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Page 108-121

# EXAMINING CLINICAL STUDIES ABOUT CUPPING THERAPY IN TURKEY: A SYSTEMATIC REVIEW AND BIBLIOMETRIC ANALYSIS

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**ABSTRACT**

There is insufficient quantitative data available on the characteristics of research conducted on cupping therapy. This insufficiency complicates our ability to achieve a more profound understanding of the subject. The primary aim of this work was to assess the outcome of clinical studies outputs in cupping therapy and discuss methodological gaps. Six databases PubMed, Cochrane Library, Medline, TUBITAK ULAKBIM DergiPark, Science Direct, and Google Scholar, were systematically searched from their inception to January 2024. Performance analysis was made in the study. Frequency and distributions were analyzed with SPSS 24. The software Wordclouds software was used to generate visualization. Within the scope of the research, 26 studies that met the selection criteria were accessed. It was determined that the majority of the studies (46.16%) were written in 2019-2021. The most used technique was 3 S (73.07%), and the most preferred point was du 14 point. While the top two variables are oxidative stress and heavy metal levels, the co-word analysis of keywords showed that "wet cupping therapy" was the largest single node. The findings from this bibliometric study provide the current status and productivity in clinical research of cupping therapy over the past ten years. It is seen that despite the challenges facing the field of cupping research, which include standardization, legal, and reporting quality, there has been an increase in publications to mitigate disease-related symptoms in clinical populations.

***Keywords:*** *cupping therapy, bibliometric analysis*

**ABSTRAK**

Data kuantitatif mengenai karakteristik penelitian yang dilakukan mengenai terapi bekam belum mencukupi sehingga mempersulit kemampuan kita untuk memahami lebih mendalam tentang subjek tersebut. Tujuan penelitian ini adalah menilai hasil studi klinis terapi bekam dan mendiskusikan kesenjangan metodologi. Enam database PubMed, Cochrane Library, Medline, TUBITAK ULAKBIM DergiPark, Science Direct, dan Google Scholar, dicari secara sistematis hingga Januari 2024. Frekuensi dan distribusi dianalisis dengan SPSS 24. Perangkat lunak Wordclouds digunakan untuk menghasilkan visualisasi. Dalam lingkup penelitian, 26 studi yang memenuhi kriteria seleksi diakses. Hasil didapatkan bahwa sebagian besar penelitian (46,16%) ditulis pada tahun 2019-2021. Teknik yang paling banyak digunakan adalah 3S (73,07%), dan titik yang paling disukai adalah Titik Du 14. Meskipun dua variabel teratas adalah stres oksidatif dan kadar logam berat, analisis kata pendamping dari kata kunci menunjukkan bahwa "terapi bekam basah" adalah simpul tunggal terbesar. Temuan dari studi bibliometrik ini memberikan status dan produktivitas terkini dalam penelitian klinis terapi bekam selama sepuluh tahun terakhir. Terlihat bahwa meskipun terdapat tantangan yang dihadapi dalam bidang penelitian bekam, yang mencakup standardisasi, hukum, dan kualitas pelaporan, terdapat peningkatan publikasi untuk mengurangi gejala terkait penyakit pada populasi klinis.

**Kata kunci:** terapi bekam, analisis bibliometrik

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Page 108-121

## 1. INTRODUCTION

Cupping therapy is a complementary and traditional treatment, which was utilized broadly in several communities and conditions.[1] There is a lot of data on cupping therapy in treating different diseases in the World Health Organization International Clinical Trial Registry Platform (WHO ICTRP).[2] In Turkey, cupping therapy is also widely employed, reflecting belief-based therapeutic approaches.[3] There is no clear information about the mechanism of action of cupping therapy there are various theories in the literature. Despite the frequent use of cupping therapy for various health problems, its mechanisms of action are still not fully understood. Expectations from treatment (positive or negative), safety, the competence/training of the practitioner, presence of chronic disease, use of medicines (blood thinners), sterilization, and implementation procedures can influence the effectiveness of cupping therapy.[4,5] The effects of cupping therapy are very important and therefore warrant analysis in terms of their ability to improve health, limitations, the correctness of research on cupping, and the recognition of the potential benefits of these therapies.[6]

Bibliometrics analysis is a quantitative study, aimed at identifying the characteristics and impact of the study published in a specific academic discipline, using statistical methods. The bibliometric analysis consists of two categories; performance analysis and science mapping. Performance analysis explores the contributions of research elements in a specific area to a given field (year of the study, publication year, type of study, research method, field including the study, etc). Science mapping explores the relationships between research components using citation analysis, common authorship/ word analysis, etc.[4,5]

Bibliometric studies are available to critically evaluate the existing clinical evidence and obtain a clearer picture of the therapeutic effect of cupping therapy.[7,8] Besides that many clinical trials assessing the effects of cupping have been published in Turkey. However, no bibliometric study has investigated the characteristics of trials in cupping research fields in the literature.

Consequently, this research aims to examine the characteristics of the studies on cupping therapy, comprehensively understand the research trend, discuss methodological gaps, and offer a valuable resource for clinical practitioners and researchers.

## 2. METHOD

### Literature Research

Without any temporal constraints, full-content studies published were scanned. To prevent biases stemming from daily database updates, all searches were repeated on a single day, January 4, 2024. The research used Medline, TUBITAK ULAKBIM DergiPark, PubMed, Cochrane Library, Science Direct, and Google Scholar databases. The content of MeSH (Medical Subject Headings) was utilized to generate keywords. The keywords employed in the scanning process were “wet cupping,” “hijama,” “cupping,” and "dry cupping”. The PRISMA-P[9] flow diagram

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

illustrates the process of decreasing the 7940 studies initially considered to the selection of 26 studies for the bibliometric analysis. (Figure 1). The citations were collected on January 5, 2024, a single day, to prevent any potential unfairness resulting from daily updates to the database.

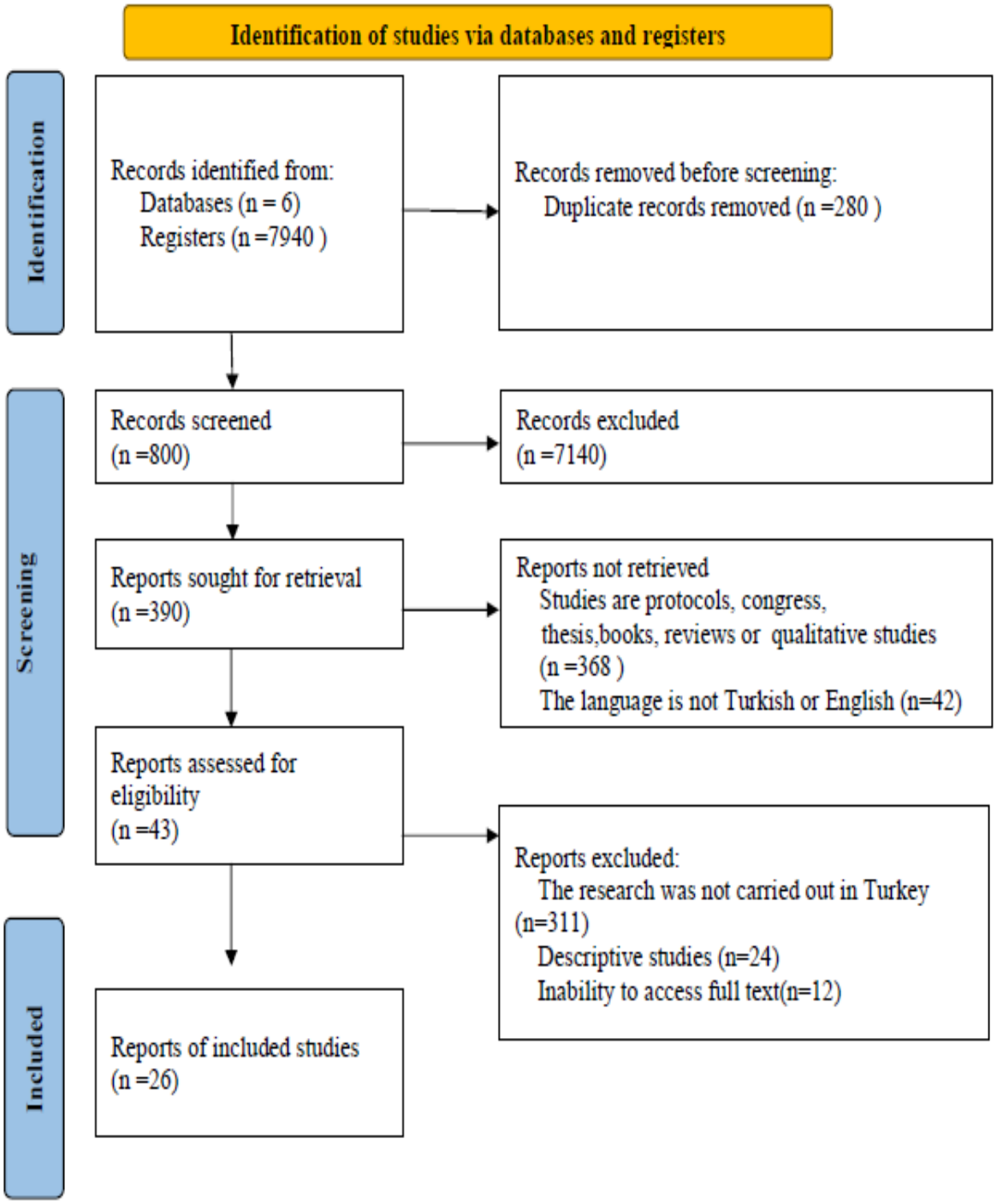


**Figure 1**: PRISMA flowchart of included studies.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

**Study Selection**

*Inclusion Criteria*; a) Randomized and non-randomized controlled trials, cross-sectional studies, cohort studies, and case reports b) Work with full-text c) Studies using all kinds of cupping therapy and concerned specifically with the effectiveness . *Exclusion Criteria*; (a) Qualitative studies, study protocols, thesis, and congress papers (b) Articles published in languages other than English or Turkish (c) The research not carried out in Turkey

**Quality of articles**

The researcher managed the selection process of the examined studies, and no quality assessment tool was employed. All studies meeting the inclusion criteria were included in the review without any time limitations; this indicates that the obtained studies are free from publication bias.

**Codification of articles**

The researcher created the coding form, which contains two main sections. The guideline created by Donthu et al.[10] was used while creating the coding form.

Study ID: Year of studies, type of practice, condition /disease, language of publication, journal, type of journal, citation count, keywords.

Components of study: Study design, duration of cupping therapy, count of sessions, number of cupping, patient posture, technical of cupping, cupping points, data collection technique, variables of the studies, sample size, group, reporting guide, practicing, practitioner training. The researcher encoded the data from 5 randomly selected studies, which were included in the bibliometric analysis, into the coding form using the Microsoft Office Excel program. During this process, any incomprehensible or missing points were corrected. To safeguard against numerical data input errors impacting the study results, the encoded data underwent two rounds of revision. This meticulous process was conducted to ensure the reliability of the coding.

**Data analysis and reporting**

In this study, the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) flowchart[11], which was published on the items that should be used in systematic review and writing of the bibliometric analysis report, was utilized. Only statistical descriptions and qualitative summaries of the results were used for data analysis. Percentages and integers were used to present the categorical data. Data extraction was conducted using Excel software. The Wordclouds software was utilized to visualize the high-frequency keywords.[12]

**Declaration of Ethics :** There was no ethical violation because received from a public database, and data not be collected from the human participant.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

## 3. RESULTS

### General characteristics of clinical trials

Table 1 presents an overview of the key characteristics of the 26 included trials.[13-38] The inclusion requirements were satisfied by 26 studies, and the main data were given. It was determined that 21(80.76%) of the studies examined for cupping therapy were at the wet cupping, and 5(19.24%) were at the dry cupping. Most of the studies were conducted in the last five years, and it was determined that they were written mostly in 2020-2022 with 12 (46.17%). Study of which 11 (42.31%) were published in citation index-focused journals. 15 (57.69%) of them were cited less than 5. One of the largest nodes in the material is a "wet cupping therapy" (Figure 2). The 9 (34.60%) of the studies were conducted in healthy participants.

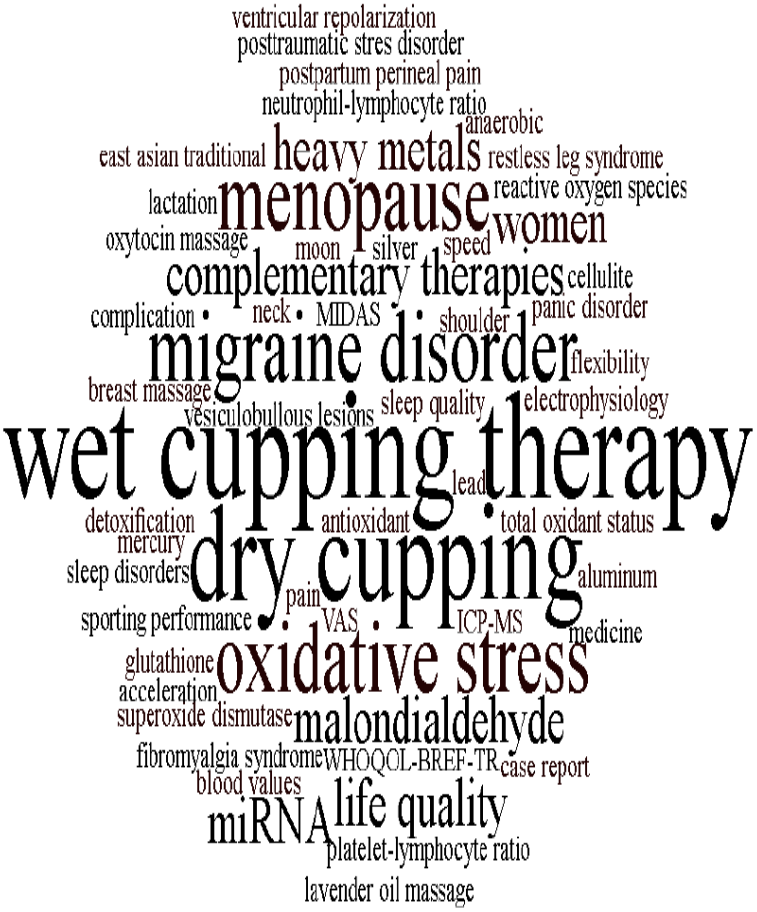


**Figure 2**: Keyword image related to cupping therapy research. The size and position of the word represent research frequency and the level of core of the keyword.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

**Table 1. General characteristics of clinical trials**

| Features | Variables | n | % | Features | Variables | n | % |
|---|---|---|---|---|---|---|---|
| **Type of practice** | Wet cupping | 21 | 80.76 | **Year of publication** | 2014-2016 | 6 | 23.07 |
| | Dry cupping | 5 | 19.24 | | 2017-2019 | 7 | 26.92 |
| **Conditions** | Healthy volunteers | 9 | 34.60 | | 2020-2022 | 12 | 46.17 |
| | Migraine | 3 | 11.52 | | 2023- | 1 | 3.84 |
| | Oxidative stress | 2 | 7.69 | **Keywords (top 5 in terms of frequency)** | Wet cupping therapy | 17 | 56.66 |
| | Pain | 2 | 7.69 | | Dry cupping | 4 | 13.34 |
| | Cardiac repolarization | 1 | 3.85 | | Oxidative stress | 3 | 10.00 |
| | Posttraumatic stres | 1 | 3.85 | | Menopause | 3 | 10.00 |
| | Panic disorder | 1 | 3.85 | | Migraine disorder | 3 | 10.00 |
| | Restless leg syndrome | 1 | 3.85 | ***Journal** | Indian journal of traditional knowledge | 3 | 42.86 |
| | Radial palsy | 1 | 3.85 | | Ankara medical journal | 2 | 28.57 |
| | Postpartum perineal pain | 1 | 3.85 | | Complementary therapies in clinical practice | 2 | 28.57 |
| | Menopause | 1 | 3.85 | ****Type of journal** | Citation index | 11 | 42.31 |
| | Postpartum breastfeeding | 1 | 3.85 | | International index | 10 | 38.46 |
| | Fibromyalgia | 1 | 3.85 | | National index | 5 | 19.23 |
| | Forearm hematoma | 1 | 3.85 | ****Number of citations** | n<5 | 15 | 57.69 |
| **Language of publication** | English | 25 | 96.15 | | 5<n<10 | 3 | 11.54 |
| | Turkish | 1 | 3.85 | | n>10 | 8 | 30.77 |

*Journals in which two or more studies have been published.
**Citation index: SCI, SCI-exp, SSCI, A&HCI; International index: Non-SCI, non-SCI exp, non SSCI, non-A&HCI; National index: Ulakbim TR Index and Türkiye Citation Index
** The number of Google Scholar citations was obtained from https://scholar.google.com/

**Table 2. Characteristics of cupping therapy methods**

| Features | Variables | n | % | Features | Variables | n | % |
|---|---|---|---|---|---|---|---|
| **Study design** | Single-arm pre-post test | 13 | 50.00 | **Variables of the studies(top 5 in terms of frequency)** | Oxidative stress | 4 | 30.76 |
| | Single-arm post-test | 8 | 30.76 | | Heavy metal levels | 3 | 23.07 |
| | RCT | 5 | 19.24 | | Hemogram parameters | 2 | 15.39 |
| **Group** | Adult | 26 | 100 | | Migraine headache | 2 | 15.39 |
| **Sample size** | n<50 | 18 | 69.24 | | Quality of life | 2 | 15.39 |
| | 50<n<100 | 6 | 23.07 | **Sessions** | n<10 | 24 | 92.31 |
| | n>100 | 2 | 7.69 | | 10<n<20 | 2 | 7.69 |
| ***Data collection tool** | Invivo-Invitro measurements | 26 | 46.42 | **Duration( minute)** | n<10 | 12 | 46.15 |
| | Question form | 17 | 30.36 | | 10<n<20 | 14 | 53.86 |
| | Scala | 13 | 23.22 | **Number of cupping** | n<5 | 15 | 57.69 |
| **Reporting guide** | NR | 23 | 88.46 | | 5<n<10 | 11 | 42.31 |
| | CONSORT | 3 | 11.54 | **Patient posture** | NR | 12 | 46.15 |
| **Practicing** | physician | 15 | 57.69 | | Sitting position | 9 | 24.61 |
| | NR | 8 | 30.77 | | Lying position | 5 | 19.24 |
| | Physician+nurse | 2 | 7.69 | **Technical of cupping** | 3 S technique | 19 | 73.07 |
| | Physiotherapist | 1 | 3.85 | | Negative pressure | 5 | 19.24 |
| **Practitioner training** | Certified training | 14 | 53.84 | | NR | 2 | 7.69 |
| | NR | 12 | 46.16 | ****Cupping points (top 6 in terms of frequency)** | Du-14(Dazhui) | 14 | 33.34 |
| **Effects** | Potentially effective | 23 | 88.46 | | Ub-42 (Pohu) | 10 | 23.81 |
| | Unclear | 3 | 11.54 | | Ub-46(Geguan) | 10 | 23.81 |
| **Side effect** | NR | 14 | 53.85 | | BL-41 (Fufen) | 4 | 9.52 |
| | No | 9 | 34.61 | | BL-12-15 (Feng Men- Xinshu) | 2 | 4.76 |
| | Yes | 3 | 11.54 | | BL-44 (Shentang) | 2 | 4.76 |

Abbreviations: NR, Not Reported; RCT, Randomized controlled trial
* Some studies involved more than one type of data collection tool
** Some studies involved more than one cupping point.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

**Characteristics of cupping therapy methods**

Overall, 13 (50.00%) of the studies published were single-arm pre-post test designs. It is seen that most of the studies used Invivo-Invitro measurements as the data collection tool. The study group comprised adults. Among the 26 studies included in this research, it is observed that 18 (69.24%) studies were conducted with a small sample group (n<50). It seems that all of the studies were conducted in hospital settings. Oxidative stress was the most used variable of the studies followed by heavy metal levels, hemogram parameters, migraine headache, and quality of life. It is seen that in studies, practitioners with certified training, in 14 (53.84%), and the majority of practitioners are physicians. It is seen that CONSORT was used in three studies. While the session frequency varies between 1 and 20 periods, the time varies between 5 and 20 minutes. The number of cupping points ranged from 1 to 7, and the most frequently used cupping therapy point was Du-14 (Dazhui). It was observed that 19 studies (73.07%) used the 3S technique. Participants' posture information was available in only 14 studies. Finally, only nine studies reported that participants/patients did not complain of adverse events during and after cupping treatment (Table 2).

## 4. DISCUSSION

**Discussion of the study characteristics**

In Turkey, there are a limited number of studies that research the effectiveness of cupping therapy and it was found to have a heterogeneous structure. It is seen that the studies on the subject have increased in 2014 and after, and there was a decrease in 2023. Compared to previous study findings, similar results were obtained.[6-8] We can say that affected the number of scientific studies besides of widespread use of cupping therapy in society. Also, it can be said that the low number of studies in 2023 is due to the studies being in the publication phase.

The study group predominantly comprised healthy volunteers. We can say that the study has limited application to patient groups due to ethical/legal responsibilities and the possibility of side effects This variable should be taken into consideration in future studies.

In this study from the keyword, wet cupping and dry cupping have a high frequency. Keywords are often considered to be condensed contents of academic publications and represent the subject of the studies. Also, keywords reflect the researchers' focus and contribute to understanding the progress of the research.[39]

The first three journals are the Indian Journal of Traditional Knowledge, Ankara Medical Journal, and Complementary Therapies in Clinical Practice. Notably, there is a striking observation that the acceptance of publications in citation-indexed journals is relatively low. We can say that publication in low-impact factor journals is related to the quality of the trials.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

It is noteworthy that there are few references to the articles in the study. Article selection, search skills, personal preferences, and ease of access can all affect the number of citations. Also, it is considered that bibliometric analysis measurements regarding citation numbers are not included in the studies, and this variable should be taken into account in future studies.

This is because high-impact factor journals generally use English as the language of publication, allowing for a wider reach and consequently enabling authors to receive more citations. Therefore, researchers often prefer to publish their work in English. A similar result was obtained in the qualitative research conducted.[40]

**Characteristics of cupping therapy methods**

In the included studies, methodological gaps have been observed, and addressing these points will enhance the quality of future research.

Few studies tried to the effect of cupping therapy in Turkey. The number of included randomized controlled trials is inadequate, and it seems that the study was conducted with a small sample group. These studies are not strong enough to suggest that cupping interventions alone, a traditional complementary medicine approach, may produce benefits to treatment. We can argue that this situation casts doubt on the effectiveness of the cupping therapy.

In this study, participants were completely adults. We can say that cupping therapy is not preferred because children and elderly groups are a special group. It is stated that in the literature, cupping therapy is contraindicated for children and elderly (below two years and above sixty years).[41]

In the studies, session frequency and intervention duration vary, and there is no standard procedure in the national and international literature. In light of these findings, there is a need for a study to investigate the extent to which the duration and number of cupping treatments influence the effectiveness of the treatment.

It appears that Invivo-Invitro measurements are preferred as a data collection tool. These tools aim to arrive at a comprehensive understanding of the phenomena under study. Besides that, these measuring tools are more objective and provide precise and accurate data.[42] The other important point is observational methods are not preferred as a data collection tool. Observational methods allow information collection on how participants perform and how act/interact. So, supporting results in vivo and in vitro is important. In future studies, it may be recommended to use mixed designs for high evidence-level data on cupping therapy.

In the studies, certain variables, such as oxidative stress and heavy metal levels, seem to take precedence, indicating a potential lack of emphasis on various variables. Not giving weight to different variables is an important finding. This aspect should be considered in hereafter cupping therapy studies.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

It seems that no information is given regarding whether the CONSORT checklist was used or not in the majority of studies. STRICTOC is an extension of the CONSORT reporting guideline, designed through international multi-stakeholder consensus, and is specific for reporting cupping therapy in clinical trials. The purpose of STRICTOC is to increase the transparency of cupping therapy study methods and ultimately improve the quality of research.[43] In this study, trials in cupping were varied in reporting quality. This situation can be attributed to the researchers' lack of awareness about the study reporting guideline or academic journals still do not encourage using this directive.

There is an inadequacy in reporting the characteristics of professional cupping therapy practitioners. This situation could affect the generalizability of the trial results and safe implementation. Cupping therapy is a practitioner-dependent, experience-required, and non - pharmacological intervention. This is a situation that is open to manipulation, and the nature of the person (physician, nurse, physiotherapist, etc.) who applies it should not be uncertain.[5] It is thought that the report on the practitioner's professional background is not commonly contained in studies, and this is a topic that should be taken into consideration in future research.

Cupping therapy is predominantly administered by physicians, and some studies lack reporting on the practitioner. According to current legislation in Turkey, cupping therapy can be performed only by certified physicians or dentists.[44] Nurses in our country have appropriate legal regulations for complementary therapies implemented, and intended to be implemented and it would be useful to establish further legal regulations for cupping therapy.

In the studies, the anatomical regions for the application of cupping therapy vary, and the most common preference is the back region. The anatomical regions for cupping therapy may vary depending on the disease. Generally, the safest and most suitable skin points are located on the back because this area is more discreet from a cosmetic perspective, has a large surface area where suction cups can be easily applied, and is advantageous in terms of distance from critical structures.[5] Similar results were obtained in the bibliometric study.[7]

Only fourteen studies provide information about the patient's posture during cupping therapy. The patient's posture must be comfortable, and it should be tailored to the needs of the treated area.[1,4,5] Therefore, researchers need to report the posture(s) used for different treatment areas.

In most studies, side effects caused by cupping therapy have not been reported. The safety of cupping therapy is a significant topic, and various factors can influence this situation. Factors such as the competence/training of the practitioner, the type of procedure, sterilization, the patient's beliefs and expectations regarding the treatment, and patients' chronic conditions (such as hyper/ hypotension)can affect the occurrence of possible side effects.[1,5] In this direction, reporting side effects in future studies will help evaluate the obtained data.

e-ISSN: 2828-4569, Volume 5, No 2, 2024
https://doi.org/10.55116/IJICM.V5I2.75
Page 108-121

The number of cupping sessions varies between 1 and 10, with no standard procedure found in national and international literature. In light of this research, there is a need for studies that indicate to what extent the number of cupping affects the effectiveness of treatment.

As a procedure, the 3 S technique (vacuuming -scarification and suction) was mostly used in the studies and it is seen that negative pressure is applied in the dry cupping (only vacuuming.[6,40,44] The physiological response to wet cupping would be expected to be different than its dry cupping and adequate information regarding the cupping technique in the study could help researchers introduce the most effective and provide valuable research references.

## 5. CONCLUSION

The results of bibliometric analysis provided some meaningful evidence regarding the effectiveness of cupping therapy in the treatment of various conditions. But, the total number of articles included in the analysis and the methodological quality were too low to reach definitive conclusions. Also, attention needs to be given to the quality of reporting of clinical trials. The important point is that STRICTOC should be used broadly sufficiently to cover all types of clinical trials, from case reports to randomized controlled trials.

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Page 108-121

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e-ISSN: 2828-4569, Volume 5, No 2, 2024
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Page 108-121

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