

*Correspondence***Valsalva maneuver: An effective non-pharmacological technique for pain management in nursing procedures**Mahbobeh Firooz ^a | Seyed Reza Hosseini ^b | Seyed Javad Hosseini ^{a*} 

a. Department of Nursing, Esfarayen Faculty of Medical Sciences, Esfarayen, Iran

b. Department of Emergency Nursing, School of Nursing, Gonabad University of Medical Sciences, Gonabad, Iran

*Corresponding author(s): Seyed Javad Hosseini (MSN), Department of Nursing, Esfarayen Faculty of Medical Sciences, Esfarayen, Iran.

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To the Editor

Pain is a physiological but unpleasant reaction during nursing procedures. Also, to help a person grasp an internal or external threat, pain is regarded as an emotional sense and experience linked to tissue damage [1]. Several chemical mediators, including prostaglandin, histamine, and substance P, are released after tissue damage, causing pain to be transferred to the cerebral cortex via nerve fibers. The brain releases endorphins and alleviates or destroys the pain related to the stimulator [2]. Pain causes various complications such as hemodynamic changes, failure to seek treatment, fear, and anxiety in the patient [3, 4]. Various studies have been performed to evaluate the effects of different methods on pain management. These methods classify into pharmacological and non-pharmacological pain management. Pharmacological pain management includes the use of EMLA cream, intradermal injection of lidocaine, and intravenous injection of fentanyl, ketamine, and propofol medications [5, 6]. Despite the high efficacy of these medications, they have several negative side effects, including toxicity, high cost, and effects on hemodynamic parameters [7]. As a result, nurses can employ non-pharmacological treatments since they are easy to use, inexpensive, and effective at managing pain, particularly mild to moderate pain [8]. These methods also include distraction, massage, acupuncture or acupressure, electrical stimulation through the skin, relaxation, and using the Valsalva maneuver [4, 9-11]. In the meantime, the Valsalva maneuver has received the attention of researchers in studies, and research has also been conducted in this field. This technique increases intra-thoracic pressure, which

results in Vaso compression, which in turn activates the baroreceptor. Peripheral receptors associated with baroreceptors in the aortic arch maintain homeostasis together with the central nervous system and the effects of parasympathetic and sympathetic nerves. By activating these baroreceptors in the aortic arch, the central nervous system inhibits pain by releasing the substance P [12, 13]. There are various techniques to do this maneuver, such as forcing an exhale with a closed glottis or having the person briefly blow into a spirometry tank [3, 14].

In general, the conducted studies show that the use of the Valsalva maneuver is effective in various painful procedures, including peripheral venous catheter insertion, drug and spinal injections [15-17]. It seems that the application of this technique for other procedures such as lumbar puncture as well as comparing its effectiveness with other non-pharmacological techniques in future studies can be of interest to researchers.

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Authors' contributions

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work: MF, SRH, SJH; Drafting the work or revising it critically for important intellectual content: MF, SRH, SJH; Final approval of the version to be published: MF, SRH, SJH; Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved: MF, SRH, SJH.

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Competing interests

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