

# Factors associated with anxiety and post-traumatic stress symptomatology during the COVID-19 pandemic in Turkey: A comparison of youths and adults

Onur Tugce POYRAZ FINDIK<sup>1</sup>, Veysi CERI<sup>2</sup>, Nese PERDAHLI FIS<sup>3</sup>

<sup>1</sup>Department of Child and Adolescent Psychiatry, Marmara University Pendik Research and Training Hospital, Pendik, Istanbul, Turkey

<sup>2</sup>Department of Child Development, School of Health, Batman University, Batman, Turkey

<sup>3</sup>Department of Child and Adolescent Psychiatry, School of Medicine, Marmara University, Pendik, Istanbul, Turkey

**Corresponding Author:** Onur Tugce POYRAZ FINDIK

**E-mail:** onurtuuce@hotmail.com

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## ABSTRACT

**Objective:** The aim of this study was to investigate anxiety and post-traumatic stress symptoms (PTSS) and their possible associated factors among youths, comparing to their older adult counterparts.

**Patients and Methods:** This cross-sectional online study assessed 1493 participants in Turkey. Beck Anxiety Inventory (BAI) and the Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5) were used.

**Results:** The Youths (15-24 years) reported to experience more anxiety and PTSS than Adults (25-59 years). There were weak correlations between BAI, PCL-5 scores and duration of recovery and isolation in Adults infected with corona virus disease 19 (COVID-19), but not in Youths. Younger age and lower economic status were common factors for severe anxiety and PTSS, additionally history of mental health needs and loss of an acquaintance due to COVID-19 were specific predictors for anxiety, and having a medical condition was predictor for PTSS in Youths. In Adults, female, lower economic status, having a medical condition, history of mental health needs, and loss of an acquaintance due to COVID-19 were common factors for worsening both PTSS and anxiety, additionally younger age for PTSS and being infected by COVID-19 for anxiety were specific predictors.

**Conclusion:** Pandemic might have a greater impact on mental well-being of youths than adults. Identification of risk factors can shed light on planning, prevention and intervention strategies.

**Keywords:** Anxiety, COVID-19, Mental health, Post-traumatic stress disorder (PTSD), Youth

## 1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) outbreak, which emerged in the last months of 2019 and spread all over the world in the first quarter of 2020, rapidly turned into a severe health crisis that dramatically changed human life. More than 100 million people become infected and more than 2 million died [1]. As of March 2020, unprecedented measures have been taken in many countries to reduce the spread of the pandemic. Like the rest of the world, Turkey also suspended face-to-face training, gone to significant work organization, and implemented curfew periods. Unemployment rates have increased, the income level has decreased, and social inequalities have deepened throughout the world [2]. During the first year of the pandemic, more than 800 million students were away from face-to-face education [3]. Since, the early stages of the pandemic which affected many aspects of daily life including social, economic, education, and

health, concerns have been raised that the COVID-19 outbreak is a serious risk factor for public mental health beyond being an infectious disease [4, 5]. Studies have shown that mental health problems such as anxiety, depression, and post-traumatic stress symptoms (PTSS) varied between one third and half of the general population during the pandemic [4,6]. As the time to control the outbreak got longer, its impact on mental health and differences in individual reactions to the pandemic became more evident [7]. Some groups, such as women, children, health care providers, and those who had a pre-existing psychiatric disorder or chronic medical condition, are more vulnerable to the development of mental health problems during lockdown and social distance measures [7,8].

Despite its relation to physical well-being, young age is also considered a risk factor for poor mental health during a health

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crisis [7]. In the first months of the COVID-19 pandemic, it was indicated that young adults aged 18-29 years experienced more psychological distress symptoms than other age groups [9]. In Italy and Spain, it has been reported that 85% of children and adolescents exhibited emotional and behavioural changes during lockdown period [10]. Youths have unique challenges and milestones different from adults. Because social interaction creates the stimulus required to shape the brain during the emergence of adulthood [11]. They are in a transition period from education to work, from living under caregiver supervision to being a caregiver. Furthermore, 'becoming an adult' has been historically portrayed as a person who completes his/her puberty, works, has financial independence, has his/her own family, and becomes a parent [12]. Accordingly, adolescents and young people are more sensitive to social restriction measurements that may affect their neurological, psychosocial, and emotional development unfavourably compared to people with older ages, which make them one of the most vulnerable groups.

This study aims to provide some insight about youths' mental health problems in Turkey during the second wave of the COVID-19 pandemic. We think that the analysis made by considering the psychological and emotional stages of life, such as Erikson's life stages rather than chronological grouping, might lead to get better results [13]. From this psychosocial perspective, we used an online survey which included self-report rating scales of anxiety and PTSS of youths (aged 15 – 24) compared to their older counterparts (aged 25 – 59). We also examined the associations between anxiety, PTSS and possible risk factors such as sex, age, socioeconomic status, and COVID-19 related factors for both groups.

## 2. PATIENTS and METHODS

### *Design and study population*

This study was conducted as a population-based, cross-sectional design. Data were gathered from an online survey with anonymous, self-rated questionnaires in Turkish that was distributed via mainstream social media platforms (i.e., Facebook, Twitter, Instagram). This survey took place between 15th November and 15th December 2020, during the second wave of the COVID-19 outbreak in Turkey and new national lockdown, when schools, colleges and universities were closed to most students. Participants were asked to complete a 15-minute survey which consists of four parts: basic demographic data, COVID-19-related exposures, anxiety and PTSS.

The universe of the study was the individuals who had completed the survey. Among these the ones over age of 60 years were discarded since disease-related risks increase by age which would be a confounding factor. As a final sample, we end up with individuals within an age range of 15-59 years, living in Turkey, having internet access, and volunteering in participation. To investigate differences and similarities between youths and adults, the sample was divided into two groups: the individuals between ages 15-24 years constituted "Youths", while the individuals in the older age range, i.e. 25-59 years of age, constituted "Adults" which served as a comparison group.

Initially, 1737 potential respondents completed the survey. Of these, 232 respondents with missing data were filtered out. 12 respondents were excluded from the sample because they were older than 60 years of age. A total 1493 valid surveys constituted the final study sample.

### *Questionnaires*

**Sociodemographic form:** The demographic variables included were: sex, age, educational level (including primary school, secondary school, high school and university degrees), economic status, marital status, having children (yes or no), having any chronic medical conditions (yes or no), history of an admission for psychiatric care services (reason for admission and time for the first contact), employment status (employee or an employee), and being a healthcare worker or not. The economic status was measured as low-middle-high based on the participants' perception of their financial constraints and situations. It was measured with a question: 'How do you find your financial situation?' There is some evidence that the predictive value of perceived socioeconomic status is a reliable measurement in terms of health-related outcomes [14]. Those who had a prior history of health needs and looked for some form of mental health support previously were considered as those with pre-existing mental health problems.

**COVID-19 related factors:** Experiences of COVID-19 related factors were determined with the following questions: Have you been diagnosed with COVID-19? If you have been diagnosed with COVID-19: Did you have to take drug? Did you have to stay in the hospital? Did you have to stay in the intensive care unit? How many days did it take for you to recover from the COVID-19? How many days did your isolation period last? If you have infected with COVID-19, do you still have ongoing fatigue? Has anyone of your acquainted (family member, friend, or college i.e.) been diagnosed with COVID-19? Have you ever known someone who died because of COVID-19?

**The Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5):** PTSS was assessed with PCL-5, which is a 20-item scale to assess the symptoms of PTSD [15]. The Turkish reliability and validity of this questionnaire have been performed. A cut-off score of 48 was used in this study. This cut-off score is suggested in discriminating individuals with PTSD seems to be more reliable in community samples [16].

**Beck Anxiety Inventory (BAI):** It is composed of 21 items with a four-point Likert-type scale [17]. The BAI scores are classified as mild anxiety (8 to 15), moderate anxiety (16 to 25), and severe anxiety (30 to 63). The Turkish reliability and validity studies of BAI were performed [18].

### *Statistical Analyses*

All statistical analyses were performed using SPSS 22.0 for Windows. Descriptive statistics were used to present participants data in each group. Categorical variables were defined as frequencies and percentages, and differences between the groups were assessed by the Chi-square and Fisher's Exact tests. Numerical variables were characterized by the mean,

standard deviation (*SD*), and differences between the groups were determined by the Student's *t*-test and Mann-Whitney U test according to the Kolmogorov-Smirnov test which was used to evaluate whether the distribution of variables was normal. Comparisons of ordinal variables between groups were performed by the Mann-Whitney U test.

Correlation between PCL-5, BAI scores, and COVID-19 related factors (duration of recovery and post-infection isolation) were measured using Spearman's test among participants with history of having COVID-19 diagnosis. The strength of the correlations was evaluated according to small  $\geq 0.10$ , medium  $\geq 0.30$ , large  $\geq 0.50$ .

In order to evaluate factors associated with the severity of anxiety and PTSS at BAI and PCL-5 (primary outcomes) as continuous variables for both group, multiple linear regression models were performed, including as independent variables: age (as a continuous variable), gender (female vs. male), education (collapsed as less than high school diploma or equivalent vs. higher high school diploma), economic status (low-middle-high), employment status (employed vs. unemployed), having a medical condition (yes vs. no), history of psychiatric admission (yes vs. no), being infected by COVID-19 (yes vs. no), acquaintance infected with COVID-19 (yes vs. no), and acquaintance died due to COVID-19 (yes vs. no). Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity ( $VIF < 5$ ) and homoscedasticity.

Two-tailed *p*-values were used. Our results and interpretations are therefore based on a significance set at  $p < .05$ .

### 3. RESULTS

#### Participants

The total sample comprised of 1493 participants with mean age of  $33.18 \pm 9.11$  years (min=15, max=59). Of these, 302 (20.2%) were younger than 25 years ( $M = 22.3$  years, min= 15, max = 24), and 1191 (79.8%) were between 25 to 59 years ( $M = 36$  years). Only 5 were married and one had a child among Youths. Of Adults, 56.8% ( $n=677$ ) were married and 51.6% ( $n=615$ ) had children ( $p < 0.001$ ,  $x=295.701$  and  $p < 0.001$ ,  $x=364.945$ ). The demographic and descriptive information of the study sample were given in Table I.

Most of those who applied to psychiatric treatment before the pandemic reported that they received help for their depressive symptoms (43.8%,  $n=49$  in Youths, 44.3%,  $n=212$  in Adults). This was followed by anxiety symptoms (36.6%,  $n=41$  in Youths, 32.8%,  $n=157$  in Adults) and traumatic stress symptoms after a stressful life event (13.4%,  $n=15$  in Youths, 15.9%,  $n=37$  in Adults). There was no statistical difference between the groups in terms of prior or current mental health contact and their psychiatric symptoms profile. It was the first treatment contact for about one third of those who applied to mental healthcare during pandemic.

**Table I.** Demographic and descriptive information of the study participants

	Youths ( $\leq 24$ years, $n=302$ ) <i>n</i> (%)	Adults ( $> 24$ years, $n=1191$ ) <i>n</i> (%)	<i>p</i>
<b>Age (<i>M</i>±<i>SD</i>) *</b>	22.03±1.72	36±7.98	$p < 0.001$ , $t = -54.751$
<b>Sex</b>			
Female	271 (89.7)	1046 (87.8)	$p = 0.358$ , $x = 0.845$
Male	31 (10.3)	145 (12.2)	
<b>Education Level</b>			
Primary school	-	8 (0.7)	$p = 0.278$ , $x = 3.853$
Secondary school	1 (0.3)	6 (0.5)	
High school	25 (8.3)	93 (7.8)	
University	276 (91.4)	1084 (91)	
<b>Socioeconomic Status (SES) *</b>			
Low SES	95 (31.5)	219 (18.4)	$p < 0.001$ , $x = 24.829$
Medium SES	143 (47.4)	663 (55.7)	
High SES	64 (21.2)	309 (25.9)	
<b>Employment Status *</b>			
Health care provider	24 (7.9)	187 (15.7)	$p < 0.001$ , $x = 164.211$
Employee non-health care sector	52 (17.2)	597 (50.1)	
Unemployment	226 (74.8)	407 (34.2)	
<b>Chronic medical condition *</b>	43 (14.2)	317 (26.6)	$p < 0.001$ , $x = 20.172$
<b>Prior psychiatric admission before the pandemic</b>	112 (37.2)	479 (40.2)	$p = 0.294$ , $x = 1.100$
<b>Psychiatric admission during the pandemic</b>	24 (7.9)	69 (5.8)	$p = 0.582$ , $x = 0.303$
First contact with mental healthcare during pandemic	9 (2.9%)	23 (1.9%)	
<b>Infected with COVID-19*</b>	90 (29.8)	276 (23.2)	$p = 0.017$ , $x = 5.718$
<b>Infected Acquaintances</b>	270 (90.6)	1045 (88.3)	$p = 0.267$ , $x = 1.232$
<b>Deaths among Infected Acquaintances</b>	92 (30.9)	336 (28.5)	$p = 0.420$ , $x = 0.651$

\*  $p < .05$

### Differences in PCL-5 and BAI scores between groups

In Youths, PCL-5 (43.93±17.82) and BAI (20.33±12.63) scores were higher than Adults (39.29±19.02 and 18.52±13.28, respectively), and the differences were statistically significant ( $p < 0.001$ ,  $t = 3.831$  and  $p = 0.033$ ,  $t = 2.140$ ). 42.7% of Youths and 35% of Adults had a score above the cut-off score for PTSD ( $p = 0.013$ ,  $x = 6.162$ ). Of Youths, 12.3% ( $n = 39$ ) reported high, 31.1% ( $n = 94$ ) moderate, and 56.5% ( $n = 169$ ) mild level anxiety symptoms. In Adults, these rates were 12.9% ( $n = 154$ ), 24.3% ( $n = 290$ ), 62.7% ( $n = 747$ ), respectively ( $p = 0.047$ ,  $x = 6.096$ ) (Figure 1). In both groups there was no one who had scores between 0-7.

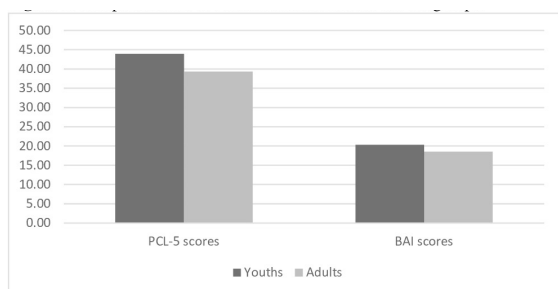


Figure 1. Comparison of PCL-5 and BAI scores between the groups

### Differences in COVID-19 survivors between groups

When the COVID-19 survivors were examined, there were no statistical difference between the two groups in terms of gender and disease severity related parameters, such as need for treatment, type of treatment, and duration of hospitalization. The adults' recovery and the post-infection isolation periods were longer than youths. The disease-related parameters of those with COVID-19 are given in Table II.

Table II. Comparison of variables associated with the course of COVID-19 between groups

	Youths with COVID-19 n=90	Adults with COVID-19 n=276	p
Female a *	85 (94.4)	227 (82.8)	$p = 0.005$ , $x = 8.029$
Need for treatment a			$p = 0.089$ , $x = 6.509$
No medication	32 (35.6)	66 (23.9)	
Taking prescribed medication at home	53 (58.9)	180 (65.2)	
Hospitalization	5 (5.6)	25 (9.1)	
Duration of hospitalization (days) b	7.8±6.83	6.77±2.94	$p = 1.000$ , $U = 65.000$
Recovery (days) b *	11.90±6.5	14.79±9.16	$p = 0.014$ , $U = 7749.00$
Post-infection isolation (days) b *	10.42±7.19	13.20±10.07	$p = 0.016$ , $U = 6154.00$
Ongoing fatigue post-infection	61 (68.5)	198 (73.1)	$p = 0.410$ , $x = 0.679$
Psychiatric admission within the pandemic a	8 (8.9)	35 (12.7)	$p = 0.327$ , $x = 0.961$

a n (%), b M±SD, \* $p < .05$

### Correlation Analysis

The correlations between the disease related factors (recovery and post-infection isolation period) and anxiety, traumatic stress response were examined in individuals with a history of infection with COVID-19. While the duration of recovery from COVID-19 and isolation was not correlated with any of the scale scores in Youths, a statistically significant but weak correlation was found with all scale scores in Adults (Table III).

Table III. Correlations between PCL-5, BAI scores and recovery, isolation duration among participants with infected COVID-19

	Recovery duration (days)	Post-infection isolation (days)
PCL scores of Youths	0.076	0.057
PCL scores of Adults	0.184**	0.207**
BAI scores of Youths	0.148	-0.125
BAI scores of Adults	0.247***	0.164*

\*\*\* $p < .001$ , \*\*  $p < .01$ , \*  $p < .05$ . PCL: The Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5), BAI: Beck Anxiety Inventory

### Factors associated with anxiety in Youths and Adults

In Youths, anxiety scores were statistically higher in those with poor economic status, with prior history of mental health needs, and the ones who had an acquaintance who died due to COVID-19 (Table IV). All the three variables and age were statistically significant in the multiple regression, with the economic status recording the highest beta value ( $\beta$ : -.268, %95 C.I.: - 6.663 - -2.768) than history of mental health needs ( $\beta$ : .150, %95 C.I.: .995 - 6.823), age ( $\beta$ : -.143, %95 C.I.: - 2.030 - -.148), and deaths among infected acquaintances ( $\beta$ : -.112, %95 C.I.: .012 - 6.152) (Table V).

In Adults, women, those who had lower economic status, those who had a medical and/or psychiatric disease, those who were infected COVID-19, and those who lost an acquaintance due to COVID-19 had higher anxiety scores (Table IV). In the multiple regression analysis, these variables remained significant, with the prior history of mental health needs recording the highest beta value ( $\beta$ : .168, %95 C.I.: 3.060 - 6.044) (Table V). Marital status and having children were not statistically significant for BAI scores in Adults.

### Factors associated with PTSS in Youths and Adults

In Youths, PCL-5 scores were associated with economic status, and they were also significant ( $\beta$ : -.251, 95% C.I.: - 8.765 - - 3.440) in the multiple regression analysis. Prior history of mental health needs was associated with higher PTSS (Table VI), but this did not remain significant in the multiple regression analysis. According to the regression analysis, being younger ( $\beta$ : - 2.75, 95% C.I.: - 4.048 - - 1.537), which recorded the highest beta value, and presence of a medical condition ( $\beta$ : .133, 95% C.I.: 1.136-13.071) were also significantly associated with worsening of PTSS (Table VI).

**Table IV.** Group comparisons of the BAI scores separately depicted with demographic and COVID-19 related variables

		Youths M±SD	pa	Adults M±SD	pa	pb
Sex	Female	20.66±12.77	.185	19.34±13.30	<.001***	.145
	Male	17.48±11.15		12.53±11.49		.030*
Education	High school and less	24.26±13.57	.097	21.39±14.33	.019*	.356
	Bachelor's degree	19.96±12.50		18.23±13.14		.049*
Economic status	Low	24.36±13.93	<.001***	22.91±14.32	<.001***	.405
	Middle	19.47±11.58		18.12±12.83		.216
	High	16.26±11.31		16.25±12.78		.995
Employment	Healthcare provider	16.45±11.60	.293	17.98±13.78	.005**	.877
	Employee non-healthcare sectors	20.80±14.44		17.50±12.95		.082
	Unemployment	20.63±12.28		20.25±13.38		.714
Medical Condition	Yes	22.39±14.29	.249	22.30±13.31	<.001***	.966
	No	19.99±14.29		17.14±13.00		.002**
Pre-existing psychiatric disorder	Yes	23.19±11.83	.002**	21.73±13.83	<.001***	.257
	No	18.64±12.85		16.21±12.38		.017*
Infected by COVID-19	Yes	20.17±12.36	.899	20.40±14.10	.010*	.893
	No	20.40±12.78		17.95±12.98		.013
Infected Acquaintances	Yes	20.69±12.77	.096	18.70±13.45	.121	.027
	No	16.20±10.21		16.94±11.59		.773
Loss of an acquaintance due to COVID-19	Yes	22.81±13.82	.024*	20.38±13.75	.003**	.134
	No	19.21±12.06		17.84±13.03		.170

\*\*\*p<.001, \*\*p<.01, \*p<.05, pa: within group analysis, pb: comparison between groups.

**Table V.** Association between sociodemographic variables, COVID-19 related factors and BAI scores in Youths and Adults.

	BAI							
	Youths				Adults			
	p	β	95% CI		p	β	95% CI	
Constant	.000		33.859	77.488	.000		22.498	34.659
Sex (male, ref. female)	.126	-.086	-8.681	1.073	.000*	-.152	-8.505	-3.953
Age	.024*	-.143	-2.030	-.148	.182	-.039	-.161	.031
Education level	.396	-.051	-7.871	3.121	.300	-.030	-4.200	1.295
Economic status	.000*	-.268	-6.633	-2.768	.000*	-.102	-3.176	-.911
Being an employee	1.000	.000	-3.425	3.424	.221	-.036	-2.602	.601
Having medical condition	.108	.092	-.766	7.656	.000*	.131	2.249	5.659
Having a pre-existing mental health problem	.009*	.150	.995	6.823	.000*	.168	3.060	6.044
Infected by COVID-19	.435	-.044	-4.247	1.833	.000*	.114	1.853	5.290
Infected Acquaintances	.527	.036	-3.794	7.396	.331	.028	-1.239	3.675
Loss of an acquaintance due to COVID-19	.049*	.112	.012	6.152	.009*	.074	.540	3.820
			ΔR2=0.116, p<0.001, F=4.791				ΔR2=0.115, p<0.001, F=16.162	

\*p<.05, BAI: Beck Anxiety Inventory

**Table VI.** Group comparisons of the PCL-5 scores separately depicted with demographic and COVID-19 related variables.

		Youths M±SD	p <sup>a</sup>	Adults M±SD	p <sup>a</sup>	pb
Sex	Female	44.59±17.75	.057	40.58±18.73	.000***	.002 **
	Male	38.16±17.66		29.95±18.57		.026*
Education	High school and less	50.34±18.57	.055	40.99±20.25	.333	.034
	Bachelor's degree	43.32±17.66		39.12±18.90		.001**
Economic status	Low	48.15±19.07	.006**	45.51±18.93	<.001***	.257
	Middle	43.24±15.54		38.61±18.66		.002**
	High	39.18±19.47		36.34±18.93		.278
Employment	Healthcare provider	38.79±17.96	.339	38.14±19.18	.003**	.877
	Employee non-healthcare sectors	44.44±20.62		37.86±19.13		.018*
	Unemployment	44.35±17.10		41.90±18.56		.103
Medical Condition	Yes	47.32±20.09	.178	42.97±18.05	<.001***	.183
	No	43.36±17.39		37.95±19.20		<.001***
Pre-existing psychiatric disorder	Yes	46.88±17.44	.028*	42.47±18.44	<.001***	.022
	No	42.22±17.90		36.86±18.97		<.000***
Infected by COVID-19	Yes	42.83±18.58	.487	38.63±20.47	.532	.085
	No	44.39±17.51		39.49±18.57		<.001***
Infected Acquaintances	Yes	44.39±17.83	.123	39.48±19.15	.311	<.000***
	No	38.54±17.16		37.63±17.88		.820
Loss of an acquaintance due to COVID-19	Yes	46.94±18.04	.059	42.42±18.44	<.001***	.037*
	No	42.70±17.68		38.14±19.06		.002*

\*\*\*p<.001, \*\*p<.01, \*p<.05, pa: comparison within the groups, pb: comparison between the groups.

**Table VII.** Association between sociodemographic variables, COVID-19 related factors and PCL-5 scores in Youths and Adults

	PCL-5							
	Youths				Adults			
	p	β	95% CI		p	β	95% CI	
Constant	.000		91.827	150.333	.000		52.365	70.034
Sex (male, ref. female)	.082	-.097	-13.278	-.807	.000*	-.155	-12.406	-5.792
Age	.000*	-.275	-4.048	-1.537	.001*	-.099	-.376	-.097
Having higher education	.582	-.033	-9.940	5.595	.648	-.013	-4.920	3.064
Economic status	.000*	-.251	-8.765	-3.440	.001*	-.097	-4.426	-1.135
Being an employee	.684	.024	-3.730	5.679	.092	-.050	-4.325	.329
Having medical condition	.020*	.133	1.136	13.071	.003*	.089	1.328	6.283
Having a pre-existing mental health problem	.135	.085	-.955	7.065	.000*	.110	2.087	6.422
Infected by COVID-19	.100	-.092	-7.668	.678	.779	.008	-2.139	2.855
Infected Acquaintances	.470	.041	-5.218	11.285	.606	.015	-2.632	4.508
Loss of an acquaintance due to COVID-19	.073	.101	-.355	8.053	.004*	.083	1.130	5.896
ΔR2=0.144, p<.001, F=5.813				ΔR2=0.084, p<.001, F=11.716				

\*p<.05. PCL: The Post-traumatic Stress Disorder (PTSD) Checklist for DSM-5 (PCL-5).

In Adults, women, poor economic status, presence of medical illness, prior history of mental health needs and loss of an acquaintance due to COVID-19 were associated with higher PCL-5 scores (Table VI). These findings were also statistically significant, with gender recording the highest beta value (β:

-.155, %95 C.I: - 12.406 - -5.792) in the multiple regression analysis (Table VII). Unemployment status was associated with a higher PCL-5 score, but this did not remain significant in the multiple regression analysis. In addition, younger age (β: -.099, %95 C.I: - .376 - -.097) became a statistically significant

predictor for PTSS in the multiple regression analysis. Infected with COVID-19, marital status and having children were not statistically significant for the PCL-5 scores in Adults.

#### 4. DISCUSSION

Our study pointed out that, when compared to adults, anxiety and PTSS were higher in young people. This finding is consistent with findings in previous studies on the greater psychological impact of the COVID-19 outbreak on young people's mental health from many other countries [19,20]. Also, the most important finding of our study, which we conducted by reaching 1493 people, is that the factors that might be related to the burden of the pandemic on the mental well-being of Youths and Adults are not homogeneous. This means that the factors affecting anxiety and post-traumatic stress can be pretty different from each other in psychologically different age groups. While being younger and having poor economic conditions were the leading risk factors for traumatic stress and anxiety symptoms in Youths, gender and COVID-19 related parameters contributed to worsening of mental health problems in Adults. Strikingly, being infected by COVID-19 was associated with neither anxiety nor PTSS in Youths, but it was on Adults for anxiety.

About half of the Youths and one third of the Adults reported PTSS above the cut-off score of PCL-5 and high or moderate level of anxiety in our sample. These findings were higher compared to those found in Chinese sample [21,22], and similar previous studies from USA [6], Italy [23], and Turkey [24,25]. The rates of provisional PTSS and anxiety in the current study seem high, which might indicate detrimental effect of the pandemic in Turkey. On the other hand, one possible explanation might be that our sample was composed of individuals with high rates of pre-existing mental health disorders (37.2% in Youths, 40.2% in Adults) that might make them vulnerable to psychosocial stresses. Nevertheless, these findings would be alarming for mental health problems during COVID-19 outbreak.

One of the most striking findings in the current study was low economic situations as a predictor for anxiety and PTSS in both groups. There are well established links between economic losses and psychological distress. The deterioration in economic situation during pandemic may boost mental health problems in the upcoming periods as economic problems, education, and social inequalities deepen during the pandemic process [26]. Similarly, previous economic crises and outbreaks showed that youth's unemployment and school dropout rates increased during these periods, and future career and salary expectations of young people with limited financial opportunities decreased [27]. Therefore, psychosocial adversities during the pandemic might be considered to have long-term effects and may even affect future generations [27]. Accordingly, financial insecurity could be an important intervention area to buffer negative mental health consequences for vulnerable individuals, as an intervenable factor, unlike age, pre-existing psychiatric or medical diseases.

The data from our study suggests that having a COVID-19 diagnosis is not associated with traumatic stress response in

either of the groups, only predicted anxiety in Adults. This might be related to the fact that our study sample, with an age range of 15-59 years, was thought to have a relatively low risk for COVID-19 mortality. The perceived stress about disease severity might determine the psychological effects of COVID-19.

We also investigated the correlation between anxiety, PTSS and the variables related to recovery process from COVID-19. The results suggested that in contrast with Youths, psychological response in Adults with COVID-19 diagnosis tend to be associated with the disease related factors. Additionally, while loss of an acquaintance due to COVID-19 was associated with both high anxiety and PTSS in Adults, it was only associated with anxiety in Youths. These findings indicated that the traumatic experiences of young people are not mainly associated with death or health outcomes in the pandemic, instead young people might perceive psychosocial challenges of the COVID-19 outbreak as more traumatic than life-threatening manifestations of the disease.

Our study confirmed that pre-existing psychiatric disorders and medical comorbidities make individuals vulnerable to experience psychosocial distress during the pandemic [19,28,29]. The findings of this study demonstrated that history of mental health needs and having a medical condition are associated with higher anxiety and traumatic stress response in Adults. However, having a medical condition predicted PTSS, while history of mental health needs predicted anxiety in Youths. Those with medical morbidity may perceive COVID-19 as a more dangerous threat to their health compared to others. In addition, their access to interrupted healthcare services can increase feelings of helplessness and loss of control, which can contribute to an increase in traumatic experiences both in youths and adults [29]. Furthermore, pre-existing psychiatric problems may impair the coping skills of the individuals and make them more vulnerable to pandemic by preventing them to attend protective daily activities such as physical activity, routines, and work.

Many of the previous studies during the pandemic suggested that women were affected more negatively [4,30]. Our study showed that both anxiety and post-traumatic stress scores of women were higher than men in Adults but not in Youths. Such a gender difference in adulthood might be due to several factors, firstly radical lifestyle changes during pandemic might have caused a greater stress for adult women. Also, it might be related to the well-known phenomenon of higher tendency for emotional problems such as anxiety and depression in women [4,30,31]. Due to the cross-sectional nature of our study, the causality relationship could not be established, but further studies are needed to understand reasons for such a gender difference in adulthood.

The results of our study should be interpreted considering some limitations. First, although it is a relatively large sample, the selection of the participants from social media networks may have increased the participation rate of those who are interested in mental health issues and seeking help. Second, as in many similar studies, individuals who completed the questionnaires are generally female and have a higher education level [6,32].

Although, we encouraged broad participation, it affects the generalizability of our sample. Third, due to restrictive measures during the pandemic, face-to-face interviews could not be performed. Therefore, our results might be limited in reflecting mental health problems at the clinical level. Fourth, although the ratio between groups did not exceed 4:1, we should mention that the sample size between groups was different. Lastly, readers also should be aware of that this study could not determine a causal relationship between risk factors and PTSD and anxiety due to cross-sectional design of our study. Despite all these limitations, the findings of our study improve our understanding of mental health consequences during COVID-19 pandemic in the context of age-related differences.

In conclusion, our findings reflected that, amid COVID-19 global pandemic, mental health of the youths was more negatively affected than adults in Turkey, which was consistent with data from many countries all over the world [4,19, 29,30]. The youths might be more vulnerable to psychosocial distress of the pandemic rather than COVID-19 related factors. Besides age specific risk factors, poor economic status appeared as a consistent risk factor for both age groups. Intervenable risk factors and vulnerable populations should be carefully addressed by policy makers.

### Compliance with Ethical Standards

**Ethical approval:** The study was approved by the Marmara University Medical Faculty Ethical Board (approval number: 12.2020.1356). Necessary legal permissions for studies on COVID-19 were obtained from the Ministry of Health (approval number: 2020-09-19T21.03.54).

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**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Author Contributions:** OTPF, VC and NPF: Concept and design of the study, OTPF and VC: Data acquisition, OTPF: Statistical analysis, OTPF and NPF: Literature review, OTPF and VC: Drafting and writing. All authors critically revised the manuscript, approved the final version to be published, and agreed to be accountable for all aspects of the work.

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