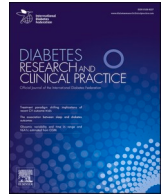




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# The impact of cold application on pain and comfort during the process of diabetic foot care

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## ABSTRACT

**Background and Aim:** Given the significance of pain management in the context of diabetic foot ulcer (DFU) care, particularly in terms of ensuring patient adherence to treatment regimens, this study was undertaken to ascertain the impact of cold washing on pain and comfort levels during diabetic foot care.

**Methods:** A single-blind randomized controlled trial was conducted in the chronic wound care clinic of a teaching and research hospital in the southeastern region of Turkey. The sample consisted of 68 patients, with 34 assigned to the cold application group and 34 assigned to the control group. Pain and comfort levels were recorded at baseline, and during and after the application of a 0.9% NaCl solution (cold or warm) during DFU care.

**Results:** A comparison of the Cold Application group with the control group revealed a statistically significant reduction in post-intervention pain scores ( $p = 0.000$ ) and a statistically significant increase in comfort scores ( $p = 0.000$ ) over time.

**Conclusion:** It can be posited that cold washing represents an efficacious intervention in the management of pain and discomfort associated with diabetic foot care.

## 1. Introduction

As the prevalence of diabetes mellitus (DM) continues to rise, so too does the incidence of DM-related complications. One of the most significant and prevalent chronic complications of DM is diabetic foot disease. The estimated lifetime risk of developing foot lesions, such as ulcers or gangrene, in a patient with diabetes is between 15% and 25% [1,2,3]. It is estimated that approximately 7% of the global population is affected by diabetic foot disease [4]. Diabetic foot disease is a significant public health concern, with high mortality and morbidity rates, prolonged hospitalization, and substantial economic costs [3]. The treatment of diabetic foot ulcers (DFUs), which have a complex etiology, is challenging and prolonged. The treatment of diabetic foot ulcers includes a multimodal approach that may include antibiotics, surgical intervention, revascularization, metabolic control, and debridement. Mechanical debridement is a primary intervention in the management of wounds. It is recognized as an effective method to accelerate the healing of ulcers and reduce the risk of serious complications. However, it is a painful procedure [4,1]. Patients with diabetic foot ulcers have typically lost their protective sensation due to diabetic peripheral neuropathy,

leading to the assumption that these wounds are painless. However, numerous studies challenge this view [5]. In a study of patients with type 2 DM, 128 of 604 patients with diabetic peripheral neuropathy (DPN) reported experiencing pain, yielding a prevalence of 21.2% [6]. Pain is a prevalent issue encountered in the context of wound care for patients diagnosed with diabetes. It is, therefore, a crucial nursing diagnosis that nurses are responsible for managing. Effective pain management is crucial for both the patient's quality of life and the nurse's ability to provide optimal wound care. The discomfort associated with wound care often impedes the efficacy of the care process, thereby delaying the wound healing process. In the existing literature, various methods have been proposed for the management of pain associated with debridement in diabetic foot care. These include behavioral and cognitive therapies, massage, interventional nerve blocks, transcutaneous electrical nerve stimulation, electroacupuncture, and topical local analgesics [7,8,9]. It appears that further experimental studies are required in order to establish a standardized approach to pain management during debridement of DFUs. In this study, we sought to elucidate the impact of cold application, a common method for pain management, on pain and comfort in patients undergoing DFU care. Our

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