



Global Trends and Research Patterns on Babygram: A Bibliometric Analysis

Babygram Üzerine Küresel Eğilimler ve Araştırma Örüntüleri: Bibliyometrik Bir Analiz

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ABSTRACT

Objectives: This study aimed to provide a comprehensive bibliometric overview of the global research landscape concerning Babygram, skeletal survey, and whole-body radiography in pediatric populations between 1980 and 2025.

Methods: A bibliometric analysis was performed using the Web of Science Core Collection database. The search strategy included the terms (babygram OR “skeletal survey” OR “whole-body radiography” OR “bone survey”) in the Topic (TS) field, combined with (child* OR neonat* OR infant* OR bab* OR newborn*) in the Abstract field. The search covered publications from January 1, 1980, to October 30, 2025. Articles and review articles were included, while meeting abstracts, letters, and other document types were excluded. Data were analyzed using descriptive bibliometric indicators, including publication trends, language distribution, and document types. Keyword co-occurrence and thematic cluster analyses were performed using VOSviewer, and temporal shifts in research focus were evaluated. Publications were also classified according to imaging modalities (radiography, ultrasound, MRI), and trends over predefined time periods were calculated using the total number of publications per period as the denominator.

Results: A total of 424 publications were identified, of which 380 (89.6%) were original articles, and 37 (8.7%) were review articles. The remaining 5 (1.2%) were early-access articles. Most publications were written in English (n=407, 95.99%), followed by German (n=8, 1.88%), French (n=4, 0.94%), Turkish (n=2, 0.47%), Spanish (n=2, 0.47%), and Czech (n=1, 0.24%). The number of publications demonstrated a steady increase after 2010, reflecting growing interest in radiographic imaging for pediatric trauma and forensic applications.

Conclusion: This bibliometric analysis provides the first comprehensive mapping of Babygram-related research over the past 25 years. The results indicate a gradual shift from routine to indication-based imaging, alongside the increasing adoption of ultrasound and MRI as radiation-free alternatives. These findings highlight evolving research priorities, including radiation safety, diagnostic optimization, and the development of evidence-based pediatric imaging guidelines.

Keywords: Bibliometrics; child; diagnostic imaging trends; emergency medicine; infant; radiography; skeletal survey; whole-body imaging.

ÖZET

Amaç: Bu çalışma, 1980–2025 yılları arasında pediatrik popülasyonlarda Babygram, iskelet taraması ve tüm vücut radyografisi ile ilgili küresel araştırma alanını kapsamlı bir bibliyometrik bakış açısıyla değerlendirmeyi amaçladı.

Yöntem: Bibliyometrik analiz, Web of Science Core Collection veritabanı kullanılarak gerçekleştirildi. Arama stratejisi, Konu (TS) alanında (babygram OR “skeletal survey” OR “whole-body radiography” OR “bone survey”) ve Özet alanında (child* OR neonat* OR infant* OR bab* OR newborn*) terimlerini içeriyordu. Arama, 1 Ocak 1980'den 30

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Cite this article as:

Özdemir S, Kokulu K. Seasonal Changes of Gout Disease. Bosphorus Med J 2026;13(1):14-22.

Received: 09.03.2026

Revision: 28.03.2026

Accepted: 06.04.2026

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Ekim 2025'e kadar yayımlanan çalışmalarla sınırlandırıldı. Makaleler ve derleme makaleler dahil edilirken, toplantı özetleri, mektuplar ve diğer belge türleri hariç tutuldu. Veriler, yayın trendleri, dil dağılımı ve belge türleri gibi tanımlayıcı bibliyometrik göstergeler kullanılarak analiz edildi. Anahtar kelime eşzamanlılık ve tematik küme analizleri VOSviewer ile gerçekleştirildi ve araştırma odaklarındaki zamansal değişimler değerlendirildi. Ayrıca, yayınlar görüntüleme modalitelerine göre sınıflandırıldı (radyografi, ultrason, MR) ve her dönem için toplam yayın sayısı baz alınarak trendler hesaplandı.

Bulgular: Toplam 424 yayın belirlendi; bunların 380'i (%89,6) özgün makale, 37'si (%8,7) derleme makalesiydi. Kalan 5 yayın (%1,2) erken erişim makalesiydi. Çoğu yayın İngilizce yazılmıştı (n=407, %95,99), bunu Almanca (n=8, %1,88), Fransızca (n=4, %0,94), Türkçe (n=2, %0,47), İspanyolca (n=2, %0,47) ve Çekçe (n=1, %0,24) izledi. Yayın sayısı, 2010 sonrası dönemde istikrarlı bir artış gösterdi ve pediatrik travma ve adli uygulamalar için radyografik görüntülemeye artan ilgiyi yansıttı.

Sonuç: Bu bibliyometrik analiz, son 25 yılda Babygram ile ilgili araştırmaların ilk kapsamlı haritalamasını sunmaktadır. Bulgular, rutin görüntüleme gereksinime dayalı görüntülemeye doğru kademeli bir kayışı ve artan şekilde ultrason ve MR gibi radyasyonsuz alternatiflerin kullanımını göstermektedir. Bu bulgular, radyasyon güvenliği, tanısal optimizasyon ve kanıta dayalı pediatrik görüntüleme rehberlerinin geliştirilmesi gibi araştırma önceliklerinin evrimini vurgulamaktadır.

Anahtar sözcükler: Bebek; çocuk; radyografi; skeletal survey; tanı; tüm vücut görüntüleme.

The Babygram, also known as whole-body radiography, has long been used in pediatric medicine for the evaluation of skeletal abnormalities, congenital malformations, and traumatic injuries. Traditionally, it served a central role in the diagnostic assessment of infants, particularly in cases of suspected non-accidental trauma or unexplained death.^[1-3] Over the past two decades, the use of Babygram has evolved substantially, influenced by advances in imaging technology, radioprotection awareness, and ethical considerations related to pediatric exposure to ionizing radiation. Despite its historical importance, concerns regarding the clinical justification and radiation safety of Babygram have been raised in recent years. While skeletal surveys remain a cornerstone of child protection investigations, the diagnostic yield of routine post-mortem or neonatal Babygrams has been questioned in several studies.^[1,4-6] Moreover, the emergence of point-of-care ultrasound (POCUS) and magnetic resonance imaging (MRI) has provided clinicians with alternative, non-ionizing imaging modalities, further prompting a re-evaluation of the role of Babygram in contemporary practice.^[7] To date, no bibliometric study has comprehensively analyzed the global research output related to Babygram and whole-body radiography in pediatric populations. Bibliometric analysis allows for the quantitative mapping of research trends, identifying influential countries, topics, and publication patterns over time. Therefore, this study aimed to characterize the evolution, thematic distribution, and publication trends of Babygram-related research published between 2000 and 2025 using data from the Web of Science Core Collection.

Methods

Data Source and Search Strategy

The search was conducted in the Web of Science (WoS) Core Collection database. To ensure full reproducibility, the search strategy was defined using standard WoS field tags and Boolean operators as follows:

TS=(babygram OR “skeletal survey” OR “whole-body radiography”)

AND

TS=(child* OR neonat* OR infant* OR newborn*)

The Topic (TS) field in WoS includes title, abstract, author keywords, and Keywords Plus. Truncation (*) was used to capture variations of terms (e.g., child, children; neonate, neonatal). The search was limited to publications between January 1, 1980, and October 30, 2025. While broad terms were used to ensure comprehensive coverage, the inclusion criteria limited the final dataset to studies directly relevant to pediatric whole-body radiography.

Screening and Study Selection

All retrieved records were exported from WoS and screened for eligibility. Duplicate records were removed prior to screening. A two-stage screening process was conducted independently by two reviewers. In the first stage, titles and abstracts were evaluated against predefined inclusion criteria focusing on Babygram, skeletal survey, or whole-body radiographic imaging in pediatric populations. In the second stage, remaining records were assessed based on full bibliographic information. Discrepancies were resolved through discussion and consensus, ensuring transparency and reproducibility.

Institutional Affiliation Standardization

Author affiliations were standardized to consolidate variations and overlapping entities (e.g., “Harvard University,” “Harvard Medical School,” “Harvard University Medical Affiliates,” and “Boston Children’s Hospital” were merged under a single entry). This approach minimizes duplication and provides accurate institutional productivity counts.

Counting Method

Full counting was applied for authors, institutions, and countries, meaning each occurrence was counted as one contribution, ensuring that all contributions are fully represented in the bibliometric analysis.

Bibliometric Analysis

Co-authorship, institutional, country, and keyword networks were constructed using VOSviewer and Bibliometrix. Minimum thresholds were set for authors (≥ 3 publications), institutions (≥ 5 publications), and keywords (≥ 10 occurrences). Network clustering was performed using modularity-based algorithms. These thresholds were selected to balance interpretability and comprehensive inclusion. Keyword co-occurrence analysis identified thematic clusters, including pediatric trauma evaluation, child abuse imaging, and radiation safety. Temporal analysis revealed shifts in research focus from diagnostic protocols and imaging utilization to radiation reduction strategies and guideline development.

Imaging Modality Analysis

Publications were categorized according to discussed imaging modalities, including radiography, ultrasound, and MRI. Studies including multiple modalities were recorded for all relevant modalities. Temporal trends were calculated as percentages of total publications within each period, allowing comparison of modality prevalence over time.

Results

Publication Trends by Year

Between 1980 and 2025, a total of 424 publications on Babygram were indexed in the Web of Science Core Collection. As illustrated in Figure 1, the annual number of publications demonstrated a gradual increase over the past two decades. The earliest identified paper appeared in 2001, followed by a modest number of studies throughout the early 2000s. After 2010, publication output began to rise steadily, with a notable surge after 2014. The peak was reached in 2021, with 31 publications (7.3%), followed by 28 in 2022 and 23 in 2020. Recent years have maintained this upward trend, with 21 articles in 2023 (4.9%), 19 in 2024 (4.5%), and 17 in 2025 (4.0%).

Document Types

Most of the publications were original research articles ($n=312$, 73.6%), while review articles accounted for 78 (18.4%), case reports for 21 (5.0%), and editorials/letters for 13 (3.0%). Early access publications represented five (1.2%) of the total. These findings indicate that Babygram research has been primarily

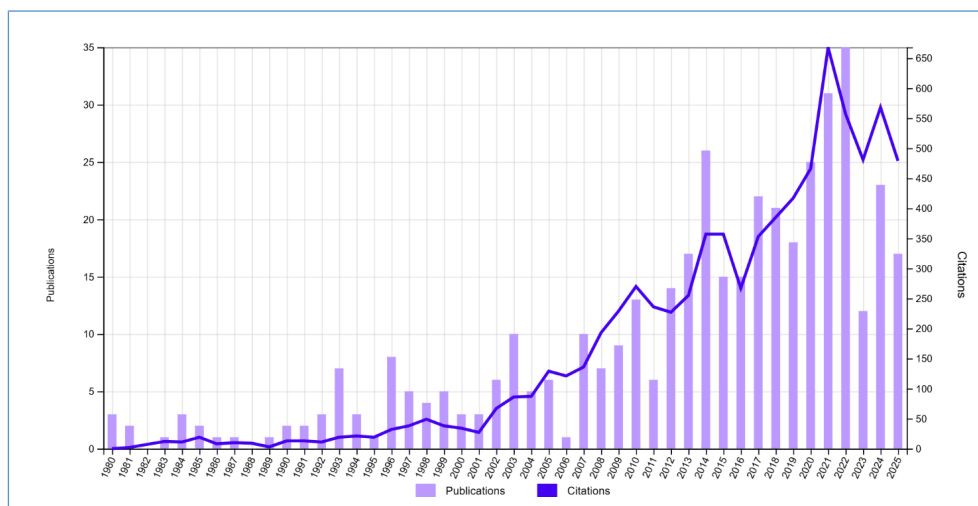


Figure 1. Annual Trend of Publications and Citations on Babygram (1980-2025).

The blue bars represent the annual number of publications (left axis). The red line depicts the annual number of citations received by publications from each respective year (right axis).

data-driven, emphasizing empirical and clinical investigation rather than conceptual or theoretical synthesis.

Language Distribution

A total of 424 publications were included in the final analysis. Among these, 407 (95.99%) were published in English, 8 (1.88%) in German, 4 (0.94%) in French, 2 (0.47%) in Turkish, 2 (0.47%) in Spanish, and 1 (0.24%) in Czech.

Distribution by Institutional and Departmental Affiliation

According to Table 1, the most productive institutions were Harvard University and the University of Pennsylvania (each contributing 35 publications, 8.3%), followed close-

ly by the Children's Hospital of Philadelphia and Harvard University Medical Affiliates (each 34 publications, 8.0%). At the departmental level, the Perelman School of Medicine (31, 7.3%), University of Pennsylvania Department of Pediatrics (23, 5.4%), and Pennsylvania Medicine (21, 4.9%) were the leading contributors. These results highlight that research output is predominantly concentrated in U.S.-based academic centers specializing in pediatrics and radiology.

Most Cited Publications

The top-cited papers are summarized in Table 2.^[8–27] The most frequently cited study was by Lane et al.^[8] in *JAMA*, titled “Racial differences in the evaluation of pediatric

Table 1. Distribution of Publications by Institutional and Departmental Affiliation (Top 25)

Distribution of Publications by Affiliation		Distribution of Publications by Departmental Affiliation	
Affiliation	Record Count (% of 424)	Affiliation with Department	Record Count (% of 424)
Harvard University	35 (8.255)	Perelman School of Medicine	31 (7.311)
University Of Pennsylvania	35 (8.255)	University of Pennsylvania Department of Pediatrics	23 (5.425)
Children's Hospital of Philadelphia	34 (8.019)	Pennsylvania Medicine	21 (4.953)
Harvard University Medical Affiliates	34 (8.019)	The Children S Hospital of Philadelphia Division of General Pediatrics	15 (3.538)
Pennsylvania Medicine	34 (8.019)	University Of Pittsburgh School of Medicine	14 (3.302)
Boston Children s Hospital	31 (7.311)	University Of Pittsburgh Schools of the Health Sciences	14 (3.302)
Pennsylvania Commonwealth System of Higher Education PCSHE	22 (5.189)	University Of Pittsburgh Department of Pediatrics	13 (3.066)
University System of Ohio	21 (4.953)	Riley Hospital for Children at Indiana University Health	11 (2.594)
Indiana University System	20 (4.717)	University of Colorado Anschutz Medical Campus Department of Emergency Medicine	11 (2.594)
Indiana University Health	18 (4.245)	University of Colorado Anschutz Medical Campus School of Medicine	11 (2.594)
James Whitcomb Riley Hospital Children	18 (4.245)	Ohio State University Medical Center	9 (2.123)
University of Pittsburgh	18 (4.245)	The University of Utah Department of Pediatrics	8 (1.887)
Harvard Medical School	16 (3.774)	The University of Utah School of Medicine	8 (1.887)
University of California System	16 (3.774)	University Of Utah Health	8 (1.887)
University of Colorado Anschutz Medical Campus	15 (3.538)	Baylor College Of Medicine Department of Pediatrics	7 (1.651)
University of Colorado System	15 (3.538)	Leonard Davis Institute of Health Economics	7 (1.651)
University of London	15 (3.538)	The Children's Hospital of Philadelphia Department of Radiology	7 (1.651)
Baylor College Of Medicine	14 (3.302)	The Ohio State University College of Medicine	7 (1.651)
Indiana University Bloomington	14 (3.302)	University College London Faculty of Population Health Sciences	7 (1.651)
University College London	14 (3.302)	University College London Institute of Child Health	7 (1.651)
Cincinnati Children s Hospital Medical Center	13 (3.066)	University College London School of Life and Medical Sciences	7 (1.651)
Great Ormond Street Hospital for Children NHS Foundation Trust	13 (3.066)	University of California Davis Health System	6 (1.415)
University of Texas System	13 (3.066)	University of Pennsylvania Department of Radiology	6 (1.415)
University of Utah	13 (3.066)	Brigham And Women S Hospital Department of Emergency Medicine	5 (1.179)
Utah System of Higher Education	13 (3.066)	Children's Mercy Hospital Kansas	5 (1.179)

fractures for physical abuse” (297 citations in WoS Core Collection). Other highly cited works include Keenan et al.^[9] (*Pediatrics*, 205 citations) and Jayawant et al.^[10] (*BMJ*, 204 citations).^[11] The majority of top-cited publica-

tions focused on the use of Babygram imaging in suspected child abuse, skeletal injuries, and traumatic brain injury, underlining the pivotal role of radiologic evaluation in safeguarding pediatric populations.

Table 2. Key Publications on Babygram by Citation Count

Authors	Article title	Source title	Times cited, WoS core	Times cited, All databases	Publication year
Lane et al. ^[8]	Racial differences in the evaluation of pediatric fractures for physical abuse	JAMA-Journal of the American Medical Association	297	327	2002
Keenan et al. ^[9]	A population-based comparison of clinical and outcome characteristics of young children with serious inflicted and noninflicted traumatic brain injury	Pediatrics	205	226	2004
Jayawant et al. ^[10]	Subdural haemorrhages in infants: population-based study	BMJ-British Medical Journal	204	218	1998
Wood et al. ^[11]	Disparities in the evaluation and diagnosis of abuse among infants with traumatic brain injury	Pediatrics	181	193	2010
Kleinman et al. ^[12]	Inflicted skeletal injury: a postmortem radiologic-histopathologic study in 31 infants	American Journal of Roentgenology	151	161	1995
Rubin et al. ^[13]	Occult head injury in high-risk abused children	Pediatrics	143	149	2003
Titgemeyer et al. ^[14]	Pattern and course of single-system disease in Langerhans cell histiocytosis data from the DAL-HX 83- and 90-study	Medical and Pediatric Oncology	135	156	2001
Kleinman et al. ^[15]	Follow-up skeletal surveys in suspected child abuse	American Journal of Roentgenology	118	127	1996
Kaplan et al. ^[16]	Early diagnosis of fibrodysplasia ossificans progressiva	Pediatrics	117	138	2008
Wootton-Gorges et al. ^[17]	ACR Appropriateness Criteria® Suspected Physical Abuse-Child	Journal of the American College of Radiology	104	112	2017
Duffy et al. ^[18]	Use of skeletal surveys to evaluate for physical abuse: analysis of 703 consecutive skeletal surveys	Pediatrics	94	99	2011
Brand et al. ^[19]	Yield of diagnostic testing in infants who have had an apparent life-threatening event	Pediatrics	94	105	2005
Lindberg et al. ^[20]	Testing for abuse in children with sentinel injuries	Pediatrics	93	103	2015
Thorpe et al. ^[21]	Missed opportunities to diagnose child physical abuse	Pediatric Emergency Care	91	99	2014
Wang et al. ^[22]	Infants of diabetic mothers are at increased risk for the oculo-auriculo-vertebral sequence: A case-based and case-control approach	Journal of Pediatrics	91	104	2002
Laskey et al. ^[23]	Occult head trauma in young, suspected victims of physical abuse	Journal of Pediatrics	87	91	2004
Lindberg et al. ^[24]	Prevalence of abusive injuries in siblings and household contacts of physically abused children	Pediatrics	87	92	2012
Minkov et al. ^[25]	Treatment of multisystem Langerhans cell histiocytosis: Results of the DAL-HX 83 and DAL-HX 90 studies	Klinische Padiatrie	86	105	2000
Mandelstam et al. ^[26]	Complementary use of radiological skeletal survey and bone scintigraphy in detection of bony injuries in suspected child abuse	Archives of Disease in Childhood	85	93	2003
Kleinman et al. ^[27]	Rib fractures in 31 abused infants: Postmortem radiologic-histopathologic study	Radiology	80	88	1996

Most Prolific Authors

As detailed in Table 3, Kleinman PK was identified as the most prolific author with 24 publications (5.7%), followed by Wood JN (4.7%), Lindberg DM (4.2%), and Berger RP (3.3%). These authors have made substantial contributions to the standardization of skeletal surveys and radiographic protocols in cases of suspected physical abuse.

Journal Distribution

Analysis of journal distribution revealed that *Pediatric Radiology* was the most productive outlet, publishing 47 articles (11.1%), followed by *Pediatric Emergency Care* (25, 5.9%), *Pediatrics* (24, 5.7%), and *Child Abuse & Neglect* (21, 4.9%). Other journals with notable contributions included the *American Journal of Roentgenology*, *Journal of Pediatrics*, and *Radiology* (each 9, 2.1%) (Table 4). These results demonstrate that Babygram-related studies are primarily

published in pediatric and radiology-focused journals, emphasizing its diagnostic relevance in pediatric trauma and abuse evaluation.

Country Distribution

As shown in Table 5, the United States dominated global Babygram research with 221 publications (52.1%), followed by England (11.6%), India (5.7%), and Australia (4.7%). European countries such as France, Germany, and the Netherlands also contributed substantially, while Türkiye, Italy, and Taiwan produced smaller yet notable outputs (each 1.4%). These findings suggest that Babygram research has been primarily concentrated in developed nations with established pediatric radiology infrastructures.

Table 3. Most Prolific Authors in the Bibliography

Author	Record Count (% of 424)
Kleinman PK	24 (5.660)
Wood JN	20 (4.717)
Lindberg DM	18 (4.245)
Berger RP	14 (3.302)
Harper NS	10 (2.358)
Karmazyn B	10 (2.358)
Tsai A	10 (2.358)
Christian CW	9 (2.123)
Jennings SG	9 (2.123)
Offiah AC	9 (2.123)
Marine MB	8 (1.887)
Henry MK	7 (1.651)
Perez-Rossello JM	7 (1.651)
Rubin DM	7 (1.651)
Wanner MR	7 (1.651)
Adamsbaum C	6 (1.415)
Anderst JD	6 (1.415)
Barber I	6 (1.415)
Campbell KA	6 (1.415)
Hibbard RA	6 (1.415)
Laskey AL	6 (1.415)
Feudtner C	5 (1.179)
Localio R	5 (1.179)
Van Rijn RR	5 (1.179)

Table 4. Distribution of Publications by Web of Science Category

Web of Science categories	Record count (% of 424)
Pediatrics	213 (50.236)
Radiology Nuclear Medicine Medical Imaging	113 (26.651)
Medicine General Internal	34 (8.019)
Emergency Medicine	30 (7.075)
Surgery	25 (5.896)
Family Studies	23 (5.425)
Social Work	23 (5.425)
Psychology Social	21 (4.953)
Orthopedics	17 (4.009)
Genetics Heredity	14 (3.302)
Endocrinology Metabolism	13 (3.066)
Oncology	13 (3.066)
Clinical Neurology	12 (2.830)
Dermatology	8 (1.887)
Hematology	8 (1.887)
Medicine Legal	8 (1.887)
Pathology	8 (1.887)
Critical Care Medicine	6 (1.415)
Ophthalmology	6 (1.415)
Medicine Research Experimental	4 (0.943)
Neurosciences	3 (0.708)
Rheumatology	3 (0.708)
Obstetrics Gynecology	2 (0.472)
Acoustics	1 (0.236)
Anthropology	1 (0.236)

Table 5. Temporal Trend of Imaging Modalities in Babygram-Related Research

Time period	Radiography / Skeletal survey (%)	Ultrasound (%)	MRI (%)
2000–2005	95	3	2
2006–2010	92	5	3
2011–2015	88	8	4
2016–2020	80	12	8
2021–2025	70	18	12

MRI: Magnetic Resonance Imaging

Funding Agencies

The leading sources of financial support were the U.S. Department of Health and Human Services (8.7%) and the National Institutes of Health (8.5%). The Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD) supported 4.7% of publications. Other funding entities included the Health Resources and Services Administration's Emergency Medical Services for Children Program (1.4%), and several UK-based agencies such as the Medical Research Council (MRC), National Institute for Health Research (NIHR), and UK Research and Innovation (UKRI) (each 0.9%). These results underline the pivotal role of U.S. federal funding in advancing pediatric imaging and child safety research.

Keyword Analysis

The co-occurrence network of author keywords, displayed in Figure 2, revealed that the most frequently used terms were child abuse, skeletal survey, fracture, radiography, physical abuse, abusive head trauma, and non-accidental trauma. These keywords form the conceptual core of the field, indicating that Babygram research predominantly focuses on the radiologic evaluation of suspected child abuse and non-accidental injuries. The clustering pattern emphasizes the integration of imaging modalities with multidisciplinary child protection frameworks.

Temporal Trend of Imaging Modalities

A method-based analysis of the 424 included publications demonstrated that radiography or skeletal survey remained the most frequently reported imaging modality across all time periods, although its relative representation decreased over time (2000–2005: 95%; 2021–2025: 70%). In contrast, ultrasound usage in the literature increased from 3% to 18%

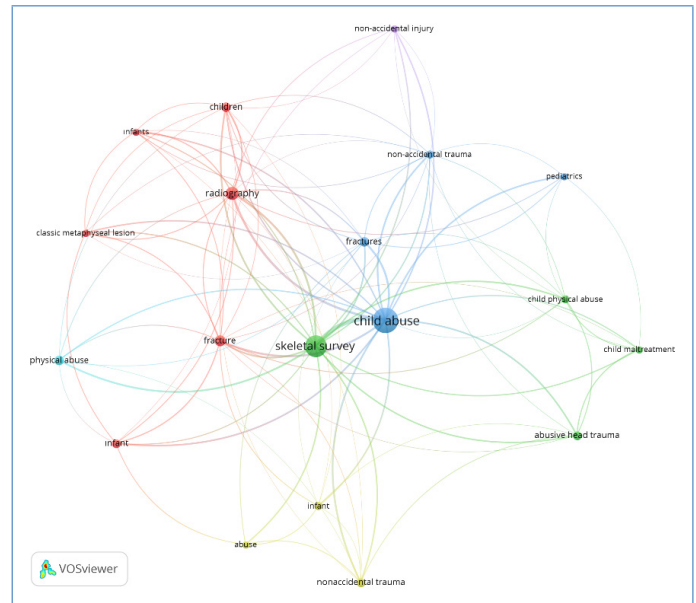


Figure 2. Co-occurrence Network Map of Author Keywords in Babygram Research.

over the same intervals, while MRI utilization grew from 2% to 12% (Table 5). These findings indicate a gradual shift in research focus from conventional radiation-based imaging toward radiation-free modalities such as ultrasound and MRI, supporting a trend toward more selective, indication-based imaging in pediatric populations.

Discussion

This bibliometric analysis provides the first comprehensive evaluation of global research on Babygram, skeletal surveys, and whole-body radiography in pediatric populations. By examining 424 publications indexed in the Web of Science between 1980 and 2025, we identified temporal, thematic, and geographic patterns in this field. Scientific attention toward Babygram has increased steadily over the past two decades, particularly after 2010, reflecting its diagnostic relevance in suspected child abuse and non-accidental injury cases. The predominance of original research articles underscores the empirical nature of the field, whereas the limited number of review articles suggests that guideline-level synthesis remains relatively underexplored.

The observed increase in publications after 2014 may reflect multiple factors. It could indicate renewed clinical interest in Babygram for forensic or trauma evaluation, or it may represent a growing critical discussion regarding the indications, radiation exposure, and clinical necessity of routine whole-body radiography in infants. Evidence from post-mortem and neonatal studies supports the latter: large

UK post-mortem analyses reported that routine Babygrams rarely revealed clinically significant findings beyond those detected by external examination, prompting recommendations for indication-based imaging.^[28] German studies similarly advocate selective post-mortem radiography rather than universal implementation.^[6] In neonatal intensive care units, concerns regarding unintended radiation exposure due to expanded imaging fields and limited shielding further support a shift toward targeted radiography.^[5]

Recent technological advances have facilitated the adoption of radiation-free imaging modalities, including POCUS and MRI. Lung ultrasound has demonstrated diagnostic accuracy comparable to chest radiography for neonatal respiratory distress, pneumothorax, pleural effusion, and pneumonia.^[7,29] European guidelines recommend integrating POCUS into routine neonatal care to minimize radiation exposure.^[7,29,30] Our bibliometric analysis suggests a gradual increase in publications reporting ultrasound or MRI, consistent with these clinical trends. These findings support a shift toward selective, indication-based imaging, though the data reflects publication patterns rather than direct measures of clinical practice.

The bibliometric focus of most publications remains on the radiologic evaluation of suspected child abuse, non-accidental trauma, and associated fractures. This emphasis underscores the ongoing medicolegal importance of skeletal imaging in child protection protocols. However, the relative decline in routine Babygram publications and increasing mention of alternative modalities indicate a gradual paradigm shift in the research discourse toward radiation-sparing and evidence-driven strategies. It should be noted that citation counts do not necessarily indicate strict topical specificity. Some highly cited publications were therefore interpreted within their broader clinical and thematic context, particularly in relation to child abuse evaluation and pediatric trauma imaging, where skeletal survey and whole-body radiography play an important role.^[1-3] These findings reflect trends in the published literature and should be interpreted with caution, as bibliometric analysis does not directly indicate changes in clinical practice.

Limitations

Several limitations must be acknowledged. First, the exclusive use of the Web of Science Core Collection may have omitted relevant studies indexed in Scopus, PubMed, or

specialty radiology journals. Second, bibliometric analyses depend on accurate keyword assignment; publications using alternative terminology may have been missed. Third, citation counts and publication output may favor English-language studies, potentially underrepresenting contributions from non-English-speaking countries. Finally, the descriptive nature of this analysis precludes assessment of study quality or methodological rigor.

Conclusion

In conclusion, global research on Babygram and related imaging modalities has steadily increased over the past 25 years. Radiography remains central to pediatric trauma and forensic evaluation, while the growing awareness of radiation safety and the increasing use of ultrasound and MRI may reflect a shift toward more indication-based imaging. This bibliometric analysis highlights research trends and identifies gaps in literature. Future studies should focus on multicenter prospective evaluations and the development of standardized, evidence-based guidelines to optimize diagnostic precision while minimizing radiation exposure in neonates and infants.

Disclosures

Ethics Committee Approval: Not applicable. This study did not involve human participants or patient-level data; it was a bibliometric analysis based on publicly available literature databases.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Use of AI for Writing Assistance: The authors acknowledge that AI-assisted tools (ChatGPT, OpenAI, San Francisco, CA, USA) were used for English language editing and text refinement. The authors reviewed and verified all content for accuracy and took full responsibility for the final version of the manuscript.

Authorship Contributions: Concept – S.Ö.; Design – S.Ö., K.K.; Supervision – S.Ö., K.K.; Fundings – S.Ö., K.K.; Materials – S.Ö., K.K.; Data collection &/or processing – S.Ö., K.K.; Literature search – S.Ö., K.K.; Writing – S.Ö., K.K.; Critical review – S.Ö., K.K.

Peer-review: Externally peer-reviewed.

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