INTERVENTIONS FOR HICCUPS IN ADULTS: A SCOPING REVIEW

Yohei Kishi, Moe Nakagawa, Jun Kako, Miwa Sakaguchi, Anri Inumaru, Mari Matsuoka, Mayumi Murabata, Michiko Nambu

Scan Me !

Introduction

Hiccups are characterized by sudden, involuntary, and spasmodic contractions of the diaphragm and external intercostal muscles, followed by abrupt closure of the glottis, which interrupts inhalation1). Although typically transient and harmless, persistent hiccups can cause insomnia, fatigue, and social disruption, severely impacting patients' quality of life2), particularly in those with serious illnesses such as cancer.

Although pharmacological interventions are commonly used in clinical practice for managing hiccups, the overall evidence remains limited. Nonpharmacological treatments have primarily been reported through case studies and lack robust evidence. Moreover, standardized outcome measures for evaluating the effectiveness of hiccup treatments have not been established.

Objective

Conducted a comprehensive review of pharmacological and nonpharmacological interventions for hiccups
Aimed to clarify the outcome measures used for evaluation

Methods

Study Design — **Scoping Review**
- Arksey and O'Malley's framework
- PRISMA-ScR guidelines

Databases Searched — PubMed, CINAHL, and Ichushi-web

Eligibility criteria
- 18 years or older
- interventions for hiccups
- RCTs, non-RCTs, single-arm trials, retrospective cohort studies
- written in English or Japanese

Exclusion criterion
- fewer than 10 participants.

Search terms — "HICCUP," "HICCOUGH," or "SINGULTUS"

Selecting studies
- **Two** reviewers independently screened
- 1st: Titles & abstracts were assessed
- 2nd: Full texts were assessed

Charting the data — the first author name, publication year, country of publication, language, journal, study design, study objectives, participant details, intervention methods for hiccups, evaluation methods for hiccups , and outcomes.

Protocol Registration — UMIN:000054537

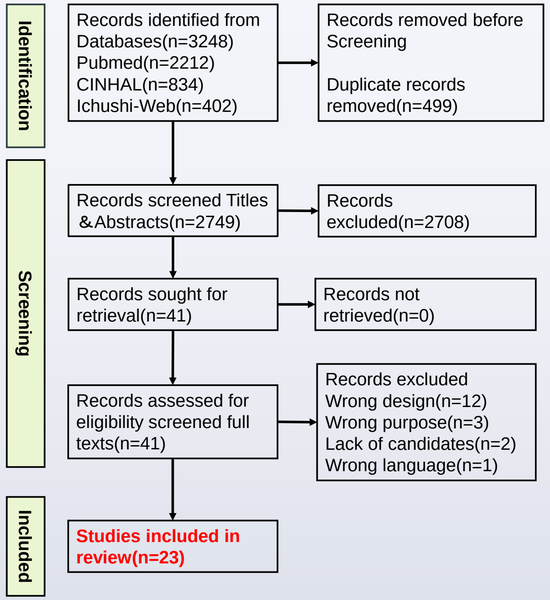

Figure1.PRISMA Flow Diagram

Results

■Articles identified: 3,248 initially
→ first screening : 2,749 articles by title&abstract
→ second screening : 41 articles by full-text
→ 23 studies included in the final analysis.

■Geographic distribution: Japan (7 studies), China (6), Korea (3), United States (2), and other countries (5).

■Total sample size：1820 individuals.
・About 70% of the study participants were male.（n=1268）

■Cancer was the most frequently reported, appearing in 13 of the included Studies and affecting 919 patients.

Table1.Summary of Study Design and Interventions

Study Design	Treatment Method	n（%）
■Pharmacological intervention		17(73.9)
Randomized Controlled Trials	Metoclopramide(2), Methylprednisolone(1), Baclofen(1), Ephedrine& Lidocaine(1)	5(21.7)
Mixed-Methods Study	Baclofen(1)	1(4.3)
Single-Arm Trial	Baclofen(1), Shitei(1),COB(1)	3(13.0)
Retrospective Cohort Studies	Shitei(4), Olanzapine(1), Gabapentin(1), Methylprednisolone(1), Shakuyaku-Kanzoto(1)	8(34.8)
■Non-pharmacological intervention		6(26.1)
Randomized Controlled Trials	Acupuncture&Cupping(1)	1(4.3)
Non- Randomized Controlled Trials	Near-infrared irradiation(1)	1(4.3)
Single-Arm Trial	Hypercapnia: Rebreathing with a plastic bag (1), Acupuncture(1) , Auricular Acupuncture(1)	3(13.0)
Retrospective Cohort Studies	Continuous Cervical Epidural block(1)	1(4.3)

■Pharmacological interventions (n = 17):
5 RCTs investigating baclofen, metoclopramide, methylprednisolone, and a combination of ephedrine and lidocaine.
■Nonpharmacological interventions (n = 6):
Only 1 RCT was identified (combined acupuncture and cupping therapy).

■Outcome measures:
・**Objective measures**: complete cessation, partial cessation, frequency reduction, time to cessation, and recurrence.

・**Subjective measures**: Numerical Rating Scale (NRS), State Anxiety Scale (SAS), and Hiccup Assessment Index (HAI).
➡Patient Reported Outcome

0	1	2	3	4	5	6	7	8	9	10

Score	Distress Level
0	No distress
1-3	Mild distress
4-6	Moderate distress
7-10	Severe distress

Discussion

This review comprehensively examined pharmacological and nonpharmacological interventions for hiccups and identified **three key findings**.

FIRST: both pharmacological and nonpharmacological interventions included a **limited number of RCTs**, and high-quality evidence for treatment efficacy remains insufficient. Even among pharmacological therapies, which are commonly used in clinical practice, evidence is still limited. Delayed onset of effect and issues of tolerability pose clinical challenges, particularly in palliative care settings, where careful consideration is required. These findings highlight the need to develop and evaluate safe, feasible, and evidence-based treatment options.

SECOND: while most studies were based on Western medicine, some from Japan, China, and Korea reported traditional Eastern approaches, including Kampo medicine, acupuncture, near-infrared irradiation, and rebreathing techniques. These interventions involve mechanisms such as neural reflexes and balance regulation, suggesting their potential as complementary strategies to Western medical treatments.

THIRD: outcome measures for hiccups were primarily objective, such as complete cessation and frequency reduction. However, some studies also employed subjective assessments using patient-reported outcomes (PROs), including the Numerical Rating Scale (NRS) and the Hiccup Assessment Index (HAI). Given that hiccups are inherently subjective symptoms, the integration of both objective and subjective evaluations is important for a more comprehensive assessment in future research.

Strengths&Limitations

Strengths
・Broadly reviewed both pharmacological and nonpharmacological treatments, including Eastern and Western medicine.
・Organized outcome measures into objective and subjective categories to aid future research design.

Limitations
・Limited to English and Japanese studies with ≥10 participants.
・No quality assessment or disease-specific analysis was conducted.

References

1.Fass R, Higa L, Kodner A, Mayer EA. Stimulus and site specific induction of hiccups in the oesophagus of normal subjects. Gut 1997;41(5): 590–593; doi: 10.1136/gut.41.5.590
2.Cymet TC. Retrospective analysis of hiccups in patients at a community hospital from 1995-2000. J Natl Med Assoc 2002;94(6):480–483.