hormonal factors may be largely responsible for gender differences in the TMD population.

Exercise-induced fatigue must also be considered in gender differences associated with TMD. During moderate-intensity long-duration exercise, females demonstrated greater lipid utilization and less carbohydrate and protein metabolism than males, resulting in different adaptations in muscle physiology. TMD appears to peak in incidence during the reproductive years suggesting that either biological, neurological or psychological factors unique to women in this period of life could increase the risk of developing or maintaining this condition. It has been long realized that females demonstrate a greater pain sensitivity during the menstrual cycle, at ovulation, and following menses. Functional estrogen receptors have been identified in most synovial joints of males and females in equal concentrations, and there exists a significant difference in the number of estrogen receptors within the TM joint. Male TM joints have been found to have few, if any, estrogen receptors which may explain why male TM joints exhibit significantly larger numbers of these receptors. Psychosocial factors have been proposed to be related to TMD experience. The relationship of the psychological factor(s) either directly or indirectly as causative must be determined on a case-specific basis. Catastrophizing (thinking of the worst) has been identified as a significant impediment to successful management of pain conditions. Studies have demonstrated that pain severity to be significantly related to the degree of life interference and to negative affect (depression, anxiety, anger). Additionally, depressed mood is associated with a decrease in the concentration of central nervous system neurotransmitters nor epinephrine and serotonin. A decrease in the seneroaminergic system is associated with impairment of endogenous pain inhibition and disrupted sleep patterns. Anxiety and stress have been found to cause compromise in the immune system, thus lowering individual host resistance. A relationship between a history of physical and/or sexual abuse and a range of psychological, functional, and physical factors has been suggested. Abuse history has been identified as a significant feature of TMD chronic pain patients populations as contrasted to non-chronic TMD patients. Research has found that a common history was likely to increase an individual's tendency to dwell on, amplify and over interpret somatic symptoms. The value of proper nutrition and exercise cannot be overemphasized, especially in patients living with chronic pain whose withdrawal from normal daily activities may have compromised not only their mental well-being, but also their neurophysiological well-being. Exercise on a regular basis boosts the body's natural immunity, enhancing the production of endogenous opioids (enkephalins, dynorphins, endorphins). Balanced nutrition can enhance the body's pain mechanism by maximizing anti-oxidant effects that interfere with the healing or enhance the progression) of a disease process. The contribution of specific occlusal factors to the multifactorial etiologic factors associated with TMD has been straited in studies to be only 10 to 25%. Associated existing factors should be considered and not assume a direct cause effect due to their presence. The dentist must consider each of these potential contributing factors on a case-specific basis.

The role of various types of trauma in the etiology of TMD has been debated for many years. Trauma is described as any force applied to the mastication structures that exceeds that of tooth loading. Factors such as intensity and duration must be considered. Most trauma can be divided into three types: direct trauma (the result of a sudden and usually isolated blow to the structures), indirect (sudden blow without direct contact), micro-trauma (the result of pro-longed, repeated forces overtime due to parafunctional habits or adverse loading through postural imbalances). Following wound structural failure, loss of function may follow. Stretching, twisting or compressing forces during eating, yawning, yelling or prolonged mouth opening have also been reported to trigger or aggravate TMD. The results of several studies indicate that the majority of TMD cases exist as a result of gradual and mostly unperceived onset of their symptoms, likely related to micro-trauma or a repetitive stress-response. Micro-traumatic factors include bruxing, clenching, postural dysfunction, and any other habitual repetitive behaviors. Experimental animals have been shown to cause pain similar to that reported by those with TMD.

The importance of sleep has been underestimated by the majority of the population; 65% of American adults do not obtain the recommended amount of daily sleep. Sleep is a basic human need, and must be considered as important as diet and exercise. Getting the right amount of sleep is vital, but just as important is the quality of our sleep. Sleep disturbances have been reported in many epidemiological studies in persons experiencing not only acute but also chronic pain. Sleep deprivation has been reported as an important cause of TMD-related problems. The question is, is sleep the most important factor? Little evidence is available to strongly implicate occlusion in the etiology of TMD.

Several studies have demonstrated that the presence of predisposing factors such as structural, metabolic and/or psychological conditions could be sufficient to increase the risk of developing TMD related problems if they are affecting the masticatory system in a negative way. It has been reported that an extreme anterior open bite, overjet greater than 6 to 7 mm, discrepancy between the right and left contact positions and the intercuspal position greater than 4 mm, five or more missing posterior teeth, and unilateral maxillary posterior teeth that may be associated with TMD.

Some contributing etiologic factors are only risk factors, others are causal in nature, and others result from, or are purely coincidental to, the problem. These factors are classified as predisposing, initiating (precipitating), and perpetuating (factors that interfere with the healing or enhance the progression) of a disease process. The contribution of specific occlusal factors to the multifactorial etiologic factors associated with TMD has been straited in studies to be only 10 to 25%. Associated existing factors should be considered and not assume a direct cause effect due to their presence. The dentist must consider each of these potential contributing factors on a case-specific basis.

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