

**BIBLIOMETRIC ANALYSIS OF MOBBING AND BULLYING RESEARCH IN NURSING WITH SCIENTIFIC MAPPING TECHNIQUE**

HEMŞİRELİK ALANINDA YAPILAN MOBBİNG VE ZORBALIK ARAŞTIRMALARININ BİLİM HARİTALAMA TEKNİĞİ İLE İNCELENMESİ

Nukhet BAYER <sup>1</sup><sup>1</sup> Lokman Hekim University, Faculty of Health Sciences, Department of Nursing, Ankara, Turkey**ABSTRACT**

**Objective:** Violence against nurses has become a worldwide public health issue and has therefore been the focus of numerous publications; however, publications made despite this were not handled with bibliometric analysis. This research was conducted to conduct a bibliometric analysis of studies focusing on workplace violence experienced by nurses in the last 25 years.

**Methods:** This bibliometric study was conducted from 1996 to 2021 in the field of workplace violence in nurses using the Web of Science (WoS) database. In order to reach mobbing-themed articles in the field of nursing, the articles were searched in the WoS database. During the search, documents in the English language Article or Review Article were scanned to reach the terms "Mobbing" or "Bullying" together with the terms "Nurse" or "Nurse care." The year 2022 has been excluded.

**Results:** It is seen that there has been an increase in the number of studies examining violence against nurses in recent years, and these studies are in the United States. The samples of the studies consist of both working nurses and nursing students. Studies mostly deal with the violence that nurses are exposed to in the workplace.

**Conclusion:** This research shows that there are few studies examining violence against nurses only, and although it is a global problem, it is only addressed in a few countries. In order to provide quality and safe patient care to patients in health care, highly motivated nurses are needed. One of the most important factors reducing motivation in nurses is mobbing. In this study, it was seen that mobbing applied to nurses was discussed only in developed countries. However, violence is a global problem, and it is necessary to increase the awareness of nurse managers and prevent violence.

**Keywords:** Bibliometric Analysis, Bullying, Mobbing, Nurse, Nurse Care.

**ÖZET**

**Amaç:** Hemşirelere yönelik şiddet dünya çapında bir halk sağlığı sorunu haline geldi ve bu nedenle çok sayıda yayının odak noktası oldu. Bu konuda yapılan araştırmalar daha önce bibliyometrik analiz ile incelenmemiştir. Bu araştırma, hemşirelerin son 25 yılda yaşadıkları işyeri şiddetine odaklanan çalışmaların bibliyometrik analizini yapmak amacıyla yapılmıştır.

**Gereç ve Yöntem:** Bu bibliyometrik çalışma, 1996'dan 2021'e kadar hemşirelerde işyerinde şiddet alanında yapılan araştırmalar Web of Science (WoS) veri tabanı kullanılarak incelenmiştir. Araştırmada İngilizce "mobbing", "zorbalık" ile birlikte "hemşire" ve "hemşire bakımı" anahtar kelimeleri kullanılarak makalelere ulaşılmıştır. 2022 yılında yayınlanan makaleler hariç tutulmuştur.

**Bulgular:** Son yıllarda hemşirelere yönelik şiddeti inceleyen çalışmaların sayısında artış olduğu ve bu çalışmaların çoğunlukla Amerika Birleşik Devletleri'nde olduğu görülmektedir. Araştırmaların örneklemini hem çalışan hemşireler hem de hemşirelik öğrencileri oluşturmaktadır. Çalışmalar daha çok hemşirelerin işyerinde maruz kaldıkları şiddeti konu almaktadır.

**Sonuç:** Bu araştırma, yalnızca hemşirelere yönelik şiddeti inceleyen az sayıda çalışma olduğunu ve küresel bir sorun olmasına rağmen yalnızca birkaç ülkede ele alındığını göstermektedir. Sağlık hizmetlerinde hastalara kaliteli ve güvenli hasta bakımı sağlamak için motivasyonu yüksek hemşirelere ihtiyaç vardır. Hemşirelerde motivasyonu azaltan en önemli etkenlerden biri yıldırma. Bu çalışmada hemşirelere uygulanan yıldırmanın sadece gelişmiş ülkelerde tartışıldığı görülmüştür. Ancak şiddet küresel bir sorundur ve hemşire yöneticilerin farkındalığının artırılması ve şiddetin önlenmesi gerekmektedir.

**Anahtar Kelimeler:** Bibliyometrik Analiz, Hemşire, Hemşire Bakımı, Mobbing, Zorbalık.

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## **INTRODUCTION**

The World Health Organization (WHO) defines violence as “the intentional use of physical force or authority against another person in the form of a threat or reality, resulting in or likely to cause injury, death or psychological harm to the person exposed” (WHO, 2002). Based on the definition, it can be said that violence is experienced not only in the family, but also in workplaces and institutional areas. Although the prevalence of workplace violence varies between countries, it is reported that physical violence is between 18.22% and 56.0%, verbal abuse is between 63.8% and 89.58%, and sexual harassment is between 4.7% and 19.7% (Al-Omari, 2015; Fute, Mengesha, Wakgari, & Tessema, 2015; Rezaei Nayeh et al., 2018). Increasing violence, which is frequently experienced in health services, constitutes a global public health problem (Shi et al., 2020; Tian et al., 2020). Although all health personnel suffer from violence, the fact that nurses have close contact with patients and their relatives and spend more time with them puts them at risk of violence three times more than other health personnel. On the other hand, it seems that male nurses are exposed to more physical violence, while female nurses face verbal violence at a higher rate (M. Li et al., 2020). Considering the studies conducted among nurses, it is reported that nurses are exposed to physical violence between 4.9-83.3% and verbal violence between 66.2-95.1% (Dadfar & Lester, 2021; Jakobsson, Axelsson, & Örmön, 2020; Shi et al., 2020). It is seen that exposure to violence causes many different problems. Studies have shown that there is a relationship between exposure to violence at work and psychological exhaustion, and that between 7.8% and 73% of nurses experience high levels of anxiety and severe depressive symptoms. It also causes an increased risk of type 2 diabetes, sleep problems, decreased quality of life, and posttraumatic stress disorder (Alderson, 2008; Fang et al., 2018; Tian et al., 2020; Ünsal Atan et al., 2013; Zhao et al., 2018). In addition, exposure of nurses to violence changes their attitudes towards their profession and reduces their motivation, quality of care, productivity, and job satisfaction. It also increases job avoidance and turnover (Dadfar & Lester, 2021; Duan et al., 2019; M. Li et al., 2020). The increase in violence against health professionals, especially nurses, who have a primary role in patient care, has also increased the number of academic publications on the subject. Accordingly, this research was conducted for the purpose of bibliometric analysis, which scans the publications covering violence against nurses.

## **MATERIALS AND METHODS**

### **Bibliometric Analysis**

Today, the production of scientific publications has increased considerably. It is important for academicians to monitor scientific studies in various fields. Efforts to access, examine and analyze scientific publications, and to measure the information provided by these publications (document, author, source, keywords used, etc.) and evaluate their effects have increased accordingly. Bibliometric analysis can be defined as “quantitative analysis of published scientific studies in a specified field and publication information in a specified time period”. Bibliometric analyzes have two main areas of use: performance analysis, which aims to measure the research and publication performance of individuals and institutions, and science mapping, which tries to reveal the structure and dynamics of scientific fields (Akyüz, 2021; Akyüz & Celik, 2021; Cobo, López-Herrera, Herrera-Viedma, & Herrera, 2011; Kurutkan & Orhan, 2018; Yu & Muñoz-Justicia, 2020).

In a bibliometric analysis, first the study area is determined, the data related to the determined area is collected and compiled. The data obtained after the compilation is analyzed by various bibliometric analysis methods and interpreted by tabulating (Aria & Cuccurullo, 2017; Zupic & Čater, 2014).

### **Obtaining and Preparing Data**

The first step in obtaining data is to select a database from which we can obtain the most comprehensive and quality results related to the research area. Web of Science (WoS) is a globally accepted database containing high quality academic studies (J. Li & Hale, 2016) For this reason, WoS data was used in this study. In order to reach mobbing-themed articles in the field of nursing, the articles were searched in the WoS database. During the search, documents in the English language Article or Review Article were scanned to reach the terms "mobbing" or "bullying" together with the terms "Nurse" or "Nurse care." The year 2022 has been excluded. ESCI, SCI-EXPANDED and SSI indexes were chosen as WoS index. As a result of the search, 806 documents were found.

806 documents in the data set obtained from WOS were re-examined using the Pandas library within the Python program. As a result of the examination, it was determined that 254 documents were not related to the study area and were removed from the data set. Author keywords of the remaining 552 documents were analyzed using the same program. 71 keywords were observed to be used synonymously, as well. Synonyms were combined in order not to adversely affect the results of the study. The data set of 552 documents obtained was analyzed.

### Analyzing Data

In the analysis of the data obtained, some of the findings were analyzed with the program called Biblioshiny, developed in the R environment, and some of the findings were interpreted using the visuals provided by the Biblioshiny program, and some of them were visualized and interpreted using the Tableau program. R is a language and environment for statistical computing and graphics while providing a wide variety of statistical and graphical techniques (r-project.org). R runs on almost all standard computing platforms and operating systems (Sriwichian & Muangprathub, 2019).

Biblioshiny, on the other hand, is a Java software developed by Massimo Aria. It is an open source software design that combines the functionality of the Bibliometrix package with the ease of use of web applications using the Shiny package environment, and provides bibliometric analysis and visualization with an easy user interface without the need for coding (Huang, Duan, He, Wang, & Hu, 2021). The workflow chart applied in this study is shown in Figure 1.

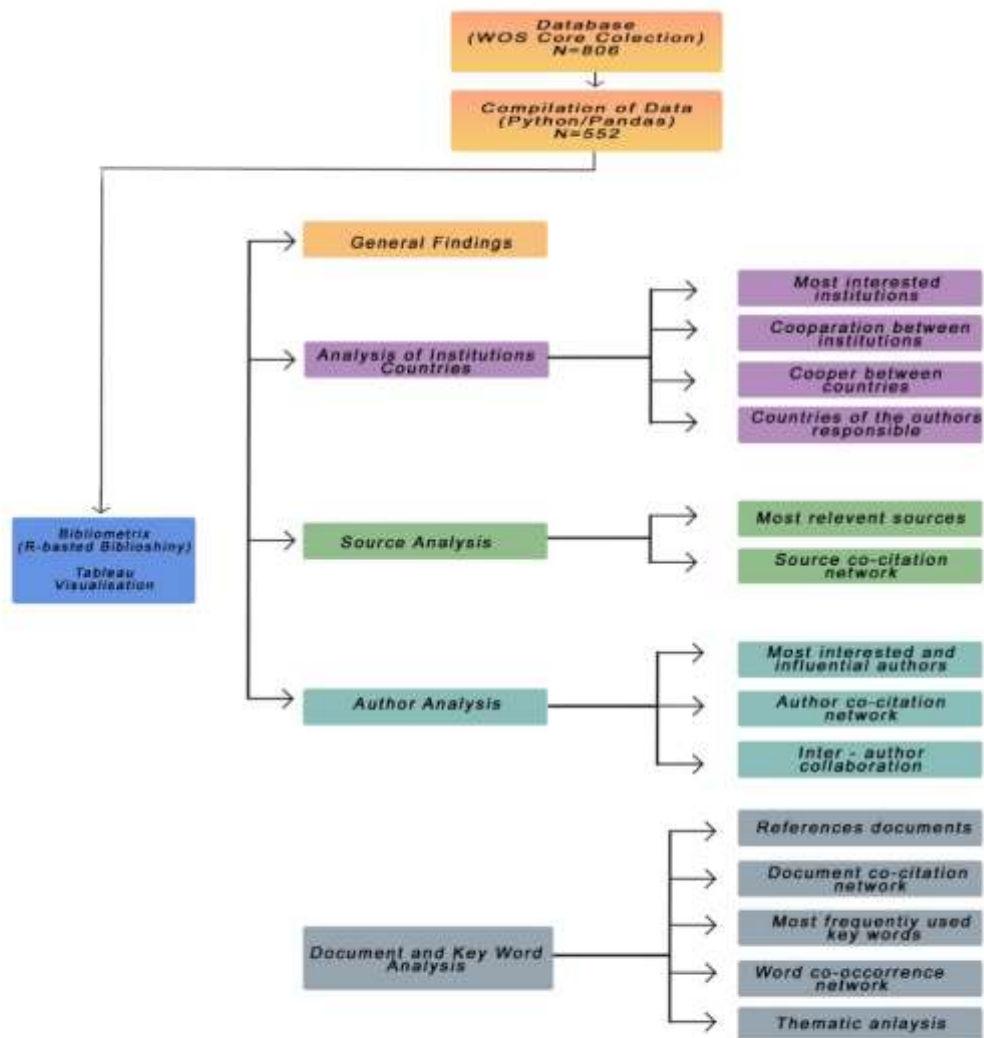


Figure 1. Bibliometric analysis workflow

Network analyzes were applied to identify common citations to sources, authors, and documents, as well as those to collaboration between institutions, countries and authors, and word co-occurrences. Co-citation network is the joint citation of both elements by a third party, whichever of the source, document or author elements is being analyzed. Collaboration is the co-work of the analyzed elements. The spheres in the network analysis represent the analyzed concept. The size of the spheres is directly proportional to the frequency. Each cluster is represented by different colors. The lines between the spheres represent the relationship between the two elements. The thickness of the line is proportional to the intensity of the relationship (Aria & Cuccurullo, 2017).

The thematic map proposed by Callon et al. for the first time (Callon, Courtial, & Laville, 1991) was used in order to understand the importance and development of the research theme by using the author's name and keywords. The thematic map is a two-axis coordinate system consisting of x and y axis. The X-axis represents centrality and measures the importance of the chosen theme. The spheres in the thematic map consist of the word elements selected during the analysis. This study is based on author keywords. The size of the spheres is proportional to the frequencies of the words that make up the theme content. The thematic map is divided into 4 quadrants. Each dial has a different name and meaning.

**Emerging or Declining Themes:** They are located in the lower left quadrant. They are low density and low centralized themes. The themes in this quadrant are those that have just emerged or lost their importance.

**Advanced and Isolated Themes (Niche Themes):** They are located in the upper left quadrant. They are high density and low centralized themes. These themes, which have not become important enough to shape the field of study, have relatively strong internal ties.

**Motor Themes:** It is located in the upper right quadrant. They are high density and highly centralized themes. These themes, which are important for shaping the study area, have very strong internal ties with each other.

**Basis Themes:** It is located in the lower right quadrant. They are low density and high centralized themes. A lot of research has been done on these themes, which are of high importance for the study area (Cobo et al., 2011; Nasir et al., 2020; Wang et al., 2020).

Thematic evolution diagram was used to analyze the historical development of the themes within the specified time period. Analysis of the keywords using the thematic evolution diagram shows the date of emergence of the themes and how they developed. The studies within the research can be divided into more than one-time period and analyzed by making comparisons between periods (Shi et al., 2020). H-index, M-index and G-index were evaluated in order to measure the scientific research output and citation effects of authors and sources. The H-index is measured by n number of citations of n works by the author or source. The M-index has been proposed to facilitate comparison of careers of academics or sources. The M-index is found by dividing the H-index by the time elapsed since the first published article (Huang et al., 2021). The G-index was defined as an improvement of the H-index by Egghe in 2006 to measure the overall citation performance of a series of articles. In order to calculate the G-index, the cited articles by the author or the source are listed in descending order of citation numbers, and it is the highest value of the total number of citations of the n most cited articles with a minimum  $n^2$  value (Aria & Cuccurullo, 2017).

## Ethical approval

Ethical approval was not required for this paper.

## RESULTS

### General Findings of the Data Set

Within the scope of this study, there are 552 documents from 199 different sources (journals, etc.) published between 1996 and 2021. Of these documents, 510 are research articles and 42 are review articles. 1091 keywords were used 2538 times in total. The number of authors who contributed to the articles is 1579, of whom 57 worked under a single name and of whom 1522 collaborated.

The annual number of publications between 1996 and 2021 are shown in Figure 2 (A) and the average citations per year (MeanTCperYear) are shown in Figure 2 (B). The first article about the study area was published in 1996 and it is the only article published that year. No article was published for the next 4 years. Articles have been published every year since 2001. The most articles were published in 2020 (n=67). The number of articles has increased since 2004. In 2021, there is a decrease again.

Considering the average citations per year, it is seen that the highest citation average occurred in 1996 (n=8.92). When the train curves are examined, it is observed that although there is an increase in the number of articles, there is a decrease in the citations made.



Figure 2. (A) annual publication amounts and (B) average citations per year (MeanTCperYear) of the studies from 1996 to the present

### Analysis Findings for institutions and Countries

#### Most interested institutions

Figure 3 shows the data of the top ten institutions with the highest number of publications according to the author institutions of the mobbing-themed articles in the field of nursing. Accordingly, “Univ Western Ontario” university made the most publications (n=16), followed by “Univ Western Sydney” and “Univ Bergen” with 15 publications each.

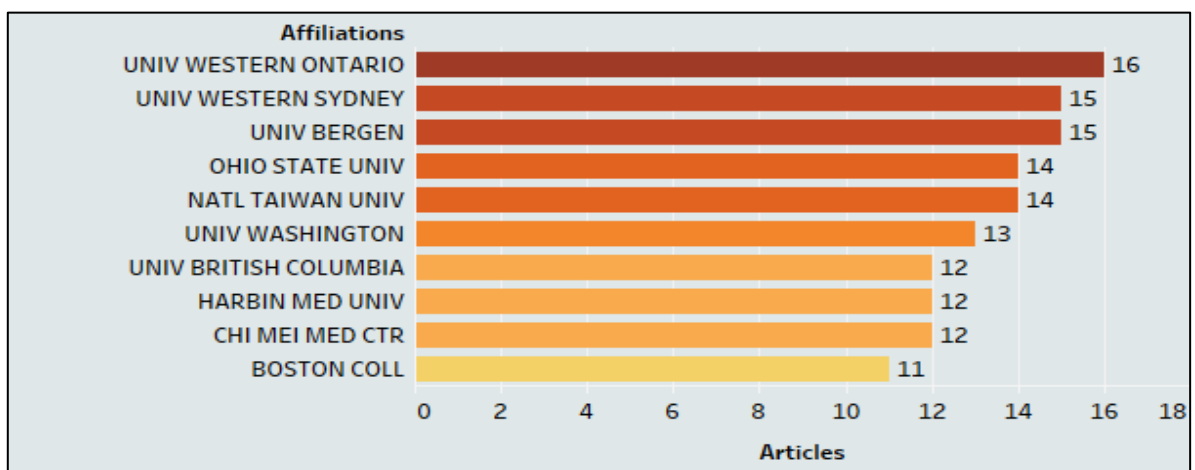


Figure 3. Author institutions of mobbing-themed articles in the field of nursing (top ten institutions)

#### Cross-institutional collaboration

Cross-institutional cooperation was examined based on the joint articles of the authors. Analysis parameters were determined as follows; “Number of labels: 50, Clustering Algorithm: Louvain, Normalization: Association, Minimum number of edges: 1, Remove isolated nodes: Yes”. 9 clusters were formed in accordance with this. The cluster with the most intense cooperation is the cluster consisting of 6 institutions, with “boston coll” at its center. The most intense collaboration in this cluster is between “boston childrens hosp” and “Harvard med sch”. The other cluster with the most intense cooperation is the one with centrally located “univ bergen” and norwegian competence ctr sleep disorders”. There is a strong relationship between these two institutions. There is cooperation between

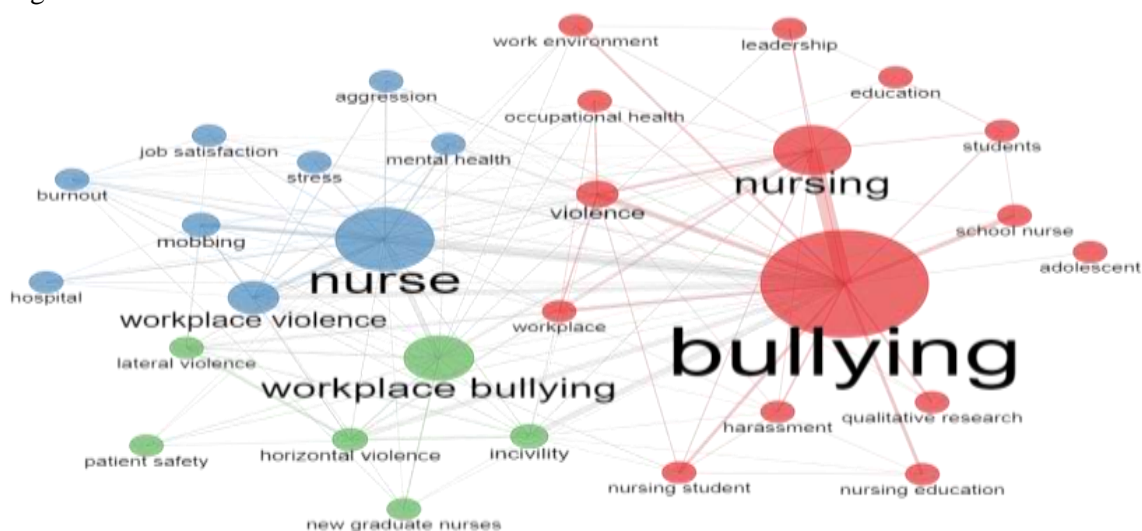
only two clusters among the 9 clusters, which provided by “boston coll” and “university Massachusetts”. It can be seen that Hacettepe University is included in the cluster by cooperating with “James cook univ” and “Bournemouth univ.”.

#### **Cooperation between Countries**

An analysis of cross-country cooperation based on joint articles by authoring countries was made. Analysis parameters were determined as follows; “Number of labels: 50, Clustering Algorithm: Louvalin, Normalization: Assocaition, Minimum number of edges: 1, Remove isolated nodes: Yes”. Accordingly, 5 clusters were formed. The highest number of publications was made by “USA” and “USA” is in the center of the cluster it is in. The countries with which “USA” has intensive cooperation are “Jordan” and “Korea”. It is seen that "USA" also cooperates intensively with "Canada" outside its own cluster. "Canada", "Australia", Singapore", "New Zealand" and "France" are observed to intensely cooperate with each other within the cluster including them. “Turkey” has collaborated with “Cyprus”, “United Kingdom” and “Sweden”.

#### **Word Co-Occurance Network**

The word co-occurrence network analysis showing the use of keywords used in mobbing-themed articles in the field of nursing is shown in Figure 4. Analysis parameters were determined as follows; “Number of nodes: 30, Clustering Algorithm: Louvalin, Normalization: Assocaition, Minimum number of edges: 2, Remove isolated nodes: Yes”. Three clusters were formed in the network. In the center of the red cluster with the most keywords (n=15) is the keyword “bullying”. The most common usage in the cluster is between the keywords “bullying” and “nursing”. The "nurse" keyword is in the center of the blue colored cluster consisting of 9 keywords. There is also a common usage between “nurse” and “bullying”. At the center of the third cluster in green is “workplace bullying”. It is seen that there are 6 keywords in the green cluster.



**Figure 4.** Word co-occurrence network

#### **Thematic Analysis**

The Thematic Map was created according to a full time period covering the years 1996-2021 in figure 5. The analysis parameters were based on 400 keywords, the number of representative tags in each theme being set to 5. Clustering occurred in only two quadrants on the thematic map while there was no clustering in Emerging or Declining and Motor themes. There are 3 themes in the developed and isolated themes (Niche Themes), which are not yet important to shape the work area. The terms “stress”, “civility” and “computerized adaptive testing” represent the clusters to which they belong. The terms in this theme have high density and low centrality values. While they have well-developed internal bonds, they have insignificant external bonds and are not sufficiently developed. It is seen that there are 5 clusters in the Basic theme. The terms “school nurse”, education”, workplace bullying” and “nurse” represent their themes. It is written in the other two terms that are in the first 3 places in the theme. Although the densities of these themes are low, their centrality is high. Much research has been done on these themes. They are of marginal importance to the research field.

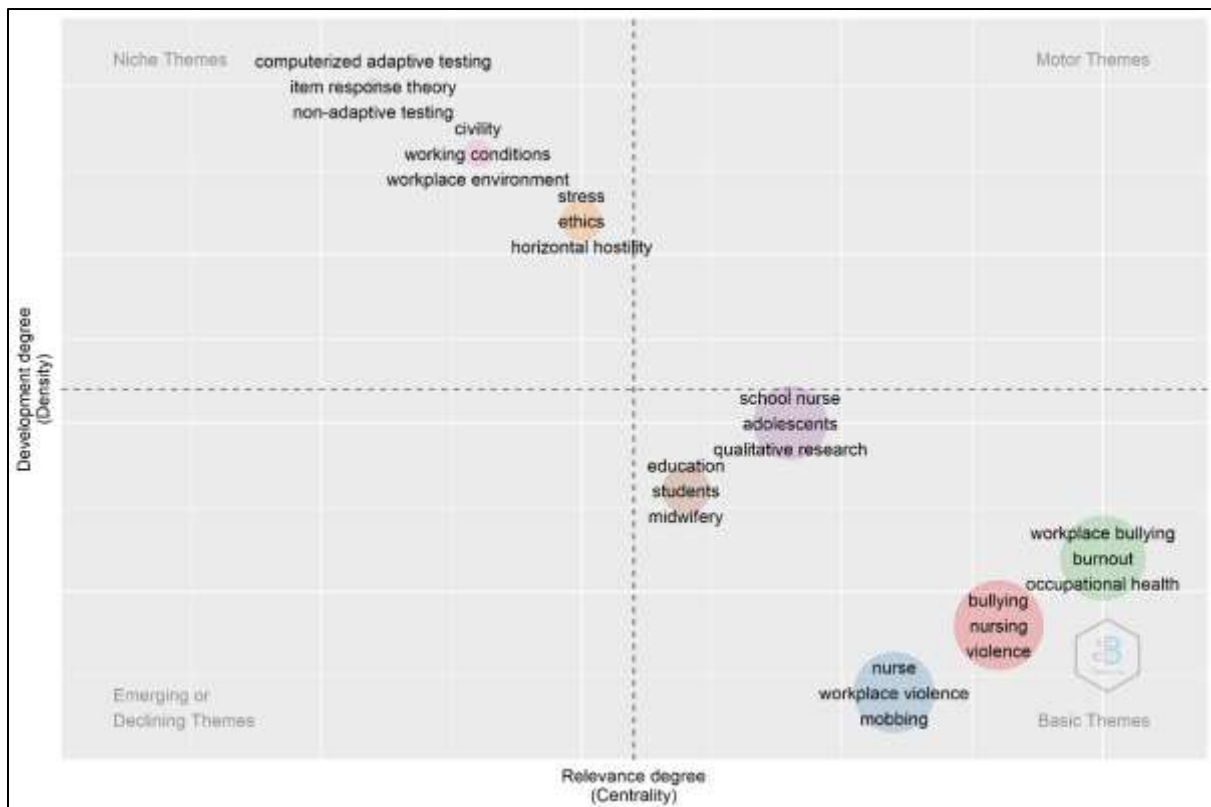
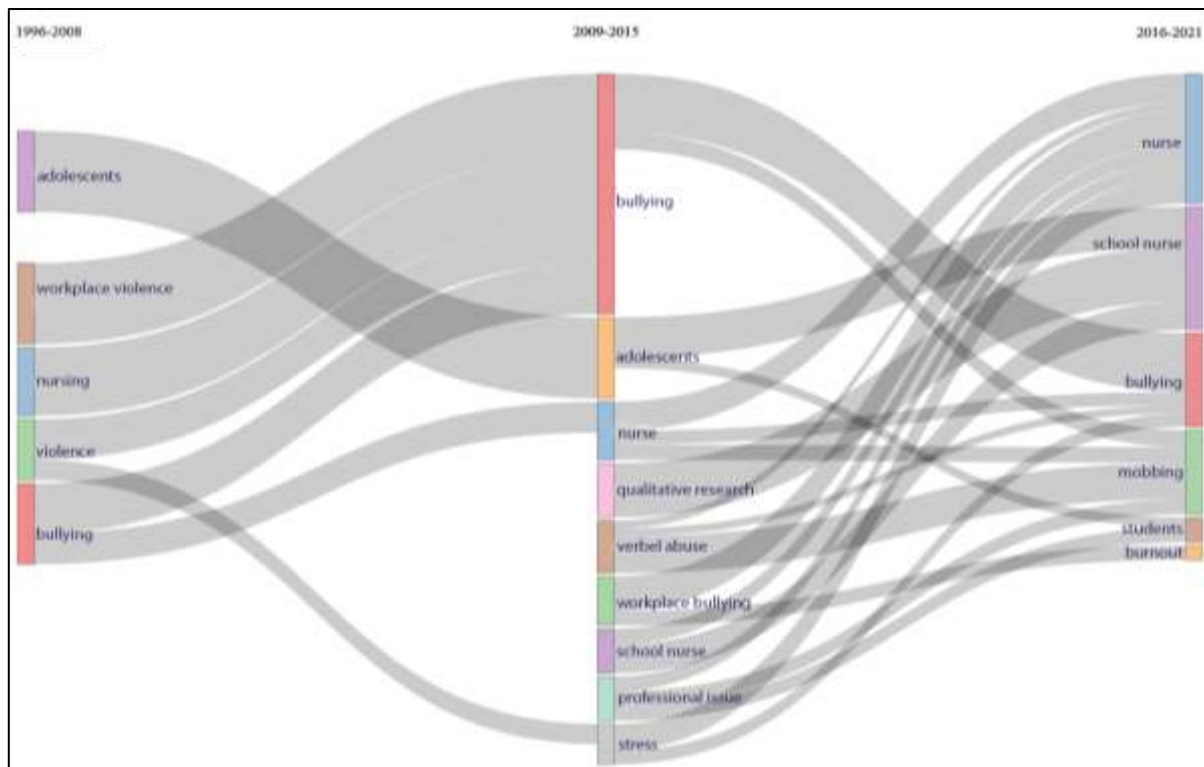


Figure 5. Thematic map

The thematic evolution diagram, which was made to analyze the development of themes over time, is shown in Figure 6. Analysis parameters were determined as follows; “Number of words: 250, Min Cluster Frequency:5, Weight index: Inclusion index weighted by Word-Occurrences, Min Weight Index: 0.1”. The years 2008 and 2015 were determined as the cut-off point and thus, three periods covering the years 1996-2008, 2009-2015 and 2016-2021 were obtained and the evolution between the periods was examined. During the period of 1996-2008, there were 5 themes represented by the terms "adolescents", "workplace violence", "nursing", "violence" and "bullying". During the period of 2009-2015, 9 themes were formed, which are represented by the terms “bullying”, “adolescents”, “nurse”, “qualitative research”, “verbal abuse”, workplace bullying”, “school nurse”, “Professional issue” and “stress”. In the last period, 2016-2021, 6 themes were formed, represented by the terms “nurse”, school nurse”, bullying”, “mobbing”, “students” and “burnout”. The terms here represent the themes they are in due to their frequency, and there are other terms within the theme.

It is seen that the "adolescents" theme that emerged in the first period continues to be used in the next period while it feeds the "school nurse" theme in the last period. The "bullying" theme, which is the most intense theme of the second period, has been fed more than 3 themes from the first period, although it has emerged in the first period, and has been used less intensely in the last period. Recently, it has fed the theme of "mobbing" with itself. The "nursing" theme that emerged in the first period fed the "bullying" theme in the next period and was replaced by this theme. It is also observable that the "mobbing" theme that emerged in the last period is fed from 4 different themes from the previous period. The theme of "school nurse" emerged in the second period, and in the last period, it was fed from both itself and the themes of "adolescents" and "qualitative research".



**Figure 6.** Thematic Evolution Diagram

## DISCUSSION

Violence against healthcare professionals is increasing day by day. People's being more worried about both themselves and their relatives' health especially during the Covid 19 pandemic, which has affected the whole world, (Ayyıldız, 2021; Terkeş et al., 2021), as well as the intense exposure of health professionals in this process and physical and mental depressions due to strenuous working conditions (Ergur et al., 2021) increase the risk of conflict between those who receive and give care. This bibliometric analysis of the studies conducted between 1996 and 2021, examining the violence against nurses, aims to reveal the quantitative connections between the publications. Our research shows that the number of studies examining the violence against nurses has increased significantly and reached the highest number in 2020. As a matter of fact, the bibliometric analysis of the studies by Taşkaya and Aksoy (2021), in which nurses are exposed to behaviors such as rudeness and incivility at work, and of those by Lucena et al. (2018), over the workplace violence applied to nurses suggests that the violence against nurses has increased. This research demonstrates that the reason for the highest rate of work in 2020 is the pandemic process, the fact that nurses are involved in all areas of health services, and that they are in close relationship/communication with patients and their relatives. The highest number of studies were conducted at University Western Ontario / Canada, followed by an equal number of University of Bergen / Norway and Western Sydney University / Australia. Although violence against nurses is a global problem, it can be observed that researches are mostly carried out in developed countries, which seem to spend efforts to improve their health systems and working conditions as well as to examine the effect of violence and prevent it so that both the quality of care and the job satisfaction and welfare of nurses can be improved. This issue was not prioritized in underdeveloped countries, as the shortage of personnel, the large number of patients and physical inadequacies prevailed. In addition, with regard to the cooperation between institutions where the studies were carried out, Boston Coll seems to be at the center in terms of intensive cooperation. What is more, it has been observed that the USA is the most cooperated country in this regard and that the USA cooperates with Canada outside its own cluster.

The fact that this cooperation is limited among countries with similar development levels shows that the importance of violence against nurses was not noticed by researchers. The data we obtained in our research reveals that the keyword "bullying" is used the most, followed by "nurse" and "workplace bullying" respectively. "Bullying" is at the center of the cluster including the



most keywords in the word co-occurrence network analysis, which shows the use of keywords used in mobbing-themed articles. Our thematic analysis shows that the themes represent the concepts within the terms “school nurse”, “education”, “workplace bullying” and “nurse”. It is thought that this situation is due to the fact that “mobbing” applied to nurses started during nursing education and continued in working life. As a result of the five-year periods created in the thematic evolution diagram made to determine the development of the themes in time periods, it appears that the “adolescents” theme in the first period continues to be used in the next period, and it is seen that it feeds the “school nurse” theme in the last period. This is thought to be done in order to determine whether the violence that nurses are exposed to begins and continues during the education. The most intense theme of the second period is “bullying” and it is fed by the three previous themes. Recently, “bullying”, which was fed from previous periods, fed the “mobbing” theme along itself. The “mobbing” theme that emerged in the last period is fed by 4 different themes from the previous period. In addition, the term “nurse” in the theme that emerged in the second period is fed by the terms “school nurse”, “bullying”, “mobbing”, “students” and “burnout” in the previous periods. This is thought to be due to the recent increase in violence against nurses and the studies conducted to reveal this.

## CONCLUSION

This research shows that there are few studies examining violence against nurses only, and although it is a global problem, it is only addressed in a few countries.

In order to provide quality and safe patient care to patients in health care, highly motivated nurses are needed. One of the most important factors reducing motivation in nurses is mobbing. Manager nurses should be aware of this situation, communication disorder and conflict experienced within the team in the process of being mobbing and being exposed to. The manager nurse should share a fair job within the team according to the quality and quantity of the nurses. When it is perceived, that nurses are exposed to mobbing, written procedures should be developed for the execution of the process. Thus, it will ensure that employees' commitment to the organization and their creative and innovative thoughts become effective within the institutional structure, as well as positive contributions to the organization such as increased performance, decreased staff turnover, and decreased intention to leave.

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## Author Contributions

**Plan, design:** NB; **Material, methods and data collection:** NB; **Data analysis and comments:** NB; **Writing and corrections:** NB

## Conflict of interest

The author declare no conflict of interest

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