Title: Temporomandibular Disorder: A practical guide for dental practitioners in diagnosis and management

Running title: Temporomandibular disorders: diagnosis and management

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Abstract:

Temporomandibular disorder is a broad term encompassing pain and/or dysfunction of the masticatory musculature and the temporomandibular joints. Pain arising from a temporomandibular disorder is a common reason for seeking dental care. It is essential that dental practitioners are able to accurately diagnose and manage this condition. Identifying people at highest risk of developing a temporomandibular disorder and knowing which procedures are more likely to initiate or exacerbate a temporomandibular disorder, are important to reduce the likelihood of its acute and chronic presentation. The aim of this paper is to provide the dental practitioner with a clinical guideline for reference including practical tools to examine, diagnose, and manage patients with temporomandibular disorder . In addition the risk profile of patients and procedures is explored to help minimise the occurrence of temporomandibular disorders and mitigate its symptoms. The scope of the dental practitioner in the management of acute and chronic temporomandibular disorders is presented, with guidance about when referral to a specialist is indicated.

Keywords: temporomandibular disorders, clinical guideline, diagnosis, management

Introduction:

Temporomandibular disorder (TMD) is the most common reason for seeking dental care other than dental pain. Dental practitioners therefore, need to know the risk profile for those patients most vulnerable to TMD, to accurately diagnose TMD and know the most appropriate management pathways for optimal outcomes. The accepted diagnostic

classifications for TMD fail to consider the unique risks associated with each individual and/or procedure. This makes the translation to an appropriate management strategy for TMD complicated. The aim of this paper is to provide the dental practitioner with a clinical guideline for reference including practical tools to examine, diagnose, and manage patients with TMD. A flowchart outlining a clinical pathway provides some practical guidance on management and indicates where a specialist referral is recommended for the more complex TMD patient.

Definition of TMD:

Temporomandibular disorder (TMD) is a broad term encompassing pain and/or dysfunction of the masticatory musculature and the temporomandibular joints [1]. The most important feature is pain, followed by restricted or limited jaw movement, and joint noises during jaw movement [1].

Although TMD is not life-threatening, it can have a profound impact on a person's quality of life as the symptoms, when chronic, are extremely difficult to manage and often requires multidisciplinary intervention.

What makes the temporomandibular joint so unique?

The **temporomandibular joint** (TMJ) is formed by the articulation of the mandible and the temporal bone of the cranium. The condylar process along with the condylar neck form the mandibular component and the squamous part of the temporal bone (glenoid fossa and the articular tubercle) form the cranial part of TMJ [2].

The articulating surfaces are covered by fibrocartilage and separated from each other by an articulating disc (meniscus) [2].

The two joint cavities formed by the articulating disc are lined by synovial membrane. This articulating surface along with the disc and joint cavities are surrounded by a joint capsule [3].

The joint functions with the aid of muscles and ligaments attached to the joint capsule, the neck of the condyle and the body of the mandible [2]. The nerve supply to the TMJ is from the Mandibular branch (V3) of the Trigeminal nerve. Sensory innervation to the joint is from the Auriculotemporal and Masseteric branches while motor nerve supply to the muscles of mastication is via the V3 [3].

The blood supply to TMJ is from branches of the External Carotid artery mainly the Superficial Temporal Artery and venous drainage via the venous plexus surrounding the capsule [2].

What makes the TMJ unique?

1. It functions as a unit of two joints on each side of the skull connected by a single bone, the mandible. Consequently, the two TMJ's cannot function independently of each other. No other two joints in the body are connected to each other in such a way to function in unison.
2. The movement of the TMJ is distinctive, often described as a ginglymo-arthroidal joint meaning it can perform both hinge and translation movements.
3. Movement of the TMJ is limited by the anatomy of the musculoskeletal framework, and the occlusal relationship between the maxillary and mandibular dentition.
4. The disc that separates the TMJ on each side is unique [4]. Unlike discs in other joints that are made up of fibrous tissue, the articulating disc of TMJ is made up of hyaline cartilage inside and lined by fibrous cartilage outside making it extra tough and resilient [5].
5. The disc separates the joint into two synovial joint cavities on each side. Each cavity is individually lined with synovial membrane and the disc helps in moving each TMJ as two separate joints so practically there are four joints operating as a single unit [5].

Who is at risk of developing a TMD?

It has long been accepted that TMD are a heterogenous group of conditions that have a multifactorial aetiology [6]. A combination of predisposing, initiating and perpetuating factors are at play. Occasionally, a visit to the dentist can be an initiating factor. Some patients will argue "cause and effect", for example state that "the dentist did this to me" or "the dentist dislocated my jaw". For the purposes of this article, predisposing factors are those that make a person more susceptible to developing a TMD, whereas initiating factors are those which might cause a TMD to develop, for example, trauma or a long dental visit and perpetuating factors are those that will sustain a TMD once established.

In 1977, Engel proposed the "biopsychosocial model" in terms of addressing chronic pain in medicine [7] (Figure 1). This approach is a comprehensive model of illness and disability which identifies the interactions between the disease, the person, and the circumstances in which it has arisen [7]. Dworkin and LeResche (1992) applied this to the study of TMD in order to capture the multi-dimensional nature of TMD [8]. They developed a dual-axis, evidence-based approach for clinicians to use when assessing patients. Axis I assigned the clinical TMD diagnosis while Axis II addressed the psychological distress and psychosocial dysfunction. Axis I is the physical assessment employing a taxonomic classification for TMD with reliable diagnostic criteria that can be clearly communicated between clinicians and researchers. The Axis II protocol employs instruments (check lists, scales, and questionnaires) to determine levels of pain severity, distribution, disability, depression, anxiety and distress. This diagnostic criterion was revised in 2014 and is still in use today [9]. Interestingly, the prognosis for patients with TMD is influenced more so by Axis II factors than Axis I factors [1, 10].

Genetics, emotional aptitude and environment all play a role in an individual's response to a similar clinical condition. Treatment is less likely to be successful if only one dimension is taken into account. In other words, individuals with a seemingly similar set of symptoms and observable dysfunction can vary considerably in their degree of impairment, limitations upon daily activities and their ability to cope.

The OPPERA Study (Orofacial Pain: Prospective Evaluation and Risk Assessment) which began in 2006, set out to identify risk factors particular to TMD. Approximately ten years later, it began providing evidence to support certain contributors [10-14]. Certain groups of individuals more prone to developing TMD and potential risk factors have been identified. This includes people reporting significant psychological states for example, perceived stress or previous traumatic life events, and those with an increased reporting of somatic symptoms and previous jaw injury [10].

A starting point is to identify those patients who exhibit signs and/or symptoms of TMD prior to commencing any treatment (Table 1).

A simple method to screen for TMD is using the six item TMD Pain Screener Questionnaire, which is a part of the Diagnostic Criteria for Temporomandibular Disorder (DC-TMD). This simple questionnaire has shown to be of utility in a general dental and medical practice [15]

Even low-risk patients with no predisposing factors can develop a TMD. As with many conditions, early diagnosis and management is the key to good outcomes. Factors to be considered include biological, psychological and social factors (Figure 1).

Risk factors for developing TMD:

Macro-trauma refers to events resulting in head trauma including accidents, falls, sports injuries, forceful intubation, physical abuse, removal of third molars and other long dental procedures. Micro-trauma includes awake and sleep bruxism and other parafunctional habits including chewing gum, nail biting, lip and cheek biting. Trauma can be both a predisposing and initiating factor in the development of TMD.

Some studies have suggested that early intervention may be successful in preventing an acute TMD developing into a chronic TMD. However, there has been no evaluation of the impact of monitoring a patient post-injury to prevent first-onset TMD [13].

Chronic pain has long been associated with poor overall health. There is evidence to link TMD with other chronic pain conditions/disorders. Examples of comorbid pain conditions include: fibromyalgia, chronic widespread pain, irritable bowel syndrome, lower back pain, migraine, chronic regional pain syndrome, chronic fatigue syndrome, tension type headache, chronic pelvic pain, post-surgical and other neuropathic pain [16]. These are diverse conditions that span autonomic, atopic and sensory disorders., They also have three common features; most are idiopathic; the examination findings and the clinical presentations (symptoms or severity) are disproportionate; most conditions share demographic, social, behavioural and psychological features. Central sensitivity syndrome (CSS) is the term that represents these overlapping and similar group of disorders without structural pathology and are bound by the common mechanism of central sensitisation, that involves hyper-excitement of the central neurons through various synaptic and neurotransmitter / neurochemical activities [17, 18]

Comorbid diseases which may specifically affect the TMJ include: rheumatoid arthritis, juvenile idiopathic arthritis, psoriatic arthritis, systemic lupus erythematosus, osteoarthritis and neoplasia [19].

While the incidence rate of TMD is only slightly greater in women than men, up to four times as many women seek treatment in addition to having a greater overall pain sensitivity. TMD is also more likely to persist in women [14]. It is interesting to note that adverse experiences in

childhood may be associated with greater risk for the development or maintenance of chronic pain in youth, particularly chronic headaches and musculoskeletal pain [20, 21].

Patients with TMD and chronic pain should be assessed for psychological factors such as depression or anxiety, catastrophising, distress, fear avoidance beliefs and post-traumatic stress disorder (PTSD). These can alter pain perception and also alter the treatment outcome in patients with TMD [9]. In addition, social and economic determinants of health are at play which can influence a person's susceptibility to underlying conditions altering their capacity to cope and manage pain [22]. Chronic TMD can be challenging to manage and consequently such patients should be referred to a specialist dental practitioner for a detailed assessment and management, with pain education forming an important component of the consultation [23].

Bruxism may be a risk factor for some negative oral health consequences such as masticatory muscle pain, temporomandibular joint pain and extreme tooth wear [24].

Bruxism and TMD can exist independently. Signs of bruxism (parafunction) include cracked teeth, multiple failed restorations, chipping of incisal edges, wear facets, mobile teeth, masseteric hypertrophy, buccal mucosal ridging and scalloping of the lateral border of the tongue [25].

High risk dental procedures:

Certain dental procedures may increase the likelihood of either initiating or perpetuating a TMD. Dental appointments that are predicted to be more than 30 minutes long, procedures on posterior teeth where rubber dam is used, and procedures where force is used, such as dental extractions, may initiate a TMD [26, 27, 28] . Patient reported fatigue or jaw and muscle pain, should also be taken into account by the dental practitioner.

The DC-TMD pain screener can be used to identify patients with symptoms of TMD and this would be helpful to assess the risk of a flare-up of an underlying TMD following a dental procedure. The DC-TMD assessment instruments are available freely from the website: www.rdc-tmdinternational.org

This questionnaire consists of six questions with the responses being binary facilitating its' implementation as part of a comprehensive dental examination for all patients. This

questionnaire has a 99% sensitivity and 98% specificity. Sensitivity is defined as the proportion of patients with a disease/disorder who test positive and specificity is defined as the proportion of patients without the disease/disorder who test negative. A negative response to this questionnaire may be possible in patients with an underlying predisposition for TMD and even a low-risk patient can develop TMD. The authors recommend the following simple steps prior to a high risk dental procedure [26, 27].

1.Administer the DC-TMD Pain Screener and obtain a detailed pain history (see suggested questions in the history taking and examination section)

2.Perform a structured clinical examination to assess the signs of TMD

3.Determine the TMD diagnosis (Table 2)

4.Refer to the flowchart (Figure 3) for guidance on care pathway

5. Initiate a referral for specialist care if TMD symptoms are persistent

DC-TMD PAIN SCREENER: pain disorder screening instrument as developed by Gonzalez et al [15]

In the last 30 days, on average, how long did any pain in your jaw or temple area on either side last? A) no pain B) from very brief to more than a week but it stops C) continuous

In the last 30 days, have you had pain or stiffness in your jaw on waking? A) no B) yes

In the last 30 days, did the following activities change any pain (make it better or worse) in your jaw or temple on either side?

A) Chewing hard or tough food: a) no b) yes
B) Opening your mouth or moving your jaw forward or to the side: a) no b) yes
C) Jaw habits such as holding teeth together, clenching, grinding or chewing gum: a) no b) yes
D) Other jaw activities such as talking, kissing or yawning: a) no b) yes

Scoring the DC-TMD Pain Screener: The first item has scores of 0-2 (a=0, b=1, c=2), while the remaining items are scored simply as a=0, b=1. A sum is computed and value exceeding the cut off score of 3 indicates that TMD may be present.

History taking and examination:

Taking a comprehensive pain history is both critical and essential in forming a diagnosis of TMD and can provide most of the necessary information to arrive at a diagnosis [29]. The treating clinician needs a combination of an open and understanding attitude, a congenial environment, and adequate time, to build rapport with the patient. This facilitates a more accurate diagnosis of the existing condition and eventually leads to better management and favourable outcomes in the long-term.

The following questions are a guide for clinicians to help gain an understanding of the pain history and to formulate a diagnosis. Some, or all of these questions may be suitable to ask depending on the individual's responses, and their comprehension and willingness to divulge the information.

1. Reason for presenting
2. Were there any triggers when the pain first started? (What do you think triggered the pain?)
3. History of trauma? (to elicit Macro-trauma (e.g. physical injury) versus micro-trauma (e.g. parafunction such as gum chewing)
4. Describe the pain in your own words
5. When did the pain first start?
6. Is the pain there all the time? Is the pain episodic or continuous?
7. If there are episodes, how often do the episodes last?
8. If there are episodes, how frequently do they occur?
9. Is there a pattern to when the pain occurs? (i.e. every morning, during the day)
10. Can you rate the pain on a scale out of 10? How is the pain NOW, when it's very bad, and when it's manageable?
11. What causes the pain to start? What makes the pain worse? What makes the pain better?
12. Can you point to the area of pain?
13. Do you have pain elsewhere in your body?
14. Are you aware of tooth grinding or clenching? Is this during the day or night or both?

15. Do you have any joint noises?
16. Do you have an earache or ear noises?
17. Do you have other symptoms (for example nausea or vomiting, blocked nose or stuffiness?)
18. Do you have headaches? If so, duration, timing, location and frequency of headaches.
19. Do you avoid any foods because of facial pain?
20. Have you lost weight because of the pain?
21. Does this pain prevent you from doing any normal activities?
22. Do you have trouble sleeping?
23. Do you have airway problems or sleep apnoea?
24. Previous treatment for facial pain?
25. Have you been experiencing significant stress or anxiety recently?
26. Have you experienced significant stressful life events or changes in your family situation, routine or employment?

Asking these questions will help gain a deeper understanding of the history of the pain, to guide management, for example, recent significant stressful life events might precede an acute TMD episode that was first initiated following trauma several years earlier. Gaining an understanding of which Axis I and II factors might be at play, will enable the dental practitioner to proceed with either management or referral to a specialist.

Clinical examination

Clinical examination of the patient needs to be structured and methodical [29]. Critical components of clinical examination include:

1. **Observation of the patient**
   -Assessment of facial symmetry
   -muscular hypertrophy, i.e. masseteric hypertrophy
   -evidence of nail biting

-evidence of other habits, such as jaw posturing, movements

2. **Jaw movements**

-mouth opening, limitations, trismus

-deviations of the mandible with opening or closing

3. **TMJ**

-palpate the TMJ in both the open and closed position

-feel for irregularities in joint movement

-listen for joint sounds

4. **Muscles of mastication (Figure 2)**

-palpation of the Masseter and Temporalis muscles (see Clinical examination photographs). The DC-TMD protocol recommends using one finger to palpate these muscles and a pressure of 1kg to be used for 2 seconds on each zone (origin, body and insertion of each muscle) [30].

5. **Examination of dentition**

-evidence of attrition, wear facets, cracks, craze lines, fractured teeth or restorations

-periodontal mobility, fremitus

-reduced occlusal vertical dimension

-loss of posterior molar support

-assessment of oral health and hygiene

6. **Radiographic assessment**: OPG or other images might be indicated

All relevant findings must be correctly documented in the patients' clinical record.

Facial asymmetry could be an indication of altered condylar morphology as a result of congenital abnormality, pathological process or degenerative disease. Other observations such as masseteric hypertrophy, may be suggestive of parafunction. Limitation of mouth opening or deviation of the jaw during function may indicate an underlying disorder in the TMJ or the associated musculature and may warrant further investigation. Palpation of the TMJ and muscles of mastication may elicit tenderness, supportive of the biological component of a TMD (Axis I). Examination of the dentition is important to rule out an odontogenic aetiology and may provide further evidence that supports a diagnosis of bruxism.

Once the history and examination are complete, radiographic or other investigations might be indicated to support your clinical findings. A summary of the clinical signs and symptoms of TMD are summarised in Table 1.

Arriving at a diagnosis of TMD:

Amalgamation of the presenting complaint, clinical history and findings from the examination will help the clinician arrive at a diagnosis. The risk of developing TMD symptoms or exacerbation of an underlying TMD is based upon affirmative response to the DC-TMD Pain Screener, as well as positive findings in the clinical examination on the background of psychosocial factors that may already be present. As TMD aetiology is multifactorial, it is essential that clinicians should also consider employing the suggested questions while taking a detailed pain history and amalgamate these with the clinical findings and psychosocial factors to determine the risk.

A brief summary of diagnoses is presented in Table 2. This has been adapted from the summary by Schiffman and Orbach, 2016 [31]. Those patients either presenting with an existing TMD or determined to be at risk of developing a TMD, should be treated as 'high risk' and managed with great care. Any dental procedure considered 'high risk' has the potential to trigger or exacerbate a TMD.

Prior to commencing dental treatment it is critical that informed consent be obtained from the patient regarding the possibility of developing a TMD [32].

Management of TMD

According to the American Association of Dental Research, it is strongly recommended that unless there are specific and justifiable indications to the contrary, treatment of TMD should be based on the use of conservative, reversible and evidence-based treatment modalities [33].

Once a diagnosis of TMD has been established, the dental practitioner needs to recognise whether management falls within their scope or a referral to a specialist is indicated. Identification of the "high risk" patients is paramount, especially in the dental setting, as subjecting a "high risk" patient to a "high risk" procedure such as an extended dental visit, could precipitate or aggravate an underlying or undiagnosed TMD. The recommended pathways for management of patients according to the patient risk and procedure risk are summarised in Figure 3. It is essential that prior to commencing any dental procedure, the predisposing risks for TMD are discussed with the patient and documented in the clinical

record. This documentation is critical when a high-risk procedure is planned for a high-risk patient, for example a long dental procedure under rubber dam isolation in a patient with a known pre-existing TMD. There may be exceptional circumstances where an emergency dental procedure is warranted in a person with a known TMD or high risk for TMD, and there is insufficient time for a specialist referral. In such cases, steps to minimise exacerbating the TMD must be taken as outlined in Figure 3.

Reassurance from the treating clinician that the TMD may resolve or improve over time plays an important role in patient management. In simple language a discussion about jaw rest, avoiding initiating and perpetuating behaviour, such as clenching and excessive movement, limiting wide mouth opening, and some gentle muscle massage can offer significant relief of symptoms. Application of heat to the musculature may be therapeutic and the use of anti-inflammatory medications if tolerated, might be indicated for some patients. Detailed guidance about the therapeutic management of acute TMD pain can be found in the Therapeutic Guidelines, 2019 [34].

The use of an oral appliance may be warranted in some situations where nocturnal bruxing is implicated. Oral appliances can protect teeth from the effects of tooth grinding but their role in reducing the habit has not been conclusive [35]. They have been shown however to be an efficacious treatment modality for some TMD. Previously, the role of Oral appliances was mainly considered to be mechanistic and related to occlusal disharmony and skeletal disparity However there has been a paradigm shift in the understanding of their mode of action.

It is widely accepted now that psychosocial factors play an important role in the management of the TMD patient, along with other factors such as the doctor-patient relationship and placebo effect [35, 36]. Most individuals will indicate on their medical history questionnaire if they have a psychiatric diagnosis or are receiving counselling. The patients' list of medications may include anti-depressants and/or anti-psychotics which can prompt further discussion about their use. If, as general dental practitioner, you have concerns about a patients' mental health status, then it would be appropriate to liaise with their general medical practitioner with the patients' permission. Otherwise, referral to a specialist is indicated. It is vital that any “therapy” offered should be conservative and reversible.

Oral appliances if used should be full coverage and patients should be reviewed at regular intervals.

After a thorough assessment patients should be made aware of events that might trigger another episode of TMD for example, long dental appointments, intubation for general anaesthesia, micro and macro trauma. Dental appointments should be kept short, mouth opening restricted and the use of a bite-block during dental procedures might be warranted. During dental appointments, frequent rest periods are indicated.

For complex patients or those with chronic TMD, management can be more complicated and a referral to a specialist should be considered. The role of general dentist is essential in the diagnosis and ongoing support for these patients, however, the management of TMD for this cohort, is likely beyond the scope of general dentistry.

Specialist management may involve: further reassurance, imaging (where indicated); pain education; oral appliance therapy; physiotherapy; pharmacotherapy; meditation/relaxation strategies; education about sleep hygiene; psychological/cognitive behavioural therapy; botulinum injections; hypnotherapy; biofeedback; and in some cases, TMJ surgery. While there is some evidence for the efficacy of botulinum toxin in the treatment of TMD, it's use is "off-label" and dentists must undertake additional training in order to administrate it.

Management of TMD should always include a detailed discussion with the patient and be augmented with a home care program providing the patient some ownership of the treatment. Patients who do not have any predisposing factors or a diagnosed TMD who are undergoing a high-risk dental procedure should be informed of the risk of developing a TMD. In such cases appropriate clinical review is recommended and should a TMD develop then referral to a specialist might be warranted.

Detailed discussion of specialist management approaches for the TMD patient is beyond the scope for this paper.

Conclusion

TMD is a complex condition and a common reason for emergency presentation in the dental clinic. Dental practitioners must be competent in recognising risk factors, to enable a correct and early diagnosis of TMD, and ensure appropriate management is undertaken to prevent the acute TMD from becoming a chronic condition. Understanding which procedures are likely to increase the risk of initiating a TMD is most critical for those people who are already predisposed to this condition. We now know that those who are at a greater risk of

developing a TMD are the same individuals in whom the condition will present with greater severity and persist as a chronic condition. Once TMD has been established as a chronic condition, resolution and reversal is more unlikely. Understanding patient suitability for management in the general dental practice versus those that require more specialised care is critical in treatment of TMD.

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Figure/Table legend

Table 1: TMD: signs and symptoms

Table 2: TMD: diagnosis and subtype

Figure 1: The "biopsychosocial" theory of pain/TMD and the biological, psychological and social risk factors for TMD

Figure 2: Clinical examination of the muscles of mastication

Figure 3: Flow chart outlining management of high and low risk TMD patients according to the procedure risk

Table 1: TMD Signs and Symptoms

Common symptoms	Less common symptoms	Common signs
Facial pain	Reduced hearing or Feeling of blocked ears	Temporomandibular joint sounds
Restricted jaw movement	Tooth ache/ sensitivity/Tooth mobility	Restricted opening or jaw deviation upon opening
Headache	Sleep disturbance	masseteric hypertrophy
Pre-auricular pain	Paresthesia / swelling of face	Tenderness muscle of mastication
Difficulty eating	Tinnitus	Tenderness TMJ
Bruxing/clenching	Occlusal disturbance	tenderness to percussion of teeth
Ear ache	Pain with swallowing	Bruxing/clenching
Joint sounds	Sharp pain in ear	
Neck/shoulder pain	Retro-orbital pain	

Table 2: TMD Diagnosis and subtype

	myalgia	**arthralgia**	**Intra-articular joint disorder**	**Degenerative joint disorder**
Information from patient history	Pain in the masticatory musculature, modified jaw movement, function or parafunction	Pain in the masticatory structure, modified by jaw movement, function or parafunction	TMJ noise(s) present **or** TMJ noises present **and** jaw locks with limited opening	TMJ noises present
Clinical examination findings	Reported pain on palpation of the muscles of mastication, or pain reported with maximum mouth opening	Patient reported pain on palpation of TMJ **or** patient reported pain upon maximum unassisted or assisted opening, right, left, lateral or protrusive movements	Clicking, popping, or snapping noise present with **either** opening and closing **or** opening and closing **and** lateral or protrusive movements	Crepitus (crackling sounds) present in TMJ during maximum active opening, passive opening, right lateral, left lateral, or protrusive movements

Adapted from Schiffman, E. and R. Ohrbach (2016). "Executive summary of the Diagnostic Criteria for Temporomandibular Disorders for clinical and research applications." The Journal Of The American Dental Association **147**(6): 438-445.

Figure 1

Bio-psycho-social model of pain and the biological, psychological and social risk factors contributing to TMD

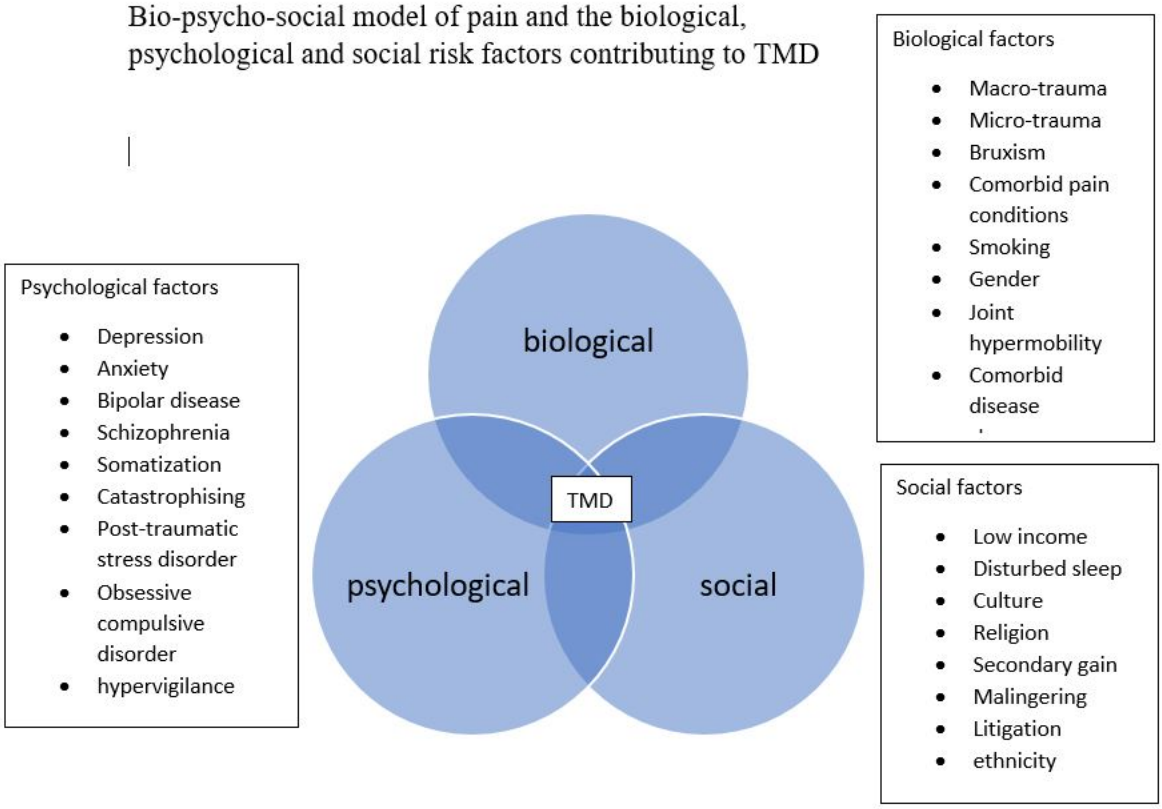

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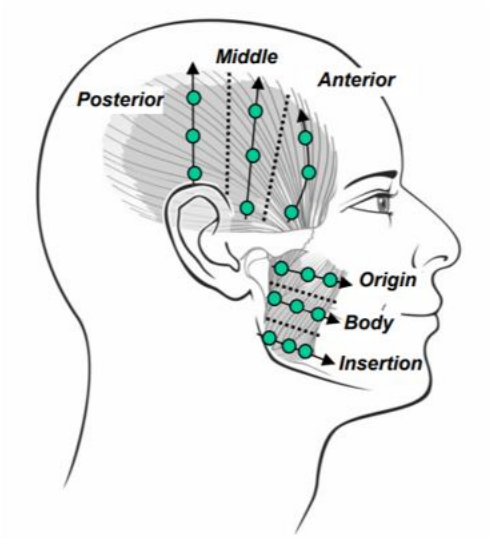
Figure 2 Clinical examination



To examine the temporalis and masseter it is recommended that three areas (as indicated in this diagram) within each muscle zone is palpated using 1kg pressure with a single finger as per the examiner protocol described in the Diagnostic Criteria for Temporomandibular Disorders (DC/TMD) Clinical Examination Protocol available from

http://www.rdc-tmdinternational.org/

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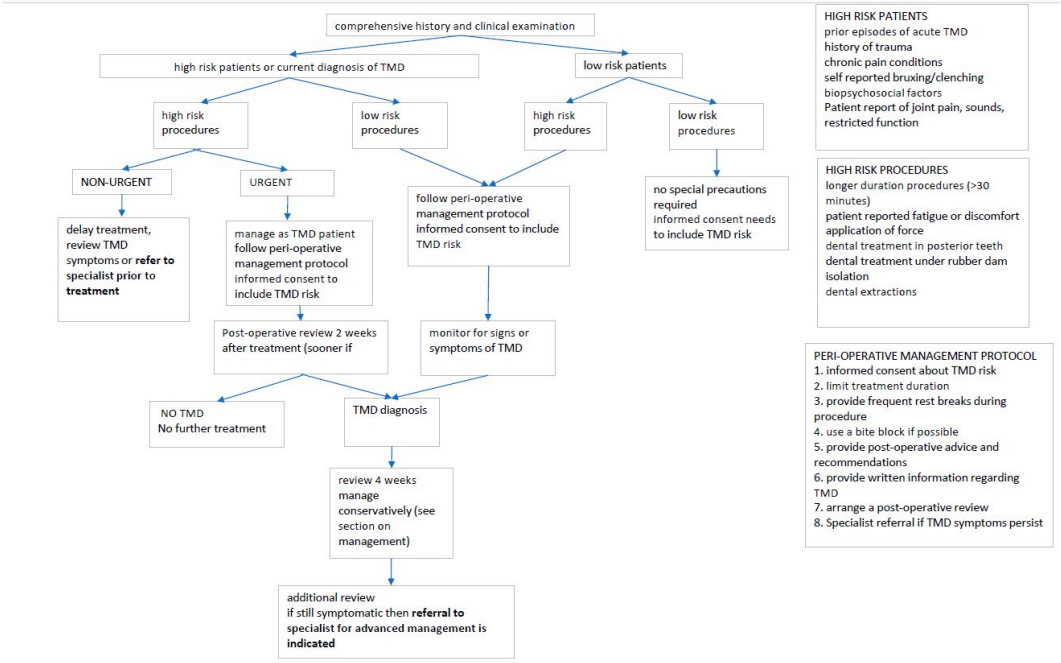

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