National Defense Policy Integration: A Bibliometric Analysis

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Abstract. National defense policy is critical for protecting a nation's sovereignty, security, and stability, addressing a wide range of contemporary challenges that include not only military threats but also economic, technological, and societal issues. As countries adopt increasingly integrated approaches to national defense, effective policy implementation requires collaboration across governmental, private, and civil sectors. This study conducts a bibliometric analysis to map research trends, identify core themes, and highlight influential publications within the field of national defense policy. Analyzing 916 documents from 1859 to 2024 retrieved from the Scopus database, this study reveals a steady growth in publications, particularly after 2000, underscoring the field's responsiveness to global security events and technological advancements. Key findings indicate that research is concentrated in interdisciplinary domains, with significant contributions from journals such as Military Medicine and Journal of Physics: Conference Series, reflecting a blend of health, technology, and environmental perspectives. Leading institutions, including the National Defense Medical Center and National Defense Medical College, play pivotal roles, particularly in defense health and technology research. The geographical distribution highlights major contributions from China and the United States, underscoring their influence in global defense policy discourse. Additionally, keyword and co-occurrence analyses reveal that topics like military personnel, national security, and network security are central, while emerging themes in sustainable development and advanced technology reflect the field's evolving focus. This study offers valuable insights into the collaborative, interdisciplinary nature of defense policy research, providing guidance for future studies that aim to address the complex demands of modern national defense.

Keywords: national defense, defense industry, network security, bibliometric

1 Introduction

National defense policy is fundamental to a nation's security, sovereignty, and stability, encompassing strategies and measures designed to protect the state from both internal and external threats [1]. Governments worldwide recognize that effective defense policy implementation requires comprehensive approaches, combining military readiness with civil preparedness, technological resilience, and international collaboration [2], [3]. In recent years, the integration of national defense policies has become increasingly critical as nations seek to foster a coordinated, multifaceted approach to safeguard their interests. This drive for national

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capacity building, especially in dual-use technologies—technologies with both civilian and military applications—reflects an understanding that defense capabilities not only support national security but also contribute to international security and confidence-building efforts [4]. The literature underscores the significance of this nexus, illustrating how advancements in technological capability at the national level can profoundly influence the international confidence-building process, as countries demonstrate their commitment to responsible and transparent defense practices [4].

The concept of national defense has evolved to encompass a range of security dimensions that extend well beyond conventional military preparedness. As nations face an increasingly complex global landscape marked by political, economic, and environmental dynamics, policymakers have recognized the need for a broader, more comprehensive understanding of national security [5]. This expanded notion integrates not only military power and territorial integrity but also economic resilience, political stability, social cohesion, and environmental sustainability. Such an inclusive approach is critical for nations to address multifaceted threats that arise from cybersecurity risks, ideological extremism, public health crises, and environmental degradation, among others [5]. Consequently, the implementation of national defense policies must consider these diverse factors, adapting to an era where security is as much about economic stability and social resilience as it is about military strength.

To enhance the effectiveness of these policies, nations often employ a range of strategies, including legislative measures, interagency cooperation, public-private partnerships, and international alliances. Defense policies today include comprehensive programs to protect critical infrastructure, bolster cybersecurity, and improve disaster response, reflecting an acknowledgment that national defense is no longer the sole responsibility of the military but a shared societal commitment. For instance, public awareness campaigns and education initiatives are implemented to foster a security-conscious society, encouraging citizens to adopt practices that support national defense goals. Such measures represent a shift toward "Total Defense" models, where every individual plays a role in upholding national security, reinforcing the social fabric that bolsters resilience in times of crisis [6].

Despite its importance, the implementation of national defense policy presents challenges, both operational and ideological. Significant resources are required to sustain defense capabilities, demanding careful balancing with other national priorities. Moreover, defense policies in democratic societies must align with values of transparency and civil liberties, avoiding public skepticism or resistance. Balancing robust security measures with respect for democratic principles requires careful policy design and effective communication to build public trust and ensure societal cooperation. Additionally, the rapid pace of technological advancements—particularly in areas such as artificial intelligence and cybersecurity—necessitates that defense policies evolve continuously to address new vulnerabilities and capitalize on emerging opportunities.

In recent years, academic interest in the implementation of national defense policies has grown considerably, with research highlighting diverse aspects of policy application, from national capacity building and defense technology to international collaboration and public engagement. A bibliometric analysis of the literature reveals strong interest in technological and strategic aspects of defense, especially in cybersecurity, critical infrastructure protection, and dual-use technology development. Studies in this area often examine how national investments in technological innovation impact both domestic security and international relations. Scholars emphasize the importance of technological capability-building, illustrating how the effective integration of advanced technologies can enhance both national defense and international confidence, as countries demonstrate transparent and collaborative approaches to defense [4].

Furthermore, as nations broaden their security perspectives, studies increasingly explore non-military dimensions of national defense, such as economic resilience, environmental protection, and public health, which collectively contribute to the overall stability and resilience of a nation [5].

This bibliometric study seeks to map the research landscape surrounding the implementation of national defense policies, identifying key themes, influential works, and research gaps within the field. By analyzing publication trends, this study aims to offer insights into how various facets of defense policy—ranging from military preparedness and dual-use technology to civil-military cooperation and public engagement—are represented in academic discourse. The findings will provide a comprehensive overview of the academic landscape, shedding light on areas where further research may be necessary to support policymakers and defense professionals in developing effective, adaptable, and socially responsible defense strategies.

In conclusion, implementing national defense policy is an evolving endeavor, requiring continuous adaptation to address modern security challenges. Through this bibliometric analysis, the study will contribute to a deeper understanding of the factors influencing successful defense policy implementation, highlighting the balance between technological advancement, social resilience, and international cooperation. As threats evolve and new challenges emerge, the importance of an integrated, adaptable national defense policy framework becomes ever more critical, underscoring the need for ongoing academic and policy-focused research to ensure effective, sustainable, and collaborative approaches to national defense.

2. Methodology and Data Processing

This study employs a bibliometric approach by following core procedures in conducting a structured literature review. The process is carried out systematically with clear stages to enhance transparency, allowing the study to be replicated by other researchers. Additionally, a mind mapping technique is used to help establish knowledge boundaries within National Defense studies. Bibliometric analysis is widely accepted across various fields, providing a quantitative overview of scientific literature, including articles, books, and other academic publications.

2.1. Essential Stages in Bibliometric Analysis

This study applies a bibliometric approach to explore National Defense research, structured around five main steps [7]. First, specific research questions were defined to direct the analysis, covering publication volume, leading sources, key authors, country-specific output, and collaboration networks. Data was then gathered from the Scopus database, focusing on English-language documents related to the “National Defense” from 1859 to 2024, yielding 917 records. Following data collection, a cleaning process ensured consistency by removing duplicates and standardizing keywords. Analysis was conducted using R Biblioshiny, which enabled descriptive statistics, identification of major sources and authors, keyword mapping, and collaboration analysis. Finally, results were presented through visualizations that highlight key authors, prominent journals, thematic areas, and global collaboration trends, providing insights and future directions for National Defense.

2.2. Research Questions

To structure this bibliometric analysis, a series of research questions (RQs) were developed to explore various dimensions of the National Defense. These questions focus on identifying core themes, tracking publication trends, and recognizing key contributors in this area. The research questions are as follows:

RQ1: What is the main information obtained from research on the implementation of national defense policies?
RQ2: What are the most relevant and influential sources in studies on national defense policies?
RQ3: What is the local impact of these sources on the policies and implementation of national defense?
RQ4: How has the volume and frequency of publications on national defense policies evolved over time?
RQ5: Who is the most relevant or influential author in research related to national defense policies?
RQ6: Which affiliations or institutions are most frequently involved in research on national defense policies, and what is their contribution?
RQ7: From which countries do the corresponding authors contributing to national defense policy research come, and is there a geographical pattern in these contributions?
RQ8: Which countries are most frequently cited in literature related to national defense policies, and what is the significance of these citations?
RQ9: What are the main keywords or terms frequently appearing in research related to national defense policies, and what is their frequency of use?
RQ10: What are the co-occurrence patterns among topics in studies on national defense policies, and which concepts frequently appear together in the literature?

3. Result

This section presents the findings of the bibliometric analysis on research related to the National Defense, following the guiding research questions (RQs). The results are based on the analysis of 916 research documents published between 1859 and 2024, as retrieved from the Scopus database.

1) What is the main information obtained from research on the implementation of national defense policies at the higher education level?

Figure 1 presents a detailed bibliometric overview of research within a specified domain, spanning publications from 1859 to 2024. Over this period, a total of 917 documents were published across 542 different sources, which could include journals, conference proceedings, or books. The dataset reflects a steady annual growth rate of 2.72%, indicating a gradual increase in research output over time.

The analysis includes contributions from 2,632 unique authors, demonstrating a significant level of interest and participation in this field. Among these authors, 200 publications are single-authored, highlighting a portion of the research conducted independently. International collaboration is also notable, with 11.23% of the documents co-authored by researchers from different countries, underscoring the field's global reach and the collaborative nature of modern research.

On average, each document has 3.75 co-authors, suggesting that many studies are collaborative, involving multiple researchers working together. The authors have collectively contributed 2,776 unique keywords to describe the content of these publications, showcasing the diversity of topics and the rich vocabulary within this field. Interestingly, there is a reference count of only 1, which may imply a limitation in data collection or an incomplete capture of the citation network within this dataset.

The average age of documents is 8.22 years, indicating that, on average, the research in this dataset is moderately recent, likely balancing both foundational and more contemporary studies. Finally, each document has received an average of 10.1 citations, suggesting a fair level of impact and visibility in academic circles. Overall, this bibliometric profile provides insight into the publication trends, authorship dynamics, collaborative practices, and the scholarly impact of research within this field over an extended period.

Figure 1. Main Information

2) What are the most relevant and influential sources in studies on national defense policies?

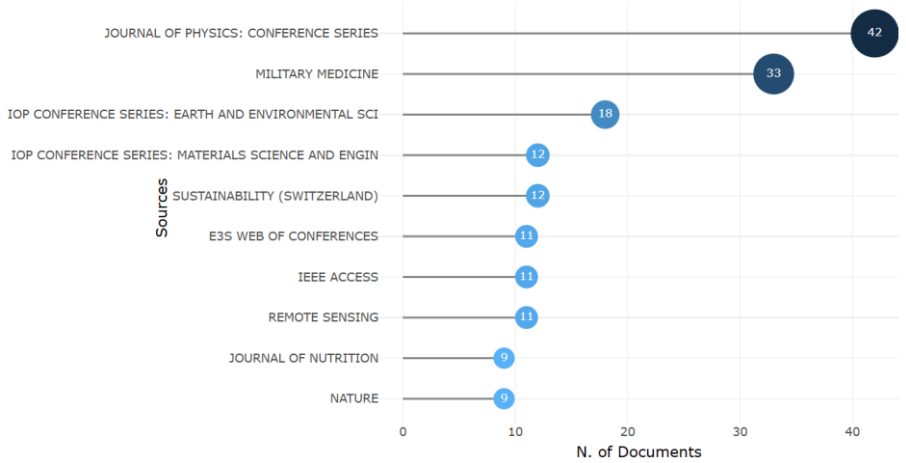

Figure 2. Relevant Sources

Based on the provided image, the most relevant and influential sources for studies on national defense policies are ranked by the number of documents they contain. The Journal of Physics: Conference Series appears to be the most prominent source, with 42 documents published, indicating its strong influence and likely focus on topics that could intersect with defense, such as technology and applied sciences. Following closely, Military Medicine has 33 documents published, making it a highly relevant source directly connected to defense and military health, which is integral to national defense policy discussions.

Other influential sources include IOP Conference Series: Earth and Environmental Science and IOP Conference Series: Materials Science and Engineering, each contributing 18 and 12 documents respectively. These sources suggest a focus on environmental and material sciences that may influence defense technology and strategies.The journal Sustainability (Switzerland) also contributes 12 documents, reflecting the growing recognition of sustainability issues within national defense considerations, possibly in the context of resource management or environmental impacts of defense activities.

The E3S Web of Conferences and IEEE Access, each with 11 documents, highlight conference contributions and technological research relevant to defense policies. Both sources cover a wide range of topics, from energy and environmental science to engineering and technology, that can influence defense planning and operations. Additionally, Remote Sensing, Journal of Nutrition, and Nature, each with 9 documents, demonstrate specialized areas such as surveillance technology, nutritional science for military personnel, and cutting-edge scientific discoveries that have implications for national defense.

In summary, this distribution of documents across various sources indicates a multidisciplinary approach to national defense policy studies, encompassing fields like physics, medicine, environmental science, materials science, sustainability, engineering, and even nutrition and fundamental sciences.

3) What is the local impact of these sources on the policies and implementation of national defense?

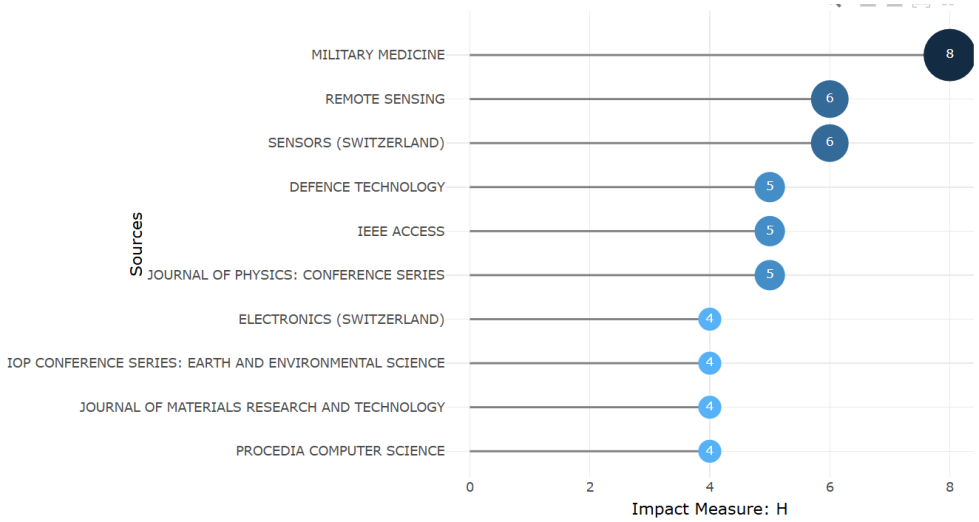

Figure 3. Local Impact Sources

The image displays a ranking of sources based on their local impact measure (H-index) in the context of studies related to national defense policies and their implementation. Here's an interpretation of the impact of each source:

1. Military Medicine has the highest local impact with an H-index of 8. This suggests that research published in this journal is highly influential in the defense field, likely addressing crucial topics related to the health, resilience, and operational readiness of military personnel. Its high impact could shape policies around military healthcare, mental health services, and overall force readiness.
2. Remote Sensing and Sensors (Switzerland) both have an H-index of 6. These journals focus on technologies for data gathering, monitoring, and detection, which are pivotal in modern defense strategies, particularly for surveillance, intelligence, and border security. Their impact likely informs policies on the use of satellite imagery, sensor networks, and other remote sensing technologies in defense.
3. Defence Technology, IEEE Access, and Journal of Physics: Conference Series each have an H-index of 5, indicating a moderate impact on defense policies. *Defence Technology* directly contributes to defense-specific innovations, potentially guiding policy decisions on the adoption of new defense systems or technologies. *IEEE Access* and *Journal of Physics: Conference Series* cover a range of engineering and physical sciences research, likely influencing policies related to defense infrastructure, technology upgrades, and the application of physics in military technology.
4. Electronics (Switzerland), IOP Conference Series: Earth and Environmental Science, Journal of Materials Research and Technology, and Procedia Computer Science all have an H-index of 4. These sources offer insights into electronics, environmental science, materials research, and computer science, each of which impacts different facets of national defense. For instance:
    - *Electronics (Switzerland)* may influence policies on electronic warfare and the development of defense electronics.
    - *IOP Conference Series: Earth and Environmental Science* could inform policies on environmental considerations in defense operations.
    - *Journal of Materials Research and Technology* provides insights into materials science that may impact the design and durability of defense equipment.
    - *Procedia Computer Science* likely contributes to policy-making around cybersecurity, data management, and artificial intelligence applications in defense.

The local impact of these sources highlights the interdisciplinary nature of national defense policy research. High-impact sources such as *Military Medicine* and *Remote Sensing* guide policies in specific areas, while sources with moderate impact contribute to technological and scientific advancements that influence broader defense strategies and implementation.

4) How has the volume and frequency of publications on national defense policies evolved over time?

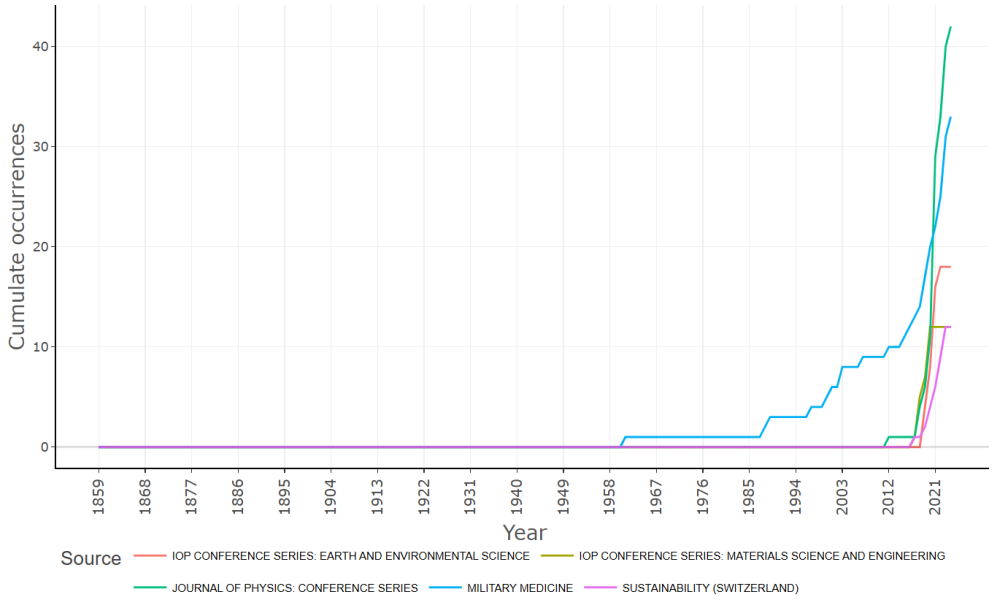

Figure 4. Frequency of Publications

Figure 4 explains the evolution of publication volume and frequency related to national defense policies over time, with data sourced from various academic journals and conference series. The cumulative occurrences in the graph reveal minimal activity before the 2000s, indicating a limited amount of documented discourse on national defense policies in earlier decades. This trend shifts significantly post-2000, particularly from 2003 onward, where a gradual increase in publications is observed, especially in *Military Medicine*. This surge aligns with global events and a heightened focus on security, likely driven by the post-9/11 geopolitical landscape, which spurred more research in defense-related fields.

The upward trend accelerates further around 2012, with notable contributions from sources like the *IOP Conference Series: Earth and Environmental Science* and the *Journal of Physics: Conference Series*. This shift suggests an interdisciplinary approach where defense policy research increasingly intersects with environmental science and technological advancements, reflecting the complexities of modern-day defense considerations that include sustainable practices and environmental impacts.

In recent years, particularly from 2021 onward, the graph indicates a sharp rise across all sources, marking an intensified focus on national defense policy publications. This could be attributed to contemporary global defense challenges, rapid technological development in military science, and a stronger academic push to integrate sustainability and environmental science perspectives into defense policy research. Overall, the trend in Figure 4 demonstrates a growing academic interest in national defense policies, especially in the context of interdisciplinary research and global socio-political developments.

5) Who is the most relevant or influential author in research related to national defense policies?

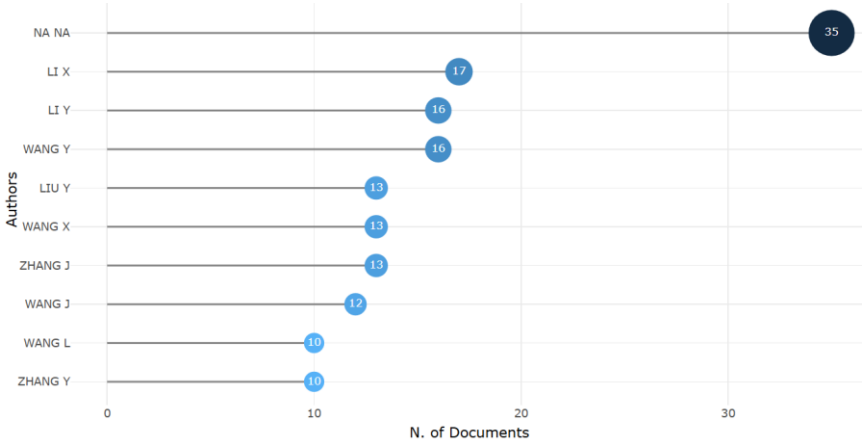

Figure 5. Most Relevant Authors

The figure identifies the most prolific authors in research related to national defense policies, with the number of documents they have contributed. The most relevant or influential author is labeled as "NA NA" with 35 documents, which may indicate unidentified or non-attributable authorship in the database or errors in data entry.

Following "NA NA," the authors with the highest contributions include *Li X* with 17 documents, *Li Y* and *Wang Y* with 16 documents each. Other notable contributors are *Liu Y*, *Wang X*, and *Zhang J*, each with 13 documents. These frequent contributions suggest that these authors are actively engaged in research surrounding national defense policies, and their work may have considerable influence in shaping the field.

The distribution in this figure suggests that while there is a core group of authors making substantial contributions, the field may also include contributions from a broad range of other researchers, as indicated by the variety of authors listed with multiple publications. This data highlights both the key players and the collaborative nature of research in this field, where multiple researchers bring diverse perspectives and expertise

6) Which affiliations or institutions are most frequently involved in research on national defense policies, and what is their contribution?

Figure 6 shows the affiliations or institutions most frequently contributing to research on national defense policies, measured by the number of articles published. The top contributing institution is the National Defense Medical Center with 29 articles, closely followed by the National Defense Medical College with 28 articles. These institutions likely have a strong focus on defense-related medical research, indicating their significant influence in this area.

Other prominent contributors include the National Defence University of Malaysia with 16 articles and I-Shou University with 15 articles. The Uniformed Services University of the Health Sciences has 14 articles, while China Medical University and the Naval Postgraduate School contributed 13 and 12 articles, respectively. Additional institutions, such as the Nanjing University of Science and Technology and the University of Chinese Academy of Sciences,

both with 11 articles, and National Yang Ming Chiao Tung University with 9 articles, also show active participation in defense policy research.

This distribution highlights that a variety of institutions, particularly those with a focus on defense, medical, and technological sciences, are leading contributors in national defense policy research. The concentration of research output from these institutions suggests their strategic commitment to advancing knowledge and policy frameworks in national defense, particularly in areas intersecting with health sciences and technology.

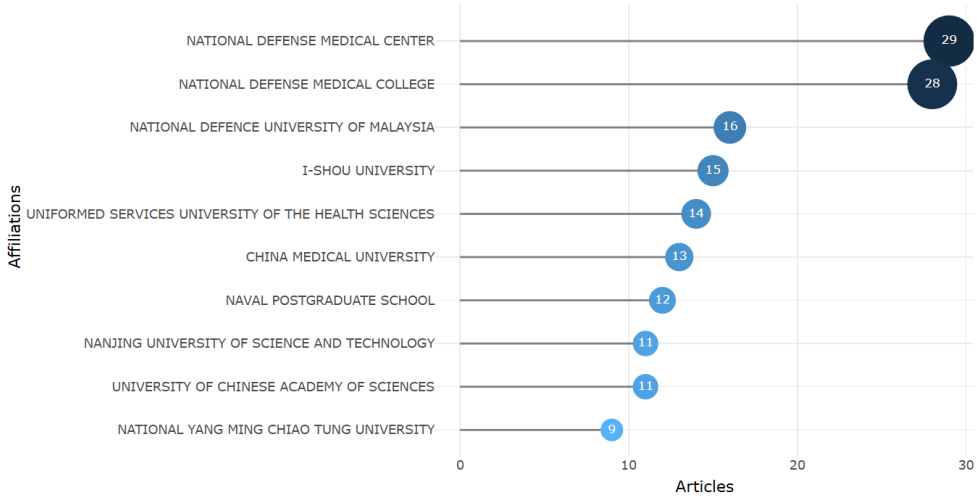

Figure 6. Most Relevant Affiliation

7) From which countries do the corresponding authors contributing to national defense policy research come, and is there a geographical pattern in these contributions?

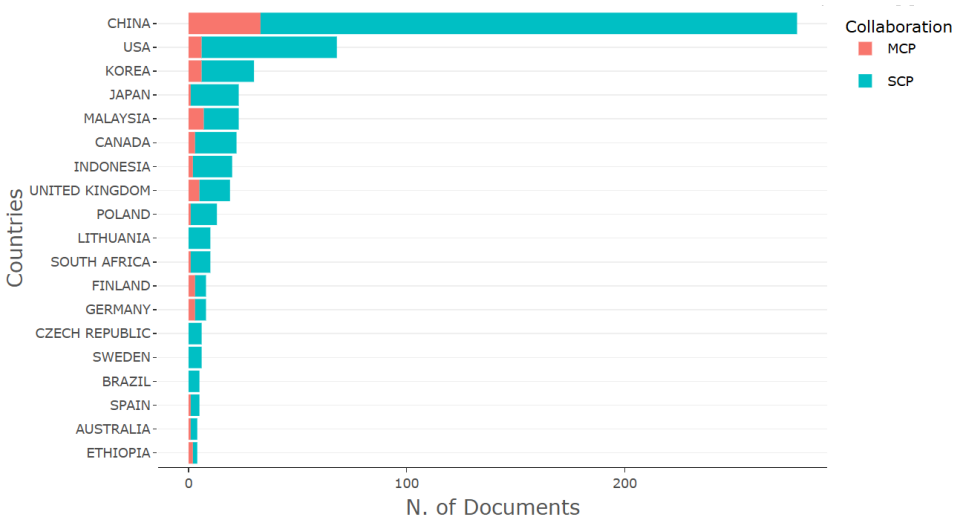

Figure 7. Corresponding Countries

8) From which countries do the corresponding authors contributing to national defense policy research come, and is there a geographical pattern in these contributions?

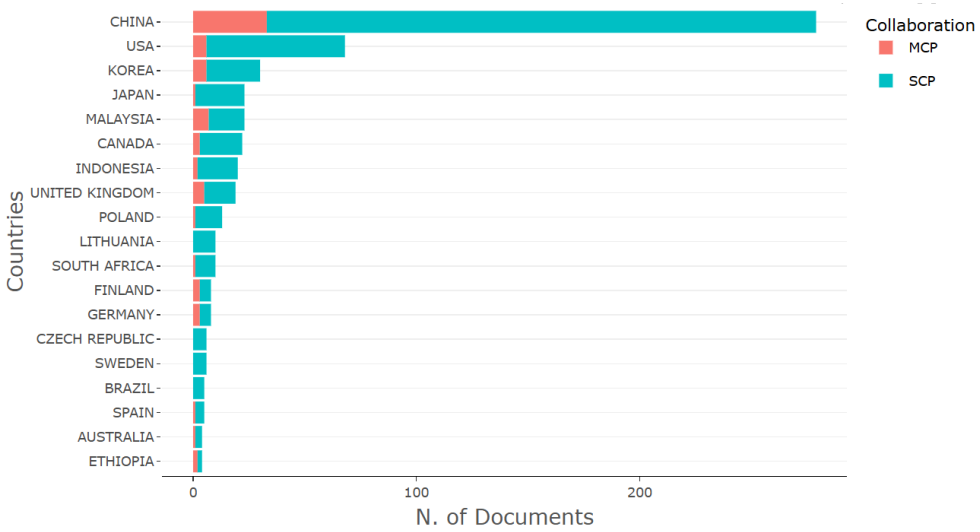

Figure 7. Corresponding Countries

Based on Figure 7, the countries with the highest contributions to national defense policy research, as indicated by the number of documents, are primarily concentrated in Asia, North America, and Europe. China leads with a significant volume of publications, followed by the United States. Both countries exhibit a strong focus on single-country publications (SCP) but also engage in multi-country collaborations (MCP), as indicated by the mix of blue (SCP) and red (MCP) bars.

South Korea, Japan, Malaysia, and Canada also contribute notably, with a majority of single-country publications and smaller portions of collaborative publications. Other countries with substantial contributions include Indonesia, the United Kingdom, Poland, and Lithuania, reflecting a diverse international interest in defense policy research.

A geographical pattern emerges, with most research coming from nations with significant strategic defense interests or advanced technological and research capabilities, particularly in Asia and North America. European countries, while contributing fewer documents overall, show engagement through collaborations, highlighting a regional emphasis on joint research efforts. This distribution indicates a global engagement in national defense policy research, with strong individual contributions from specific countries and collaborative efforts emerging, especially in Europe.

9) Which countries are most frequently cited in literature related to national defense policies, and what is the significance of these citations?

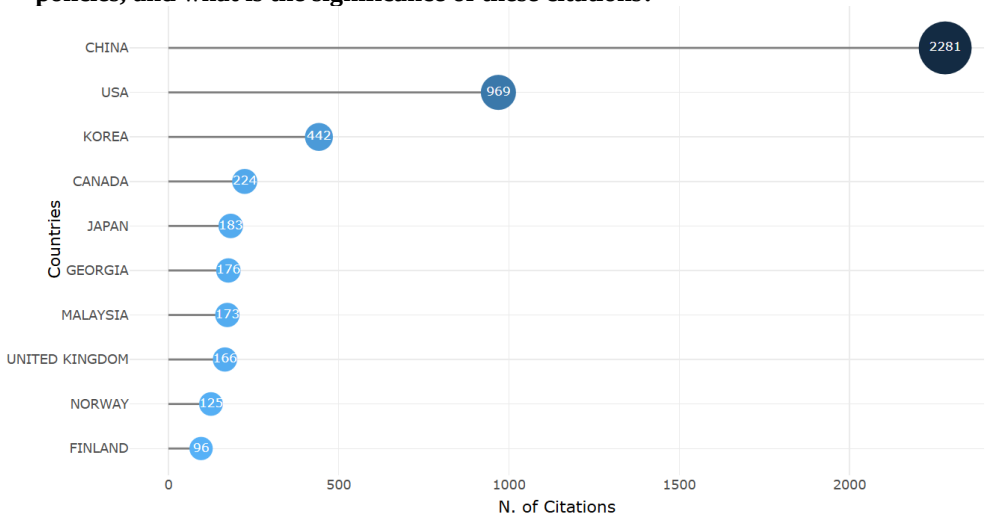

Figure 8. Most Cited Countries

The figure highlights the countries whose publications in national defense policy research have garnered the highest number of citations, indicating their influence and impact on the field. China leads significantly with 2,281 citations, suggesting that research produced in China is not only prolific but also widely referenced, reflecting its importance and relevance in the global discourse on defense policy. The United States follows with 969 citations, showcasing a substantial influence, likely due to the country's extensive involvement in defense and security research.

South Korea ranks third with 442 citations, marking its research as a notable contributor to the field, followed by Canada (224 citations), Japan (183 citations), and Georgia (176 citations). Other countries, including Malaysia, the United Kingdom, Norway, and Finland, also show significant citation counts, indicating their research's value and contribution to advancing knowledge in defense policy.

The citation counts suggest a geographical pattern where research from China and the United States is particularly impactful, potentially due to their strategic and technological capabilities in defense. This influence indicates that other countries, as well as international researchers, rely on insights from these nations, underscoring their role as leaders in setting trends and frameworks in national defense policies. The spread of citations across multiple countries also highlights a globalized research network, where countries contribute diverse perspectives that enrich the collective understanding of defense policies and strategies.

10) What are the main keywords or terms frequently appearing in research related to national defense policies, and what is their frequency of use?

Figure 9. WordCloud

The co-occurrence network in Figure 9 reveals the relationships between key terms and concepts frequently studied together in national defense policy research. Prominent terms such as *national defense*, *humans*, *military personnel*, and *network security* appear centrally, indicating these as core concepts closely associated with broader discussions on national defense. The centrality and size of these terms suggest they are highly interconnected with various other themes and are frequently explored together in the literature.

Other important terms include *United States*, *military medicine*, *decision making*, and *risk assessment*, reflecting the geographical focus on specific nations and the methodological emphasis on strategic and health considerations in this field. The appearance of regional and national terms, such as the *United States*, emphasizes the importance of understanding national defense policies in the context of specific countries with substantial defense interests. Additionally, the presence of terms like *deep learning* and *remote sensing* highlights the integration of advanced technologies in defense research.

The proximity of concepts like *sustainable development*, *economics*, and *science and technology* suggests that researchers often examine the intersection of defense policies with broader technological, environmental, and economic frameworks. Terms such as *human*, *female*, *male*, and *adult* further indicate a focus on demographic and human-centered aspects within defense studies.

Overall, the co-occurrence network highlights the multifaceted and interconnected nature of research on national defense policies. It demonstrates the close relationships between core defense concepts, policy considerations, and interdisciplinary studies, reflecting the global and complex scope of this field.

11) What are the co-occurrence patterns among topics in studies on national defense policies, and which concepts frequently appear together in the literature?

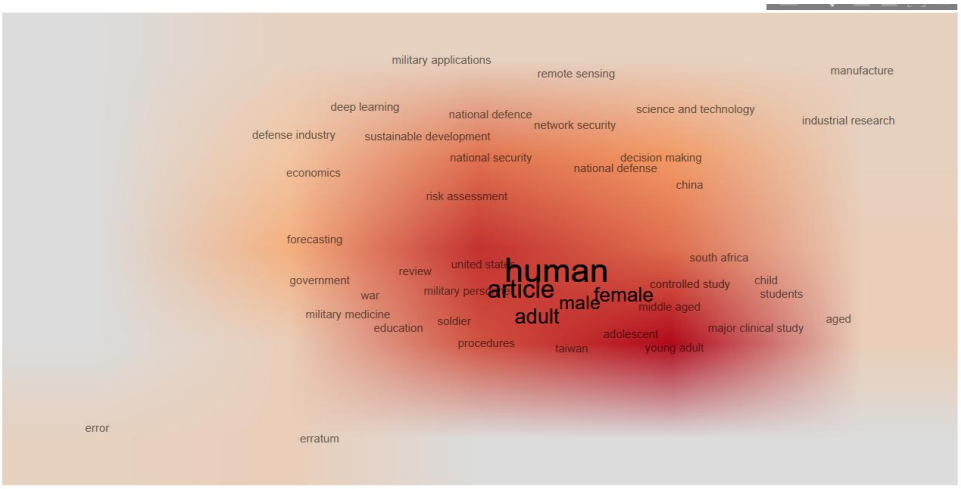

Figure 10. Occurrence Patterns

Based on Figure 10, the co-occurrence patterns in studies related to national defense policies reveal clusters of frequently associated concepts, with a focus on human-centric and security-related terms. At the center, “human,” “article,” “adult,” “male,” and “female” are prominently connected, indicating that much of the literature involves studies centered on human subjects, demographics, and possibly gender-related analyses within national defense research.

Surrounding these central terms are additional keywords such as “military personnel,” “national security,” “network security,” and “national defense,” which often appear together, reflecting the interconnectedness of human resources and security considerations in defense research. Topics like “decision making,” “risk assessment,” and “military medicine” are also closely associated, suggesting a focus on strategic processes, risk management, and healthcare aspects within military contexts.

Further out, terms like “deep learning,” “sustainable development,” “defense industry,” and “economics” appear, pointing to the integration of technology, sustainability, and economic perspectives in defense studies. This distribution shows that while central themes focus on human and security elements, there is also significant interdisciplinary interest involving technology, sustainability, and industrial applications in national defense policy research.

The spatial arrangement in the heat map suggests that topics closer to the center, such as human demographics and military security, are more frequently discussed together, while peripheral topics like “manufacture,” “remote sensing,” and “sustainable development” indicate emerging or less frequently combined areas within the literature. Overall, the co-occurrence patterns reflect a comprehensive approach to defense policy research, with core topics in human demographics and security, complemented by supporting research in technology, industry, and economic aspects.

4. Discussion

The bibliometric analysis of national defense policy research highlights a field marked by consistent growth, interdisciplinary contributions, and global collaboration. The dataset spans publications from 1859 to 2024, indicating a steady increase in research output, with a current average growth rate of 2.72% annually. This growth reflects an increasing academic and practical interest in defense policy, shaped by evolving geopolitical landscapes and technological advancements. The presence of over 2,600 unique authors and a notable portion of international collaborations (11.23% of documents) underscores the field's diversity and the collaborative nature of modern research. The average of 3.75 co-authors per document suggests that collective expertise is frequently leveraged in this area, enhancing the robustness and scope of findings.

Key sources contributing to defense policy literature are diverse, with journals like the Journal of Physics: Conference Series and Military Medicine leading in publication volume. These sources suggest that defense research intersects with fields like technology, medicine, and environmental science. For instance, Military Medicine provides insights directly relevant to military health, resilience, and personnel readiness, which are foundational to defense policy. Similarly, sources like IOP Conference Series: Earth and Environmental Science and Materials Science and Engineering indicate a growing focus on sustainability and materials, reflecting the integration of environmental concerns and technological advancements into defense strategies. This multidisciplinary approach enriches defense policy literature by incorporating perspectives from health sciences, engineering, and environmental studies.

Local impact analysis further reveals that Military Medicine holds the highest influence (H-index of 8), followed by journals specializing in technology and remote sensing, such as Remote Sensing and Sensors (Switzerland). The high impact of these journals suggests a policy influence on topics such as military healthcare, remote surveillance, and sensor technology, which are increasingly crucial in modern defense. Journals with moderate H-index scores, like Defence Technology and IEEE Access, underscore the role of technological and engineering research in shaping policies on cybersecurity, defense infrastructure, and military innovations. These findings suggest that national defense policy research is not confined to traditional military studies but includes vital contributions from environmental, technological, and medical disciplines.

The temporal analysis of publication trends reveals minimal activity before 2000, with a marked increase post-2003, likely due to heightened global security concerns following events like 9/11. Publications surged further around 2012, aligning with broader interdisciplinary interests, including environmental impacts and technological advancements. The recent surge in publications, especially post-2021, likely reflects an intensified focus on sustainability and technological integration within defense policy, driven by contemporary global challenges. This upward trend indicates a robust and growing academic interest in defense policy, with research increasingly informed by interdisciplinary perspectives and evolving global defense requirements.

Author contributions show a varied landscape, with certain authors like Li X, Li Y, and Wang Y making substantial contributions, though the presence of “NA NA” as the top contributor suggests potential data limitations. Despite this, a core group of influential authors actively shapes the field, supported by a wide array of contributors who add diverse insights. The collaborative nature of this research community allows for a more comprehensive exploration of defense policy topics, integrating various academic perspectives and expertise.

Institutional contributions are led by defense and medical-focused institutions, such as the National Defense Medical Center and the National Defense Medical College, which underscore a commitment to research that intersects with military health and preparedness. Other notable contributors, like the National Defence University of Malaysia and the Uniformed Services University of the Health Sciences, highlight a strategic focus on advancing defense knowledge through academic and applied research. The involvement of institutions with technological and scientific focuses, such as the University of Chinese Academy of Sciences and Nanjing University of Science and Technology, reinforces the interdisciplinary foundation of defense policy research, where medical, technological, and academic institutions collectively drive advancements in policy frameworks.

Geographical analysis reveals that contributions predominantly come from nations with substantial defense interests, particularly China and the United States, which lead in both publication volume and citation impact. These countries' influence likely reflects their advanced defense capabilities and strategic focus on military research. Other significant contributors, including South Korea, Japan, and European countries, highlight the global nature of defense policy research, with countries contributing based on their unique technological, strategic, or regional priorities. The high citation counts for countries like China and the United States indicate their role as primary reference points in the global defense discourse, underscoring the value of their research output to international scholars and policymakers.

Keyword and co-occurrence analysis further emphasize the multifaceted nature of defense policy research, with terms like “human,” “national defense,” “military personnel,” and “network security” reflecting core topics centered on human resources and security. The prominence of terms like “decision making,” “risk assessment,” and “military medicine” suggests that strategic and health considerations are integral to this field. The presence of terms related to technology, such as “deep learning” and “remote sensing,” as well as economic and environmental terms like “sustainable development,” illustrates the interdisciplinary scope of defense policy studies. The co-occurrence patterns reveal close connections between human demographics and security, while peripheral topics like “manufacture” and “sustainable development” indicate emerging areas of research focus.

In conclusion, the findings from this bibliometric analysis illustrate a dynamic and collaborative field of national defense policy research. The growing number of publications, diverse disciplinary contributions, and international collaborations reflect a comprehensive approach to addressing contemporary defense challenges. By integrating insights from technology, environmental science, and medical fields, defense policy research is well-positioned to inform policy decisions that address both traditional military objectives and modern considerations, such as sustainability and technological advancement. This interdisciplinary and globally engaged research community will likely continue to shape defense policies that are responsive to an increasingly complex global landscape.

5. Conclusion

This bibliometric analysis of national defense policy research provides a comprehensive overview of the field's evolution, key contributors, interdisciplinary reach, and global collaboration patterns. The study reveals a steady growth in publications, particularly post-2000, driven by global security events and technological advancements. This increase reflects a heightened interest in understanding and shaping defense policies that address contemporary challenges in national security.

Key sources such as *Military Medicine*, *Journal of Physics: Conference Series*, and *Remote Sensing* underscore the multidisciplinary nature of defense policy research, which integrates insights from health sciences, engineering, environmental studies, and technology. This interdisciplinary approach is crucial for addressing the complexities of modern defense, where technological advancements, sustainability concerns, and human resource management play critical roles.

Institutional contributions are led by defense, medical, and technological institutions, with significant involvement from research centers in China and the United States, countries that also lead in publication volume and citation impact. This geographical distribution indicates that nations with strong defense interests and capabilities play central roles in advancing knowledge and shaping global discourse on defense policies. Moreover, the collaborative nature of the field is evident in the considerable number of internationally co-authored papers, highlighting a shared interest among countries in improving defense strategies and policies through collective expertise.

The keyword and co-occurrence analysis reveals that human-centric topics such as military personnel and national security are at the core of defense policy studies, while emerging themes like sustainable development, remote sensing, and economic perspectives are gaining prominence. This combination of traditional and emerging topics demonstrates the adaptability of defense policy research to incorporate new challenges, such as environmental impacts and cybersecurity, alongside established military objectives.

In conclusion, national defense policy research is an expanding field characterized by interdisciplinary collaboration and global participation. The insights gained from this bibliometric analysis underscore the importance of a comprehensive approach to defense policy, one that not only addresses immediate security needs but also integrates broader societal, technological, and environmental considerations. This evolving research landscape is well-positioned to inform policy-makers in creating resilient, adaptable, and forward-looking defense strategies for a rapidly changing global environment. The continued growth and diversification of this field promise to provide increasingly nuanced and relevant insights to meet the complex demands of modern national defense.

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