Low-Concentration Topical Capsaicin for Chronic Neuropathic Pain in Adults

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Objective
To assess the efficacy and tolerability of topically applied low-concentration (less than 1%) capsaicin for treating chronic neuropathic pain in adults.

Type of Review
The current review examined the evidence from seven double-blind randomized, controlled trials that compared the application of low-concentration (less than 1%) topical capsaicin cream with placebo or other active treatment for a minimum duration of six weeks.

Relevance for Nursing
Neuropathic pain is caused by nerve damage or dysfunction as a result of injury or disease, and is described as chronic if experienced on most days for a three-month period. It has been variously described as a burning sensation; sharp, stabbing, or shooting pain; or pain similar to an electric shock. Topical creams such as capsaicin can be applied externally and are taken in through the skin. When applied, capsaicin, the active compound in chili peppers, binds to the sensory receptors in the skin that are responsible for sending pain signals. Adverse events such as burning and stinging at the application site have been noted in the use of capsaicin, so healthcare providers should determine whether the treatment is efficacious and tolerable in adults, particularly for those involved in nursing care. This review is an update of a review previously published in 2009, which combined high- and low-concentration formulations of capsaicin. This update examines only low-concentration formulations of capsaicin.

Characteristics of the Evidence
Seven studies (1,600 total participants) were included in the review. Participants were adults aged 16 years or older who were experiencing neuropathic pain of at least a moderate intensity for a minimum of three months. Participants had various neuropathic pain conditions, including postherpetic neuralgia, diabetic neuropathy, distal painful polyneuropathy, HIV neuropathy, postmastectomy pain, and postsurgical cancer pain.

Capsaicin 0.075% in a cream base was used by 449 participants four times a day for 6, 8, or 12 weeks. A total of 325 participants received a placebo cream, and 117 patients used oral amitriptyline. The primary outcome measurement was clinical improvement, ideally a 50% reduction in pain, as reported by patients using validated scales. Secondary outcomes included the number of participants with local (at the application site) and systemic adverse events; coughing or sneezing; and the number of withdrawals because of all causes, lack of efficacy, and adverse events.

The reviewers noted that the methodologic quality of studies was considered adequate; however, studies were small in size. Allocation concealment was unclear in all studies, but at least half of the included studies had a low risk of bias for random sequence generation, blinding of participants and personnel, blinding of outcome assessment, and attrition bias. Researchers noted that maintaining double-blinding of studies was difficult because of the application of capsaicin causing redness, burning, or stinging in some participants.

Summary of Key Evidence
Considerable heterogeneity existed in the results, possibly as a result of the studies with small numbers of participants, as well as the different pain conditions studied and different definitions of clinical success. Only two studies reported data for the preferred primary outcome of at least 50% pain relief, and too few data were gathered for pooling.

Reporting also was inconsistent for adverse events. Local skin reactions were more common with capsaicin, were usually tolerable, and attenuated with time. Pooled analysis from five studies comparing capsaicin with placebo for the number of patients with burning, stinging, or erythema at the application site indicated the relative risk (RR) of treatment was 2.6 (95% confidence interval [CI] [2.1, 3.3]), and the number needed to harm (NNH) or cause an event was 2.5 (95% CI [2.1, 3.1]).

For coughing and sneezing, the RR of treatment compared with placebo was 5.7 (95% CI [2.1, 15]), and the NNH for experiencing coughing or sneezing after six to eight weeks of treatment was 13 (95% CI [8.7, 25]). No analysis was possible for systemic adverse events. Withdrawals
because of adverse events were reported in four studies (n = 37 for those receiving capsaicin, n = 7 for those receiving placebo), and almost all were because of skin irritation.

**Best Practice Recommendations**

Because of the small number of studies and small numbers of participants, insufficient data existed to draw conclusions about the efficacy of 0.075% capsaicin cream applied 3–4 times daily for 6 to 12 weeks for the treatment of neuropathic pain. In addition, the use of the cream often causes local skin irritation, which was a confounding problem in the studies because researchers attempted to create a placebo that also presented this irritation.

The review indicated that capsaicin cream in low concentration lacks meaningful effect and causes local skin irritation. It seems unlikely that this cream has any effective use in clinical practice.

**Research Recommendations**

The available data do not indicate that low-concentration topical capsaicin is effective for neuropathic pain, and it is unlikely that additional research with low-concentration cream will be worthwhile. A newer strategy of using a single application of high-dose capsaicin, facilitated by pretreatment with a local anaesthetic may be beneficial. That strategy is the subject of new studies, as well as the subject of a separate Cochrane review (Derry, Sven-Rice, Cole, Tan, & Moore, 2013).

**References**


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