Vibration and audio-visual stimulation: How effective in reducing invasive nursing procedural pain?

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Abstract

**Introduction:** The pain related to high-volume minor invasive nursing procedures usually dealt with non-pharmacological measures because they are safe, inexpensive and can be performed independently by a nurse. Mechanizing these measures may reduce the complexity and help to deliver consistent and standardized therapy most of the time.

**Objectives:** This research inquires the analgesic use of machine delivered vibration and audio-visual stimulation, to reduce pain sensation during minor invasive nursing procedures. The study also tries to find out the association between the study subject's selected personal variables and the degree of effectiveness of these stimulations.

**Methods:** Researcher developed and validated a machine that can produce Vibratory-Audio-Visual stimulation (VAVS) either in combination or individually on the patients. A quasi-experimental design was formulated by drawing 80 patients, who were receiving intramuscular (IM) injection over the deltoid area. The selected samples were further divided into 4 groups: 20 in each, - namely Vibration only, Audio-Visual only, Vibratory-Audio-Visual, and No stimulation groups - and determined the effectiveness of device delivered VAVS in reducing pain during IM injection using a Visual Analogue Scale.

**Results:** One-way ANOVA revealed that there was a significant difference in pain scores across the study groups (F = 13.134, df = 3, p = .001). The Post Hoc test intergroup comparison showed that; the mean pain scores of ‘Vibratory-Audio-Visual’ group and ‘Vibration only’ group were significantly reduced as compared with ‘Audio-Visual only’ group and ‘No stimulation’ group.

**Conclusion:** The study recommends to use a mechanical vibration of 6100rpm; 32Hz within 10cm of the site of IM injection to reduce the invasive nursing procedural pain.

**Keywords:** Pain, Non-Pharmacologic Pain Management, IM Injection, Nursing Procedural Pain, Vibration, Audio-Visual Stimulation, Innovation

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