

Patients Satisfaction and Perspective on Wearable Focal Vibration Therapy for Home Usage

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Background: Multiple Sclerosis (MS) is among the most common causes of neurological disability in young adults and affecting more than one million adults in the US. Diabetic Peripheral Neuropathy (DPN) is the most common type of diabetic neuropathy that affects up to 70% of people with diabetes. Damage to either the central nervous system in MS or the peripheral nervous system in DPN can cause pain, loss of sensation, impaired balance and altered gait which can result in decreased functional ability, which in turn, leads to problems with participation, independence and quality of life. Focal vibration therapy has been showing promise on symptom management for both MS and DPN, and a wearable focal vibration device has been developed for at home usage. Preliminary studies have been focused on effectiveness of the intervention, but less has been done on the user's perspective on the intervention and technology.

Purpose: The purpose of this study was to examine the user satisfaction and perspective on wearable focal vibration therapy for at home usage in patients with MS and DPN.

Methods: Patients with MS and DPN who participated in the two ongoing studies were sampled. Those patients who completed the 4 weeks at home focal vibration intervention were included in this study. For both patient populations, the same protocol was utilized. Participants positioned the Myovolt™ wearable vibration device on both legs on three different muscles with each muscle for 10 minutes, 3 days a week for 4 weeks. At the end of both studies, participants were surveyed on their satisfaction of the wearable focal vibration technology using the Quebec User Evaluation of Satisfaction with Assistive Technology (QUEST 2.0). Perspective on in home focal vibration therapy was gained using semi-structured interviews. Descriptive statistics were used for the demographic and satisfaction scores. Thematic analysis was used to analyze the semi-structured interview data.

Results: 4 patients with MS, 1 male and 3 females, aged 51.5 ± 10.34 years, and 16 patients with DPN, 5 males and 11 females, aged 34.6 ± 5.04 years, have completed the studies thus far. The MS study resulted in a score of 39 ± 1.15 and the DPN study a score of 34.6 ± 5.04 , both reported out of 40 on the QUEST satisfaction measure. Three themes - application of the vibration therapy, personal experience with the therapy and feedback on the wearable device were identified from the interview data.

Conclusion: Patients satisfactory scores on the QUEST specifically indicate they found the device easy to use and comfortable. It was noted that the MS patients had higher scores on satisfaction than DPN patient. This could be the smaller sample size, or the two patients reported low satisfaction (both 24 /40) in the DPN study had comorbidity (one has brain pathology, another has cognitive and memory issue). From the semi-structured interview patients reported application of the vibration therapy times varied in usage throughout the day and most patients used the device while sitting or lying down. Personal experience reflects the vibration was enjoyable, but many patients desired a stronger vibration. Patient feedback on the wearability of the device reflected ease of use but the straps could be further improved.

Relevance to Allied Health: Although more research needs to be conducted on the effects of focal vibration, we found that patients who have MS and DPN enjoyed the experience and would purchase the Myovolt™ device for their own personal use. Patient feedback regarding the Myovolt™ device can be used to ensure the device is not only effective but also client-centered. The findings related to satisfaction with at home wearable focal vibration, could help inform future allied health professionals.