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Investigation on the Effect of Age and Gender Variables on Sars-Cov-2 in Persons Applying to a Hospital in Istanbul

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Abstract

Objective: The study was planned based on the demographic characteristics (age and gender) of 36704 people who applied to a hospital in the Istanbul European region with the suspicion of COVID-19.

Method: Nasopharyngeal and oropharyngeal swab samples were taken from people who applied to the hospital between November 2020 and March 2021, and the detection of the SARS-CoV-2 virus was made by RT-qPCR technique. The data were evaluated with chi-square analysis and SPSS 28 statistical program was used in all calculations. Using the COVID-19 data in the first, middle, and last five days of the specified months, observing the course of the pandemic in this period was desired.

Results: It was found that the most COVID-19 PCR test was performed in November 2020 with 13380 (36.4%) cases and 2347 of the cases were detected as positive. It was observed that 4231 (11.5%) of the total cases (36704) were positive in all of the mentioned months. The highest number of positive cases is between the ages of 20-39 with 1995 people (47.1%). The following 1442 (34.8%) cases were reported to be between the ages of 40-59. While the distribution of COVID-19-positivepatients by age groups in November 2020 did not differ significantly between men and women, significant differences were found in December. The distribution of Covid-19 COVID-19 positive patients by age groups in 2020 and 2021 showed a significant difference. While the proportion of patients aged 0-9, 20-39, and over 60 was higher in 2020, the proportion of patients aged 10-19 and 40-59 was higher in 2021.

Conclusion: The effect of age and gender factors in the pandemic triage of individuals during the pandemic period when they were exposed to the COVID-19 epidemic was investigated retrospectively. No application has been made to harm the private information of the patients. The study is thought to contribute to detecting the SARS-CoV-2 virus, detecting pandemics and epidemics, and managing treatment, especially depending on age and gender.

Keyword: COVID-19, RT-qPCR, SARS-CoV-2, viral diagnosis, pandemic

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INTRODUCTION

The first cases of pneumonia of unknown cause were encountered in Wuhan city of China's Hubei province in December 2019. A new coronavirus, different from the previous ones, was detected in samples obtained from cases on January 12, 2020. By genetic sequence analysis, it was determined that the epidemic was of viral origin. This virus has been determined to be severe acute respiratory syndrome coronavirus 2 (Severe Acute Respiratory Syndrome Coronavirus 2; SARS-CoV-2), also known as the new coronavirus 2019-nCoV. The disease was later identified as COVID-19. This situation caused WHO to declare pneumonia an epidemic disease on January 30, 2020 (1, 2). COVID-19 is a respiratory disease with a very high level of transmission caused by SARS-CoV-2 (3). The diagnosis of COVID-19 in Turkey was first announced on March 11, 2020, and the first death due to COVID-19 was announced by the Ministry of Health of the Republic of Turkey on March 15, 2020. Education in primary secondary and high schools and universities was suspended as of March 16, 2020, and classes continued via the internet and television (4). COVID-19 is a disease caused by an RNA virus that can be transmitted to humans and animals and occurs as a result of infection in the respiratory system (5). Coranaviruses (CoV) are a large family of viruses that cause deadly diseases such as MERS-CoV and SARS-CoV. SARS-CoV-2 is similar to bat coronavirus (BatCoV), SARS-CoV, and MERS-CoV, which emerged in 2012. These three related viruses, which are the source of diseases, belong to the Beta coronavirus genus, which is the causative agent of disease in humans (6).

The current diagnostic test to detect COVID-19 is real-time, Reverse-Transcription Polymerase Chain Reaction (RT-PCR). Although there are still problems in the tests used in the diagnosis of the disease, case information is updated in every period of the epidemic and efforts are made to control it, especially with the early diagnosis and isolation of patients identified as superspreaders. Many laboratory diagnostic methods, potential drugs and vaccine studies have been conducted for the diagnosis and treatment of the SARS-CoV-2 virus, which threatens humanity and is the source of COVID-19 (8, 9).

This study is a retrospective study and aimed to detect the SARS-CoV-2 virus using the RT-qPCR technique, based on the ages and gender

of people who applied to a private hospital in Istanbul between November 2020 and March 2021. It was intended to observe the course of the pandemic in these periods by using COVID-19 data from the first, middle and last 5 days of the specified months. This study aimed to investigate the effect of individuals' age and gender factors in pandemic triage on the disease during the pandemic days when we were exposed to the COVID-19 epidemic (10). It also seeks answers to two basic questions;

1) Does the age factor affect COVID-19 disease?

2) What is the effect of the gender factor on the SARS-CoV-2 virus in humans?

It aimed to observe the status of age and gender factors in the disease with the data obtained from the study and to contribute to subsequent COVID-19 studies.

METHODS

The study is retrospective and includes data from the first, middle, and last five days of the November 2020 and March 2021 periods. It encompasses individuals who sought hospital care for suspected COVID-19, those who underwent PCR tests for domestic and international travel, individuals who had PCR tests for pre-operative screening, those who were required to undergo compulsory COVID-19 tests by their workplaces, and those who needed PCR tests for entry to concerts, entertainment events, and football competitions. The data of individuals who underwent medical tests and compulsory PCR tests during the specified period were utilized. Approval for conducting the study was obtained from the Scientific Research Platform of the Ministry of Health of the Republic of Turkey (Form No: Devran ŞENER-2021-04-29T08_13_10). Furthermore, the study's content was reviewed and approved by the Ordu University Clinical Research Ethics Committee (Decision No: 2021/237).

Sample Collection and Transfer

Swabs and nasopharyngeal (from the back of the nose and throat) and oropharyngeal (from the epithelial cells in the throat and pharynx) swab samples were collected from individuals who wished to undergo COVID-19 PCR testing. The collected samples were brought to the laboratory in a Bio-speedy vNAT transfer tube (Cat. No.: BS-NA-513-100) containing 2 mL of viral nucleic acid extractor and a protective fluid. Thanks to the vNAT viral nucleic acid buffer (Cat. No.: BS-NA-510) in the transfer tube, viral samples could be used directly for RT-qPCR without the need for additional extraction. In addition, the infectivity of viral samples transferred in this manner became inactive within 5 minutes. Swab samples were stored at +2-8 °C and no freeze-thawing was performed.

RT-qPCR Preparation Stage

The preliminary preparation phase was carried out in a second-class biosafety cabinet in a sterile room. At this stage, the samples coming to the laboratory with the vNAT transfer tube are sorted according to their emergency status (time of arrival to the laboratory, why they were taken, barcode colors). One study included 94 patients. One negative control in each run; a positive control in case of contamination; It was used for reagent stability control. In this study, the biospeedy SARS CoV-2 Double Gene RT-qPCR Kit of the Bioeksen brand was used. By following the kit protocol, patient samples were processed in the Bio-Rad brand CFX96 Touch PCR device with 2X Prime Script Mix at 52°C for 1 cycle, 95°C for 1 cycle, 95°C for 1 cycle; With CVD Oligo Mix, 12 cycles at 67°C -56°C and 35 cycles at 85°C and 55°C, respectively, were completed and FAM and HEX channels were read.

Post PCR Step and Analysis

Interpretation of results was performed according to the kit protocol. In each study, the relative fluorescence unit (RFU) was set at 200 RFU and was considered the threshold value. First, the positive and negative controls must function correctly for the test to be considered valid. In the well containing the positive control, the FAM and HEX channels should give a sigmoidal curve. The result of a positive patient should show a sigmoidal curve above the 200 RFU threshold in the FAM and HEX channels, just as in the positive control analysis.

In addition, the result is considered positive if there is a sigmoidal curve above the threshold value in the FAM channel, even if there is no radiation in the HEX channel. In the analysis of negative results, the HEX channel should have a sigmoidal curve above the threshold of 200 RFU and the FAM channel should have no radiation.

Table 1. Interpretation of the results and conclusion determination

Orf1ab+N (Fam)	**Rnase P (Hex)**	**Interpretation**	**Result**
Positive	Positive	SARS-CoV-2 RNA detected The result is valid	It is reported as positive
Positive	Negative	SARS-CoV-2 RNA detected The result is valid	It is reported as positive
Negative	Positive	S SARS-CoV-2 RNA detected The result is valid	It is reported as negative
Negative	Negative	(Sampling/inhibition problematic) The result is invalid	The same sample is run again and if the problem persists, a new sample is requested.

The study is considered valid if the positive and negative controls functioned correctly. If HEX and FAM channels do not emit in any well of a valid assay, the assay is repeated in that well. In the first stage, the test is repeated with the same sample, but if the HEX and FAM channels do

not emit light in the second study, a new swab sample is requested from the patient. The situations used in the interpretation of the results and the events leading to the conclusion are shown in Table 1.

Statistical analysis

Data are expressed as numbers and percentages. Data were evaluated with chi-square analysis. In chi-square analysis, Pearson or Likelihood ratio chi-square values were calculated as appropriate. All calculations were made with the SPSS 28 statistical program. A 5% statistical significance level was taken into account in calculations and interpretations.

RESULTS

The distribution of patients admitted to the hospital with suspicion of COVID-19 by age group and gender in each year and month is given in Table 2 and Figure 1. According to the chi-square test, there is no significant relationship between age groups and gender in November 2020 ($p<0.001$; $\chi2=20.877$). While the proportion of female patients is high in patients aged 60 and over, the proportion of male patients is higher in other age groups. In December 2020, there is no significant relationship between age groups and gender ($p=0.470$; $\chi2=3.553$). In 2021, the female-male ratios showed significant differences according to age groups in January ($p=0.022$), February ($p<0.001$) and March ($p=0.020$). In every three months, the rate of male patients in the 40-59 group is higher than the rate of female patients in other age groups.

The distribution of positive patients by age group and gender in each year and month is given in Table 3 and Figure 2. In November 2020, the distribution of COVI-19 positive patients according to age groups did not differ significantly between men and women ($p=0.163$; $\chi2=6.526$). In December, the distribution of Covid-19 positive patients according to age groups showed a significant difference between men and women ($p=0.032$; $\chi2=10.595$). The distribution differed according to age groups in male and female patients. In the 0-9 age group, the rate of women (3.2%) is higher than the rate of men (0.8%). Similarly, among those aged 60 and over, the rate of women (13.4%) is higher than the rate of men (9.7%). In other age groups, the rate of male patients is higher than the rate of female patients.

The distribution of negative patients by age group and gender in each year and month is given in Table 4 and Figure 3. In November 2020, the distribution of Covid-19 negative patients according to age groups showed a significant difference between male and female patients ($p = 0.003$; $\chi2 = 16.196$). In the 0-9 age group, the rate of men (1.7%) is higher than the rate of women (1.6%). Similarly, among those aged 20-39 and 40-59, the rate of men (53.2% and 31.5%, respectively) is higher than the rate

of women (52.6% and 29.8%, respectively). Among those aged 10-19 and those aged 60 and over, the rate of women (5.7% and 10.2%, respectively) is higher than the rate of men (5.5% and 8.1%, respectively). In December 2020, the distribution of Covid-19 negative patients according to age groups did not differ significantly between male and female patients ($p=0.626$; $\chi2=2.607$).

The change in age distribution of Covid Positive patients over the years is given in Table 5. The distribution of positive patients across age groups showed a significant difference in 2020 and 2021 ($p<0.001$; $\chi2=26.346$). While the proportion of patients aged 0-9 years, 20-39 years of age and over 60 years of age is higher in 2020, the proportion of patients in the 10-19 and 40-59 age groups is higher in 2021.

The change in age distribution of Covid Negative patients over the years is given in Table 6. The distribution of negative patients across age groups showed a significant difference in 2020 and 2021 ($p<0.001$; $\chi2=90.703$). While the rate of patients aged 20-39 and over 60 years old was higher in 2020, the proportion of patients aged 0-9 years, 10-19 years old and 40-59 years old is higher in 2021. Figure 4 shows the distribution of total positive, total negative and total number of cases according to age groups.

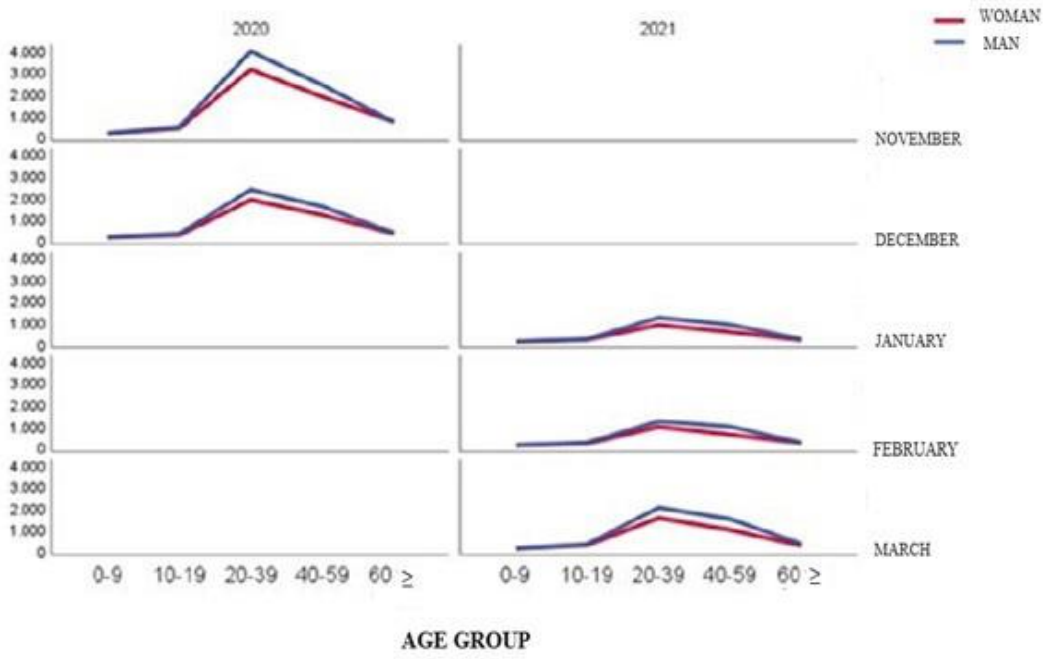

Figure 1. Distribution of patients in the study by years, months, age groups and gender

Table 2. Distribution of patients in the study by age group and gender in each year and month

				Gender						χ^2	p
				Woman		Man		Total			
Year	**Month**			**n**	**%**	**n**	**%**	**n**	**%**		
2020	November	Age Group	0-9	97	45.3	117	54.7	214	100.0	20,877	**<0.001**
			10-19	346	46.0	406	54.0	752	100.0		
			20-39	3066	44.0	3909	56.0	6975	100.0		
			40-59	1809	43.5	2354	56.5	4163	100.0		
			60 ≥	642	50.3	634	49.7	1276	100.0		
		Total		5960	44.5	7420	55.5	13380	100.0		
	December	Age Group	0-9	80	44.9	98	55.1	178	100.0	3,553	0.470
			10-19	193	43.6	250	56.4	443	100.0		
			20-39	1827	44.4	2291	55.6	4118	100.0		
			40-59	1135	42.7	1523	57.3	2658	100.0		
			60 ≥	255	46.5	293	53.5	548	100.0		
		Total		3490	43.9	4455	56.1	7945	100.0		
2021	Jonuary	Age Group	0-9	54	44.3	68	55.7	122	100.0	11.440	**0.022**
			10-19	151	46.2	176	53.8	327	100.0		
			20-39	834	41.8	1162	58.2	1996	100.0		
			40-59	513	37.9	841	62.1	1354	100.0		
			60 ≥	136	44.3	171	55.7	307	100.0		
		Total		1688	41.1	2418	58.9	4106	100.0		
	February	Age Group	0-9	68	45.3	82	54.7	150	100.0	24.810	**<0.001**
			10-19	229	45.9	270	54.1	499	100.0		
			20-39	1485	43.1	1958	56.9	3443	100.0		
			40-59	938	39.5	1437	60.5	2375	100.0		
			60 ≥	208	42.3	284	57.7	492	100.0		
		Total		2928	42.1	4031	57.9	6959	100.0		
	March	Age Group	0-9	58	48.7	61	51.3	119	100.0	11.707	**0.020**
			10-19	133	43.0	176	57.0	309	100.0		
			20-39	915	43.9	1169	56.1	2084	100.0		
			40-59	551	37.4	921	62.6	1472	100.0		
			60 ≥	162	49.1	168	50.9	330	100.0		
		Total		1819	42.2	2495	57.8	4314	100.0		

χ^2: Pearson Chi-Square Test

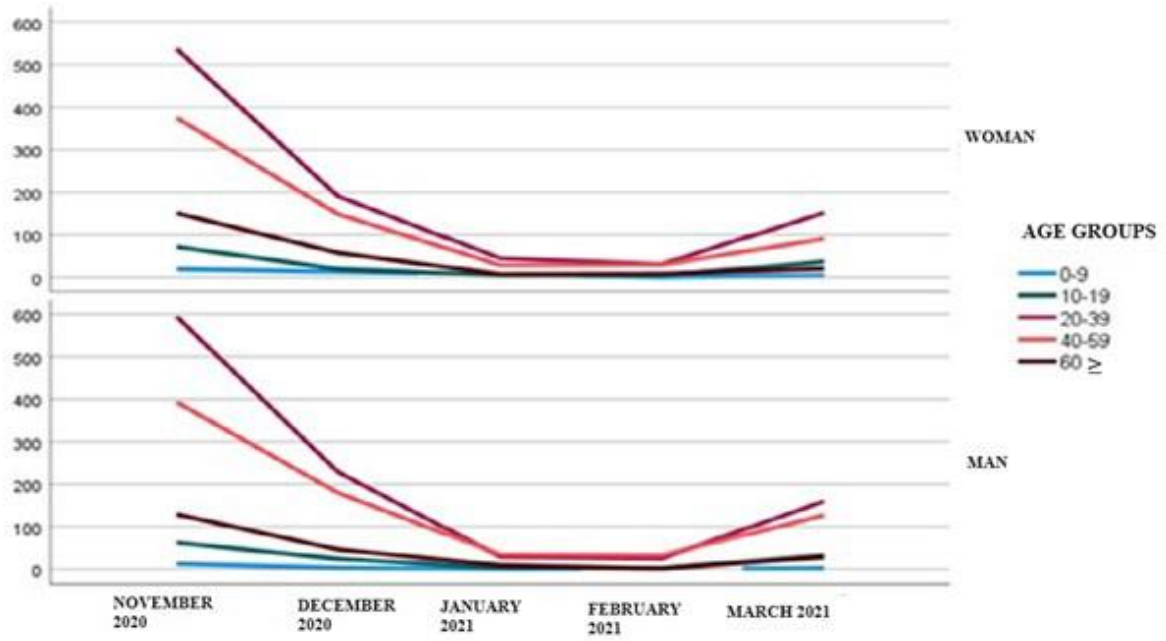

Figure 2. Distribution of covid positive patients by years, months, age groups and gender

Table 3. Distribution of positive patients by age group and gender in each year and month

				Gender							
				Woman		Man		Total		χ^2	p
Year	**Month**			**n**	**%**	**n**	**%**	**n**	**%**		
2020	November	Age Group	0-9	20	1.7	13	1.1	33	1.4	6,526	0,163
			10-19	72	6.2	63	5.3	135	5.8		
			20-39	537	46.5	594	49.8	1131	48.2		
			40-59	375	32.5	393	33.0	768	32.7		
			60 ≥	151	13.1	129	10.8	280	11.9		
		Total		1155	100.0	1192	100.0	2347	100.0		
	December	Age Group	0-9	14	3.2	4	0.8	18	2.0	10.595	**0.032**
			10-19	20	4.6	25	5.2	45	4.9		
			20-39	191	44.2	229	47.2	420	45.8		
			40-59	149	34.5	180	37.1	329	35.9		
			60 ≥	58	13.4	47	9.7	105	11.5		
		Total		432	100.0	485	100.0	917	100.0		
2021	Jonuary	Age Group	0-9	0	0.0	1	1.3	1	0.6	5.214	0.266
			10-19	6	6.8	4	5.0	10	6.0		
			20-39	45	51.1	30	37.5	75	44.6		
			40-59	29	33.0	35	43.8	64	38.1		
			60 ≥	8	9.1	10	12.5	18	10.7		
		Total		88	100.0	80	100.0	168	100.0		
	February	Age Group	0-9	1	1.3	0	0.0	1	0.7	6.262	0.180
			10-19	5	6.6	3	4.7	8	5.7		
			20-39	31	40.8	26	40.6	57	40.7		
			40-59	30	39.5	33	51.6	63	45.0		
			60 ≥	9	11.8	2	3.1	11	7.9		
		Total		76	100.0	64	100.0	140	100.0		
	March	Age Group	0-9	6	2.0	3	0.9	9	1.4	5.636	0.228
			10-19	37	12.1	33	9.4	70	10.6		
			20-39	152	48.7	160	51.3	312	47.3		
			40-59	91	29.6	127	36.1	218	33.1		
			60 ≥	21	6.8	29	8.2	50	7.6		
		Total		307	100.0	352	100.0	659	100.0		

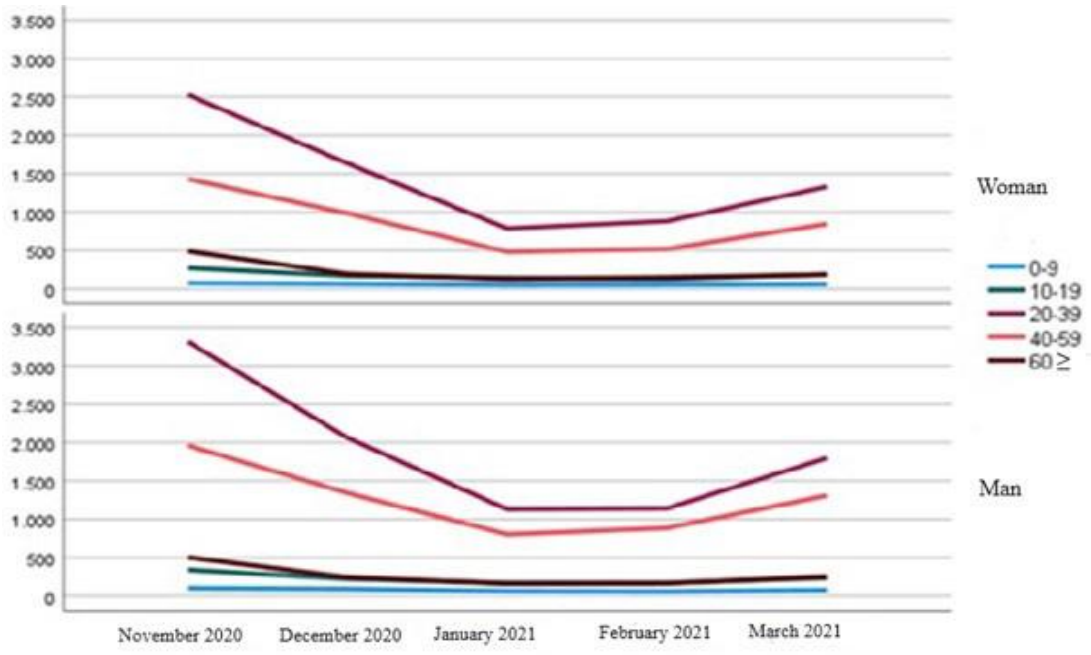

Figure 3. Distribution of positive patients by age group and gender in each year and month

Table 4. Distribution of negative patients by age group and gender in each year and month

Year	Month			Gender				Total		χ^2	p
				Woman		Woman					
				n	%	n	%	N	%		
2020	November	Age Group	0-9	77	1.6	104	1.7	181	1.6	16,196	**0.003**
			10-19	274	5.7	343	5.5	617	5.6		
			20-39	2529	5.6	3315	53.2	5844	53.0		
			40-59	1434	29.8	1961	31.5	3395	30.8		
			60 ≥	491	10.2	505	8.1	996	9.0		
		Total		4805	100.0	6228	100.0	11033	100.0		
	December	Age Group	0-9	66	2.2	94	2.4	160	2.3	2.607	0.626
			10-19	173	5.7	225	5.7	398	5.7		
			20-39	1636	53.5	2062	51.9	3698	52.6		
			40-59	986	32.2	1343	33.8	2329	33.1		
			60 ≥	197	6.4	246	6.2	443	6.3		
		Total		3058	100.0	3970	100.0	7028	100.0		
2021	Jonuary	Age Group	0-9	54	3.4	67	2.9	121	3.1	11.171	**0.025**
			10-19	145	9.1	172	7.4	317	8.0		
			20-39	789	49.3	1132	48.4	1921	48.8		
			40-59	484	30.3	806	34.5	1290	32.8		
			60 ≥	128	8.0	161	6.9	289	7.3		
		Total		1600	100.0	2338	100.0	3938	100.0		
	February	Age Group	0-9	57	3.3	61	2.5	118	2.8	23.309	**<0.001**
			10-19	128	7.3	173	7.1	301	7.2		
			20-39	884	50.7	1143	47.0	2027	48.6		
			40-59	521	29.9	888	36.5	1409	33.8		
			60 ≥	153	8.8	166	6.8	319	7.6		
		Total		1743	100.0	2431	100.0	4174	100.0		
	March	Age Group	0-9	62	2.4	79	2.1	141	2.2	8.229	0.084
			10-19	192	7.3	237	6.4	429	6.8		
			20-39	1333	50.9	1798	48.9	3131	49.7		
			40-59	847	32.3	1310	35.6	2157	34.2		
			60 ≥	187	7.1	255	6.9	442	7.0		
		Total		2621	100.0	3679	100.0	6300	100.0		

χ^2: Pearson Chi-Square Test

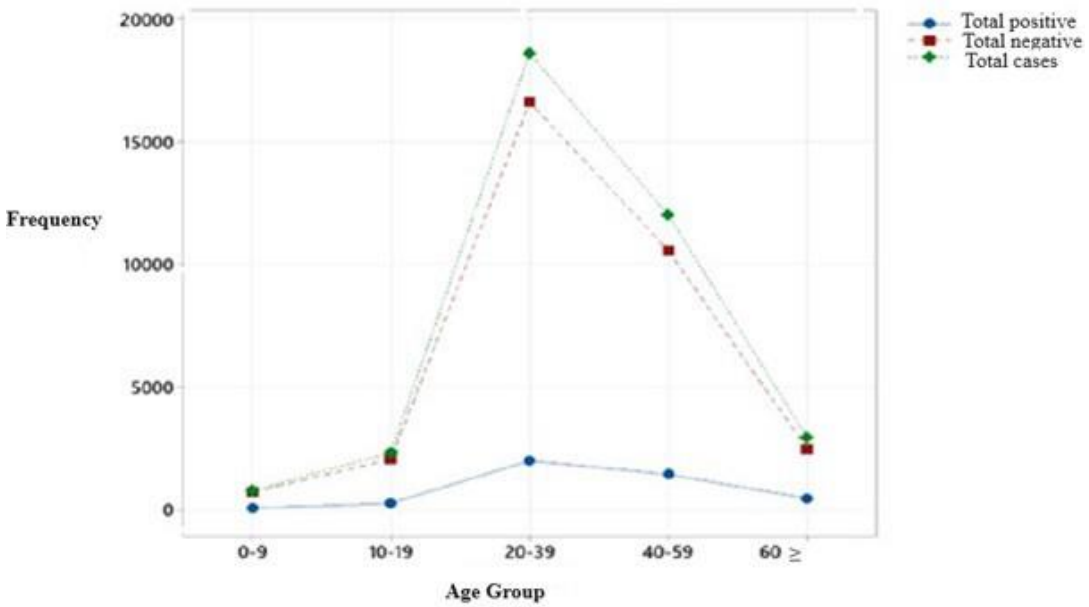

Figure 4. Distribution of total positive, total negative and total number of cases by age groups

Table 5. Change in age distribution of covid positive patients by years

		Year							
		2020		2021		Total		χ^2	p
		n	%	n	%	n	%		
Age Group	0-9	51	1.6	11	1.1	62	1.5	26.346	**<0.001**
	10-19	180	5.5	88	9.1	268	6.3		
	20-39	1551	47.5	444	45.9	1995	47.2		
	40-59	1097	33.6	345	35.7	1442	34.1		
	60 ≥	385	11.8	79	8.2	464	11.0		
Total		3264	100.0	967	100.0	4231	100.0		

χ^2: Pearson Chi-Square Test

Table 6. Change in age distribution of covid-negative patients by years

		Year				Total			
		2020		2021				χ^2	p
		n	%	n	%	n	%		
Age Group	0-9	341	1.9	380	2.6	721.0	2.2	90.703	**<0.001**
	10-19	1015	5.6	1047	7.3	2062.0	6.3		
	20-39	9542	52.8	7079	49.1	16621.0	51.2		
	40-59	5724	31.7	4856	33.7	10580.0	32.6		
	60 ≥	1439	8.0	1050	7.3	2489.0	7.7		
Total		18061	100.0	14412	100.0	32473.0	100.0		

χ^2: Pearson Chi-Square Test

DISCUSSION

The PCR test was positive for 442 of 3377 cases, in which the effect of age, gender and demographic data on COVID-19 was examined between 18 March and 24 April 2020. When the data of positive people were evaluated, it was reported that gender did not directly affect the risk of contracting COVID-19, as the male/female ratio was almost the same. In the same study, the rate of people under the age of 18 contracting COVID-19 was 2.7%, while the rate of people aged 65 and over was 29.7% (11). In our study, according to the Chi-square test, there is no significant relationship between age groups and gender in November 2020 ($p<0.001$; $\chi2=20.877$). While the proportion of female patients is high in patients aged 60 and over, the proportion of male patients is higher in other age groups. In December 2020, there is no significant relationship between age groups and gender ($p=0.470$; $\chi2=3.553$).

Data of confirmed COVID-19 patients in a research hospital in Izmir were examined retrospectively. On May 15, 2020, the early period of the pandemic, 49 (10.2) of 480 COVID-19 patients were healthcare workers. 37 (75.5%) of the healthcare workers were women and their ages ranged between 23-59 (12). In our study, no specific study was conducted for professions, but in November and December 2020, 1252 (15.9%) of 7837 female COVID-19 suspects between the ages of 20-60 were found to be COVID-19 positive.

The course of COVID-19 disease in young children under five years of age was studied, and its demographic and clinical characteristics

were evaluated. In total, they were able to establish an age distribution for 1135 of 1214 COVID-19 cases. They reported 596 (53%) of 1135 cases as under one year of age (infant), and 5 of the infant cases were in newborn status (13). In our study, while the total number of cases in children under 10 years of agein 2020 and 2021 was 783, 62 of them were COVID-19 positive. Among theCOVID-19 positive patients under the age of 10 years, 21 (33.9%) are boys and 41 (62.1%) are girls.

There were 69 cases in the COVID-19 study in Lu'an, China, between January 22, 2020 and February 18, 2020. In the study, 44 of the total cases were male and 25 were female patients. It has been reported that the age range varies between 10 months and 78 years and the highest number of cases is in the 20-49 age group with 68.1% (14). In our study, a total of 21325 cases were reached in 2020. Of the total cases, 11875 (55.6%) are male and 9450 (44.4%) are female patients. While the presented study had an age range of 0 to over 65 years, the most cases were observed in the 20-39 age range with 11093 (52%) cases.

Another study in China between January 16, 2020 and February 8, 2020 reported that 1208 (56.6%) of 2135 pediatric COVID-19 cases were male. It was reported that children are sensitive to COVID-19, but gender does not contain significant differences (15). Similarly, in our study, there was no significant relationship between age groups and gender in November 2020 ($p<0.001$; $\chi2=20.877$). It has been determined that the proportion of female patients is higher in patients aged 60 and over, but the proportion of male patients is higher in other age groups.

A retrospective study was conducted from data of 544 patients at Wuhan University. Demographic characteristics of the patients were used. 107 of 544 cases have been discharged. While 88 of those discharged recovered, 19 died. It reported that 19 deaths were in the 64-81 age range and 16 were men. At the end of the study, it was reported that the period of 7-13 days from the onset of COVID-19 is very critical and age and gender are risk factors (16). In our study, the distribution of COVID-19 negative patients according to age groups in November 2020 showed a significant difference between male and female patients ($p = 0.003$; $\chi2 = 16.196$). In the 0-9 age group, the rate of men (1.7%) is higher than the rate of women (1.6%). Similarly, among those aged 20-39 and 40-59, the rate of men (53.2% and 31.5%, respectively) is higher than the rate of women (52.6% and 29.8%, respectively). Among those aged 10-19 and those aged 60 and over, the rate of women (5.7% and 10.2%, respectively) is higher than the rate of men (5.5% and 8.1%, respectively).

The study conducted in China's Hubei Province examined the epidemiological and clinical characteristics of COVID-19 patients. While 262 of the 276 COVID-19 patients hospitalized

experienced the disease with mild symptoms, it was reported that the condition of 14 patients was serious. In the study, the rate of patients over the age of 60 who had a severe disease course was 78.6%, while the rate of those with a milder course was 18.7% (17). In our study, the total number of COVID-19 cases was recorded as 36704 in 2020 and 2021. The number of cases in people over 60 years of age is 2683 (7.3%). The period with the highest number of cases in people over the age of 60 was November 2020. While 464 (17.2%) of 2683 cases are COVID-19 positive, 2219 (82.8%) are negative. When positive patients are examined, 217 (46.7%) are male and 247 (53.2%) are female.

CONCLUSION

In the presented study, the number of people admitted to the hospital with suspicion of COVID-19 between November-December 2020 and January-February-March 2021 is 36704. Applications in the first five, middle five and last five days of each month are evaluated. The period with the highest number of applications was November 2020 with 13380 (36.4%) cases. The period with the highest number of positive cases was November 2020, with 2347 positive cases. Of the positive cases, 1192 (50.7%) are male and 1155 (49.3%) are female. in November 2020 with 1131 (48.2%) cases, in December 2020 with 420 (45.8%) cases, in January 2021 with 75 (44.6%) cases, and in March 2021 with 312 (47%) cases. ,3) The age range of 20-39 is the age range with the highest number of positive cases. In February 2021, the highest number of positive cases were seen in the 40-59 age group, with 63 (45%) cases.

The distribution of positive patients by age groups in 2020 and 2021 showed a significant difference ($p<0.001$; $\chi2=26.346$). While the proportion of patients in the 0-9 age range, 20-39 age range and over 60 years of age is higher in 2020, the proportion of patients in the 10-19 and 40-59 age groups is higher in 2021.

Looking at both years, the total number of cases over the age of 60 is 2683 (7.3%). The period with the highest number of cases in people over the age of 60 was November 2020. While 464 (17.2%) of 2683 cases are COVID-19 positive, 2219 (82.8%) are negative. When positive patients are examined, 217 (46.7%) are male and 247 (53.2%) are female.

There is no significant relationship between age groups and gender as of November 2020 ($p<0.001$; $\chi2=20.877$). It has been determined that the proportion of female patients is higher in patients aged 60 and over, but the proportion of male patients is higher in other age groups.

The distribution of negative patients across age groups showed a significant difference in 2020 and 2021 ($p<0.001$; $\chi2=90.703$). While the proportion of patients aged 20-39 and over 60 years of age was higher in 2020, the proportion

of patients aged 0-9, 10-19 and 40-59 was higher in 2021.

In November and December 2020, 1252 (15.9%) of 7837 female COVID-19 suspects between the ages of 20-60 were COVID-19 positive. While the total number of male patients between the ages of 20-60 is 6263, 987 (15.7%) are COVID-19 positive.

Between November 2020 and March 2021, 330 (10.6%) of the total 3113 cases in people aged 19 and under were positive. Of the positive cases, 149 (45.1%) are men and 181 (54.8%) are women.

The total number of people admitted to hospital with suspicion of COVID-19 between January 2021 and February 2021 is 11065. Of the total cases, 6449 (58.2%) are male and 4616 (41.7%) are female patients. While the month with the most cases is February (6959 cases), the month with the most positive cases is January (168 positive cases). Total positive cases were 308 (2.7%) in January and February. Of the positive cases, 144 (46.7%) are male and 106 (53.2%) are female patients. While the age range with the highest number of positive cases in January was 20-39 (75 positive cases), in February it was 40-59 age range (63 positive cases).

The number of people admitted to hospital with suspicion of COVID-19 in March 2021 is 4314. Of the total cases, 2495 (57.8%) are men and 1819 (42.2%) are women. The age range with the highest number of cases is the 20-39 age range with 2084 cases. The second highest number of cases is in the 40-59 age group with 1472 cases. 659 (15.27%) of the total cases are positive. Of the 312 cases between the ages of 20-39, 160 (51.3%) are men and 152 (48.3%) are women. Among the 218 positive cases, the number of male patients in the 40-59 age range is 127 (58.2%), while the number of female patients is 91 (41.7%).

Detecting the SARS-CoV-2 virus using a sensitive and reliable method such as RT-qPCR in all data obtained is thought to be important in detecting potential pandemics and epidemics, facilitating the approach to clinical pictures related to this virus, and especially in the case of managing treatment depending on age and gender.

Limitations of the Research

The research was limited to people who applied to a hospital in Istanbul. Therefore, the research results cannot be generalized to the entire population in Turkey.

Ethics Committee Approval: Approval for this study was obtained from the Ordu University Non-Interventional Research Ethics Committee (Decision No: 2021/237).

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