

ACADEMIC: ORIGINAL RESEARCH

Somatisation status and associated variables in final-year medical students at a public university, in Istanbul, Türkiye

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Abstract

Background

Somatisation, a complex manifestation of mental health disorders, is of pivotal importance due to its high prevalence and profound impact, especially among individuals aged 20–30 years. While stress, common in this age group, can intensify somatic symptoms, it is essential to recognise that the impact of stress varies, being both beneficial and detrimental depending on its level and type. This nuance underscores the complexity of studying somatisation and its triggers. Considering the elevated prevalence of mental disorders, including anxiety and somatic symptom disorders, among medical students, our study specifically targets somatisation and related variables in final-year medical students at a public university in Istanbul.

Materials and Methods

In this descriptive study, we surveyed 92 out of 180 final-year students enrolled in a public medical faculty in Istanbul, Türkiye, during the 2020–2021 academic year. Data were collected using an online questionnaire, which comprised a 20-item socio-demographic questionnaire and a 33-item “Somatisation Scale”. Statistical tests including Mann-Whitney U, Kruskal-Wallis, and Multiple Linear Regression were conducted.

Results

In our study of final-year medical students, 23.9% of participants scored 17 or above on the Somatisation Scale, classifying them as having somatisation. Females exhibited significantly higher somatisation scores than males. The prevalence of somatisation was higher in smokers, at 42.3%, compared to non-smokers, at 16.7%, with $p < 0.009$. Additionally, the presence of somatisation was significantly associated with having a chronic illness and specific sleep patterns, such as usually not being able to sleep, sometimes not being able to sleep, and sleeping well. Variables such as living arrangements, place of longest residence, academic achievement, career plans, and anxiety about the future did not reveal statistically significant associations with somatisation status.

Conclusions

This study examines the somatisation status among final-year medical students. Educational initiatives and early interventions for variables such as sleep patterns, smoking, and chronic illnesses are crucial in

reducing the frequency of somatisation. Recognising the significance of early diagnosis for addressing widespread somatisation concerns is vital. For future research, we recommend using larger sample sizes and established scales to assess sleep and anxiety conditions.

Keywords:

College student, medical student, somatisation, somatoform disorders

Introduction

Mental health is defined as a state of well-being in which an individual is aware of their own capabilities, can cope with the general stresses of life, can work productively, and can make a contribution to their community.¹ According to the World Health Organization's (WHO) 2019 report, one of every eight people worldwide grapples with a mental disorder, with the most prevalent being depression and anxiety disorders. In 2020, in the wake of the Covid-19 pandemic, there was an estimated 26% increase in anxiety disorders and a 28% increase in depressive disorders within a single year.² In Türkiye, this figure is approximately 20%.³ Mental health disorders are not only prevalent but also noteworthy due to the challenges in treatment and their high rates of chronicity. Considering the cost of treatment and the loss of work-force caused by these illnesses, they also create a substantial economic disadvantage.⁴ Taking all these factors into account, it becomes evident that mental health disorders constitute a critical public health concern.⁵

According to the DSM-5 criteria, somatic symptom disorder (formerly known as somatisation disorder) is defined as the presence of physical symptoms lasting for more than six months, accompanied by high levels of anxiety, disproportionate and persistent thoughts related to these symptoms, and impaired functionality.⁶ It has been noted that inappropriate activation of the autonomic nervous system, endocrine system, and immune system may play a role in the onset of somatic symptoms.⁷ Somatic symptoms occur most commonly between the ages of 20 and 30. Potential risk factors include female gender, low educational level, low socioeconomic status, a family history of chronic illness, and comorbid psychiatric disorders.⁸

Physical symptoms of somatic symptom disorder include back pain, chest pain, dizziness, fatigue, headaches, pain in joints and limbs, gastrointestinal complaints, and sleep disturbances.⁹ With the updated diagnostic criteria in DSM-5, the diagnosis of somatic symptom disorder has undergone revision.⁶ The requirement for symptoms to be included in the four symptom groups (pain, gastrointestinal symptoms, sexual symptoms,

and conversion symptoms) has been removed. In the past, it was stated that these symptoms could not be explained by any medical condition; however, this criterion has been updated to consider “symptoms that can or cannot be explained by any medical condition”.¹⁰

Somatic symptoms are highly correlated with depression and anxiety.¹¹ Stress is considered a major risk factor for somatic symptom disorder. University students in Türkiye experience significant stress due to challenges such as exams and changing living conditions. In response to this stress, individuals may develop somatic symptom disorder.¹²

In the literature, it is notable that mental disorders have a high prevalence among medical students worldwide.⁴ Medical faculty students are particularly at a higher risk of stress and depression compared to students in other departments.¹³ Therefore, stress-related physical complaints, such as digestive system problems or musculoskeletal system problems, are frequently observed in this group.¹³

Somatic symptom disorder not only negatively impacts students' academic performance but also leads to functional impairment in daily life.¹⁴ Recognising and addressing this disorder is therefore imperative. In light of the intricate relationship between somatisation and its impact on both academic and personal spheres, our study endeavoured not merely to assess the status of somatisation among final-year medical students at a public university in Istanbul, Türkiye, but also to uncover the underlying variables associated with it. By doing so, we aimed to contribute to a deeper understanding of somatisation within this specific demographic, facilitating the development of targeted interventions that could mitigate its adverse effects and enhance student wellbeing.

Materials and Methods

This descriptive study was conducted among final-year students enrolled in a public university's medical school in Istanbul, Türkiye during the 2020–2021 academic year. The study aimed to survey the entire eligible population, initially consisting of 180 individuals. However, due to a response rate of 51%, the final sample comprised of 92 participants. All participants volunteered to take part in the study.

Data for our research was gathered using an online survey platform. Participants completed a 20-item socio-demographic questionnaire, which included details such as gender, age, marital status, living arrangements, smoking habits, sleep patterns, presence of chronic diseases, career plans, anxiety status, place of longest residence, place of residence up to age 12, use of supportive medicine, presence of chronic illness in first-degree relatives, and academic achievement status. Additionally, participants responded to a 33-item Somatisation Scale, validated for reliability by Şeyda Dülgerler, consisting of questions answered with ‘true’ and ‘false’.¹⁵ Participants are assigned scores of 0 or 1 based on their responses. Scores on this scale range from a minimum of 0 to a maximum of 33. A higher total score indicates the presence of somatic symptom disorder, with a cut-off score set at 17. For the purpose of this study, participants scoring “17” or higher are classified as “somatisation present”, while those scoring below “17” are classified as “somatisation absent”.¹⁵

The statistical significance of participant responses was evaluated using data from the socio-demographic information questionnaire and the Somatisation Scale. Descriptive analyses were conducted, presenting counts, percentages, means, medians, and standard deviations. The somatisation scale score, serving as the dependent variable, was compared against various independent variables, including gender, sleep pattern, smoking status, chronic illness status, living arrangements, career aspirations, anxiety status, place of longest residence, place of longest residence up to age 12, and academic achievement status. These comparisons were conducted using non-parametric tests. Specifically, the Mann-Whitney U test is used when the independent variable can divide participants into exactly two categories, as it compares differences between these two groups when the dependent variable is ordinal or continuous, but not normally distributed. Conversely, the Kruskal-Wallis test is employed when the independent variable contains more than two categories, as it allows for comparing distri-

butions of a continuous or ordinal dependent variable across these multiple groups.

Based on the outcomes of univariate analyses, the variables gender, sleep pattern, smoking status, and chronic illness status were incorporated into a multiple linear regression model. This analytical approach was undertaken to investigate the predictive relationships between somatisation scale scores and these variables, to quantify their contributions to the variance observed in somatisation scale scores.

Necessary permissions were obtained from the Clinical Research Ethics Committee of the relevant university's medical school, with protocol number 09.2020.1260, dated 04.12.2020, and our research was conducted in accordance with the Helsinki Declaration. Prior to administering the online survey, informed consent was obtained from all participants. Furthermore, we obtained the necessary permission to use the Somatisation Scale in our study from Assoc. Prof. Dr. Şeyda Dülgerler.

Results

A total of 92 individuals participated in the research. The average age of the participants was 24 (± 1.18) years. Among these individuals, 60.9% ($n=56$) were females, and 39.1% ($n=36$) were males. Among the 92 participants, somatisation was detected in 23.9% ($n=22$) of them, while 76.1% ($n=70$) did not exhibit somatisation.

When the somatisation scores were compared by gender, it was found that females scored statistically significantly higher than males (Table 1; $p=0.017$).

Analysis of somatisation scores and sleep patterns using the Kruskal-Wallis test revealed a statistically significant difference (Table 1, $p=0.007$). Specifically, participants reporting “I usually can't sleep” had a mean score of 16 ± 7.42 , with a median of 17 (range: 0–27). Those reporting “Sometimes I can't sleep” had a mean score of 11.54 ± 5.25 , with a median of 10 (range: 3–22), and participants who said “I sleep well” had a mean score of 9.84 ± 5.38 , with a median of 9 (range: 1–22). The most significant difference was observed between the groups “I sleep well” and “I usually can't sleep”, with the latter showing higher mean scores.

Comparison of somatisation scores between medical students based on smoking status, using the Mann-Whitney U test, showed the following: smokers had a mean score of 12.88 ± 7.07 , with a median of 12 (range: 0–27), while non-smokers had a mean score of 10.93 ± 5.62 , with a median of 10 (range: 1–24). This analysis revealed no statistically significant difference in somatisation scores between smokers and non-smokers (Table 1, $p=0.236$).

Investigating the association between chronic illness presence and somatisation scores revealed significant differences. Individuals with a chronic illness exhibited higher somatisation scale scores (mean: 15.7 ± 7 , median: 18, range: 0–24) compared to those without a chronic illness (mean: 10.97 ± 5.81 , median: 10, range: 1–27), according to the Mann-Whitney U test (Table 1, $p=0.021$).

Table 1: Comparative Distribution of Somatisation Scores by Gender, Sleep Patterns, Smoking Habits, and Chronic Illness Status

Variables/ Somatisation Scores	Median	Minimum- Maximum	IQR	P value
Gender (n=92)				
Male (n=36)	8.0	1.0 – 27.0	6.50	0.017*
Female (n=56)	11.5	0.0 – 24.0	8.75	
Sleep Patterns (n=92)				
I usually can't sleep*** (n=16)	17.0	0.0 – 27.0	12.25	0.007**
Sometimes I can't sleep (n=31)	10.0	3.0 – 22.0	7.00	
I sleep well (n=45)	9.0	1.0 – 22.0	7.50	
Smoking Habits (n=92)				
Non-Smokers (n=66)	10.0	1.0 – 24.0	7.00	0.236*
Smokers (n=26)	12.0	0.0 – 27.0	12.25	

Chronic Illness Status (n=92)				
Absent (n=82)	10.0	1.0 – 27.0	7.50	0.021*
Present (n=10)	18.0	0.0 – 24.0	7.75	

* Mann Whitney U Test

** Kruskal Wallis Test

*** The row creates significance

An analysis of somatisation scores among final-year medical students, segmented by living arrangements and evaluated using the Kruskal-Wallis test, yielded the following results: students living with their families had a mean score of 10.56 ± 5.78 , with a median of 9 (range: 0–22); those living with friends had a mean score of 10.78 ± 5.71 , with a median of 11 (range: 1–22); and students living alone had a mean score of 13.44 ± 6.64 , with a median of 13 (range: 3–27). These findings indicate no significant difference in somatisation scores across the different living arrangements ($p=0.194$).

In our analysis of somatisation prevalence concerning students' career aspirations, we categorised career choices into two groups. Choices related to the Turkish Medical Specialty Exam (TUS), domestic postgraduate studies, doctorate programs, and general practice were grouped as 'domestic'. In contrast, options pertaining to overseas career plans, including overseas postgraduate studies and doctorate programs abroad, were classified as 'abroad'. The comparison of somatisation scores between students planning to pursue their careers domestically (mean: 11.49 ± 5.98 , median: 10, range: 0–24) and those aiming for opportunities abroad (mean: 11.47 ± 6.74 , median: 10, range: 2–27) revealed no statistically significant difference (Mann-Whitney U test, $p=0.786$).

Students' anxiety status was assessed through self-reports, categorising responses as either 'anxiety present' or 'anxiety absent', without employing a standardised anxiety scale. The analysis of somatisation scores revealed no statistically significant difference between students who reported anxiety about the future (mean: 11.90 ± 6.03 , median: 10.5, range: 1–24) and those who did not report such anxiety (mean: 10.18 ± 6.24 , median: 9, range: 0–27) (Mann-Whitney U test, $p=0.199$).

No statistically significant differences were observed for somatisation scores in the distributions of variables including place of longest residence, place of longest residence up to age 12, use of any additional supportive medicine, presence of chronic illness in a first-degree relative, and academic achievement status (all $p > 0.05$).

In our study, a regression analysis was conducted to delve deeper into the effects of various variables on somatisation scores. The regression model included gender, smoking habit, chronic illness status, and two levels of sleep patterns as predictors. The model's constant coefficient of 7.145 signifies the baseline somatisation score. This score is associated with a statistically significant t-value of 5.988, given all other variables are held constant. Gender emerged as a statistically significant predictor. Being female was associated with a 2.883-point increase in somatisation scores ($p = 0.018$), highlighting a notable difference based on gender. However, smoking habit and the presence of chronic illness did not significantly predict somatisation scores, with p-values of 0.117 and 0.143, respectively. Regarding sleep patterns, a marked association with somatisation scores was observed. Individuals who usually did not sleep experienced a 6.195 increase in scores ($p < 0.001$), whereas those who sometimes did not sleep showed a 1.863 increase, though this was not a statistically significant finding ($p = 0.148$). The R-squared value for the model stood at 0.240, suggesting that the included variables could explain approximately 24% of the variability in somatisation scores, as detailed in Table 2.

Table 2: Regression Analysis of Somatisation Scores on Gender, Smoking Status, Illness, and Sleep Patterns

Variables	Coefficients	Std. Error	t-value	p-value
Constant	7.145	1.193	5.988	<0.001
Gender (Female)	2.883	1.191	2.421	0.018
Smoking Habits (Smokers)	2.050	1.295	1.583	0.117
Chronic Illness Status (Present)	2.806	1.896	1.480	0.143
Sleep Patterns (I usually can't sleep)	6.195	1.608	3.852	<0.001
Sleep Patterns (Sometimes I can't sleep)	1.863	1.278	1.458	0.148

R Squared: 0.240

Discussion

Our research aimed to investigate the presence of somatisation among final-year medical students at the relevant university and its association with accompanying variables. The findings revealed that somatic symptom disorder was present in approximately 25% of final-year students. In studies involving the general population, the prevalence of somatic symptom disorder varies between 26.2% and 34.8%⁴, while a meta-analysis of 32 studies indicated a prevalence of approximately 12.8%. These elevated rates of somatisation may be attributed to how individuals with somatic symptom disorder seek healthcare more frequently compared to the general population. Notably, a study conducted in Australia reported a psychiatric illness prevalence of 26% among final-year medical faculty students, significantly higher than in the general population.¹⁷ When specifically examining somatic symptom disorder among medical faculty students, a study in Nigeria found a prevalence of 14.3%, while a similar study in Nepal reported a prevalence of 22.4%.^{7,18} Our study is consistent with both general population-based studies and studies conducted among medical students, demonstrating that somatic symptom disorder is quite common.

In our study, the analysis of the impact of gender on somatic symptom disorder revealed that women had significantly higher scores on the somatic symptom scale. This finding is consistent with a similar investigation among university students in Mexico, where higher somatisation levels were reported in females.¹⁹ The existing literature supports the notion that women are more likely to report somatic symptoms.^{19–21} However, contrasting evidence comes from a study conducted at an Iranian medical faculty, where no significant gender differences in somatic symptoms were observed.²²

Classifying participants by their sleep patterns, this study identified significant differences in somatisation scores across three groups: those reporting frequent sleep disturbances ('I usually can't sleep'), those with occasional disturbances ('Sometimes I can't sleep'), and students experiencing minimal disturbances ('I sleep well'). Statistical analysis confirmed a significant correlation between sleep patterns and somatisation scores. Notably, pairwise comparisons revealed substantial disparities, particularly between the group reporting frequent disturbances and those with minimal or occasional disturbances. These findings suggest a direct link between the severity of sleep disturbances and an increased prevalence of somatisation symptoms. Supporting evidence from a study in the United Kingdom indicates that sleep disturbances may contribute to or exacerbate somatic symptoms.²³ Conversely, another study highlighted a negative correlation between improved sleep quality and the severity of somatic symptoms.²⁴ However, a study conducted in Romania found no significant correlation between poor sleep quality and elevated somatisation scores.²⁵

The somatisation scores were not significantly higher among smokers compared to non-smokers, although existing literature suggests a potential link between elevated somatisation scores and health behaviours, including smoking.^{26,27} This discrepancy may be attributed to

stress as a mediating factor,²⁸ with smoking individuals possibly experiencing increased perceived stress, which in turn could influence their smoking habits and potentially elevate somatisation scores. However, the anticipated increase in somatisation scores among smokers was not observed, possibly due to the small sample size of smoking participants in the study.

The presence of a chronic illness was significantly correlated with higher somatic symptom scale scores, aligning with findings from a study in Adana, Türkiye, which identified chronic illness as a risk factor for somatisation.¹² Similarly, research in Mexico underscored chronic illness as a strongly associated variable with somatisation.¹⁹ The presence of concurrent illnesses may exacerbate an individual's anxiety about their symptoms, potentially increasing their vulnerability to somatisation. Our analysis revealed no evidence to suggest an association between a history of chronic illness in first-degree relatives and elevated somatic symptom scale scores. However, existing literature suggests that a family history of psychiatric illness could increase the risk of somatisation.²⁹

Categorising participants by their living arrangements (with family, friends, or alone) revealed no statistically significant differences in somatic symptom scale scores. Although existing literature on this topic is sparse, a study conducted with students in the Czech Republic and Slovakia suggests that family structure may impact somatic symptoms.³⁰ Specifically, it was found that individuals from non-traditional family structures such as households with a single parent or those living alone may exhibit higher levels of somatic symptoms.³⁰ Further research involving larger sample sizes is necessary to more thoroughly understand the influence of living arrangements on somatisation.

Analysing participants' career plans in the context of somatisation scores revealed no statistically significant relationship. Although specific studies directly addressing this connection are lacking, research exploring the influence of employment status on somatisation has yielded conflicting results. Notably, one study reported no significant difference in somatisation between employed and unemployed individuals.³¹ Conversely, another study found that unemployed individuals exhibited higher somatisation scores compared to their employed counterparts.³² This conflicting evidence highlights the complexity of the relationship between employment status and somatisation. Additionally, existing literature consistently underscores a correlation between somatisation and unemployment, suggesting that the lack of employment may exacerbate somatisation symptoms.^{32,33}

In our investigation, anxiety was evaluated through participants' self-reported descriptions of their anxieties. When comparing the groups reporting anxiety with those without anxiety in terms of somatisation scale scores, no significant differences were observed. This contrasts with findings from other studies, which have consistently identified stress and anxiety as substantial risk factors for somatisation.^{4,34,35} Moreover, it's important to note that medical students often face an elevated risk of psychiatric conditions due to having higher baseline stress and anxiety levels compared to other populations.⁴ The absence of a significant difference in our study may be attributed to the relatively small number of participants who reported no anxiety and the absence of a specific anxiety measurement scale employed in our assessment.

Additionally, somatic symptom disorder is known to be influenced by personality disorders, psychosocial stressors, and cultural factors.⁹ Further research is recommended to investigate these variables as well.

Our study is subject to several limitations. Primarily, the overlap of the study period with the COVID-19 pandemic necessitated the adoption of an online survey for data collection, precluding face-to-face interactions and limiting our ability to reach the intended number of participants. Furthermore, literature indicates that the COVID-19 pandemic has heightened the frequency and severity of somatisation.^{36,37} Consequently, the timing of our study may have contributed to elevated somatisation scores among participants. The study's generalisability is limited by its sample population, which consists solely of

final-year medical students from a single university in Türkiye, thereby restricting the applicability of the results to the broader population. Moreover, the absence of a standardised scale for measuring anxiety poses another significant limitation, hindering our ability to comprehensively assess its impact on somatisation. Importantly, the online survey format and the specific participant demographic may also introduce social desirability and response biases, as participants might provide answers they perceive as more acceptable or favourable.

Conclusion

In conclusion, this study highlights the undeniable prevalence of somatisation among final-year medical students in the investigated faculty. The presence of somatisation was notably associated with variables such as poorer sleep patterns, smoking, and the presence of chronic illness. Addressing these identified risk factors should be considered a crucial component of an effective initial intervention plan. Students' knowledge regarding sleep hygiene and sleep patterns could be enhanced through education initiatives. Expanding health facilities at the university and providing specific counselling on chronic illnesses and smoking may improve student wellbeing. Access to psychiatric counselling should similarly be prioritised, and efforts should be made to prevent stigmatisation in this regard.

For future research, conducting more extensive studies with larger samples, encompassing broader class groups, and incorporating inter-class comparisons is recommended. These studies should also utilise standardised scales to assess sleep and anxiety conditions.

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Declarations

The author had no conflicts of interest or sources of funding to declare.

Ethical approval/patient consent

Ethical approval was obtained from the Clinical Research Ethics Committee of the relevant university's medical school, with protocol number 09.2020.1260, dated 04.12.2020. The research was conducted in accordance with the Helsinki Declaration.

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