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File: ■ Chamomile (*Matricaria chamomilla*, Asteraceae)
■ Sleep
■ Systematic Review/Meta-analysis

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RE: Systematic Review Highlights Chamomile's Potential to Reduce Nighttime Awakenings, but Effects on Overall Sleep Quality Remain Inconclusive

Kazemi A, Shojaei-Zarghani S, Eskandarzadeh P, Hashempur MH. Effects of chamomile (*Matricaria chamomilla* L.) on sleep: a systematic review and meta-analysis of clinical trials. *Complement Ther Med*. 2024;84:103071. doi:10.1016/j.ctim.2024.103071.

Sleep disorders and insufficient sleep affect a significant amount of the world population; however, sleep is a fundamental process of the human body for overall well-being. Sleep disorders can cause insomnia, psychiatric disorders, substance abuse and dependence, medical ailments, and neurological complications. Psychotherapeutic methods and pharmacotherapy are often used to mitigate sleep disorders; however, they are often associated with limited availability, costs, insufficient evidence, and potential dependency. One herb that has often been used for its calming and sedative properties is chamomile (*Matricaria chamomilla*, Asteraceae). Chamomile has flavonoids and terpenoids that have sleep-enhancing effects and enhance sleep quality; however, previous trials have shown mixed results. The authors conducted a systematic review to understand the efficacy of chamomile on sleep.

This systematic review followed the International Prospective Register of Systematic Reviews and Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist. The authors utilized PubMed, Scopus, Web of Science, and Cochrane Library up to August 2023. Inclusion criteria included trials investigating the efficacy of chamomile on sleep in individuals 18 years or older who were healthy or had a condition. Exclusion criteria included trials that used chamomile in combination with other herbal remedies, did not have a control or placebo, or included individuals who were under the age of 18. Cochrane Risk of Bias Tool for Randomized Controlled Trials was used to assess the risk of bias.

Of the 370 articles identified, 258 were excluded. Of the 281 articles screened, 23 were retrieved to assess for eligibility. Of the 23 that were assessed, 13 were excluded due to not using a control group (n = 1), chamomile being in combination with other herbal remedies (n = 4), requiring outcomes not being reported (n = 1), and not being a clinical trial (n = 7). This left 10 studies included in the analysis. Participants included women who were postmenopausal (n = 2) and individuals who were elderly (n = 2), were

postnatal and sleep-disrupted (n = 1), had poor sleep (n = 1), were adolescents with dysmenorrhea (n = 1), and suffered from heart failure (n = 1) or chronic kidney disease (n = 1), and one study included healthy individuals. Locations of studies included Iran (n = 5), Indonesia (n = 1), Pakistan (n = 1), Taiwan (n = 1), and the United States (n = 1). The effect of chamomile jelly, capsules (540-800 mg/day), syrup (400 mg/day), tea (1 cup/day), drops (60 drops per day), or extract are tested. Trial duration was between two days and one month, and the sample sizes were between 34–110 individuals. Studies included the Pittsburgh Sleep Quality Index (PSQI) (n = 7), Postpartum Sleep Quality Scale (n = 1), St Mary's Hospital Standard Sleep Quality Index (n = 1), and Oguri sleep survey sheet (n = 1). No adverse events were reported for any of the studies. One study surveyed the blinding successiveness, and one study tested the products for purity.

There was a significant reduction in reported PSQI scores after consuming chamomile, and removing a study from the analysis did not change the results. A meta-analysis for three trials that also reported sleep time length indicated there was no significant change after consuming chamomile; however, two of three studies found that sleep onset latency improved. There was no significant improvement in sleep efficiency, and two of three studies had improved number of awakenings after sleep or staying asleep. One study reported a reduction in subjective sleep quality, and one reported no change. Lastly, daytime sleep time was not reported in any study.

There was no significant effect on fatigue severity index, postpartum fatigue scale, and anxiety; however, there was an improvement in depression for postpartum women but not in participants who were elderly. There was also an improvement in sleep disorders in patients who had heart failure.

There was low risk of bias for random sequence generation (n = 6), allocation concealment (n = 2), blinding of participants and personnel (n = 2), blinding of outcome assessment (n = 2), incomplete outcome data (n = 10), selective reporting (n = 5), and other bias (n = 4). There was high risk of bias for random sequence generation (n = 1), allocation concealment (n = 6), blinding of participants and personnel (n = 6), blinding of outcome assessment (n = 2), selective reporting (n = 1), and other bias (n = 6). Lastly, there was unclear risk of bias for random sequence generation (n = 3), allocation concealment (n = 2), blinding of participants and personnel (n = 2), blinding of outcome assessment (n = 6), and selective reporting (n = 4).

The authors conclude that chamomile could improve the number of awakenings during sleep; however, there were no positive results for other markers of sleep. Limitations in this study include participants being dissimilar among trials, most trials having a high risk of bias, trials having a high heterogeneity, and trials using subjective measurements. More robust trials are needed to fully understand the effects of chamomile on sleep. The authors declare no conflict of interest.

—*Dani Hoots*

Referenced article can be accessed at
<https://www.sciencedirect.com/science/article/pii/S0965229924000591?via%3Dihub>,