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REVIEW ARTICLE

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Bibliometric analysis of literature on caregivers of surgical patients

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Abstract

The care of surgical patients is provided by nurses, family members, and paid caregivers who support the patient. It is observed that there are few studies in the literature addressing the care outcomes delivered by these caregivers together. Accordingly, articles in English available in the Scopus and Web of Science databases were reviewed. In this search, a bibliometric analysis was conducted using the keywords "nursing", "surgical patient", and "caregiver". As a result of the search, 15 publications were identified in Scopus and 13 in Web of Science. The use of keywords varied between databases; while "human" and "caregiver" stood out in Scopus, "family caregiver" and "surgery" were the most frequently used terms in the Web of Science database. The countries producing the most publications were the United States, the Netherlands, China, and Australia. Examination of citation maps revealed a strong concentration in multidisciplinary journals. Although studies in this area are increasing in the literature, research remains limited, with ongoing gaps in multicenter and cross-cultural studies.
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Keywords: Nursing, caregiver, family caregiver, surgical patient, bibliometric analysis

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1. Introduction

Surgical procedures have a significant impact on the patient's quality of life, in addition to causing physiological and psychological changes. This impact is also associated with the individual's lengthy recovery process [1-3]. Recently, the physical and emotional needs related to caregivers who support the patient in their care process during this period have started to appear in the nursing literature [3,4]. The American Nurses Association (ANA, 2015), which defines the quality of care as the best nursing practices, notes that care recipients associate this care with values such as compassion, empathy, and understanding [5]. Recently, it has been emphasized in quality indicators in healthcare services that care is not limited to nursing services alone. It has been reported that family members of the patient and professional caregivers also have a significant effect on the recovery of patients undergoing surgical procedures [6-9].

When examining studies in the literature, the involvement of caregivers in surgical processes has been investigated. In a randomized controlled trial conducted by Mailhot et al. (2017), it was reported that including family members in the nurse-led care process for cardiac surgery patients led to improvements in delirium management and psychofunctional recovery [4]. In another study involving the inclusion of family members in the care processes of children who underwent tracheostomy, improvements were observed both in clinical outcomes and in quality of life [3]. In a separate study by Schhreuder et al. (2019), it was found that caregivers involved in the care processes of patients who underwent esophageal or pancreatic surgery enhanced patient satisfaction and adherence in fundamental care practices such as mobilization, breathing exercises, cognitive activities, and oral care; moreover, no significant increase in caregiver burden was detected [8].

Despite this evidence, few nursing studies focus specifically on caregivers of surgical patients. This bibliometric analysis maps that limited but clinically important area.

2. Materials and methods

2.1. Data collection

This bibliometric study analyzed the literature on surgical patients, caregivers, and nursing. The Web of Science (WoS) and Scopus databases were searched for data collection process.

2.2. Literature search and dataset development

The researchers first convened to reach a consensus on the study topic and conducted a literature review to identify potential keywords. During this process, Medical Subject Headings (MeSH) terms were considered, and the most appropriate set of keywords aligned with the study aim was developed. Keyword selection was an iterative process: the team reviewed MeSH terms together, ran preliminary searches, and revised the search string twice before finalizing it. VOS viewer outputs were collectively reviewed , with each author contributing to the interpretation of the cluster maps.

2.3. Search strategy

Web of Science (WoS) and Scopus were selected because they are widely used and recognised in academic evaluation and promotion in Türkiye, and the analysis was limited to these two databases. Owing to the specific topic, the number of available studies is limited.

The WoS search strategy could not be applied directly to Scopus, because the two databases process queries differently. For Scopus, the keywords were adjusted slightly while preserving the same conceptual scope, and a separate search strategy was used.

WoS search string: (("surgical patient*" OR "postoperative care" OR "perioperative care" OR "surgical recovery") AND ("family caregiver" OR "informal caregiver" OR "caregiver burden") AND (nursing OR "nursing care"))

Scopus search string: (("perioperative care" OR "postoperative care" OR "surgical ward" OR "surgical patient*" OR "surgical recovery") AND ("family caregiver" OR "informal caregiver" OR "caregiver burden") AND (nursing OR "nursing care" OR "perioperative nursing") AND NOT ("palliative care" OR "cancer" OR "dementia"))

Both databases were searched on August 5, 2025, for articles published between January 1, 2010, and August 5, 2025.

WoS Dataset: The initial search retrieved 15 articles. A language filter for English excluded two, leaving 13 articles; all met the inclusion criteria on review of titles, abstracts, and keywords. Thus, 13 WoS articles were analysed.

Scopus Dataset: The initial search retrieved 26 articles. Filters (subject area Nursing; January 1, 2010 – August 5, 2025; document type “Article”; language “English”) left 16 studies, and one off-topic article was excluded after review, leaving 15. The study followed the PRISMA-ScR (Preferred Reporting Items for Systematic Reviews and Scoping Reviews) guidelines (Figure 1).

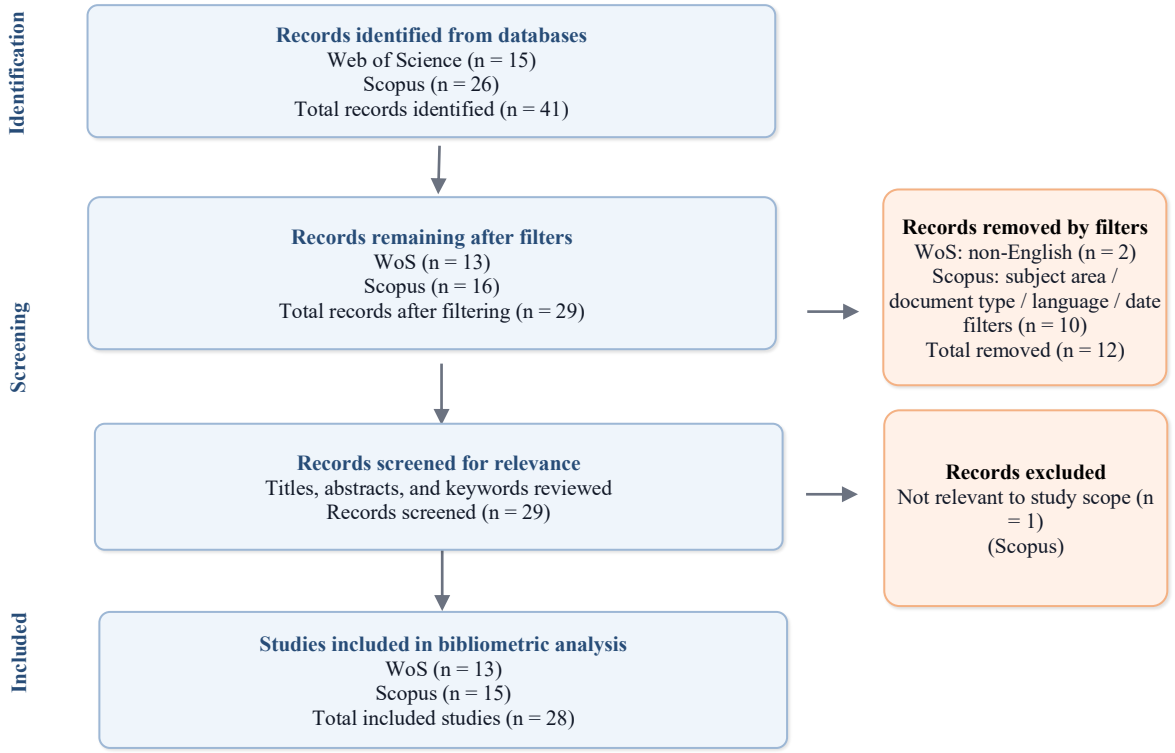


Fig. 1. PRISMA-ScR flow diagram of the study selection process.

2.4. Data analysis

Bibliometric analyses were conducted using VOSviewer software (version 1.6.20.0; Center for Science and Technology Studies, Leiden University, Leiden, The Netherlands). The WoS and Scopus datasets were uploaded separately into the software. Using the 'Create a map based on bibliographic data' option, analyses were carried out for keyword co-occurrence, co-authorship, sources, and countries. Both Author Keywords and Index Keywords were included in the keyword analyses, with a minimum occurrence threshold of two for co-occurrence analyses. For co-authorship analysis, the minimum number of documents was set to one and the minimum number of citations to zero. During the visualization stage, network and density visualization maps were generated using the default VOSviewer clustering algorithm (LinLog/modularity). Due to the limited dataset size, overlay visualization was not applied. The maps were then interpreted to identify relationships between clusters, thematic density areas, and research trends. Findings were reported separately for each database and presented comparatively (Table 1 / Figure 2).

Table 1. Search and selection process for publications meeting the research criteria in the WoS and Scopus databases.

Criteria	WoS	Scopus
Number of publications identified in the initial search	15	26
Number of publications remaining after document type and language filters	13	16
Number of publications remaining after content review	13	15
Number of publications included in the analysis	13	15

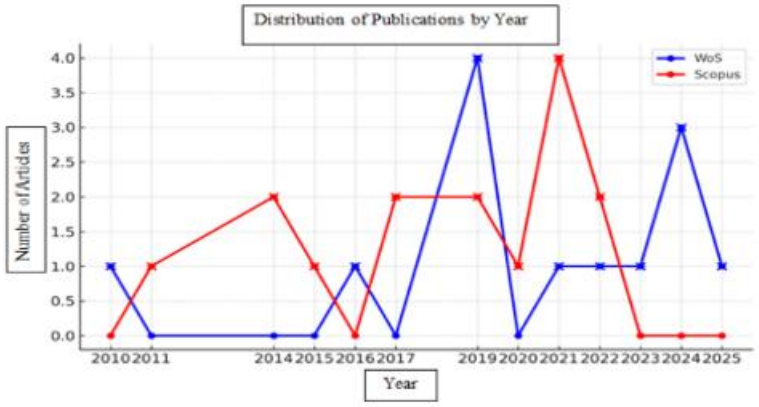


Fig. 2. Distribution of publications by year in the WoS and Scopus databases.

2.5. Ethical considerations

This study used only publicly available WoS and Scopus data. As this study analyzed only indexed bibliographic records, no ethical approval was sought or required. The study adhered to the principles of research integrity and the Helsinki Declaration.

3. Results

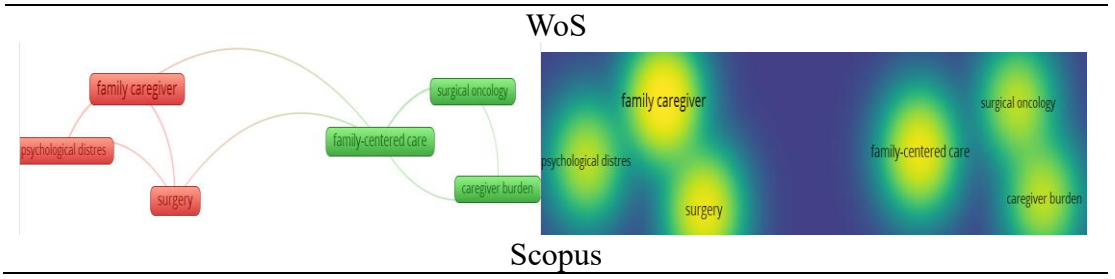
3.1. Country distribution of publications on surgical patients' caregivers and nursing

This section presents the results of the bibliometric analyses conducted on datasets. Table 2 shows the country distribution of publications on surgical patient' caregivers and nursing in the WoS and Scopus databases. In WoS data, the United States, Australia, the Netherlands, and China are among the leading countries. In Scopus data, China, the Netherlands, the United States, and Australia rank at the top. Since some articles in the WoS dataset may have been co-authored by researchers from multiple countries, the total number of publications by country may exceed the total number of articles in the dataset (n=13).

Table 2. Distribution of publications on caregivers of surgical patients and nursing by country in WoS and Scopus databases.

Countries	Number of Publications (WoS)	Countries	Number of Publications (Scopus)
USA	7	China	3
Australia	4	Netherlands	3
Netherlands	4	USA	3
China	2	Australia	2
Philippines	1	Brazil	2

In the co-occurrence analysis of WoS data, a total of 40 author keywords were identified, and when the "minimum number of occurrences" threshold was set at 2, six keywords were included in the analysis. These keywords formed two clusters with a total link strength of 11. The most frequently encountered keywords were *family caregiver* (n=4), *family-centered care* (n=3), *surgery* (n=3), *psychological distress* (n=2), and *surgical oncology* (n=2) (Figure 3).



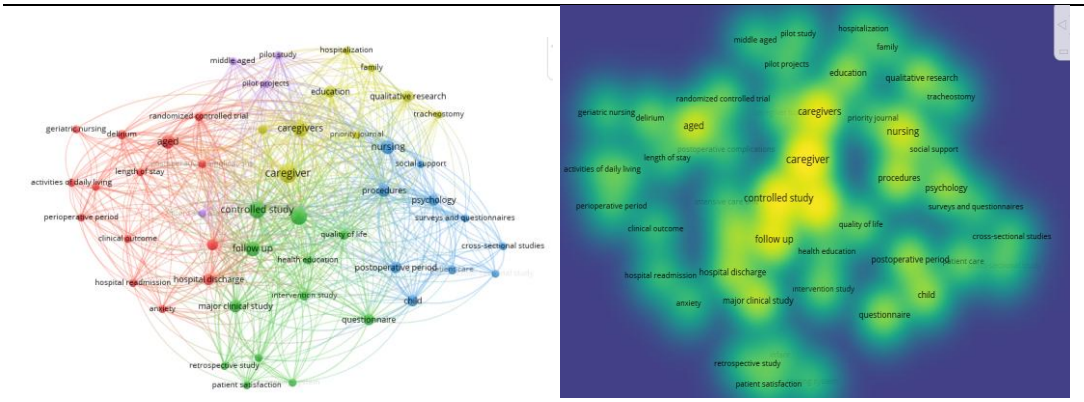


Fig. 3. Network and density maps of author keyword co-occurrence for publications on surgical patients' caregivers and nursing in the WoS and Scopus databases.

In the Scopus dataset, 280 author keywords were identified, and when the minimum number of occurrences was set at 2, a total of 54 keywords were included in the analysis. These keywords formed four clusters, with a total link strength of 1882. The most frequent keywords were caregiver (n=19, including both "caregiver" and "caregivers"), postoperative care (n=9), and nursing (n=6).

3.2. Citation mapping in the literature on surgical patients' caregivers and nursing

3.2.1. Citation analysis at the document level (citation–documents)

In this study, citation analysis was performed at the document level for 13 documents in the WoS dataset. With the "minimum number of citations" set at 2, 10 publications exceeding this threshold were included in the analysis. The top three most cited publications were Bobay (2010) (n=75), Kim (2016) (n=33), and Schreuder (2019) (n=28). These publications formed seven clusters with a total link strength of 4. For the 15 documents in the Scopus dataset, the "minimum number of citations" was also set at 2, resulting in 12 publications included in the analysis. The top three most cited publications were Hartnick (2017) (n=48), Mailhot (2017) (n=38), and Ågren (2015) (n=29). These publications formed 12 clusters (Figure 4).

WoS Scopus

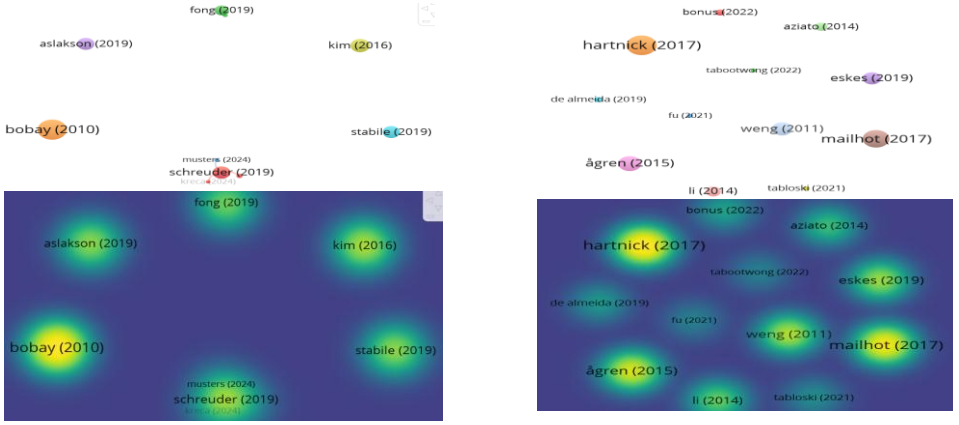


Fig. 4. Network and density maps of citation analysis at the document level for publications on surgical patients' caregivers and nursing in the WoS and Scopus databases.

3.2.2. Citation analysis at the author level (citation–authors)

In WoS, 95 authors were identified in total. When the "minimum number of citations" was set at 5, 11 authors met the threshold. The most cited authors were Eskes, Anne M., and Van Dieren, Susan (n=34), followed by Van Dijkum, Els J. M., and Nieveen de … (n=32). These authors formed three clusters with a total link strength of 34. In Scopus, the author-level citation analysis revealed a total of 89 citations. When the threshold was set at 5, 41 authors were included in the analysis. The most cited authors—Callans, Kevin Mary; De Guzman, Venessa; Diercks, Gillian R.; Hartnick, Christopher J.; Hartnick, Elizabeth; and Van Cleave, Jeanne M.—each received 48 citations. As all of these authors co-authored the same highly cited publication, their citation counts were identical. These authors formed 41 clusters with a total link strength of 0.

3.2.3. Citation analysis at the country level (citation–countries)

This analysis aimed to identify the countries with the highest scientific impact in the literature on surgical patients' caregivers and nursing. Country-level network maps were generated for those meeting the minimum citation threshold in WoS and Scopus datasets.

In WoS, among the five countries identified, three met the threshold of at least two citations: the United States (n=184), Australia (n=36), and the Netherlands (n=36). These countries formed two clusters with a total link strength of 6. The findings indicate that nursing research on surgical patients' caregivers generates higher scientific impact particularly in the United States, with Australia and the Netherlands also being significant contributors.

In Scopus, among the 12 countries identified, five had at least two citations. The top three were the United States (n=53), the Netherlands (n=50), and Australia (n=24). These countries formed five clusters with a total link strength of 0.

3.2.4. Co-citation analysis at the reference level (co-citation–references)

In WoS, 527 cited references were identified. When the "minimum number of citations" was set at 2, 37 references were included in the analysis. The top three most cited references were Bail, K. (2013) (n=3), Eskes, A.M. (2019) (n=3), and Eskes, A.M. (2020) (n=3). These references formed three clusters with a total link strength of 328.

In Scopus, 141 cited references were identified. As no references had more than one citation, the analysis was

conducted with the threshold set to 1. This included all 141 references, forming one cluster with 45 links. Since all references received only one citation, no top three ranking was provided.

3.2.5. Co-citation analysis at the source level (co-citation–sources)

In WoS, 306 total co-citations were recorded. With a "minimum number of citations" set at 20, no sources met the threshold. Therefore, the analysis was based on the most frequently co-cited sources. The top four were *Annals of Surgery* (n=17), *Journal of Pain and Symptom Management* (n=13), *Journal of Clinical Oncology* (n=12), and *Journal of the American Geriatrics Society* (n=12). These sources formed one cluster with a total link strength of 104.

In Scopus, 52 cited sources were identified. Only five sources had two or more citations, so the threshold was set at 2. As all had exactly two citations, no top three ranking was made. The analysis resulted in three clusters with a total link strength of 6.

3.2.6. Co-citation analysis at the author level (co-citation–authors)

In WoS, 466 authors were identified. When the "minimum number of citations" was set at 5, only four authors met the threshold. The most frequently co-cited authors were Eskes, A.M. (n=7), Park, M. (n=6), and Bull, M.J. (n=6). These authors formed two clusters with a total link strength of 17.

In Scopus, 108 authors were identified. When the "minimum number of citations" was set at 3, only three authors met the threshold: Sharon, K. (n=3), Inouye (n=3), and Beluci, M. (n=3). These authors formed two clusters with a total link strength of 5.

4. Discussion

In this review, we explored the nursing literature concerning the caregivers of surgical patients. The aim of this study was to map the principal research themes, highlight the key studies, and identify the research gaps that require further work. We retrieved a relatively small number of publications; this result is to be expected given the narrow scope of the topic. Bibliometric studies generally rely on large datasets; however, when the research focus is well defined, a more limited body of publications can still reveal meaningful trends. In our analysis, the intersection of nursing, caregiving, and surgery was surprisingly narrow. This observation is consistent with earlier studies reporting that, although family nursing research has expanded broadly, this specific niche remains neglected [10–13].

Because only 28 articles met our inclusion criteria, these findings should not be regarded as an exhaustive summary of the entire field. Nevertheless, the same themes recurred across both databases. Themes such as family-centered care and the psychosocial burden on caregivers were particularly prominent. This consistency suggests that the patterns observed reflect genuine trends rather than random variation. To the best of our knowledge, no other bibliometric study has specifically examined nursing research on caregivers of surgical patients. The scarcity of published work further indicates that this is an emerging field. Accordingly, the main contribution of this study is to show how the current literature is structured and which topics have received the most attention. In addition, a small number of highly cited studies—particularly those by Bobay (2010), Kim (2016), and Hartnick (2017)—appear to have shaped the early development of this research area.

The available studies mainly focused on caregiver participation in nursing care, psychosocial support needs, ethical responsibilities, and communication between patients and caregivers. These themes are closely related and reflect the increasing recognition of the role played by both professional and informal caregivers during surgical treatment and recovery [14]. However, the literature has not yet developed evenly across different patient groups, surgical specialties, or healthcare settings. Another important finding was the geographical concentration of the research. Most publications originated from a relatively small number of countries and clinical contexts, while cross-cultural, longitudinal, and multicentre studies were uncommon. The absence of some countries from the bibliometric maps

should not be taken to mean that caregiving is less important in those settings. It is more likely that research from these regions is less often published in indexed English-language nursing journals [15]. This limits the extent to which the current findings can be applied across different cultures and healthcare systems. The most frequently cited articles in both databases addressed family-centred care, surgical outcomes, and caregiver burden. This indicates that these topics form the main foundation of the literature. Similar citation patterns have been described in other nursing bibliometric studies, where a small number of influential papers account for much of the field's academic visibility [14].

Research activity was also concentrated among a limited number of authors. Eskes, A.M., Park, M., and Bull, M.J. were among the most productive authors in the Web of Science dataset, while Sharon, K. and Inouye were prominent in Scopus. This suggests that much of the existing work has been produced within relatively small research groups [16]. Wider collaboration between nursing, surgery, geriatrics, psychology, and rehabilitation may help the field develop in a more comprehensive direction.

The United States, the Netherlands, China, and Australia emerged as the leading countries in both publication volume and citation influence. Their prominence may be partly explained by stronger representation in widely indexed international journals, rather than by a greater focus on caregiving practice itself. Expanding research contributions from a wider range of regions would help strengthen both cultural diversity and real-world applicability. Our co-citation analysis further indicated that the topic has a scope wider than nursing. We observed repeated citations from journals in surgery, geriatrics, pain management, and palliative care, including well-known titles such as *Annals of Surgery*, *Journal of Pain and Symptom Management*, and *Journal of the American Geriatrics Society* . This interdisciplinary profile makes sense because the care of surgical patients and their caregivers often depends on knowledge drawn from several professional domains [17,18].

In summary, nursing research focusing on caregivers of surgical patients is still developing. The small dataset does not allow for broad conclusions, but it does provide a meaningful picture of the field and shows the main thematic directions in the existing literature. Further work would be strengthened by larger and more heterogeneous samples, wider database inclusion, extended publication windows, and more thorough qualitative exploration of the identified themes.

5. Conclusion and recommendations

In conclusion, although caregivers play a central role in the recovery process of surgical patients, the number of studies that jointly address the concepts of nursing, caregiver, and surgical patient was limited to 28. By mapping research on caregivers specific to surgical patients, this study makes an important contribution to identifying this gap in the field. The findings showed that most publications originated from a small number of countries—predominantly the United States, the Netherlands, China, and Australia— and that multi-center studies were limited. Cross-cultural studies spanning different healthcare systems are therefore needed. Recognizing caregivers as part of the care team during surgical processes, in turn, is expected to have a positive effect on patient outcomes.

Acknowledgement

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Limitations of the Study

This study has several limitations. The first is that only WoS and Scopus were searched; excluding indexes such as PubMed, CINAHL, and Google Scholar may have narrowed the coverage of the search. A second important limitation is that the study was restricted to English-language publications, which may have left relevant work in other

languages outside its scope. In addition, the small number of retrieved publications (WoS=13, Scopus=15) both indicates that the topic is still emerging and limits the generalizability of the findings. Finally, the use of a limited keyword set—without terms such as "informal care" or the names of specific surgical clinics—may have caused some niche publications to be overlooked.

Author Contributions

E.K. and G.Y. conceptualized and designed the study and led the writing and revision. H.A. contributed to methodology and data interpretation. C.D. contributed to manuscript preparation and critical review. All authors approved the final version.

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