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Prevelence of temporomandibular joint dysfunctions (TMDs) and depressive symptoms and feelings of stress in physiotherapy students with type D personality

Występowanie objawów zaburzeń stawów skroniowo-żuchwowych (TMDs) i depresji oraz odczuwanie stresu u studentów fizjoterapii z osobowością typu D

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Abstract

Background. Recent scientific reports in dentistry and psychology tend to emphasize the role of various personality traits in temporomandibular joint dysfunction (TMD) multimodal etiology. Since type D personality is a new construct, there has not been much research published regarding this subject. It encompasses both the tendency to experience negative emotions and the tendency to refrain from expressing them. The impact of this combined effect on the increase in stress intensity and the development of somatic and psychiatric illnesses is clearly highlighted. The data presented in the scientific report complement previous insights during ongoing research on Type D personality in people with TMD predisposing factors.

Aim. The aim of this article was to assess the influence of type D personality and its two dimensions on the prevalence of symptoms located in TMJ and adjacent tissues, predisposing factors, depression, and levels of perceived stress.

Material and methods. The study was conducted on a group of 240 physiotherapy students. The study group (G1) comprised of 120 students with DS. 14 type D personality. The control group (G2) consisted of the same number of people without Type D personality. Data obtained included symptoms of TMJ symptoms, and predisposing factors according to original questionnaire form developed for the study; PSS10 stress severity questionnaire and the Beck Depression Inventory (BDI) were also used.

Results. In the study group, TMD symptoms significantly positively correlate with type D personality (with NE a stronger correlation than with SI), PSS10 and BDI, and negatively correlate with age. Students with type D personality had significantly more frequent and higher TMD symptoms than those without stress personality ($p = 0.000$). The exception was the symptom of increased muscle tension which showed no statistical difference ($p = 0.222$). People with Type D personality are more than 6 times more likely to clench their teeth (OR = 6.76) and 3 times more likely to have TMJ acoustic symptoms (OR = 3.35) and teeth grinding (OR = 3.27). In the study group, as the level of perceived stress and degree of depression increased, the number of TMJ and preauricular area complaints reported were also on the rise. In the group of students with type D personality, depression was significantly more frequent than in the group without stress personality ($p = 0.000$).

Conclusion. Students with Type D personality risk experiencing more TMJ and preauricular area issues, while coping with more stress and depressed mood.

Key words:

D personality, stress, depression, temporomandibular joint dysfunction, students

Streszczenie

Wprowadzenie. Doniesienia naukowe z zakresu stomatologii i psychologii podkreślają rolę cech osobowości w etiologii dysfunkcji stawów skroniowo-żuchwowych (TMDs). Osobowość typu D jest stosunkowo nowym konstruktem, w związku z czym nie ma jeszcze zbyt wielu badań na ten temat. Obejmuje ona zarówno skłonność do doświadczania negatywnych emocji, jak i tendencję do powstrzymywania się od ich wyrażania. Wyraźnie podkreśla się wpływ tego połączonego efektu na wzrost natężenia stresu oraz rozwój chorób somatycznych i psychicznych. Przedstawione w doniesieniu naukowym dane stanowią uzupełnienie wcześniejszych spostrzeżeń podczas realizowanych badań dotyczących osobowości typu D u osób z TMDs.

Cel. Ocena wpływu osobowości typu D oraz jej dwóch wymiarów na występowanie TMDs i czynników predysponujących, depresji i poziom nasilenia odczuwanego stresu.

Materiał i metody. Badania przeprowadzono na grupie 240 studentów fizjoterapii. Grupę badaną (G1) stanowiło 120 studentów ze stwierdzoną na podstawie kwestionariusza DS14 osobowością typu D. Grupę kontrolną (G2) stanowiła taka sama liczba osób bez osobowości typu D. Dane zebrano za pomocą opracowanego na potrzeby badania formularza występowania objawów zaburzeń TMDs i czynników predysponujących , kwestionariusza oceny nasilenia stresu PSS10 oraz kwestionariusza depresji Becka (BDI).

Wyniki. W badanej grupie ilość objawów TMDs istotnie dodatnio koreluje z osobowością typu D (z NE mocniejsza korelacja niż z SI), PSS10 oraz BDI oraz ujemnie koreluje z wiekiem. U studentów z osobowością typu D istotnie częściej oraz w większej ilości występowały objawy TMDs niż u osób bez osobowości stresowej ($p = 0,00$). Wyjątek stanowił objaw wzmożonego napięcia mięśniowego, który nie wykazał różnicy statystycznej ($p = 0,22$). Osoby z osobowością typu D są ponad 6 razy częściej narażone są na zaciskanie zębów (OR = 6,76) oraz 3 razy częściej na objawy akustyczne TMJ (OR = 3,35) i zgrzytanie zębami (OR = 3,27). W grupie badanej wraz ze wzrostem poziomu odczuwanego stresu i stopnia depresji wzrasta też ilość zgłaszanych objawów TMDs. W grupie studentów z osobowością typu D depresja występowała istotnie częściej niż w grupie bez osobowości stresowej ($p = 0,00$).

Wniosek. Studenci z osobowością typu D są narażeni na występowanie większej ilości objawów TMDs oraz silniejsze odczuwanie stresu i depresji.

Słowa kluczowe:

osobowość D, stres, depresja, dysfunkcja stawu skroniowo-żuchwowego, studenci

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Introduction

The time of study is a radical change in a young person's life, creating developmental opportunities and bringing certain social and psychological risks [1]. These may involve a change of residence, new circles of friends, and specific factors inherent in the academic environment. These changes can also be a source of significant stress [2]. Negative emotions perceived over time can contribute not only to cardiovascular or internal organ issues, but also affect the condition of the temporomandibular joints (TMJ) and surrounding tissues [3-7].

Among personality characteristics that can exacerbate the consequences of stress the tendency to experience strong negative emotions (negative affectivity- NA) and to refrain from expressing them (social inhibition- SI) are most significant. These two dimensions, taken as relatively stable traits, make up the so-called D-type personality (distressed personality). This concept was introduced into the literature by clinical psychologist J. Denolett in 1995 [8].

Coping with strong negative emotions and consciously refraining from expressing them is associated with a sense of severe distress for an individual [9]. What is more, the ones with high NA feel irritable and tense while maintaining a negative self-image. They rarely experience positive feelings and focus on unpleasant sensations more, showing tendency to be worried and pessimistic about life [10]. The second dimension comprising Type D personality, or SI, denotes a constant tendency to refrain from emotional expression and related behaviors in social interactions [11]. Individuals with elevated levels of SI tend to feel tense, insecure, and inhibited when interacting with others and avoid expressing their thoughts and feelings [12]. At the same time, they perceive their environment as threatening, as they expect unsatisfactory behavior from others [13].

Theoretical basis of Type D personality draws on Eysenck's formulation of biological theories of inhibition and activation theory [14]. According to the former one, individuals in whom arousal potential is created quickly and forcefully, while reactive inhibition occurs slowly and disappears quickly, show predisposition to introverted behavior (the opposite is true for extroverts) [15]. Activation theory, on the other hand, refers to individual differences in the level of activity of the reticular cortical loop, which determines the activation level. The activity level of introverts exceeds that of extroverts [16]. Tendency to experience negative emotions, common for both type D personality and neuroticism, modifies behavior and level of functioning in situations that enhance limbic system activity [17].

Type D personality construct is based on a relatively enduring disposition that manifests the two main Big Five personality dimensions – neuroticism and introversion [18].

The stress personality is linked to neuroticism by a tendency to have a catastrophic view of reality, a way of judging events as highly threatening and harmful, and experiencing intense anxiety and tension. In social situations, shyness in the presence of others and a tendency to worry, high vulnerability to stress and a tendency to break down in demanding situations

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are characteristic [19]. Unlike type D personality, there is no emphasis on refraining from disclosing negative emotions in neuroticism. On the other hand, Type D personality shares with introversion a reticence in social interactions, shyness, and a tendency to be alone. In addition, introversion, like type D, is associated with a lower tendency to seek social support, poorer quality of social contacts and loself-esteem [19].
Type D personality is a significant predictor of cardiovascular disease, cancer, gastric and duodenal ulcers, skin disease and insomnia [20–26]. Individuals with this personality type are at increased risk of psychiatric disorders such as anxiety, post-traumatic stress disorder, phobia, and somatoform disorders [27, 28]. Studies show also significant association between Type D personality and depression [29].
According to the literature on the subject, there is a relationship between personality traits and symptoms of temporomandibular joint disorders (TMDs) [30–33].

Previous research conducted by the authors of the study on the assessment of the occurrence of type D personality in people with symptoms of TMDs clearly demonstrated the relationship between these factors [34,35]. Additionally, a significant relationship was observed between type D personality and the level of perceived stress and depression [36,37]. In the current work, additional analyzes were performed to expand knowledge about type D personality, and in particular its two dimensions, i.e. NE and SI. First, both dimensions of type D personality were assessed in relation to the level of perceived stress and the intensity of depression as well as the number of TMDs symptoms. Then, a more detailed analysis of the BDI scale was performed in relation to both dimensions of personality and the number of reported TMDs symptoms.
We hypothesized that individuals characterized by Type D personality, compared to others, would feel stress more vividly and experience its' health and psychological consequences more strongly.

Aim

The aim of the study was to evaluate the influence of Type D personality and its two dimensions on the occurrence of self-reported TMJ problems and depression symptoms and the level of perceived stress severity.

Material and methods

The study was conducted from September 2021 to November 2021 among the students of Physiotherapy at the Pomeranian Medical University in Szczecin, Poland.
DS14 questionnaire was used in a group of 320 physiotherapy (first, second, third or fourth year of physiotherapy) students, based on which a group of 120 students with a type D personality (the study group, G1) was selected. The inclusion criteria were the presence of a type D personality based on the DS-14 questionnaire (obtaining at least 10 points in the NE and SI), age from 20 to 28 years, no history of neurological or mental diseases, consent to participate in the study. Exclusion criteria included bilateral pain, inflammation in the oral cavity that emerged as myospasm or preventive muscle contraction, earlier splint therapy, pharmacotherapy (e.g., oral

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contraception, hormone replacement therapy, and antidepressants), systemic diseases (e.g., rheumatic and metabolic diseases), lack of stability in the masticatory organ motor system, masticatory organ injury, pregnancy, patients undergoing orthodontic treatment, other types of inflammation in the oral cavity (e.g., pulp inflammation or impacted molars), and fibromyalgia [38].
From the remaining group of students who did not meet the D personality criteria (obtaining less than 10 points in the NE and SI), 120 people were randomly selected as a control group (G2).
The presence of type D personality in G1 group was considered main differentiating factor in the inclusion criteria in groups G1 and G2 for the purpose of the study. In all subjects with G1 and G2, the stress intensity was assessed according to PSS10 scale; the BDI depression incidence and the proprietary questionnaire about self-reported TMJ and adjacent tissues problems with predisposing factors was used.
The study was approved by the Pomeranian University of Medical Science Institutional Ethical Committee (KB-0012/79/16).

Research tools

a) Psychological Questionnaire DS14 (Type-D scale). For assessing the presence of a stressful personality in this study the authors used the validated Polish adaptation of DS-14 [34]. It consists of 7 related to the tendency to experience negative emotions and 7 tendencies to refrain from expressing these emotions. Each statement is rated on a scale from 0 (false) to 4 (true). The theoretical range of scores for each dimension is 0 to 28 points. Classification to type D requires obtaining at least 10 points in each of the two dimensions, i.e., NA (negative emotionality) and SI (social inhibition). The reliability coefficient of Cronbach's alphas for the DS14 is 0.86.

b) Perceived Stress Scale (PSS-10). For assessing the stress level in this study, we used validated Polish adaptation of PSS10 [39]. It contains 10 questions about different subjective feelings related to personal problems and events, behaviors and ways of coping. The respondents provided their answers by entering the correct number (0 – never, 1 – almost never, 2 – sometimes, 3 – quite often, 4 – very often). The overall score on the scale is the total of all points, the theoretical distribution of which is from 0 to 40. The higher the score, the greater the severity of the perceived stress. The general indicator after conversion to standardized units is interpreted according to the properties characterizing the sten scale (is a scale of psychological test normalized so that the population mean is 5.5 and the standard deviation is 2. The scale has 10 units). Scores in the range 1–4 sten (0–13 points) are treated as low, and in the range 7–10 sten (20–40 points) as high. Results between 5 and 6 sten (14–19 points) were considered average. The reliability coefficient of Cronbach's alphas for the PSS-10 was 0.74.

c) Beck Depression Inventory (BDI). Advantages of the inventory are its high internal consistency, high content validity, validity in differentiating between depressed and nondepressed subjects, sensitivity to change. The original

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version has proven and satisfactory psychometric properties, while the data on the Polish translation are still only preliminary, despite very frequent use in practice and research [40]. BDI consists of 21 questions. The participants can choose one of four answers to each question. Each answer is assigned a value of 0 to 3 points. The theoretical range of scores for each dimension is 0 to 63 points. Depending on the total number of the points obtained, one can detect absence of depression (0-11 points), mild depression (13-19 points), moderate depression (20-25 points), severe depression (above 26 points). The reliability coefficient of Cronbach's alphas for the BDI is 0.84.

d) Our own questionnaire of TMD predisposing factors., i.e., headache, neck pain and shoulder girdle pain, TMJ (temporomandibular joint) pain, TMJ acoustic symptoms, increased masticatory muscle tension, TMJ locking, teeth clenching and grinding.

Study group characteristics

A group of 240 students participated in the study, including 164 women (68.3%) and 76 men (31.7%). The mean age in G1 group of 120 students was 20 (SD 2.32). This group consisted of 99 women (82.5%) and 21 men (17.5%). G2 group consisted of 56%, 27%, 12% and 25% of first, second, third and fourth-year students, respectively. In the G2 control group of 120 students, the mean age was 22.95 (SD 6.11). The group consisted of 65 women (54.2%) and 55 (45.8%) men. G2 group included 41%, 32%, 17%, and 30% of first, second, third and fourth-year students, respectively. There was no difference in the gender structure and year of studies between the groups, $p = 0.000$.

Statistical analysis

Data are presented as n and% of responses for qualitative variables and the average +/- standard deviation for quantitative features. The Chi2 Pearson test was used to compare the relationships between the qualitative variables. Comparisons for quantitative variables were made using the Student's t-test, and the relationship between quantitative variables was assessed using the Pearson correlation coefficient. Due to the considerable number of cases in the study groups, based on the central limit theorem parametric tests were applied.

Results

Correlation analysis of the variables for the entire study group is presented first.

As seen from the analysis above, all variables studied correlate negatively with age. Personality D, PSS10 and BDI correlate positively with all variables. Notably, the number of TMJ symptoms and predisposing factors correlate positively with NE and SI, with social inhibition being the stronger component. The BDI also correlates positively with the number of TMJ symptoms (Table 1).

Table 2 provides information on the prevalence of individual symptoms and predisposing factors of TMDs in G1 and G2. A statistical comparison between the two groups was made.

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Table 1. Correlation analysis of the analyzed variables in the whole study group

Variable	Correlations (n = 240)						
	1	2	3	4	5	6	7
Age	–	−0.417 p = 0.000	−0.1977 p = 0.002	−0.1927 p = 0.003	−0.1887 p = 0.003	−0.1428 p = 0.027	−0.1409 p = 0.029
Type D (NE)	−0.2417 p = 0.000	–	0.5608 p = 0.000	0.7842 p = 0.000	0.7823 p = 0.000	0.6297 p = 0.000	0.4051 p = 0.000
Type D (SI)	−0.1977 p = 0.002	0.5608 p = 0.000	–	0.5046 p = 0.000	0.4782 p = 0.000	0.5236 p = 0.000	0.3194 p = 0.000
PSS10 (points)	−0.1927 p = 0.003	0.7842 p = 0.000	0.5046 p = 0.000	–	0.9843 p = 0.000	0.6667 p = 0.000	0.3320 p = 0.000
PSS10 (sten)	−0.1887 p = 0.003	0.7823 p = 0.000	0.4782 p = 0.000	0.9843 p = 0.000	–	0.6733 p = 0.000	0.3249 p = 0.000
BDI	−0.1428 p = 0.027	0.6297 p = 0.000	0.5236 p = 0.000	0.6667 p = 0.000	0.6733 p = 0.000	–	0.3464 p = 0.000
Number of TMJ symptoms and predisposing factors TMDs	−0.1409 p = 0.029	0.4051 p = 0.000	0.3194 p = 0.000	0.3320 p = 0.000	0.3249 p = 0.000	0.3464 p = 0.000	–

Legend: NE – negative affectivity, SI – social inhibition p – statistical significance; sten – unit of the psychological scale

Table 2. Analysis of the prevalence of the analyzed TMJ symptoms in the group of people with and without Type D personality

Variable	Type D (G1)	No type D (G2)	OR	95% CI	p
Headache	74 (61.7%)	44 (36.7%)	2.78	1.65–4.69	p = 0.000
Pain in the neck and shoulder girdle	74 (61.7%)	17 (14.2%)	2.81	1.48–5.33	p = 0.000
TMJ pain	56 (46.7%)	22 (18.3%)	2.81	1.48–5.33	p = 0.001
TMJ acoustic symptoms	28 (23.3%)	10 (8.3%)	3.35	1.54–7.25	p = 0.001
Increased masticatory muscles tension	32 (26.7%)	24 (20.0%)	1.45	0.80–2.66	p = 0.222
Teeth clenching	69 (57.5%)	20 (16.7%)	6.76	3.71–12.34	p = 0.000
Teeth grinding	32 (26.7%)	12 (10.0%)	3.27	1.59–6.728	p = 0.000

Legend: p – statistical significance; 95%CI – 95% confidence interval of the 95th percentile; OR – odds ratio

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As can be seen from Table 2, students with Type D personality were significantly more likely to have TMJ symptoms than those without a stress personality. The exception was the symptom of increased muscle tension which showed no statistical difference. Analysis of the OR ratio showed that people with type D personality were more likely to have TMJ-related issues, especially teeth clenching, teeth grinding and acoustic phenomena in TMJ.

Table 3. Correlation between prevalence of depression and selected variables

Pair of variables (n=240) BDI	Tau	p
Age	−0.09	0.035
Type D (NE)	0.52	0.000
Type D (SI)	0.43	0.000
PSS10 (point)	0.55	0.000
PSS10 (sten)	0.58	0.000
Year of study	−0.05	0.277
Number of TMJ symptoms and TMD predisposing factors	0.32	0.000

Legend: NE – negative affectivity, SI – social inhibition p – statistical significance; sten – unit of the psychological scale, Tau – Kendall Tau

As shown in Table 3, the degree of depression increases with the increase in NE and SI values, the intensity of perceived stress and the number of reported TMD symptoms and predisposing factors.
Table 4 provides information on the results achieved by the participants in the measurement of the severity of perceived stress. In the group of students with type D personality, the largest group (80%) were people with a high sten score, which proves a high perception of experienced stress. In the group of people without a type D personality, the largest group were people (44.1%) with a low sten score, indicating a low experience of perceived stress. There was a significant difference between the groups.

Table 4. Analysis of the obtained results in the perceived stress level assessment scale in groups with and without a type D personality

Sten	Variable PSS10	Points	Type D (n = 120)	No type D (n = 120)	p
3	low	4–9	0 (0%)	19 (15.8%)	p = 0.00
4		10–13	2 (1.7%)	34 (28.3%)	
5	meidal	14–16	11 (9.2%)	22 (18.3%)	
6		17–19	11 (9.2%)	25 (20.8%)	
7	high	20–22	24 (20%)	13 (10.8%)	
8		23–26	32 (26.7%)	6 (5.0%)	
9		27–30	30 (25%)	1 (0.8%)	
10		31–40	10 (8.3%)	0 (0%)	

Legenda: p – istotność statystyczna; sten – jednostka skali psychologicznej / Legend: p – statistical significance; sten – unit of the psychological scale

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When analyzing the PSS10 scale values related to reported TMJ issues, it was observed that people with type D personality and TMJ symptoms scored significantly higher on the PSS10 scale than the control group (p = .00).

Discussion

Type D personality is a new construct, so there is not much research on it. Most research has focused on assessing the prevalence of stress personality in patients with cardiovascular disease [41, 42].

In the literature, one can see a growing number of scientific papers on personality type assessment in people with TMDs; these are analyzed based on the NEO-FI, STAI or Eysenck questionnaires. According to Moayedi et al., neuroticism may contribute to the pathophysiology of muscular TMDs, as there is a correlation between chronic pain in TMDs and the patient's neurotic personality [43]. The results of a study by Mankiewicz et al. using the Eysenck questionnaire showed that people with TMDs have a higher level of neuroticism (40%) than those without TMDs (20.3%) [44]. According to a study by Montero et al. using the NEO-FFI questionnaire, the risk of bruxism increases proportionally for personality traits such as neuroticism (OR: 1.06) and extraversion (OR: 1.04) [45].

According to our data, students with Type D personality were significantly more likely to suffer from TMJ symptoms than those without stress personality (p = 0.00). The exception to the above was the symptom of increased muscle tension, which showed no statistical difference (p = .222). The most frequently reported symptoms in people with personality D were headaches (61.7%), neck and shoulder girdle pain (61.7%), teeth clenching (57.5%), and TMJ pain (46.7%). Particularly noteworthy is the fact that people with Type D personality are more than 6 times more likely to suffer from teeth clenching (OR = 6.76) and 3 times more likely to suffer from TMJ acoustic symptoms (OR = 3.35) and teeth grinding (OR = 3.27), i.e., symptoms clearly associated with TMDs. In a study by Sójka et al., no relationship was found between personality type (A, B, A/B) and teeth clenching and grinding (p = 0.11) as well as between personality type and non-occupational parafunctions (p = 0.26) [46]. The above data may indicate that individuals with type D personality are more likely to have occlusal parafunctions of the masticatory organ. Therefore, future research should be considered to extend the study to assess the prevalence of bruxism in individuals with stress personality, as there are no scientific papers assessing such a relationship to date.

The authors of the study, while analyzing the correlation coefficient in the study group, observed that the number of TMJ symptoms (surrounding tissues and organs) positively correlates with type D personality. Still, a stronger component is NE (.4051, p = .000) than SI (.3194, p = .000). The result may indicate the overriding role of neuroticism in positing TMDs symptoms. These data indirectly coincide with the study of Serra-Negra et al., where it was shown that children whose personality domain has a high level of neuroticism are more prone to sleep bruxism [47]. According to a study by Southwell et al. using the Eysenck questionnaire, individuals

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with TMDs score higher on the neuroticism and introversion scales (both p < 0, 05) [48]. In the literature, Type D personality is thought to consist of more than just the presence of NA and SI, and it has been suggested that it is a synergistic effect of both constructs combined [10,49]. However, our findings may suggest that the effects observed for Type D in individuals with TMJ symptoms are not driven by a synergistic interaction but instead by NA. Similarly, more recent findings also suggest that NA may be a key component driving the relationship between Type D personality and a range of health symptoms [22, 50–53]. Hence, future research should focus on determining whether Type D in individuals with TMJ symptoms has predictive utility above NA trait alone.

In their study, the authors obtained a negative correlation between the number of TMJ symptoms and age, which may indicate that the frequency of TMJ disorder symptoms is higher in younger than in older people. Subsequently, a significant positive correlation was obtained between the level of perceived stress and depression and the number of TMJ symptoms. In a study by Atsü et al., statistical analysis showed that depression (OR = 5.88, p < 0.01) and hysteria (OR = 2.94, p < 0.05) had a significant effect on the symptom of masticatory muscle tenderness [54]. Therefore, in the authors' opinion, people with psycho-emotional disorders especially should be included in a TMDs prevention program.

Chronic stress creates an environment that exacerbates many determinants of mental ill health, including the emergence of depressive symptoms. The alarming increase in the number of students with depression is highlighted by numerous authors in their studies [55–57].

Sharma's study of 380 students found that the prevalence of depression was 44.5% and that it was significantly associated with Type D personality [58]. Sensoy et al. reached similar conclusions, who found a correlation between Type D personality in students and the occurrence of depressive symptoms (p = 0.001) [59]. According to our study, a significantly positive correlation was obtained between the severity of depression in students and the NE (Tau = 0.52, p = 0.000) and SI (Tau = 0.43, p = 0.000) dimensions and the perceived stress scale (Tau = 0.55, p = 0.000).

As can be seen from the data obtained by the authors on the PSS10 scale of perceived stress between students with and without type D personality, a statistical difference was obtained. In the group of students with type D personality, the largest group (80%) were those with a high sten score, indicating a heightened perception of perceived stress. In the group without Type D personality, the largest group was those with a low sten score (53%), indicating low perceived stress. O'Riordan et al.'s study of students found that Type D individuals perceived their life events as significantly more stressful than those without Type D. Type D individuals also reported increased perceptions of negative social relationships and less social support [60]. Cho S. et al. reached similar conclusions in their research paper when conducting a study among Korean students and observed that Type D personality was related to the level of perceived stress [61]. Our own analysis showed that the level of perceived stress showed statistical significance with the number of TMJ symptoms reported (p = 0.00). As the level of perceived stress increases, the number of reported TMJ symptoms increases.

The above considerations, confirm the influence of Type D

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personality on the occurrence of TMJ symptoms. Thanks to the conducted analyses and the assessment of two dimensions, i.e., NA and SI, a stronger correlation of negative emotionality with the number of TMJ symptoms was pointed out, which should be emphasized when conducting further research on the influence of personality on the development of temporomandibular joint disorders.

Limitations

The findings presented, which indicate the role of Type D personality on the occurrence of TMJ symptoms, as well as predisposing factors, depression, and levels of perceived stress, should be treated with caution. Primarily due to the cross-sectional nature of the research. It should also be noted that an individual's personality is only one of many determinants of TMDs. A limitation of the presented study is the lack of a manual examination of the temporomandibular joints to assess the occurrence of dysfunctions objectively. Therefore, the authors see the need to continue the studies conducted in the future, taking into account the DC/TMD diagnostic protocol.

Conclusion

1 Type D personality may influence the number of TMJ symptoms present in young people. Attention should be paid to assessing the prevalence of personality type D in individuals with masticatory parafunctions.
2. Students with type D personality are at risk of experiencing more severe stress and more frequent depressive symptoms.
3 The degree of depression and the level of perceived stress influence the number of TMJ symptoms reported, which should be considered when conducting TMD diagnosis and treatment in the dental practice.

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Piśmiennictwo/ References

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