Health-related Quality of Life and Associated Factors Among Undergraduate University Students

Naim Nur*, Ahmet Kıbık, Esma Kılıç and Haldun Sümer

Department of Public Health, Cumhuriyet University, Sivas, Turkey

ABSTRACT

Objectives: The aims of this study were to explore factors associated with health-related quality of life (HRQOL) among students of Cumhuriyet University, Turkey. *Methods*: This cross-sectional study involved 1751 undergraduate students. HRQOL was measured using the Turkish version of 36-Item Short Form Health Survey questionnaire. We looked at the effect of sociodemographic characteristics (e.g., gender, age, drinking, and smoking) on the individual HRQOL domains. *Results:* Place of residency (odds ratio (OR) = 3.947 for role emotion dimension), smoking status (OR = -2.756 for role physical dimension), received amount of pocket money (OR = 2.463 for mental health dimension), and body mass index (OR = 1.463 for mental health dimension) were the factors significantly associated with the HRQOL. *Conclusions:* Young students' HRQOL is affected by socioeconomic, demographic, and behavioral factors. To improve student's HRQOL, any health-promoting strategies should focus on modifiable risk factors and socioeconomic supports for students.

Quality of life is defined by the World Health Organization as an "individuals' perception of their position in life in the context of the culture and value systems in which they live and their relation to their goals, expectations, standards and concerns".[1] Because of the nature of the various sociodemographic factors related to students' well-being, further examination of the health-related quality of life (HRQOL) among university students is needed. As a multidimensional concept, the HRQOL reflects the health of people both physically and mentally. The importance of the HRQOL to promote and maintain a correct lifestyle among student population has been well presented. The problems associated with a poor quality of life of the young students include poor interpersonal relations, depression, and low self-esteem. Moreover, these psychological problems have a significant impact on students' achievement, performance, and enhanced productivity.[2–4] There are remarkable inequalities in the impact that these problems have on students, especially when considering sociodemographic characteristics and economics. The relationship between different aspects of HRQOL has been well presented in different studies.[5,6]

Because the university period constitutes an environment where students spend a great part of their time, the life of university students in Turkey is naturally a concern to public health authorities. Young university students between the ages of 18–25 are in a transition period to adulthood. It is well-known that the interaction of biological and socio-psychological factors that happen during this period may make students particularly vulnerable to high-risk physical or psychological behaviors that may have a negative impact on their long-term health and viability.[7] In this framework, the university experience provides them an opportunity to develop a personal identity based on their own aspirations and to enhance personal competencies based on their own skills. Students who perceive a better quality of life take advantage of the numerous resources and services available and integrated better in social and academic backgrounds.[8]

Although a growing body of research has examined the associations between various health problems and HRQOL in the general population, very few studies addressed these issues among university students. Therefore, we sought to explore the factors associated with the HRQOL among students of Cumhuriyet University using the 36-Item Short Form Health Survey (SF-36).

METHODS

The campus of Cumhuriyet University is located in the centre of the Sivas province. Sivas is a province

situated in the Middle part of Anatolia, with a population of about 650 000. At the campus of Cumhuriyet University where the study was conducted, there are 13 faculties and three vocational schools with 17 976 students who continue regular education. Participants of this cross-sectional survey were recruited between November 2015 and April 2016.

A sample size of 2 119 students was determined to be large enough to estimate an expected prevalence of HRQOL of 50% with a 95% confidence interval and a margin of error of ± 2%.

Using a multistage sampling method in this current study, four faculties and one vocational school (medicine, economics, engineering, science, and literature), as clusters, were systematically selected. A total of 2 119 of students (from first to the fourth educational grades and fifth and sixth grades in medicine faculty) were chosen randomly from each cluster.

The study was reviewed and approved by the Ethical Committee of the Cumhuriyet University. After obtaining the permission from the Rectorate of Cumhuriyet University, the questionnaire was applied to the students by eight trained interns with the help of academic staff at the relevant faculties and vocational school. The students were approached after class and asked to participate in the study. All students were informed about the aim of the study and explained that their answers were anonymized and participation was voluntary. Written consent was obtained from all participants. Among the targeted sample of 2 119 students, 368 declined to participate (mainly because they did not have time to complete the interview). In all, 1 751 students (82.6% response rate) agreed to participate in this study.

To assess sociodemographic characteristics, all participants were required to complete a self-administered questionnaire giving their age, gender, birth place (urban/rural), the presence of chronic diseases (defined as diseases lasting for more than one year), residency (with family, dormitory or rented house with a friend), amount of pocket money, alcohol consumption and smoking habits.

Self-reported weight and height data were used to calculate body mass index (BMI). BMI was calculated for each individual by dividing their weight in kilograms by their height in square meters. Obesity was defined as BMI ≥ 30 kg/m² and overweight as 25.0–29.9 kg/m².

Table 1: Distribution of the subjects according to the sociodemographic characteristics.

Characteristics	Number	Percentage (%)
Age, years		
< 20	423	24.2
≥ 20	1328	75.8
Gender		
Male	790	45.1
Female	961	54.9
Residence		
With family	462	26.4
Dormitory or rented house with friends	1289	73.6
Birth place		
Urban	1367	78.1
Rural	384	21.9
Received amount of pocket money		
Adequate	1038	59.3
Inadequate	713	40.7
Physical Activity		
Yes	1077	61.5
No	674	38.5
Body mass index scores, kg/m²		
< 25.0	1487	84.9
≥ 25.0	264	15.1
Alcohol consumption		
Yes	216	12.3
No	1535	87.7
Current smoking		
Yes	382	21.8
No	1369	78.2
Having a chronic disease needing the use of any medicine		
Yes	164	9.4
No	1587	90.6

Alcohol consumption was determined by the frequency of drinking: often (least once per week), occasionally (rarely, less than one beverage per month), and never. Then further categorized as 1: none or occasional drinker and 2: frequent drinker.

Information on smoking habits included: duration of smoking (years) and daily average number of cigarettes smoked. Smoking then was classified as 1: none or occasional (cigarette smoking at least once a week) and 2: daily.

The amount of pocket money received was graded as very poor (1) to very good (5) and then categorized as 1: adequate and 2: inadequate.

All participants' HRQOL was assessed by the SF-36 health survey, which is a multidimensional generic, self-administered instrument that measures

Table 2: Relationships between the mean domain scores and selected sociodemographic characteristics of the subjects (n = 1 751).

Variables	PF	RP	BP	GH	VT	SF	RE	MH
Age, years								
< 20	80.1 ± 21.5	34.9 ± 18.6	26.7 ± 21.0	55.2 ± 18.3	58.0 ± 18.1	71.7 ± 22.4	71.4 ± 23.0	61.9 ± 20.0
≥ 20	81.3 ± 20.3	35.0 ± 18.1	26.0 ± 21.5	56.4 ± 17.9	59.3 ± 17.7	71.0 ± 22.7	70.6 ± 23.7	60.9 ± 20.4
p-value*	0.298	0.911	0.569	0.227	0.180	0.579	0.567	0.379
Gender								
Female	80.4 ± 20.9	34.7 ± 17.8	26.0 ± 21.4	55.3 ± 18.3	58.5 ± 18.0	70.5 ± 23.0	70.7 ± 23.7	61.0 ±20.2
Male	81.8 ± 20.2	35.3 ± 18.5	26.5 ± 21.3	77.1 ± 17.7	59.5 ± 17.4	72.4 ±22.1	71.7 ± 23.2	62.6 ±20.5
p-value*	0.140	0.482	0.620	0.048	0.243	0.120	0.377	0.097
Residence								
With family	81.0 ± 21.3	35.9 ± 18.7	27.2 ± 21.5	56.0 ± 17.8	60.1 ± 17.6	71.0 ± 22.0	72.1 ± 23.3	62.0 ± 20.6
Without family**	81.1 ± 20.3	34.7 ± 18.0	25.8 ± 21.3	56.1 ± 18.1	58.6 ± 17.8	71.3 ± 22.9	68.6 ± 24.0	60.9 ± 19.6
p-value*	0.918	0.236	0.231	0.919	0.103	0.821	0.005	0.299
Birth place								
Urban	81.4 ± 20.7	34.5 ± 17.9	26.0 ± 21.3	56.5 ± 18.5	60.2 ± 17.1	72.3 ± 22.6	71.3 ± 23.0	61.3 ± 20.8
Rural	81.0 ± 20.5	35.2 ± 18.3	26.3 ± 21.4	56.0 ± 17.9	58.7 ± 17.9	70.9 ± 22.6	71.2 ± 23.6	61.8 ± 20.2
p-value*	0.710	0.556	0.821	0.665	0.134	0.301	0.929	0.621
Pocket money								
Adequate	81.4 ± 20.3	35.6 ± 18.3	26.2 ± 21.4	55.8 ± 18.2	59.3 ± 17.5	70.8 ± 22.8	71.8 ± 23.3	63.2 ± 19.9
Inadequate	80.5 ± 21.0	34.1 ± 18.0	26.2 ± 21.4	56.6 ± 17.8	58.8 ± 17.9	71.8 ± 22.4	70.4 ± 23.7	60.7 ± 20.5
p-value*	0.372	0.087	0.992	0.362	0.529	0.380	0.216	0.010
Alcohol consumption								
Yes	81.0 ± 20.6	30.5 ± 18.1	27.0 ± 21.4	57.9 ± 18.0	58.6 ± 17.9	72.7 ± 21.4	70.7 ± 23.2	62.6 ± 20.2
No	81.3 ± 20.2	34.9 ± 18.6	26.1 ± 21.4	55.9 ± 18.0	61.7 ± 16.5	71.0 ± 22.8	71.3 ± 23.5	61.6 ± 20.3
p- value*	0.877	0.890	0.581	0.128	0.016	0.307	0.772	0.501
Smoker								
Yes	81.6 ± 20.0	33.1 ± 18.7	26.0 ± 21.8	57.5 ± 17.2	58.4 ± 18.0	71.0 ± 22.7	71.5 ± 24.4	62.2 ± 21.5
No	80.9 ± 20.7	35.6 ± 18.0	26.3 ± 21.3	55.7 ± 18.3	61.0 ± 16.8	71.9 ± 22.2	71.1 ± 23.2	61.6 ± 20.0
p-value*	0.518	0.017	0.845	0.091	0.013	0.497	0.748	0.570
Presence of chronic disease								
Yes	80.5 ± 19.1	33.4 ± 18.7	26.0 ± 21.1	55.3 ± 17.7	60.4 ± 16.2	70.7 ± 22.6	71.8 ± 8.0	61.3 ± 21.2
No	81.1 ± 20.7	35.2 ± 18.1	26.2 ± 21.4	56.2 ± 18.1	58.9 ± 17.9	71.3 ±2 2.6	71.1 ± 23.5	61.7 ± 20.2
p-value*	0.714	0.226	0.901	0.554	0.297	0.775	0.731	0.782
Body mass index, kg/m²								
< 25.0	81.6 ± 20.3	35.1 ± 18.3	25.9 ± 21.3	56.0 ± 18.1	58.8 ± 17.8	71.2 ± 22.8	70.7 ± 23.6	61.3 ± 19.4
≥ 25.0	77.7 ± 19.5	31.5 ± 19.9	24.4 ± 21.5	54.8 ± 19.2	59.7 ± 17.9	69.3 ± 22.8	71.4 ± 22.3	65.0 ± 20.2
p-value*	0.034	0.021	0.413	0.469	0.533	0.323	0.735	0.030

*Students't-test. **Dormitory or rented house with friends.*
PF: physical functioning; RP: role physical; BP: body pain; GH: general health; VT: vitality; SF: social functioning; RE: role emotional; MH: mental health.

eight different domains of life with eight scales. These include physical functioning (PF), role limitations due to physical problems (RP), body pain (BP), general health perceptions (GH), vitality (VT), social functioning (SF), role limitations due to emotional problems (RE) and mental health (MH). Scores ranged from 0 to 100 separately for each domain with higher scores reflecting better-perceived health. Reliability and validity assessment of Turkish version of the SF-36 scale was performed by Kocyigit et al.[9]

Data analysis was undertaken using SPSS Statistics (SPSS Inc. Released 2007. SPSS for Windows, Version 16.0. Chicago, US). Descriptive summary statistics were performed to provide the sample distribution. Significant differences in the eight domains were assessed using the Student's *t*-test for continuous variables according to the various

Table 3: Multiple linear regression coefficients (r^2) according to sociodemographic characteristics of the subjects (n = 1 751).

Variables	PF	RP	BP	GH	VT	SF	RE	MH
Age, years								
Non standardized β coefficients	1.074	0.466	-1.000	0.687	0.648	-1.257	0.824	0.496
Standardized β coefficients	0.022	0.011	-0.020	0.016	0.016	-0.024	0.015	0.010
Gender (Male /Female)								
Non standardized β coefficients	1.837	0.010	0.695	1.449	0.422	2.030	1.332	1.505
Standardized β coefficients	0.044	0.001	0.016	0.040	0.012	0.045	0.028	0.037
Residence with family (Yes/No)								
Non standardized β coefficients	0.308	-1.156	-1.433	0.160	-1.581	0.194	3.947	1.118
Standardized β coefficients	0.007	-0.028	-0.030	0.004	-0.039	0.004	0.074	0.024
Received adequate amount of pocket money (Yes/No)								
Non standardized β coefficients	-1.124	-1.281	0.220	0.640	0.471	0.893	-1.696	2.463
Standardized β coefficients	-0.027	-0.035	0.005	0.017	0.013	0.019	-0.035	0.060
Alcohol consumption (Yes/No)								
Non standardized β coefficients	0.362	-1.171	-1.033	-0.917	-2.136	-1.226	1.522	-0.003
Standardized β coefficients	0.006	-0.021	-0.016	-0.017	-0.040	-0.018	0.021	-0.000
Current smoking (Yes/No)								
Non standardized β coefficients	-0.468	-2.756	0.830	-0.849	-1.662	-0.004	-0.259	0.386
Standardized β coefficients	-0.009	0.063	0.016	-0.019	-0.039	-0.000	-0.005	0.008
Body mass index scores								
Non standardized β coefficients	-1.135	0.408	1.059	0.493	0.251	-0.017	1.292	1.493
Standardized β coefficients	-0.043	0.017	0.0538	0.021	0.011	-0.000	0.042	0.057
r^2	0.005	0.008	0.003	0.006	0.009	0.003	0.009	0.009

All statistically significant differences are in bold type (p < 0.050).
PF: physical functioning; RP: role physical; BP: body pain; GH: general health; VT: vitality; SF: social functioning; RE: role emotional; MH: mental health.
Values of categorical variables: 1 = male, 0 = female; 1 = yes, 0 = no.

sociodemographic characteristics. Finally, multiple linear regression models tested for the problems of potential collinearity to demonstrate the significant variables that in relation to their HRQOL were applied. Purposeful selection of candidate variables was done based on a bivariate *p*-value < 0.150. A *p*-value ≤ 0.050 was considered statistically significant.

RESULTS

The distribution of the subjects according to the sociodemographic characteristics are summarized in Table 1. The sample population consisted of 790 (45.1%) males and 961 (54.9%) females with a mean age of 21.3±2.5 years. The majority of students (73.6%) reported living in students dormitories or living in rented apartments with friends while 26.4% of them lived with parents at home. The majority of participants (78.1%) were born in urban areas and 59.3% of them declared that they had adequate amount of pocket money. A high BMI score was

found 15.1% in students. Alcohol consumption was declared by 12.3% and the smokers made up 21.8% of the sample group. Of the total sample, 9.4% reported having a chronic disease.

The mean of SF-36 scale scores and selected sociodemographic characteristics of the subjects are presented in Table 2. Significant difference was found among men reporting higher score compared to women significantly in GH domain (*p* = 0.048). Students staying with their family had a significantly HRQOL score for RE domain than students living in dormitory or rented house with their friends (*p* = 0.005). Students who reported receiving an adequate amount of pocket money, had higher MH domain scores compared to those who received an inadequate amount (*p* = 0.010). Only the VT score of non-drinkers was significantly higher than that of drinkers (*p* = 0.016) while the VT and RP scores of non-smokers was significantly higher than that of smokers (*p* = 0.013 and *p* = 0.017, respectively). Overall, participants who were a healthy weight had better physical HRQOL in both the PF and RP

domains than those who were overweight/obese ($p = 0.034$ and $p = 0.021$, respectively). Overweight/obese students had a better score in the MH domain than those with normal weight ($p = 0.030$).

Multiple linear regression models were performed to explore associations with the SF-36 domains and sociodemographic characteristics [Table 3]. Place of residency, pocket money received, smoking status, and BMI were associated with the HRQOL. Students living with their family had higher HRQOL score for the RE domain, and those who received an adequate amount of pocket money had a higher score for the MH domain. On the other hand, students who were non-smokers had a higher HRQOL score for the RP domain. Finally, a higher BMI was related to higher HRQOL score in the MH domain.

DISCUSSION

We sought to assess the HRQOL of university students to help decision makers to determine which health promotion strategies could be more effective among university youth.

Socioeconomic and demographic characteristics influenced the HRQOL of students to a great extent.[10–12] This study, consistent with previous findings, showed the same pattern of variation between genders on the majority of subscales (significantly only for GH domain). Women generally experienced a lower HRQOL than men, a pattern that is common in others studies.[11–13] This could be explained by the fact that women may experience a wider range of life events more stressful than men.[11]

In agreement with a recent study by Pekmezovic et al,[14] also carried out on university students, students who lived at home with their parents had a higher HRQOL than students who lived in dormitory or rented house with friends approximately in all domains, but only statistically significant in the RE domain. However, a study by Boot et al,[15] from the Netherlands, found that students living with a partner were associated with higher scores of perceived health status compared with students living at home with their parents. Paro et al,[16] found no differences related to the HRQOL between students living with or away from family. The differences in the observations of these studies may be due to the timing of the data collection, the

survey method (cross-sectional or cohort), and the student population (e.g., only medical students or nursing students etc).

Although there is restricted data about the effect of family household income on students HRQOL, a recent study[14] also showed that students who were given adequate amount of pocket money reported a higher HRQOL (significantly for only MH domain) compared to those who were given inadequate amount of pocket money.

Non-smokers had a higher HRQOL (statistically significant only for RT and VT domains) compared to smokers and this finding was in agreement with the study by Pekmezovic et al.[14]

We showed that overweight/obesity is associated with decreasing levels of HRQOL (significantly for PF and RP domains). On the other hand, obese individuals have better mental HRQOL than those of normal weight (even though this effect was relatively small). This finding was in agreement with some other studies that indicate that obese people have slightly better mental HRQOL than those of normal weight,[17,18] but contradicts most earlier reports that have indicated either a negative relationship or no relationship at all between obesity and mental HRQOL[19,20] or related HRQOL domains. This study and others showed a positive relationship between obesity and mental HRQOL[14,15] using population-based samples; however, at least some of the studies that found no relationship or a negative relationship used clinical based samples,[20,21] which seem to be characterized by individuals suffering from a mental health and related problems.[19]

We found that place of residency, amount of pocket money received, smoking, and BMI were factors associated with the HRQOL, which has also been found in a number of previous studies.[20–23]

We conducted a cross-sectional study and such a design provides a snapshot of the impact of some sociodemographic and economic effects experienced by students, but does not allow to prove or to establish a temporal relationship between cause and effect.

CONCLUSION

Young students' HRQOL is affected by socioeconomic, demographic, and behavioral factors. HRQOL is likely to be higher among those living in urban areas, non-smokers, those with have

adequate amount of pocket money, and those with higher BMI index. Health-promoting strategies should target modifiable risk factors and consider socioeconomic support to improve the HRQOL among university students.

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