

Relationship of Temporomandibular Joint Disorders and Psychological Distress in Young Adults

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ABSTRACT

Background: Temporomandibular disorders (TMD) relate to dysfunctions that impact the temporomandibular joint (TMJ), masticatory muscles, and connected structures. Psychological well-being can be among the various factors that TMD affects. Prior studies conducted in different countries have demonstrated a correlation between TMD symptoms and psychological distress in young adults. However, research on this topic is limited in Indonesia. **Objective:** To assess the association of symptoms of temporomandibular joint disorder and psychological stress in young adults. **Materials and Methods:** This research employed an analytical cross-sectional design and involved 354 participants (141 males and 213 females) aged 19-21 from Kampus A of Universitas Trisakti. The subjects' general characteristics, including gender, age, and ethnicity, were described. The data were gathered through two types of questionnaires: DC/TMD axis I (Symptom Questionnaire) and axis II (Patient Health Questionnaire-PHQ-4), and were analyzed using the Spearman correlation test administered through Google Form. **Result:** The study's findings revealed that 141 participants (39.8%) were male, while 213 (60.2%) were female. Among the research subjects, 91 individuals - 32 males and 59 females - experienced the most discomfort in the pain category, with the mean PHQ-4 score for pain being the highest at 4.68. The bivariate analysis demonstrated a moderate correlation coefficient value ($r = 0.401$) and a significant relationship ($p < 0.05$) between temporomandibular disorders (TMD) in the pain category and psychological distress. The prevalence of TMD was 39.8% in males and 60.2% in females. **Conclusions:** TMD is a common problem among young adults aged 19-21 years, and pain associated with TMD can lead to psychological distress in this age group.

Keywords: Patient Health Questionnaire-4, Psychological distress, Temporomandibular disorders, Young adult

ABSTRAK

Latar belakang: Gangguan temporomandibular (TMD) berhubungan dengan disfungsi yang berdampak pada sendi temporomandibular (TMJ), otot pengunyahan, dan struktur yang terhubung. Kesejahteraan psikologis dapat menjadi salah satu dari berbagai faktor yang mempengaruhi TMD. Studi sebelumnya yang dilakukan di berbagai negara telah menunjukkan korelasi antara gejala TMD dan tekanan psikologis pada dewasa muda. Namun, penelitian tentang topik ini masih terbatas di Indonesia. **Tujuan:** Untuk menilai hubungan gejala gangguan sendi temporomandibular dan stres psikologis pada dewasa muda. **Materi dan Metode:** Penelitian ini menggunakan desain cross-sectional analitik dan melibatkan 354 peserta (141 laki-laki dan 213 perempuan) berusia 19-21 dari Kampus A Universitas Trisakti. Karakteristik umum subjek, termasuk jenis kelamin, usia, dan etnis, dijelaskan. Data dikumpulkan melalui dua jenis kuesioner: DC/TMD aksis I (Kuesioner Gejala) dan aksis II (Kuesioner Kesehatan Pasien-PHQ-4), dan dianalisis menggunakan uji korelasi Spearman yang diberikan melalui Google Form. **Hasil:** Hasil penelitian menunjukkan bahwa 141 peserta (39,8%) adalah laki-laki, sedangkan 213 (60,2%) adalah perempuan. Di antara subjek penelitian, 91 orang - 32 laki-laki dan 59 perempuan yang mengalami ketidaknyamanan paling banyak dalam kategori nyeri, dengan rata-rata skor PHQ-4 untuk nyeri tertinggi sebesar 4,68. Analisis bivariat menunjukkan nilai koefisien korelasi sedang ($r = 0,401$) dan hubungan yang signifikan ($p < 0,05$) antara gangguan temporomandibular (TMD) dalam kategori nyeri dan tekanan psikologis. Prevalensi TMD adalah 39,8% pada pria dan 60,2% pada wanita. **Kesimpulan:** TMD merupakan masalah umum di kalangan dewasa muda berusia 19-21 tahun, dan nyeri yang terkait dengan TMD dapat menyebabkan tekanan psikologis pada kelompok usia ini.

Kata Kunci: Dewasa muda, Distres Psikologis, Gangguan Temporomandibular, Kuesioner Kesehatan Pasien-4

1. Introduction

Symptoms of psychological pressure and temporomandibular disorder (TMD) or temporomandibular joint disorders are getting significant attention, especially in young adults. The temporomandibular joint disorder is a collection of symptoms affecting the temporomandibular joint, muscles of mastication, and related structures, causing various problems and impaired jaw

function. This disorder can cause pain, discomfort, and limited function in daily activities, thus having an impact on individual well-being.¹

Psychological problems have a role in the emergence of temporomandibular joint disorders. Psychological distress, which includes symptoms of anxiety, depression, and emotional instability, is a significant problem often experienced by young adults.² Many patients with temporomandibular joint disorders report high life pressures and anxiety. Several studies have shown that individuals suffering from temporomandibular joint disorders also report experiencing psychosocial problems, somatic complaints, and functional disturbances with varying intensities.³ Other studies have demonstrated a strong association between temporomandibular disorders and emotional stress, depression, anxiety, and somatic complaints. The transition phase from adolescence to adulthood is characterized by various challenges, such as academic pressures, social changes, and career decisions, which can contribute to psychological distress.⁴ Understanding the relationship between psychological distress and symptoms of temporomandibular joint disorder in this population is essential for determining comprehensive treatment.⁵

Research conducted in America and Asia shows a high prevalence of temporomandibular disorders in young adults. Previous studies have also demonstrated an association between symptoms of temporomandibular disorders, such as jaw pain and dysfunction, and manifestations of psychological distress.⁶ However, what is equally important to do is to look at this relationship in different cultural contexts and diverse populations because the prevalence and impact of temporomandibular disorders and psychological stress can vary across regions.⁷

According to the 2018 RI Ministry of Health data and information center results, based on the age group of 20-24 years, the number of young adults in Indonesia is 21,823 million.⁸ Young adults are a productive age group that has a major role in the productivity of a country. Therefore, this study aims to see the relationship between symptoms of temporomandibular joint disorder and psychological distress in young adults.⁹ By looking at the relationship between these two things, researchers hope to understand the factors that play a role, impact, and risk factors so that they can contribute to the development of treatment for temporomandibular joint disorders and psychological distress in young adults.

2. Material and Methods

The type of research that will be used to achieve the objectives of this study is analytic observational with a cross-sectional design. The research population in this study were students aged 18-22 years at Trisakti University Campus A, with a total of 354 respondents. The tools and materials used were Informed consent in digital form, the Indonesian-translated version of the PHQ-4 questionnaire in the form of Google Form, and the Indonesian-translated version of the SQ questionnaire in the form of Google Form.

3. Result and Discussion

From a total of 354 samples that met the inclusion and exclusion criteria, the proportion of gender was 141 males and 213 females with a patient age range of 18-22 years. The researcher conducted a Spearman correlation test because the results of the data distribution were not normal. Based on gender, the symptoms of temporomandibular joint disorders can be observed, and pain is the symptom of temporomandibular disorders that most respondents complain about (Table 1).

Table 1. Crosstable between symptoms of temporomandibular disorders and gender

Symptoms of Temporomandibular Disorders	Sex		Total
	Male	Female	
Painful	32	59	91
Headache	25	46	71
Jaw joint sound	27	41	68
Locked jaw	26	41	67
Jaws locked when open	31	26	57
Total	141	213	354

Based on comparing the average PHQ-4 value, which describes psychological pressure, the highest value of psychological stress was obtained in the pain category. For the lowest average value of psychological distress in the variety of no locked jaw disorder. (Table 2).

Table 2. Comparison of average psychological pressure values with symptoms of temporomandibular joint disorders

Symptoms of Temporomandibular Joint Disorders	Everage- PHQ-4
Pain / No	4,68/3,60
Headache / No	3,39/4,20
Jaw joint sound / No	3,28/3,56
Jaws locked (closed lock)/ No	2,31/2,29
Jaws that are locked in an open state (open lock) / No	3,46/2,88

Based on the results of the PHQ-4 data analysis, the distribution of the average score and standard deviation of each category of PHQ-4 questionnaire questions is shown in Table 9. It can be seen that the highest average score is in the anxiety category (Table 3).

Table 3. Descriptive statistical data on two dimensions of PHQ-4

No	Questions	N	Min	Max	Mean	Std.Deviation
1	Anxiety	354	0	6	1,53	1,328
2	Depression	354	0	6	1,46	1,465

Based on the Spearman correlation test results in the pain category, the results obtained were $p\text{-value/Sig} = 0.000$ ($p < 0.05$), which indicated a significant relationship between the symptoms of temporomandibular joint disorder in the pain category and psychological stress. The value of the correlation coefficient Spearman/ r (+) 0.401 indicates a positive correlation with a moderate correlation strength. A positive correlation shows a unidirectional relationship between the two variables, namely symptoms of temporomandibular disorders in high pain causing high psychological distress. The results of the bivariate test, which showed another significant relationship, were in the closed lock category. In contrast, the sound of the jaw joints and open lock did not establish a meaningful relationship for the headache category. Spearman's correlation coefficient, which shows a positive correlation, is only found in the headache category. In the variety of jaw joint sounds, locked jaw, and locked jaw, when opened, show a negative correlation, which means there is a non-unidirectional relationship between the two variables (Table 4).

Table 4. Spearman correlation test between symptoms of temporomandibular disorders and psychological distress

Symptoms of Temporomandibular Joint Disorders	r	p
Pain	,401**	0.000
Headache	0,065	0.222
Jaw joint sound	-0,032	0.549
Jaws locked (closed lock)	-,147**	0.006
Jaws that are locked in an open state (open lock)	-0,003	0.956

In the research that was carried out from July 2019 to August 2019 at Trisakti University Campus A, sample data were obtained in this study of 354 respondents aged 18-22 years by filling out a questionnaire by respondents via Google form, which had been distributed online to students and female students at Trisakti University Campus A who fit the inclusion criteria. The total subject of this study was 354 respondents, of which there were 141 men and 213 women who were respondents to the questionnaire in the form of Google form.

The results of the univariate analysis were carried out to determine the distribution of data based on age, gender, complaints of symptoms of temporomandibular joint disorders, and the average of the questionnaire used. In univariate data analysis in the study, the number of male subjects was 141 people (39.8%), and women were 213 people (60.2%). In this study, most research subjects were 21 years old, namely 97 people, and 11 were at least 18. The research subjects experienced the most complaints of pain, namely as many as 91 people, 32 men, and 59 women. Meanwhile, the least complained of by respondents was that the jaws were locked in an open state,

namely as many as 57 people, 31 of whom were men and 26 women. The results of the univariate analysis of the mean PHQ-4 for TMD symptoms showed that the average PHQ-4 was highest in the pain category of 4.68, with 91 people consisting of 32 men and 59 women. Research conducted by Tay et al., 2019, using DC/TMD SQ, also showed that the most reported symptom was pain at 16.69%. Schiffman (2014) also concluded that psychological problems were more common in subjects with temporomandibular joint disorders.¹⁰ Research conducted by Manfredini et al., 2009 using a questionnaire (SCL-90-R) also showed that there was a significant relationship between pain and psychological pressure in patients with temporomandibular disorders.¹¹

The bivariate analysis results using the Spearman correlation test show a relationship between temporomandibular disorders and psychological distress. Based on the results of the Spearman correlation test in the pain category, the results obtained were p-value/Sig = 0.000 ($p < 0.05$), which showed a significant relationship between pain and psychological stress. These results show that the null hypothesis or H_0 , which states that there is no relationship between the two variables, is rejected. The Spearman correlation coefficient/ r indicates the strength of the correlation between the two variables obtained from the Spearman correlation test. Spearman's coefficient value (+) 0.401 indicates a positive correlation with a moderate correlation strength. A positive correlation means a unidirectional relationship between the two variables, namely temporomandibular disorders in the high pain category causing high psychological distress.

In the context of the study you mentioned, if there were a positive correlation between temporomandibular disorders (TMD) in the high pain category and increased psychological distress, it would mean that individuals with more severe TMD pain are more likely to experience higher levels of psychological distress. This correlation indicates a statistical relationship between the two variables but does not necessarily imply causation. In other words, a positive correlation does not tell us whether TMD pain is causing psychological distress or vice versa. There could be other factors at play that influence both TMD pain and psychological distress independently, or it could be a bidirectional relationship, where each variable can affect the other over time. Researchers typically need to conduct further studies, such as longitudinal studies or randomized controlled trials, to establish a cause-and-effect relationship between temporomandibular disorders and psychological distress to determine causation.¹² It's essential to be cautious when interpreting correlations and avoid making causal claims based solely on correlation data.

This research aligns with Al-Khatami et al. 2016 used the Youth Self Report scale for young adults, which showed a significant relationship between psychological stress and temporomandibular joint disorders. Research by Al-Khatami et al. 2016 stated that young adults who suffer from temporomandibular disorders have a higher tendency to experience psychological disorders in the form of depression and anxiety and more aggressive behavior than healthy young adults.¹ This study also aligns with Zwiri AMA et al., 2016 which showed a significant relationship between emotionality and temporomandibular disorders in the age group 18-25 years.¹³ However, the results of this study are different from Reiter., et al. 2015, which used a questionnaire (GAD-7) with a total of 2 respondents. 07 people and shows no significant relationship exists between temporomandibular disorders and psychological stress in the form of anxiety.¹⁴ This difference can be caused by many things, among others, different backgrounds and cultures, as well as social habits, which can also affect individual responses to psychological stress.¹⁵ It can be said that from this study, symptoms of pain in temporomandibular disorders and psychological pressure have a close relationship. In contrast, other symptoms such as headaches, jaw joint sounds, jaw locking, and jaws that lock when opened do not appear to affect psychological solid pressure in young adults. Continually felt pain can also reduce the quality of life, increasing the possibility of stress, depression, and anxiety.¹⁶

In this study, a clinical examination was not carried out to see objectively that the respondent had temporomandibular joint disorders. It is interesting for further research involving more subjects and with more thorough clinical examination stages to see the relationship between temporomandibular joint disorders and psychological distress. The text acknowledges the need for further research involving more subjects and comprehensive clinical examination stages. This approach would likely provide more reliable and accurate results regarding the association between TMJ disorders and psychological distress. By incorporating rigorous clinical assessments, researchers can better understand the relationship between these conditions and potentially identify any causal or correlational factors.

It's essential to address such limitations in research to ensure that conclusions and recommendations are based on robust evidence. Without a proper clinical examination, it's challenging to establish a direct link between TMJ disorders and psychological distress, as other factors could be contributing to the observed symptoms. Future studies with more extensive methodologies can help clarify the connection and provide valuable insights into effective treatment and management strategies for individuals experiencing TMJ disorders and psychological distress.

4. Conclusion

Based on the results of this study, it can be concluded that there is a significant relationship between temporomandibular disorders in the pain category and psychological pressure in young adults using the TMD symptom questionnaire and PHQ-4.

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Authors Contribution

Contribution	Hanin I	Putri PW
Concepts or ideas	√	√
Design	√	√
Definition of intellectual content	√	
Literature search	√	√
Experimental studies	√	
Data acquisition	√	
Data analysis	√	
Statistical analysis		√
Manuscript preparation	√	√
Manuscript editing	√	√
Manuscript review	√	√



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