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Original Article

A survey study for the dental students' satisfaction with the “needling therapies for temporomandibular disorders” lectures

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Received 17 December 2023

Available online 26 December 2023

KEYWORDS

Acupuncture;
Dry needling therapy;
Temporomandibular
disorders

Abstract *Background/purpose:* Dry needling therapy and acupuncture can effectively relieve myofascial pain in temporomandibular disorders (TMDs). This study evaluated dental students' satisfaction with the “needling therapies for TMDs” lectures given in 2022 and 2023. *Materials and methods:* The “needling therapies for TMDs” lectures included mainly a dry needling therapy lecture and an acupuncture lecture which were given to the fifth-year dental students in both 2022 and 2023. An additional needling therapy demonstration lecture was given in 2023 only. Immediately after the lectures, the students were asked to complete an online-based questionnaire with four survey questions regarding their satisfaction with (1) the dry needling therapy, (2) the acupuncture, (3) the overall, and (4) the needling therapy demonstration lectures using 5-point Likert scale ratings.

Results: Fifty-three (80 %) of 66 and 60 (81 %) of 74 students answered the questions in 2022 and 2023, respectively. The satisfaction rates improved from 70 % in 2022 to 83 % in 2023 for the dry needling therapy lecture, from 64 % in 2022 to 85 % in 2023 for the acupuncture lecture, and from 70 % in 2022 to 88 % in 2023 for the overall lecture. The satisfaction rate was 88 % in 2023 for the needling therapy demonstration lecture.

Conclusion: The results of this study suggest that inclusion of the needling therapy demonstration lecture in 2023 can result in a marked increase in the satisfaction rates for the lectures.

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The relatively-lower satisfaction rate for the acupuncture lecture in 2022 may be due to the difficulty in understanding the mechanisms underlying the acupuncture therapy.

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Introduction

Temporomandibular disorders (TMDs) are pathologies affecting the temporomandibular joint, muscles, and associated tissues, leading to chronic pain and reduced jaw movement.¹ TMD is common among the population around the world and is a common cause of orofacial pain complaints.² Etiological factors such as trauma, psychological stress, and multifactor contribute to the development of TMD.³ There are various treatment options for managing the TMDs, including pharmaceutical therapy, physiotherapy, intraoral devices, biological feedback, and behavioral modification.⁴ Among the treatments to reduce myofascial pain, needling therapies such as the dry needling therapy and the acupuncture are studied increasingly for their efficacy on the treatment of the TMDs.⁵

The dry needling therapy focuses on application to myofascial trigger points using a fast-in-fast-out needling technique. In contrast, the acupuncture involves needling predefined acupuncture points based on the principles of traditional Chinese medicine.⁶ Although research interest surrounds using both approaches for the TMDs, little is known about dental students' perceptions and understanding of these needling treatment modalities.

Therefore, this study aimed to evaluate the dental students' satisfaction with the "needling therapies for TMDs" lectures that were delivered in two successive years of 2022 and 2023. The specific contents in the "needling therapies for TMDs" lectures and the inclusion of the needling therapy demonstration in 2023 were presented, and the students' perceptions and the satisfaction rates for the lectures were gathered using survey questions to allow analysis of the key trends and themes. Comparison of students' perspectives allowed for better instructional content design to improve the grasp of needling therapies for treatment of the TMDs.

Materials and methods

This study evaluated dental students' satisfaction with the "needling therapies for TMDs" lectures at Chung Shan Medical University in the two successive years of 2022 and 2023. The lectures were delivered as a part of the regular curriculum for the fifth-year dental students in the oral and maxillofacial surgery course.

The "needling therapies for TMDs" lectures consisted of three core lectures: an overview of the dry needling therapy, an introduction to the acupuncture principles and needling, and a demonstration of the needling techniques on a volunteer. These lectures were accompanied by a PowerPoint/Keynote presentation explaining the needling

therapy procedural details, evidence base, and clinical recommendations and indications for each form of the needling therapy. In 2023, a needling therapy demonstration lecture was included in response to the students' feedback request for more practical learning components for the needling techniques.

Immediately after the lectures, the students were asked to complete an online-based questionnaire with four survey questions regarding their satisfaction with (1) the dry needling therapy, (2) the acupuncture, (3) the overall, and (4) the needling therapy demonstration lectures using 5-point Likert scale ratings. Additionally, students could provide the free-form written positive or negative comments and suggestions for the lectures. This study was carried out following the Declaration of Helsinki. The participation in the survey study was elective and anonymous. The Likert scale ratings and free text comments were subjected to a statistical analysis. The different responses between the two cohorts of the fifth-year dental students of 2022 and 2023 were compared, and descriptive statistics were presented and the key themes in qualitative feedback were identified.

Results

In this survey study, 53 (80 %) of the 66 and 60 (81 %) of the 74 dental students answered the questions in 2022 and 2023, respectively. The satisfaction rates improved from 70 % in 2022 to 83 % in 2023 for the dry needling therapy lecture, from 64 % in 2022 to 85 % in 2023 for the acupuncture lecture, and from 70 % in 2022 to 88 % in 2023 for the overall lecture. Moreover, the satisfaction rate was 88 % in 2023 for the needling therapy demonstration lecture (Table 1). In general, the dental students reported relatively-higher satisfaction rates for all surveyed lectures in 2023 compared to those in 2022 (Table 1).

More qualitative comments were given by the dental students with the response rate of 35 % in 2022 versus the response rate of 18 % in 2023. In 2022, a positive feedback of a "very good lecture" was given by 48 % of the dental students. Moreover, 26 % of dental students asked for the needling therapy demonstration for an easier understanding of the dry needling therapy and the acupuncture lectures, and this was the reason why we added a needling therapy demonstration lecture in 2023. Moreover, negative comments concerning mainly the difficulty in comprehending the acupuncture lecture were proposed by 26 % of the dental students in 2022. In 2023, the predominant theme was the lecture being very good (62 %), and the isolated suggestions were proposed to expand the lecture contents on the acupuncture and Fu's subcutaneous needling.

Table 1 Dental students' satisfaction with the "needling therapies for temporomandibular disorders" lectures.

Items	Satisfaction rate (%)			
	Very satisfied		Satisfied	
Year	2022	2023	2022	2023
^a Q1 Dry needling therapy lecture	70	83	30	17
Average	77		23	
^a Q2 Acupuncture lecture	64	85	36	15
Average	75		25	
^a Q3 Overall lecture	70	88	30	12
Average	79		21	
^a Q4 Needling therapy demonstration lead to easier understanding of the whole lecture	–	88	–	12

^a Response rate: 80 % (53/66) for 2022; 81 % (60/74) for 2023.

Discussion

The main results of this survey study were the relatively-higher overall students' satisfaction rates with the "needling therapies for TMDs" lectures after enhancing the lecture delivery and adding the needling therapy demonstration lecture in 2023. This also means that an adequate explanation of the frameworks and mechanisms underlying the acupuncture needling is important to promote students' understanding of the needling techniques and the acupuncture lectures. The relatively-

lower satisfaction rate related to the acupuncture lecture in 2022 may reflect the greater complexity of concepts associated with the traditional Chinese medicine theories underlying the acupuncture therapy that are difficult to understand compared to the easier understanding of the anatomical-biomechanical focus and myofascial trigger point theory of the dry needling therapy (Table 2).^{7–9}

The acupuncture practice requires extensive and additional training in traditional Chinese medicine principles such as the meridians through which vital energy flows, Zang Fu (internal organs), Yin-Yang energy balance, and the Five-element theory, none of which feature in modern evidence-based dry needling therapy protocols targeted to myofascial trigger point release.⁸ Compared to the familiarity with understanding the musculoskeletal pain pathways, this paradigm shift that introduced unfamiliar acupuncture frameworks might challenge the novice students who learned about these dry needling therapy and acupuncture needling for the first time.

Incorporating practical needling therapy demonstration during the lectures in 2023 could reduce confusion on the acupuncture technique. Establishing clinical relevance through visual and practical learning may improve the understanding of concepts such as the appropriate depth and manipulation of the needles, the use of multiple needles, and the elicitation of deqi sensation; all of these are important components of the acupuncture procedure described in Table 2.

Enhanced comprehension also tied into better information retention, self-efficacy in performing needling techniques after observational learning, and verbal components. This aligned with the requests for more needling therapy demonstration in the students' feedback in 2022,

Table 2 Differences between dry needling therapy and acupuncture.^{7–9}

	Dry needling therapy	Acupuncture
Theory	Myofascial trigger points	1. Meridians 2. Zang Fu 3. Yin and Yang 4. Five elements
Point selection	Myofascial trigger points	Acupoints, extra points, and ashi points
Needling technique	One needle	More than one needle is usually necessary.
Manipulation	1. Fast-in and fast-out (injection needle) 2. Fast screwed-in and screwed-out (filiform needle) 3. Multiple insertions 4. Local twitch response (as much as possible) 5. Needles in situ is not required.	1. Several traditional techniques 2. Depends on the diagnosis 3. Needs "deqi" sensation 4. Needles in situ is usually needed.
Depth	Not specified	1. Depends on the acupoints 2. Deqi sensation
Goal	Pain relief	Harmonize Yin and Yang
Clinical requirements	1. Anatomy, muscle and joint kinesiology and biomechanics, myofascial trigger points diagnostic techniques, and needling techniques 2. Medical doctors and dentists	1. Entire acupuncture system (meridians, Zang Fu, Yin and Yang, Five elements, traditional Chinese medicine, etc.) 2. Chinese medical physician 3. Certified medical doctors and dentists

but no such comments emerged in 2023. A lower qualitative response rate was observed during 2023 despite the improved satisfaction rates for the lectures in 2023. Because ambiguity about the acupuncture was reduced through needling therapy demonstration, fewer questions and comments were proposed in 2023.

Theories, techniques, goals, and training requirements vary considerably between the dry needling therapy and the acupuncture (Table 2). The trigger points for the needle in the muscles or connective tissues are the central focus of the dry needling therapy, with the priority of temporary pain relief. In contrast, the acupuncture points may be away from the pain point or unrelated to the pain location since the needles are used to restore harmony between Yin and Yang energies along the meridians based on traditional Chinese medicine principles.^{7–9} Appreciating these divergent rationales is the key point for the appropriate application of either the dry needling therapy or the acupuncture for the TMDs.

The dry needling therapy for TMDs has been included in the Taiwan National Health Insurance System since 2019. After official certification, the dentist can offer the acupuncture therapy in Taiwan for dental or oral-related diseases. Since there is a promising pain control using needling therapies for the TMDs, introducing basic knowledge of needling therapies to dental students can increase their interest in learning these needling treatment modalities and further provide a better needling therapy quality for patients with the TMDs.

Declaration of competing interest

The authors have no conflicts of interest relevant to this article

Acknowledgments

We would like to thank Professor Li-Wei Chou for his lecture and demonstration on the dry needling therapy.

References

1. Tseng HJ, Lo WL, Chen MH, Tsai SJ, Chen TJ, Liou YJ. Bidirectional association between eating disorder and temporomandibular joint disorder: a retrospective longitudinal nationwide population-based cohort study. *J Dent Sci* 2023 (in press).
2. Slade GD, Sanders AE, Bair E, et al. Preclinical episodes of orofacial pain symptoms and their association with healthcare behaviors in the OPPERA prospective cohort study. *Pain* 2013; 154:750–60.
3. Slade GD, Sanders AE, Ohrbach R, et al. Pressure pain thresholds fluctuate with, but do not usefully predict, the clinical course of painful temporomandibular disorder. *Pain* 2014;155:2134–43.
4. Klasser GD, Greene CS. Oral appliances in the management of temporomandibular disorders. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2009;107:212–23.
5. Park EY, Cho JH, Lee SH, Kim KW, Ha IH, Lee YJ. Is acupuncture an effective treatment for temporomandibular disorder? A systematic review and meta-analysis of randomized controlled trials. *Medicine* 2023;102:e34950.
6. Cagnie B, Castelein B, Pollie F, Steelant L, Verhoeyen H, Cools A. Evidence for the use of ischemic compression and dry needling in the management of trigger points of the upper trapezius in patients with neck pain: a systematic review. *Am J Phys Med Rehabil* 2015;94:573–83.
7. Hong CZ. Treatment of myofascial pain syndrome. *Curr Pain Headache Rep* 2006;10:345–9.
8. Chou LW, Kao MJ, Lin JG. Probable mechanisms of needling therapies for myofascial pain control. *Evid Based Complement Alternat Med* 2012;2012:705327.
9. Lin JG, Chen WL. Acupuncture analgesia: a review of its mechanisms of actions. *Am J Chin Med* 2008;36:635–45.