

RESEARCH ARTICLE

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What Impact does a Pandemic have on Emergency Department Visits? COVID-19 Pandemic and Coronaphobia

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Abstract

Objective: During the COVID-19 pandemic, emergency department visits decreased all around the world. This has been linked to reduced access to health care services associated with the pandemic, changes in social life, and individuals avoiding health care facilities to avoid disease contamination. Lack of access to emergency department services for health problems requiring urgent care can lead to complications and outcomes resulting in mortality and disability. The purpose of this study was to examine the postponement of emergency department visits during the pandemic and to explore the reasons for these delays.

Methods: A cross-sectional study was conducted in the emergency department of a university hospital in the Black Sea region of Turkey. The study population consisted of patients 18 years of age and older. Patients who met the inclusion criteria were given a questionnaire that included a COVID-19 Phobia Scale. The data collection forms were administered by ED physicians through face-to-face interviews.

Results: The research was completed with 352 patients. 27.0% of the participants stated delays in their emergency department visits due to COVID-19 pandemic. The most common reasons for postponing emergency department visits were reluctance to visit a hospital because of the pandemic (46.3%), lack of an individual to accompany the patient (28.4%), and difficulty in finding proper transportation (18.9%). ED visit delays were significantly higher among single patients than married ones and were significantly lower in patients aged 31-55 compared to other patients ($p < 0.05$). No statistically significant difference was found in terms of COVID-19 Phobia Scale scores between patients postponing emergency department visits and those not postponing them ($p > 0.05$).

Conclusion: Around one in three patients postponed their visits to the emergency department (ED) due to the COVID-19 pandemic. This delay can be attributed to the "fear of exposure to the disease," which is a direct effect of the pandemic. However, there are also indirect effects, such as concerns over finding transportation and an individual to accompany the patient.

Key words: Positive birth experience, birth satisfaction, labor, delivery, midwife.

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INTRODUCTION

The pneumonia cases of unknown cause began being seen in the city of Wuhan in the Chinese province of Hubei after 31st of December 2019. The agent causing these cases was identified on 7th of January 2020, as a new Coronavirus Disease (COVID-19) that had not been previously detected in humans. The first case outside of China was observed in Thailand on 13th of January 2020, after which the virus spread rapidly across the world (1). The number of confirmed cases of COVID-19 infections as of 30th of October 2020, was 44,888,869 worldwide, with 1,178,475 individuals dying in association with the infection (2).

No pharmaceutical methods for treating the disease or preventive measures was developed, at the time of data collection. Therefore, the basic strategy aimed at controlling case numbers in the pandemic and decreasing the burden on the health system had relied on community-based non-pharmaceutical interventions (14). These interventions

included case-based isolation aimed at reducing transmission from person to person to the lowest level possible, personal protective measures such as mask-wearing, social distancing, and compliance with hygiene rules, the protection of vulnerable groups, school closures, the banning of mass participation activities, lockdowns, and quarantine apart from under exceptional circumstances (21). Health service provision had also been significantly affected during this time. Postponement of elective care and the prioritization of emergency health problems were adopted to prevent the spread of the disease in health institutions (3).

The changes in social life and health service provision caused by the COVID-19 pandemic, and the fear of contracting the disease had also resulted in a significant decrease in ED visits, while the prevalence of the Coronaphobia also increased among health care workers as well (8). ED visits decreased 42% in the USA (6), 30% in the UK (11), and 34.9% in Germany (7). A reduction in non-urgent visits had formed a significant portion of this decrease (20). 10-60% reduction in ED visits was reported which involved emergency health problems with significant risks of mortality and disability,

such as myocardial infarction, stroke, and hyperglycemic crisis (3, 12, 13).

The decreases in ED visits involving urgent health problems have been linked to a reluctance to visit health care providers out of concerns regarding the COVID-19 pandemic (4, 7). Delayed visits of critical patients, whose clinical conditions require immediate attention, can have severe consequences, such as increased complication rates, limited therapeutic options, and mortality (15, 17, 18, 19). The present study investigated whether patients going to the emergency department of a university hospital in Turkey, which served as a regional reference hospital during the COVID-19 pandemic, delayed their visit to the emergency department.

METHODS

Type of research

A cross-sectional study.

Research location

The research was conducted over one-week period at the xxx Health Application and Research Center emergency department. This is a tertiary university hospital with a 780-bed capacity. The hospital emergency department contains 38 beds in a trauma, yellow, red, and green zones specially designed for the provision of treatment and observation services. The emergency department receives approximately 250 visits a day, and serves as an emergency care center receiving patients

referred for treatment and care from other provinces in its region.

The research population and sample selection

Patients aged 18 and over going to the emergency department during the study period constituted the research population. The following criteria were applied during sample selection:

- Inclusion criteria: Patients aged 18 or over visiting the xxx Hospital Emergency Department between the dates specified. To agree to participate in the study.
- Exclusion criteria: Patients aged under 18, or who were unconscious or disoriented and unable to cooperate were excluded. Not agreeing to participate in the study.

Data collection

A questionnaire developed by authors who serve as physicians in the study hospital, and the COVID-19 Phobia Scale was applied to patients meeting the inclusion criteria. Data collection is performed by ED physicians via face-to-face interviews following examination and treatment of patients. All participants were informed about the study before the questionnaire was administered, the ethics committee approval document was submitted, and they were verbally asked if they wished to participate in the questionnaire. Those who declined were not interviewed and continued their usual care in the emergency department.

The questionnaire consisted of seven questions concerning demographic characteristics (sex, education, marital status, smoking, alcohol consumption, presence of chronic disease, and other people in the household), five questions concerning ED visit (level of urgency, postponement of presentations and reasons therefore, time of onset of symptoms, whether any measures had been taken to resolve health symptoms before presentation, and attendance at any other health institution), eleven questions concerning personal protective measures against COVID-19 disease (wearing masks, carrying hand sanitizers, social distancing, changing clothing after returning home, hand-washing, accepting invitations, paying visits to others, receiving visitors at home, use of mass transportation, and changes in shopping frequency and frequency of smoking and/or alcohol consumption), and three questions intended to elicit patients' anxiety regarding COVID-19 disease. The applicability of the questionnaire was evaluated by an emergency medicine physician working in the Emergency Medicine Department, and public health specialist from the Public Health Department, and a psychiatrist from the Psychiatric Department.

The COVID-19 Phobia Scale was used to determine the effect of Coronaphobia on patients' postponement of emergency department visits. This five-point Likert-type scale developed by Arpacı et al. (2020) consists

of 20 items in four sub-dimensions – psychological (six items), somatic (five items), social (five items) and economic (four items). Possible scores range between 20 and 100, with higher scores indicating greater coronaphobia. Validity and reliability study of the scale showed that the sub-dimensions exhibit adequate internal consistency ($0.853 < \alpha < 0.897$), with a Cronbach alpha value for the entire scale of 0.926 (16). The Cronbach alpha value of the COVID-19 Phobia Scale in the present study was 0.920.

Ethical committee approval

Ethical committee (No 2020-196 dated 13.07.2020) for the study was obtained from the Regional Clinical Research Ethical Committee, together with institution approval from the hospital where it was performed, and verbal consent from the participants.

Statistical analysis

The study data were analyzed on IBM Statistical Package for Social Sciences software (IBM SPSS; Armonk, NY, USA). Descriptive data were presented as raw numbers and percentages. The chi-square test was applied to analyze qualitative data. Normality of distribution was evaluated using the Kolmogorov-Smirnov test. Normally distributed data were compared between two groups using Student's t-test, or using ANOVA for comparisons between more than two groups. Non-normally distributed data were analyzed using the Mann Whitney-U test for

comparisons between two groups, and the Kruskal Wallis test for three or more groups. p values <0.05 were regarded as statistically significant.

RESULTS

379 patients participated in the research who visited to the emergency department during the data collection period. Out of this number, 27 patients were excluded because of incomplete responses to the questions on the data collection form. The research analyses were thus conducted with data from 352 patients.

The sociodemographic characteristics of the patients in the study are given in Table 1. The median age of the participants was 46 (min=17, max=98), 63.4% were men, 73.6% were married, and 41.9% were educated at the middle or high school level. A chronic disease was present in 47.6% of the participants (Table 1).

Twenty-seven percent ($n=95$) of the patients reported delaying their visits after the onset of symptoms due to the COVID-19 pandemic. The most common reasons for postponing emergency department visits were reluctance to go to hospital because of the pandemic (46.8%), the lack of an individual to accompany the patient at that time (28.7%), and difficulty in finding transportation (19.1%). In addition, 15.4% of patients reported visiting the ED at least three days after the onset of symptoms, and 56.5% of patients took no measures to

overcome their health problems prior to visiting the emergency department (Table 2).

One hundred and forty patients (39.8%) were reluctant to present to hospitals during the COVID-19 pandemic, 70.7% of whom attributed this to a fear of exposure to the virus. Other reasons reported by patients included clinics being closed (12.9%), anxiety over inability to find a doctor (9.3%), and inability to make an appointment (7.1%).

Analysis of postponement of emergency department visits during the COVID-19 pandemic in terms of sociodemographic characteristics revealed significant variation between patient groups established on the basis of age ($p=0.023$). Two-way comparisons between the groups revealed a significantly lower prevalence of delaying emergency department visits in patients aged 31-55 (19.3%) compared to those aged 30 or under (35.0%) and those aged over 55 (30.3%) ($p=0.035$ and $p=0.015$, respectively). The rate of emergency department visit delays was also higher among single patients (38.0%) than among married patients (23.3%) ($p=0.007$). Comparisons based on other sociodemographic characteristics and levels of urgency revealed no significant differences between patients in terms of delaying emergency department visits ($p>0.05$). No significant difference was found in this study between delayed and non-delayed visits in terms of level of urgency or time of onset of symptoms ($p>0.05$) (Table 3).

In this study, 54.3% of patients postponing emergency department visits always wore masks outside the home, 57.4% always complied with social distancing, and 50.9% always changed their clothes after returning home. In addition, 34.7% of the patients significantly increased the frequency of handwashing during the coronavirus pandemic, 73.5% significantly reduced their attendance of social activities such as communal fast-breaking dinners, and 67.3% significantly reduced their frequency of visiting friends and family in their houses (Table 4).

Examination of anxiety and concerns due to COVID-19 pandemic revealed that 81.5% of the participants had never experienced symptoms such as chest pain, respiratory difficulty, palpitations, syncope, or weakness due to fear of coronavirus. 40.3% of participants felt no anxiety because of the pandemic becoming a social disaster or causing economic problems (Table 5).

The mean COVID-19 Phobia Scale score of patients visiting emergency department was 48.3 ± 14.9 . Analysis revealed that patients delaying their visits had a higher median score on all subscales than those not delaying their visits. However, this difference between the patient groups was not statistically significant ($p > 0.05$) (Table 5).

Patients' COVID-19 Phobia Sale scores according to sociodemographic and presentation-related characteristics are shown

in Table 6. Our analysis showed that women had significantly higher mean scale scores (50.4 ± 13.97) than men (47.0 ± 15.34), and that individuals who applied some method intended to overcome health problems prior to presenting to the emergency department also had higher mean scores (50.1 ± 14.67) than those not employing such methods ($p = 0.040$ and $p = 0.044$, respectively). Patients' scores did not differ significantly in terms of other variables ($p > 0.05$).

DISCUSSION

Approximately one in three patients visiting the emergency department delayed their visits. The most common reason for postponements was reluctance to visit hospital due to the COVID-19 pandemic, followed by absence of an accompanying relative, and difficulty in finding transportation. No significant difference was determined between patients postponing and not postponing visits to the emergency department in terms of mean COVID-19 Phobia Scale scores and subscale scores. Analysis of compliance with personal protective measures against the COVID-19 pandemic among the patients revealed that more than half of them always applied personal protective measures. The rate of postponement of ED visits was also higher among single patients than married individuals.

Twenty-seven percent of patients going to the emergency department in the present study delayed their visits after the onset of symptoms

due to fear of contracting COVID-19. Similarly, research from the United States reported that 12.0% of adults avoided the ED visits due to anxieties over the COVID-19 pandemic (4). A significant global decrease in ED visits was observed due to reluctance to visit (5,6). However, a noteworthy increase was recorded in deaths due to complications other than COVID-19 during the pandemic (7). Avoidance of emergency department visits not requiring urgent care has led to a decreased workload in these departments during the pandemic and has contributed to the prevention of the spread of COVID-19 in the community. However, inability to intervene promptly in emergency conditions can result in the exacerbation of health problems and increased mortality, and it is therefore important for the public to be appropriately informed on this subject.

The study results show that the COVID-19 pandemic leads directly to avoidance of emergency department presentations by causing fear of transmission of the disease, and that it also plays an indirect role in decreased presentations to health institutions due to its impacts on social and daily life.

Marital status and age found to be correlated with postponement of visits. ED visit delays was higher among participants age 30 or below and 55 or above, and among singles. The lower rate of postponement of visits in the 31-55 age group may be due to individuals in that age

group having fewer difficulties related to finding transportation or someone to accompany them than individuals aged over 55 or under 30.

Table 1. Sociodemographic characteristics of patients included in the study.

Age (n=347)	n	%
<35 years	98	29.3
35-49	97	27.6
50-64	66	18.8
≥65	86	24.4
Gender (n=352)		
Female	129	36.6
Male	223	63.4
Education (n=351)		
Illiterate or elementary school	138	39.3
Middle and high school	147	41.9
University and postgraduate	66	18.8
Marital status (n=349)		
Single	92	26.4
Married	257	73.6
Place of residence (n=343)		
Village	89	25.9
City	254	74.1
Smoking status (n=352)		
Smoker	121	34.4
Non-smoker	231	65.6
Alcohol consumption (n=348)		
Yes	23	6.6
No	325	93.4
Chronic disease (n=351)		
Yes	167	47.6
No	184	52.4
Individuals in the household (n=350)		
Family	324	92.6
Friend	10	2.9
Living alone	16	4.6

The higher rate of visit postponement among unmarried individuals may be associated with the fact that most single participants were aged under 30. Results in Czeisler et al. (2020) showed that being in the younger age group

(18-24) was linked to avoidance of requesting emergency health services during the COVID-19 pandemic is compatible with our own finding

Table 2. ED visits characteristics, reasons for postponements, and measures adopted before presentation.

Urgency level. (n=351)	n	%
High (USI 1-3)	213	60.7
Low (USI 4-5)	138	39.3
Time of inset of symptoms (n=338)		
≤3 hours	116	34.3
>3-24 hours	63	18.6
1-3 hours	107	31.7
>3 days	52	15.4
Emergency department postponement status (n=352)		
Postponed	95	27.0
Not postponed	257	73.0
Reasons for postponement of emergency department presentations (n=94)		
I waited because I was reluctant to go to hospital because of the pandemic	44	46.8
I waited so relatives could accompany me	27	28.7
I waited to find transportation	18	19.1
I waited because of lockdown	4	4.3
I waited because my relative was reluctant to take me to hospital because of the pandemic	1	1.1
Measures taken to resolve the health problem before presentation ** (n=352)		
No measures taken	199	56.5
Medical treatment decided by the patient	47	13.4
Herbal therapy	4	1.1
Massage	2	0.6
Telephone consultation with health officials	12	3.4
Presentation to family physicians	11	3.1
Presentation to public hospital	69	19.6
Presentation to university hospital	20	5.7
Presentation to private hospital	4	1.1

*USI: Urgency Severity Index, **Participants were able to select more than one option

Table 3. Characteristics of emergency department presentations depending on reasons for postponement

Sociodemographic characteristics	Delayed ED presentations		Non-delayed ED presentations		p value
	n	%	n	%	
Age (n=347)					
<30	28	30.1	52	20.5	0.023
31-55	27	29.0	113	44.5	
≥55	38	40.9	89	35.0	
Sex (n=352)					
Female	40	42.1	89	34.6	0.196
Male	55	57.9	168	65.4	
Education (n=351)					
Illiterate or primary school	40	42.1	98	38.3	0.112
Middle and high school	32	33.7	115	44.9	
University and postgraduate	23	24.2	43	16.8	
Marital status (n=349)					
Single	35	36.8	57	22.2	0.007
Married	60	63.2	197	77.6	
Place of residence (n=343)					
Village	27	29.3	62	24.7	0.465
City	65	70.7	189	75.3	
Chronic disease (n=351)					
Yes	43	45.3	124	48.7	0.597
No	52	54.7	132	51.6	
Presentation-related characteristics					
Urgency level (n=351)					
High (USI 1-3)	53	55.8	160	62.5	0.253
Low (USI 4-5)	42	44.2	96	37.5	
Time of onset of symptoms (n=338)					
≤3 hours	24	26.7	92	37.1	0.129
>3-24 hours	20	22.2	43	17.3	
1-3 days	27	30.0	80	32.3	
>3 days	19	21.1	33	13.3	

*: Emergency Department

Table 4. Patients' compliance with personal precautions during the COVID-19 pandemic (N=352)

Personal precautions. N (%)	Never	Rarely	Sometimes	Often	Always
Social distancing	-	12 (3.4)	31 (8.8)	107 (30.4)	202 (57.4)
Wearing masks outside the home	12 (3.4)	20 (5.7)	37 (10.5)	92 (26.1)	191 (54.3)
Changing clothes after returning home	8 (2.3)	21 (6.0)	43 (12.2)	101 (28.7)	179 (50.9)
Carrying hand disinfectant	39 (11.1)	52 (14.8)	59 (16.8)	90 (25.6)	112 (31.8)
	Decreased significantly	Decreased	Unchanged	Increased	Increased significantly
Handwashing	4 (1.1)	1 (0.3)	71 (20.2)	154 (43.8)	122 (34.7)
*Accepting invitations to communal activities	258 (73.5)	76 (21.7)	13 (3.7)	3 (0.9)	1 (0.3)
Visiting others' homes	237 (67.3)	97 (27.6)	11 (3.1)	6 (1.7)	1 (0.3)
Receiving visitors in the home	215 (61.1)	117 (33.2)	12 (3.4)	6 (1.7)	2 (0.6)
Using mass transportation	177 (50.3)	94 (26.7)	66 (18.8)	8 (2.3)	7 (2.0)
* Going shopping	195 (55.6)	109 (31.1)	38 (10.8)	6 (1.7)	3 (0.9)
**Frequency of smoking/alcohol use	86 (33.1)	42 (16.2)	124 (47.7)	8 (3.1)	-

*Answered by 351 participants y, ** Answered by 260 participants

Table 5: Patients' anxiety status regarding infectious COVID-19 disease (N=352)

Anxiety regarding the pandemic. n (%)	Never	Rarely	Sometimes	Often	Always
Physical findings associated with fear of the pandemic (palpitations. weakness. etc.)	287 (81.5)	36 (10.2)	16 (4.5)	8 (2.3)	5 (1.4)
*Concern that the pandemic may result in a social disaster	142 (40.3)	72 (20.5)	82 (23.3)	38 (10.8)	18 (5.1)
*Economic anxieties concerning the pandemic	142 (40.3)	71 (20.2)	83 (23.6)	38 (10.8)	18 (5.1)

*Answered by 351 participants.

Table 6: COVID-19 Phobia Scale scores of patients presenting to the emergency department (N=352)

	Not postponing ED presentations*		Postponing ED presentations		p value
	Mean±SD	Median (min-max)	Mean±SD	Median (min-max)	
Psychological subscale	14.6±5.34	14 (6-28)	15.0 ± 4.56	15 (6-24)	0.378
Somatic subscale	12.5±4.07	13 (5-24)	13.2 ± 3.57	14 (5-21)	0.092
Social subscale	10.9±4.04	11 (5-23)	11.5 ± 3.27	12 (5-18)	0.081
Economic subscale	9.4±3.33	9 (4-19)	9.6 ± 3.08	10 (4-16)	0.410
Total score	47.8±15.50	48 (20-92)	49.5 ± 13.23	50 (20-77)	0.215

ED*: Emergency Department

Table 7: Distribution of COVID-19 Phobia Scale scores by sociodemographic and presentation-related characteristics

Sociodemographic characteristics	COVID-19 Phobia Scale scores			
	n	Mean	SD	p value
Age (n=347)				
<30	80	50.8	13.80	0.070
31-55	140	49.0	15.07	
≥55	127	46.1	15.11	
Sex (n=352)				
Female	129	50.4	13.97	0.040
Male	223	47.0	15.34	
Education (n=351)				
Illiterate or primary school	138	47.3	15.12	0.334
Middle and high school	147	49.6	14.62	
University and postgraduate	66	47.1	15.20	
Marital status (n=349)				
Single	92	50.1	13.88	0.180
Married	257	47.6	15.32	
Place of residence (n=343)				
Village	89	46.7	15.63	0.294
City	254	48.6	14.58	
Chronic disease (n=351)				
Yes	167	46.9	15.12	0.122
No	184	49.4	14.58	
Presentation-related characteristics				
Urgency level (n=351)				
High (USI 1-3)	213	47.6	15.37	0.323
Low (USI 4-5)	138	49.3	14.27	
Presentation to another health institution before the ED (n=352)				
Yes	98	48.1	15.03	0.876
No	254	48.4	14.91	
Use of measures to resolve the health problem before presentation to the ED (n=352)				
Yes	153	50.1	14.67	0.044
No	199	46.9	15.00	

ED*: Emergency Department

No significant relationship was found between visit delays for reasons associated with the COVID-19 pandemic and other visits in terms of level of urgency. Reports from across the world have reported significant exacerbation of health problems because of delayed emergency department visits during the

COVID-19 pandemic, together with an increase in numbers of critical visits (10).

The study has some limitations. The absence of any relationship between visits delayed for reasons associated with the COVID-19 pandemic and others in terms of level of urgency may be associated with the absence of any difference among visits in terms of time

since the onset of symptoms. Further multicenter studies with larger sample numbers are now needed for a better understanding of reasons for postponement of emergency department visits during the pandemic.

The median COVID-19 Phobia Scale score of individuals postponing visits to the emergency department due to anxieties concerning the COVID-19 pandemic (median= 50) was slightly higher than that of patients who did not delay their visits (median= 48), although the difference was not statistically significant. Our review of the literature revealed no previous study investigating the effect of corona-phobia on the postponement of emergency department presentations, at the time of this study. However, the findings of the present study show no significant relationship between COVID-19 Phobia Scale scores and visit delay. Due to the confusion caused by the rapid spread of the disease and unconfirmed information about treatment, and rising mortality rates, the COVID-19 can result in panic and anxiety disorders, in addition to fear (9). We think that further studies evaluating the fear due to the pandemic and other psychological consequences and considering changes in social life can provide useful information in elucidating the association between the pandemic and postponement of emergency department visits.

At least half of patients visiting the emergency department reported ‘always

complying with precautionary measures’ against COVID-19 disease. Compliance with personal protection measures is regarded as the most effective means of individual and mass protection against COVID-19 disease. From that perspective, social information and awareness activities are particularly important in terms of raising compliance with such measures.

CONCLUSION

As many as approximately one in three patients visiting the ED during the pandemic delayed their visits after the onset of symptoms due to anxiety over contracting COVID-19 disease and reasons associated with the pandemic. The mortality and disability rates resulting from such delays are still unknown. Considering that the pandemic could persist for a long time, it is even more important for the society to be properly informed about the importance of timely use of emergency care services. Therefore, we believe that communication and collaboration between public health specialists, health service managers, and emergency health service providers need to be established for the society to be accurately informed on this subject. (1–14)

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