

# Sexual satisfaction in people and couples belonging to sexual orientation and gender diversities: a bibliometric analysis

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## Abstract

**Introduction:** Sexual satisfaction is a key component of individual and relational well-being and is defined as the subjective perception of enjoyment and fulfillment in sexual life. For individuals and couples belonging to sexual orientation and gender diversities (SOGDs), this satisfaction may be influenced by unique factors related to the experience of their sexual orientation and gender identity. However, the scientific literature exploring sexual satisfaction in these groups remains scarce. The present work analyzes the growth and characteristics of scientific production in this field of study.

**Objectives:** Mapping scientific articles indexed in Scopus and Web of Science on the scientific production of sexual satisfaction in SOGD individuals and couples and identifying the production growth, sources, authors, countries and affiliations, relevant terms, and collaborative networks.

**Methods:** A bibliometric analysis of 333 articles published in scientific journals was performed. The selected studies included terms related to the SOGD population and sexual satisfaction in the title, abstract and keywords. The articles covered the period 1976–2023 and were analyzed in terms of temporal production; authors, countries and institutions; relevant terms; trend topics; co-occurrence; and collaborations, using R-bibliometrix and VOSviewer.

**Results:** The analysis revealed a progressive growth in scientific production, especially in the last decade. The main journals that published on the subject include *The Journal of Sexual Medicine*, *Archives of Sexual Behavior*, and *The Journal of Sex Research*. The studies were mainly concentrated in North American and European countries. Recurring terms such as *HIV* and *relationship satisfaction* were identified, while some SOGD collectives remained underrepresented. Additionally, limited intellectual collaboration networks were observed.

**Conclusions:** This analysis highlights the need to expand research on sexual satisfaction in SOGD populations to include underrepresented regions and groups. A more inclusive and collaborative approach is recommended, addressing experiences of sexual satisfaction from affirmative and multicultural perspectives.

**Keywords:** sexual satisfaction; SOGD; LGBT; research trends; bibliometric analysis.

## Introduction

Lawrance and Byers<sup>1</sup> described sexual satisfaction as “an affective response arising from one’s subjective evaluation of the positive and negative dimensions associated with one’s sexual relationship” (p. 268). This dimension of sexuality, which can be understood as the result of individual and shared or interpersonal sexual experiences,<sup>2</sup> has captured the focus of scientific interest in recent decades, first, because of the number of well-being variables with which it is closely related: physical and psychological health,<sup>3</sup> sexual well-being,<sup>4</sup> and relationship satisfaction,<sup>5,6</sup> among others. Furthermore, its study is becoming increasingly visible, owing to its consideration by international organizations as a sexual right.<sup>7,8</sup>

This study focuses on the experiences of people belonging to sexual orientation and gender diversities (SOGDs). This acronym refers to individuals and communities whose sexual orientations, gender identities, gender expressions, or sex characteristics differ from dominant societal norms. We

prefer the use of the term “diversities” in order to highlight the richness and plurality of human experiences rather than focusing solely on a numerical or hierarchical logic that can be associated with the term “minorities,” which is also used. Traditionally, sex research has shown limited interest in individuals belonging to SOGDs. Numerous authors have noted the exclusion of SOGD individuals and couples from scientific advances,<sup>9–13</sup> which could have negative consequences for them in terms of physical and psychological health.<sup>14,15</sup> In addition, there is a tendency to study SOGD individuals from a risk and vulnerability perspective,<sup>16</sup> with few approaches to the study of their sexual satisfaction from consolidated theoretical models,<sup>17–19</sup> and their predictors are still poorly understood.<sup>20</sup>

The systematic review by Sánchez-Fuentes et al.<sup>21</sup> highlighted two important aspects: (1) the multidimensionality of sexual satisfaction (determined by individual, interpersonal, social, and ideological–cultural factors) and (2) the scarcity of

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relevant theoretical models from which to study this construct. Among the studies analyzed in their review, only 1% included exclusively gay participants, and 13.2% included participants with different sexual orientations.<sup>21</sup> Recently, Vigil et al.,<sup>22</sup> in a content analysis of sexual satisfaction and sexual pleasure among LGBQ+ individuals, noted the lack of representation of plurisexual people, the racial identity of SOGD people, and the inclusion of variables specific to these groups.

Calvillo et al.,<sup>23</sup> in their literature review on sexual satisfaction in same-sex couples, reported similarities with different-sex couples, observing that sexual satisfaction is also associated with multiple factors (ie, individual, interpersonal, social, and ideological-cultural), but they observed differential nuances such as sex and/or gender roles. Similarly, Shepler et al.<sup>20</sup> concluded that the sexual satisfaction of SOGD individuals is influenced by a variable unique to their experience: identity pride. Pascoal et al.<sup>11</sup> also referenced this by finding that LGB people's definitions of sexual satisfaction include personal, interpersonal, and primary discourses (where context/relational structure and sexual minority identity stand out). A review by Croteau and Morrison<sup>24</sup> analyzed the relationship between minority stress and sexual satisfaction and revealed a clear inverse link between the 2 constructs.

Most studies with SOGD individuals include only gay and lesbian individuals<sup>25,26</sup> or, at best, limit their sample to the LGB population.<sup>20</sup> In fact, in the area of sexual satisfaction, it is estimated that the bisexual population represents, on average, only 10.58% of the participants in existing studies.<sup>22</sup> The remaining groups belonging to SOGDs are much more underrepresented. Some exceptions include asexual,<sup>27,28</sup> intersex,<sup>29,30</sup> or transgender individuals,<sup>31</sup> although many of these studies are approached from a mostly biomedical lens, focusing on hormonal or postsurgical aspects.<sup>32,33</sup> Ultimately, despite the scarcity and failure to account for all existing diversity, these studies represent valuable approaches to the sexual health of SOGD people.

Given the scarcity of bibliometric studies on topics related to SOGD experiences, it is difficult to understand the reality of research on these collectives, which is the objective of this work. Bibliometrics focuses on the analysis of research on the bibliographic production of a given topic. This innovative quantitative approach aims to discover structures and patterns of scientific production in the development of a specific subject.<sup>34</sup> Bibliometric analyses are widely used to examine the state of research, as well as its directions and development trends,<sup>35</sup> offering insights that differ from those provided by systematic reviews, yet both methodologies can complement each other. Whereas reviews (eg, scoping, systematic) focus on thematic synthesis and conceptual exploration, bibliometric analyses emphasize productivity metrics and trends using statistical and visualization tools. Bibliometric approaches offer an overview and key findings of all the available literature to provide the reader with an overall summary of the state of research in a given field. A few bibliometric studies have focused on different constructs in the SOGD population, such as general health, its related factors and inequalities,<sup>36</sup> HIV research on the LGBT population,<sup>37</sup> and the health of LGBT older adults.<sup>38</sup> However, to date, we are unaware of any attempt to bibliometrically analyze the literature related to the sexual satisfaction of people and couples belonging to SOGDs. Therefore, this study aims to respond to this need, with the purpose of identifying the state of the art of this topic,

inquiring into its retrospective, identifying research gaps, and enlightening researchers on possible future directions of study in this field.<sup>39</sup>

The objective of this study was to conduct a bibliometric analysis of publications on sexual satisfaction in populations that depart from the traditional cisgender and heterosexual schema. To this end, we intend to analyze production up to the year 2024, with the purpose of examining the following: (1) the growth of scientific production; (2) the most relevant sources; (3) authors' production; (4) country and affiliation production; (5) relevant terms, trend topics, and co-occurrence network; and (6) author and country collaborations. This mapping will allow us to understand the dynamics that the study of sexual satisfaction in SOGD individuals has experienced to move toward a more diverse and inclusive science.

## Materials and methods

To promote reproducibility and transparency throughout the process of data collection and analysis, we describe the methodology used in this work according to 4 distinct and successive phases, as proposed in the guidelines of Donthu et al.<sup>39</sup> on how to conduct bibliometric analyses.

### First phase: Aims and scope

Our aim was to conduct a bibliometric analysis of scientific production (ie, articles published in scientific journals) on SOGD sexual satisfaction. We aimed to analyze the retrospective and scientific performance in the selected field of study. In the first exploratory phase, we ensured that the body of results to be processed was broad enough to conduct a bibliometric analysis instead of a systematic review or meta-analysis, where the literature could be analyzed more comprehensively. Bibliometrics is designed to handle large volumes of data. Although the number of data required usually varies depending on the objectives, to determine that the corpus of information was sufficiently large and thus ensures the choice of a bibliometric analysis with sufficient variance, we relied on the considerations of Donthu et al.<sup>39</sup> and Rogers et al.<sup>40</sup>

### Second phase: Techniques

We decided to combine elements of the 2 most frequent categories of bibliometric analysis: performance analysis (descriptive examination of the contributions of research elements) and science mapping (analysis of the relationships between research components). Within the latter, we focused on citation analysis, co-word analysis, and co-authorship analysis. Since this is the first bibliometric analysis conducted on the topic, we decided to combine techniques from both categories to map it in a broader and more enriching way. We first selected the techniques and then prepared and cleaned the data according to the chosen formats.<sup>39</sup>

### Third phase: Data collection

With respect to data collection, we established a phase of scientific literature review on different aspects of the sexuality of people belonging to SOGDs with the aim of defining the most appropriate search terms. In the first brainstorming phase, we defined a preliminary search formula that included the most relevant terms to be analyzed. Given that the terminology used to designate and explore the experiences of SOGD persons is

constantly evolving,<sup>41</sup> we decided, in addition, to conduct a peer review of the search formula designed for the purpose of obtaining feedback from external experts to refine and improve it. In this phase, we contacted a total of 37 sexuality researchers with publications indexed in Journal Citation Reports® and related to the topic (ie, original articles and/or systematic reviews on different aspects of SOGD sexuality). The purpose was to compile a sufficiently rich list according to the gender and origin of the experts. Eight researchers agreed to collaborate: 4 men and 4 women from 8 institutions on 3 different continents (America, Asia, and Europe).

Due to the large number of results, we decided to limit our search based on the following inclusion criteria: (1) scientific articles; (2) published in academic journals; (3) of any subject area, publication stage, country, affiliation, and of any open access option; (4) considering relevant terms in the title, abstract, and keywords fields; and (5) in English. The search was performed in March 2024, so we decided to temporarily limit the search to results prior to that year. We chose to concentrate the search on manuscripts in English, and the search terms were designed for this purpose; however, we decided not to exclude a small percentage (6.64%) of manuscripts written in other languages because the title, abstract, and keywords did appear in English. Despite the recommendation of Donthu et al.<sup>39</sup> of focusing exclusively on one database, because the bibliometric format to be processed may vary between them, in the present study, we decided to focus on two databases (Scopus and Web of Science), combining the results of both in the same bibliometric document. We made this decision because of the ease of combining the results of both and subsequent statistical processing. For illustrative and convenience purposes, the final search formula used for Scopus is presented. The strategy used in Web of Science was identical but adapted to that platform.

(TITLE-ABS-KEY ("non heterosex\*" OR nonheterosex\* OR non-heterosex\* OR gay OR lesbian\* OR LGB\* OR GLB\* OR homosex\* OR MSM OR "m?n who have sex with m?n" OR WSW OR "wom?n who have sex with wom?n" OR same-sex OR bisex\* OR transsex\* OR transex\* OR transg\* OR "trans female" OR "trans wom?n" OR "trans male" OR "trans m?n" OR "trans people" OR "trans person" OR "trans indiv\*" OR "male to female" OR male-to-female OR MTF OR MtoF OR AMAB OR "female to male" OR "female-to-male" OR FMT OR FtoM OR AFAB OR "gender ident\*" OR "sexual ident\*" OR intersex\* OR \*queer OR asex\* OR greysex\* OR "sex\* minorit\*" OR "gender minorit\*" OR "sex\* and gender minorit\*" OR "sex\* diversit\*" OR "sex\* and gender diversit\*" OR "gender diversit\*" OR "gender creativ\*" OR non-binary OR nonbinary OR "non binary" OR "gender non-conforming" OR "gender nonconforming" OR "gender non conforming" OR "genderfluid" OR gender-fluid OR "gender fluid" OR pangender OR agender OR demi-gender OR demigender OR bigender OR trigender OR "gender varian\*" OR demisex\* OR pansex\* OR two-spirit OR "two spirit" OR "2 spirit") AND TITLE-ABS-KEY ("sex\* \*satis\*" OR "\*satis\* with sex\*")) AND (LIMIT-TO (SRCTYPE, "j")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (EXCLUDE (PUBYEAR, 2024)).

In this work, we focus on both individuals and couples belonging to SOGDs. This consideration is intended not to exclude the dyadic research trend that employs terminology more related to the relational configuration in terms of sex/gender (eg, same-sex [couples, partners, dyads, marriage]). We decided not to use terms referring to relational agreements

(eg, polyamory, open relationships, relational anarchy) in the search because they are not exclusive to SOGD individuals.

For data cleaning, we manually reviewed the articles offered by both databases, examining the titles, abstracts, and keywords of all the results obtained. The aim was to eliminate duplicates and erroneous entries. The main reasons for exclusion were: (1) results not directly related to the topic addressed [eg, manuscripts confusing the Arizona Sexual Experience Scale (ASEX) to assess sexual function with the search term asex\*, truncation of asexuality]; (2) results in which one of the selected key terms appeared (eg, homosexual), but noting that these subjects had been excluded or recommended their inclusion in future studies; (3) results that warned in the abstract about the lack of research in these groups; (4) studies on trans issues that alluded not to sexual satisfaction *per se* but to satisfaction with surgeries, functionality, postsurgical genital aesthetics, medical procedures, etc.; (4) papers that alluded to pederasty, incest or child sexual exploration contacts (regardless of whether these might include same-sex sexual experiences); (5) studies that focused exclusively on attitudes (eg, attitudes toward homosexuality); (6) works that used a term (eg, asexuality) in a pejorative way and not as a category to frame the sexual orientation of a sector of the population; and (7) the first existing study that focused on animals rather than humans (monkeys and baboons). We have not excluded papers based on a sex-positive/negative lens toward people and couples belonging to SOGDs or manuscripts in which some aspect could be considered offensive from current perspectives, since we included classic studies. Finally, in the case of some manuscripts where there were doubts or discrepancies about their possible inclusion in our analysis, we proceeded to review the rest of the manuscript thoroughly to make a decision.

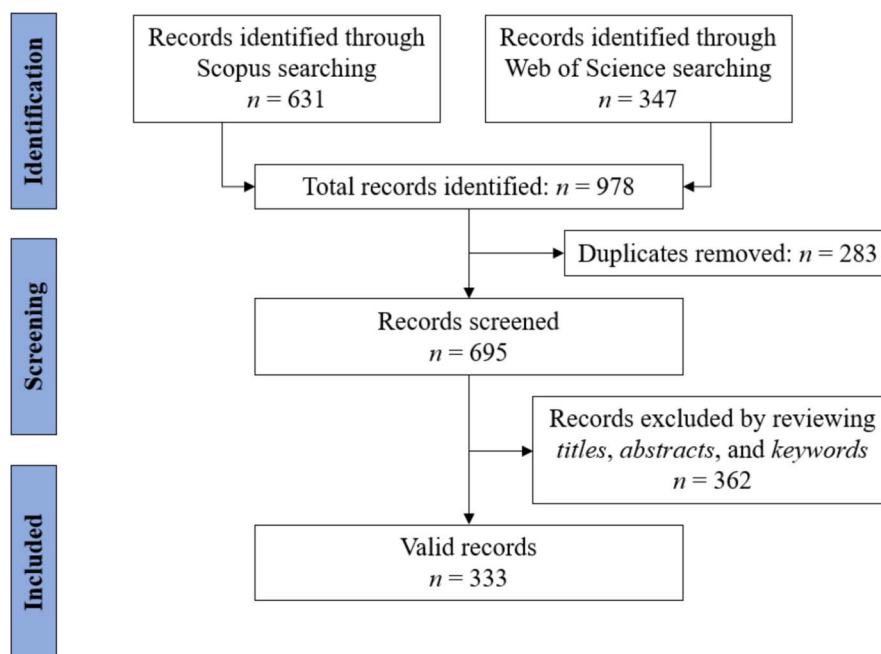
Importantly, we selected scientific articles in which sexual orientation was reported and SOGD people were present, regardless of whether they represented the total sample of the work or a specific percentage of it. Finally, we focused exclusively on the traditional keywords selected by the authors, excluding manuscripts in which a term appeared in the KeyWords Plus® (terms generated automatically from the cited articles). We also discarded the occurrence of terms in the EMTREE medical terms since they correspond to a biomedical classification system unrelated to the original keywords selected by the authors. After the entire cleaning and filtering process, the results obtained were unified in a single document in BibTeX format. The data retrieval flow chart is shown in Fig. 1.

#### Fourth phase: Analysis

The classification and review of the manuscripts were carried out via IBM® SPSS Statistics software (version 22). The bibliometric analyses were conducted in the R® environment (version 4.2.1<sup>42</sup>) with the RStudio® interface (version 2022.07.2 Build 576<sup>43</sup>). After refinement, performance analysis was carried out using R-bibliometrix (version: 4.3.0<sup>44</sup>) through the biblioshiny app and science mapping using the support of VOSviewer (version 1.6.19<sup>45</sup>) to generate and visualize academic networks.

#### Results

A total of 333 articles whose timespan covered 1976-2023 were obtained. These documents were published by 147 academic journals, contained a total of 713 author keywords,



**Figure 1.** Flow chart of the search process. *Note.* Among the total number of screened records, 47.91% of the articles were included. The main reasons for exclusion can be found in the “Third Phase: Data Collection” section.

and included 1376 authors (24 authors of single-authored documents and 1352 authors of multi-authored documents).

### Growth of scientific production

An increasing trend in scientific production (calculated according to the number of published works) was observed over time (annual growth rate: 12.59%), reaching a maximum peak in 2023, with a total of 50 papers. The first article<sup>46</sup> was published in 1976 in *Archives of Sexual Behavior* by J. M. Carrier. This manuscript discussed the sociocultural roles that affect Mexican men’s involvement in homosexual behavior, sex role expectations, and ways of obtaining sexual satisfaction (Figure 2). We also analyzed the average number of article citations per year, which peaked in 1991, when the article with the highest number of citations of all those analyzed was published<sup>47</sup> (total citations = 509;  $TC_{year} = 14.97$ ).

### Most relevant sources

A total of 147 journals were published on sexual satisfaction in SOGD people and couples, ranking first in the production specialized journals in Sexology, with a few exceptions (eg, *International Journal of Environmental Research and Public Health* or *Frontiers in Psychology*). The list is headed by *The Journal of Sexual Medicine*, with a total of 34 manuscripts, followed by *Archives of Sexual Behavior* (30 articles) and *The Journal of Sex Research* (22 articles). Figure 3. Using Bradford’s Law of Scattering,<sup>48</sup> we found that the 5 most productive journals represent the core of production. This law of performance and distribution of scientific literature establishes the main journals in which the production on a given topic has been focused.

### Authors’ production

Among all the authors ( $N = 1376$ ), the 2 most productive were A. Carballo-Diéguez of Columbia University, specializing in

HIV prevention, and G. T’Sjoen of Ghent University, specializing in endocrinology of transgender and gender diverse people. Each of them published a total of 6 articles (Figure 4). Considering the Lotka Law,<sup>49</sup> we found that the vast majority of authors have signed exclusively 1 paper related to the subject. This bibliometric law states that, regardless of discipline, most authors publish the smallest number of papers, whereas only a few publish the majority of the relevant literature.

### Country and affiliation production

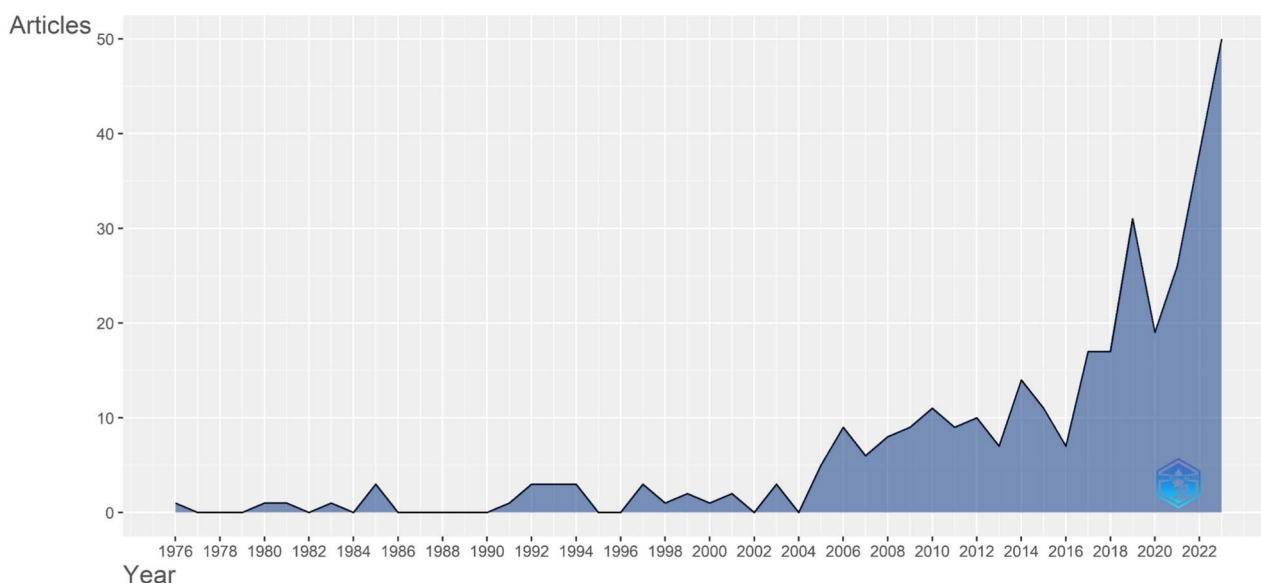
The 1376 authors represent 45 countries, with the United States ( $n = 366$ , 26.6%) at the top, followed by Canada ( $n = 102$ , 7.41%), the Netherlands ( $n = 59$ , 4.29%), the United Kingdom ( $n = 52$ , 3.78%), and Germany ( $n = 46$ , 3.34%). Together, they account for more than 45% of the world’s production. Notably, North America and Europe lead the production, with countries from other geographical locations not appearing until position 11, corresponding to China ( $n = 27$ , 1.96%), and 12, corresponding to Australia ( $n = 25$ , 1.82%), and the first two South American countries appearing tied in positions 16 and 17 (Brazil and Chile;  $n = 11$ , 0.8%) (Image S1).

We identified a total of 569 affiliations, with Karolinska Institutet (Solna, Sweden; 5.81%) leading the ranking, followed by Indiana University (Bloomington, IN, USA; 4.5%), Northwestern University (Evanston, IL, USA; 3.3%), VU University Medical Center (Amsterdam, Netherlands; 3.3%), and University of California (Berkeley, CA, USA; 3%). The first non-North American or European affiliation appears in position 12, corresponding to the University of Melbourne (Melbourne, Australia; 2.1%) (Figure 5).

### Relevant terms, trend topics, and co-occurrence network

Given the existence of different approaches to the terminological analysis of the information, we decided to focus on that





**Figure 2.** Growth of scientific production.



**Figure 3.** Most relevant sources.

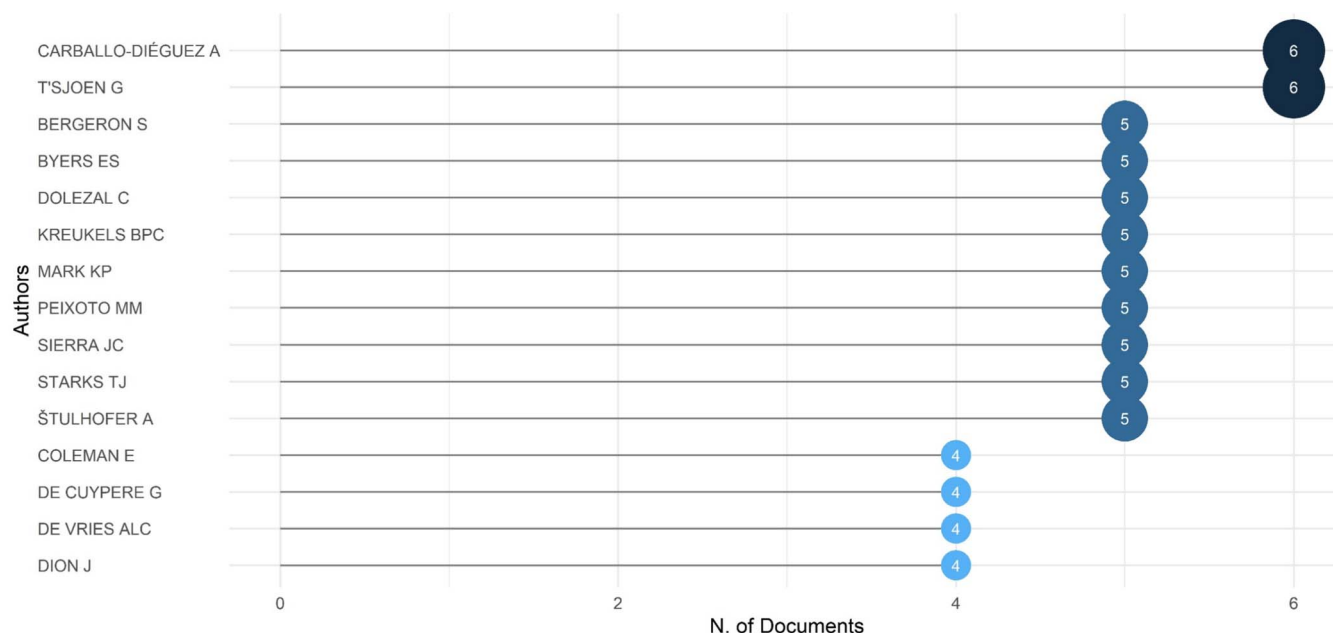
reflected by the author keywords, rather than that offered by titles, abstracts, or KeyWords Plus®, since the latter are more arbitrary, whereas the author keywords reflect a deliberate terminological selection by the authors and better encompass the essence of each manuscript. Figure 6 shows the most relevant terms according to their occurrence in the author keywords. Most of them logically correspond to the purpose of the analysis, both in terms of the construct analyzed (ie, sexual satisfaction) and in terms of population groups (eg, sexual minority, bisexual, gay, or lesbian). We highlight the non-inclusion of minority groups underrepresented in research (eg, asexuals or intersexuals), the relevance of the term HIV, which appears in the first positions, and the presence of the term relationship satisfaction (one of the most studied constructs together with sexual satisfaction).

Next, we analyzed the trend topics within the author keywords (word minimum frequency = 7; number of words per

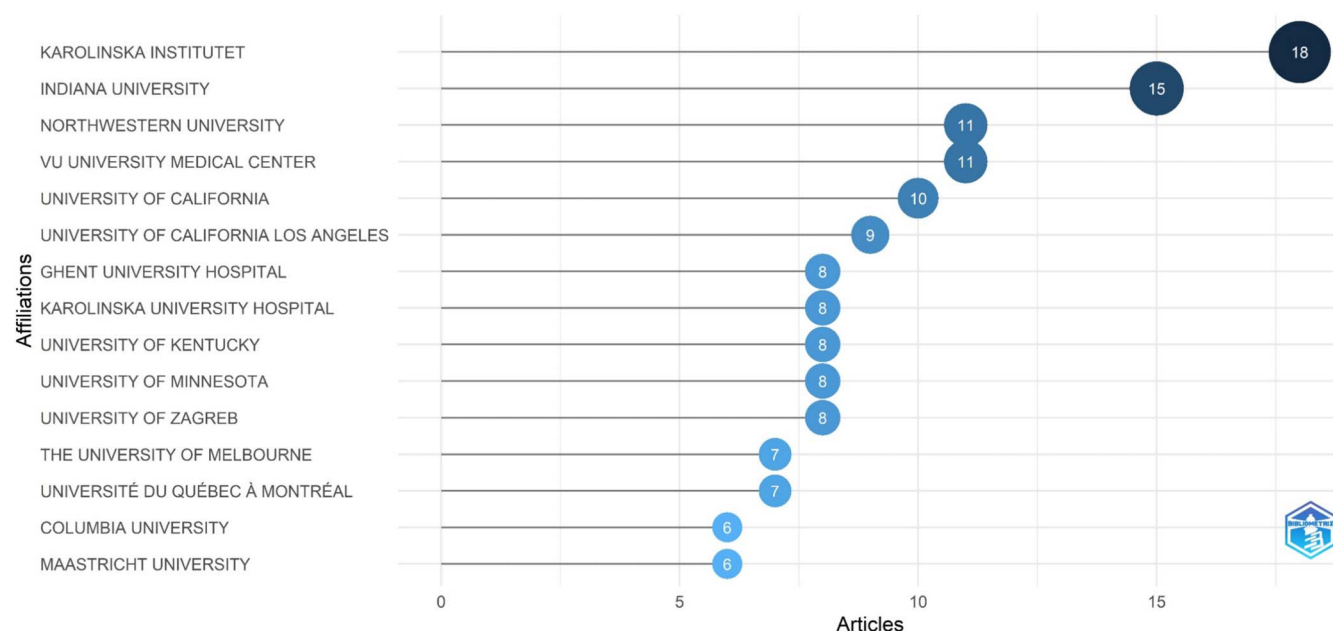
year = 7). For visual convenience, we selected the period from 2000 to 2023. Figure 7 shows how, as the list descends, the terms shown are more obsolete. A good example of this is the one that occupies the last position (homosexuality), a nomenclature that should no longer be used due to its negative connotations. In terms of sexual behavior, the inclusion of the term men who have sex with men, and its acronym (MSM), stands out, but not the female counterpart, women who have sex with women (or WSW).

In Image S2, we present the keywords WordCloud. The most frequent terms appear larger and in central positions, as opposed to the less prominent terms. The analysis was limited to 50 terms for better visualization, and sexual satisfaction was omitted because it was the central term of the study.

Finally, by means of a co-occurrence network analysis, we visually appreciate the number of publications in which certain author keywords tend to appear together in the keyword



**Figure 4.** Author production.



**Figure 5.** Affiliation production.

list. This method is commonly used to identify thematic structures and conceptual relationships in a given field. Specifically, VOSviewer identified 7 information clusters: cluster 1 (11 items: bisexual, body image, gay, heterosexual, homosexual, lesbian, men who have sex with men, quality of life, sexual dysfunction, sexual function, and women); cluster 2 (9 items: aging, bisexuality, erectile dysfunction, gender, homosexuality, intimacy, LGBTQ, male, and sexuality); cluster 3 (8 items: gender dysphoria, orgasm, sex reassignment surgery, sexual functioning, transgender, transsexual, transsexualism, and vaginoplasty); cluster 4 (7 items: couples, gay men, HIV, MSM, relationship quality, sexual behavior, and sexual desire); cluster 5 (5 items: internalized homonegativity, minority stress, relationship satisfaction, same-sex couples, and sexual satisfaction); cluster 6 (4 items: sexual communication,

sexual health, sexual identity, and sexual minority); and cluster 7 (1 item: sexual orientation) (Image S3).

### Author and country collaboration

For the analysis of collaboration between authors, we used the association strength method. Image S4 (Attraction = 5; Repulsion = 1) shows the main research teams represented with different colors (author clusters). There is not much connection between clusters, which translates into a low level of scientific collaboration (Collaboration Index = 4.43). This finding also indicates that manuscripts tend to have a considerable number of co-authors. An exception is found in the teams represented in the right area of the sphere, where synergies can be seen. In the zone below Image S4 (Attraction = 10; Repulsion = 1), an

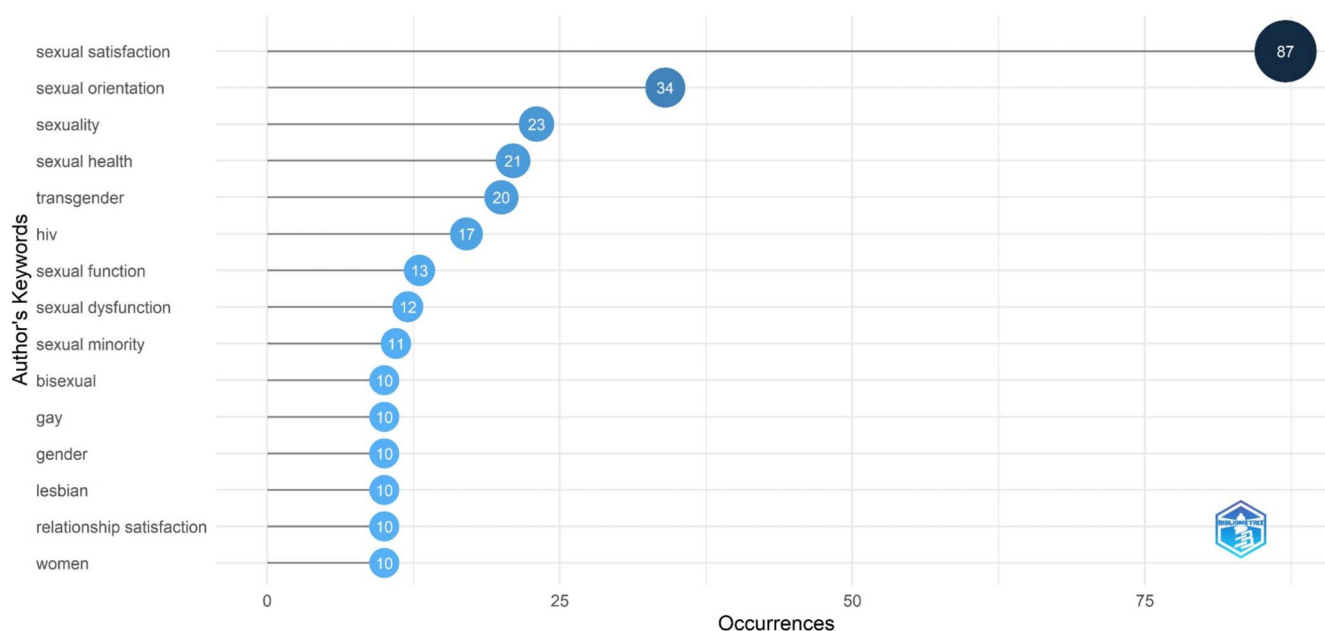


Figure 6. Most relevant terms (author keywords).

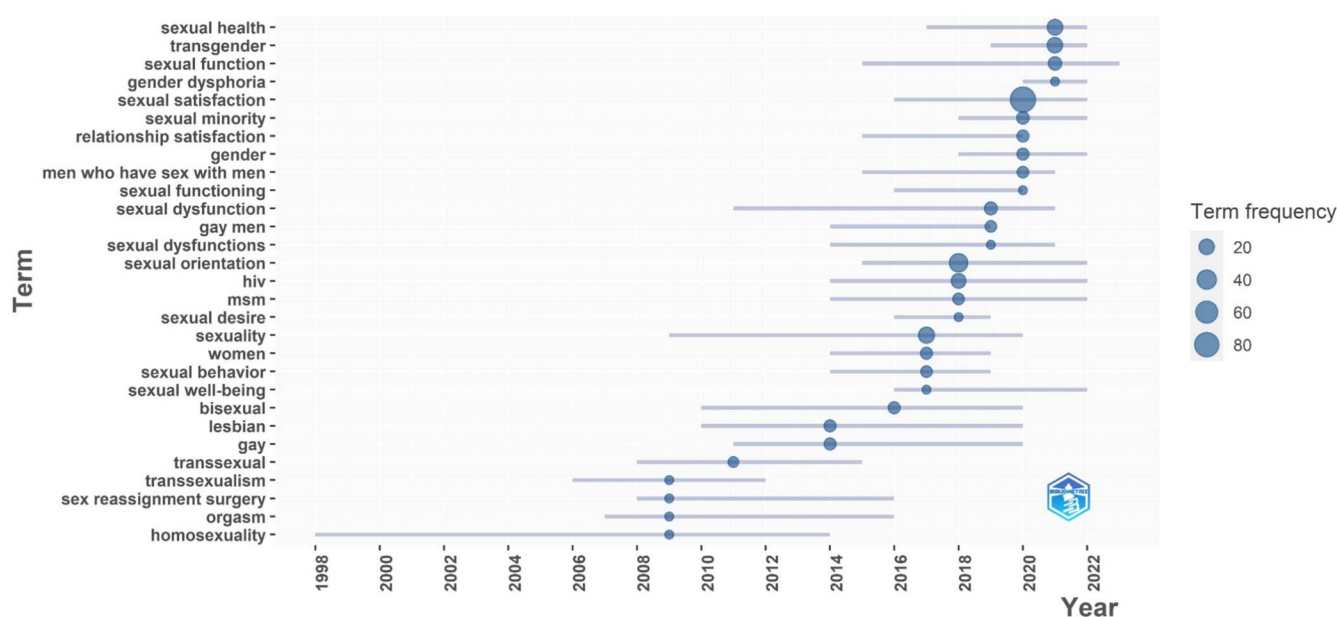


Figure 7. Trend topics.

amplification of the collaboration nodes between both teams can be seen.

Finally, in Image S5, we present the WorldMap of collaborations between countries. The main focus is represented by the United States, from which connections arise with the rest of the world (especially Canada and Europe), followed by different European countries, from which various connections arise, especially with the American continent. Collaboration among countries belonging to South America, Africa, China, and Australia, as well as with the leading countries in production, is very scarce.

## Discussion

This bibliometric analysis of the scientific production on sexual satisfaction of people and couples belonging to SOGDs

was conducted based on 333 articles published in journals indexed in Scopus and Web of Science. Our objective was to establish a mapping to examine the production growth, the most relevant sources, authors, countries, affiliations, terms, trend topics, co-occurrences, and collaborations.

We observed an increasing trend in terms of production over the five decades analyzed, with the highest point occurring in 2023. This progression reflects a growing interest in the subject. From 2005 onward, a progressive rise was observed, which became very noticeable in 2017 and beyond. These years almost coincide with the creation of the Yogyakarta Principles and its subsequent expansion.<sup>50,51</sup> This universal document on the human rights of SOGD people probably boosted the development of research on SOGD health. On the other hand, the appearance of journals such as *Journal of Bisexuality* in 2000 and *LGBT Health* and *Psychology of*

*Sexual Orientation and Gender Diversity* in 2014 may have contributed to this.

To contextualize our bibliometric analysis within the body of SOGD studies, it is noteworthy to consider the study by An and Batra,<sup>52</sup> who conclude that significant attention to this demographic group began in the 2010s. Furthermore, they identify the term *satisfaction* with a low rate of occurrence, which is especially prominent in the period 2015-2017. The main construct of our analysis, *sexual satisfaction*, is not the only dimension that includes the term *satisfaction* in the production about SOGDs (other examples could be relationship satisfaction, satisfaction with sex of rearing, or satisfaction with procedures/surgery/functionality and aesthetic results). De Angelis et al.,<sup>53</sup> in a bibliometric analysis of publications from 2008 to 2021 about the LGBT community, also reported an increasing trend in terms of production.

The most productive journals are *The Journal of Sexual Medicine* (10.21% of the production), followed by *Archives of Sexual Behavior* (9.01%) and *The Journal of Sex Research* (6.61%). These 3 journals, together with *Journal of Sex & Marital Therapy* (4.50%) and *Journal of Homosexuality* (3.30%), represent the core of production, accounting for 33.63% of the research among the 147 journals identified. The fact that the 5 journals are specific to the area shows the maturity reached by the sexological discipline. The evidence that, of the 5 most productive journals, 4 are in the first quartile and 1 in the second quartile of their corresponding Journal Citation Reports® categories may reflect the quality of the work published on sexual satisfaction in SOGD individuals.<sup>54</sup> Nevertheless, although useful, this may not be the best indicator of a manuscript's excellence, since it does not always correlate perfectly with the methodological rigor or theoretical contributions of individual articles.

In geographical terms, most production has been carried out in North American and European contexts. This is evident when analyzing the top authors, the countries, and the most prolific institutions. This geographical reductionism has been present for decades and was already evident in a bibliometric analysis of the *Journal of Homosexuality*,<sup>55</sup> which reported that 73% of the authors were from the United States. Our findings on the geographical mapping of this research topic are similar to those found by An and Batra<sup>52</sup> in generic research on the LGBT community. The existence of a geographical gap in SOGD topics between North America/Europe and the rest of the world could be due, on the one hand, to the fact that there are still very restrictive societies toward sexual diversities, where the rights of SOGD people are not protected and they even suffer persecution and criminalization.<sup>56</sup> On the other hand, the lack of economic resources should be noted, since the regions that receive the most funding for research are North America and Western Europe.<sup>57</sup>

The terminological analysis reflects the underrepresentation of some SOGD groups, something pointed out by different authors, who even noted the pathologization of some of these groups.<sup>58-60</sup> There is also a strong prominence of the term HIV, something already shown by De Angelis et al.<sup>53</sup> in their bibliometric analysis as one of the most prominent research areas in LGBT+ studies. This last finding may be unexpected, since we knew that research on SOGDs has tried to disassociate from the classic perspective associated with risks,<sup>61,62</sup> but the production on HIV has continued to be significant in recent years, together with sexual satisfaction,

and is generally associated with the MSM group. In addition, the term *sexual health* has become notorious, a concept that currently reflects a significant change in the way we understand and approach health in modern societies and that has become a symbol of rights, inclusion, and integral well-being.<sup>63</sup> Importantly, the evident disuse of the term *homosexuality*, which seems outdated as of 2014, is associated with the diagnostic category and whose abandonment today reflects an evident depathologization, increased visibility of SOGD communities, and a change in the narrative that refers to the experiences of this group.<sup>64</sup> The salience of the term relationship satisfaction shows that it is probably the most studied phenomenon associated with sexual satisfaction, both of which are highly related constructs.<sup>18,19,65</sup>

The co-occurrence analysis using clusters yields several findings: (1) the presence of bisexuality associated with body image, quality of life, and sexual (dys)function, since it has been found that, especially in bisexual women, body image is associated with sexual health<sup>66</sup>; (2) the term aging, conceptually associated with sexual dysfunction and intimacy, since, although age has been shown to negatively affect sexual function, at this stage of life, it is important to attend to more creative ways of seeking intimacy<sup>67</sup>; (3) references to transsexuality tend to be reductionist and appear associated with clinical or biomedical terms (eg, sex reassignment surgery or vaginoplasty), reflecting an attention to this group that eclipses other dimensions of their experience; (4) the term HIV seems to be exclusively linked to the male population, which could also be due to the numerous publications on the use of Pre-Exposure Prophylaxis (PrEP) in MSM<sup>68</sup>; and (5) the nuclear term of the study, sexual satisfaction, appears to be linked also to social peculiarities of the SOGD community (ie, internalized homonegativity, minority stress), dimensions that have also been shown to affect sexual satisfaction.<sup>24,25,69</sup>

Finally, in reference to collaborative networks, we observed clusters of data that reflect more than a dozen consolidated research groups but with little collaboration between them. One exception is that of two Western European teams, among whom frequent synergies can be seen in the publication of papers examining different aspects of the health of transgender people. In terms of countries, collaboration networks are observed precisely between the countries that lead production. We found most of the links between North America and Europe, with less prominence of synergies involving other more underrepresented regions.

This study has several limitations. First, despite the strengths of having used two databases and having established a large list of search terms in collaboration with external judges, there is a possibility that some papers may have been excluded from our analysis (eg, papers published in low-impact journals or articles in which our selected terms are used but outside the fields of title, abstract, and keywords). Moreover, by limiting the studies to 2023, it is possible that some of the conclusions drawn from our analyses may change as a result of more recent publications. We also consider it a limitation to have focused our search exclusively on English-language literature.

Finally, we would like to propose some guidelines extracted from the findings of this work, which can serve as guidance in the deepening of the study of sexual satisfaction in people and couples belonging to SOGDs: (1) expand research to underrepresented geographic areas (ie, Latin America, Asia, Africa, and Middle East); (2) consider the impact of the



legal and social context by addressing human rights policies, legislation on SOGD people, and social attitudes that may impact the sexual health of these groups; (3) extend research to less studied populations (eg, asexual individuals); (4) diversify samples, including more diversity, even in studies that focus on SOGD individuals; (5) move away from pathological approaches, taking into account that, although risk behaviors are still being investigated, an affirmative and wellness-promoting perspective should be considered; (6) integrate a resilience-based approach (featuring protective factors such as social support or self-acceptance); (7) create and strengthen international and interdisciplinary collaboration networks; (8) innovate in methodologies and analyses (ie, qualitative, mixed, or longitudinal methods), since most of the reviewed studies are quantitative and cross-sectional in nature; (9) making knowledge more accessible by publishing in languages other than English; and (10) fostering applied research, generating interventions, sex education programs, and policies that can positively impact the sexual satisfaction of SOGD people and couples. We encourage future similar studies to focus on other psychosexual constructs that may also be associated with sexual health in SOGD individuals (eg, relationship satisfaction, sexual assertiveness, sexual self-esteem).

## Conclusion

This study represents the first bibliometric analysis that examines the scientific production on sexual satisfaction of people and couples belonging to sexual orientation and gender diversities. We have observed an increasing trend in production with accelerated growth, especially in the last decade, reflecting a growing interest in the topic. Production is dominated by the United States and Europe, which suggests an underrepresentation of other regions. This geographic concentration could reflect cultural or social barriers in other contexts. In addition, little international collaboration was observed outside these geographic poles. The prominence of variables such as HIV or relationship satisfaction as recurrent terms of study, the underrepresentation of certain groups within the SOGD umbrella, and pathologization in some cases were observed. Finally, although there are several consolidated research networks, there is little interconnection between them, which may limit knowledge sharing and interdisciplinarity. This study invites us to break down geographical, demographic, and methodological boundaries, fostering more inclusive and diverse research on sexual satisfaction in SOGD populations.

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## Author contributions

Both authors are equal contributors to this work.

## Supplementary material

Supplementary material is available at *Sexual Medicine Reviews* online.

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## Conflicts of interest

None declared.

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