

Research Article

Scientific Knowledge Graph of Acupressure/ Acupuncture for Labor Pain Management: A Bibliometric Analysis from 2002 to 2023

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Abstract: Background: Childbirth pain is a subjective experience that often leads to heightened anxiety and fear among expectant mothers. These emotional responses can influence some women to avoid vaginal birth, thereby contributing to the increasing rates of cesarean sections. As a result, there is growing interest in non-pharmacological pain management strategies, such as acupressure and acupuncture, which aim to reduce labor pain and promote normal vaginal delivery. This study aims to conduct a bibliometric analysis of publications related to the use of acupressure and acupuncture for labor pain management, indexed in the Web of Science (WOS) database between 2002 and 2023.

Methods: We retrieved 42 relevant publications from the WOS database, covering the period from January 2002 to December 2023. Thirteen articles were excluded based on predefined criteria. The bibliographic information collected included details on countries, authors, journals, institutions, and keywords. Data analysis and visualization were performed using VOSviewer (version 1.6.19) and the Biblioshiny program.

Results: This bibliometric analysis includes 42 articles addressing the effects of acupuncture and acupressure on labor pain, comprising 32 original research articles (76.19%) and 10 review articles (23.81%). The journals with the highest number of publications in this area were Complementary Therapies in Medicine, Acta Obstetrica et Gynecologica Scandinavica, and Birth: Issues in Perinatal Care. The countries with the most publications were Iran, China, and Türkiye. Among the

institutions, Shiraz University of Medical Sciences was the most productive, contributing nine articles over the past two decades.

Conclusion: This study provides a comprehensive bibliometric overview of research on acupressure and acupuncture for labor pain management. Over the past twenty years, this topic has garnered significant attention from researchers worldwide. The findings highlight the importance of continued research and encourage future studies and international collaborations to further explore and validate the efficacy of these non-pharmacological interventions in labor pain management.

1. Introduction

Acupressure and acupuncture are forms of complementary and alternative therapies that have been integral to traditional Chinese medicine for centuries. These methods are widely utilized in the promotion and preservation of women's health. According to traditional Chinese medicine, specific meridian points within the body serve as channels for the flow of energy. Acupressure involves applying pressure to these points, while acupuncture uses needles to stimulate them [1].

A review of the literature indicates that acupressure and acupuncture have demonstrated effectiveness in alleviating several women health conditions, including nausea and vomiting in pregnant [2], low back pain in pregnancy [3], dysmenorrhea [4], labor pain [5], breastfeeding-related issues [6], and menopausal symptoms [7].

Childbirth pain is a deeply subjective experience that can provoke significant anxiety and fear in women. For many, this fear of labor pain contributes to the decision to avoid vaginal birth, thus playing a role in the rising global cesarean section rates [8]. Effective labor pain management is therefore crucial to encouraging normal vaginal deliveries. In this context, there is growing interest in non-pharmacological pain relief methods that align with the natural physiology of childbirth [9]. In particular, research into acupressure and acupuncture for labor pain relief is expanding.

According to a Cochrane systematic review, both acupressure and acupuncture have been found to reduce labor pain and increase maternal satisfaction with the birth experience. However, despite promising findings, existing data remain insufficient, and further high-quality studies are needed [5].

Given the increasing volume of publications on this topic, bibliometric analysis provides a valuable approach to evaluating current research trends, identifying leading contributors, and highlighting gaps in the literature. Therefore, this study aims to visualize publication trends, the most active countries and institutions, author collaborations, and the most frequently used keywords in this field using VOSviewer and Biblioshiny software.

2. Methods

2.1. Search strategy

The data for this study were obtained from the Web of Science (WOS) Core Collection database (Thomson Reuters, New York, USA). The WOS database was chosen because it provides comprehensive bibliometric data, such as author names, affiliated countries, keywords, and more, and is widely recognized for bibliometric analyses.

The search strategy involved using Medical Subject Headings (MeSH) terms and their synonyms to identify relevant literature. The specific search terms were as follows: TI = ("labour" OR "labor" OR "delivery" OR "childbirth") AND ("pain" OR "pain management" OR "pain control") AND ("acupressure" OR "acupuncture") NOT ("cesarean" OR "caesarean" OR "C-section"). The search was limited to articles published in English between the years 2002 and 2023.

2.2. Publication selection and data extraction

All the publications (n=55) retrieved from the literature search were screened for study selection. Following this, the type, titles, and abstracts of each publication were independently reviewed by two authors to ensure that they were relevant to labor pain management. Then, 13 publications (n=4 letters; n=2 editorial material; n=1 meeting abstract; n=1 duplicate; n=5 out of purpose) were excluded because of outside the criteria. At the end of data management, 42 articles, 33 journals, and 163 authors were selected for final analysis.

2.3. Analytical tools for visualization

The articles were coded in terms of publication year, citation, research area, journal, country, organization, authors, and keywords. The results were analyzed and visualized with VOSviewer (v1.6.19; The Center for Science and Technology Studies, Leiden University, Leiden, The Netherlands) and Biblioshiny for the Bibliometrix program (Academic Spin-Off of the University of Naples Federico II).

2.4. Research Ethical Review

An ethical review is not required because all the data used in the study were downloaded from public databases. The study did not involve direct interactions with animals or humans.

3. Results

3.1. Analysis of Annual Publications and Citations

This study incorporates a bibliometric analysis of 42 articles related to the effect of acupuncture/acupressure on labor pain, including 32 research articles (76.19% of the total) and 10 review articles (23.81% of the total). The number of articles published each year and average citations per year are shown in Figure 1. The number of articles published increased from two in 2019 to seven in 2020, indicating that the number of publications is increasing but fluctuating in other years. The years with the most publications are 2020 (n=7), 2022 (n=4), 2014 (n=4), and 2021 (n=3) respectively. There were no publications in 2003, 2005, and 2013. These findings indicate a variable research interest in this field. Publication growth in this field has been slow in the past twenty years. According to Figure 1, it can be seen that the highest number of annual average citations between 2002 and 2022 were in 2007, with 4.5. This was followed by 2012 and 2020 with 3.75 and 3.64 (Figure 1).

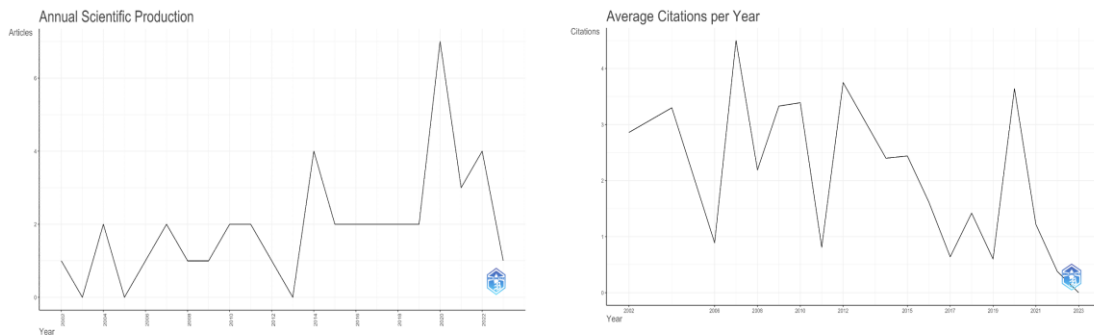


Figure 1. The number of articles published each year and average citations per year

3.2. The Most Relevant Journals

The journals published on the use of acupuncture/acupressure in labor pain were examined, and the 10 most relevant journals are given. It was seen that the 10 journals with the highest numbers of publications on the use of acupuncture/acupressure in labor pain included 19 publications, representing 45.2% of the studies included in the analysis. It was observed that the three journals with the most publications were *Complementary Therapies in Medicine*, *Acta Obstetrica Et Gynecologica Scandinavica* and, *Birth-Issues in Perinatal Care*, respectively.

3.3. The Most Relevant Institutions

The distribution of studies on the use of acupuncture/acupressure in labor pain by institutions is presented in Figure 2. Shiraz University of Medical Science has produced the largest number of articles in the last twenty years, with nine articles. Qazvin University of Medical Sciences, Shahid Beheshti University Medical Sciences, and Tehran University of Medical Sciences were among the second most productive institutions with five articles each. The other universities produced a similar number of articles (Figure 2).

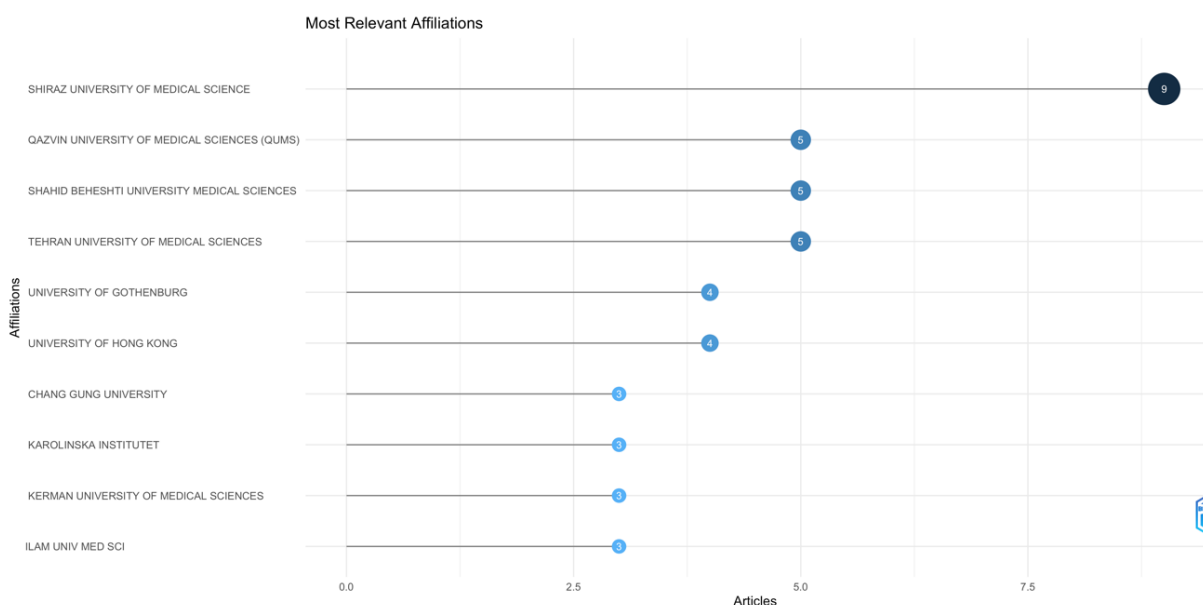


Figure 2. Most relevant institutions

In this bibliometric analysis, a fields plot of country, author, and journal was given. It has been determined that authors from Iran and Sweden have been working intensively on acupuncture/acupressure in labor pain. Moreover, these authors publish in journals in the fields of complementary and alternative therapies and obstetrics and gynecology (Figure 3).

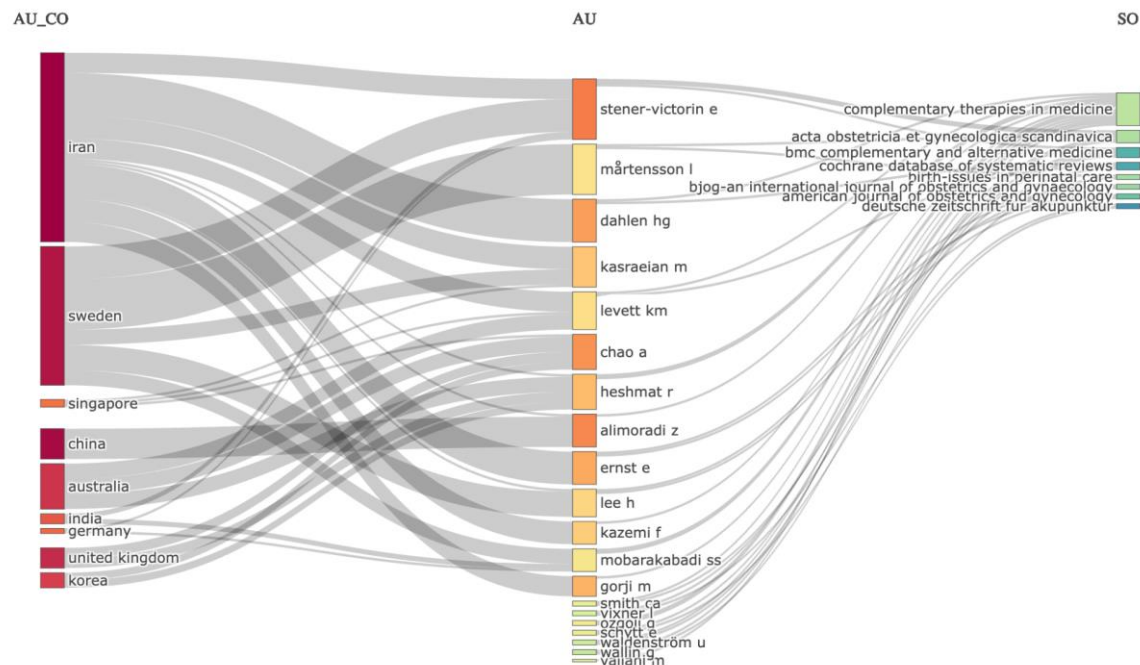


Figure 3. Three Fields Plot- Country of author, author, source

3.4. The Most relevant keywords

In this bibliometric analysis, keywords that met the criteria of repetition at least 5 times were analyzed. The 5 keywords that are repeated at least 5 or more times are, in order: relief (n:16), management (n:10), 1st stage (n:9), acupuncture (n:9), and women (n:9).

4. Discussion

This study employed bibliometric and visual analysis methods to examine publications from the past 20 years on the use of acupuncture and acupressure in labor pain management. The findings highlight existing scientific gaps and reveal opportunities for future research. Additionally, the study outlines the contributions and collaborative efforts of various countries in this field. Understanding the current landscape of acupuncture and acupressure use during labor can enhance clinical practice and inform future research. Ultimately, widespread scientific interest in this topic can support more effective decision-making for patients, healthcare professionals, and society at large.

The analysis revealed that between 2003 and 2019, the number of studies on this subject remained relatively limited. However, a noticeable increase in research output since 2019 indicates growing academic interest in this emerging field. This trend can be attributed to the increasing focus on complementary and alternative medicine (CAM) in obstetric care [10], especially as a response to rising cesarean section rates linked to childbirth-related pain [11]. Despite this growing interest, studies specifically investigating acupuncture and acupressure remain relatively scarce. This may be

due to ethical concerns associated with conducting research during the intrapartum period, as well as the requirement for advanced expertise in administering these interventions.

Identifying the most relevant journals in the field can guide researchers in selecting appropriate venues for publication and expedite the peer-review process. According to the results, *Complementary Therapies in Medicine* emerged as the leading journal in this area, underlining its significance in the literature on complementary and alternative therapies. Other notable journals include those specializing in obstetrics and gynecology.

When examining countries and institutions contributing most to this field, Iran was identified as the most productive and well-funded. CAM is a widely accepted practice in Iran and is used extensively across various healthcare disciplines, including obstetrics [12]. Since 2014, Iran has implemented national policies aimed at reducing cesarean section rates and promoting normal vaginal births. Labor pain management is a key component of these policies [13]. Sweden also stands out as a country actively supporting research in this area. Like Iran, Sweden has adopted strategies to increase the rate of normal vaginal births and is among the countries with the lowest cesarean section rates globally [14]. The prominence of research in these countries may be attributed to supportive national health policies.

The analysis also identified the most frequently used keywords, with “pain,” “management,” and “first stage of labor” being the most prominent. These keywords are likely to enhance the visibility and impact of future research in the field.

Limitations

This study was limited to articles indexed in the Web of Science database. For a more comprehensive analysis, future studies should consider including other databases such as Google Scholar, PubMed, and Scopus.

5. Conclusion

According to the findings of this bibliometric analysis, research on the use of acupuncture and acupressure in labor pain management has shown a noticeable increase beginning in 2019. The high impact factors of the journals publishing on this topic suggest that the quality of these studies is robust and academically significant. Iran and Sweden have emerged as the most productive countries, likely influenced by supportive national health policies aimed at reducing cesarean section rates and promoting normal vaginal births.

There is a pressing need to further encourage and support studies in this area. Effective labor pain management is essential not only for maternal comfort but also for reducing unnecessary cesarean deliveries and improving birth outcomes. Acupuncture and acupressure represent promising non-pharmacological interventions that are safe, cost-effective, easy to administer, and beneficial for both maternal and fetal health.

To strengthen maternal and public health outcomes globally, it is crucial to promote the wider dissemination and integration of these methods into clinical practice. Comparative studies, particularly those conducted through international collaborations, can help identify the most effective strategies. Such efforts would enable healthcare professionals to deliver reliable, evidence-based care that enhances the well-being of mothers, families, and communities.

Author contributions

Conceptualization (N.KY); Formal analysis (N.KY; N.A); Investigation (N.KY), Methodology (N.KY; N.A); Project Administration (N.A), Resources (N.KY; N.A Supervision (N.A); Writing – original draft (N.KY; N.A); Writing – review and editing (N.A).

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Conflicts of interest

The authors declare no conflicts of interest in this work.

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