consumer-oriented marketing practices intersect.

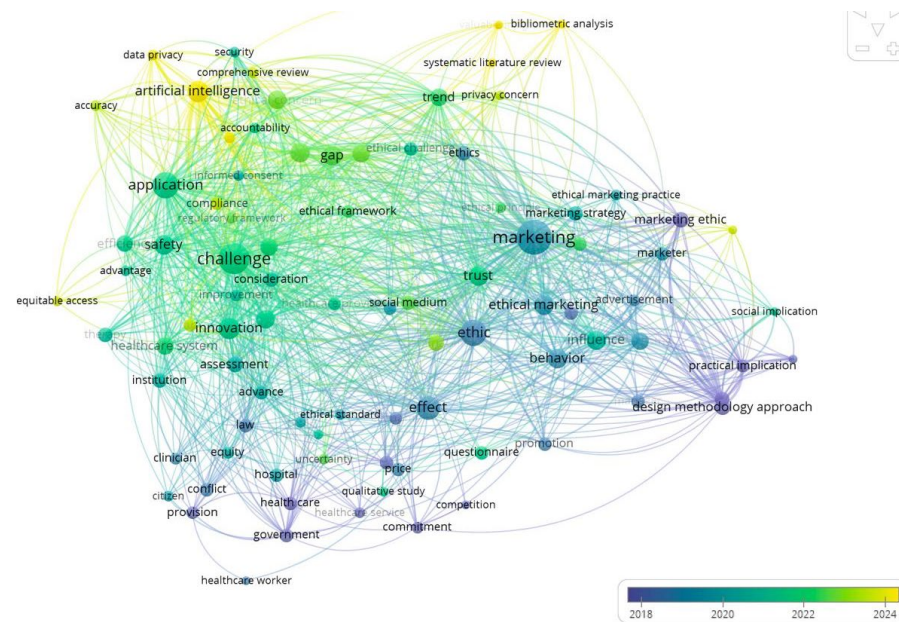


Fig. 1: Term co-occurrence overlay analysis

Figure 1 presents an overlay term co-occurrence network derived from the literature retrieved using the keywords ethical marketing, healthcare, and marketing. In this map, node size reflects the frequency of term occurrence, links represent the strength of co-occurrence between terms, and the overlay colors indicate average publication year (from earlier themes in blue/green to more recent themes in yellow). The visualization is characterized by a dense and highly interconnected core, suggesting that research on ethical marketing in healthcare is conceptually integrated rather than fragmented into isolated subtopics.

At the center of the network, the terms marketing, ethical marketing, ethics, and trust appear as dominant hubs, indicating that ethical considerations are embedded directly into mainstream healthcare marketing discussions. The strong connectivity of trust across multiple areas highlights its role as a bridging mechanism: ethical marketing is repeatedly linked to trust-building processes that shape consumer or patient perceptions, influence behavior, and affect the legitimacy of marketing activities in healthcare contexts. Surrounding this core, the network reveals three broad but interconnected thematic orientations. One stream emphasizes governance and responsible practice, including terms such as data privacy, security, accountability, compliance, and informed

consent, reflecting the importance of legal and ethical safeguards in health-related promotion. A second stream focuses on marketing execution and outcomes, connecting concepts such as marketing strategy, advertisement/promotion, influence, behavior, and practical/social implications, which points to research examining how ethical conduct shapes marketing effectiveness and stakeholder responses. A third stream reflects the institutional and healthcare-system context, containing terms such as hospital, clinician, healthcare system, government, and institution, alongside methodological cues (e.g., questionnaire, qualitative study, assessment, effect), suggesting that the literature often examines ethical marketing through empirical evaluation in real healthcare settings.

The overlay colors indicate a clear temporal shift in research emphasis. Earlier contributions (approximately 2018–2020) appear more closely associated with traditional marketing and evaluation terms, such as promotion, advertisement, and research design indicators, reflecting an initial focus on understanding ethical marketing practices and their effects. More recent contributions (approximately 2022–2024) increasingly highlight governance-oriented topics, particularly privacy, security, and accountability, as well as review-based synthesis (e.g., systematic literature review, bibliometric analysis). This shift suggests a maturing research agenda in which ethical marketing in healthcare is increasingly framed through the lens of responsible governance, compliance, and long-term trust maintenance, rather than only communication effectiveness.

Overall, the term overlay map confirms that the literature on ethical marketing in healthcare is structured around a strong ethical–marketing core, with growing emphasis on privacy and accountability. These findings imply that future research and healthcare marketing practice will likely be shaped not only by performance goals and persuasive communication, but also by stricter expectations for transparency, data protection, and responsible engagement with patients and other stakeholders.

Overlay visualization of a citation network of cited references

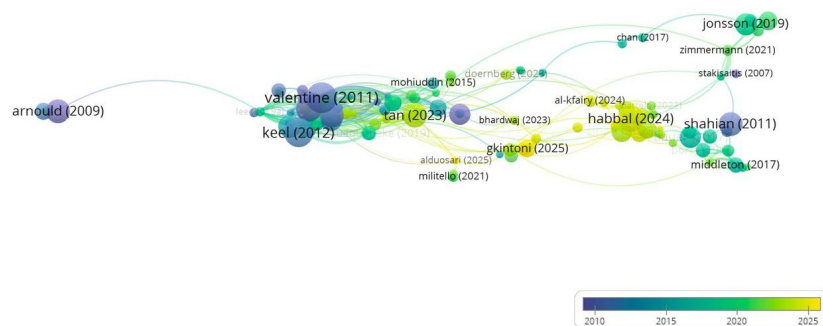


Fig. 2: Overlay visualization of a citation network of cited references

Source: Visualized using VOSviewer software based on bibliometric data from WoS.

To examine the intellectual foundations of the field, an overlay visualization of a citation network of cited references was generated in VOSviewer.

- Unit of analysis: cited references (author–year)
- Node size: citation frequency within the dataset
- Clusters: groups of related references forming the field’s knowledge base
- Overlay color: publication year of the cited reference

Figure 2 presents an overlay visualization of a citation-based network of cited references within the literature retrieved using the keywords ethical marketing, healthcare, and marketing. In this map, each node represents a cited reference (author–year), node size reflects its citation weight within the dataset, links indicate relatedness between references (i.e., references that tend to be cited within the same scholarly conversation), and the overlay colors represent publication year (older references in blue/purple and more recent ones in green/yellow, approximately 2009–2026). The network displays a largely connected structure, suggesting that research on ethical marketing in healthcare is grounded in a shared knowledge base rather than developing as disconnected streams.

Several works function as intellectual anchors in the network. Earlier references, most visibly Valentine (2011) and Keel (2012), appear as large, centrally positioned nodes with multiple linkages, indicating their continued role in shaping how ethical marketing issues are conceptualized and studied in healthcare contexts. At the same time, more recent contributions, particularly Tan (2023) and Habbal (2024), also occupy prominent positions near the core of the map, reflecting their rapid uptake and growing influence in current debates. Additional well-connected nodes, including Shahian (2011), Middleton (2017), Chan (2017), and Jonsson (2019), strengthen the impression of continuity between foundational work and newer applied or contextual research.

The overlay colors highlight a clear temporal dynamic in the evolution of the field. While foundational references from the early 2010s remain embedded in the core, there is an increasingly visible concentration of newer references (green/yellow tones) from the late 2010s through 2024–2025. This pattern suggests that the ethics–healthcare–marketing literature is both cumulative and fast-developing: it continues to rely on established conceptual foundations, but recent publications are becoming influential relatively quickly as new ethical challenges emerge and research attention intensifies.

Overall, the structure of the citation network indicates stability and renewal. Stable, highly cited earlier works continue to provide the conceptual backbone of the field, while a growing set of more recent references is consolidating newer directions, consistent with a research domain that is expanding rapidly in response to evolving expectations around responsible marketing practices, stakeholder trust, and governance in healthcare.

Geographical distribution of research

To explore the geographical distribution of research and the extent of international connectivity in the literature on ethics in healthcare marketing, a country-level network analysis was conducted using VOSviewer. This type of mapping helps clarify which countries contribute most actively to the field and how national research communities relate to each other through shared intellectual foundations. Rather than focusing only on publication counts, the network approach highlights patterns of similarity and linkage between countries, offering a clearer view of how knowledge is produced and diffused globally.

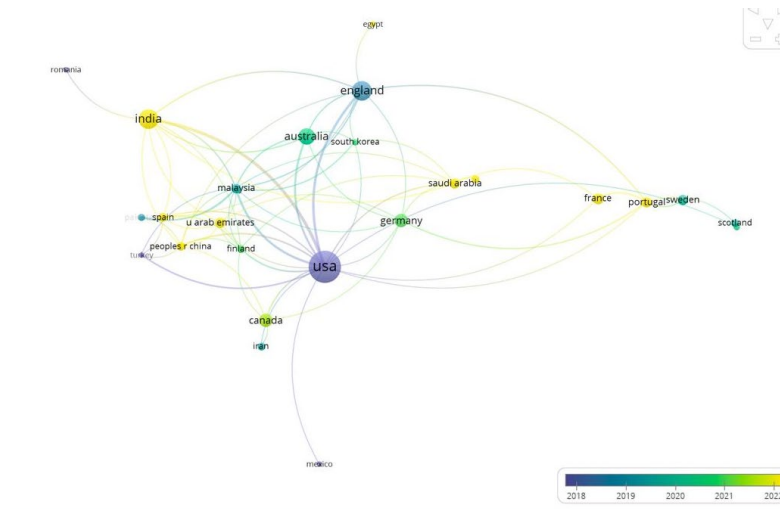


Figure 3: Overlay visualization of geographical distribution of research

Source: Visualized using VOSviewer software based on bibliometric data from WoS.

To explore international research structure and relatedness, a bibliographic coupling analysis by country was conducted using author affiliation data. Bibliographic coupling connects countries when their publications cite overlapping sets of references, indicating shared intellectual foundations and similar research orientations.

- Unit of analysis: countries
- Node size: country weight (e.g., output or total link strength, depending on settings)
- Links: shared cited references between countries
- Clusters: groups of countries with similar cited foundations
- Overlay color: average publication year, highlighting earlier vs. more recent national participation

A threshold was set for at least 5 documents per country resulting in the average publication year between 2018 and 2022. Figure 3 presents an overlay visualization of the country network, where each node represents a country included in the dataset. The size of each node reflects its relative weight in the sample (e.g., research output or link strength), while the connecting lines illustrate the strength of relationships between countries based on shared references. The overlay colors indicate the average publication year (2018–2022), allowing the identification of countries that entered the research conversation earlier versus those whose contributions are more recent. This visualization provides a concise, evidence-based overview of the international structure of the field, showing both established hubs and emerging contributors.

Figure 3 is an overlay network at the country level, bibliographic coupling by country in VOSviewer). The map includes 25 countries grouped into 8 clusters. Links show how strongly countries are connected through shared references (i.e., similarity in the literature they cite), which is often interpreted as shared research agendas and, indirectly, collaboration potential. Color represents average publication year (scale ~2018–2022), so it highlights how the activity “moves” over time.

Core structure and leading contributors

- USA is the dominant hub: it is the largest node and sits at the center of the network with many strong connections.
- This positioning indicates that the USA is both:
 - a high-output contributor (large node size), and
 - a key connector linking multiple regional clusters (many cross-links).

Regional clustering patterns (who groups with whom)

The map shows several interconnected regional groupings rather than isolated blocs:

- A European cluster is visible around England, Germany, France, Portugal, Sweden, Scotland, with strong internal connectivity, suggesting a shared citation base and aligned research interests.
- An Asia/Middle East-linked cluster appears around India, China, Malaysia, Saudi Arabia, UAE, South Korea, showing active integration with the main network and frequent coupling with the USA and parts of Europe.
- Canada sits close to the USA and acts as a secondary connector, consistent with strong shared research foundations.
- Countries like Romania, Egypt, Mexico, Iran appear more peripheral, with fewer or weaker links, suggesting smaller output, narrower topical focus and less overlap in cited foundations with the dominant core.

The color gradient suggests a time shift in participation:

Countries with earlier average activity (more toward blue/purple, ~2018–2019) appear closer to the established core around the USA and major European contributors. Countries with more recent average activity (more toward green/yellow, ~2021–2022) include several nodes in the Asia/Middle East and parts of Europe, implying that these regions have become increasingly active in the most recent period. This pattern fits a field that is expanding internationally, with newer contributions emerging beyond the earliest core contributors.

The network indicates that research in this domain is globally distributed but still shaped by a core set of countries (especially the USA and major European contributors) that provide the dominant shared knowledge base. The increasing visibility of countries such as India, China, Saudi Arabia, UAE, and Malaysia (many with more recent colors) suggests a broadening research front.

Overall, the country network points to a strongly centralized but increasingly international field, where the USA anchors the intellectual structure while Europe and Asia/Middle East show growing and more recent engagement.

Treemap of Web of Science subject categories



Fig. 4 Treemap of Web of Science subject categories

Source: Web of Science (2025).

Figure 4 presents a treemap of Web of Science subject categories for the dataset retrieved using the keywords ethical marketing, healthcare, and marketing. In a treemap visualization, each rectangle represents a WoS category and its size reflects the number of publications assigned to that category. The figure therefore provides a compact view of the disciplinary composition of research on ethical marketing in healthcare and highlights the extent to which the topic is distributed across business, health, ethics, and technology-oriented domains.

The largest category is Business (105 publications), indicating that ethical marketing in healthcare is primarily positioned as a marketing/management research topic, rather than being treated exclusively as a clinical or philosophical issue. The second largest area is Ethics (62 publications), confirming that ethical marketing is not merely an implicit background concern, but a central analytical lens within the field. In addition, Medical Ethics (31) and Health Policy & Services (31) further reinforce that much of the literature is anchored in healthcare governance and professional responsibility, where ethical marketing is linked to regulation, patient protection, and acceptable promotional conduct.

A substantial share of the dataset is also located in health services and population health categories, including Health Care Sciences & Services (34) and Public, Environmental & Occupational Health (29). This suggests that ethical marketing in healthcare is often studied in relation to service delivery, health communication practices, and broader society impacts such as equity, access, and public trust. In parallel, the presence of Management (29) and Economics (17) indicates that the topic is also discussed through a strategic and performance-oriented lens, focusing on organizational behavior, market dynamics, and the efficiency–ethics balance in healthcare promotion.

Notably, the treemap also shows a consistent technology and information systems component, with Computer Science, Information Systems (29), Computer Science, Artificial Intelligence (21), Computer Science, Interdisciplinary Applications (21), and Engineering, Electrical & Electronic (18). This distribution implies that ethical marketing in healthcare is increasingly examined alongside digital infrastructures and data-driven communication tools, where ethical concerns tend to intensify around privacy, transparency, accountability, and governance. Finally, the presence of Pharmacology & Pharmacy (23) and Medicine, General &

Internal (21) highlights that a meaningful portion of the literature is connected to regulated health products and clinical contexts, where ethical marketing is constrained by medical evidence standards and strict promotional rules.

Overall, the subject-category distribution confirms that research on ethical marketing in healthcare is strongly interdisciplinary: it is anchored in business and marketing scholarship, reinforced by ethics and health policy perspectives, and increasingly connected to digital and technological domains. This disciplinary mix supports the view that ethical marketing in healthcare must be understood as both a strategic marketing issue and a governance-driven responsibility shaped by healthcare regulation, stakeholder trust, and evolving digital communication environments.

Document types of WOS analysis



Fig. 5 Treemap of Web of Science document types

Source: Web of Science (2026).

Figure 5 summarizes the document types included in the Web of Science dataset using a treemap, where the size of each rectangle reflects the number of records assigned to that category. The distribution is clearly dominated by journal articles (367), indicating that research on ethics in healthcare marketing is primarily disseminated through full-length, peer-reviewed studies. A substantial proportion of the dataset is also composed of review articles (92), suggesting that the field has reached a stage where scholars are increasingly consolidating evidence, clarifying conceptual directions, and synthesizing emerging findings. In addition, proceedings papers (45) represent a meaningful share of the output, which is typical for technology-driven topics where novel applications and early-stage ideas often appear first in conference venues. Smaller categories, such as early access papers (19), editorial material (14), and book chapters (8), indicate ongoing activity at the research frontier, alongside viewpoint-driven contributions and broader conceptual discussions. Overall, the publication profile reflects a field with a strong empirical journal foundation, complemented by review-based consolidation and a smaller but relevant stream of conference and editorial outputs.

Web of Science index coverage

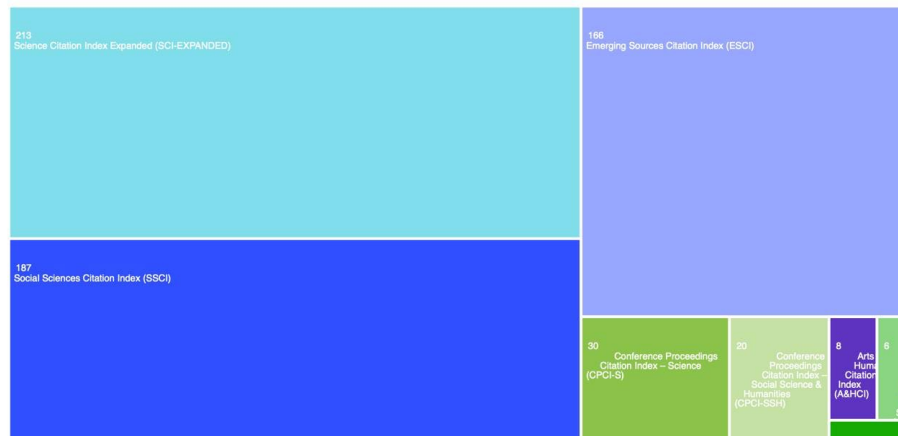


Fig. 6 Treemap of Web of Science index coverage

Source: Web of Science (2026).

Figure 6 displays the distribution of records across Web of Science indices, illustrating the broader disciplinary positioning of literature. The largest share of documents is indexed in the Science Citation Index Expanded, **SCI-EXPANDED 213** reflects strong activity in science and technology (e.g., AI, digital health)". At the same time, a comparably large portion appears in the Social Sciences Citation Index, **SSCI (187)** reflects work in social science and business journals, especially on marketing and management. The presence of a substantial number of records in the Emerging Sources Citation Index, **ESCI (166)** signals rapid venue expansion and the rising influence of newer journals. Smaller contributions from the conference proceedings indices, **CPCI-S (30)** and **CPCI-SSH (20)** show conferences still matter for sharing emerging ideas. Taken together, the index distribution reinforces the interdisciplinary character of ethics in healthcare marketing research and connects technical/scientific investigations with social science analyses

Conclusion

Using a 500-document Web of Science dataset and VOSviewer network tools, the bibliometric study mapped the knowledge structure and development of research at the nexus of ethical marketing, healthcare, and marketing. Overall, the results show that ethical marketing in healthcare is an increasingly prominent and multidisciplinary topic of study, rooted in business and ethics studies but closely linked to health policy, health services, and technology.

The field is structured around a stable core and is theoretically integrated. A dense network centered on marketing, ethical marketing/ethics, and trust is depicted in the word co-occurrence overlay map, indicating that ethical issues are integrated into mainstream healthcare marketing discussions rather than being viewed as incidental. A bridging mechanism that connects ethical standards to stakeholder responses and communication efficacy is trust.

Often, ethical marketing is presented as a governance and compliance challenge rather than just a "good practice" objective. The temporal overlay shows that, more recently, privacy, security, responsibility, compliance, and informed consent have become more important than promotion, assessment, and marketing execution. This points to a developing agenda in which patient autonomy protection, data governance, and regulatory requirements are used to assess responsible marketing.

Though current work swiftly gains influence, the philosophical foundation remains consistent. The extensive connectivity of the cited-reference overlay network suggests common intellectual underpinnings. While more recent references are quickly incorporated into the core, older, highly referenced works continue to be vital. This tendency is indicative of a field that is simultaneously adjusting to new ethical issues, particularly those that are made worse by digital communication contexts

Although research is dispersed around the world, it is structurally concentrated in a few hubs. The nation bibliographic coupling map shows that major contributors, particularly the USA—play a significant central role, with significant connectors in Europe and increasing participation from countries connected to Asia and the Middle East. The colours of the overlay imply that more recent contributions are coming from around the world, indicating growth beyond the initial core contributors.

It is evident that ethical marketing in healthcare is multidisciplinary, with business and ethics serving as its central disciplines. In addition to being heavily represented in Medical Ethics, Health Policy & Services, Health Care Sciences & Services, and pertinent technology-related categories, WoS subject categories show that the literature is dominated by Business and Ethics. This distribution lends credence to the idea that strategy and governance, professional standards, and digital infrastructures all influence ethical healthcare marketing at the same time.

A field that is both dynamic and consolidating is suggested by the publishing profile. Peer-reviewed journal publications make up the majority of the dataset, with a significant proportion of review articles. This indicates that the discipline is moving away from early conceptions and towards more synthesis and theory development. The existence of proceedings papers indicates ongoing attention to rapidly evolving concerns and new platforms.

The rise of publications has accelerated dramatically in recent years. The yearly trend indicates a moderate output in previous years, a significant growth after 2019, and a noticeable acceleration in 2023–2025. This tendency shows that responsible promotion, trust, privacy, and regulatory compliance in healthcare marketing are becoming increasingly important from an academic and practical standpoint. (If indexing is not full, the most recent year should be regarded with caution.)

According to the maps, ethical marketing in the healthcare industry is becoming more and more focused on relational outcomes (trust) and governance ideas (privacy, responsibility, and consent). Future conceptual models ought to approach ethical marketing as a process that builds trust while adhering to legal restrictions, in addition to treating it as a normative ideal.

The data suggests that ethical legitimacy and healthcare marketing efficacy are closely related. Because ethical failures immediately affect trust and long-term reputational capital, organizations should prioritize honest communication, avoid exploiting vulnerabilities, secure meaningful consent (particularly in digital contexts), and establish strong data-governance measures.

Limitations

- The dataset is only based on Web of Science, which may underrepresent regional publications and exclude pertinent material that is indexed elsewhere (such as Scopus).
- Rather than demonstrating the causal links between ideas or behaviors, bibliometric networks explain patterns of association (co-occurrence, coupling, citations)
- Overlay year metrics can be affected by indexing delays in the most recent years.

Directions for future research

Future studies could strengthen this agenda by:

- evaluating the strength of thematic and geographic trends by comparing WoS results with Scopus.
- carrying out more thorough qualitative synthesis on high-risk areas (such as patient vulnerability, manipulation, data privacy and consent, and platform responsibility) that are indicated by the maps;
- analyzing ethical marketing at the level of certain healthcare areas where information asymmetry and vulnerability are particularly high, such as pharmaceutical promotion, mental health services, and advertising for cancer;
- investigating how new ecosystems for digital marketing are reshaping ethical limits, particularly through data-driven targeting, platform governance, and personalization.

Acknowledgments

During the preparation of this work, the authors utilized ChatGPT 4 to enhance readability and language clarity. Following the use of this tool, the authors meticulously reviewed and revised the content as necessary and assumed full responsibility for the final content of the publication.

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