Clinical and Experimental Health Sciences

The Effect of Mental Health on Health-Related Quality of Life in Adolescents

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ABSTRACT

Objective: The aim of this study was to determine the effect of mental health on health-related quality of life in adolescents.

Methods: This cross-sectional study was conducted among 1188 students studying in a public high school in Istanbul, Turkey. Data were collected using the General Health Questionnaire (GHQ-12) and the Turkish Generic Health-Related Quality of Life Questionnaire for adolescents (Kiddo-KINDL). Descriptive statistics, correlation analysis and multiple regression analysis were used in the analysis.

Results: The mean age of the adolescents was 16.61±1.17; 56.6% were female. This study shows that mental health was a negatively significantly related to all subscales of health-related quality of life (physical wellbeing, emotional wellbeing, self-esteem, family, friends, school) of adolescents ($p<0.05$). It was discovered that the adolescents' mental health, relationships with friends, participation in regular physical activity, school success, family relationships, class, economic situation, their ability to talk to people close to them about their personal problems and the presence of chronic illness were significant predictors of their overall quality of life ($R^2=0.402, p<0.001$).

Conclusion: Overall quality of life increases among adolescents who do not have a mental health problem, those who have good relationships with friends, engage in regular physical activity, achieve well at school, have good family relations, are in the upper classes, have a good economic situation, those who talk to people close to them about personal problems and those who have no chronic illness. School nurses can organize health education programs and counseling services to improve the mental health of adolescents.

Keywords: Adolescent, health-related quality of life, mental health, nurse

1. INTRODUCTION

Adolescence is the transition period from childhood into adulthood which is characterized by rapid physical growth, sexual development, and psychosocial maturation (1-3). WHO (2021) identifies adolescents as between the ages 10-19. This period is often known as a conflicted, tense, difficult period (4). The desire for independence and autonomy is the most prominent feature of this period (5). It is reported that, most common mental disorders have an onset in childhood or adolescence and with the peak incidence for common disorders occurring during adolescence (6). Today, almost one in seven young people meet diagnostic criteria for a mental illness (7). WHO (2020) reported that, mental health problems account for 16% of the global burden of disease and injury in adolescents.

Mental health problems can significantly affect the development of adolescents having an enduring impact on their health and social functioning in adulthood (9). In this period, mental health problems negatively affect adolescents' educational life, social functions and quality of life (10). It is also reported that the physical, psychological and social health of individuals is an important indicator of their quality of life (11). In many studies, it has been shown that depressive adolescents and adolescents with anxiety have lower levels of quality of life (12-15).

Quality of life is a widely comprehensive concept that covers the complexities of an individual's physical health, psychological state, social relations and characteristics related to environment (16). Health-related quality of life (HRQOL) pertains to the perception of an individual's wellbeing in the context of physical, psychological, emotional and social functionality levels (16). The importance of HRQoL assessment in adolescents stems from its ability to identify individuals at risk and detect health inequalities (17).

Studies on quality of life reveal that the health-related quality of life of adolescents is not a subject that has been widely explored and in fact, it can be seen that the quality of life of adolescents is frequently neglected. In this period, adolescents seek independence so that they can make their own lifestyle decisions. These decisions may have a long-term effect on the adolescent's health and wellbeing (13).

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The numerous factors related to on HRQoL of adolescents have been addressed previously; namely gender, age, economic status, family prosperity, physical activity and sleep (13,15,18-25).

While reviewing the literature, it was discovered that, a few prior studies have evaluated the relationship between mental health and HRQoL on healthy adolescents (13). The mental health and health-related quality of life of adolescents unfortunately is a matter that is frequently ignored. In this context, it is important to identify the relationship between mental health and health-related quality of life of adolescents if improvements are to be made in their health and wellbeing. The aim of this study in this context was to determine the effect of mental health on health-related quality of life in adolescents. The study sought answers to the following research questions:

- What is the level of mental health of adolescents?
- What is the level of quality of life of adolescents?
- Is there a relationship between mental health and health-related quality of life of adolescents?
- What are the factors associated with health-related quality of life among adolescents?

2. METHOD

2.1. Study Design and Participants

This cross-sectional study was carried out April 2014 with students attending a public high school in Istanbul, Türkiye. The school is located in a region of middle socioeconomic level in Istanbul. The choice of the school was influenced by the fact that the school was a public school and was located in a close area in terms of access to researchers. The universe of the study consisted of the students (*N*=1380) enrolled in a public high school in Istanbul over the 2013-2014 academic year. No sample selection was made since our target was to reach the entire universe of the study. In the school where this research was conducted, all of the students receive similar education and the health education is not given.

The study included students who were present on the study day and whose parents authorized participation. The criteria of exclusion were: absence on the study day, having a vision, hearing and cognitive problem, and incomplete questionnaire data. The study sample comprised 1188 students in the 9th, 10^{th,} 11th and 12th grades. Consent/assent was obtained for 1188 students (86%) who were subsequently enrolled in the study. Of the 1380 eligible adolescents, 96 (7%) did not provide written permission from their parents, 55 (4%) were absent from school on the day of the study, and 41 (3%) did not wish to participate.

2.2. Variables of the Study

Dependent variables; adolescents' mental health and health-related quality of life.

Independent variables; adolescent's gender, age, class, economic status, mother/father's education, type of family, number of siblings, work status, school success, participation in social activity, participation in regular physical activity, having a health problem in the last year, family relations, and relationships with friends and talking to people who are close about personal problems.

2.3. Measures

A socio demographic information form, the General Health Questionnaire (GHQ-12) and the Turkish Generic Health-Related Quality of Life Questionnaire for adolescents (Kiddo-KINDL) were used in the data collection.

Sociodemographic Information Form

The sociodemographic data were collected with information form. The information form contained 16 questions on the adolescent's gender, age, class, economic status, mother/father's education, type of family, number of siblings, work status, school success, participation in social activity, participation in regular physical activity, having a health problem in the last year, family relations, and relationships with friends and talking to people who are close about personal problems.

The General Health Questionnaire 12 (GHQ-12)

The GHQ was developed by David Goldberg (1970) to identify acute mental illnesses that are frequently encountered in the community. The validity and reliability studies for the questionnaire in Turkey were conducted by Kılıç et al. (1997); the form is currently used in the community to identify psychiatric cases (Cronbach's alpha: 0.78). While the questionnaire is reported to be reliable in identifying symptoms of non-psychotic depression and anxiety. Each question inquiries into the symptoms experienced in the last few weeks and have four choices of response ("never, as many as usual, more frequent that usual, very often"). Individuals receiving scores over "2" are identified as having mental problems (anxiety or depression) (26). In this study, Cronbach's alpha coefficient for the GHQ-12 was 0.83.

The Turkish Generic Health-Related Quality of Life Questionnaire for Adolescents (Kiddo-KINDL)

The Kiddo-Kindl Questionnaire was developed by Ravens-Sieberer and Bullinger (1998). The Turkish version of the scale was created by Eser et al. (2004) (27). This measure consists of 24 items on a 5-point Likert scale (from 1= "never" to 5= "always") which includes six subscales: physical wellbeing, emotional wellbeing, self-esteem, family, friends and school. The raw scores are transformed into a 0-100 scale, with higher scores indicating better HRQoL. The Kiddo-KINDL scale Cronbach alpha values were 0.83 for total quality of life, 0.70 for physical wellbeing, 0.73 for emotional wellbeing, 0.70 for self-esteem, 0.71 for family, 0.58 for friends, and 0.55 for school (27). Cronbach's alpha values for the subscales in this study vary between 0.31 – 0.79 (physical wellbeing; 0.75,

emotional wellbeing; 0.69, self-esteem; 0.79, family; 0.77, friends; 0.31, school; 0.32, total quality of life; 0.79).

2.4. Ethical Considerations

The University's Ethics Committee granted its approval for the study (approval date 09.09.2013 and number 48). Prior to the start of the research, approval for the study was first obtained from Istanbul Provincial Directorate of National Education. The researchers visited each classroom and distributed the informed parent consent and child assent forms for the students to take home to their parents. Parents signed the informed consent form at home, and then returned them to school via the students. The students completed their questionnaire after the parents gave their informed consent. The students were informed by the investigators about the nature of the study and were instructed that participation was voluntary and information was confidential and anonymous. Students completed the question forms and scales in their classrooms during school hours.

2.5. Limitations of the Research

The results of the study were limited to its own sample and therefore cannot be generalized. The data of the study were collected on the basis of self-reporting. No observations or objective evaluations were made in the study.

2.6. Data Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS, version 25.0). Descriptive statistics (numbers, percentages, means, and standard deviation) were used in the analysis. Relationships between the socio-demographic characteristics, the GHQ-12 score and the Kiddo-KINDL scores were assessed with the Pearson correlation analysis. Stepwise multiple regression analysis was performed to determine factors related to health-related quality of life. The results were found to be in the 95% confidence interval and significance was assessed as $p< 0.05$.

3. RESULTS

The mean age of the students was 16.61±1.17; 56.6% were female. More details on the demographic characteristics of the adolescents are shown in Table 1. The mean scores for the subscales of the Kiddo-KINDL were found to be 54.49±22.20 for physical wellbeing, 59.98±21.24 for emotional wellbeing, 52.77±25.13 for self-esteem, 52.86±24.63 for family and 64.87±17.22 for friends, 55.46±19.23 for school, and 56.74±14.57 for the total Kiddo-KINDL. The GHQ-12 means score was found to be 2.90±3.00 (Table 2). The correlation values between sociodemographic characteristics, GHQ-12 and subscales of Kiddo-KINDL of adolescents are shown in Table 3.

Table 1. *Socio-demographic characteristics of adolescents*

Socio demographic characteristics	Min-Max	Mean±SD
Age	14-19	16.61± 1.17
Number of siblings	1-4	2.84±0.94
	n	%
Gender		
Female	672	56.6
Male	516	43.4
Grade		
9	200	16.8
10	162	13.6
11	416	35.0
12	410	34.5
Parents		
Two parents	1087	91.5
Single parent	84	7.1
No parent	17	1.4
Mother education		
Not literate	157	13.2
Literate	54	4.5
Elementary school	603	50.8
Middle School	214	18.0
High school	135	11.4
College / University	25	2.1
Father education		
Not literate	33	2.8
Literate	27	2.3
Elementary school	556	46.8
Middle School	293	24.7
High school	234	19.7
College / University	45	3.8
Monthly income		
Lowest	95	8
Middle	683	57.5
Good	376	31.6
Very good	34	2.9
Family relations		
Very good	522	43.9
Good	354	29.8
Middle	250	21
Bad	40	3.4
Very bad	22	1.9
Friend relations		
Very good	638	53.7
Good	398	33.5
Middle	128	10.8
Bad	11	0.9
Very bad	13	1.1
Talking to someone close to them about their personal problems		
Never	132	11.1
Sometimes	597	50.3
Often	235	19.8
Routinely	224	18.9

School success		
Above the class average	217	18.3
Class average	907	76.3
Below class average	64	5.4
Working status		
Yes	113	9.5
No	1075	90.5
Extracurricular social activity		
Yes	324	27.3
No	864	72.7
Sleeping problem		
Yes	597	50.3
No	591	49.7
Chronic disease		
Yes	98	8.2
No	1090	91.8
Having a health problem in the last year		
Yes	968	81.5
No	220	18.5
Regular physical activity three days a week		
Yes	619	52.1
No	569	47.9
Total	**1188**	**100**

Table 2. *The mean scores for the sub-scales and total of the Kiddo-KINDL and the GHQ-12 of adolescents*

Sub-scales of the Kiddo-KINDL	Min	Max	Mean	SD
Physical well-being	0	100	54.49	22.20
Emotional well-being	0	100	59.98	21.24
Self esteem	0	100	52.77	25.13
Family	0	100	52.86	24.63
Friends	0	100	64.87	17.22
School	0	100	55.46	19.23
Kiddo-KINDL Total	8	96	56.74	14.57
The GHQ-12 mean score	0	12	2.90	3.00

A stepwise multiple regression analysis was performed to determine the factors related to health-related quality of life of the adolescents. In the univariate analysis, the variables that had a significant relationship with health-related quality of life of adolescents were considered as independent variables. A significant relationship was seen between the physical wellbeing of the adolescents and their GHQ-12 scores (β=–0.293, $p< 0.001$), gender (β=–0.176, $p<0.001$), family relations (β=0.098, $p<0.001$), having a health problem in the last year (β=0.088, $p<0.001$), and presence of chronic illness (β=0.080 $p<0.01$), sleeping problems (β=0.061, $p< 0.05$), friend relationships (β=0.060, $p<0.05$), respectively. These variables explained 23% of total variance (R^2=0.23, $p<0.001$) (Table 4). The physical wellbeing of adolescent's increases when there is no mental health problem, the adolescent is male, family relationships are good, no health problem was experienced in the last year, there are no chronic diseases, no sleeping problems and relationships with friends are good.

A significant relationship was seen between the emotional wellbeing of the adolescents and the adolescents' GHQ-12 scores (β=-0.472, $p<0.001$), family relations (β=0.124, $p<0.001$), relationships with friends (β=0.121, p<0.001), participation in regular physical activity (β=0.068, $p<0.01$) and mother's education (β=0.061, $p<0.01$), respectively. These variables explained 35% of total variance (R^2=0.35, $p<0.001$) (Table 4). The emotional wellbeing of adolescents increases if there are no mental health problems, relationships with friends and family are good, the adolescent engages in regular physical activity and the more education the mother has.

Table 3. *Correlations between socio-demographic characteristics, GHQ-12 and Kiddo-KINDL of adolescents*

Variables	1	2	3	4	5	6	7	8	9	10	11	12
Monthly income (1)												
School success (2)	0.011											
Family relations (3)	0.187**	0.114**										
Friend relations (4)	0.139**	0.034	0.356**									
Talking to someone close to them about their personal problems (5)	0.108**	-0.017	0.138**	0.212**								
GHQ-12 (6)	0.124**	0.097**	0.376**	0.214**	0.097**							
Physical well-being (7)	0.078**	0.065*	0.256**	0.160*	0.022	-0.414**						
Emotional well-being (8)	0.149**	0.067*	0.349**	0.270**	0.128**	-0.559**	0.459**					
Self esteem (9)	0.102**	0.168**	0.216**	0.173**	0.107**	-0.334**	0.228**	0.365**				
Family (10)	0.104**	0.160**	0.199**	0.175**	0.099**	-0.316**	0.214**	0.343**	0.967**			
Friends (11)	0.155	0.075*	0.177**	0.342**	0.177**	-0.237**	0.163**	0.325	0.296**	0.300**		
School (12)	0.075**	0.221**	0.281**	0.169**	0.074*	-0.358**	0.255**	0.320**	0.232**	0.227**	0.212**	
KINDL – Total Quality of life (13)	0.161**	0.190**	0.365**	0.310**	0.146**	-0.551**	0.579**	0.695**	0.815**	0.806**	0.534**	0.535**

*Note: **p <0.01, * p <0.050.*

A significant relationship was seen between the self-esteem of the adolescents and the adolescents' GHQ-12 scores (*β*= – 0.280, *p<0.001*), class (*β*= 0.146, *p< 0.001*), participation in regular physical activity (*β*=0.145, *p<0.001*), school success (*β*=0.112, *p<0.001*), relationships with friends (*β*=0.093, *p<0.001*), and talking to people who are close about personal problems (*β*= 0.069, *p<0.05*), respectively. These variables explained 19% of total variance (R^2=0.190, *p<0.001*) (Table 4). The adolescents' level of self-esteem increased when there were no mental health problems, they were in the higher classes, and they engaged in regular physical activity, had success at school had good relations with friends and when they talked to people close to them about their personal problems.

A significant relationship was seen between the adolescents' family dimension of quality of life and their' GHQ-12 scores (*β*=–0.262, *p<0.001*), participation in regular physical activity (*β*=0.121, *p<0.001*), class (*β*=0.125, *p<0.001*), relationships with friends (*β*=0.093, *p<0.001*) school success (*β*=0.107, *p<0.001*), working at a job (*β*=–0.077, *p<0.01*), talking to people who are close about personal problems (*β*=0.065, *p<0.05*) and economic situation (*β*=0.062, *p<0.05*), respectively. These variables explained 17% of total variance (R^2=0.171, *p<0.001*) (Table 4). The adolescents' level of family dimension of quality of life increased when there were no mental health problems, they engaged in regular physical activity, they were in the higher classes, had good relations with friends, had success at school, did not work at a job outside of school, when they talked to people close to them about their personal problems, and when their economic situation was good.

Table 4. *Physical well-being, emotional well-being, self esteem and family predictors according to results of multiple regression analysis*

Variables	R^2	Adjusted R^2	F	p	B	β	t	p
Physical well-being								
Constant	0.238	0.233	52.64	0.000	40.523		9.303	0.000***
GHQ-12					-2.168	-0.293	-10.048	0.000***
Gender					-7.868	-0.176	-6.683	0.000***
Family relations					2.243	0.098	3.339	0.001***
Having a health problem in the last year					5.006	0.088	3.335	0.001***
Chronic illness					6.482	0.080	3.119	0.002**
Sleeping problems					2.693	0.061	2.213	0.027*
Relationships with friends					1.665	0.060	2.186	0.029*
Emotional well-being								
Constant	0.356	0.354	130.958	0.000	39.484		10.676	0.000***
GHQ-12					-3.342	-0.472	-18.320	0.000***
Family relations					2.723	0.124	4.700	0.000***
Relationships with friends					3.207	0.121	4.806	0.000***
Physical activity					2.904	0.068	2.865	0.004***
Mother education					1.097	0.061	2.591	0.010**
Self esteem								
Constant	0.190	0.184	34.486	0.000	15.625		2.901	0.004**
GHQ-12					-2.346	-0.280	-10.106	0.000***
Class					3.429	0.146	5.464	0.000***
Physical activity					7.309	0.145	5.381	0.000***
School success					6.000	0.112	4.196	0.000***
Relationships with friends					2.942	0.093	3.403	0.001**
Talking to someone close to them about their personal problems					1.886	0.069	2.561	0.011*
Family								
Constant	0.171	0.166	30.64	0.000	25.879		3.558	0.000***
GHQ-12					-2.150	-0.262	-9.340	0.000***
Physical activity					5.988	0.121	4.404	0.000***
Grade					2.879	0.125	4.583	0.000***
Relationships with friends					2.856	0.093	3.326	0.001***
School success					5.620	0.107	3.980	0.000***
Work in a job					-6.476	-0.077	-2.830	0.005**
Talking to someone close to them about their personal problems					1.741	0.065	2.371	0.018*
Economical situation					2.361	0.062	2.290	0.022*

GHQ-12=The General Health Questionnaire * p < 0.05, ** p <0.01, ***p < 0.001

A significant relationship was seen the adolescents' friends dimension of quality of life and their relationships with friends (*β*=0.276, *p<0.001*), GHQ-12 scores (*β*=–0.143, *p<0.001*), talking to people who are close about personal problems (*β*=0.097, p<0.001), participation in regular physical activity (*β*=0.082, *p< 0.01*) and economic situation (*β*=0.073, p<0.05), respectively. These variables explained 16% of total variance (R^2=0.167, *p<0.001*) (Table 5). The adolescents' level of friends dimension of quality of life increased when their relations with friends were good, there were no mental health issues, they were able to talk to people close to them about personal problems, they engaged in regular physical activity and their economic situation was good.

A significant relationship was seen between the adolescents' school dimension of quality of life and their GHQ-12 scores (*β*=–0.266, *p<0.001*), school success (*β*=0.178, p<0.001), family relationships (*β*=0.143, p<0.001) and sleeping problems (*β*=0.065, p<0.001), respectively. These variables explained 18% of total variance (R^2=0.187, *p<0.001*) (Table 5). The level of the adolescents' school dimension of quality of life increased when there were no mental health problems, success at school, good family relationships and no sleep problems.

A significant relationship was seen between the adolescents' overall quality of life and their GHQ-12 scores (*β*=–0.429, *p< 0.001*), relationships with friends, participation in regular physical activity (*β*=0.132, *p<0.001*), school success (*β*= 0.113, *p<0.001*), family relationships (*β*=0.102, *p<0.001*), class (*β*=0.079, *p<0.001*), economic situation (*β*= 0.060, *p< 0.01*), talking to people who are close about personal problems (*β*= 0.059, *p<0.05*), and presence of chronic illness (*β*=0.053, *p*<0.05), respectively. These variables explained 40% of total variance (R^2=0.402, *p<0.001*) (Table 5). The adolescents' overall quality of life increased when there were no mental health problems, good relationships with friends, they engaged in regular physical exercise, had success at school, good family relations, the higher their class was at school, when their economic situation was good, they talked to people close to them about personal problems and when there was no chronic illness involved.

Table 5. *Friends and school subscales and KINDL-total quality of life predictors according to results of multiple regression analysis*

Variables	R^2	Adjusted R^2	F	p	B	β	t	p
Friends								
Constant	0.167	0.163	47.258	0.000	30.449		9.578	0.000***
Relationships with friends					5.955	0.276	9.915	0.000***
GHQ-12					-0.821	-0.143	-5.132	0.000***
Talking to someone close to them about their personal problems					1.816	0.097	3.556	0.000***
Physical activity					2.155	0.082	3.013	0.003**
Economical situation					2.532	0.073	2.701	0.007**
School								
Constant	0.187	0.184	63.039	0.000	32.001		9.455	0.000***
GHQ-12					-1.702	-0.266	-9.080	0.000***
School success					7.294	0.178	6.725	0.000***
Family relations					2.832	0.143	4.944	0.000**
Sleeping problems					2.512	0.065	2.317	0.021*
KINDL – Total Quality of life								
Constant	0.402	0.398	30.64	0.000	23.574		7.330	0.000***
GHQ-12					-2.086	-0.429	-17.079	0.000***
Relationships with friends					2.809	0.154	6.248	0.000***
Physical activity					3.856	0.132	5.704	0.000***
School success					3.511	0.113	4.925	0.000***
Family relations					1.540	0.102	3.956	0.000***
Grade					1.085	0.079	3.451	0.001***
Economical situation					1.350	0.060	2.585	0.010*
Talking to someone close to them about their personal problems					0.939	0.059	2.555	0.011*
Chronic illness					2.824	0.053	2.344	0.019*

GHQ-12=The General Health Questionnaire * p < 0.05, ** p <0.01, ***p < 0.001

4. DISCUSSION

In this study which evaluated the relationship between mental health and health-related quality of life of the adolescents, the GHQ-12 mean score was 2.90±3.00. Adolescents' average GHQ-12 score above 2 indicated that they are at risk in terms of psychiatric illness. Mental health problems are seen to be quite common among adolescents (7). An estimated 10-20% of adolescents globally experience mental health problems (8). Therefore, these studies to determine mental health of adolescents are very important for determining adolescents at risk.

It is seen that the health-related quality of life of the adolescents participating in this study is slightly above the average according to the possible scores that can be obtained from the scale. While the health-related quality of life of adolescents was reported to be high in the study of Freire and Ferreira (2018), the quality of life of adolescents was reported slightly below the average values in the study of Magiera and Pac (2022) (13,28). It is stated in the literature that adolescents are generally considered to be healthy (2). It is seen that the quality of life of adolescents is similar in studies conducted with healthy adolescents in different populations.

This study shows that mental health is a significantly related to all dimensions of health-related quality of life (physical wellbeing, emotional wellbeing, self-esteem, family, friends, and school) of adolescents. The results of the study showed that as the adolescents' GHQ-12 scores rose (i.e., as the risk of mental health issues rose), health-related quality of life in all the dimensions diminished. Similar to the results of the study, Knudsen et al. (2016) it was reported that symptoms of depression were associated with low HRQoL scores (29). It has been reported that the quality of life scores of depressive adolescents are significantly lower than those of healthy adolescents (14). In a study by Freire and Ferreira (2018), it was reported that low levels of depressive symptoms are significant predictors of quality of life in all its dimensions (13). At the same time, it has been shown that anxiety is associated with low levels of quality of life (15).

Our study showed that being male was a positive predictor of quality of life in terms of physical wellbeing. In a study by Freire and Ferreira (2018), it was reported that being male was a significant predictor of physical wellbeing and psychosocial wellbeing (13). Studies on quality of life have demonstrated that men's quality of life is at a higher level than women's (19,30-31). Contrary to the results of the study, Hamby et al. (2020) and İlhan et al. (2019) found that no relationship between the gender of adolescents and quality of life in terms of physical wellbeing (2,32).

As adolescents' gain seniority at school, their health-related quality of life increases in terms of the sub dimensions of self-esteem and family and also in terms of overall quality of life. Unlike the results of the study, in a study by Karalar et al. (2017), however, no differences were detected in school quality of life according to the students' class (33). It is reported that adolescents' quality of life falls as they get older (19). This result shows that further studies are needed on the effect of the level of class on health-related quality of life of adolescents.

This study is also important in terms of showing that family and friend relationships are a significant predictor of quality of life. As adolescents' relationships with their parents improve, their health-related quality of life increases in terms of the sub dimensions of physical wellbeing, emotional wellbeing and school as well as in terms of overall quality of life. The period of adolescence is the period of transition in which an individual becomes an autonomous adult. The individual may experience conflicts with the family in this process. The fact that these conflicts are long-term and negative can harm the parent-adolescent relationship and to youths' development. (34). Conflicts between parents and adolescents during adolescence and destructive reactions to these conflicts are the main reasons that decrease the quality of life and productivity of the family (35). A family environment in which the individual can "be", "belong" and achieve "self-actualization" is of vital importance in improving quality of life (11). In order to adolescents to successfully complete this transition period, they need the thoughtful and sensitive support of their parents (35). Im et al. study (2018) showed that mothers' emotional warmth is predictors of HRQoL for adolescents (36). In a study by Williams and Anthony (2015), it was reported that family togetherness and parent behavioral expectations were associated with greater health and well-being (37). The better adolescents are able to engage in good relations with their families, the more quality of life increases.

As adolescents' relationships with their friends improve, all of the sub dimensions of quality of life outside of the school dimension as well as overall health-related quality of life improve. When adolescents are able to talk to people close to them about their personal issues, quality of life is heightened in many dimensions (self-esteem, friends) as well as on the overall scale. Friendship, togetherness and joining a group are important for the adolescent (38). Friendships in adolescence provide an important opportunity to adolescents to increase their self-esteem, support identity development, develop social skills, help solve problems, provide emotional support, and have entertainment (39,40). In a study by Williams and Anthony (2015), it was reported that friend support was associated with greater health and well-being and less school misbehavior (37). Therefore, adolescents' positive friendships should be supported (38).

As adolescents' achievement at school improves, health-related quality of life increases in many dimensions (self-esteem, family, school) as well as on the overall scale. In the study by Karalar et al. (2017), students who perceived they to be academically successful had higher quality of life scores than students who saw them to be poor or mediocre students (33). The researchers found a direct correlation between school success and school quality of life. The higher the students' academic achievement, the more their relations

with their families, teachers and friends are positively influenced and not only does their self-confidence improve in this case but they perceive school as a more positive and safe environment to be in.

In literature, socioeconomic status has been reported to correlate with individual and/or community health including HRQoL. The socioeconomic status is determined by the combination of the education level, occupation and economic status of the individual and family (22,41). The research showed that the higher the mother's level of education, the better was the adolescent's health-related quality of life in terms of emotional wellbeing. An adolescent's working at a job outside of school causes a drop in the family dimension of health-related quality of life. The better the economic status of adolescents, the more improvement was seen in the family and school sub dimensions of quality of life as well as on the overall scale. There are indications in the literature that point to the fact that income status and education status is the most significant predictor of an individual's physical, emotional, social health, and of their success and satisfaction at work and in social life, and consequently their quality of life (11).

Not experiencing any health issue in the last year increases adolescents' health-related quality of life in terms of their physical wellbeing. Additionally, when there is no chronic illness involved, adolescents' quality of life is higher, both in terms of physical wellbeing and on the total scale. In the study by Filho et al. (2018), it was found that the presence of a chronic illness and the use of medicines were significant predictors of both physical and mental health (18). Studies have shown that the quality of life of adolescents suffering from migraines, acne or functional abdominal pain was significantly lower that the quality of life of their healthier peers (42,43). In another study, a correlation was revealed between the presence of chronic illness and a low level of quality of life (31).

Suffering from insomnia lowers the health-related quality of life of adolescents in terms of the dimensions of physical wellbeing and school. One study pointed to a correlation between sleep quality and the physical functionality, vitality, mental health, body aches and general health parameter aspects of quality of life (20). Similarly, other studies have shown that people with sleep problems have poorer quality of life than individuals who have a healthy pattern of sleep and that there is a significant relationship between sleep duration and quality of life (44,45). This has a negative effect on students' quality of life.

At the end of the study, it was observed that engaging in regular physical exercise increased adolescents' health-related quality of life in terms of various dimensions (emotional wellbeing, self-esteem, family, and friends) and improved their scores on the overall scale. Filho et al. (2018) reported that vigorous physical activity is a significant predictor of physical and mental health (18). An association was found in various studies between higher levels of physical activity and higher HRQOL scores, leading to the conclusion that physically active children had a better quality of life (23-25,46).

Since the study was cross-sectional, it is limited to its own sample. The dependence of the research on the patients' self-reporting is a limitation of the study. The sufficiently large sample size was strength of the study. At the same time, in line with the results of the study, it may also be recommended that experimental studies be carried out in order to evaluate the effectiveness of nursing interventions carried out to promote adolescents' health-related quality of life.

5. CONCLUSION

This study shows that mental health is a negatively significantly related to all subscales of health-related quality of life (physical wellbeing, emotional wellbeing, self-esteem, family, friends, and school) of adolescents. It was discovered that the mental health of adolescents, their relationships with friends and family, their participation in regular physical activity, their school success, their class, their economic situation, their talking to people who are close to them about personal problems and the presence of chronic illness were significant predictors of health-related quality of life.

The school healthcare team and families have a major role in improving the quality of life of adolescents. School nurses are the most well-equipped health workers in improving the quality of life of adolescents in school. Mental health screenings and counseling services and health education programs to be performed by school nurses are especially important in adolescence. Screening should be conducted to identity adolescents that are at risk of mental health issues and these individuals should be referred for professional counseling. Other adolescents too should receive guidance and counseling. Various workshops can be conducted, group activities can be organized to improve adolescents' relations with family and friends and increase communications. Both parents and students should be provided with education about the period of adolescence and its characteristics to facilitate the transition through this period in life. The results of the research show that these interventions will contribute to improving the quality of life of adolescents.

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REFERENCES

[1] İlhan N. Improving adolescent health. Efe R, Özcanarslan F, Shapekova NL, Sancar B, Özdemir A, editors. Recent Developments in Nursing and Midwifery England: Cambridge Scholars Publishing; 2018. pp.327-43.

[2] İlhan N, Peker K, Yildirim G, Baykut G, Bayraktar M, Yildirim H. Relationship between healthy lifestyle behaviors and health related quality of life in Turkish school-going adolescents. Niger J Clin Pract. 2019;22(12):1742-1751. DOI: 10.4103/njcp.njcp_190_19.

[3] Meade T, Dowswell E. Adolescents' health-related quality of life (HRQoL) changes over time: A three year longitudinal study. Health Qual Life Outcomes 2016; 14:14. DOI: 10.1186/s12955.016.0415-9.

[4] World Health Organization. Adolescent health. Accessed [05 May 2021] https://www.who.int/health-topics/adolescent-health/#tab=tab_1

[5] Yiğit T. Mental problems encountered by children and adolescents and psychiatric socialwork practices. The Journal of Academic Social Science 2018; 6(66):70-83. DOI: 10.16992/ASOS.13421.

[6] American Psychological Association. Child and adolescent mental and behavioral health resolution. Accessed [05 May 2020] https://www.apa.org/about/policy/child-adolescent-mental-behavioral-health /

[7] Radez J, Reardon T, Creswell C, Lawrence PJ, Evdoka-Burton G, Waite P. Why do children and adolescents (not) seek and access professional help for their mental health problems? A systematic review of quantitative and qualitative studies. Eur Child Adolesc Psychiatry. 2021;30(2):183-211. DOI: 10.1007/s00787.019.01469-4.

[8] World Health Organization. Adolescent mental health. Accessed [05 May 2021] https://www.who.int/news-room/fact – sheets/detail/adolescent-mental-health

[9] Aguirre Velasco A, Cruz ISS, Billings J, Jimenez M, Rowe S. What are the barriers, facilitators and interventions targeting help-seeking behaviours for common mental health problems in adolescents? A systematic review. BMC Psychiatry. 2020;20(1):1-22. DOI: 10.1186/s12888.020.02659-0.

[10] O'Brien D, Harvey K, Howse J, Reardon T, Creswell C. Barriers to managing child and adolescent mental health problems: a systematic review of primary care practitioners' perceptions. Br J Gen Pract. 2016;66(651):693-707. DOI: 10.3399/bjgp16X687061.

[11] Aydıner Boylu A, Paçacıoğlu B . Quality of life and indicators. Journal of Academic Researches and Studies 2016;8(15):137-150. DOI: 10.20990/kilisiibfakademik.266011

[12] Farooq SA, Muneeb A, Ajmal W, Tauni MA, Mahmood S, Sohaib Qadri SK, Butt AY, Mustafa SF, Sohail SH, Rizvi NN. Quality of life perceptions in school-going adolescents with social anxiety. J Child Dev Disord. 2017;3(2):1-5. DOI: 10.4172/2472-1786.100046

[13] Freire T, Ferreira G. Health-related quality of life of adolescents: Relations with positive and negative psychological dimensions. Int J Adolesc Youth. 2018;23(1):11–24. DOI: 10.1080/02673.843.2016.1262268

[14] Park S, Lee M, Jeon JY. Factors affecting depressive symptoms among North Korean adolescent refugees residing in South Korea. Int J Environ Res Public Health. 2017;14(8):1-11. DOI: 10.3390/ijerph14080912.

[15] Raknes S, Pallesen S, Himle JA, Bjaastad JF, Wergeland GJ, Hoffart A, Dyregrov K, Håland ÅT, Haugland BSM. Quality of life in anxious adolescents. Child Adolesc Psychiatry Ment Health. 2017;11(33):1-11. DOI: 10.1186/s13034.017.0173-4.

[16] Karimi M, Brazier J. Health, health-related quality of life, and quality of life: What is the difference? Pharmacoeconomics 2016;34:645–649 DOI: 10.1007/s40273.016.0389-9

[17] Motamed-Gorji N, Qorbani M, Nikkho F, Asadi M, Motlagh ME, Safari O, Arefirad T, Asayesh H, Mohammadi R, Mansourian M, Kelishadi R. Association of screen time and physical activity with health-related quality of life in Iranian children and adolescents. Health Qual Life Outcomes 2019;17(2):1-11. DOI: 10.1186/s12955.018.1071-z.

[18] Filho VCB, Oppa DF, Mota J, Mendes de Sá SA, Lopes da S. Predictors of health-related quality of life among Brazilian former athletes. Rev Andal Med Deporte. 2018;11(1):23–29. DOI: 10.1016/j.ramd.2016.02.010.

[19] Guedes DP, Villagra Astudillo HA, Moya Morales JM, del Campo Vecino J, Pires Júnior R. Health-related quality of life in Latin American adolescents. Rev Panam Salud Publica. 2014;35(1):46-52.

[20] İyigün G, Angın E, Kırmızıgil B, Öksüz S, Özdil A, Malkoç M. The relationship between sleep quality with mental health, physical health and, quality of life in university students. J Exerc Ther Rehabil. 2017;4(3):125-133.

[21] Marker AM, Steele RG, Noser AE. Physical activity and health-related quality of life in children and adolescents: A systematic review and meta-analysis. Health Psychol. 2018;37(10):893-903. DOI: 10.1037/hea0000653.

[22] Menati W, Baghbania, A, Asadi-Lari,M Moazen J, Menati R, Sohrabivafa M, Moghaddam AS, Kassani A. Health-related quality of life and socioeconomic status: Inequalities among adults in West of Iran. Iran Red Crescent Med J. 2017;19(7):e55571. DOI: 10.5812/ircmj.55571.

[23] Muros JJ, Salvador Pérez F, Zurita Ortega F, Gámez Sánchez VM, Knox E. The association between healthy lifestyle behaviors and health-related quality of life among adolescents. J Pediatr (Rio J). 2017;93(4):406-412. DOI: 10.1016/j.jped.2016.10.005.

[24] Wafa SW, Shahril MR, Ahmad AB, Zainuddin LR, Ismail KF, Aung MM, Mohd Yusoff NA. Association between physical activity and health-related quality of life in children: a cross-sectional study. Health Qual Life Outcomes 2016;14(71):1-6. DOI: 10.1186/s12955.016.0474-y.

[25] Wu XY, Han LH, Zhang JH, Luo S, Hu JW, Sun K. The influence of physical activity, sedentary behavior on health-related quality of life among the general population of children and adolescents: A systematic review. PLoS One 2017;12(11):1-29. DOI: 10.1371/journal.pone.0187668.

[26] Kilic C, Rezaki M, Rezaki B, Kaplan I, Ozgen G, Sağduyu A, Oztürk MO. General Health Questionnaire (GHQ12 & GHQ28): Psychometric properties and factor structure of the scales in a Turkish primary care sample. Soc Psychiatry Psychiatr Epidemiol. 1997;32(6):327-331. DOI: 10.1007/BF00805437.

[27] Eser E, Yüksel H, Baydur H, Bilge B, Dündar PE, Pala T, Oral A. Kiddo-Kindl (Kindl Adolescents Form) Quality of Life Scale Turkish version validity and reliability results. [Poster

presentation]. I. Symposium on Quality of Life in Health, 2004 April 8-10 Izmir, Türkiye.

[28] Magiera A, Pac A. Determinants of quality of life among adolescents in the Małopolska Region, Poland. Int J Environ Res Public Health. 2022;19(14):1-15. DOI:10.3390/ijerph19148616.

[29] Knudsen KB, Pressler T, Mortensen LH, Jarden M, Skov M, Quittner AL, Katzenstein T, Boisen KA. Associations between adherence, depressive symptoms and health-related quality of life in young adults with cystic fibrosis. Springerplus 2016; 5(1):1-8. DOI: 10.1186/s40064.016.2862-5.

[30] McLaughlin JM, Munn JE, Anderson TL, Lambing A, Tortella B, Witkop ML. Predictors of quality of life among adolescents and young adults with a bleeding disorder. Health Qual Life Outcomes 2017;15(1):1-9. DOI: 10.1186/s12955.017.0643-7.

[31] Pappa E, Chatzikonstantinidou S, Chalkiopoulos G, Papadopoulos A, Niakas D. Health-related quality of life of the Roma in Greece: The role of socio-economic characteristics and housing conditions. Int J Environ Res Public Health. 2015;12(6):6669-6681. DOI: 10.3390/ijerph120606669.

[32] Hamby S, Taylor E, Mitchell K, Jones L, Newlin C. Health-related quality of life among adolescents as a function of victimization, other adversities, and strengths. J Pediatr Nurs. 2020;50:46-53. DOI: 10.1016/j.pedn.2019.11.001.

[33] Karalar M, Öksüz Y, Öztürk MB. Middle school students' perceptions of school life quality: a demographic analysis. The Journal of Academic Social Science 2017;5(52): 430-442. DOI: 10.16992/ASOS.12571

[34] Moed A, Gershoff ET, Eisenberg N, Hofer C, Losoya S, Spinrad TL, Liew J. Parent-adolescent conflict as sequences of reciprocal negative emotion: Links with conflict resolution and adolescents' behavior problems. J Youth Adolesc. 2015;44(8):1607-1622. DOI: 10.1007/s10964.014.0209-5.

[35] Yavuzer Y, Liman B, Kılıçarslan S. Opinions of girl adolescents on conflict situations between parents-adolescents and parent reactions. Mehmet Akif Ersoy University Journal of Education Faculty 2019; 50:90-109. DOI: 10.21764/maeuefd.512601

[36] Im YM, Yun TJ, Lee S. Health condition and familial factors associated with health-related quality of life in adolescents with congenital heart disease: a cross sectional study. Health Qual Life Outcomes 2018;16(9):1-7. DOI: 10.1186/s12955.018.0841-y.

[37] Williams LR, Anthony EKA. Model of positive family and peer relationships on adolescent functioning. J Child Fam Stud. 2015;24(3):658–667. DOI: 10.1007/s10826.013.9876-1

[38] Şahin S, Özçelik, ÇÇ. Adolescence and socializing. Cumhuriyet Nurs J. 2016;5(1): 42-49.

[39] Atalay D, Özyürek A. Friendship relationships and peer deviation in adolescents. Journal of Humanities and Tourism Research 2020;10(2):249-261. DOI: 10.14230/johut843

[40] Wentzel KR. Peer relationships, motivation, and academic performance at school. In Elliot AJ, Dweck CS, Yeager DS, editors. Handbook of competence and motivation: Theory and application, The Guilford Press. 2017. pp. 586–603.

[41] Kim JH, Park EC. Impact of socioeconomic status and subjective social class on overall and health-related quality of life. BMC Public Health 2015; 15:1-15. DOI: 10.1186/s12889.015.2014-9.

[42] Abuhandan M, Kandemir H, Kaya C, Güzel B, Karababa F, Koca B, Çevik M. Quality of life and psychiatric properties in children with functional abdominal pain. Selçuk Medical Journal 2014;30(1):15-18. (Turkish)

[43] Erturan İ, Aktepe E, Kocaman O, Sönmez Y, Başak PY, Ceyhan AM, Akkaya VB. Evaluation of acne quality of life, loneliness and life satisfaction levels in adolescents with acne vulgaris. TURKDERM 2014;48(4):172-176. DOI: 10.4274/turkderm.02779

[44] Gustafsson ML, Laaksonen C, Aromaa M, Asanti R, Heinonen OJ, Koski P, Koivusilta L, Löyttyniemi E, Suominen S, Salanterä S. Association between amount of sleep, daytime sleepiness and health-related quality of life in schoolchildren. J Adv Nurs. 2016;72(6):1263-1272. DOI: 10.1111/jan.12911.

[45] Xu F, Chen G, Stevens K, Zhou H, Qi S, Wang Z, Hong X, Chen X, Yang H, Wang C, Ratcliffe J. Measuring and valuing health-related quality of life among children and adolescents in mainland China – A pilot study. PLoS One 2014;9(2):e89222. DOI: 10.1371/journal.pone.0089222.

[46] Wong M, Lycett K, Olds T, Gold L, Wake M. Use of time and adolescent health-related quality of life/well-being: A scoping review. Acta Paediatr. 2017;106(8):1239-1245. DOI: 10.1111/apa.13929.

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