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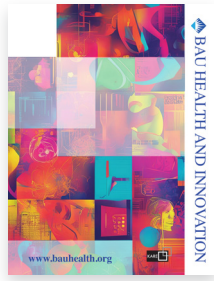

Original Article

Dentists' Awareness of the Role of Physiotherapists in the Treatment of Temporomandibular Disorders

Beyza Nur Yumak,[1] Sena Özdemir Görgü[2]

[1]Department of Physiotherapy and Rehabilitation, İstanbul Atlas University Faculty of Health Sciences, İstanbul, Türkiye
[2]Department of Orthosis and Prosthetics, İstanbul Medipol University Faculty of Health Sciences, İstanbul, Türkiye

Abstract

Objectives: Temporomandibular disorders (TMDs) are frequently encountered conditions with complex, multifactorial causes that often necessitate a multidisciplinary and collaborative treatment approach.

Methods: This cross-sectional study assessed TMDs management practices among Turkish dentists through a 22-item online questionnaire. The tool, based on standardized TMDs criteria, included an educational infographic. Data were collected from dentists through social media/email, focusing on referral patterns, interdisciplinary awareness, and treatment preferences. The data are presented as the total number of participants and frequency percentages.

Results: The questionnaire was completed by 106 dentists. The participating dentists had a mean age of 32 ± 9.58 years. The majority were general dental practitioners with bachelor's degrees and 0–5 years of clinical experience. It was observed that 26.4% of dentists refer TMDs patients to physiotherapist (PT). Most of the dentists prefer occlusal splints, occlusal adjustments, and pharmacotherapy in the TMDs treatment. TMDs patients were predominantly referred to PT for neck pain and postural problems. Before participating in this survey, the majority of dentists were unaware that PT could play a role in the treatment of TMDs patients. After the questionnaire, 67% of dentists indicated an increased likelihood of referring TMDs patients to a PT when deemed necessary. 87.7% of participants expressed an interest in gaining further knowledge about the benefits of interdisciplinary collaboration with PT in the management of TMDs.

Conclusion: This study showed that dentists had limited awareness of the role of PTs in the treatment of TMDs. The results highlight significant gaps in both knowledge and awareness about the TMDs treatment.

Keywords: Dentists, physical therapists, temporomandibular dysfunction.

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The temporomandibular joint (TMJ) is one of the most frequently utilized and highly mobile joints in the human body, playing a crucial role in functions, such as mastication, swallowing, and speech.[1] Temporomandibular disorders (TMDs) refer to a group of conditions that affect the structure and function of the TMJ and its associated components.[2] The common clinical manifestations of TMDs include TMJ pain, restricted mandibular movement, joint sounds during function, widespread myofascial pain in the surrounding muscles and jaw fascia, and headaches.[3] TMDs are relatively common, with a prevalence ranging from 5% to 12% across different populations. The condition is more frequently observed in women than in men and typically affects individuals between the ages of 20 and 50.[4]

Address for correspondence: Sena Özdemir Görgü, PhD. İstanbul Medipol Üniversitesi Sağlık Bilimleri Fakültesi, Ortez ve Protez Anabilim Dalı, İstanbul, Türkiye
Phone: +90 542 575 12 29 **E-mail:** senaozdemir@medipol.edu.tr

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TMDs, as classified by the Diagnostic Criteria for TMDs, encompass a broad spectrum of conditions, ranging from acute to chronic and from simple to complex forms.[5] These disorders are often influenced by cognitive, psychosocial, and behavioral factors. TMDs are considered multifactorial in origin, with risk factors, including trauma, bruxism, malocclusion, psychological stress, poor posture, and connective tissue disorders. In chronic cases, a multidisciplinary approach is particularly essential, involving collaboration among primary care physicians, dentists, physiotherapists (PTs), psychologists, and speech-language therapists. The knowledge, training, and coordinated efforts of these professionals play a pivotal role in achieving effective treatment outcomes.[6]

A variety of treatment modalities have been proposed for TMDs, including interocclusal appliances, occlusal adjustment, physiotherapy, jaw exercises, acupuncture, transcutaneous electrical nerve stimulation, cognitive behavioral therapy, and pharmacological interventions.[7] Physiotherapy is recognized as the most cost-effective and non-invasive treatment modality for TMDs.[8] Recent evidence further underscores the pivotal role of PT in restoring jaw function by increasing mouth opening and mobility, and alleviating TMJ-related pain and inflammation. Moreover, interdisciplinary collaboration – particularly between dentists and PTs – has been associated with superior clinical outcomes.[9]

Several studies have investigated the knowledge, attitudes, and awareness of dentists and PTs regarding their respective roles in the treatment of TMDs across various geographical regions.[1,7,9–12] These studies consistently report a lack of interprofessional collaboration in TMDs management and indicate that many dentists are unaware of the importance of referring patients to PTs.[1,8] However, a review of the existing literature reveals a lack of studies evaluating dentists' awareness of the role of physical therapists in Türkiye.

The primary objective of the present study is to assess the present level of awareness among dentists in Türkiye concerning the role of PTs in TMDs treatment, as well as the extent of interdisciplinary collaboration between these professional groups. A secondary aim is to enhance understanding of the critical contributions of PTs in TMDs management and to emphasize the benefits of a multidisciplinary approach through collaborative practice. This study hypothesizes that emphasizing the role of physiotherapy and rehabilitation in TMDs treatment will strengthen interdisciplinary collaboration between dentists and PTs and increase dentists' awareness of PTs' contributions to TMD management.

Materials and Methods

Study Design

This cross-sectional observational study was conducted online through the Google Forms platform between May 27, 2023, and January 10, 2025. The study was approved by the Ethics Committee of Istanbul Medipol University (Decision No: E-10840098-772.02-3061, dated May 26, 2022). The study was conducted in accordance with the Declaration of Helsinki, and electronic informed consent was obtained from all participants through an online consent form.

Participants

Participants in this study were dentists actively practicing in public and/or private clinics across Türkiye. They were contacted through social networks and email. The inclusion criteria were as follows: (a) Completion of dental training (undergraduate or post-graduate) in Türkiye; and (b) active clinical practice at the time of data collection. Exclusion criteria comprised dentists who were not working in Türkiye or were still pursuing their education. All participants were informed about the purpose of the survey and the confidentiality of their responses.

Questionnaire

An online survey was prepared based on the studies by Gadotti et al.[1] and the Turkish version of the Diagnostic Criteria for TMDs.[13] A structured online survey consisting of 22 items was created using Google Forms (Appendix 1). The questionnaire form included 5 questions about demographic information and education, 1 question about dentists' education about TMD, 11 questions about TMD diagnosis and treatment, and 5 questions about TMD awareness. At the end of the questionnaire, to inform dentists about physiotherapy approaches and the role of the PT in the treatment of TMD and to increase their awareness, a diagram was produced based on,[14] there is a diagram named "Approach to the Treatment of the Patient with TMD Symptoms." The questionnaire was sent to dentists working in Türkiye through social media and e-mail. It was stated that the average time taken by participants to complete the survey was between 7 and 8 min.

The categories of questions in the questionnaire;

- Demographic and educational background (4 questions: Age, gender, level of education, and clinical experience),
- Education related to TMDs (1 question)
- Clinical assessment and treatment approaches for TMD (6 questions)
- Patient referral practices (5 questions)

- Awareness of interdisciplinary collaboration with PT (2 questions)
- Perceptions of the role of physiotherapy in TMD treatment (2 questions)
- Interest in interdisciplinary collaboration with PT (2 questions).

Data Analysis

Descriptive statistics were used to analyze the responses. The data are presented as the total number of participants (n) and frequency percentages (%). Written responses provided by the dentists were also taken into account in the analysis. The results are visually represented through tables and bar charts to illustrate the participants' demographic information, referral patterns related to TMDs, and referral criteria for physiotherapy. Since no inferential statistical methods were employed due to the descriptive nature of the study, a formal power analysis (sample size calculation) was not conducted; however, a minimum of 100 participants was targeted to ensure adequate representativeness.

Results

106 dentists completed the questionnaire. Demographic information of the groups is shown in Table 1. The health care providers TMDs patients are referred to are shown in Figure 1. Conditions in which dentists refer patients with TMDs to PTs is shown in Figure 2. The age of the participants ranged from 23 to 67 (mean 32±9.58). 68 participants (64.1%) were with a bachelor's degree, 18 participants (16.9%) had a master's degree, and 20 participants (18.8%) had a doctoral degree. 72 participants (67.3%) were general dentists and followed by other specialties (32.7%). The majority (42.1%) had 0–5 years of experience. 30.8% of participants had taken courses related to TMDs.

Table 1. Demographic information of the participants

Demographics	n	%
Age (years)		
23–29	42	39.6
30–39	25	23.5
40–49	32	30.1
50–59	6	5.6
60+	1	0.9
Years of practicing dentistry		
0–5	45	42.5
6–10	12	11.3
11–15	9	8.5
16–20	14	13.2
21–25	19	17.9
26–30	4	3.8
31–35	2	1.9
41–45	1	0.9
Specialities of the dentists		
General practicing dentist	72	67.9
Periodontologist	9	8.5
Prosthodontist	6	5.7
Orthodontist	4	3.8
Oral, dental, and maxillofacial surgeon	5	4.7
Other specialities	8	9.4
Education level		
Bachelor's degree	68	64.2
Master's degree	18	17
Doctor of philosophy	20	18.9

n: number.

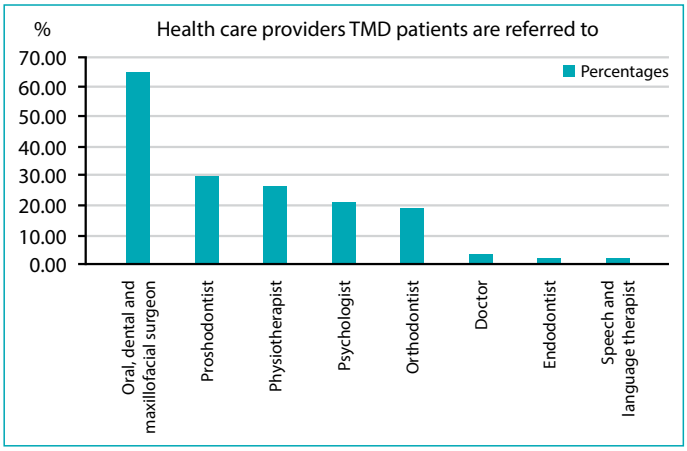

Figure 1. Healthcare providers temporomandibular disorder patients are referred to.

TMD: Temporomandibular disorders.

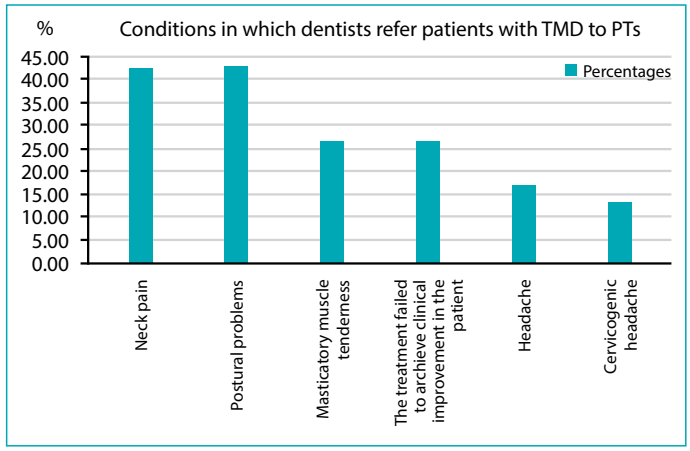

Figure 2. Conditions in which dentists refer patients with temporomandibular disorders to physiotherapists.

PTs: Physiotherapists.

21.7% of dentists reported that between 1% and 10% of their patients have TMDs symptoms. 21.6% of dentists reported that more than half of their patients have TMDs symptoms. Dentists reported diagnosing TMDs in their patients at a rate of 31.1% in the acute stage, 16% in the subacute stage, and 66% in the chronic stage.

Parafunction habits (55.7%) and TMJ disc displacement (25.5%) were the most common TMDs symptoms assessed. Occlusal alterations (16%), muscle tightness/tender points (14.2%), and headaches (10.4%) were the least seen TMDs symptoms. TMJ degeneration, TMJ hypermobility, and hypomobility were among the other TMDs symptoms handled. 3.6% of the dentists reported that all symptoms were assessed. Furthermore, it was found that dentists observed neck pain in 60.3%, postural problems in 31.1%, and cervicogenic headaches in 50.9% of their patients with TMDs during the assessment. 26.4% of dentists did not evaluate neck pain, 49% did not assess postural problems, and 38.6% did not evaluate cervicogenic headaches.

Jaw movements while opening/closing the mouth (92.5%), TMJ click sounds (92.5%), TMJ palpation (82.1%), signs of parafunctional habits (82.1%), dental occlusion assessment (78.3%), and palpation of chewing muscles (77.4%) were the most commonly used assessment methods for TMDs by dentists. They reported that palpation of neck muscles (0.9%), maximum mouth opening (0.9%), joint vibration sounds (0.9%), digital occlusion analysis (0.9%), and mouth open/closed MRI (0.9%) were used at low rates by dentists for the assessment of TMDs.

In the treatment of TMDs, 67% of dentists were found to prefer splint therapy and occlusal adjustment, 12.3% preferred botulinum toxin therapy, and 12.3% chose pharmacological treatment. 0.9% of the participants reported that they used dry needling and massage. 84.9% of the participants stated that they referred their patients to another health professional. It was found that 23.8% of dentists refer 0–5% of TMDs patients, while 21% refer 75–100% to a healthcare professional. It was observed that 65.1% of dentists referred TMDs patients to an oral and maxillofacial surgeon, 30.2% to a prosthodontist, 26.4% to a PT, and 20.8% to a psychologist. TMDs patients were predominantly referred to PT for neck pain and postural problems. Referrals were less common for masticatory muscle tenderness and persistent symptoms following treatment. Furthermore, dentists reported infrequent referrals for headaches, including cervicogenic headaches. The primary reason 70.5% of dentists never referred their patients to a PT was a lack of awareness regarding its benefits, while 19.2% believed the patient did not require physiotherapy.

Before participating in this survey, the majority of dentists were unaware that PT could play a role in the treatment of TMDs patients. However, 52.8% of dentists reported having prior knowledge that cervical spine pain could contribute to jaw pain. In addition, 55.7% of participants acknowledged being aware of scientific evidence suggesting that physiotherapy interventions, including oral exercises, manual therapy, and postural re-education exercises, can be effective in alleviating TMDs symptoms.

Most dentists indicated an increased likelihood of referring TMDs patients to a PT when deemed necessary. Moreover, 87.7% of participants expressed an interest in gaining further knowledge about the benefits of interdisciplinary collaboration with PT in the management of TMDs.

Discussion

To the best of the authors' knowledge, this study is among the first to evaluate dentists' awareness of the role of physical therapy in the management of TMDs in Türkiye and to explore the potential for interdisciplinary collaboration. In addition, the study aimed to raise awareness among dentists regarding the importance of physiotherapy in the treatment of TMDs and to highlight the potential benefits of collaborative practice between dentists and PT.

The questionnaire was completed by 106 dentists living in Türkiye. In the present questionnaire study, the age, education level, and specialization of dentists were consistent with previous studies.[9,15]

There is a well-established neuroanatomical and neurophysiological connection between the TMJ and the cervical spine, influencing both posture and the masticatory system.[10] Previous studies have demonstrated associations between TMDs and conditions, such as neck pain, cervicogenic headache, and postural dysfunction.[15–19] A comprehensive understanding of this interrelationship may enable both PTs and dentists to manage TMDs-related pathologies more effectively. However, findings from the present study revealed that 26.4% of dentists did not assess neck pain in patients with TMDs, 49% did not evaluate postural abnormalities, and 38.6% failed to consider cervicogenic headaches during clinical examinations. These results highlight the need for dentists to incorporate the evaluation of these associated symptoms into their clinical practice and to refer patients to PT when necessary. Conversely, it is also important for PT to be capable of identifying dental issues linked to TMDs – such as occlusal abnormalities – during their assessments and to refer patients to dentists when appropriate. This underscores the importance of bidirectional interdisciplinary collaboration to ensure comprehensive and effective management of TMDs.[20]

Dentists and PT address different aspects of patient well-being, working collaboratively to provide comprehensive care that improves TMDs symptoms, oral health, and physical function.[21] Studies have demonstrated that a multidisciplinary approach can enhance treatment outcomes.[22,23] This interprofessional collaboration between dentists and PT has been shown to improve patients' oral health, alleviate TMDs symptoms, enhance functional recovery, and elevate overall quality of life.[23,24] Present evidence suggests that physiotherapy should be attempted, where appropriate, before considering surgical options in TMDs management.[1] The results indicated that although 42.5% of dentists were aware of the role of PT in the treatment of TMDs patients before this study, the majority demonstrated a lack of awareness in this regard. Moreover, similar to Shaheen's study, the referral rate of TMDs patients to PT was found to be low.[9] In our study, less than half of dentists were unaware of the evidence that physiotherapy can improve TMDs symptoms with oral exercises, manual therapy, and postural corrective training. Recent studies have shown that most dentists are unaware of the benefits of collaborating with PT, in accordance with our results.[12,25,26] On the other hand, in both our study and previous researches, dentists have expressed a strong desire to gain further knowledge about the benefits of physiotherapy after participating in this questionnaire.[16,27] The results demonstrated that dentists require further education on the multidisciplinary approach to treating TMDs, particularly regarding the role of PT.

In line with previous literature, the present study found that the most frequently employed treatment modalities among participating dentists were pharmacotherapy, occlusal splints, and occlusal adjustments.[1,7] However, overlooking the potential contribution of physiotherapy in the management of TMDs may compromise the overall treatment outcomes and negatively impact patients' oral health. To address this gap, it is recommended that the role of physiotherapy and PTs in TMDs treatment be integrated into undergraduate and post-graduate dental education curricula, thereby promoting greater awareness of the importance of multidisciplinary care.

The first limitation of this study is the relatively small sample size, which may limit the generalizability of the findings. Future research should aim to include larger and more diverse samples, incorporating both national and international dental practitioners. In addition, alternative strategies should be considered to increase participation rates and enhance dentists' awareness regarding interdisciplinary approaches to TMDs management. A second limitation is the one-time administration of the survey. Longitudinal follow-up assessments are recommended to evaluate changes over time in dentists' understanding of the role of PT in the treatment of TMDs.

Conclusion

This study demonstrated that dentists have limited awareness regarding the role of PT in the management of TMDs. The findings highlight significant gaps in both knowledge and awareness related to TMDs treatment. It is anticipated that this study will contribute to increasing awareness of the critical role of physiotherapy within the multidisciplinary management of TMDs. Future research should investigate whether collaboration between dentists and PT has improved over time and assess its therapeutic impact using larger sample sizes and longitudinal follow-up assessments.

Disclosures

Ethics Committee Approval: The study was approved by the Istanbul Medipol University Non-interventional Clinical Research Ethics Committee (no: E-10840098-772.02-3061, date: 26/05/2022).

Informed Consent: Informed consent was obtained from all participants.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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Author Contributions: Concept – B.N.Y.; Design – B.N.Y., S.Ö.G.; Supervision – B.N.Y., S.Ö.G.; Resource – B.N.Y., S.Ö.G.; Materials – B.N.Y., S.Ö.G.; Data collection and/or processing – B.N.Y., S.Ö.G.; Data analysis and/or interpretation – B.N.Y., S.Ö.G.; Literature search – B.N.Y., S.Ö.G.; Writing – B.N.Y.; Critical review – B.N.Y., S.Ö.G.

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Appendix 1

Dear Participant,

This survey has been prepared to provide data for a scientific research study being conducted by Physiotherapist Beyza Nur Yumak within the scope of the Master's Program in Physiotherapy and Rehabilitation at Medipol University Health Sciences Institute. The aim of the study is to investigate the awareness levels of dentists regarding the role of physiotherapy in the treatment of temporomandibular joint dysfunction. Your responses will be used solely for scientific research purposes, and your personal information and answers will not be shared with anyone. The survey consists of 22 questions. It will take approximately 10 minutes to complete the survey questions. At the end of the survey, there is an informative diagram about the treatment of temporomandibular dysfunction symptoms. Thank you in advance for your valuable contributions and assistance.

1. Do you agree to participate in this study? (Mark only one option)
   ☐ Yes ☐ No
2. How old are you? ……years
3. Which city do you live in? .....
4. What is the highest level of education you have completed in your field? (Mark only one option)
   ☐ Bachelor's Degree ☐ Doctorate ☐ Specialization
5. Which field do you work in? (Mark only one option)
   ☐ Dentist ☐ Pedodontics ☐ Periodontology ☐ Oral and Maxillofacial Surgery ☐ Orthodontics ☐ Prosthodontics ☐ Other
6. How many years have you been practicing dentistry? (Mark only one option)
   ☐ 0–5 ☐ 6–10 ☐ 11–15 ☐ 16–20 ☐ 21–25 ☐ 26–30 ☐ 31–35 ☐ 36–40 ☐ 41–45
7. Have you previously attended any training/courses on temporomandibular dysfunction? (Mark only one option)
   ☐ Yes ☐ No
8. What percentage of your patients have symptoms of temporomandibular dysfunction? (pain in the jaw joint, sounds (crepitation or clicking), and irregular jaw movements) (Mark only one option)
   ☐ 0% ☐ 1–10% ☐ 11–20% ☐ 21–30% ☐ 31–40% ☐ 41–50% ☐ 51–60% ☐ 61–70% ☐ 71–80% ☐ 81–90% ☐ 91–100%
9. What type of temporomandibular dysfunction have you diagnosed and/or treated in your patients? Mark only one option.
   ☐ TMJ (temporomandibular joint) disc displacement ☐ TMJ degeneration ☐ TMJ hypermobility ☐ TMJ hypomobility
   ☐ Muscle tension/trigger points ☐ Parafunctional habits (bruxism, etc.) ☐ Headaches ☐ Occlusal changes
   ☐ I have never diagnosed or treated TMD before ☐ Other .....
10. Which of the following do you apply when evaluating patients with temporomandibular dysfunction? (You can select one or more options). Mark all that apply.
    ☐ TMJ palpation ☐ Masticatory muscle palpation ☐ Jaw movements during opening/closing ☐ TMJ sounds
    ☐ Signs of parafunctional habits ☐ Dental occlusion ☐ None ☐ Other: .....
11. At what stage of the disease did you diagnose temporomandibular disorder in your patients? Mark only one option.
    ☐ Acute ☐ Subacute ☐ Chronic
12. During the evaluation, did your patients with temporomandibular dysfunction have any of the following symptoms? (Mark only one option in each row)

	Yes	No	Not evaluated
Neck pain	☐	☐	☐
Posture disorder	☐	☐	☐
Cervicogenic headache	☐	☐	☐

13. Which method do you prefer most when treating your patients with temporomandibular dysfunction? (Mark only one option)
    ☐ Splint therapy and occlusal adjustment ☐ Pharmacological treatment ☐ Botox ☐ Intra-articular injection ☐ Other: .....
14. Do you refer your patients with temporomandibular dysfunction to another healthcare professional? (Mark only one option)
    ☐ Yes ☐ No
15. What percentage of your patients with temporomandibular disorder do you refer to another healthcare professional? Mark only one option.
    ☐ 0–5% ☐ 5–25% ☐ 25–50% ☐ 50–75% ☐ 75–100%
16. If you refer your patients with temporomandibular dysfunction to another healthcare professional, which of the following do you prefer to refer them to? (Mark all that apply)
    ☐ Orthodontist ☐ Pedodontist ☐ Oral and maxillofacial surgeon ☐ Endodontist ☐ Physiotherapist ☐ Psychologist
    ☐ Speech and language therapist ☐ Doctor ☐ Prosthodontist ☐ Other: .....

Appendix 1. Cont.

17. If you refer your patient with temporomandibular dysfunction to a physiotherapist, which of the following reasons do you refer them for? (Mark all that apply)

    ☐ Neck pain ☐ Postural changes (forward head posture, etc.) ☐ Masticatory muscle tenderness ☐ Headache
    ☐ Cervicogenic headache ☐ Because the patient did not improve after treatment

18. If you have never referred your patient with temporomandibular dysfunction to a physiotherapist, what is the reason? (Mark only one option)

    ☐ The patient does not need physiotherapy ☐ Not knowing the benefits of physiotherapy ☐ Other:.....

19. Before this survey, were you aware that a physiotherapist could treat TMD patients? (e.g., retraining jaw movements and restoring masticatory muscle function). (Mark only one option)

    ☐ Yes ☐ No

20. Before this survey, did you know that cervical spine pain could be the cause of jaw pain? (Mark only one option)

    ☐ Yes ☐ No

21. Were you aware that scientific research suggests that physical therapy can improve TMD symptoms with oral exercises, manual therapy, and postural corrective training? (Mark only one option)

    ☐ Yes ☐ No

22. After participating in the survey, are you more likely to refer a patient with temporomandibular dysfunction to a physiotherapist when necessary? (Mark only one option)

    ☐ Yes ☐ Maybe ☐ No

23. Would you like to learn more about the benefits of collaborating with physiotherapists to treat temporomandibular dysfunction patients? (Mark only one option)

    ☐ Yes ☐ No