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ORIGINAL PAPER

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FACTORS ASSOCIATED WITH HEALTH-RELATED QUALITY OF LIFE AMONG UNIVERSITY STUDENTS IN TURKEY

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ABSTRACT

Introduction: Purpose of this descriptive study is to determine the mental health problems and quality of life levels of college students and examine the relationship between them. **Methods:** The sample of the study consisted of 429 students continuing their education in Health School at Afyon Kocatepe University. Data were collected by using information form, Brief Symptom Inventory (BSI), SF 36 Quality of Life Scale questionnaires. In the analysis of obtained data, descriptive statistics, t-test, ANOVA and correlation analyses were used. **Findings:** Mental symptoms which the students got the highest scores from the subscales of BSI were respectively, depression (1.31 ± 0.75), hostility (1.22 ± 0.67) and anxiety (1.00 ± 0.65). Discomfort severity index which is the overall score of the scale was found 1.07 ± 0.61 . Relation between state of mind and quality of life was found statistically significant ($F: 70.894$; $p < 0.000$). When quality of life summary scores examined, it was found out that physical health summary score (48.92 ± 7.93) and mental health summary score (43.44 ± 9.52) points were low. **Conclusions:** Consequently, according to averages of scores, it can be said that frequency of the mental symptoms of students are high but their quality of life is low. It was found that when students' quality of life decreased, their mental symptoms increased.

Key words: Quality of Life, depression, anxiety.

1. INTRODUCTION

Quality of life is defined as one's perception style of his own situation in the system of his culture and values. In this concept, physical health, mental health, independency level, social relations, environmental factors and personal beliefs take part on the basis of subjectivity. Quality of life brings a humanistic point of view to today's medicine which focuses on mechanic treatment of diseases and alleviation of symptoms (1).

Since every researcher studies life quality according to their subject, there are many different definitions of quality of life and many different approaches of life quality emerged, as well. In previously conducted researches, data for quality of life indicators were tried to be collected generally in two separate sections as objective indicators and subjective indicators. Being physically healthy, managing his own life and self-care are among the objective indicators of life quality.

Subjective indicators, on the other hand, are associated with their life satisfaction. It is important for an individual to evaluate his own life and find it positive (4, 5).

How socio-demographic factors effect life quality is indicated in a Yugoslavian study. According to this study, it was determined that people living in towns had better life quality than people living in villages and educated elders had better life quality than uneducated youth (6).

Foster et, al, were interested in subscales related to sleeping and pain. An important relation between sleeping disorder and relapse was determined. Also, it was observed that pain was associated with using analgesic though direct relation could not be detected (7).

Life quality includes many areas of life such as meeting of basic needs and social expectations of an individual and benefiting from the opportunities provided by the society in which he lives. First studies investigating life quality in mental disorders were in consultation liaison psychiatry

and they were followed by studies on mood disorders, anxiety disorders, and schizophrenia and childhood-senility psychiatry (8, 9). Rudolph et al, observed that subjective life evaluation of the patients depended on their inner worlds rather than their outer worlds (10). Using the concept of life quality in medicine has been effective in changing the traditional, obsolete, narrow-minded views (8, 11).

Recently, the most common scale used to measure the quality of life has been Short-Form Health Survey titled as 36 (SF-36). It evaluates two dimensions: mental health and physical health. Each of them contains 4 sub-groups (i.e., total of 8): physical functioning, limitations of function due to physical health problems, bodily pain, social functioning, general mental health, loss of function due to emotional problems, life and general health perception (6).

The purpose of this study was to investigate the prevalence of a group of mental health symptoms among health sciences students, and to determine the association between mental health symptoms prevalence and quality of life.

2. METHODS

Data collection and Samples

From September to December 2015, a descriptive survey was conducted university students attending at Afyon Health School. Population of this study consists of 1250 students studying at Afyon Health School in the departments of Nutrient and Dietetics, Physiotherapy and Rehabilitation, Nursing and Health Management. Sample selection was not taken, all the students (429) that could be reached and that accepted to participate in the study were taken into scope of study. In order to conduct the study, written permission was taken from Afyon Kocatepe University Medical Faculty Board of Ethics and management of the school where the study was conducted. Additionally, informed consent was taken from the students participating in the study voluntarily, and that if at any point they decided not to complete the questionnaire, they could withdraw from the study. In the study, "Brief Symptom Inventory" and "Quality of Life-SF-36" were employed to analyze psychological symptoms and general quality of life perception of young. Data were collected by filling in the questionnaires in a determined class hour with the consent of instructor of the class and the students. Socio-demographic characteristics, number and percentage of the students were given as average points of BSI and SF-36 scales. Relation between their mental health and quality of life was evaluated by correlation and multilinear regression analyses. Statistical analyses were conducted by using SPSS for Windows 15.0 and significance level was accepted as $p < 0.05$.

Descriptive Form: It contains 18 questions in total about socio-demographic characteristics such as age, sex, marital status, department, grade, type of work, occupation and choosing the department willingly, satisfaction with the department, using cigarette and alcohol and success.

Brief Symptom Inventory (BSI): It is a Likert type symptom scanning scale which consisted of 53 items. The BSI was developed as a multidimensional test to measure current levels of psychological symptoms (12). Each item on a 5-point scale are evaluated between the points of 0 (not at all) to 4 (extremely). The scale consists of five sub-scales and

also three global indices. Subscales are, "somatization", "depression", "anxiety", "hostility" and "negative ego". Global indices are Global Severity Index (GSI), Positive Symptom Distress Index (PSDI), and Positive Symptom Total (PST) (12).

Global indices are the parts that show actual functioning and level of indicator with different approaches (13). GSI is calculated by taking the mean of the items. DSI is obtained by dividing the total scores of all items, except for the blank ones, into 53. If DSI is found above 1, it shows psychopathological proneness in symptoms. In this study, DSI score was used in order to assess psychopathological level of students' mental states. TSI is the total score as a result of accepting all the items (items that are positive) as 1 except for the items marked as 0. SRI is obtained by dividing total scores of subscales into total of symptom (13). Turkish validation and reliability of were done for the samples formed by adults (1994), adolescents and university students (2002) by Şahin et al, (14). It is stated that BSI is a useful scale for measuring psychological problems in the studies of mental health screening (12, 15).

Quality of Life Scale-Short Form (SF-36): SF-36 which is a self-evaluation scale developed by Ware (1987) was used in order to measure the life qualities of the young people related to health (16). SF-36 is a general questionnaire which can be widely used for various populations and under various conditions and it was designed for individuals' evaluating their health states from their own point of view (17, 18). Turkish adaptation of SF-36 and its validity and reliability studies were conducted by Pinar (19), and its Cronbach Alpha value was found as 0.91 (19). SF-36 scale contains 36 questions grouped as 8 sub-health states: Physical function (PF), Role -physical (RP), bodily pain (BP), general health (GH), energy / vitality (V), social function (SF), Role- emotional (RE), mental health (MH) (17). Physical (physical health component summary scale, PCS) and mental (mental health component summary scale, MCS) Health Summary Score is obtained by adding scores of SF-36 Quality of Life Scale (17). Each health dimensions of SF-36 scale is scored between 0-100 and as the score increase, it means less limitation, better quality of life related to health or less pain (20).

3. RESULTS

The mean age of the students who participated in the study is 20.98 ± 1.78 , mean of their body-mass index (BMI) is 21.61 ± 2.85 and their cumulative grade point average (cum-GPA) is 2.63 ± 0.38 . Distribution of personal information of 429 college students forming the sample such as sex, age, MSI, department, grade, satisfaction of department, income state are given in Table 1.

Of the students participating in the study; 71.6 % is female, 100% is not married, 48% is at the age of 20-21, 58.3% is staying at dormitory. It was discovered that 83.9% of the students chose their departments willingly, 56.9% of them had adequate monthly income, % 56.9 of them had adequate family monthly-income, and 47.3% of them had 3-4 siblings (Table 1). it was found that of the students, 27.36% enjoyed listening to music, 25.44% enjoyed internet, 24.76% enjoyed going to cinema and theatre, 9.71 % enjoyed doing sport regularly and 7.8% enjoyed playing musical instruments. 42.03 %of the students often listens to rock, hip-hop music

Variables	Groups	n	%
Sex	Male	122	28.4
	Female	307	71.6
Age	18-19-year-old	81	18.9
	20-21-year-old	206	48.0
	22-year-old and above	142	33.1
BMI	Thin (<18.5)	132	30.8
	Normal (18.5-24.5)	252	58.7
	Overweight (25 and >)	45	10.5
Department	Nutrition and Dietetics	68	15.9
	Physiotherapy and Rehabilitation	81	18.9
	Nursing	147	34.3
	Health Management	133	31.0
Grade	Grade 1	111	25.9
	Grade 2	103	24.0
	Grade 3	139	32.4
	Grade 4	76	17.7
Type of High School	High School	368	85.8
	Medical Vocational High School	61	14.2
Preference of Department	Willingly	360	83.9
	Unwillingly	69	16.1
Satisfaction of Department	Yes	309	72.0
	No	120	28.0
Housing Status	Home	179	41.7
	Dormitory	250	58.3
Working Status	Working	353	82.3
	Permanent	36	8.4
	Part-time	40	9.3
Monthly income	Adequate	244	56.9
	Partly adequate	144	33.6
	Not adequate	41	9.5
Monthly income of family	Adequate	176	41
	Partly adequate	240	55.9
	Not adequate	13	3
Number of siblings	2 and under	171	39.9
	3-4 siblings	203	47.3
	5 and over	55	12.8
Total		429	100.0

Table 1. Numerical and percentage distribution of the profile of the students.

which is energetic, upbeat, renewed and consumed more quickly. Additionally, 25.36% of the students listens to Turkish classical-folk music, 20.65% of them listens to classical music and frequency of listening to arabesque music is at low level of 11.96%. It was discovered that of the students, 71.3% was not satisfied with their bodies, 85.75% had health problems, 82.3% did not use cigarettes, 87.2% did not use alcohol, 67.1% did not have sleeping problems and 91.6 % was not exposed to violence.

While average score that students got from BSI was 57.05 ± 32.56 , it was found that, from the subscales, depression was 1.31 ± 0.75 , hostility was 1.22 ± 0.67 , anxiety was 1.00 ± 0.65 , negative self-perception was 0.99 ± 0.70 and somatization was 0.85 ± 0.59 (Table 2). According to the average of the scores, frequency of mental symptoms of the students is normal. Among the global indices, while average of GSI (1.07 ± 0.61) and SDI's (1.72 ± 0.48) being above 1 shows that symptoms are at psychopathological level, it is seen that score of TSI (26.49 ± 12.8) is at medium-level.

	Scale, Sub-scale and Indices	General $\bar{X} \pm SS$
BSI*	General	57.05 ± 32.56
	Depression	1.31 ± 0.75
Sub-scale	Hostility	1.22 ± 0.67
	Anxiety	1.00 ± 0.65
	Negative ego	0.99 ± 0.70
	Somatization	0.85 ± 0.59
	GSI	1.07 ± 0.61
Indices*	SDI	1.72 ± 0.48
	TSI	31.68 ± 12.91
SF-36	General	46.18 ± 6.55
	PF	50.09 ± 8.63
	RP	45.34 ± 11.17
	BP	51.17 ± 8.53
	GH	47.32 ± 7.92
	VT	50.28 ± 8.57
	SF	45.09 ± 10.25
	RE	42.64 ± 13.38
	MH	43.67 ± 9.50
Indices	PCS	48.92 ± 7.93
	MCS	43.44 ± 9.52

Table 2. Distribution of average BSI and SF-36 scale, sub-scale and indices scores. BSI: Brief Symptom Inventory, GSI: Global Severity Index, SDI: Symptom Discomfort Index, TSI: Total Symptom Index, SF-36: Quality of life, PF: Physical function, PR: Physical role, BP: Bodily pain, GH: General health, VT: Vitality, SF: Social function, RE: Role Emotional, MH: Mental health, PCS: Physical Component Summary, MCS: Mental Component Summary.

		PCV	MCS	SF36
Anxiety	r	-0.384**	-0.529**	-0.617**
Depression	r	-0.324**	-0.573**	-0.613**
Negative ego	r	-0.371**	-0.543**	-0.619**
Somatization	r	-0.464**	-0.447**	-0.606**
Hostility	r	-0.242**	-0.473**	-0.490**
GSI	r	-0.499**	0-.682**	-0.764**
SDI	r	-0.384**	-0.542**	-0.593**
TSI	r	-0.457**	-0.594**	-0.675**

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3. The relation between mental states and life qualities of the students. GSI: Global Severity Index, SDI: Symptom Discomfort Index, TSI: Total Symptom Index, PCS: Physical Component Summary, MCS: Mental Component Summary, SF-36: Quality of Life.

Although average of their score which they got from SF-36 is 46.18 ± 6.55 , when sub-scale scores were examined, it was found that PF was 50.09 ± 8.63 , PR was 45.34 ± 11.17 , BP was 51.17 ± 8.53 , GH was 47.32 ± 7.92 , VT was 50.28 ± 8.57 , SF was 45.09 ± 10.25 , RE was 42.64 ± 13.38 , and MH was 43.67 ± 9.50 . Of the SF-36 indices, it was found that they got 48.92 ± 7.93 from PCV and 43.44 ± 9.52 from MCS. It was found that scores of SF-36 scale, sub-scales and indices were generally low (Table 3).

The relation between the scores which students got from BSI, sub-scales of BSI and global indices and SF-36 and indices was given after evaluated by correlation analysis. According to results in Table 5, it was found that there was

Coefficients ^a						
Model	Non-standardized coefficients		Standardized coefficients	t	p	
	B	SS	β			
(Fixed)	54,266	1,869		29,040	0,000	R: 0.664 ^a
GSI	-6,812	1,638	-0,638	-4,159	0,000	R ² : 0.441
1 TSI	-0,003	,058	-0,006	-0,053	0,957	F: 70.894
DSI	-0,376	1,100	-0,028	-0,342	0,733	p: 0.000 ^a
R ² : Explanatory Coefficient Dependent variable: SF-36:Quality of Life						

Table 4. The relation between mental states and life qualities of the students

a medium-level negative relation between sub-scales of BSI and SF-36, PCS and MCS. Strong-level negative relation was found between MSI which we use with the aim of general assessment of psychopathology and quality of life. As the mental problems of the students increase, their life qualities decrease.

According to results in Table 4, there is significant relation between DSI global index which shows pathological level of mental state and quality of life ($p < 0.005$). Any significant relation between other global indices and quality of life could not be found ($p > 0.05$). The relation between mental state and quality of life was found statistically significant ($F: 70.894$; $p < 0.000$). Among variables there is positive, medium level relation ($r = 0.664$). In addition, determination coefficient (r^2) was calculated as 0.441 and it can be said that % 44.1 of the changes in mental state depends on quality of life.

4. DISCUSSION

Mental state symptoms and quality of life related to health do not have the same meaning. Mental health is defined as individual's perception of feeling well about physical, emotional, cognitive or psychosomatic states. On the other hand, quality of life (or functional state) shows the effect of an event on individual's daily function (21). The purpose of this study was to investigate the prevalence of a group of mental health symptoms among health sciences students, and to determine the association between mental health symptoms prevalence and quality of life. We hypothesized there was a negative association. We thought that mental health symptoms and quality of life assessment among young people could provide unique insight into health status and help design appropriate interventions for happy life (21).

According to the scores that students got from BSI, it can be said that frequency of mental symptoms is at medium-level. Global indices are the parts that show actual functioning and level of indicator with different approaches (13). Founding DSI above 1 shows the psychopathological proneness of mental symptoms. In this study, DSI score (1.07) was used in order to determine the psychopathological level of students' mental states. According to study results, it can be said that mental symptoms of the students are at psychopathological level. In some studies conducted, psychopathological level of students' mental states was found as 1.22 by Yıldırım et al, (22), 1.0 by Tanrıverdi and Ekinci (23) and 1.05 by Kartal et al, (24) while mental symptom level of the students in this study has similarities with those studies, it is higher when compared to some study results.

Arslan et al, (25) found the mental symptom level as 0.90 in their study, Terakye (26) found it as 0.92 and Demirel et al. (27) found it as 0.17. DSI's being above 1 makes us think that mental states of the students in the study group are at problematic level. Average of mental symptom scores of the students was found as, from the highest to the lowest respectively, depression, hostility, anxiety, negative ego and somatization. The highest symptom in the average of mental symptom score is depression. In other studies conducted, it was seen that the order was different (27, 28, 29, 30). Mental health is defined as the state of feeling well emotionally or cognitively or as the state of not being sick. % 20 of the young people suffers mental problems. Of the mental health problems, frequency of seeing depression among young people is % 5 and % 20. Depression not only decreases the attention, concentration, memory, motivation, decision making skills but also it is a risk factor for attempting suicide (13, 31). The second highest mental symptom score of the students is hostility. Hostility means sense of anger and hatred in the dimensions of thought, emotion and behaviors. It can be defined as an attitude that involves not liking others and causes them to evaluate others negatively (27). These data emphasize the importance of the studies conducted on this subject in terms of discovering mental problems of young people early and preventing the formation of psychiatric disorders later in life (32).

In this study, SF-36 norm-based scores are given. Among the sub-scales of SF-36, the highest scores belong to bodily pain (BP) and physical function (PF) dimensions, the lowest scores belong to role-emotional (RE) and Mental Health (MH) dimensions. There have been studies parallel to our study results. 180 American students participated in the study of Lins et al. (33). Average normalized SF-36 score, scores of RE (41.6 ± 13.6) and MCS (42.0 ± 11.7) were parallel to our results and they were quite lower than 50. In the study where Domantay researched life qualities of medicine students, PF and BP had the highest scores while RE had the lowest average score (34). In the study which was conducted with Turkish students by Arslan et al, for the students with no evidence of depression, the highest average score belonged to the sub-scales of PF, RP and BP while the lowest average scores belonged to the sub-scales of RE, V and MH. There are studies which have lower scores, as well (25). Sabbah et al, studied life qualities of 208 Lebanon university students; they stated that PF had the highest score (89.0 ; $SS=17.2$) and RE had the lowest score (55.2 ; $SD=42.4$) (17). In the study which was conducted by Suleiman with 119 university students, the highest score belonged to PF (78.1 ; $SD=23.0$) and the lowest score belonged to vitality dimension (52.3 ; $SD: 17.8$) (18). In the study of DeBerard et al, it was seen that students got the highest scores for PF (92.1 ; $SD=18.3$) and lowest score for Vitality (62.5 ; $SD=19.8$) (35). In the same study, normative PCS and MCS scores of the students were higher than those of ours. Latas et al researched quality of life of 561 medicine students and 332 students from other departments (36). In the study of Latas, general SF-36 scores and average scores of sub-scales were higher than ours. The reasons behind the differences between the results may be due to using different methodological approaches (consecutive approach vs. distribution from all

years) and conducting the research with different samples (only medicine students or nursing and physical education students) (37). Health students from various departments and management students who are not directly linked to health participated in our study.

5. CONCLUSIONS

In this study, it was discovered that there was a significant relation and a negative medium-level correlation between mental symptom level and quality of life. That is, it can be said that students whose quality of life decreases experience mental problems more. Mental symptom scores determined by BSI scale try to define depression, hostility, anxiety, negative ego, somatization and these five mental states given. In this case, it can be stated that students with low quality of life are more likely to be prone to mental disorders such as depression, hostility, anxiety, negative ego and somatization. We found in this study that mental health symptoms were associated with poorer quality of life, and quality of life was explained by mental health symptoms. It is important to identify symptoms and offer early interventions to reduce mental health symptom burden and, thereby, improve quality of life of young people.

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- **Conflict of interest:** None declared.

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