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Emerging Horizons and Strategic Priorities in Iranian Health Policy Research

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Abstract

Aims: This study analyzed the health policy research domain in Iran from 1987 to 2025, examining publication trends in the Web of Science database and identifying core subdomains and conceptual trajectories.

Instrument & Methods: This bibliometric science-mapping study evaluated 4,229 Web of Science-indexed documents. We applied cluster analysis and strategic diagrams to map the field's conceptual structure, delineate thematic subdomains, and examine their interrelationships.

Findings: Nine distinct clusters were identified: (1) health system governance, policymaking, and management; (2) qualitative research in nursing and hospital care services; (3) mental health, quality of life, and vulnerable populations; (4) epidemiology of noncommunicable diseases and health inequities; (5) public health, environmental health, and smart technologies; (6) epidemiology, mortality, and the global burden of disease; (7) the COVID-19 pandemic and infectious diseases; (8) reproductive health, digital health, and social challenges; and (9) knowledge, attitudes, and practices related to health behaviors.

Conclusion: Iranian health policy research has undergone substantial quantitative growth and thematic diversification, particularly since 2020, providing a useful evidence base for guiding future research priorities and resource allocation.

Keywords

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Introduction

Co-word and network analyses have been used effectively across various scientific fields, including information literacy [1], financial literacy [2], digital literacy [3], throbbing headaches [4], general concepts of literacy and decision-making [5, 6], and neuroscience [7], to map knowledge structures. Nevertheless, applying these methods to health policy has helped uncover specialized patterns and thematic trends at the national and international levels. Some studies have focused on evaluating key topics in specific domains or subfields, including health diplomacy, the integration of artificial intelligence, and co-production in health policy.

Health policy and services research is a dynamic and continuously evolving scientific domain that plays a pivotal role in informing prevention and control efforts for a variety of health conditions [8]. This research area is inherently interdisciplinary and closely related to factors such as politics, economics, the environment, and public goods. Consequently, it encompasses a broad spectrum of overlapping topics, ranging from health diplomacy [9] to co-production in health policy and management [10].

In this context, scientometric analyses of scientific documents published in authoritative citation databases enable researchers to evaluate dynamic trends and describe the visibility and impact of scientific output in this domain [11]. By systematically mapping health policy research directions and gaps, these analyses provide a foundation for developing a strategic research agenda and supporting evidence-based decision-making [12].

Nevertheless, mapping the global landscape of health policy research reveals geographical disparities and significant imbalances in knowledge production. Developed nations dominate publications in this field, creating a persistent core-periphery structure [13]. Although the volume of published health policy analysis (HPA), as well as its scale, scope, and analytical sophistication, has grown significantly in low- and middle-income countries (LMICs), the dominance of authors from high-income countries (HICs) persists, and structural imbalances in knowledge production remain [14]. Therefore, analyzing the status of national research and identifying existing knowledge gaps are essential for benchmarking experiences and formulating policies that can be adapted to local contexts [8].

Scientometric and bibliometric analyses at the international and regional levels show that scientific output in health policy surged, particularly after 2020, during the COVID-19 pandemic. Using scientometric approaches, Gonzalez-Argote and López Sánchez demonstrate the strong growth and quality of scientific documents in this field, finding that scientific output is substantial and is largely published in high-impact journals. They report COVID-19, primary care, health care, health policies, and health insurance as core keywords and primary pillars of this body of research [11].

From a historical perspective, Yudantara conducted a comprehensive bibliometric analysis of public health policy literature, mapping the domain's evolution across three distinct phases: a focus on risk (2000–2007), an emphasis on access (2008–2015), and integrated health approaches (2016–2024). This evolutionary trajectory and the post-2020 publication boom reflect a paradigm shift from unidimensional frameworks to comprehensive, systemic approaches [13].

A similar pattern of growth and thematic diversification is evident at the national level. Through a systematic mapping of health policy research directions and gaps in Indonesia, Asriadi and Sari demonstrate a growing trend. The most frequently occurring keywords in their study include health policy, health care policy, public health, decision-making, health insurance, and global health [12]. Similarly, Zhao *et al.* report research hotspots in health services and policy research, including HIV infections, primary health care, delivery of health care, and health services accessibility [8].

Beyond domestic considerations, the transnational and international dimensions of health policy have gained prominence. Jiangwei and Daud argue that research on health diplomacy not only deepens global health governance but also promotes information and resource sharing in public health. Their findings reveal that health diplomacy research has interdisciplinary, transdisciplinary, and temporal characteristics and is closely intertwined with politics, economics, the environment, and public goods. Core research topics include power, COVID-19, security, soft power, WHO, vaccine diplomacy, and governance [9].

Another stream of the literature focuses on integrating emerging technologies and novel approaches into health care policy. Rashidian *et al.* demonstrate a marked increase in publications after 2020, with rapid growth in research on artificial intelligence and health care policy. Key research themes include machine learning, COVID-19, health policy, risk, large language models, interpretable machine learning, neural network-assisted screening, socioeconomic perspectives, and public health applications. These themes increasingly focus on predictive modeling, public health decision-making, and emerging artificial intelligence technologies [15]. Similarly, Sabri and Alabdali provide a bibliometric analysis of AI research in health linked to implementation science and governance frameworks, identifying four major themes: regulatory compliance, ethical frameworks with limited operational measures, organizational readiness, and clinical workflow integration. Their

findings indicate that thematic development had progressed from general ethical discussions to pandemic-related applications and more specific regulatory frameworks [16].

In addition to technology, the shift toward patient-centered and community-based approaches to policymaking represents another core theme. Fusco *et al.* have provided a comprehensive mapping of co-produced health literature, outlining an intellectual structure rooted in three major domains: public administration and management, service management, and knowledge translation. Emerging themes, meanwhile, were linked to social and health phenomena, including older adults and chronic diseases, the use of technology, and the recent patient-centered approach to care (patient involvement and engagement) [10]. Furthermore, attention to policy evolution in specific demographic segments indicates that target-group rights and health perspectives are replacing traditional paradigms [17].

Examining institutional interactions and structural inequalities in health policy knowledge production forms another key component of the literature. Whyle *et al.* trace the trajectory of HPA in LMICs from 2008 onward, noting substantial growth in publication volume. They conclude that targeted efforts by researchers, funders, and institutions; improved domestic and regional funding; support for LMIC researchers; deeper theoretical engagement; and the promotion of HPA in analytical ways that enable cross-contextual learning and explanation are essential to sustaining the field's development and fostering progressive policy change [14].

Moreover, structural imbalances in knowledge production and hierarchical arrangements have been documented in multiple studies. On the one hand, Yudantara demonstrates that the United States and the United Kingdom dominate publications, with network visualizations revealing a persistent core-periphery structure that highlights disparities in productivity between developed and developing nations [13]. On the other hand, Zhao *et al.* conclude that a distinct gap in research depth remains between China and developed regions and countries, such as Europe and the United States [8]. Furthermore, regarding emerging technologies, Sabri and Alabdali report three research gaps in the algorithm-to-policy translation: the principles–practice gap, the regulatory–evidence gap, and the innovation–implementation gap [16].

To address these challenges and chart future pathways, Yudantara emphasizes expanding data coverage, applying more sophisticated social impact metrics, and investigating informal knowledge transfer mechanisms to inform more equitable and effective public health policies globally [13].

Because most existing studies focus on the global level, developed nations, or specific regional contexts, a notable gap remains: a comprehensive, systematic, and up-to-date mapping of Iran's scientific output in this field. This study used a bibliometric methodology to map the knowledge landscape of Iranian health policy research in the Web of Science (WoS) database. By examining research themes, trends, and emerging topics, this study aimed to identify publication patterns, thematic hotspots, and existing scientific structures, thereby providing evidence-based guidance for researchers, policymakers, and health care managers to support strategic decision-making.

Instrument and Methods

This bibliometric science-mapping study aimed to examine the intellectual and conceptual structure of Iranian health policy research. Using co-word and network analyses, and following standard guidelines for bibliometric evaluation and science mapping, we searched the Web of Science Core Collection (WoSCC) on September 20, 2026. The search covered the Science Citation Index Expanded (SCI-EXPANDED), Social Sciences Citation Index (SSCI), Arts & Humanities Citation Index (A&HCI), and Emerging Sources Citation Index (ESCI). The search strategy combined the topic, author-keyword, and abstract fields for "Health Policy" with the country field for Iran, the publication years 1987–2025, and the document types "Article," "Review Article," and "Proceedings Paper": (TS=("Health Policy") OR AK=("Health Policy") OR AB=("Health Policy")) AND CU=Iran AND PY=(1987-2025) AND DT=("Article" OR "Review Article" OR "Proceedings Paper").

The inclusion criteria were peer-reviewed original research articles, review papers, and conference proceedings papers; studies specifically addressing health policy, health systems, health governance, or health care delivery; publications with at least one author affiliated with an Iranian institution or university (CU=Iran); and publications published between 1987 and 2025.

Editorial materials, letters to the editor, meeting abstracts, book reviews, corrections, and news items, as well as retracted publications, and records lacking a detailed abstract or a relevant keyword in their metadata were not included. To minimize language bias, no language restrictions were imposed during data retrieval; however, the retrieved corpus was predominantly in English.

The starting boundary of 1987 was determined empirically, as it marks the chronological inception of the first documented and indexed Iranian publication in the field of health policy in the WoS database. The terminal cutoff of 2025 encompassed the most recent publications indexed by the date of the search. Thus, the study covered a comprehensive four-decade evolutionary horizon (1987–2025).

Following data retrieval, a total of 4,229 records were obtained. Metadata fields from the 4,229 plain-

text files were parsed using BibExcel (version dated February 20, 2016). Core concepts were extracted using BibExcel and its natural language processing techniques. A total of 19,159 concepts were identified across these documents. The concepts were then standardized and normalized (e.g., singular and plural forms were merged, spelling variations were standardized, and synonymous terms, such as COVID-19 and SARS-CoV-2 were unified), leaving 8,574 unique concepts after processing.

A frequency threshold of 10 was selected to preserve structural relationships among the research concepts. Although Bradford's Law of Scattering was originally formulated to describe the distribution of articles across scientific journals, its underlying core–periphery principle was adapted here as a systematic, evidence-based approach to determining the threshold cutoff for co-word analysis. As with journal dispersion, term frequency followed a highly skewed distribution: a small nucleus of core concepts constitutes the field's central intellectual architecture, while a long tail of peripheral, low-frequency terms contributes semantic noise. By applying Bradford's three-zone division (the one-third rule) to cumulative keyword occurrences [18], a cutoff threshold of 10 was established empirically. This strategy captured the high-frequency core concepts shaping the discipline's knowledge structure while eliminating marginal terms that would otherwise clutter network visualizations and impede topological interpretation. After this step and a series of processing routines in BibExcel, a symmetrical plain-text matrix with dimensions of 199×199 was constructed, with the values along the main diagonal set to zero.

The co-occurrence matrix was converted into a similarity matrix using the Association Strength Index. This matrix was then imported into VOSviewer software 1.6.20, transformed into a correlation matrix, exported in Excel format, and re-imported into VOSviewer, which calculates the association strength among the concepts that met the defined threshold. The association strength between two concepts serves as a similarity measure, reflecting the actual co-occurrence of the concepts relative to their expected co-occurrence across the total sample of analyzed records [19, 20]. Clustering was performed using VOSviewer's default algorithm, the Louvain algorithm based on the standard Newman–Girvan modularity metric, in conjunction with the VOS (Visualization of Similarities) mapping algorithm.

To construct the strategic diagram, the centrality and density scores of the conceptual network clusters identified in the previous step were calculated using UCINET 6.766. We used the strategic diagram framework established by Callon *et al.* [21]. This approach provides a standard, widely accepted framework for mapping knowledge structures and defines the role of each thematic cluster across four strategic quadrants based on the two dimensions of centrality and density. This framework enables researchers to assess not only the current state of research themes but also their prospective evolutionary trajectories.

A strategic diagram visually depicts internal cohesion and cross-cluster relationships. In strategic mapping, the horizontal axis typically represents centrality (the degree of cross-cluster correlation), whereas the vertical axis represents density (the strength of internal cohesion within a cluster) [22]. Melcer *et al.* described the strategic diagram as an analytical tool for visualizing thematic maturity and structural cohesion within a research field [23].

The strategic plot was divided into four quadrants. Clusters in Quadrant I are highly cohesive and centrally positioned in the field, representing motor themes that drive a major portion of the network. Clusters in Quadrant II are internally cohesive but peripheral, representing specialized niche topics. Quadrant III contains emerging or declining themes characterized by low density and low centrality. Finally, Quadrant IV contains foundational, well-connected themes with low internal density but high centrality, which have the potential to evolve into motor themes [23, 24].

Findings

Scientific output on health policy in the WoS database followed an overall upward trajectory from 1987 to 2025. Three phases are apparent. From 1987 to 2006, publication volume remained low, reflecting the field's early development. From 2007 onward, output grew steadily, rising from 12 documents in 2007 to 188 in 2019.

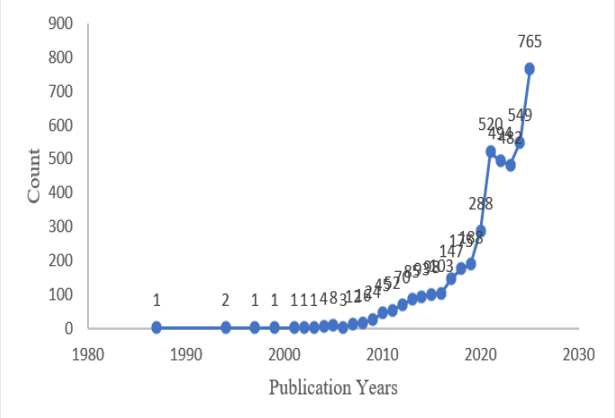

Figure 1. Publication trend of health policy records in the Web of Science (WoS) database.

A marked increase followed, with annual publications rising from 288 in 2020 to 520 in 2021. After minor fluctuations in 2022 and 2023, output continued to increase, reaching 765 documents in 2025. This rise coincided with the COVID-19

pandemic and increased attention to evidence-informed policymaking, although the trend alone cannot establish a causal relationship. The 2025 count included records assigned to that publication year and indexed in Web of Science by the data-retrieval cutoff (Figure 1).

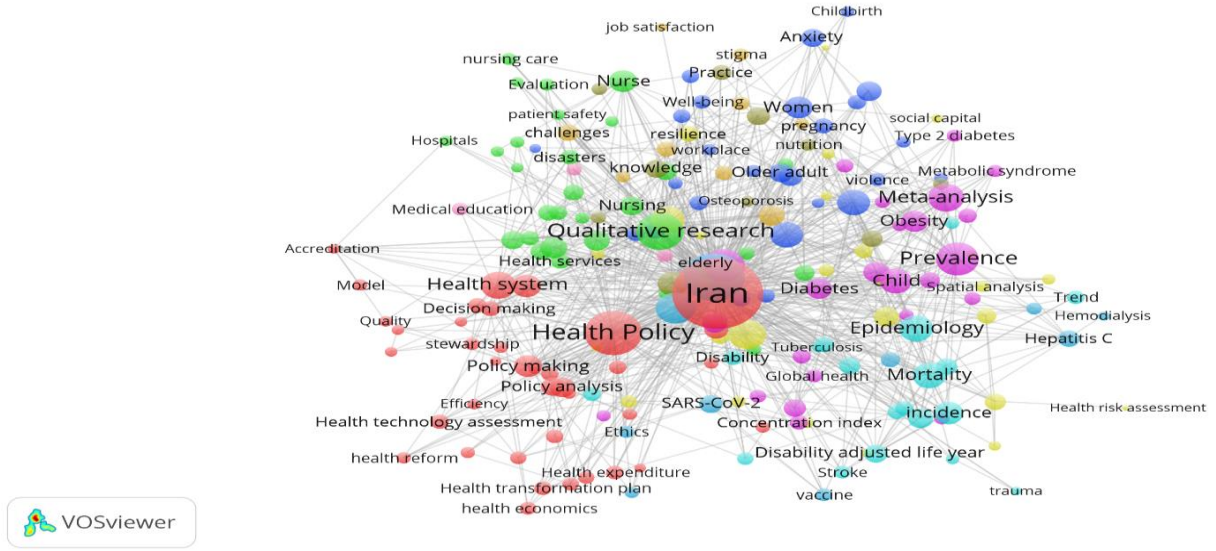

Figure 2. Co-word network map of health policy literature.

Table 1. Cluster names and key sub-themes in Iranian health policy research

Cluster	Key concepts and concept weights
Health System Governance, Policy-Making, and Management	Iran (2974), Health policy (1026), Health system (330), Primary healthcare (214), Policy making (194), Policy analysis (160), Prevention (144), Universal health coverage (134), Decision making (82), Governance (80), Health technology assessment (74), Utilization (70), Health expenditure (68), Health equity (66), Health transformation plan (66), Health insurance (64), Equity (62), Resource allocation (60), Health economics (58), Interrupted time series analysis (56), Stewardship (54), Cost (48), Health reform (48), Health financing (46), Stakeholder analysis (46), Family physician (44), Economic burden (42), Model (42), Economic evaluation (36), Efficiency (36), Quality (36), Access (34), Accreditation (34), Insurance (34), Knowledge translation (34), Evidence-based practice (32), Development (26), Willingness to pay (26).
Qualitative Research in Nursing and Hospital Care Services	Qualitative research (680), Nurse (202), Healthcare (192), Barriers (168), Nursing (144), Hospital (136), Cancer (122), Education (120), Management (102), Breast cancer (100), Scoping review (98), Research (94), Health services (88), Disasters (78), Facilitators (78), Palliative care (78), Eastern mediterranean region (62), Evaluation (50), Nursing care (50), Students (50), Review (48), Cervical cancer (42), Qualitative (42), Grounded theory (40), Participation (40), Patient safety (38), Screening (38), Hospitals (36), Safety (32), Implementation (30).
Mental Health, Quality of Life, and Vulnerable Populations	Mental health (290), Adolescent (284), Women (198), Depression (162), Older adult (142), Quality of life (132), Anxiety (130), Health promotion (100), Elderly (92), Oral health (90), Pregnancy (88), Stress (80), Women's health (76), Health literacy (72), Well-being (70), Family (68), Aging (66), Social determinants of health (66), Violence (58), Social support (54), Health education (48), Food insecurity (46), Workplace (46), Childbirth (38), Pregnant women (36), Lifestyle (34), Health behavior (32), Fertility (26).
Epidemiology of Noncommunicable Diseases and Health Inequities	Prevalence (512), Systematic review (488), Meta-analysis (352), Child (276), Obesity (192), Risk factors (168), Diabetes (164), Noncommunicable disease (162), Inequality (122), Hypertension (94), Overweight (80), Socioeconomic factors (76), Concentration index (72), Pediatrics (68), Global health (62), Life expectancy (62), Developing countries (60), Medical education (58), Socioeconomic status (58), Blood pressure (54), Decomposition (54), Health personnel (54), Metabolic syndrome (52), Type 2 diabetes (52), Healthcare system (48), Health-related quality of life (46), Dental caries (42).
Public Health, Environmental Health, and Smart Technologies	Public health (390), Health (304), Cardiovascular disease (156), Air pollution (104), Resilience (92), Tehran (84), Physical activity (78), Climate change (72), Artificial intelligence (60), Food security (52), Machine learning (44), Spatial analysis (44), Environment (40), GIS (40), Built environment (38), Deep learning (36), Sustainable development (36), Theory of planned behavior (36), particulate matter (34), Social capital (28), Urban planning (28), Air quality (26), Sustainability (24), Sustainable development goals (24), Risk assessment (22), Health belief model (12), Health risk assessment (8).
Epidemiology, Mortality, and Global Burden of Disease	Epidemiology (302), Mortality (286), Incidence (220), Global burden of disease (156), Disability adjusted life year (DALY) (130), Middle East (108), Burden (102), Addiction (86), Disability (86), Burden of disease (80), Rehabilitation (80), Treatment (80), Trend (64), Stroke (62), Harm reduction (58), Suicide (48), Injury (36), Tuberculosis (34), Trauma (22).
COVID-19 Pandemic and Infectious Diseases	Covid 19 (1198), Pandemic (432), Sars-cov-2 (124), Hepatitis C (106), Vaccination (82), Vaccine (56), Ethics (54), Hepatitis B (54), System dynamics (42), Hemodialysis (28).
Reproductive Health, Digital Health, and Social Challenges	HIV (172), Challenges (104), Reproductive health (82), Content analysis (78), Sexual health (66), Stigma (52), Telemedicine (42), Abortion (38), Digital health (32), Job satisfaction (22).
Knowledge, Attitude, and Practice regarding Health Behaviors	Policy (252), Knowledge (136), Attitude (128), Smoking (104), Practice (82), Tobacco (54), Aged (52), Nutrition (52), Physician (52), Osteoporosis (38).

To identify the field's main thematic areas, we examined the frequency of concepts identified through co-word analysis. Among the 20 most frequent concepts, which totaled 3,118 occurrences, Iran ranked first (945 occurrences, 30.3%), indicating the dataset's strong country focus. COVID-19 (369, 11.8%) and health policy (260, 8.3%) were the next most frequent concepts. Other prominent topics included qualitative research (225, 7.2%), systematic review (122, 3.9%), prevalence (118, 3.8%), public health (113, 3.6%), health system (97, 3.1%), health (87, 2.8%), and meta-analysis (83, 2.7%). The remaining concepts, in descending order of frequency, were pandemic (79, 2.5%), epidemiology (77, 2.5%), mental health (74, 2.4%), child (74, 2.4%), adolescent (71, 2.3%), mortality (68, 2.2%), primary healthcare (67, 2.1%), nurse (65, 2.1%), quality of life (62, 2.0%), and policy (62, 2.0%). Overall, these concepts point to substantial attention to COVID-19 and health system issues, evidence-synthesis methods, and topics related to population health and specific groups, including children, adolescents, and nurses.

To determine the number of clusters, cluster analysis was conducted in VOSviewer. Concepts in health policy research during the analyzed period were partitioned into nine distinct clusters. Health policy concepts aggregated into nine thematic clusters (Figure 2; Table 1).

Iran appeared in 945 documents and has the highest total link strength (TLS; 2,974), reflecting its connections to policy and health-system themes. The network also featured a major COVID-19 cluster (TLS 1,198) and two methodological strands: qualitative research in nursing and hospital care, and systematic reviews and epidemiological studies of noncommunicable diseases. Other clusters addressed mental health and vulnerable populations; public, environmental, and digital health; reproductive health and social challenges; mortality and global disease burden; and health-related knowledge, attitudes, and behaviors. Overall, the themes suggest a broadening from treatment-focused research toward a multidisciplinary perspective.

Overlay visualization was used to illustrate temporal developments in the field. Nodes that shifted toward yellow represent recent research trends (COVID-19, anxiety, global burden of disease, climate change, sexual health, health literacy, artificial intelligence, etc.). Conversely, concepts that were prominent in earlier decades appear in darker shades (Figure 3).

After constructing a matrix for each cluster and importing the matrices into UCINET, we calculated centrality and density scores and plotted the strategic diagram. The diagram's origin was set at the mean centrality of 17.42±9.82 and mean density of 1.02±0.93.

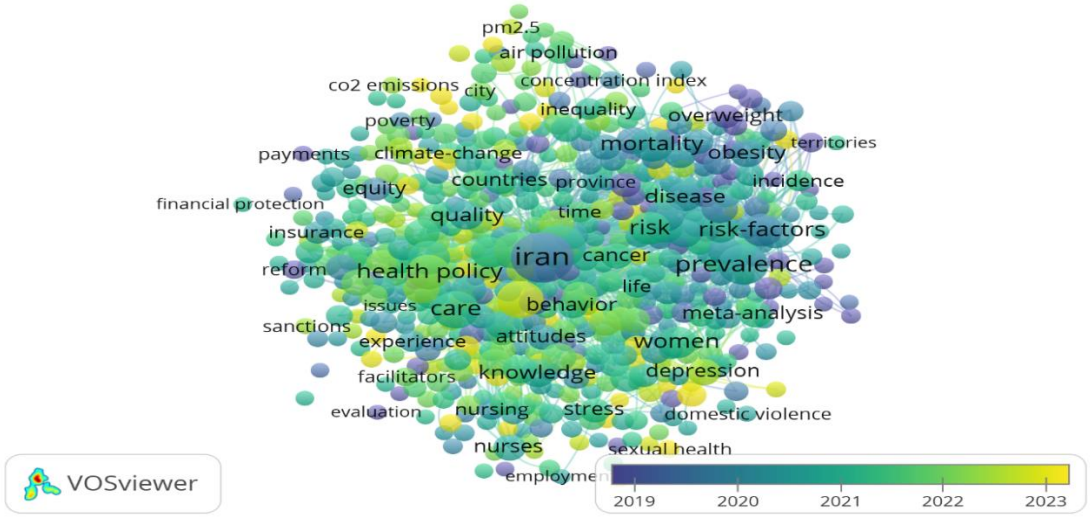

Figure 3. Co-word map of health policy literature based on overlay visualization.

Cluster 1, health system governance, policymaking, and management, had the highest centrality (36.789), with a density of 0.994. Cluster 2, qualitative research in nursing and hospital care services, scored 17 in centrality and 0.586 in density. Cluster 3, mental health, quality of life, and vulnerable populations, scored 16.714 and 0.619, respectively. Cluster 4, epidemiology of noncommunicable diseases and health inequities, scored 24.519 in centrality and 0.943 in density. Cluster 5, public health, environmental health, and smart technologies, scored 9.778 and 0.376, while Cluster 6, epidemiology, mortality, and global burden of disease, scored 18 and 1.

Cluster 7, COVID-19 pandemic and infectious diseases, had a centrality of 31 and the highest density (3.444). Cluster 8, reproductive health, digital health, and social challenges, scored 6.2 and

0.689, and Cluster 9, knowledge, attitude, and practice regarding health behaviors, scored 14.2 and 1.578.

The high centrality of Cluster 1 indicates its broad connections with other health policy topics and its central role in the network. In contrast, Cluster 7's high density reflects strong internal cohesion and close co-occurrence among its concepts.

Based on the strategic diagram, Cluster 7 (COVID-19 pandemic and infectious diseases) functioned as the primary motor theme in Quadrant I. It was structurally cohesive, occupied a central position, and connected extensively across the network. Cluster 9 (knowledge, attitude, and practice regarding health behaviors) lay in Quadrant II, representing a specialized, internally cohesive, yet relatively isolated research topic.

Clusters 2 (qualitative research in nursing and hospital care services), 3 (mental health, quality of life, and vulnerable populations), 5 (public health, environmental health, and smart technologies), and 8 (reproductive health, digital health, and social challenges) occupied Quadrant III. In Callon's typology, this quadrant represented "emerging or declining" themes, reflecting their lower centrality and density scores in this cross-sectional dataset.

Quadrant IV contained themes that served as foundational pillars with strong potential to influence the development of core domains. In this study, Clusters 1 (health system governance, policymaking, and management), 4 (epidemiology of noncommunicable diseases and health inequities), and 6 (epidemiology, mortality, and global burden of disease) fell within this quadrant (Figure 4).

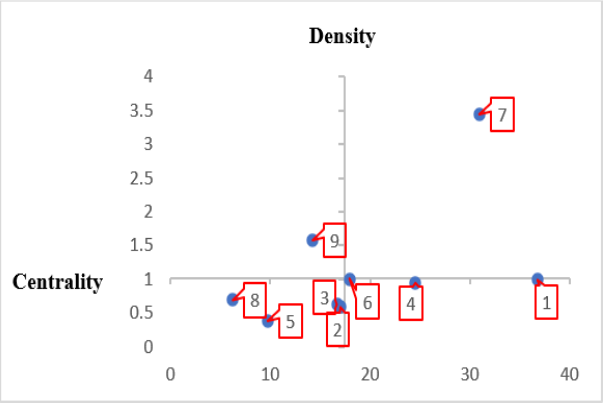

Figure 4. Strategic diagram of health policy research.

Discussion

This study analyzed the health policy research domain in Iran from 1987 to 2025, examining publication trends in the Web of Science database and identifying core subdomains and conceptual trajectories. The strategic diagram analysis and co-word mapping delineated the structural development, thematic distribution, and intellectual trajectory of Iranian health policy research over nearly four decades. By positioning research clusters in a two-dimensional space defined by centrality and density, this study contextualized domestic thematic priorities within the broader global landscape of health policy and systems research.

Cluster 7 (COVID-19 pandemic and infectious diseases) was the sole motor theme in the Iranian health policy network, distinguished by exceptional internal cohesion and strong cross-network interaction. Conceptually, the public health crisis functioned as an overarching thematic catalyst, reorganizing health research priorities around infection containment, vaccine ethics, and emergency preparedness. This observation aligns with the international bibliometric findings of Gonzalez-Argote & López-Sánchez [11] and Yudantara [13], who document an unprecedented post-2020 surge in which pandemic-related topics rapidly dominated global health policy agendas. Furthermore, this cluster's strong capacity to bridge relationships mirrors the findings of Jiangwei & Daud [9], affirming that biological crises inherently transcend narrow clinical confines and reshape multisectoral governance and policy analysis.

Cluster 9 (knowledge, attitude, and practice regarding health behaviors) emerged as an internally cohesive yet peripheral domain in Quadrant II. From a scientometric perspective, its high density reflects established methodological maturity and conceptual consistency, while its below-average centrality indicates limited thematic interaction with macro-governance and structural clusters. In contrast to the international trends documented by Fusco *et al.* [10], in which behavioral research and patient-centered approaches have increasingly merged with mainstream public administration and service design, the Iranian literature exhibits a persistent structural disconnect: behavioral and lifestyle interventions (e.g., smoking cessation and nutrition awareness) are predominantly evaluated as standalone epidemiological inquiries rather than integrated into upstream legislative and economic policy frameworks.

Quadrant III captured four clusters characterized by lower density and centrality: Cluster 2 (qualitative research in nursing and hospital care services), Cluster 3 (mental health, quality of life, and vulnerable populations), Cluster 5 (public health, environmental health, and smart technologies), and Cluster 8 (reproductive health, digital health, and social challenges). This positioning reflects two distinct scientific phenomena. On the one hand, clinical nursing and mental health literature, while abundant, remains localized around descriptive quality-of-life evaluations and exerts limited structural influence on national resource-allocation policies. On the other hand, the presence of smart technologies (AI, machine learning, and GIS), digital health, and environmental determinants (climate change and air pollution) delineates genuine

emerging frontiers. These thematic hotspots mirror the temporal frontiers identified in overlay visualizations by Rashidian *et al.* [15] and Sabri & Alabdali [16]. Their current position in Quadrant III underscores what Sabri & Alabdali defined as the innovation-to-policy gap and regulatory-evidence gap [16]: while technical explorations of AI, predictive algorithms, and spatial analytics are expanding in Iranian health research, their institutionalization in formal governance, ethical guidelines, and health technology assessment frameworks remains in its early formative stages.

The structural configuration placed Clusters 1 (health system governance, policymaking, and management), 4 (epidemiology of noncommunicable Diseases and Health Inequities), and 6 (epidemiology, mortality, and global burden of disease) in Quadrant IV. Methodologically, these clusters are defined by high centrality but moderate density and constitute the transversal foundation of the discipline. Cluster 1 registered the highest centrality score in the entire network, affirming that governance frameworks, health financing, and universal health coverage serve as the intellectual anchors connecting diverse policy subfields. This foundational position is consistent with the trajectory outlined by Whyle *et al.* [14] regarding HPA in LMICs, where macro-level governance reforms and health system strengthening typically form the central intellectual core. Similarly, the close integration of disease burden and noncommunicable disease (NCD) metrics reflects national health realities. As highlighted by Zhao *et al.* [8] and Yudantara [13], LMICs undergoing rapid epidemiological transitions must continuously align policy formulation with population mortality metrics and equity assessments. This helps explain why quantitative disease surveillance acts as a structural bridge that feeds into broader policy discourse.

Given the placement of smart technologies (AI, machine learning, and GIS) and digital health in Quadrant III, future research should focus on developing policy frameworks for integrating AI into health systems, addressing the ethical and legal challenges of digital health, and applying spatial analysis (GIS) to evaluate the equitable allocation of health resources. In light of the emergence of keywords such as “climate change” and “air pollution” in recent overlay trends, researchers should develop national frameworks to strengthen health system resilience to climate change and conduct socioeconomic impact evaluations of air pollution to support cross-sectoral policy design. Given the heavy burden of NCDs (diabetes, cardiovascular diseases, and obesity), health economists and policy researchers should prioritize studies of the economic burden of these conditions and cost-effectiveness analyses of preventive interventions to optimize resource allocation within constrained health budgets. As the acute phase of COVID-19 subsides, research priorities within Cluster 7 should shift from emergency management toward documenting lessons in crisis governance, evaluating long-term vaccination policies, and establishing robust biosecurity frameworks for the intelligent management of emerging infectious diseases

A primary limitation of this study is its exclusive reliance on the Web of Science Core Collection, which omits relevant literature indexed in other international databases (e.g., Scopus and PubMed) and the domestic Iranian database ISC. Consequently, because substantial local and operational health policy research is published in Persian for domestic policymakers, these findings reflect only the internationally visible, English-language literature rather than the full scope of Iran’s national scientific output.

Conclusion

Iranian health policy research has undergone substantial quantitative growth and thematic diversification, particularly since 2020, providing a useful evidence base for guiding future research priorities and resource allocation.

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Ethical Permissions: The research used publicly verifiable secondary data extracted from the WoS database and did not involve human or animal subjects.

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