A twenty-year bibliometric analysis on the relationship between complicated grief and attachment

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Abstract

Attachment theory is a key paradigm for understanding individual differences for the elaboration of the grieving processes, however limited attempts to systematically synthesize are found on the literature. Our aim is to conduct a bibliometric analysis about the relationship between complicated grief and attachment over the past twenty years. A bibliographic search was made in the Core Collection of Web of Science, the bibliometric analysis was performed using the software Hiscite version 2010.12.6, and VosViewer were used for the construction of bibliometric maps. Results show 276 publications from 2003 until 2023 from 789 authors, published in 143 scientific journals. The field presents a regular increase and sustained number of publications. The topics most researched were bereavement, complicated grief and attachment, and since 2018 has been increased interest in prolonged grief disorder. In conclusion, this bibliometric analysis contributes to the understanding of the current state of this topic and its evolution, being relevant to consider attachment style in bereavement interventions.

Keywords Complicated grief · Attachment · Prolonged grief · Bereavement · Bibliometric Analysis

Introduction

Most people will experience the death of a significant other during their lifetime, and the emergence of severe psychological distress is a natural reaction that often occurs during grieving (Liljeroos et al., 2022). For many, the frequency and intensity of these experiences decrease in the weeks and months following the loss; however, current data estimate that about 10% of bereaved individuals may experience a pathological form of grief (Lundorff et al., 2017).

The term complicated grief can be defined as a persistent form of severe bereavement that involves the occurrence of certain grief-related symptoms at a later time than is considered adaptive (Lobb et al., 2010). This persistent and disruptive grief has been referred to as traumatic grief, complicated grief, and persistent complex grief disorder. During the past two decades, there has been increased recognition that grief may turn into a disorder, and several concepts and proposed diagnostic criteria sets have been used to understand such disturbed grief (Prigerson et al., 2021; Shear et al., 2013). Nowadays (Boelen et al., 2020) it is included in both the International Classification of Diseases (World Health Organization, 2019) and the last edition of the Diagnostic and Statistical Manual (DSM-5 TR) under the name prolonged grief disorder (American Psychiatric Association, 2022).

Among the important elements to be considered for the adaptive elaboration of the grieving process is the mourner's attachment style. In fact, attachment theory is currently considered one of the main paradigms for understanding grief adaptation, since the loss of a loved one through death is an event that triggers activation of the attachment system (Russ et al., 2022).

The studies on the relationship between normative and prolonged grief and attachment style began more than 40 years ago, when (Bowlby, 1980) theorized that the nature

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of grief, including the tendency to develop its pathological forms, is closely related to the bereaved person's attachment organization (Sekowski & Prigerson, 2022). Research has shown that individuals with non-secure attachment relationships are more susceptible to complicated grief (Schenck et al., 2016), specifically that anxiously attached individuals often feel excessive longing for their lost loved one whereas avoidantly attached individuals tend to minimize the threat and limit their attachment behavior (Meier et al., 2013).

Even though attachment theory is a key paradigm for understanding individual differences in reactions to typical grief experiences, and there is a reasonable number of studies among the grieving process and the mourner's attachment style (Boelen & Klugkist, 2011; Currier et al., 2015; Denckla et al., 2015; Field & Filanosky, 2010; Meier et al., 2013), there have been limited attempts to systematically synthesize and assess the literature on the relationship between attachment and complicated grief. During this half a century of research, it has been published three systematic reviews of the literature that have explored the risk of complicated grief that include attachment style (Lobb et al., 2010; Mason et al., 2020; Russ et al., 2022). On another hand, Fernandes et al. (2016) conducted a bibliometric study on bereavement and palliative care, however, the quantitative analysis of research on the relationship between complicated grief and attachment, to our knowledge, has not been systematically performed through bibliometric analysis.

In view of the above, this paper aim is to update the last published revision of research up to the last twenty years by a bibliometric analysis as well as perform a bibliometric analysis of the relationship between complicated grief and attachment style.

Bibliometric analysis is defined as a helpful and rigorous method for scientists to explore high volumes of research data, and enables researchers to extract quantitative information about the distribution by author, time, country and journal (Donthu, Kumar, Pandey et al., 2021; Donthu, Kumar, Mukherjee et al., 2021). Both bibliometric analysis and bibliometric mapping allows to assess academic output, publication and citation information to define parameters using statistical methods (van Raan, 2004) and to identify specific research topics (van Eck, 2011).

Bibliometric indicators have gained popularity in a number of fields, and nowadays are a fundamental tool in the psychology field to identify the number and distribution of publications, authorship, co-authorship, and most cited articles (Haddad, 2017). Bibliometric analysis has been used by researchers for various reasons, such as to assess the intellectual structure of a specific domain in the literature, to look for the emerging research trends (Verma & Gustafsson, 2020) and hotspots in certain topics (Zhao et al., 2022), and

to uncover journal performance and research constituents (Donthu, Kumar, Pandey et al., 2021).

The objective of this research is to perform a bibliometric analysis of the most important articles about the relationship between attachment and complicated grief in the last twenty years according to their Science Citation Index (SCI) impact factor through WoS (Web of Science®, Thomson Reuters, New York, USA). Only Web of Science (WoS) publications were considered, as this is considered the most widely accepted database for the collection and analysis of scientific articles (van Nunen et al., 2018).

The main contribution of this study is to address a dimension that has not yet been highlighted, since despite reviews of the subject, no such bibliometric analysis has been conducted on the influence of the mourner's attachment style on the grieving process. The fundamental aim of the present study is to comprehensively analyze the current status and developing trends in publications on the research among the relationship between complicated grief and attachment style. In particular, our focus is to: (1) assess the research outputs in publications; (2) find the core countries, researchers and journals; (3) construct global scientific collaboration networks among countries; and (4) identify and explore the key topics. By approaching the last 20 years, it brings to the complicated grief researchers from any region or country to understand the current state of literature and to identify the relevant topics to open new avenues of knowledge to guide future research and future applications.

Methods

The aim of this study is to understand the current state of the topic and their evolution and to describe exactly the number of published articles, institutions, countries, authors, citations, the most cited articles, analysis of terms, co-citations, and co-authorship.

Design

Quantitative content analysis was implemented to study all the published research papers about the relationship between attachment and complicated grief for the years 2003–2023. The results were analyzed using descriptive methods, descriptive bibliometric analysis, and bibliometric mapping.

Data collection

The research was conducted on February 1st, 2023, in the WoS Core Collection database on SCI-EXPANDED and SSCI. The search strategy included the combination of

Table 1 Analysis bibliometric according to publication year

Publication Year	Articles	%	GCS
2003	1	0.4	43
2005	4	1.4	323
2006	7	2.5	928
2007	6	2.2	342
2008	4	1.4	321
2009	10	3.6	461
2010	19	6.9	970
2011	10	3.6	272
2012	9	3.3	273
2013	11	4.0	406
2014	9	3.3	447
2015	20	7.2	376
2016	17	6.2	255
2017	21	7.6	273
2018	17	6.2	204
2019	23	8.3	248
2020	16	5.8	142
2021	28	10.1	291
2022	41	14.9	54
2023	3	1.1	3

Table 2 Analysis bibliometric according to journal (≥ 5 articles)

Journal	Articles	%	GCS
Death Studies	33	12.0	1250
Omega-Journal of Death and Dying	23	8.3	327
Journal of Loss & Trauma	8	2.9	88
Journal of Clinical Psychology	7	2.5	120
Journal of Affective Disorders	6	2.2	204
Psychiatry Research	6	2.2	116
Anthrozoos	5	1.8	72
Bereavement Care	5	1.8	80
Journal of Nervous and Mental Disease	5	1.8	173
Palliative & Supportive Care	5	1.8	31

attachment and complicated grief, specifically the syntax used was (TS= ("attachment") AND ("complicated grief" OR "complicated bereavement" OR "prolonged grief")). We tried other synonyms for complicated grief, such as complicated grieving process, bereave or bereaved process, but the totality of documents found was already included in the original search. Based on the results of syntax, 289 articles were obtained. The study was therefore limited to research articles in the strict sense, including only original papers and excluding editorials, book reviews, conference abstracts, letters, editorials and news items. This led us to eliminate 13 articles that did not meet the criteria. As a result, the final sample of the study consisted of 276 articles.

Data analysis

Bibliometric analysis of these data was performed using the following programs: Hiscite (version 2010.12.6; Hist-Cite Software LLC, New York, USA), Bibexcel (version 2011.02.03; Olle Persson, University of Umeå, Umeå, Umeå, SWE), Pajeck (version 3.14, 2013.11.12; Batagelj and Mrvar, University of Ljubljana, Ljubljana, Slovenia), and Vosviewer (Van Eck & Waltman (2010), University of Leiden, The Netherlands). Initially, before performing the bibliometric analysis, it was necessary to clean the data obtained. We checked for unknown data and duplicate records and standardized the names of the authors to avoid spelling errors in their names and initials. We solved the issue of synonyms or homonyms in authors' names by using other specific fields, such as "author address" (Jensen et al., 2009). However, the addresses of all co-authors are

not listed in the WoS database, so in cases where the information did not appear, an additional search was conducted through Google. If the author had changed institutions, then the most current one was chosen.

The bibliometric analysis and construction of the bibliometric map were carried out using the following software: Histcite (version 2010.12.6), Bibexcel (version 2011.02.03) in combination with Pajek. (version 3.14) and Vosviewer. The analysis was conducted in two parts: (a) calculation of basic bibliometric indicators; and (b) coauthoring, co-citation, and semantic mapping based on the words of the abstract and title.

Results

Basic bibliometric indicators

Considering the field evolution in the last 20 years (Table 1), the years more productive are 2022, 2021, 2019, 2017 y 2015 in which there is greater growth. In 2022, 41 articles were published while 28 were published in 2021. Articles published by year, ranged from 1 to 41 with a mean of 13.80 and a *SD* of 9.82. On the other hand, considering the GCS (Global Citation Score of the ISI's database Web of Science) per year, it ranges between 0 and 970 (Mean = 331.60, *SD* = 245.66), 2010 was the year with more citations (GCS = 970) followed by 2006 (GCS = 928) and 2009 (GCS = 461). A comparison was also made between the number of publications and the number of citations per year (Image 1-Appendix I).

The number of articles published per journal (Table 2) varies between 1 and 33, with mean 1.93 (*SD* = 3.42); *Death Studies* (33 articles) and *Omega-Journal of Death and Dying* (23 articles) corresponded to the most productive journals, followed by *Journal of Loss and Trauma* (8 articles); *Journal of Clinical Psychology* (7 articles); *Journal of Affective Disorders* and *Psychiatry Research* (6 articles); and *Anthrozoos*, *Bereavement Care*, *Journal of Nervous and Mental Disease* and *Palliative and Supportive Care* (5

articles). The number of citations ranged from 0 to 1250, with mean 46.38 ($SD = 117.89$). The results indicate higher values for the *Death Studies* (GCS = 1250), followed by *Omega-Journal of Death and Dying* (GCS = 327), *European Archives of Psychiatry and Clinical Neuroscience* (GSC = 268), *Clinical Psychology-Science and Practice* (GCS = 264) and *Journal of Palliative Medicine* (GCS = 235).

The articles came from 28 different countries (Table 3). The number of articles published in the different countries ranges from 1 to 146, with an average of 11.68 (SD = 27.28). The most productive countries were the USA (n = 146) and Australia (n = 30). Slightly less prolific were countries such as the Netherlands (n = 30), the UK (n = 17), followed by Canada (n = 15), Italy (n = 15) and Germany (n = 14). The rest of the countries published ten or less articles related to the field. On the other hand, regarding the GCS it ranges between 0 and 5333 (Mean = 264.68; $SD = 830.92$), being USA (GCS = 4333), Australia (GCS = 926), Netherlands (GCS = 881), the UK (GCS = 296) and Canada (GCS = 196) the most quoted.

Our study identified 368 institutions (Appendix III). The number of articles published by the different institutions ranges from 1 to 29, with mean 1.74 (SD 2.17). The most prolific institutions were Columbia Univ (N = 29), Harvard Univ and Med School (N = 16), Univ Uthecht (N = 15), Univ Memphis (N = 14) and Massachusetts General Hospital (N = 10). The rest published nine or less articles related to the field. Regarding the most cited institutions, the number of citations ranges from 0 to 1171, with an average of 41.02 (SD 106.56). The four most cited institutions were Columbia Univ (GCS = 1171), Univ Uthecht (GCS = 881), Univ Memphis (GCS = 680), Univ Pittsburgh (GCS = 622) and Harvard Univ and Med School (GCS = 502).

Considering the language of publication (Appendix III), the majority of the articles were written in English (N = 264).

A total of 789 researchers published at least 1 article on the topic of complicated grief and attachment (Table 4), whose publications ranged from 1 to 22 articles, with mean 1.38 ($SD = 1.40$). Only 10 authors produced more than 6 articles, the rest, published 5 articles or less. The 10 most productive authors were Shear MK, Neimeyer RA, Prigerson HG, Boelen PA, Bonanno GA, Bryant RA, Maccallum F, Simon NM, Field NP and Reynolds CF. On the other hand, considering the cited authors their quotations ranged between 0 and 1262 (Mean = 37,27; $SD = 88.80$), the 5 most frequently cited authors were Shear MK (GCS = 1262, GCS/t = 100.44), Bonanno GA (GCS = 754, GCS/t = 15.53), Neimeyer RA (GCS = 692, GCS/t = 66.70), Prigerson HG (GCS = 692, GCS/t = 10.10) and Boelen PA (GCS = 670, GCS/t = 71.38).

Table 3 Analysis bibliometric according to country

Country	Articles	%	GCS
USA	146	52.9	4333
Australia	30	10.9	926
Netherlands	20	7.2	881
UK	17	6.2	296
Canada	15	5.4	196
Italy	15	5.4	180
Germany	14	5.1	90
Israel	9	3.3	73
Turkey	9	3.3	10
Poland	6	2.2	14

Table 4 Analysis bibliometric according to principal authors (≥ 5 articles)

Authors	Articles	%	GCS	GCS/t
Shear MK	22	8	1368	100.44
Neimeyer RA	16	5.8	696	66.70
Boelen PA	11	4.0	675	71.38
Prigerson HG	11	4.0	481	72.91
Bryant RA	9	3.3	286	29.75
Maccallum F	8	2.9	273	28.30
Bonanno GA	7	2.5	162	15.53
Simon NM	7	2.5	94	15.38
Bui E	5	1.8	36	7.29
Dean JM	5	1.8	161	14.25
Field NP	5	1.8	259	19.90
Mancini AD	5	1.8	127	11.16
Meert KL	5	1.8	161	14.25
O'Connor MF	5	1.8	200	17.18
Reynolds CF	5	1.8	337	25.10
Robinaugh DJ	5	1.8	224	25.05
Van den Bout J	5	1.8	491	30.88

The 10 most frequently cited articles published are presented in Appendix III below, whose citations ranged from 0 to 323, with mean 24.19 ($SD = 41.53$). The most cited article was written by Lobb EA (2010) with 323 GSC and was published in *Death Studies*. The second most cited article was written by Boelen PA (2006), with 264 GCS and was published in *Clinical Psychology-Science and Practice*. Finally, the third most cited article was written by Neimeyer RA (2006), with 256 GSC and was also published in *Death Studies*. The most recent article published that was among the 10 most cited articles was written by Robinaugh (2014), with 69 GCS and was published in *Journal of Abnormal Psychology*.

Finally, articles were classified into 56 journal fields based on Web of Science categories (Appendix III). The most productive fields were Psychology Multidisciplinary (N = 86), Psychiatry (N = 76), Psychology Clinical (N = 64), Social Sciences Biomedical (N = 56) and Social Issues (N = 33).

Fig. 1 Co-author network (≥ 3 co-author publications)
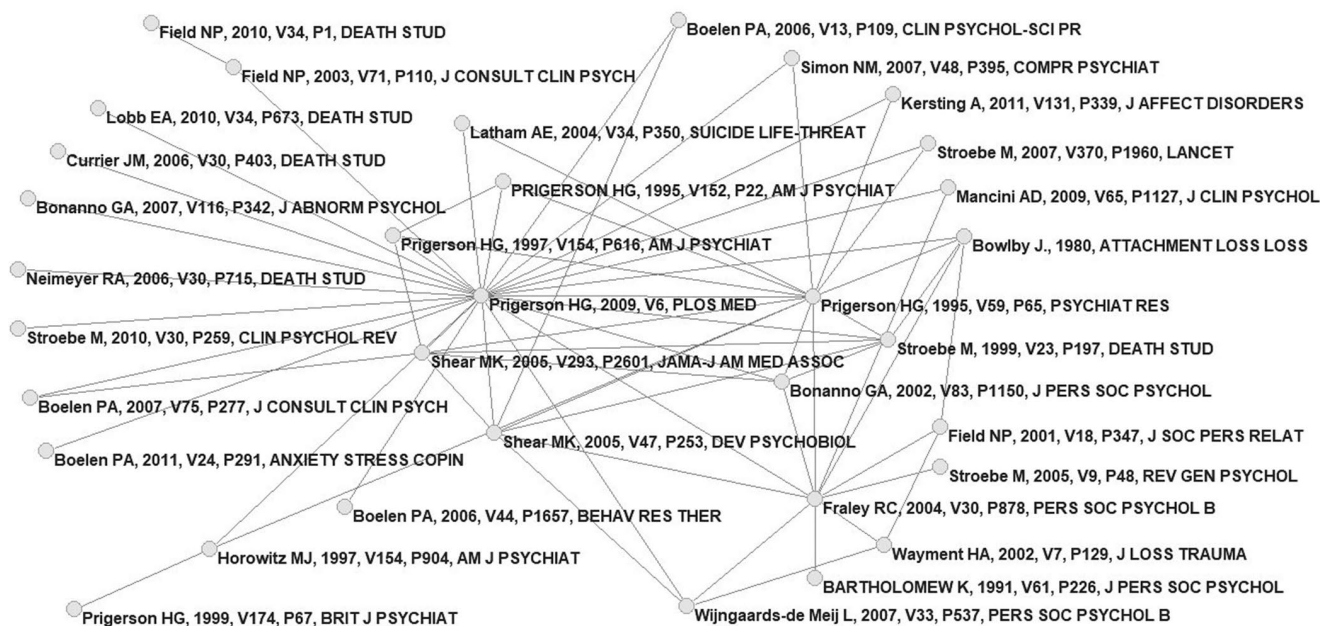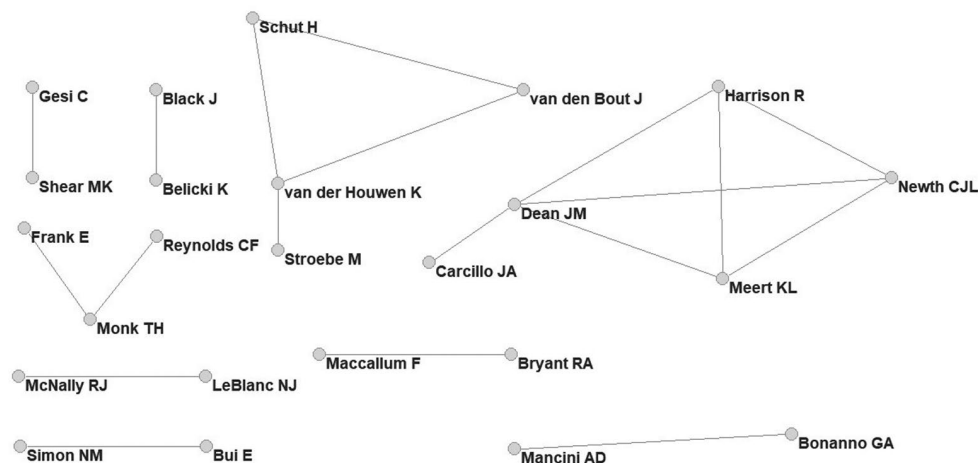
Fig. 2 Co-citation network (≥ 15 co-citations of publications)

Co-author, co-citation and thematic analysis

Co-author network

Co-author network: researchers are represented by nodes in co-authorship networks. Two nodes are connected if corresponding researchers co-authored at least one publication together with or without other co-authors. In the network of co-authors for presentation, a threshold of three or more collaboratively written citations was set. Using this criterion, 24 authors were identified. The authors were organized into nine groups. The largest group had five members. The largest research groups are shown in Fig. 1.

Co-citation network

The co-citation network involves tracking pairs of papers that are cited together. A threshold of fifteen more collaboratively written citations was set (Fig. 2). Using this criterion, 30 authors were identified. The author with the highest number of co-citations was Prigerson (2009 and 1995), followed by Fraley (2004), Shear (2005), Stroebe (1999) and Bonanno (2002). These authors cited each other's work the most.

Thematic analysis

In the thematic analysis, 950 different terms appeared in the titles and abstracts, which we attempted to group by categories. The inclusion criterion was binary counting and a

frequency of occurrence of ≥ 10, which gives a total of 45 terms. From them the exclusion criteria were terms referring to the design or methodology of the research carried out. The terms were filtered to group together those that were synonyms as well as those that appeared in singular and plural or with different genders. Which gives a total of 28 terms grouped in 4 clusters.

In descending order of appearance, the following terms stand out: "complicated grief"; "attachment"; "bereavement"; "grief" and "depression". These terms receive the highest number of citations. As seen in Figs. 3 and 4 groups with different themes and their associated terms are observed: (1) 'attachment and grief aspects" ("attachment", "avoidance", "bereavement", "coping", "grief", "resilience", "rumination", "stress" and "symptoms") identified as purple; (2) "psychopathology and grief" ("anxiety", "depression", "health", posttraumatic-stress-disorder", "prolonged grief disorder", "PTSD", "risk" and "trauma") identified as green; (3) "progress and evolution of grief" as "comorbidity", "death", "experience", "loss", "prevalence" and "scale", identified in blue; and finally, (4) the group identified with yellow, it has referenced to "bereavement intervention and prevention aspects" like "complicated grief", "mental-health", "predictors", "social support" and "therapy".

In addition to the network maps, we generated a density map of title and abstract terms with VOSviewer, as seen in Fig. 5 (Appendix II). The colour of each point on the map represents the density of the term during the period of study (i.e., yellow represents higher density while blue represents lower density). The density of the point on the map was calculated using the number of neighboring terms and the amount of them (using a Gaussian kernel function) (van Eck & Waltman, 2010). The larger the number of terms to the proximity of a point and the greater the weight of the terms, the closer it is to yellow. On the other hand, the smaller number of terms to the proximity of a point and the smaller the weight of the terms, the closer they are to blue. In this case, we observe greater density in the term bereavement, complicated grief, attachment, grief and depression.

Finally, Fig. 4 shows the relationship between the most used words according to the year. It is found that before 2015 the articles focused on aspects related to loss, resilience, therapy, social support as well as trauma, risk and posttraumatic-stress-disorder. Between 2015 and 2018 the studies were centered on bereavement and complicated grief, attachment and related symptoms such as depression. Finally, since 2018, the studies have focused on aspects related to prolonged grief disorder and on its prevalence and predictors.

Discussion

In the present study, a novel bibliometric analysis was conducted, on the relationship between complicated grief and attachment, according to the impact factor of the Science Citation Index (SCI) through WoS (Web of Science®, Thomson Reuters, New York, USA). The aim was to describe the number of published articles, institutions, countries, authors, citations, most cited articles, co-citations, and

Fig. 3 Groups of thematic analysis
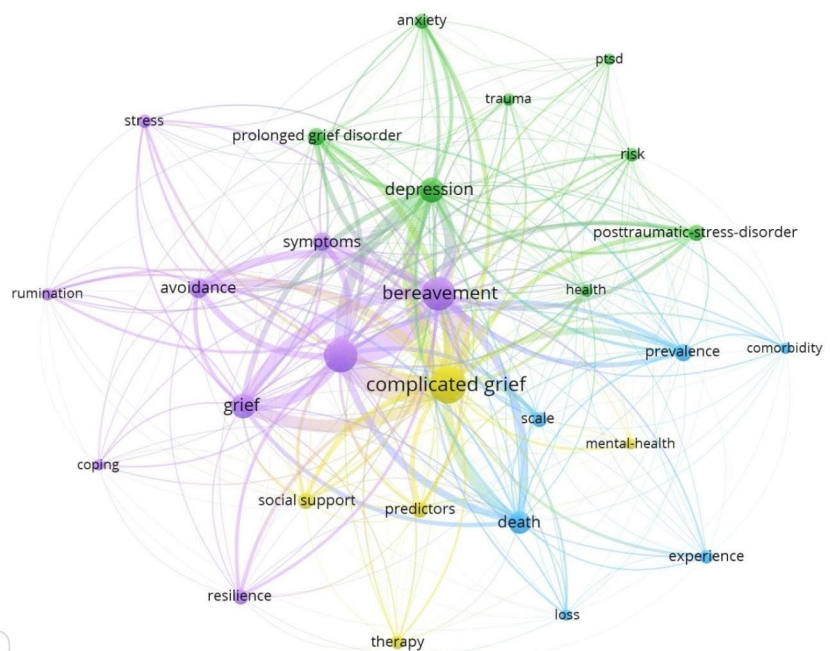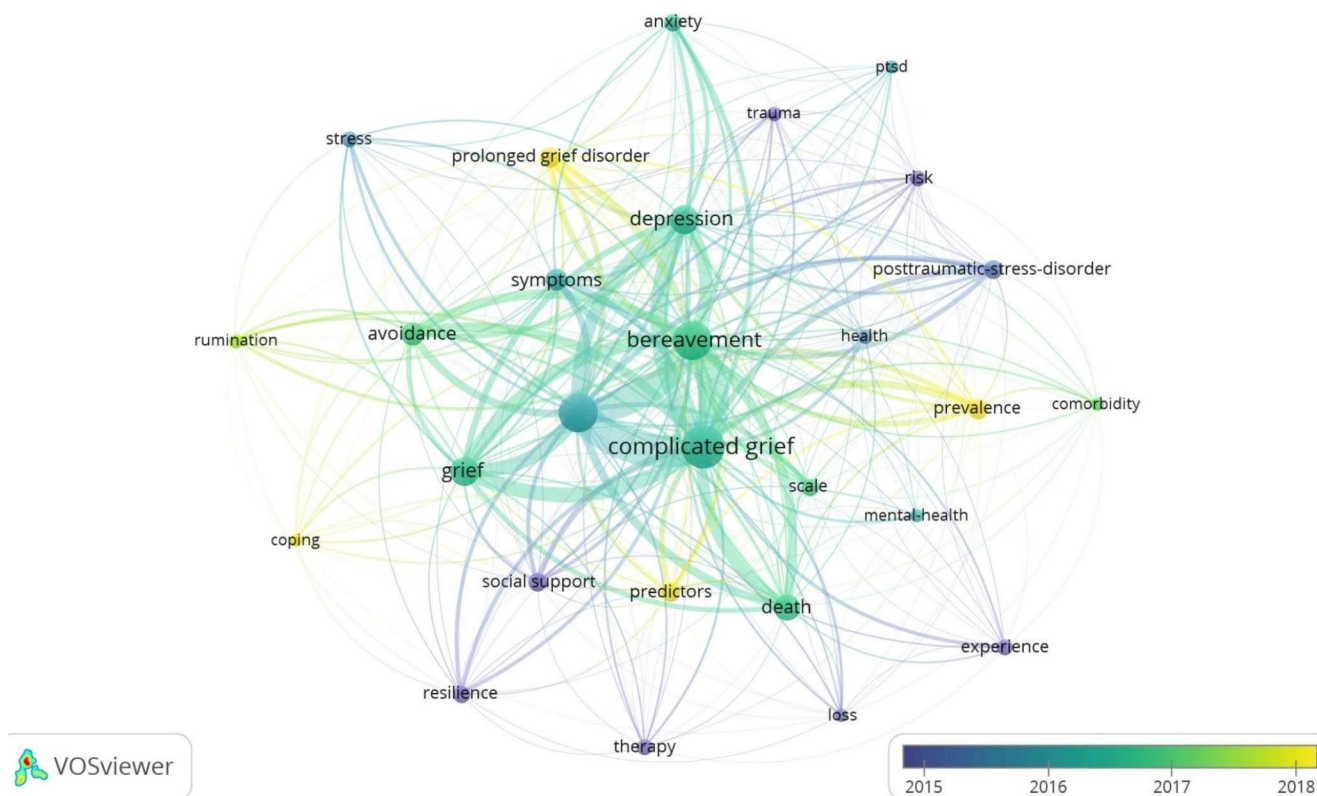
Fig. 4 Overlay visualization

co-authorships on BJW research over the past twenty years (2003–2023).

When considering the evolution of the number of publications, in general, an upward trend is observed from 2015 until February 1st, 2023. More specifically, last year a considerable increase was observed, ranking 2022 as the year in which most articles were published over the past twenty years (41 in total). However, despite the fact that these years produced the highest number of publications, 2010 and 2006 stood out for receiving the highest number of citations (GCS = 970 and GCS = 928, respectively).

The descriptive bibliometric analysis showed that *Death Studies* had the greatest number of publications as well as the highest number of citations, followed by *Omega-Journal of Death and Dying*. Also, it is worth mentioning that, although *European Archives of Psychiatry and Clinical Neuroscience* (n = 2*), Clinical Psychology-Science and Practice* (n = 1) and *Journal of Palliative Medicine* (n = 2) had only one or two published articles, were third (GSC = 268), fourth (GCS = 264) and fifth (GCS = 235) most cited journals, respectively. The most productive country was the USA, publishing slightly more than half of the articles included in the study (n = 146, 52,90%). These findings are consistent with the fact that the main institutions with the greater number of articles published on the topic are American (Columbia University and Harvard University

and Medical School); and with English as the predominant language (96,40% of the articles were written in English).

Of the 789 researchers identified, about 81% have published a single article related to the relationship between complicated grief and attachment, and just only 10 of the authors have published more than 6 articles. The most published researchers are Shear M. K., followed by Neimeyer R. A., Prigerson H. G. and Boelen P. A. The most published research, Shear M.K., belongs to the University of Columbia, which coincides with the institution that had received more publications and citations. Regarding co-authorship analysis, none of these 4 authors have published jointly and none of them was part of the same research group. Overall, all authors received between 0 and 323 citations with an average of 24.19 (*SD* = 41.53). The most cited authors were Shear and Neimeyer, who were also the most prolific, who accumulated 1368 and 696 citations respectively, for the articles for which they appeared as authors. The topics published by these authors are mainly aspects related to bereavement and complicated or prolonged grief.

Our study showed that the 10 most cited articles are from the years 2005 and 2015 and were primarily articles presenting updates on models, predictors, diagnosis and treatment of complicated grief. The recent articles proportionally received the lowest number of citations, this could reflect the average from the time an article is published until it

reaches a significant number of citations, which is between four and five years (Kulkarni et al., 2007). The most cited article was written by Lobb et al. (2010), with 70 citations, which was published in *Death Studies*. This article is a systematic review of the literature on predictors of complicated grief, taking into account factors preceding death (as previous loss, exposure to trauma, a previous psychiatric history or attachment style); factors associated with death (type death, the quality of the caregiving or dying experience or close kinship relationship to the deceased); and factors after death (as a social support or cognitive appraisals). As Lobb et al. have already noted in 2010, "further research into conceptualizations of complicated grief in terms of attachment theory (…) was warranted" (p. 693).

According to the analysis of terms, the topics most researched were aspects related to bereavement, complicated grief and attachment. Analysis of the relationship between the most used words according to the year shows that there is a recent interest in prolonged grief disorder. This finding follows the line of the authors who indicate that there has been increased recognition that grief as disorder (Prigerson et al., 2021) and an increased interest in its research by being included in both ICD-11 (WHO, 2019) and DSM-5 TR (APA, 2022). Moreover, the increased interest in the field since 2018, and the high production in 2021 and 2022 might be partly explained by the occurrence of the covid-19 pandemic, considering that a significant number of bereaved people were expected to develop Complicated Grief (CD) due to restrictions such as not having been able to be present at the time of their loved one's death or being prevented from holding a proper funeral (Gesi et al., 2020).

Limitations

The main strength of this study is the application of bibliometric analysis to determine the state of research about the grieving process and the mourner's attachment style. However, there are limitations to this work because we used only one indicator, the articles published in one database, without accounting for other indicators from other indices of impact of databases such as SCOPUS, nor other indicators of academic quality: transfer through congresses, patents, etc. Future research should compare the results obtained with other types of indexations or journals to complete the information provided. Likewise, it has not been analyzed in detail whether each of the articles or citations included has been previously retracted or whether any of the authors have papers previously retracted, a negative academic aspect not reflected in the study. Future research should explore this aspect further. Finally, because of the time lag between the publication of an article and its indexation in Web of Science, very recent articles may not be captured in a search.

However, while we continue to rely on the new literature and expand it over time, our research provides valuable information and joins the growing interest in the subject under study, as evidenced by the progression of publications worldwide.

Conclusion

Bibliometric analysis of the 143 journals included in this study showed that 276 articles were written by 789 authors from 368 institutions and 28 countries from 2003 to 2023. Relevant information was presented on the distribution of the articles in the journals, the countries where most literature has been published, co-authorship networks, citations and the most recurrent keywords that have aroused most interest among the authors.

The results obtained in this research can be a starting point for other authors and interested professionals to delve deeper into the area of complicated grief. The information provided allows a better understanding of the evolution of bereavement research, specifically in relation to attachment as a relevant factor in the mourning process. Finally, it is relevant to use it for the future development of grief research, along the lines of taking into account the attachment style with the aim of improving clinical interventions in bereaved persons after the death of a loved one and facilitating an adaptive grief process.

Declarations

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