

Investigating the Relationship between Personality Traits and Distress Tolerance with Mental Health and Academic Performance of Dental Students of Kashan University of Medical Sciences

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ABSTRACT

Background: Mental health and academic performance of students in the quality of dental education is very important to the learners in this field.

Study aim: This study was designed to investigate the relationship between personality traits and distress tolerance with mental health and academic performance of dental students attending Kashan University of Medical Sciences, Iran.

Methods: Seventy three dental students from Kashan University of Medical Sciences, Iran, participated in the present study. The sampling method was the census method. In this descriptive cross-sectional study, the Mental Health Questionnaire (GHQ), Distress Tolerance Questionnaire (DTS) and Five-Factor Personality Questionnaire (NEO) were used to assess the desired indicators and the total grade point average of students as a measure of their academic performance. Data was analyzed using Poisson regression estimators and descriptive statistics.

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Article received on the 5th of January 2022 and accepted for publication on the 28th of March 2022

Results: Study participants had a mean age of 22.42 years and 84.9% of them were single. In this study, the mean score was 23.84 (± 11.90) for GHQ and 45.01 (± 8.93) for DTS. There was no significant relationship between different variables and their dimensions and students' academic performance.

Conclusion: Improving the mental health of dental students is very important and should be on the agenda of educational policy makers.

Keywords: distress tolerance, five-factor personality questionnaire, mental health, academic performance, dental students.

INTRODUCTION

Dental education as a challenge makes students prone to poor physical and mental health (1, 2). Compared to the general population, dental students report a level of distress and depression that is many times higher (3-5). In Colombia for example, the level of psychological distress anxiety among dental students has been shown to be alarming (6). Numerous reports indicate that medical students experience a lot of stress and mental disorder during their studies (7-11). Long-term psychological stress and distress are associated with a wide range of negative consequences such as academic failure, unprofessional behaviors, and burnout, and may even lead to mental and physical disability in dental students (10-13), which is often higher than their medical counterparts (14-16). Meanwhile, financial problems and the element of "population congestion" in college (17), social class, gender, and minority status (18) affect the mental health of students; on the other hand, the effect of mental health on students' academic performance is undeniable (19). Thus, mental health is an important and influential concept in individuals' performance, which is also a significant issue among students. Mental health, by its very nature and effectiveness, is associated with concepts such as motivation for academic achievement, and changes the status of each of these concepts. Accordingly, addressing students' mental health and the effects that will have on their motivation for academic achievement and performance deserves attention and study. Many studies report that personality traits are one of the most important factors affecting academic performance (20). For example, the results of a study showed that there was a negative relationship between neuroticism and extraversion with academic performance, and

also a positive relationship between personality factors of openness to experience, agreement, and conscientiousness with academic performance (21). On the other hand, some studies have pointed to the role of stress tolerance in mental health and academic performance and have introduced it as a protective variable against stress (22, 23). Distress tolerance is also expressed as emotional structures and as an individual's ability to experience and resist negative emotional states. This structure, which may be created as a result of cognitive or physical processes in the individual, is an emotional state that is often characterized by practical tendencies to reduce the negative effects of emotional experience (24). Numerous studies have shown that stress tolerance could play a significant role in dealing with study-induced stress in students (25, 26).

Since the field of dentistry is considered to be one of the most stressful fields and at the same time the dangers of not controlling stress in this field can provoke many harms for the person and his/her patients, it seems that recognizing personality traits and evaluating the distress tolerance of dental students and using appropriate educational models in order to promote educational goals in the educational program is very important and their relationship to psychological and academic status can provide information about these students and policies; As a result, this study was conducted to determine the relationship between personality traits and distress tolerance with mental health and academic performance of dental students of Kashan University of Medical Sciences, Iran, in 2020. □

METHODS

The present study is a cross-sectional one. The study population included dental students of Kashan University of Medical Sciences, Iran, in

the academic year 2020, which were selected by using the census method, with unwillingness to cooperate, failure to complete all questionnaires, chronic physical illness (such as cancer) and the death of a first-degree relative in the last quarter being all exclusion criteria. Questionnaires were sent to 234 students, of which 73 answered the questions (response rate 31.1%). Once the ethics committee approved the study and gave permission to conduct it, dental students' names, numbers and contact numbers were prepared from the educational deputy of Kashan School of Dental Sciences. Then, questionnaire links were sent to each student to answer the questions if they wished to participate in the study. There was no time limit for answering the questions, and participants in any part of answering could opt out of continuing to cooperate. In addition, if they wanted to receive the results of questionnaires, participants could mention their email at the end of each questionnaire. The researcher's email was provided to students for further guidance. Data collection and analysis were also performed by different evaluators to ensure the confidentiality of information.

The questionnaire used by us had four sections of demographic information including age, sex, year of entry and marital status. The NEO Questionnaire is a personality test based on the Big Five Personality Theory by McCrae and Costa. The five personality factors of this personality model include neurosis, extraversion, flexibility (openness to new experiences), compatibility (agreement), responsibility and conscientiousness. In the reliability and validity of NEO test in Iran, which was performed by Grossi Farshi, Cronbach's alpha coefficients of 0.86, 0.68, 0.73, 0.56 and 0.87 for neurosis, extraversion, flexibility, compatibility and conscientiousness, respectively, were obtained (27).

The General Health Questionnaire (GHQ) is a popular tool for identifying minor mental illnesses in the general population or clinical non-psychiatric wards to identify primary care procedures. The 28-item questionnaire, developed by Goldberg, has four subscales that include physical symptoms and general health status, distress, social dysfunction, and depression. This test has a high reliability and the calculated alpha value for all its items is 0.90 (28). The fourth questionnaire, Distress Tolerance Scale (DTS), is an emotional distress self-assessment index developed by Si-

mons and Gaher (29). This scale is an emotional distress tolerance self-assessment index with four subscales of tolerance (emotional distress tolerance), absorption (absorption by negative emotions), assessment (mental assessment of distress), and adjustment (adjustment of efforts to alleviate distress), which was confirmed by a Cronbach's coefficient of 0.71 (30). Collected data were entered into a computer, frequency tables were drawn for qualitative variables, and regression models were used to determine the relationship between the variables. A significance level of 5% was considered. All analysis steps were performed using Stata statistical software version 13.1. □

RESULTS

Table 1 shows the demographic characteristics of study participants. Out of the 73 subjects, 29 were boys and 44 girls. Participants had a mean age of 22.42 ± 3.55 years and 84.9% of

Variable		Total
Gender	Man	29 (39.7)
	Female	44 (60.3)
Age		22.42±3.055
Marital status	Single	62 (84.9)
	Married	11 (15.1)
Grade point average		16.44±1.24
Year of university entrance	92	3 (4.1)
	93	8 (11.0)
	94	9 (12.3)
	95	11 (15.1)
	96	11 (15.1)
	97	2 (2.7)
	98	17 (23.3)
	99	12 (16.4)

TABLE 1. Descriptive characteristics of the students

Variable	Total
Distress tolerance (DTS)	93.01±8.45
Mental health (GHQ)	90.84±11.23
Neurosis (NEO)	23.8±13.33
Openness (NEO)	66.4±11.33
Extraversion (NEO)	13.6±71.33
Conscientiousness (NEO)	12.8±66.38
Compatibility (NEO)	19.5±91.32

TABLE 2. Mean total score obtained in the distress and mental health questionnaires

TABLE 3. Assessment of mental health score, personality and distress tolerance according to demographic and educational characteristics

Variable	Five-factor personality questionnaire						
	Distress tolerance (DTS)	Mental health (GHQ)	Neurosis (NEO)	Extraversion (NEO)	Openness (NEO)	Compatibility (NEO)	Conscientiousness (NEO)
Man	47.7±39.70	20.12±92.84	29.9±75.14	33.7±78.31	33.5±71.82	32.5±85.75	38.8±82.32
Female	43.9±00.40	25.11±79.01	20.12±92.84	33.5±67.32	32.4±72.57	32.4±95.88	38.8±56.08
P-value	0.07	0.09	0.07	0.07	0.82	0.19	0.42
Single	46.8±44.29	23.12±86.37	33.8±03.28	34.5±05.72	33.4±59.62	32.5±65.07	38.7±54.76
Married	37.8±09.49	23.9±90.35	33.8±72.27	31.8±90.1	30.4±45.15	34.5±36.86	39.10±36.28
P-value	0.001	0.98	0.57	0.38	0.87	0.76	0.24

TABLE 4. Relationship between student's educational status and questionnaire scores after controlling demographic variables

DTS questionnaire			NEO questionnaire			GHQ questionnaire		
Variable	IRR	P-value	Variable	IRR	P-value	Variable	IRR	P-value
Entering year	0.995	0.800	Entering year	0.997	0.883	Entering year	0.996	0.855
Age	0.989	0.466	Age	0.987	0.416	Age	0.987	0.393
Gender (female)	1.038	0.562	Gender (female)	1.037	0.598	Gender (female)	1.027	0.687
Marital status: (married)	0.999	0.988	Marital status: (married)	0.997	0.977	Marital status: (married)	0.985	0.866
Questionnaire dimensions			Questionnaire dimensions			Questionnaire dimensions		
Tolerance	1.001	0.938	Neurosis (NEO)	0.999	0.795	General health	1.005	0.715
Absorption	1.011	0.526	Extraversion (NEO)	1.002	0.819	Distress	1.002	0.849
Assessment	0.997	0.767	Openness (NEO)	1.000	0.984	Social dysfunction	0.992	0.522
Teaching	0.994	0.653	Compatibility	0.999	0.874	Depression	0.992	0.778
Fixed variable	34.402	0.116	Conscientiousness (NEO)	1.002	0.605	Fixed variable	31.838	0.121
			Fixed variable	27.797	0.166			

them were single. In addition, the average grade point average (GPA) of students participating in the study was 16.44. In addition, incoming students in 2019 had the highest participation and incoming students in 2018 the lowest participation in the research.

Table 2 shows the average total scores of dental students participating in the research in mental health and distress tolerance questionnaires. As can be seen, the mean score for DTS was

45.8 ±01.93 and for mental health was 23.84 ±11.90. The dimensions of each questionnaire are given in Table 2.

Table 3 shows there is no statistically significant difference between men and women in the distress tolerance, mental health, and different areas of the five personality questionnaires (P > 0.05). Also, it highlights a statistically significant difference in distress tolerance between singles and married people (P = 0.001). However, mental

health and five personality factors did not show a statistically significant difference between single and married people ($P > 0.05$).

Table 4 shows the relationship between students' academic status and questionnaire scores after controlling demographic variables. Summarized data reveal that there is no significant difference between the different dimensions of the questionnaire scores and students' grades after controlling the demographic variables. □

DISCUSSION

In the present study, students' mental health scores were not satisfactory. In this regard, researchers in Kurdistan showed that 40.2% of participants had a poor mental health (31).

In addition, in the present study, the situation was moderate in terms of distress tolerance index. Given that students' desirable tolerance of distress maintains their mental health when confronted with psychological stress, the high percentage of students with an undesirable tolerance of distress observed in the present study can indicate that the mental health of dental students attending Kashan University of Medical Sciences is at risk.

In the present study, there was no statistically significant difference between distress tolerance, mental health and five personality factors between male and female subjects. In this regard, two previous studies reported that students' mental health did not show a statistically significant difference between male and female participants (32, 33), which was in agreement with our findings.

In the present study, there was no statistically significant difference between mental health and five personality factors between single and married people. In this regard, Gilavand et al showed that there was a statistically significant difference between the mean mental health scores of single and married students (34).

In our study, students' academic performance did not have a statistically significant relationship with either the five factors of personality, distress tolerance, and mental health, or any of the areas in the five-factor distress tolerance and personality questionnaires. In this regard, Tamakaeefar Fsm and Dashtban Zadeh (35) showed that there was no statistically significant relationship between students' mental health and their academic performance. Students' academic performance was

significantly and inversely correlated, meaning that increasing mental health (lower overall score on the test) increased students' average score (as an indicator of academic performance) (34). In addition, in contrast to the results of our study, Premuzic et al showed that neuroticism was inversely related to academic performance (36). In addition, Costa et al stated that openness led to the acceptance of new ideas and a tendency to seek new scientific experiences and improved students' academic performance. Contrary to our findings, in the study of Gilavand et al, between the mean scores of the students' mental health questionnaire and one of the reasons for the meaninglessness of the variables of the present study, the sample size may be small.

The present study had some limitations. Due to the corona pandemic, dental students, especially basic science ones, were not physically present in the university, and therefore the questionnaires were completed through the Pors Line system, in which the number of participants was smaller than that of attending students due to access difficulties. In addition, since three questionnaires were used in this study, some students did not have enough patience to complete all of them. □

CONCLUSION

In the present study, the academic performance of dental students attending Kashan University of Medical Sciences had no statistically significant relationship with the five factors of personality, distress tolerance and mental health. However, according to the status of scores of the mental health questionnaire and other questionnaires, attention to dental students' mental health should be considered by policy makers. It is suggested that in future studies, the relationship between mental health and academic performance in three groups of medical, dental and paramedical students should be investigated and these three groups be compared. □

Conflicts of interest: none declared.

Financial support: This study was financially supported by the vice chancellor for research and technology of Kashan University of Medical Sciences.

Acknowledgments: The authors would like to thank all participants and those who have cooperated in the study design and conduction.

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