



Students in Turkey During the Early Days of the COVID-19 Pandemic

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Abstract

This study aims to analyse the subjective well-being of university students during the early days of the COVID-19 pandemic process and to examine how students have been affected economically, psychologically and socially. Other subjects included in the scope of the study are the suitability of the physical conditions during the process of online education, the students' motivation, and their expectations towards the future. The study also analyses the connection between these factors and the subjective well-being concepts of happiness and life satisfaction. The study focuses on students of the Faculty of Economics at Marmara University in Turkey. In total, 428 students took part in the survey prepared for the study. Descriptive analyses indicate that students have been negatively affected in terms of psychological and socio-economic factors along with subjective well-being. Ordered probit models show a statistically significant relationship between a major part of these changes and subjective well-being variables.

Keywords Happiness · Life satisfaction · Student · Covid-19

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Introduction

The new coronavirus disease (COVID-19) first emerged in the city of Wuhan in China in December 2019. It quickly spread to other cities and regions in China and then the whole world (Wang et al., 2020a). This disease, which causes severe acute respiratory problems, was declared a pandemic on 11 March 2020 by the World Health Organization (WHO, 2020a). Various measures were taken by many countries to prevent the spread of the disease. These measures included closing schools and universities, travel restrictions, banning meetings and demonstrations, curfews, social distancing, and lockdowns (Hale et al., 2020). These measures had negative effects on an international level in the fields of economy, education, health, and tourism (Pragholapati, 2020).

Due to the radical changes caused by the global pandemic in the field of education, educational institutions in 132 countries were shut down as of September. This ongoing process caused 1.049 billion students to be affected by the conditions of the pandemic (UNESCO, September 2020). After the first confirmed case in Turkey, face-to-face teaching in higher education has been suspended as of 16 March 2020 due to the global pandemic (YOK, 2020). In line with the principle that education is a fundamental human right (UN, 1948), Turkey switched to online education like the rest of the world. Since 23 March 2020, over 2 million university students have been continuing their education online (YOK, 2020).

According to experts, there are four areas of health: physical, psychological, social, and mental. The focus of studies is more on the physical well-being outcomes of COVID-19, but it is equally important to examine the impact of COVID-19 on other areas of health (Shek, 2021). Despite being young and outside of the risk group, the COVID-19 pandemic has had an impact on these students' education, their lives, and their psychological well-being. While the measures managed to slow down the spread of the virus, it has had a deep impact on the students who are a part of society. In addition to stressors such as financial problems, academic pressure, and future anxiety, the COVID 19 pandemic has emerged as a new stress factor for students (Omigbodun et al., 2006; Kohls et al., 2021). The psychological shock experienced as a result of quarantine and lockdown could be extensive and long for students (Satpathy & Ali, 2020). It is also widely known that 75% of all severe mental illnesses occur before the age of 24 (Kessler et al., 2005). The harmful effects of the pandemic can cause irreversible losses on students. Therefore, it is necessary to evaluate the psychological costs of the pandemic on students (Rubin & Wessely, 2020).

Various studies have investigated the effect of the conditions of the pandemic on university students. Cao et al. (2020), Odriozola-González et al. (2020), Husky et al. (2020), Kaparounaki et al. (2020), Verma (2020), Khan et al. (2020), Islam et al. (2020), Erden et al. (2021) focused on the psychological impact of the COVID-19 pandemic on university students, Adnan & Anwar (2020), Bao (2020), Al-Okaily et al. (2020), Ebner et al. (2020), Rahiem (2020) looked at the effects of online teaching, Van Nguyen et al. (2020) looked at its effects on behaviour, Elmer et al. (2020) studied its effects on social and psychological life,

Cohen et al. (2020) examined its effects on students' health, mental health, and economic situations; Bono et al. (2020), Capone et al. (2020), Rogowska et al. (2020), Schlesselman et al. (2020), Von Soest et al. (2020) researched its impact on subjective well-being, Hagedorn et al. (2022) examined its effects on students' psychosocial and academic frustrations.

The impact of the pandemic on people's experienced quality of life or subjective well-being - an important indicator of mental health (Diener, 1984) - is also increasingly being studied (WHO, 2020b). Many researchers associate subjective well-being with happiness, life satisfaction, and the presence of positive emotions (Myers & Diener, 1995). It is important to examine the effects of the COVID-19 pandemic on university students within the framework of subjective well-being because the pandemic has significantly changed the learning environment for them. In the case of a repetition of a similar situation, this knowledge will be useful for helping students to maintain subjective well-being.

In the literature, Parkerson et al. (1990), Reifman and Dunkel-Schetter (1990), Brunstein (1993), Chow (2005), Ozturk and Mutlu (2010), Joshanloo and Afshari (2011), Kong et al. (2012), Odacı and Cıkrıkçı (2014), Cazan and Năstăsă (2015), Bückner et al. (2018), Biead et al. (2019) specifically considered in their studies university students' subjective well-being.

The COVID-19 pandemic has caused widespread fear, worry, and stress in students like it has for everybody else and the kind of response that needs to be given in this situation has become a significant issue. With timely and appropriate psychological interventions, it can be possible to support the mental health status of the students (Jalloh et al., 2018). To the best of our knowledge, very few studies have addressed subjective well-being conditions of university students in Turkey during the early days of COVID-19 pandemic (Arslan, 2021; Genc & Arslan, 2021; Gundogan, 2021; Ozmen et al., 2021; Yildirim & Tanrıverdi, 2021). In this regard, the primary aim of the study is to examine the subjective well-being of university students during the early days of the pandemic period. The secondary aim is to examine how students have been affected economically, psychologically and socially in these times. Another aim is to analyse the relationship between socio-economic, socio-demographic, psychological and social life variables and the subjective well-being concepts of happiness and life satisfaction. For these purposes, an online survey was prepared as part of the study and implemented on students at the Faculty of Economics at Marmara University in Turkey.

Our current study provides a detailed overview of how the pandemic is affecting the subjective well-being of university students. The findings can inform public health officials and policy makers on improving students' well-being.

The remainder of this paper is organized as follows. The second section describes our data and methodology. The third section presents the descriptive of subjective well-being as well as economic, social, and psychological aspects during the early days of the pandemic period. The changes in life satisfaction and household income are presented in this section. The fourth section includes our results. The fifth section includes our discussion and the sixth section concludes.

Data and Methods

In Turkey, of the total COVID-19 cases, 56% in April 2020 and 40% in October 2020 were seen in Istanbul (Republic of Turkey Ministry of Health, 2020). Istanbul leads the way in Turkey, in terms of the number of universities and students. According to data from the governorship of Istanbul, the number of higher education students in Istanbul is around 1 million (Governorship of Istanbul, 2019). Students studying in Istanbul come from different socio-cultural backgrounds, different economic conditions, and different cities. For this reason, the target population for the study was determined to be the Faculty of Economics at Marmara University, one of the bigger universities in Istanbul, which we believed was instrumental in showing the differences and similarities in how university students have been affected by the pandemic process.

In order to reduce the risk of facilitating the spread of the virus, Marmara University started online teaching on 30 March 2020. This was then decided to be extended further for the fall semester of 2020–2021. The diversity of the student population here is ideal to examine how the existing inequalities further increased during the pandemic period. The survey was open between 01 and 2020 and 03 August 2020 for the participants. The participants received a survey link on “LimeSurvey” via e-mail. A total of 428 students gave relevant and complete responses to the survey and constitute our convenience sample.

Descriptive statistics were used to understand the distribution of the participants in the study. A frequency distribution was also employed to assess the effect of the pandemic on the students. To test for significance in the difference between life satisfaction averages independent sample t-test was employed for 2019 and dependent samples t-test was employed for the period during the pandemic.

In the paper, also, an ordered probit model was employed to reveal the relationship among subjective well-being and socio-economic, socio-demographic and psychological factors related to the COVID-19 pandemic.

Descriptive

Participant's Characteristics

In total, 181 participants (42.3%) were male, while 247 participants (57.7%) were female. The average age for the students who took part in the survey was 22.23 years old. Based on the frequency distribution of students' responses to the question determining where they stayed during the pandemic, 86.7% stayed with their family (371 people), 11.9% (51 people) stayed in a dormitory and the remaining 1.4% (6 people) stayed at their own apartment. Consequently, we can say that a big majority of the students have spent the pandemic period with their families. The socio-demographic, socio-economic, and personal characteristics statistics can be found in Appendix Table 7.

Life Satisfaction and Happiness

The COVID-19 pandemic has affected many people’s lives and increased the pressure on university students, who are still at the stage of building their identity, social life and career. When universities started teaching online, students had to develop different studying methods, and various factors, such as feelings of loneliness born out of social distancing, concerns regarding the infection, and implementation of virus control measures especially affected the university students. Lu et al. (2021) showed that community-level quarantine was associated with decreased happiness. Moreover, severe restrictions and concerns may have caused students’ life satisfaction to decrease as well (Von Soest et al., 2020). In this regard, this study looks into students’ life satisfaction in the early days of the pandemic.

For this study, the participants were asked about their life satisfactions for the year 2019, and for the pandemic period in 2020, and descriptive statistics were estimated for the two reporting periods. The survey asked about the participants’ life satisfaction with the question “When you consider your life as a whole, how satisfied are you with your life?” The responses were provided on a scale from 1 to 10, where a 1 denoted “not satisfied at all” and a 10 denoted “extremely satisfied”. As can be seen in Fig. 1, students reported a higher average life satisfaction for 2019 than for the pandemic period.

The survey also includes a question on happiness. The question is formulated as “How happy are you these days?” The responses were provided through a 4-point Liker scale (1 = not happy at all; 4 = very happy). As in Fig. 2, while the rate of students who are not happy at all and not very happy is 53.5%, the rate of those who are somewhat happy is 36.21%, and the rate of those who are very happy is 10.28%.

Life satisfaction and happiness variables were used as dependent variables in the regression analysis. The level of life satisfaction of last year (2019) as remembered by the respondent indicates the change of satisfaction during the pandemic and in the regressions the variable is assumed to control for spurious correlations between socioeconomic variables and life satisfaction via time-invariant omitted variables.

First of all, the life satisfaction distributions were analysed to see if the difference between the average life satisfaction scores of the students were statistically significant and the distributions were assumed to constitute a normal distribution

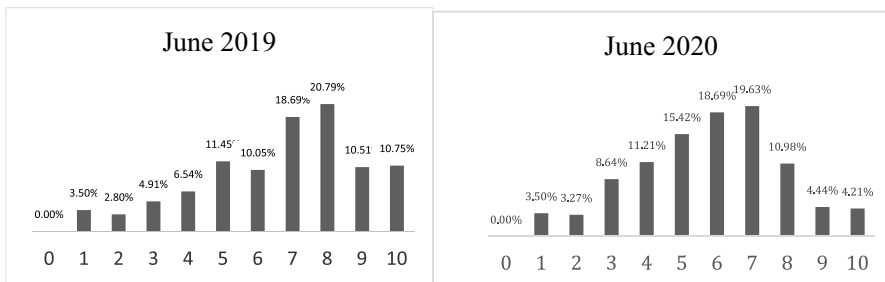


Fig. 1 Reported life satisfaction

Fig. 2 Reported happiness

because there were no excess values, because skewness-kurtosis values were within ± 2 when divided to standard errors, and because the values obtained after dividing the interval between quarters by standard deviation are 1.3. The Dependent Sample t-Test results implemented as such are given in Table 1.

A significant difference is observed in between 2019 Life satisfaction and 2020 Life satisfaction scores. While the average for 2019 is 6.67, it reduced to 5.77 for 2020, which is a statistically significant decrease ($t(427) = -7.782$; $p < 0.001$). In order to see if this difference is significant according to the sex variable as well, the test has been repeated for the sex categories. The results of the Dependent Sample t-Test implemented separately for the sex categories indicate that there has been a statistically significant decrease in the life satisfaction scores of both female ($t(246) = -5.855$; $p < 0.001$) and male students ($t(180) = -5.206$; $p < 0.001$) when compared to the period before the pandemic. However, the decline in life satisfaction for female students is higher than for males.

Psychological, Economic and Social Effects

One of the aims of our study is to examine how students have been affected psychologically, economically, and socially during the early days of the pandemic. The descriptive statistics of the items covering the psychological, economic and social

Table 1 The comparison of students' life satisfaction scores before and after the pandemic using a dependent sample t-test analysis

		n	Average	Standard deviation	t	Degree of freedom	p
All	Life satisfaction score-2019	428	6.67	2.322	-7.782	427	0.000
	Life satisfaction score-2020	428	5.77	2.109			
Male	Life satisfaction score-2019	181	6.63	2.312	-5.206	180	0.000
	Life satisfaction score-2020	181	5.82	2.261			
Female	Life satisfaction score-2019	247	6.70	2.334	-5.855	246	0.000
	Life satisfaction score-2020	247	5.74	1.994			

effects of the students during the pandemic period are provided in Table 2. These effects are discussed separately in the following section.

Psychological Effects

Psychological symptoms after experiencing a disaster are common (Ko et al., 2006). Death risk, health concerns, and measures taken in the face of the global pandemic have caused psychological pressure on individuals (Ornell et al., 2020). The expectation to perform academically in the face of reduced social interaction during the pandemic, along with the stress factors created by the COVID-19 pandemic may have negatively affected students' psychology.

For this reason, students were asked some questions under the heading "Psychological Effects of the Pandemic Period" in order to see the effects of negative emotions experienced by the students and to examine their psychological health. As presented in Table 2, health concerns for oneself and family members (4.30) are most often mentioned, followed by uncertainty (4.19) and stress and anxiety (4.10). Students were also asked whether they feel the need to get professional psychological support and whether they want an online psychological counselling line to be established within the university body. The answers to this question indicate that 25% of the students (107 people) felt the need for psychological support, while 52.3% of the students (224 people) did not feel the need for psychological support. Moreover, 67.3% (288 people) said they wanted an online psychological counselling line to be set up within the university body.

The COVID-19 pandemic may have caused significant changes in students' expectations for the future as well. According to the answers of the students participating in the survey to the items directed to them in order to evaluate their expectations for the future, 82.7% (354 people) of the students who participated in the survey stated that the COVID-19 pandemic increased their anxiety about the future.

Economic Impact

In addition to the impact of the COVID-19 pandemic on public health, the precautions taken to control the pandemic led to a severe shrinking in the global economy. Due to the environment of uncertainty created by the pandemic, there has been a drop in household spending and production capacity (Altig et al., 2020; Baker et al., 2020; Coibion et al., 2020). As a result of these adverse conditions, the global economy is expected to shrink by 5.2% at the end of the year (World Bank, 2020). Unemployment has increased especially for people working in temporary jobs (Blustein et al., 2020).

Periods of economic recession have been widely known to be associated with mental issues and suicidal behaviour (Frasquilho et al., 2015). In addition, the subjective well-being of individuals is affected during these recession periods (Montagnoli & Moro, 2018). The economic difficulties faced by the students and their families during the pandemic period might have contributed to the increase of economic

Table 2 Descriptive statistics values of psychological, economic and social items

Variables	n	Minimum value	Maximum value	Mean	Standard deviation
Psychological effects of the pandemic period					
Remembered life satisfaction (2019)	428	1	10	6.67	2.322
Life satisfaction (2020)	428	1	10	5.77	2.109
How happy in general, these days?	428	1	4	2.41	0.878
Concerns resulting from uncertainty	428	1	5	4.19	1.025
Health concerns for yourself and your family	428	1	5	4.30	0.973
Anxiety (uncertainty)	428	1	5	4.10	1.079
Frustration or sadness	428	1	5	3.69	1.164
Loneliness or isolation	428	1	5	3.62	1.305
Have you felt the need to get professional psychological support?	428	1	3	2.27	0.837
Would you like to establish an online psychological counseling line by your university?	428	1	3	1.44	0.687

Table 2 (continued)

Variables	n	Minimum value	Maximum value	Mean	Standard deviation
Economic effects of the pandemic period					
Household income (2019)	428	1	10	5.01	2.727
Household income (2020)	428	1	10	4.14	2.798
Employment	428	0	1	0.18	0.38
Borrowed money	428	0	1	0.29	0.45
Spend previous savings	428	0	1	0.44	0.49
Stable	428	0	1	0.52	0.43
Saved money	428	0	1	0.22	0.41
Job losses (people around)	428	0	1	0.74	0.44
Job losses (family members)	428	0	1	0.19	0.39
Diminish in Family Income	428	0	1	0.57	0.50
Social effects of the pandemic period					
Where did you spend the pandemic period?	428	1	3	1.15	0.392
I have started shopping online more.	428	1	5	3.47	1.32
I have started reading more.	428	1	5	3.34	1.25

Table 2 (continued)

Variables	n	Minimum value	Maximum value	Mean	Standard deviation
I have started watching more movies/TV series.	428	1	5	3.96	1.11
I have started exercising more.	428	1	5	2.96	1.40
I have taken up a new hobby.	428	1	5	3.02	1.31
My friendship ties have become stronger.	428	1	5	2.78	1.24
I have started using social media more.	428	1	5	3.95	1.18
I have started having more calls/video calls on my phone.	428	1	5	3.94	1.23

Notes: 0–1 scale values mean yes or no. 1–3 scale values mean yes, no and undecided. 1–3 scale for “Where did you spend the pandemic period?” item is expressed as family, dormitory and own house. 1–4 scale for “How happy in general, these days?” item is expressed as very happy, quite happy, not very happy, not at all happy. 1–5 scale values mean I absolutely disagree, I disagree, I neither agree nor disagree, I agree, I absolutely agree

anxiety, which is a form of a mental problem, hence leading to a decrease in life satisfaction.

Household income is one of the important proxies used to measure household economic well-being (Joo, 2008). For this reason, in the present study, the economic effects of the pandemic conditions were discussed within the framework of their impact on students' household income. Accordingly, students were asked some questions under "Economic Effects of the Pandemic Period" to present their economic situations.

According to the survey, 17.8% of the participants (76 people) were employed while 82.2% (352 people) were not. Numbers and percentage distributions of the household incomes of students who took part in the study before and after the pandemic are presented in Table 3.

In order to alleviate the economic effects of the COVID-19 pandemic, a lay-off ban was put into effect on 17th April 2020. However, despite this ban, 4% (17 people) of the students who took part in the survey either lost their jobs or had a family member who lost their jobs during this period. Involuntary unemployment during the pandemic period has a significantly higher degree of potential effect on mental health than voluntary work separation (Yao & Wu, 2021). The government provides cash assistance for institutions who sent their employers on unpaid leave due to lay-off bans. In addition, some workplaces reduced their working hours and started to implement short-term working allowance. With this practice, the people whose working time has been reduced by their workplaces get short-term working allowance from the government (Official Gazette, 17 April 2020). However, the support given by the government was not able to prevent the decline in household incomes. Before the pandemic, 6.5% of households had an income of 2000TL or below; and 11.2% had a household income of 2000–2999, which during the pandemic period increased to 20.3% and 15.9, respectively. While people in the 5000–5999 and 8000–8999 income groups before the pandemic did not experience any change in their incomes during the pandemic period, other groups experienced a decline in their household incomes.

Impact on Social Life

Increased time spent at home during the quarantine period can have both positive and negative impacts on social life (Górnicka et al., 2020). Boredom and concerns resulting from being confined to their houses can change students' lifestyle and encourage them towards overconsumption (Naja & Hamadeh, 2020; Chaput et al., 2011). Furthermore, restriction of physical activities and showing low effort due to the isolation period may have a negative impact on physical and mental health (Naja & Hamadeh, 2020; Zhang et al., 2020). Therefore, the pandemic period may have caused students' lifestyles and habits to become different. In this regard, students were asked some questions under "Social Effects of the Pandemic Period". Students were asked about how much they agree to certain statements based on a likert scale in order to assess the changes in their social lives.

Table 3 Numbers and percentage distribution of household income variable before and during the pandemic period

Household income levels	Before the pandemic		During the pandemic		Result
	<i>n</i>	%	<i>n</i>	%	
	2000TL and below	28	6.5	87	
2000–2999	48	11.2	68	15.9	↑
3000–3999	82	19.2	59	13.8	↓
4000–4999	70	16.4	57	13.3	↓
5000–5999	38	8.9	38	8.9	→
6000–6999	38	8.9	30	7.0	↓
7000–7999	31	7.2	17	4.0	↓
8000–8999	25	5.8	25	5.8	→
9000–9999	21	4.9	15	3.5	↓
10,000 and above	47	11.0	32	7.5	↓

Notes:

↑ sign shows that there has been a significant increase during the pandemic period compared to the period before the pandemic

↓ sign shows that there has been a significant decrease during the pandemic period compared to the period before the pandemic

→ sign shows that there has been no change during the pandemic period compared to the period before the pandemic

According to findings, 57% (244 people) have started shopping online more, 50.7% (217 people) have started reading more, 72.2% (309 people) have started watching more movie/TV series, 38.3% (164 people) have started exercising more, 39.8% (170 people) have taken up a new hobby, 74.1% (317 people) have started using social media more and 75% (321 people) have started having more calls/video calls on their phones.

Regression Analyses

In this section the relationship between socio-economic, socio-demographic, psychological and personal characteristics, and subjective well-being were analysed using ordered probit models.

The main purpose is to examine the relationship among subjective well-being indicators and psychological, social and economic variables during the early days of the pandemic. By doing this, it is also possible to compare the findings (during the pandemic) with the findings in existing studies done under normal conditions. In its most basic form, the baseline cross-section models we employed for life satisfaction and happiness are specified as follows:

$$S_i(\text{or}H_i) = \beta_0 + \sum \beta_{ji}X_i + e_i$$

Where S_i or H_i denote the individual i 's life satisfaction level and individual i 's happiness level, respectively; X_i represent a vector of explanatory variables and control variables and the Greek symbols indicate parameters; and e_i is an error term. Ordered probit models are employed in both estimations for life satisfaction and happiness due to the nature of dependent variables. These models include a link function, so the relationship between dependent and explanatory variables indicate an association between these variables rather than a causal relationship. We use the robust Huber-White sandwich estimator for a robust estimation of the standard error.

Tables 4, 5, and 6 provide the results of ordered probit estimations. As a result of the estimated coefficients in the standard parameterization of the ordered probit model cannot be interpreted directly and are only identified up to a scale normalization, we interpret the results over the signs of the estimated coefficients showing the direction of the effects of an explanatory variable. For robustness check OLS estimations were also employed and the estimation results are very similar with the ordered probit estimations. The findings are available upon request. Due to the multicollinearity problem, we ran separate regressions for the categories seen below.

Table 4 shows four models where the dependent variables are happiness and life satisfaction. For each variable, the first estimation shows the variables relating to the household economic conditions while the second estimation includes students' perceptions towards the relationship between their household and the COVID-19 in their environment.

Table 4 shows that household income has a positive and statistically significant impact on subjective well-being. There is an insignificant relationship found between changes in the household from 2019 to 2020 (dummy variable) and dependent variables. While the variable of being employed impacts positively and significantly on happiness, there is no statistically significant impact on life satisfaction. The coefficients of economic variables are also found insignificant. There is a statistically significant relationship between subjective well-being variables and some variables showing the student perception towards financial developments during the COVID-19 process. While observing job losses by people in their environment and in their family (via a dummy variable) has a statistically significant and negative impact on life satisfaction, the variable showing the detection of a decline in the household income level impacts the happiness negatively and significantly. Estimations 2 and 4 in Table 4 also reveal the relationship among the future expectations of the respondents with subjective well being indicators: happiness and life satisfaction. The expectation variable is a dummy variable formulated with the question whether respondents have increasing concerns with the future. The relation is statistically significant and negatively related with both dependent variables: happiness and life satisfaction.

The results of the ordered probit analysis conducted to determine students' subjective well-being variables by the physical conditions that they have, their psychological state, while continuing their education online during the COVID-19 period are presented in Table 5.

Having an environment suitable for studying (student home environment variable) has a statistically significant impact on both dependent variables, life satisfaction and happiness. Having a suitable studying environment positively affects

Table 4 Ordered-probit estimates of coefficients of economic variables

Dependent variable	Happiness		Life Satisfaction	
	(1)	(2)	(3)	(4)
Variables	Estimated	Estimated	Estimated	Estimated
	Coefficient	Coefficient	Coefficient	Coefficient
	(Std. Error)	(Std. Error)	(Std. Error)	(Std. Error)
Ln hhold income (2020)	0.291** (0.136)	0.281** (0.140)	0.286** (0.115)	0.254** (0.118)
Ln hhold income increase (2019-2020-dummy)	0.257 (0.199)	0.274 (0.208)	0.049 (0.169)	0.110 (0.160)
Employed	0.401*** (0.150)	0.331** (0.157)	0.184 (0.123)	0.149 (0.126)
Borrowed money	-0.001 (0.154)	0.039 (0.161)	0.059 (0.137)	0.159 (0.147)
Spend previous savings	-0.093 (0.137)	-0.031 (0.145)	0.004 (0.121)	0.113 (0.128)
Stable	0.165 (0.147)	0.009 (0.156)	0.122 (0.138)	-0.025 (0.142)
Saved money	-0.041 (0.150)	-0.083 (0.153)	0.116 (0.137)	0.105 (0.137)
Job losses (people around)		-0.123 (0.131)		-0.316*** (0.120)
Job losses (family members)		-0.062 (0.158)		-0.295** (0.149)
Diminish in Family Income		-0.256* (0.133)		-0.187* (0.105)
Concern for the future		-0.241*** (0.064)		-0.192*** (0.063)
Observations	425	425	425	425
Pseudo R-squared	0.090	0.110	0.086	0.101

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors

Controls: Gender, Age, Age2, Undergraduate programs, grade, life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness, location during the pandemic. Model estimation for all control variables is included in Table 8 in Appendix

happiness and life satisfaction. Dummy variables “problems with access to a computer and internet” have a statistically significant impact on both variables of subjective well-being. Problems faced in this area are negatively related with the subjective well-being variables. There is a statistically significant relationship between the subjective well-being variables and (dummy) variables of frustration and loneliness-isolation in terms of the state of mind during the COVID-19 period. Feelings of frustration and isolation negatively affect the subjective well-being variables.

The results of the ordered probit analysis conducted to determine students’ subjective well-being variables by change in students’ social activities (increase) during the COVID-19 period are presented in Table 6. Respondents are asked whether

Table 5 Ordered-probit estimates of coefficients of psychology related variables

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated Coefficient (Std. Error)	Estimated Coefficient (Std. Error)
Home Study Facilities		
Student home environment	0.135** (0.053)	0.114** (0.047)
Computer access	-0.532*** (0.198)	-0.222 (0.179)
Internet access	-0.248* (0.136)	-0.202* (0.122)
Psychological State		
Efficiency (work)	-0.086 (0.053)	0.015 (0.042)
Anxiety (uncertainty)	-0.100 (0.077)	0.022 (0.069)
Concern for family health	0.052 (0.067)	-0.036 (0.064)
Frustration	-0.220*** (0.068)	-0.232*** (0.062)
Loneliness, Isolation	-0.173*** (0.058)	-0.148*** (0.054)
Observations	425	425
Pseudo R-squared	0,090	0,127

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors.

Controls: Gender, Age, Age2, Undergraduate programs, grade, remembered life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness, location during the pandemic. Model estimation for all control variables is included in Table 8 in Appendix

they (totally) disagree or (totally) with the statement that refers to increasing social activities during the pandemic.

The increase in the frequency of watching movies has a statistically significant and negative impact on both life satisfaction and happiness, while friendship ties impacts positively and significantly. Increase in the hobbies of the participants has also a positive and statistically significant impact on life satisfaction. But an insignificant relationship is found between hobbies and happiness.

Discussion

While the COVID-19 pandemic has affected people’s health directly, public health policies and measures to prevent it have had an impact on students’ subjective well-being. The overall life satisfaction has dropped drastically compared to

Table 6 Ordered-probit estimates of coefficients of social activity variables

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated	Estimated
	Coefficient	Coefficient
	(Std. Error)	(Std. Error)
Social Activities (increase)		
Reading book	0.070 (0.051)	-0.010 (0.044)
Watching movies	-0.103* (0.062)	-0.096* (0.056)
Exercising	0.015 (0.045)	-0.018 (0.044)
Hobbies	0.011 (0.048)	0.077* (0.045)
Friendship ties	0.158*** (0.055)	0.106** (0.050)
Social media use	-0.067 (0.054)	-0.079 (0.051)
Phone use	-0.030 (0.049)	0.039 (0.046)
Online activities (seminars etc.)	0.017 (0.046)	0.006 (0.403)
Online shopping	0.013 (0.049)	-0.070 (0.044)
Observations	425	425
Pseudo R-squared	0,112	0,099

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors.

Controls: Gender, Age, Age2, Undergraduate programs, grade, remembered life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness), location during the pandemic. Model estimation for all control variables is included in Table 8 in Appendix.

pre-pandemic surveys (Bittmann, 2021). According to our result, significant decline has been observed in students' life satisfaction during the pandemic period when compared to 2019. Moreover, the decline in women's life satisfaction was larger than the decline in men's life satisfaction.

Subjective well-being is closely related to psychology, economy, and social life (Henrich & Herschbach, 2000; Dolan et al., 2008; Miret et al., 2017; Steptoe et al., 2015). In this context, it is aimed to reveal the subjective well-being level of university students during the early days of the pandemic period in subjective well-being and to analyze this level in terms of psychological and economic conditions and social life in this study. Also, it is aimed to examine how students have been affected economically, psychologically and socially.

The findings suggest that health concerns, worry due to uncertainty, stress and anxiety have been the most common emotions experienced by the students during the pandemic period. Rising deaths and cases in the whole world increased the levels of worry and anxiety in students (Bao et al., 2020). Furthermore, the measures taken due to the pandemic have had an impact on social life and communication possibilities. This has resulted in stress, anxiety and worry and contributes to its further increase (Xiao, 2020; Kmietowicz, 2020; Wang et al., 2020a). Moreover, while 82.7% of the university students have had increased worries for the future, 78.7% have started to have lower hopes of finding a job when compared to normal circumstances. This is also associated with the impact of COVID-19 on employment in the future (Wang et al., 2020b).

The economic conditions show that students experienced a decline in their household incomes, 9.3% (40 people) were sent on unpaid leaves and 12.4% (53 people) had to incur debts. Additionally, COVID-19 pandemic has also caused changes in students' social lives. During the early days of the pandemic, 74.1% (317 people) have started to use social media more, 75% (321 people) have started to have more calls/video calls on their phones and 57% (244 people) have started to shop online more. Social media use can help protect students' subjective well-being (WHO, 2020c). Therefore, it is possible to consider the increase in the use of social media as a positive development. Moreover, the increased frequency of calls/video calls can be taken as a positive effect as they increase socialisation and communication.

There are considerable differences in what people perceive as risky (Waters et al., 2021). Individuals who experience a higher perception of threat during the pandemic experience high levels of anxiety. This situation causes harmful consequences on their subjective well-being. Therefore, the more severe the COVID-19 threat is perceived, the more negatively the individual's subjective well-being is affected. While negative situations reduce the subjective well-being, many factors such as resilience, social support and friendships ties support subjective well-being (Diener, 2009; Liu et al., 2013). More resilient individuals are less affected by the negative psychological consequences of the pandemic (Paredes et al., 2021). Resistant individuals adapt better to stress due to their optimism and adaptability (Bonanno, 2008). Also, social support, which expresses the quality and function of social relations, is another factor that increases subjective well-being (Arslan, 2018; Schwarzer & Knoll, 2007). For example, Ye et al. (2021) had shown that there was a strong association between perceived stress and life satisfaction for college students with high friendship quality during the pandemic period. From this point of view, it can be stated that the psychological effects of the pandemic differ from person to person. In addition, resilience, positive psychological knowledge, skills, and individual approaches can help increase the level of subjective well-being (Arslan, 2016; Yıldırım & Belen, 2019; Waters et al., 2021).

Limitations

Our study provides significant information about the relationship between subjective well-being indicators and social, economic and psychological aspects during the early days of the pandemic. However, the validity of the present study is subject to some issues. First, the generalizability of the findings to other periods is limited, as the study was made in the early part of the pandemic. The level of well-being of the students and the level of psychological, economic and social impact may have changed over time. In this respect, further evaluation of long-term quarantine is needed and long-term follow-up studies (see e.g., Morrison et al., 2022; Bittmann, 2021) are recommended to determine the level of well-being and psychological, economic and social impact of the pandemic on students in Turkey. Second, even if the data in this study can be considered a limitation, it can be a pioneering study for similar student groups because it takes into account multiple dimensions of student life. Third, due to the cross-sectional characteristics of the data, the models cannot identify causal relationships. We assume that the main used variables impact on life satisfaction. However, there is a potential problem of reverse causal relationship from life satisfaction to the socioeconomic and other variables. For example, respondents may find it more important to follow social media if they are less satisfied with their life.

Conclusion

This article has examined the effects of COVID-19 on university students' subjective well-being, relating it to their psychology, their economic conditions, and their social life. We conducted a survey of 428 students at Marmara University to analyse these effects.

According to the results of the current study, feelings of frustration and isolation and future expectations in the COVID-19 pandemic negatively affected the subjective well-being of university students. Problems encountered in accessing computers and the internet also caused a decrease in students' subjective well-being levels. In addition, it was found that household income, employment, increase in hobbies, friendship ties and having a suitable working environment alleviated the negative effects of the pandemic on subjective well-being.

In specific, job losses by people in their environment and in their family has a negative impact on life satisfaction, the variable showing the detection of a decline in the household income level affects the happiness negatively and significantly. The increase in the frequency of watching movies has a statistically significant and negative impact on both life satisfaction and happiness, while friendship ties impacts positively and significantly. Increase in the hobbies of the participants has also a positive and statistically significant impact on life satisfaction. Finally, feelings of frustration and isolation negatively affect the subjective well-being variables.

Rigid measures have been taken in order to reduce the spread risk of the COVID-19 pandemic, also in Turkey. However, it is important to consider the potential

negative impact that these measures might have on the students. Particularly, more attention needs to be directed towards the feelings of worry and anxiety experienced by the students to manage this unusual situation and different strategies should be implemented in trying to cope with these feelings. It is also important not to ignore positive supporting resources. It should also be taken into account that these positive and negative effects will differ from person to person. In this context, it can be said that psychological support interventions will play an important role in increasing the subjective well-being of students. It is recommended that the government and universities cooperate to offer mental health services for students. Long-term strategies are also needed for emergency situations in the field of health in the future.

Appendix

Tables 7, 8, 9, 10 and 11

Table 7 Descriptive statistics

	Mean	Std. dev.	Min-max
Demographic			
Gender	0.42	0.49	0–1
Age	22.2	1.91	18–28
Grade	1.41	0.45	1–4
Household size	3.56	1.45	1–8
Big5			
Agreeableness	3.38	0.68	1–5
Conscientiousness	3.10	0.59	0–5
Emotional	3.26	0.74	1–5
Extraversion	3.11	0.54	1–5
Openness	2.82	0.62	1–5
Home study facilities			
Student home environment	3.52	1.25	1–5
Computer Access	0.90	0.30	0–1
Internet access	0.82	0.44	0–1
Efficiency (self improvement)	3.11	1.27	1–5

Table 8 Ordered probit estimation results with all control variables for the baseline models (1 and 3) in Table 4

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated Coefficient (Std. Error)	Estimated Coefficient (Std. Error)
Gender	-0.141 (0.110)	0.050 (0.109)
Age	-0.009 (0.279)	-0.815** (0.412)
Age Square	0.001 (0.005)	0.017 (0.009)
BIG5 Agreeableness	-0.046 (0.093)	-0.061 (0.086)
BIG5 Conscientiousness	-0.484*** (0.102)	-0.507*** (0.095)
BIG5 Emotional	-0.146* (0.088)	-0.026 (0.083)
BIG5 Extraversion	-0.013 (0.107)	0.028 (0.113)
BIG5 Openness	0.027 (0.092)	0.055 (0.085)
Econometrics Program	0.254** (0.124)	0.157 (0.113)
Public Finance Program	-0.205 (0.184)	-0.475** (0.174)
Labor Econ. Ind. Rel. program	0.072 (0.230)	0.021 (0.223)
Economics Program	-0.202 (0.325)	0.187 (0.363)
Grade	-0.107 (0.076)	0.002 (0.073)
Life Satisfaction (2019)	0.094*** (0.026)	0.205*** (0.031)
Household Size	-0.093 (0.044)	0.005 (0.043)
Stayed with parents during pandemic	0.221 (0.163)	-0.188 (0.154)
Employment	0.413*** (0.150)	0.187 (0.122)
Household Income	0.259** (0.136)	0.279** (0.112)
Borrowed money	-0.002 (0.153)	0.059 (0.137)
Spend previous savings	-0.098 (0.137)	0.003 (0.121)

Table 8 (continued)

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated	Estimated
	Coefficient	Coefficient
	(Std. Error)	(Std. Error)
Stable	0.168 (0.147)	0.124 (0.138)
Saved money	-0.035 (0.150)	0.117 (0.137)
Observations	425	425
Pseudo R-squared	0,089	0,086

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors

Controls: Gender, Age, Age2, Undergraduate programs, grade, life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness), location during the pandemic

Table 9 OLS estimates of coefficients of economic variables

Dependent variable	Happiness		Life Satisfaction	
	(1)	(2)	(1)	(2)
Variables	Estimated	Estimated	Estimated	Estimated
	Coefficient	Coefficient	Coefficient	Coefficient
	(Std. Error)	(Std. Error)	(Std. Error)	(Std. Error)
Ln hhold income (2020)	0.206** (0.101)	0.193* (0.101)	0.512** (0.205)	0.449** (0.205)
Ln hhold income increase (2019-2020-dummy)	0.178 (0.147)	0.186 (0.149)	0.094 (0.291)	0.187 (0.268)
Employed	0.283*** (0.109)	0.224** (0.113)	0.314 (0.213)	0.242 (0.215)
Borrowed money	0.001 (0.115)	0.030 (0.117)	0.105 (0.246)	0.270 (0.256)
Spend previous savings	-0.072 (0.100)	-0.025 (0.105)	0.018 (0.218)	0.195 (0.224)
Stable	0.114 (0.110)	0.002 (0.113)	0.226 (0.247)	-0.014 (0.247)
Saved money	-0.024 (0.112)	-0.053 (0.111)	0.181 (0.243)	0.160 (0.239)
Job losses (people around)		-0.083 (0.094)		-0.501** (0.205)
Job losses (family members)		-0.045 (0.115)		-0.478** (0.259)
Diminish in Family Income		-0.180* (0.097)		-0.297 (0.183)
Concern for the future		-0.170*** (0.046)		-0.316*** (0.108)
Observations	425	425	425	425
PAdjusted R-squared	0.154	0.189	0.267	0.303

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors.

Controls: Gender, Age, Age2, Undergraduate programs, grade, life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness, location during the pandemic).

Table 10 Ordered-probit estimates of coefficients of psychology related variables

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated Coefficient (Std. Error)	Estimated Coefficient (Std. Error)
Home Study Facilities		
Student home environment	0.085** (0.034)	0.175** (0.078)
Computer access	-0.317** (0.123)	-0.325 (0.294)
Internet access	-0.150* (0.090)	-0.309* (0.201)
Psychological State		
Efficiency (work)	-0.051 (0.035)	0.021 (0.069)
Anxiety (uncertainty)	-0.055 (0.049)	0.031 (0.111)
Concern for family health	0.025 (0.043)	-0.061 (0.10)
Frustration	-0.143*** (0.044)	-0.360*** (0.097)
Loneliness, Isolation	-0.112*** (0.038)	-0.237*** (0.087)
Observations	425	425
Adjusted R-squared	0,319	0,370

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors.

Controls: Gender, Age, Age2, Undergraduate programs, grade, remembered life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness, location during the pandemic. Model estimation for all control variables is included in Table 8 in Appendix.

Table 11 OLS estimates of coefficients of social activity variables

Dependent variable Variables	Happiness	Life Satisfaction
	Estimated Coefficient (Std. Error)	Estimated Coefficient (Std. Error)
Social Activities (increase)		
Reading book	0.048 (0.036)	-0.021 (0.078)
Watching movies	-0.067 (0.044)	-0.154* (0.094)
Exercising	0.006 (0.033)	-0.036 (0.077)
Hobbies	0.007 (0.035)	0.128* (0.079)
Friendship ties	0.113*** (0.039)	0.177** (0.086)
Social media use	-0.051 (0.039)	-0.143 (0.085)
Phone use	-0.020 (0.036)	0.076 (0.079)
Online activities (seminars etc.)	0.011 (0.033)	0.009 (0.069)
Online shopping	0.010 (0.035)	-0.122 (0.077)
Observations	425	425
Adjusted R-squared	0,181	0,289

*** = $p < 0.01$, ** = $p < 0.05$, * = $p < 0.10$ and the values in parentheses are robust standard errors.

Controls: Gender, Age, Age², Undergraduate programs, grade, remembered life satisfaction (2019), household size, big5 (agreeableness, conscientiousness, emotional, extraversion, openness), location during the pandemic. Model estimation for all control variables is included in Table 8 in Appendix.

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