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· 临床研究 ·

青少年颞下颌关节盘前移位患者的睡眠质量及其影响因素调查

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【摘要】 目的 探讨青少年颞下颌关节盘前移位患者睡眠质量现状及其相关影响因素。方法 本研究已通过单位伦理委员会审查批准, 并获得患者知情同意。采用便利抽样法, 应用一般资料调查表、匹兹堡睡眠质量指数量表(Pittsburgh sleep quality index, PSQI)、中国中学生心理健康量表(mental health inventory of middle-school students, MMHI-60)和疼痛视觉模拟评分量表(visual analogue scale, VAS)对上海某三级甲等医院口腔外科门诊就诊的120例青少年颞下颌关节盘前移位患者进行调查, 采用描述性分析、单因素分析、相关性分析及回归分析探讨相关影响因素。结果 本研究中青少年颞下颌关节盘前移位患者PSQI得分为(7.77 ± 4.63)分; 不同学业压力、夜磨牙的患者其睡眠质量的差异具有统计学意义($P < 0.01$); PSQI得分与疼痛得分呈正相关($r = 0.45, P < 0.001$), 疼痛影响睡眠质量; 与MMHI-60量表得分呈正相关($r = 0.74, P < 0.001$), 心理健康者睡眠质量较好; 回归分析结果显示, 学业压力($OR = 2.511, 95\% CI = 1.307 \sim 4.828$)、夜磨牙($OR = 3.694, 95\% CI = 1.394 \sim 9.791$)、疼痛得分($OR = 2.104, 95\% CI = 1.095 \sim 4.041$)、心理得分($OR = 1.039, 95\% CI = 1.021 \sim 1.058$)为睡眠质量的影响因素。结论 青少年颞下颌关节盘前移位患者的睡眠质量普遍较低, 学业压力、夜磨牙、疼痛和心理健康状况是睡眠质量的影响因素。

【关键词】 颞下颌关节; 关节盘前移位; 青少年; 睡眠质量; 影响因素; 夜磨牙; 疼痛; 心理健康

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An investigation of the sleep quality status of adolescent patients with temporomandibular joint anterior disc displacement and its influencing factors XIA Di^{1,2}, HE Meijuan^{1,2}, YU Leilei^{1,2}, ZHENG Jisi². 1. Nursing Department, Shanghai Ninth People's Hospital, Shanghai Jiaotong University School of Medicine, Shanghai 200011, China; 2. Department of Oral, Shanghai Ninth People's Hospital, Shanghai Jiao Tong University School of Medicine, Shanghai 200011, China

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【Abstract】 Objective To survey the current situation and analyze the relevant influencing factors of sleep quality in adolescent patients with temporomandibular joint anterior disc displacement. **Methods** This study has been reviewed and approved by the Ethics Committee, and informed consent has been obtained from patients. A convenience sampling method was used to investigate 120 adolescent patients with temporomandibular joint anterior disc displacement in the outpatient department of stomatology in a grade A tertiary hospital in Shanghai using the general data questionnaire, the Pittsburgh sleep quality index scale (PSQI), the Chinese middle school student mental health scale (MMHI-60) and the pain visual analog scale (VAS). Descriptive analysis, single factor analysis, correlation analysis and multi-

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ple regression analysis were used to explore the relevant influencing factors. **Results** The PSQI score of adolescent patients with temporomandibular joint anterior disc displacement in this study was 7.77 ± 4.63 . There was a statistically significant difference in sleep quality among patients with different academic pressures and levels of sleep bruxism ($P < 0.05$). The sleep quality score was positively correlated with the pain score ($r = 0.45, P < 0.001$) and positively correlated with the psychological score ($r = 0.74, P < 0.001$). The degree of pain can affect the patient's sleep quality, and those with good mental health have better sleep quality. The results of regression analysis showed that academic stress ($OR = 2.511, 95\% CI = 1.307 \sim 4.828$), bruxism ($OR = 3.694, 95\% CI = 1.394 \sim 9.791$), pain score ($OR = 2.104, 95\% CI = 1.095 \sim 4.041$) and psychological score ($OR = 1.039, 95\% CI = 1.021 \sim 1.058$) were statistically significant. **Conclusion** The sleep quality of adolescent patients with temporomandibular joint anterior disc displacement is generally poor. Academic pressure, sleep bruxism, pain and mental health are the influencing factors of sleep quality.

【Key words】 temporomandibular joint; anterior disc displacement; adolescent; sleep quality; influencing factors; sleep bruxism; pain; mental health

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关节盘前移位(anterior disc displacement, ADD)是颞下颌关节紊乱病(temporomandibular disorders, TMD)最常见的亚类之一,患病率为18%~35%,多见于20~40岁女性^[1]。近年来,青少年ADD的患病率呈增高趋势,且随着年龄的增长而不断升高^[2-4]。ADD主要表现为下颌运动功能受限、疼痛和心理不适,严重影响青少年患者口腔健康相关的生活质量、情绪状态及睡眠质量。据报道,ADD患者常伴有睡眠障碍,睡眠质量随病情严重程度的增加而降低且ADD的存在增加了患者睡眠不佳的可能性^[5]。ADD病因复杂,越来越多的学者认为睡眠障碍可能单独与其他因素共同作用影响疾病的发生发展^[6-9]。本研究旨在了解青少年颞下颌关节紊乱病患者睡眠质量现状及影响因素,以期制定改善睡眠质量的有效措施提供依据。

1 资料和方法

1.1 研究对象

本研究已通过单位伦理委员会审查批准。本研究采用方便抽样,选取2021年10月至2021年12月在上海某三级甲等医院口腔外科就诊的120例青少年颞下颌关节盘前移位患者作为研究对象。纳入标准:①经磁共振诊断为颞下颌关节盘前移位的患者;③年龄范围:采用世界卫生组织标准10~19岁,能独立如实填写问卷者;④自愿参加本次试验,并签署知情同意书者。排除标准:①无法配合研究者;②患有其他系统性疾病、重大创伤史、精

神病史;③近期参加类似研究者。样本量估算:采用二分类多因素 Logistic 回归分析方法的研究,样本量取自变量的10~15倍。本研究总变量共为9个,研究样本量应为90例。考虑样本丢失量20%,因此最小样本量应为108例。最终共纳入120例患者。

1.2 研究方法

向调查对象介绍本次研究目的、内容、意义,取得其知情同意并签署知情同意书,未满18周岁的青少年需与监护人共同签署知情同意书。由经过统一培训的调查员发放线下纸质问卷,由调查员逐条询问并记录,理解不清的地方由调查员给予专业性解释,检查无误后当场回收。对调查对象的个人信息进行保密。本次调查共收集问卷120例,其中有效问卷120例,有效回收率100%。

1.2.1 调查表一般资料 调查问卷患者的人口社会学资料包括性别、年级、有无学业压力;患者的临床资料包括晚上睡觉时有无夜磨牙及张口呼吸、有无鼻炎。

1.2.2 匹兹堡睡眠质量指数量表 采用中文版匹兹堡睡眠质量指数量表(Pittsburgh sleep quality index, PSQI)测量患者近1月的睡眠情况。该量表由 Buysse 等^[10]于1989年编制,由刘贤臣等^[11]于1996年将该量表译制成中文,具有良好的重测信度(0.85)和内部一致性(Cronbach's $\alpha = 0.83$),已被证明是评估 ADD 患者群体睡眠质量的有效和可靠的工具^[12]。其中19个自评条目被合并成7个因

子,包括主观睡眠质量、入睡时间、睡眠时间、睡眠效率、睡眠障碍、服用催眠药物以及日间功能障碍。每个因子按0~3分等级计分,7个因子得分之和为PSQI总分,总分范围为0~21分,以PSQI总分 ≤ 7 分为睡眠质量好, > 7 分为睡眠质量差。

1.2.3 中国中学生心理健康量表 采用中学生心理健康量表(mental health inventory of middle-school students, MMHI-60),Cronbach α 系数为0.65~0.86,具有良好的信效度,能较好地反映青少年焦虑、抑郁倾向者的主观感受,在临床心理状况自评中广泛使用。该量表由60个条目组成,共10个分量表,每个分量表由6个条目组成。这10个分量表分别是强迫、偏执、敌对、人际关系敏感、抑郁、焦虑、学习压力、适应性不良、情绪波动性、心理不平衡性。采用五级记分,1~5分别表示“无=0分”“轻度=1分”“中度=2分”“偏重=3分”“严重=4分”。

1.2.4 疼痛视觉模拟评分法 疼痛视觉模拟评分法(visual analogue scale, VAS)采用中华医学会疼痛学会监制的VAS测评卡^[13],长约10 cm,两端分别为“0”分端和“10”分端,“0”分表示无痛,“10”分表示难以忍受的最剧烈的疼痛。

1.3 统计学分析

采用SPSS26.0对数据进行统计分析。计数资料采用 $n(\%)$ 描述;非正态分布计量资料采用叫四分位数 $[M(P_{25}, P_{75})]$ 描述;正态分布计量资料采用均数 \pm 标准差描述,采用两独立样本t检验/方差分析方法,对比分析两组/多组之间正态指标的差异情况;采用Pearson相关性分析方法,分析疼痛得分、心理量表得分与睡眠质量量表总得分及其各维度得分之间的相关关系;采用二分类多因素Logistic回归分析方法,分析睡眠质量的影响因素。检验水准为 $\alpha=0.05$ 。

2 结果

2.1 调查表一般资料结果

本研究共调查青少年颞下颌关节盘前移位患者120例,男性和女性分别为31例(25.8%)和89例(74.2%);98例(81.7%)患者有学业压力;伴有磨牙的调查对象为66例(55.0%);伴有鼻炎的调查对象为76例(63.3%);伴有张口呼吸的调查对象为102例(85.0%),详见表1。

2.2 青少年颞下颌关节盘前移位患者PSQI得分情况 本研究中青少年颞下颌关节盘前移位的PSQI

平均得分为 (7.77 ± 4.63) 分。其中,日间功能障碍得分最高 (2.65 ± 2.13) 分;催眠药物得分最低 (0.11 ± 0.43) 分,见表2。

表1 120例青少年颞下颌关节盘前移位患者的一般资料
Table 1 General information of 120 dimensions in adolescents with anterior disc displacement

Variables	N (%)
Gender	
Male	31 (25.8)
Female	89 (74.2)
Academic pressure	
No	22 (18.3)
Some	59 (49.2)
More	30 (25.0)
Great	9 (7.5)
Sleep bruxism	
No	54 (45.0)
Yes	66 (55.0)
Rhinitis	
No	44 (36.7)
Yes	76 (63.3)
Mouth breathing	
No	18 (15.0)
Yes	102 (85.0)

表2 青少年颞下颌关节盘前移位患者PSQI总分及各项得分情况

Table 2 PSQI total scores and scores of all dimensions in adolescents with anterior disc displacement $\bar{x} \pm s$

Dimensions	Scores
Sleep quality	1.08 \pm 0.74
Sleep latency	1.70 \pm 1.72
Sleep duration	0.93 \pm 1.00
Sleep efficiency	0.40 \pm 0.83
Sleep disturbances	0.91 \pm 0.49
Sleep medication	0.11 \pm 0.43
Daytime dysfunction	2.65 \pm 2.13
Total scores	7.77 \pm 4.63

PSQI: Pittsburgh sleep quality index

2.3 影响青少年颞下颌关节盘前移位患者睡眠质量的单因素分析

结果显示,学业压力不同,睡眠质量总得分不同($P < 0.001$),两两比较结果为学业压力较大和很大者,其睡眠质量总得分高于有点学业压力和没有学业压力者;有夜磨牙者的睡眠质量总得分高于无夜磨牙者,差异具有统计学意义($P = 0.001$)。睡眠质量总得分在其他变量上不存在统计学差异($P > 0.05$),见表3。

表3 青少年颞下颌关节盘前移位患者睡眠质量的单因素分析

Table 3 Single-factor analysis of patients sleep quality in adolescents with anterior disc displacement $\bar{x} \pm s$

Variables	Group	PSQI	t/F	P
Gender	Male	7.84 ± 5.20	0.100	0.920
	Female	7.74 ± 4.45		
Academic pressure	No	4.77 ± 4.94	7.013	< 0.001
	Some	7.44 ± 4.18		
	More	9.80 ± 4.38		
	Great	10.44 ± 3.17		
Sleep bruxism	No	6.30 ± 4.37	-3.271	0.001
	Yes	8.97 ± 4.52		
Rhinitis	No	7.66 ± 4.74	-0.193	0.847
	Yes	7.83 ± 4.60		
Mouth breathing	No	7.28 ± 4.75	-0.484	0.629
	Yes	7.85 ± 4.63		

PSQI: Pittsburgh sleep quality index. The total score range of PSQI is 0-21, with a total score of ≤ 7 indicating good sleep quality and a score of > 7 indicating poor sleep quality

2.4 青少年颞下颌关节盘前移位患者睡眠质量与疼痛、心理健康状况及年龄之间的相关性

结果显示, VAS评分的四分位数为[1(1, 1)]分, MMHI-60量表评分的四分位数为[46(21.25, 74.75)]分。经Pearson相关分析, 疼痛得分与睡眠质量、入睡时间、睡眠效率、睡眠障碍、催眠药物、日间功能障碍和PSQI总分之间均呈正相关($P < 0.05$), 与睡眠时间无相关性($P = 0.051$); 心理量表得分与PSQI总分及各维度得分均呈正相关($P < 0.05$)。即疼痛得分越高, PSQI得分越高, 睡眠质量越差; 心理量表得分越高, PSQI得分越高, 睡眠质量越差, 具体见表4。

2.5 影响青少年颞下颌关节盘前移位患者睡眠质量的Logistic回归分析

将睡眠质量作为因变量(0 = 好, 1 = 差), 将性别(1 = 男, 2 = 女)、学业压力(1 = 没有, 2 = 有点, 3 = 较大, 4 = 很大)、磨牙(0 = 无, 1 = 有)、张口呼吸(0 = 无, 1 = 有)、鼻炎(0 = 无, 1 = 有)、疼痛、心

表4 青少年颞下颌关节盘前移位患者睡眠质量与疼痛、心理健康状况及年龄相关分析

Table 4 Sleep quality associated with pain, mental health and age in adolescents with anterior disc displacement

Variables	VAS Score		MMHI-60 Score	
	r	P	r	P
Sleep quality	0.483	< 0.001	0.507	< 0.001
Sleep latency	0.310	0.001	0.454	< 0.001
Sleep duration	0.179	0.051	0.397	< 0.001
Sleep efficiency	0.676	< 0.001	0.304	0.001
Sleep disturbances	0.239	0.009	0.438	< 0.001
Sleep medication	0.677	< 0.001	0.232	0.011
Daytime dysfunction	0.388	< 0.001	0.629	< 0.001
Total scores	0.450	< 0.001	0.740	< 0.001

PSQI: Pittsburgh sleep quality index, the higher the score, the worse the sleep quality. VAS: visual analogue scale, the higher the score, the higher the degree of pain. MMHI-60: mental health inventory of middle-school students, the higher the score, the worse the level of mental health

理得分作为自变量, 进行二分类多因素Logistic回归分析。结果显示, 学业压力和磨牙2个变量进入了回归方程, 学业压力越大, 睡眠质量差的概率越高($OR = 2.511, 95\%CI = 1.307 \sim 4.828$); 有磨牙调查对象的睡眠质量比无磨牙调查对象差($OR = 3.694, 95\%CI = 1.394 \sim 9.791$); 疼痛得分越高, 睡眠质量差的概率越高($OR = 2.104, 95\%CI = 1.095 \sim 4.041$); 心理得分越高, 睡眠质量差的概率越高($OR = 1.039, 95\%CI = 1.021 \sim 1.058$), 见表5。

3 讨论

3.1 青少年颞下颌关节盘前移位患者睡眠质量不理想

本研究结果显示, 青少年ADD患者的睡眠质量总分为(7.77 ± 4.63)分, 显著高于常模(3.88 ± 2.52)分^[10]。其中得分>7分者占49.2%, 说明青少年ADD患者睡眠质量整体不理想。此外, 本研究结果显示日间功能障碍、入睡时间、睡眠质量3个

表5 睡眠质量影响因素的二分类多因素Logistic回归分析

Table 5 Binary multifactor logistic regression analysis of the influencing factors of sleep quality

Variables	β	S.E	Wald	P	OR	95%CI
Academic pressure	0.921	0.333	7.628	0.006	2.511	1.307 ~ 4.828
Sleep bruxism	1.307	0.497	6.902	0.009	3.694	1.394 ~ 9.791
Pain	0.744	0.333	4.984	0.026	2.104	1.095 ~ 4.041
Mental health	0.039	0.009	17.666	< 0.001	1.039	1.021 ~ 1.058
Constant	-5.286	1.180	20.076	< 0.001		

The degree of pain can affect the patient's sleep quality, and those with good mental health have better sleep quality

因子得分较高,其中日间功能障碍得分最高为(2.65 ± 2.13)分,这说明青少年ADD患者入睡时间较长,睡眠质量差进而导致白天容易出现注意力不集中、思维迟钝、疲倦困乏等现象,不利于患者的正常生活与学习。

3.2 青少年颞下颌关节盘前移位患者睡眠质量的相关影响因素

3.2.1 学业压力 本研究显示,学业压力越大,患者睡眠质量越差。长期暴露于高学业压力后,青少年可能会经历焦虑、抑郁和睡眠障碍^[14-15]。Wang等^[16]通过1 232名青少年的自我报告问卷数据,调查学业压力与青少年睡眠质量之间的关系,发现学业压力水平较高的青少年睡眠质量往往较差,学业压力对青少年睡眠质量的影响受到焦虑和学习倦怠的影响。此外,有研究发现,伴随疼痛的颞下颌关节疾病患者更易分心、焦虑,由此产生更大的学业压力,且失眠现象更为常见^[17]。

3.2.2 夜磨牙 本研究显示,伴有夜磨牙的调查对象睡眠质量比无夜磨牙的调查对象差。夜磨牙(sleep bruxism, SB)被定义为一种发生在睡眠期间的咀嚼肌活动^[18]。近年来,夜磨牙被认为是TMD持续和/或加重的重要危险因素,夜间重复的肌肉运动可能会损伤颞下颌关节和咀嚼肌^[19]。研究表明,伴有夜磨牙的患者其睡眠质量较差^[20]。Tuncer等^[21]将91例伴有夜磨牙的TMD患者和109例无夜磨牙的TMD患者进行病例对照研究,发现伴有夜磨牙的TMD患者其下颌功能活动受限且睡眠质量较低,提示临床在评估和治疗TMD患者时应考虑夜磨牙的重要性。夜磨牙容易造成神经衰弱、记忆力减退、成绩下降等负面影响,甚至出现悲观沮丧、抑郁等不良心理情绪,且长期夜磨牙给颞下颌关节造成过大负荷,加重ADD症状,出现开口困难、关节疼痛等症状。

3.2.3 心理健康状况 本研究显示,心理健康状况越差的青少年ADD患者,睡眠质量越不乐观。国外学者对425名在牙医学院口腔颌面外科门诊就诊的颞下颌关节疾病患者进行心理评估,结果显示TMD患者的睡眠质量随着焦虑和抑郁水平的增加而下降,与本研究结果一致;并且研究者发现睡眠质量差的患者其压力、焦虑和抑郁水平明显高于睡眠质量好的患者,心理状况应作为诊断和治疗颞下颌关节疾病患者和提高睡眠质量的重要因素^[22]。青少年处于生长发育的复杂时期,正经历强烈的情感、认知、社会、身体和荷尔蒙的转变,社

会需求、学业压力及教育标准都会加重青少年的心理负担。不良心理因素不仅会导致睡眠质量、睡眠时间下降,还会加重疾病的症状,使有心理问题的患者身体健康指数进一步降低^[23-24]。医护人员及家属应及时评估青少年患者的心理变化及需求,帮助其缓解焦虑、抑郁等不良情绪;同时加强临床专业队伍培训,让更多的医护人员具备一定的心理教育资格与技能,探索贴合患者心理需求的新模式、新思路和新方法,保障心理干预措施的科学性、专业性及多样性,进而促进青少年ADD患者身心健康全面发展。

3.2.4 疼痛 本研究显示疼痛越明显,青少年ADD患者的睡眠质量越差。颞下颌关节区及相应肌群的疼痛常常是颞下颌关节疾病患者就诊的第一主诉,且研究表明颞下颌关节疾病的疼痛症状严重影响患者的睡眠质量^[25-26]。Yap等^[5]通过使用PSQI测量发现,与无TMD的对照组相比,伴随疼痛的TMD导致睡眠不良的频率增加了2~3倍,且睡眠质量随着TMD严重程度的增加而恶化。因此,提示医护人员须及时评估患者疼痛程度,必要时通过药物干预或认知行为疗法帮助患者缓解疼痛,对于存在咀嚼疼痛的患者应注意调整饮食类型,避免进食过硬、需过度咀嚼的食物,做好日常健康宣教。

本研究显示,青少年颞下颌关节盘前移位患者睡眠质量较差,且受学业压力、磨牙、疼痛以及心理健康状况的影响。本研究不足之处在于没有对调查对象进行跟踪随访,无法了解其睡眠质量的动态变化。

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参考文献

- [1] List T, Jensen RH. Temporomandibular disorders: old ideas and new concepts [J]. *Cephalalgia*, 2017, 37(7): 692-704. doi: 10.1177/0333102416686302.
- [2] Macri M, Murmura G, Scarano A, et al. Prevalence of temporomandibular disorders and its association with malocclusion in children: a transversal study [J]. *Front Public Health*, 2022, 10: 860833. doi: 10.3389/fpubh.2022.860833.
- [3] Wu J, Huang Z, Chen Y, et al. Temporomandibular disorders among medical students in China: prevalence, biological and psychological risk factors [J]. *BMC Oral Health*, 2021, 21(1): 549. doi: 10.1186/s12903-021-01916-2.
- [4] Marpaung C, van Selms MKA, Lobbezoo F. Temporomandibular

- joint anterior disc displacement with reduction in a young population: prevalence and risk indicators [J]. *Int J Paediatr Dent*, 2019, 29(1): 66-73. doi: 10.1111/ipd.12426.
- [5] Yap AU, Cao Y, Zhang MJ, et al. Temporomandibular disorder severity and diagnostic groups: their associations with sleep quality and impairments [J]. *Sleep Med*, 2021, 80: 218-225. doi: 10.1016/j.sleep.2021.01.063.
- [6] Kim HK, Kim ME. Disturbed sleep may be a core risk factor for jaw functional limitation in patients with painful temporomandibular disorders [J]. *J Oral Rehabil*, 2021, 48(9): 1013 - 1024. doi: 10.1111/joor.13217.
- [7] Yang FN, Xie W, Wang Z. Effects of sleep duration on neurocognitive development in early adolescents in the USA: a propensity score matched, longitudinal, observational study [J]. *Lancet Child Adolesc Health*, 2022, 6(10): 705-712. doi: 10.1016/S2352-4642(22)00188-2.
- [8] Lobbezoo F, de Vries N, de Lange J, et al. A further introduction to dental sleep medicine [J]. *Nat Sci Sleep*, 2020, 12: 1173-1179. doi: 10.2147/NSS.S276425.
- [9] Scott AJ, Webb TL, Martyn-St James M, et al. Improving sleep quality leads to better mental health: a meta-analysis of randomised controlled trials [J]. *Sleep Med Rev*, 2021, 60: 101556. doi: 10.1016/j.smrv.2021.101556.
- [10] Buysse DJ, Reynolds CF 3rd, Monk TH, et al. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research [J]. *Psychiatry Res*, 1989, 28(2): 193 - 213. doi: 10.1016/0165-1781(89)90047-4.
- [11] 刘贤臣, 唐茂芹. 匹兹堡睡眠质量指数的信度和效度研究 [J]. *中华精神科杂志*, 1996, 29(2): 103 - 107. doi: 10.1007/BF02951625.
- Liu XC, Tang MQ, Hu lei, et al. Reliability and validity of the Pittsburgh sleep quality index [J]. *Chin J Psychiatry*, 1996, 29(2): 103-107. doi: 10.1007/BF02951625.
- [12] Rener-Sitar K, John MT, Bandyopadhyay D, et al. Exploration of dimensionality and psychometric properties of the Pittsburgh Sleep Quality Index in cases with temporomandibular disorders [J]. *Health Qual Life Outcomes*, 2014, 12: 10. doi: 10.1186/1477-7525-12-10.
- [13] Hawker GA, Mian S, Kendzerska T, et al. Measures of adult pain: visual analog scale for pain (VAS pain), numeric rating scale for pain (NRS pain), McGill pain questionnaire (MPQ), short-form McGill pain questionnaire (SF-MPQ), chronic pain grade scale (CP-GS), short form-36 bodily pain scale (SF-36 BPS), and measure of intermittent and constant osteoarthritis pain (ICOAP) [J]. *Arthritis Care Res (Hoboken)*, 2011, 63(Suppl 11): S240 - S252. doi: 10.1002/acr.20543.
- [14] Karaman MA, Lerma E, Vela JC, et al. Predictors of academic stress among college students [J]. *J Coll Couns*, 2019, 22(1): 41-55. doi: 10.1002/jocc.12113.
- [15] Pascoe MC, Hetrick SE, Parker AG. The impact of stress on students in secondary school and higher education [J]. *Int J Adolesc Youth*, 2020, 25(1): 104 - 112. doi: 10.1080/02673843.2019.1596823.
- [16] Wang H, Fan X. Academic stress and sleep quality among Chinese adolescents: chain mediating effects of anxiety and school burnout [J]. *Int J Environ Res Public Health*, 2023, 20(3): 2219. doi: 10.3390/ijerph20032219.
- [17] Sójka A, Stelcer B, Roy M, et al. Is there a relationship between psychological factors and TMD? [J]. *Brain Behav*, 2019, 9(9): e01360. doi: 10.1002/brb3.1360.
- [18] Manfredini D, Ahlberg J, Lobbezoo F. Bruxism definition: past, present, and future-what should a prosthodontist know? [J]. *J Prosthet Dent*, 2022, 128(5): 905-912. doi: 10.1016/j.prosdent.2021.01.026.
- [19] Ohlmann B, Waldecker M, Leckel M, et al. Correlations between sleep bruxism and temporomandibular disorders [J]. *J Clin Med*, 2020, 9(2): 611. doi: 10.3390/jcm9020611.
- [20] Câmara-Souza MB, de Figueredo OMC, Rodrigues Garcia RCM. Association of sleep bruxism with oral health-related quality of life and sleep quality [J]. *Clin Oral Investig*, 2019, 23(1): 245-251. doi: 10.1007/s00784-018-2431-0.
- [21] Tuncer A, Atay F, Guzel HC, et al. Comparison of factors affecting patients with a myofascial temporomandibular disorder with and without sleep bruxism [J]. *Niger J Clin Pract*, 2022, 25(3): 273-280. doi: 10.4103/njep.njep_1420_21.
- [22] Ekici Ö. Association of stress, anxiety, and depression levels with sleep quality in patients with temporomandibular disorders [J]. *Cranio*, 2020: 1-9. doi: 10.1080/08869634.2020.1861886.
- [23] Yap AU, Natu VP. Inter-relationships between pain-related temporomandibular disorders, somatic and psychological symptoms in Asian youths [J]. *J Oral Rehabil*, 2020, 47(9): 1077 - 1083. doi: 10.1111/joor.13033.
- [24] Jiang Y, Guo L, Lai W, et al. Association of emotional and behavioral problems with sleep disturbance among Chinese adolescents: the moderation effect of academic performance [J]. *J Affect Disord*, 2023, 330: 94-100. doi: 10.1016/j.jad.2023.02.136.
- [25] Lee YH, Auh QS. Comparison of sleep quality deterioration by subgroup of painful temporomandibular disorder based on diagnostic criteria for temporomandibular disorders [J]. *Sci Rep*, 2022, 12(1): 9026. doi: 10.1038/s41598-022-12976-x.
- [26] Fernandes G, van Selms MKA, Lobbezoo F, et al. Subjective sleep complaints were associated with painful temporomandibular disorders in adolescents: the epidior-adolescere study [J]. *J Oral Rehabil*, 2022, 49(9): 849-859. doi: 10.1111/joor.13344.

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