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Effects of non-weight bearing leg and foot exercises on ulcer healing and its associated factors in patients with type 2 diabetes

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Background: Impaired ulcer healing increases morbidity, mortality and cost of care in patients with diabetic ulcers. Though ankle exercises has shown a positive healing response, its role on diabetic ulcer healing is not yet reported.

Objective: To evaluate the effects of non-weight bearing leg and foot exercises on ulcer healing and sensory neuropathy status in patients with diabetic ulcers.

Methods: In this prospective study (n=87), subjects in the intervention group (n=41) performed home based non-weight bearing leg and foot exercises till ulcer was healed or for a maximum period of 12 week. Control group (n=46) received usual care. Ulcers were photographed and measurements were taken on digital images by planimetry software at baseline and 4 weekly up to 12 weeks. The effect of exercises on pressure, vibration and position senses was also assessed. Ethical clearance was obtained from Ethics Review Committee, University of Sri Jayewardenepura.

Results: A significant percent reduction of ulcer surface area was seen in the intervention compared to control group at 4 weeks (p=0.025). However, there was no difference seen when the total duration was considered. Also, a significant reduction of insensate sites in the foot was seen in the intervention compared to control group (18/23 vs 10/27; p=0.001) during the study period.

Conclusions: Non-weight bearing leg and foot exercises facilitate ulcer healing in the acute stage of the ulcer and improve pressure sense of the foot. These findings will form the basis of further studies in designing non-invasive, low-cost adjuvant therapy to facilitate diabetic ulcer healing.