

Statement by Johann Müller, Prof. Dr med. Dr med. dent., Munich

# CMD: Does occlusion really no longer play a role internationally?

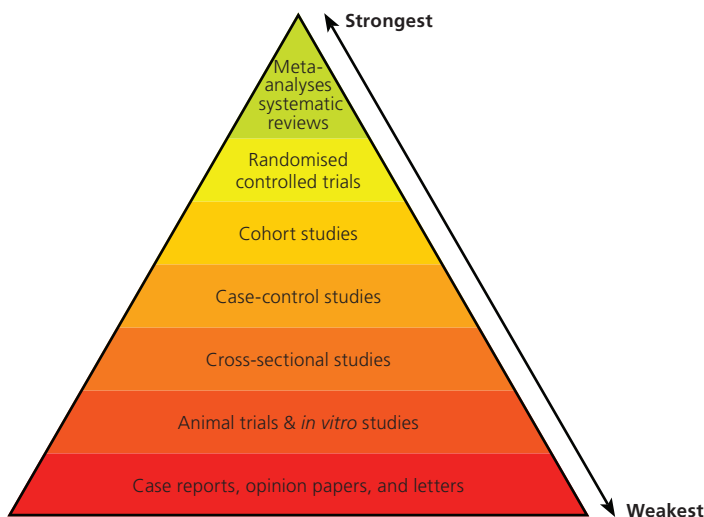
At the 2022 Bavarian Dentists' Congress, which was organised in cooperation with the German Society of Craniomandibular Function and Disorders in the DGZMK (DGFDT), DGFDT Vice President Dr Bruno Imhoff (Cologne), said that "internationally, occlusion has long ceased to play a role in CMD".

When questioned by the author, Dr Imhoff clarified that this statement referred to the aetiology of functional disorders in the masticatory organ and thus has serious implications for the principles of dental therapy. This is reflected in the scientific statement of the DGFDT on "Therapy of craniomandibular dysfunctions (CMD)", which Dr Imhoff presented at the conference.

This is particularly irritating because, in contrast to this statement from December 2022, the S2k guideline on jaw relation recordings, also published by the DGFDT in July 2022, cites dozens of literature references that prove a causal relationship between occlusion and CMD. Consequently, (other) dental treatment suggestions are derived from this S2k guideline.

This current S2k guideline on jaw relation recordings states:

## Hierarchy of Scientific Evidence



"Oxford pyramid" of evidence-based medicine (EBM).

On closer examination of this statement by the DGFDT, i.e. its current board, it becomes clear that high-quality literature references (in accordance with the Oxford Guidelines of Evidence-Based Medicine [EBM]), which show an aetiological connection between occlusion and CMD, have not been taken into account (see appendix).

### Consequences of uneven interocclusal contact

In patients with *fixed dentures*, uneven occlusal contact may lead to nonspecific complaints such as: [30,66,78,124,139,162,188,242–244,247,279,293,323,351,379,393,394,409,535].

- Pain,
- Muscle fatigue, myoarthropathy, craniomandibular dysfunction,

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S2k Guideline: "Instrumental Functional Analysis and Jaw Relation Recording in Dentistry" (Extended Version)

Status: July 2022

- Searching for mandibular position ("control contacts"), motor restlessness of the mandible (patient "does not know where to position the jaw"),
- Tooth loosening,
- Triangulation, bone loss,
- Increased abrasion,
- Implant screw loosening.

In addition to affecting effects on the patient's tolerance, failure to achieve the goal of a simultaneous and uniform occlusal contact with *removable dentures* has the following consequences [116,117,134,349,350]:

But how did Dr Imhoff and the current DGFDT board arrive at this statement that is incorrect not only from a clinical but also from a scientific point of view?

1 As already mentioned above, the current scientific statement of the DGFDT on "Therapy of craniomandibular dysfunctions (CMD)" contains a very selective and, from a scientific point of view, extremely questionable selection of cited literature references.

2 The second main reason is the purely economic allocation of the treatment of CMD disorders to pain clinics in the USA—based on a consensus conference in the early 1990s. This conference was attended by seven directors of pain clinics and one dentist (Dr Terry Tanaka). In the following years, based on the exclusive treatment of patients with CMD symptoms in the pain clinics, diagnostic criteria were developed by these clinics that did not include any occlusal findings (so-called RDC/TMD findings, which were renamed DC/TMD in 2015 (DC = diagnostic criteria; TMD = temporomandibular [joint] disorder).

3 Misleading terms or inconsistent nomenclature: in the USA, only the term “TMD” is used, but not the term “CMD”, which is commonly used in Germany. In addition, it should be noted that in Europe the term “TMD”, which is also commonly used in the literature, also considers occlusion as an aetiological factor, based on different diagnostic criteria—in contrast to the English-language literature (see appendix: Studies by the group of Professor Kirveskari, Turku, Finland, among others, which are predominantly assigned to the second highest level of the EBM criteria). In the current scientific statement of the DGFDT on the “Therapy of craniomandibular dysfunctions (CMD)”, this essential difference is negated and leads to the seriously incorrect statement that “internationally, occlusion has long ceased to play a role in CMD”.

4 In this context, another important aspect should be noted: the modification of the definition by the DGFDT in its declarations in 2011 and 2016:

#### 4.1

While the terms “CMD”, “TMD” and (the term frequently used in German for decades) “myoarthropathy” (MAP) were still equated in the DGFDT’s 2011 statement on nomenclature, the DGFDT made a distinction in 2016.

#### 4.2

In 2018, the Universities of Heidelberg and Leipzig also translated or adopted the diagnostic criteria of the American pain clinics into German, thus causing further diagnostic confusion or “irritation” between TMD and CMD (so-called “Axis I” and “Axis II” criteria” without any recording of occlusal findings).

5 Other fundamental methodological difficulties and peculiarities of studies on the aetiology of CMD remain unnoticed:

#### 5.1

Lack of comparison groups: Different diagnostic criteria and terminology (see above) and heterogeneous groups make it impossible to compare results. A particularly valuable study by Alanen et al. in 2012 (“Methodological problems in studies on the aetiology of TMD: Are the current options based on

## Definitions

### **Functional disorder, dysfunction, craniomandibular dysfunction (CMD), myoarthropathy of the masticatory system (MAP)**

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### **Craniomandibular dysfunction (CMD)**

Comprises pain and/or dysfunction:

*Pain* occurs in the form of masticatory muscle and/or the temporomandibular joint pain and (para)functionally related toothache.

*Dysfunction* can take the form of

- Painful or non-painful restriction (limitation) of movement, hypermobility or coordination disorder (aspect targeting mandibular movements),
- Painful or non-painful intraarticular disorder (aspect targeting the temporomandibular joint)
- Premature contact and obstruction of gliding movements that interfere with function (aspect targeting occlusion)

### **Myoarthropathy of the masticatory system (MAP)**

Is a subset of craniomandibular dysfunction:

Complaints and findings involving the masticatory muscles, the temporomandibular joints or related tissue structures; this does not include consideration of the occlusion.

### **Temporomandibular joint disorder (TMD, English synonym: MAP)**

is a subset of craniomandibular dysfunction:

Complaints and findings involving the masticatory muscles, the temporomandibular joints or related tissue structures; this does not include consideration of the occlusion.

evidence?") discusses this problem in detail and concludes: "It is not fair to simply list studies on the aetiology of CMD in reviews and meta-analyses without taking into account their methodological differences in study design. The currently prevailing view that occlusion is at best an insignificant causal factor in CMD is not supported by the evidence."

## 5.2

Different technical and practical results (even) with the same initial clinical findings: Dr D. Reusch, a colleague who has been clinically active for over 50 years, explained this very aptly in a letter to the DGFDT board in 2023: "Basically, I see it as follows: in dentistry, it is very difficult to carry out studies for certain procedures and treatment concepts because it is hardly possible to set up appropriate comparison groups. In addition, the results obtained are highly dependent on the technique used. If a less experienced practitioner with little in the way of practical routine—and possibly lacking the appropriate manual dexterity—performs a complex, demanding procedure, the result will usually be that his attempts are not successful and cannot be exactly replicated. This is then quoted as the conclusion. In reality, however, the conclusion must be that the procedure performed by an untalented, inexperienced

practitioner does not produce the desired result, but the same procedure performed by a practitioner with the appropriate skill, routine and knowledge produces good results.

A lack of scientific evidence should not lead to a method being rejected or even declared ineffective, especially when positive clinical results are achieved by experienced practitioners. It is not acceptable to simply negate clinical evidence!"

To summarise:

1. Occlusion is a significant and often dominant aetiological factor in CMD. Dental treatment alone leads to permanent, causal treatment success.
2. The current widespread view that occlusion is at best an insignificant causal factor in CMD is not based on scientific evidence.
3. It is unscientific for a scientific society to negate clinical evidence and contradict itself in the selection of literature for statements and guidelines within the narrow time frame of only six months.
4. Due to the high occlusal tactile sensitivity, sustained treatment success (also) requires technical excellence in the clinical application of scientifically based and clinically successful treatment concepts that have been tried and tested over the decades.

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Literature sources showing a causal relationship between occlusion and CMD.

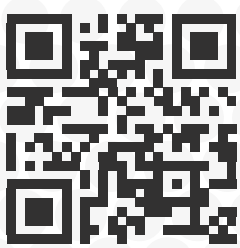
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