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DIFFERENCES IN THE PREVALENCE OF SYMPTOMS OF TEMPOROMANDIBULAR JOINT DISORDERS IN FACULTY OF DENTISTRY UNIVERSITAS JENDERAL ACHMAD YANI STUDENTS

(*PERBEDAAN PREVALENSI GEJALA GANGGUAN SENDI TEMPOROMANDIBULA PADA MAHASISWA FAKULTAS KEDOKTERAN GIGI UNIVERSITAS JENDERAL ACHMAD YANI*)

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ABSTRACT

Temporomandibular joint disorder (TMD) is a common problem with various clinical signs and symptoms of the structures of the masticatory system, including the masticatory muscles and the temporomandibular joint, often found in the age group of 20-40 years. People with TMD symptoms can show at least one symptom of the disorder. The prevalence of TMD was reported among dental students. This study aims to determine differences in the majority of symptoms of temporomandibular joint disorder in students of the Faculty of Dentistry, Jenderal Achmad Yani University class of 2020 in 2021 and 2023. This research is an analytical study using a cross-sectional approach. Data

were analyzed using the Wilcoxon signed-rank test with 54 research subjects from the Faculty of Medicine class 2020. This study found that in 2021, there were 88.8% of students, while in 2023, 87% of students suffered from symptoms of temporomandibular joint disorder with a score p=0.739. No significant difference in the prevalence of temporomandibular joint disorder symptoms in 2021 and 2023.

Keywords: prevalence; students; temporomandibular disorders

ABSTRAK

Gangguan sendi temporomandibula (TMD) *merupakan masalah umum dari macam-macam tanda dan gejala klinis dari struktur sistem pengunyahan, termasuk otot pengunyahan dan sendi temporomandibula yang sering dijumpai pada kelompok usia 20-40 tahun. Penderita gejala* TMD *dapat memperlihatkan setidaknya satu gejala gangguan. Prevalensi* TMD *cukup banyak dilaporkan pada mahasiswa kedokteran gigi. Penelitian ini bertujuan untuk mengetahui perbedaan prevalensi gejala gangguan sendi temporomandibula pada mahasiswa Fakultas Kedokteran Gigi Universitas Jenderal Achmad Yani angkatan 2020 pada tahun 2021 dan 2023. Penelitian ini merupakan penelitian analitik dengan menggunakan metode pendekatan* cross-sectional. *Data dianalisis menggunakan* Wilcoxon signed-rank test *dengan subjek penelitian sebanyak 54 mahasiswa Fakultas Kedokteran Gigi angkatan 2020. Penelitian ini mendapatkan hasil pada tahun 2021 sebanyak 88.8% mahasiswa sedangkan pada tahun 2023 didapat 87% mahasiswa yang menderita gejala gangguan sendi temporomandibula dengan nilai p=0.739. Tidak terdapat perbedaan yang signifikan dalam penelitian ini terkait prevalensi gejala gangguan sendi temporomandibula pada tahun 2021 dan 2023.*

Kata kunci: *gangguan sendi temporomandibular; mahasiswa; prevalensi*

INTRODUCTION

Temporomandibular joint disorder, commonly called Temporomandibular Joint Disorder (TMD), is a common problem of various clinical signs and symptoms of the structures of the masticatory system, including the masticatory muscles and temporomandibular joints (TMJ), which are often found in the age group of 20-40 years. Research by Ryan et al. in 2019 states that the prevalence of TMD varies quite a bit depending on age, gender, population, emotional and psychosocial, and TMD assessment methods.[1] Research by Chang et al. in 2018 in Taiwan stated that several cross-sectional studies have shown that the overall prevalence of TMD symptoms is significantly high in the population aged 20 to 40 compared to other age groups.[2] Atika et al. examined Andalas University FKG students, with 41 respondents (61.2%) experienced TMD and as many as 26 respondents (38.8%) did not experience TMD.[3] The temporomandibular joint plays an essential role in daily activities and can be disrupted if a person suffers from a temporomandibular joint disorder. Symptoms of TMD disorders can be characterized by pain and impaired function. The triggers for problems from TMD are very broad and complex. Patients with symptoms of TMJ disorders can show at least one symptom of TMJ, including sounds, muscle, and joint pain, limited mandibular motion, limitations in opening the mouth, deviation, and deflection.[4–8]

Temporomandibular disorder can be caused by many predisposing factors such as trauma, bad habits, excessive or uneven chewing load, age, gender, hormones, parafunctional habits, orthodontic treatment, tooth extraction, genetic factors, psychosocial factors, and stress. TMD symptoms are generally caused by pain, tenderness, and masticatory muscle spasms, muscle hyperactivity and muscle dysfunction can result in parafunctional activity, malocclusion which is affected to a certain degree and duration and psychological factors also play a role. Laurensia et al in 2019 in Bandung examined 107 dental professional students consisting of 63 (58.8%) students who had TMD symptoms.[4]

Several longitudinal studies in non-patient populations have shown that TMD symptoms fluctuate and can come and go in unpredictable patterns. Most longitudinal studies in non-patient populations primarily involve children or mid-adolescents, so that fluctuating characteristics may be due to masticatory growth or mental development. There are

differences in outcomes in young adults, who are considered at high risk for TMD; the natural course of their TMD symptoms has not been adequately identified. The study examined the longitudinal changes in TMD symptoms in young adults. Dentistry students at Jenderal Achmad Yani University class of 2020 have previously filled out a TMD symptom questionnaire. In 2021 out of 152 FK and FKG students aged 18-20 years, 77 people were found to be symptomatic.[9–12] Based on this description, researchers were interested in examining the development of the prevalence of symptoms of temporomandibular joint disorder in the FKG Unjani students class of 2020, which occurred in 2021 and 2023.

METHOD

The research design carried out in this study was analytic with a cross-sectional approach, namely data taken from existing data and taken at one time, and no follow-up was carried out. Data for temporomandibular joint disorders in 2021 were obtained from the previous study in January and for data collection for temporomandibular joint disorders in 2023 in January. It was carried out using a questionnaire that was still the same as data in 2021, namely a questionnaire from AAOP by De Leeuw and Klasser published in 2013 and presented in the form of Google form.[9,13] This study has a goal, namely, to find out differences in the prevalence of symptoms of temporomandibular joint disorder in students of the Faculty of Dentistry, Jenderal Achmad Yani University class of 2020 in 2021 and 2023.[9,14]

The subjects of this study were students of the Faculty of Dentistry, Jenderal Achmad Yani University class of 2020 in 2021 and 2023, who met the inclusion and exclusion criteria. In determining the sample size in this study, researchers used a purposive sampling technique (non-random sampling) The sample size of the entire population, which obtained as many as 54 research samples.

The data obtained from the research is processed analytically. Technical analysis data were analyzed statistically using the statistical application SPSS (Statistical Product and Service Solutions). An analysis to find out the significance of the difference in prevalence and change between the incidence of temporomandibular joint disorders in Dentistry Students at Jenderal Achmad Yani University class of 2020 in 2021 and 2023 using the Wilcoxon signed-rank test

RESULT

Subject Characteristic

This research obtained the

characteristics of the research subjects, which can be seen in Table 1.

Table 1. Characteristics of research subjects

Variable	Total (n)	%
Gender		
Male	17	31.5%
Female	37	68.5%
Age in 2021		
18	34	63%
19	17	31.4%
>20	3	5.6%
Age in 2023		
20	34	63%
21	17	31.4%
>22	3	5.6%

Based on Table 1, the number of female students was 37 out of 54 respondents, while the remaining 17 were male students. In this study, there were more female students than male students. Based on age, there are more FKG Unjani students in 2021 aged 18 and 19 years compared to 20 years old, and in 2023, the period will increase by two years. It can also be seen that students who are respondents are still with the same person but at the same time differ.

The significance of the difference in the prevalence of TMD symptoms in students of the 2020 batch of the Faculty of Dentistry at Jenderal Achmad Yani University was examined using the Wilcoxon signed-rank test.

Table 2. Prevalence of symptoms of TMD disorders in students of the Faculty of Dentistry Unjani 2020 in 2021

Variable	Symptoms of TMD				Total
Prevalence	Yes		No		
	n	%	n	%	
2021	48	88.8%	6	11.2%	54

Table 3. Prevalence of symptoms of TMD disorders in students of Faculty of Dentistry Unjani 2020 in 2023

Variable	Symptoms of TMD				Total
Prevalence	Yes		No		
	n	%	n	%	
2023	47	87 %	7	13%	54

Table 4. Prevalence of symptoms of TMD disorders in students of Faculty of Dentistry Unjani 2020 in 2021 and 2023

Variable	Symptoms of TMD				Total	p-value
Prevalence	Yes		No			
	n	%	n	%		
2021	48	88.8%	6	11.2%	54	0.739
2023	47	87%	7	13%	54	

Table 5. The question of symptoms of TMD disorders in students of Faculty of Dentistry Unjani 2020 in 2021 and 2023

Questions	TMD year 2021				TMD year 2023				p-value
	Yes		No		Yes		No		
	n	%	n	%	n	%	n	%	
1. Do you have difficulty, pain, or both when opening your mouth, for instance, when yawning?	4	7.5%	50	92.5%	8	14.8%	46	85.2%	0.248
2. Does your jaw "get stuck'. "locked" or "go out"?	4	7.5%	50	92.5%	4	7.5%	50	92.5%	1.0
3. Do you have difficulty, pain, or both when chewing, talking, or using your jaws?	16	29.7%	38	70.3%	29	53.7%	25	46.3%	0.002
4. Are you aware of noises in the jaw joints?	27	50%	27	50%	35	64.8%	19	35.2%	0.074
5. Do your jaws regularly feel stiff, tight, or tired?	4	7.5%	50	92.5%	13	24%	41	76%	0.013
6. Do you have pain in or near the ears, temples or cheeks?	15	27.7%	39	72.3%	16	29.7%	38	70.3%	0.835
7. Do you have frequent headaches, neck aches, or toothaches?	29	53.7%	25	46.3%	35	64.8%	19	35.2%	0.109
8. Have you had a recent injury in your head, neck or jaws?	10	18.5%	44	81.5%	1	1.8%	53	98.2%	0.003
9. Have you been aware of any recent changes in your bite?	16	29.7%	38	70.3%	9	16.6%	45	83.4%	0.052
10. Have you been previously treated for unexplained facial pain or a jaw joint problem?	24	44.5%	30	55.5%	0	0%	54	100%	0.000

Shown in Table 3 is the prevalence of TMD symptoms in 2023 students at FKG Unjani. As many as 47 of the 54 students of class 2020 (87%) have at least one symptom of TMD, and the remaining seven (13%) do not. Table 4 shows that the value of p> 0.05 is obtained from the statistical test, meaning there is no significant difference between TMD symptoms in FKG Unjani students in 2021 and 2023. It was explained that the symptoms of TMD in the class of 2020 student group in 2021 students who had symptoms of TMD were 48 or 88.8%. The remaining six students, or 11.2%, had no symptoms, while in the class of 2020 students in 2023, students who had symptoms of TMD were 47 or 87.1%, and the remaining seven students, or 12.9%, had

no symptoms. There is a difference of 1 student who has TMD symptoms. In the 2023 class 2020, students who suffer from TMD are lower than in 2021; it's just that the difference in numbers is not significant.

The results of the questionnaire showed a significant difference ($p < 0.05$). An increase can be seen in question three regarding the difficulty of using the jaw with a significance value (of 0.002) and question five regarding stiff and tight jaws with a significance value of 0.013. A significant decrease occurred in question number 8 regarding head, neck, or jaw injuries, with a significance value of 0.003, and in question number 10 regarding being treated for joint problems, which was 0.000. out of 10 questions, there were only four questions that had a significant difference. The remaining six questions had no significant difference.

DISCUSSION

The decrease in the prevalence of symptoms of temporomandibular joint disorders can be caused by many factors, ranging from improving bad habits (clenching, grinding, biting nails, supporting one side of the chin) to improving the joint itself. Repair of the TMJ can be due to physiological adaptations or treatment of the joints, which can impact filling out answers from respondents and affect the research results.[13,15–17] Articular discs have unique abilities, including self-healing, repair, and adaptation. Adaptation over time and tissue adaptation to the joint may allow the affected joint to return to a more normal direction.[18,19]

Question number three regarding difficulty, pain, or both when chewing, speaking, or using the jaw, this can increase because you have previously suffered from disc displacement, and this is usually related to a disc displacement without reduction where symptoms occur in the form of pain, difficulty using the jaw which is not treated immediately or the etiology is eliminated. The pain is usually mild in character and usually only temporary, but for some people, it can become a chronic and persistent condition. It is generally reported that bruxism and oral habits, complaints of body aches, female gender, and various psychological factors are risk indicators for pain-related TMD.[20,21]

The increase in question number five regarding the jaw often feeling stiff, tight, or tired can be related to stress and parafunctional habits. Stress affects parafunctional activity by the reticular system in the hypothalamus and especially the limbic system, which affects muscle activity. This effect is exerted by increased activity in the intrafusal fibers that react to produce reflex contracts to low-activity

stimuli. Most of the molecules involved in stress mechanisms are the same as those associated with pain, resulting in a stressful situation that impairs the perception of pain-related transmission. Emotional stress can also cause an increase in muscle activity in resting positions, which can cause fatigue and result in muscle spasms. Parafunctional habits that stress affects can cause pain, tightness, stiffness, and fatigue in TMJ disorders. Parafunctional habits also cause pressure on the masticatory muscles and consequently exacerbate TMJ disorders.[15,22,23]

There was a significant decrease in question number eight related to head or neck injuries from 18.5% of students to 1.8% of students. This result is very likely to occur because in filling out the previous questionnaire with a result of 18.5%, the data was obtained in 2023, and for the questionnaire used, it was only asked up to 6 months back from filling out. It is impossible to say whether the subjects were interested in participating or whether they did because they had previously noticed the symptoms mentioned by the researcher. Misperceptions related to questions during filling can also occur. Trauma can cause TMD. Trauma itself can be associated with intracapsular disorders rather than muscle disorders. Trauma itself is divided into microtrauma and microtrauma. Macro trauma, such as a blow or impact to the face or head area that can make the TMJ joint click, injury to the head or neck is usually considered a risk factor that is significant enough to cause TMD, and the microtrauma that occurs is caused by small but repeated trauma that occurs in the joint.[9,13,24,25]

The question regarding treatment showed the most significant results of all respondents who answered that they had previously been treated for pain in the face or jaw joint problems; it decreased dramatically from 44.5% of students who claimed to have had none at all (0%), this most significant decrease was very likely occurs when respondents have been treated previously only the first time they fill out the questionnaire. Still, the second time they filled out, they have never received treatment; this is in line with research conducted by Rollman A. et al. in 2013 with a final sample of 100 patients adults with as many as 50% of subjects had improvement of TMD at follow-up six months later.[17]

All six question items did not change significantly in this study. Some were headaches, neck pain, limited movement, and being locked. Items with the highest significance value are in item number two regarding stuck or locked jaws, with a result of 7.5% suffering and a p-value of 1.0, meaning there is no difference from 2021 to 2023. Locked jaws can be

temporary but can become chronic and persistent in some individuals. Jaw locking occurs intermittently; the patient can handle it without assistance, known as intermittent locking disk displacement. Closing the jaw when opened wide may be painful, depending on the lock's severity and duration and the joint's structural integrity. Patients with acute, short history and period joint pain can only be associated with joint ligament elongation (such as trying to force the jaw open). As episodes of intermittent locking become more frequent and chronic, the ligaments are damaged, and innervation is lost. Symptoms that are left untreated and not treated immediately can become chronic.[19,21]

TMD symptoms can be treated after knowing the symptoms, risk factors, examination, and definite diagnosis of the patient. Anterior disc displacement without reduction is a benign and self-limiting condition. As the first treatment step, mandibular manipulation is recommended to restore the displaced disc. In cases where mandibular manipulation is successful, the patient must still be equipped with occlusal therapy devices. Still, if mandibular manipulation fails, the patient must be educated about the condition of the TMJ. At that time, conservative treatment is unnecessary because the locked jaw's clinical symptoms usually decrease over time. In cases of lack of self-improvement, conventional therapy should be applied.[20]

CONCLUSION

There was no statistically significant difference in prevalence regarding the prevalence of symptoms of temporomandibular joint disorder in FKG Unjani students in 2020, 2021, and 2023 ($p = 0.739$).

CONFLICT OF INTEREST

The authors reported no potential conflict of interest.

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