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# Violence patterns during the Covid-19 pandemic An Egyptian sample

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## ABSTRACT

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### KEYWORDS

*Violence,  
COVID-19 pandemic,  
Medico-legal report,  
Quarrel,  
Blunt.*

Violence is a worldwide phenomenon resulting in 1.6 million deaths per year, making it one of the top causes of mortality worldwide. Physical, sexual, psychological, and negligence are the most common forms of violence. The newly identified coronavirus disease (Covid-19) is a new pandemic global health crisis caused by a newly identified coronavirus (WHO) which began in Wuhan, China. COVID-19 led to enormous and devastating changes in the daily lives of millions around the world. This study aims to evaluate the effect of the COVID-19 pandemic on the violence pattern among people in the Menoufia governorate, Egypt. The number of patients that arrived at the forensic medicine department during the pre-COVID-19 study period was 275; the male gender represented 60.7% of them. During the COVID pandemic, 304 individuals visited the forensic medicine department for the primary medico-legal reports, with 74.3 percent being males. Most of the patients in both groups (pre-COVID and COVID), came from rural areas. Blunt instruments were the most frequently used instruments in violence in both pre and post-COVID groups (86.5% and 85.9%, respectively). Quarrels were the most common cause of violence. Simple wounds were the most common. The overall incidence of violence has increased during COVID-19. The majority of patients were male, middle-aged, and young adults who lived in rural areas. Quarrels were the most common violent etiology during COVID-19; blunt instruments were the most commonly used instruments.

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## Introduction

Violence is a worldwide phenomenon resulting in 1.6 million deaths per year, making it one of the top causes of mortality in the world. Violation-related deaths are more common in low- and middle-income countries. However, no country is entirely free of violence (Roberts, 2005).

Violence is defined as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, or deprivation" (WHO, 2015).

Physical, sexual, psychological, and negligence are the most common forms of violence. Family violence is violence between family members, whereas community violence is violence between people who may or may not know each other. Social, political, and economic issues are the root causes of violence (Stewart, 2002).

Coronavirus disease (COVID-19) is a new pandemic global health crisis caused by a newly identified coronavirus that appeared in Wuhan, China. It has since spread worldwide, killing hundreds of thousands of people (WHO 2021). According to the WHO Covid-19 Dashboard, there will be 35 million illnesses and over 1 million fatalities worldwide by October 2020 (WHO, 2021).

COVID-19 led to enormous and devastating changes in the daily lives of

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millions around the world. Many countries have implemented safety measures such as social distance, screening, halting aircraft, and lockdown to protect the public's health and prevent disease spread (Evans, 2020; Al-Samkari et al., 2020). Mandatory lockdown (quarantine) strongly reduces individuals' mobility, and all become isolated (Perez-Vincent, 2020). Furthermore, lockdown extends people's time at home and exposes them to new experiences, perhaps increasing their exposure to interpersonal violence. (Dugan et al., 1999).

From March 2020, the Egyptian government imposed a strict lockdown (quarantine) during designated periods, which was later extended (Evans, 2020).

The aim of the present study is to assess the impact of the COVID-19 pandemic on the pattern of violence among people in Menoufia governorate by examining the pattern of violence in cases arriving at the forensic medicine department at Menoufia University Hospitals in Egypt during the COVID-19 pandemic during the study period (April 1 to the end of June 2020) and during the same period of the previous year (April 1 to the end of June 2019), to assess the impact of this health crisis.

### **Material and Methods:**

#### **Material:**

The present study is conducted on people (of both sexes and different age groups) who arrived at the forensic medicine department at Menoufia University Hospitals, Egypt, to do a primary medico-legal report over the study period.

The patients in this study were divided into two groups based on the study time. The pre- COVID group: in the period between

April 1, 2019, and the end of June 2019, (pre-lockdown).

The after COVID or pandemic group: between April 1, 2020, and the end of June 2020 (during lockdown). The calculated sample size is 385 participants.

#### **Methods:**

The current study looked at various patient data from both study periods to see if there was a shift in violent patterns following COVID-19 and then compared it to data from the same time the prior year (2019). Socio-demographic data (age, sex, and residence) and data about the violence (type, cause, healing duration, time of arrival, causative instrument, and hospital admission, were collected directly from the primary medico-legal reports (database). All the data was compared, analyzed, and statistically analyzed.

#### **Ethical Considerations:**

Ethical approval was obtained from the ethical committee at Menoufia University Hospital. The code number is (NO. 6/2022 FORE).

#### **Statistical analysis:**

Data were fed to the computer and analyzed using IBM SPSS software version 20.0. (Armonk, NY: IBM Corp). The Kolmogorov- Smirnov was used to verify the normality of variables'; comparisons between groups for categorical variables were assessed using the Chi-square test (Fisher). Judged Significance of the obtained results was at the 5% level.

**Results:**

During the pre-COVID-19 pandemic research period, 275 individuals were brought to the forensic medicine department for a primary medico-legal report, with 60.7 percent being male. Three hundred and four people visited the forensic medical department for a primary medico-legal report during the COVID pandemic research period, with 74.3 percent of men and 25.7 percent of women. In both groups, males are more affected by violence, and the difference was statistically significant (P-value, 0.001) (Table 1).

Pre-Covid patients were predominantly young adults (66.9%), followed by middle-aged people (26.5%), while children and the

elderly were the least affected (3.3 percent each). Young adults were the most affected age group in the post- COVID group, accounting for 75.3 percent of cases, followed by middle age (16.1%), children (7.2%), and elderly patients (1.3%). There was a statistically significant difference between the groups of children, young adults, and middle-aged people (P- values 0.03, 0.02 and 0.002, respectively) (Table 1). The majority of patients in both groups (before and post-COVID) lived in rural areas (73.1 percent in the pre- COVID group and 69.4 percent in the COVID -19 group). The difference in residence between the two study groups was statistically non-significant (P-value: 0.33) (Table 1).

**Table (1):** Comparison between the two studied groups according to different parameters

	Pre-Covid-19 pandemic group (n = 275)	Covid-19 pandemic group (n = 304)	$\chi^2$	p
<b>Sex</b>				
Male	167 (60.7%)	226 (74.3%)	12.275*	<0.001*
Female	108 (39.3%)	78 (25.7%)		
<b>Age</b>				
Child	9 (3.3%)	22 (7.2%)	4.477*	0.034*
Young adult	184 (66.9%)	229 (75.3%)	5.005*	0.025*
Middle age	73 (26.5%)	49 (16.1%)	9.439*	0.002*
Elderly	9 (3.3%)	4 (1.3%)	2.519	0.112
<b>Residence</b>				
Rural	201 (73.1%)	211 (69.4%)	0.954	0.329
Urban	74 (26.9%)	93 (30.6%)		
<b>Time</b>				
Morning	41 (14.9%)	66 (21.7%)	4.434*	0.035*
Afternoon	68 (24.7%)	94 (30.9%)	2.749	0.097
Evening	84 (30.5%)	80 (26.3%)	1.272	0.259
Night	82 (29.8%)	64 (21.1%)	5.883*	0.015*
<b>Causative instrument</b>				
Blunt	238 (86.5%)	261 (85.9%)	0.058	0.810
Sharp	27 (9.8%)	41 (13.5%)	1.875	0.171
Firearm	2 (0.7%)	1 (0.3%)	0.444	<sup>FE</sup> p=0.606
Combined	8 (2.9%)	1 (0.3%)	0.444	<sup>FE</sup> p=0.606
<b>Etiology</b>				
Quarrel	205 (74.5%)	253 (83.2%)	6.578*	0.010*
RTA	57 (20.7%)	41 (13.5%)	5.383*	0.020*
Firearm	2 (0.7%)	1 (0.3%)	0.444	<sup>FE</sup> p=0.606
Fall from height	11 (4.0%)	9 (3.0%)	0.468	0.494

	Pre-Covid-19 pandemic group (n = 275)	Covid-19 pandemic group (n = 304)	$\chi^2$	P
<b>Admission</b>				
No	188 (68.4%)	213 (70.1%)	0.196	0.658
Yes	87 (31.6%)	91 (29.9%)		
<b>Duration</b>				
Simple	173 (62.9%)	220 (72.4%)	5.925*	0.015*
Dangerous	101 (36.7%)	79 (26.0%)	7.775*	0.005*
Fatal	1 (0.4%)	5 (1.6%)	2.311	<sup>FE</sup> p=0.220
<b>Type of wound</b>				
Abrasion	21 (7.6%)	30 (9.9%)	0.896	0.344
Cut wound	13 (4.7%)	16 (5.3%)	0.087	0.768
Combined	128 (46.5%)	161 (53.0%)	2.377	0.123
Contusion	82 (29.8%)	56 (18.4%)	10.331*	0.001*
Contused wound	31 (11.3%)	41 (13.5%)	0.650	0.420

$\chi^2$ : Chi square test, FE: Fisher Exact, RT: Road traffic accident, P: p-value for comparing between the studied groups, \*: Statistically significant at  $p \leq 0.05$ .

Concerning hospital arrival time, 30.5 percent of cases in the pre- COVID group arrived in the evening, 29.8% in the night, 24.7 percent in the afternoon, and 14.9 percent in the morning. Patients arriving in the afternoon made up 30.9 percent of all patients in the Covid-19 group, 26.3 percent in the evening, 21.7 percent in the morning, and 21.1 percent at night. People arrived significantly more in the morning during COVID-19 (P-value 0.04), while they arrived more at night in the pre-Covid19 (P-value 0.015) (Table 1).

Blunt instruments were the most commonly used causative instruments in violence in both the pre- and post-COVID groups (86.5% and 85.9%, respectively), followed by sharp instruments (9.8 percent in the pre-COVID group and 13.5 percent in the COVID group). In the pre-COVID group, 0.7 percent of incidents involved firearms, while 2.9 percent involved combined instruments. The COVID group equally used a gun (firearm) and combined instruments in 0.3% of cases. There are no significant differences between both groups regarding the used instrument (Table 1).

The most common etiology of violence was quarrels, which accounted for 74.5 percent of pre-COVID violence and 83.2 percent of post-COVID violence. Violence is caused by road traffic accidents (RTA) in 20.7 percent of the pre- COVID group and 13.5 percent of the COVID group. Falling from a great height (4 percent in the pre-COVID group and 3 percent in the COVID group), followed by firearms (0.7 percent in the pre-COVID and 0.3 percent in the COVID group) (Table 1 & Figure 1). Quarrels were significantly increased during the COVID period (P-value 0.01), while road traffic accidents were significantly more severe in the pre -COVID period (P-value 0.02).

Only 31.6 percent of pre-COVID patients needed to be admitted to the hospital, compared to 29.9% of COVID violence patients. The difference was statistically non-significant (P-value 0.66) (Table 1).

According to the legal wound classification, simple wounds (the wounds that healed in less than 20 days) were the commonest type as they accounted for 62.9% in the pre- COVID group, dangerous wounds (the wounds that healed in more than 20 days and/or left a permanent infirmity) were

36.7%, and fatal wounds were 0.4% in this group. In the COVID group, the simple type of wound represented 72.4%, the dangerous wounds were 26%, and the fatal type represented 1.6% of cases. Simple wounds

occurred significantly more frequently in the COVID group (P-value 0.01), whereas dangerous wounds occurred significantly more frequently in the pre-COVID group (P-value 0.005) (Table 1).

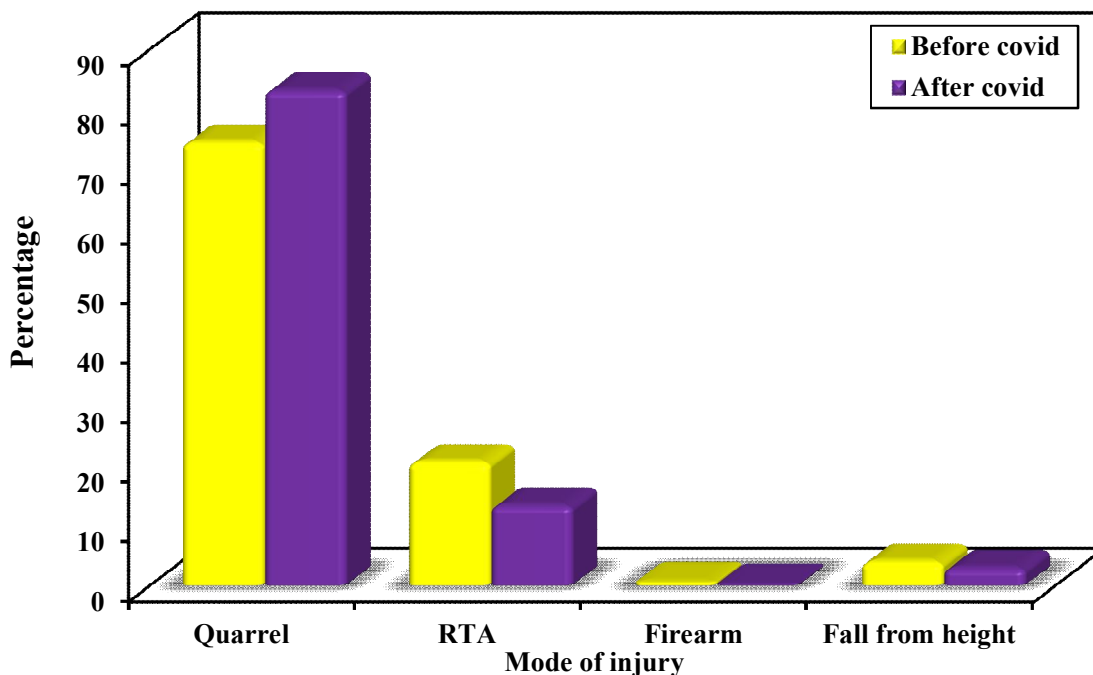


Fig. (1): Comparison between the two studied groups according to the etiology of injury.

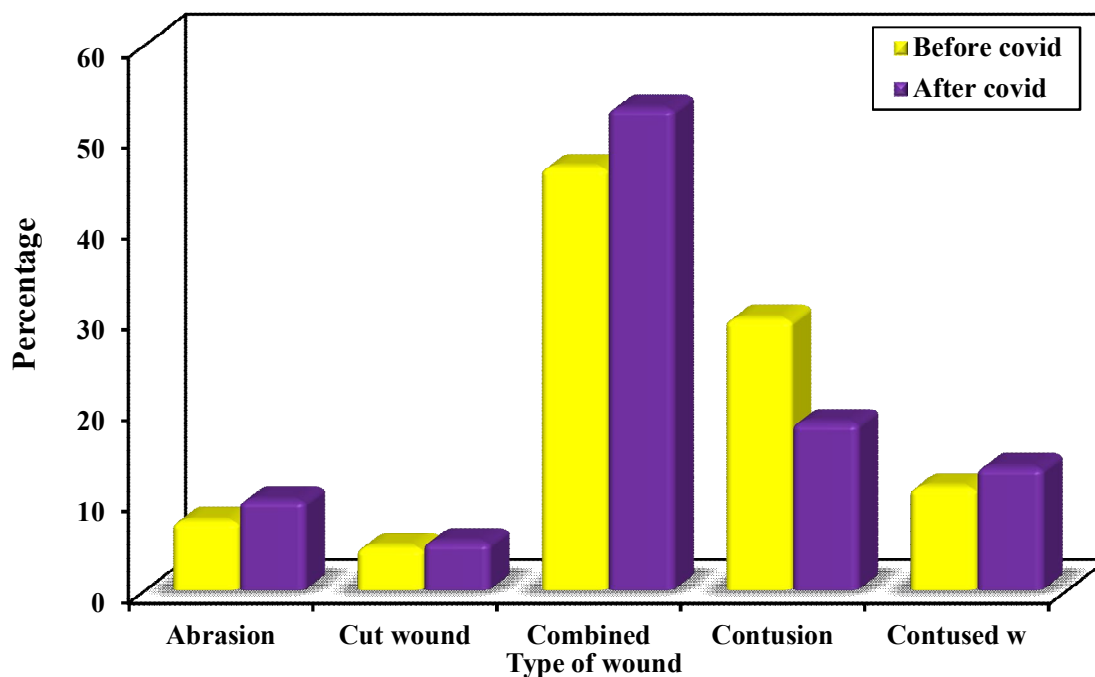
In the pre-COVID group, combination wounds accounted for 46.5 percent of cases; contusions accounted for 29.8%; contused wounds accounted for 11.3 percent; abrasions accounted for 7.6%; and cut wounds accounted for 4.7 percent. In the COVID group, combined injuries accounted for 53%, contusions (blood extravasation under intact skin caused by a blunt instrument) accounted for 18.4%, contused wounds (the blunt force opened the skin irregularly) accounted for

13.5%, abrasions accounted for 9.9%, and cut wounds accounted for only 5.3%.The number of counties was significantly higher in the pre-COVID group (P-value = 0.001) (Table 1 & Figure 2).Table (2) shows the relation between sex and etiology of injury; there was no statistical difference between male and female sex in the total sample, pre-COVID and POST-COVID groups regarding the etiology of injury (P values were 0.12, 0.19, and 0.05, respectively).

**Table (2):** Relation between sex of the studied groups and the etiology of injuries.

Etiology of injury	Sex					
	Total sample		Before Covid		After Covid	
	Male (n= 393)	Female (n= 186)	Male (n= 167)	Female (n= 108)	Male (n= 226)	Female (n= 78)
Quarrel	303(77.1%)	155(83.3%)	122 (73.1%)	83 (76.9%)	181 (80.1%)	72 (92.3%)
RTA	74 (18.8%)	24 (12.9%)	39 (23.4%)	18 (16.7%)	35 (15.5%)	6 (7.7%)
Firearm	1 (0.3%)	2 (1.1%)	0 (0.0%)	2 (1.9%)	1 (0.4%)	0 (0.0%)
Fall from height	15 (3.8%)	5 (2.7%)	6 (3.6%)	5 (4.6%)	9 (4.0%)	0 (0.0%)
$\chi^2(p)$	5.313 (0.128)		4.403 ( <sup>MC</sup> p=0.191)		6.999 ( <sup>MC</sup> p=0.051)	

$\chi^2$ : **Chi square test**, MC: Monte Carlo, p: p value for comparing between the studied groups, \*: Statistically significant at  $p \leq 0.05$



**Fig. (2):** Comparison between the two studied groups according to the wound type.

**Discussion**

The Covid-19 pandemic significantly impacted people's everyday lives and work routines. As a result, the prevalence of violence has changed. The current study

found a rise in the incidence of violence after the Covid-19 pandemic compared to the pre-Covid period when examining the incidence of violence among patients arriving at the Menoufia forensic medicine department (10.5 percent increase during the covid 19 pandemic). This may be due to the victims

and offenders spending so much time at home. It could be owing to Egypt's limited curfew period.

Hatchimonji et al. (2020) discovered that violence has increased in the United States during the Covid-19 epidemic, similar to our findings. In contrast, Chodos et al. (2021) reported an increase in the incidence of violence before the Covid-19, with a total of 1900 patients evaluated before the Covid-19 compared to 1837 patients in the same months of the post- Covid period, a 3.4 percent increase in the trauma volume.

In addition, according to Olding et al. in 2020, total trauma decreased by 35% during the Covid 19 period compared to the two preceding years. Compared to the Staunton P. study in 2021, violent activity during COVID-19 reduced by about half (45.3%) compared with the same period in 2019.

The current findings contrast with those of Gosangi et al. (2021), who observed that the overall number of patients who experienced violence during the COVID-19 epidemic dropped over the previous three years.

In the current study, the male gender was more abundant in both groups, with men in the post-COVID group being significantly higher than those in the pre-COVID group. This is because men are more prone to participating in outdoor activities. They also bring multiple new stresses, economic fragility, and employment losses associated with the COVID-19 pandemic. Staunton (2021) reported in his study that males were also more likely to be exposed to violence, accounting for 45 percent of incidents.

In the current study, young adults and the middle-aged were the most vulnerable to violent exposure in both groups; children and young adults were significantly higher in the Covid-19 group, while middle-aged patients were significantly higher in the pre-COVID

group. This could be due to restrictions on economic activity, school closures, and physical separation during COVID-19, all of which make children and adolescents more vulnerable to violence. In contrast to the current study's findings, Staunton et al. reported in 2021 that the average age of the patients was 55 years.

Because rural areas make up the majority of the Menoufia governorate, most patients in both study groups live in rural areas. In the current study, quarrels were the most common cause of injury, and they rose following the COVID-19 pandemic compared to the same time in 2019 (pre-COVID). This could be due to various new stresses, including increased discomfort, a wide range of negative psychological effects, increased contact time due to curfew, and economic insecurity. Staunton (2021) reported that the Majority of trauma referred to the Dublin - based center during Covid-19 appears to be home-based quarrels.

In the current study, road traffic accidents (RTA) were much higher in the pre-COVID period because people engaged in more outdoor activities before the Covid-19 pandemic. There's also the fact that during COVID-19, students don't have to attend school at their regular times, which helps to reduce traffic congestion.

Similarly, Sutherland et al. (2020) observed that the incidence of vehicle collisions had significantly decreased during the Covid-19 pandemic. Bäckström and Wladis (2022) also observed a decline in the number of RTA and falls during COVID-19.

Simple wounds in the present study were significantly higher in the post-COVID period because the most common injury causes were quarrels. The dangerous wounds were significantly higher in the pre- COVID group as RTA were more in this group.

Violence caused by blunt instruments was the most common in both groups of the present study, followed by sharp instruments. Bäckström and Wladis (2022) discovered that blunt trauma dominated the trauma picture in COVID pandemic time in Sweden. In 2020, Chodos et al. stated there was no specific change in blunt assault and RTA mechanisms in both the pre-and post-COVID periods and that firearm-related injuries increased significantly during Covid-19.

Regarding the hospital arrival time, in the pre-COVID group, cases significantly arrived at night. While in the post-COVID period, violent cases significantly arrived in the morning to avoid the curfew time in Egypt, usually at night.

### **Conclusion:**

The overall incidence of violence has increased during COVID-19. The vast majority of patients were male, middle-aged, or young adults from rural areas. During COVID-19, the most common violent etiology was quarrels; blunt instruments were the most commonly used instruments; and the majority of wounds were simple.

### **Recommendations:**

Further research on a more significant number of people is needed over a more extended period and in other parts of Egypt.

### **Conflict of interest:**

The authors declare that they have no conflicts of interest in this research.

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## نمط العنف خلال جائحة كوفيد- ١٩ عينة مصرية

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العنف ظاهرة عالمية تؤدي إلى وفاة حوالي ١,٦ مليون شخص سنويًا ، مما يجعله أحد الأسباب الرئيسية للوفيات حول العالم. أشكال العنف الجسدي والجنسي والنفسي والإهمال هي أكثر أشكال العنف شيوعًا. مرض فيروس كورونا (كوفيد -١٩) هو أزمة صحية عالمية جديدة بدأت في الصين ، و أسفر عن مقتل مئات الآلاف من الناس. أدى كوفيد ١٩ إلى تغييرات هائلة في الحياة اليومية للملايين حول العالم. تهدف هذه الدراسة إلى تقييم تأثير جائحة كورونا على نمط العنف بين الناس في محافظة المنوفية ، مصر.

بلغ عدد المرضى الذين وصلوا إلى قسم الطب الشرعي خلال فترة الدراسة قبل كوفيد ٢٧٥ مريضاً ، يمثل الذكور ٦٠,٧٪ منهم. أما خلال فترة انتشار جائحة كوفيد ، زاد العدد الي ٣٠٤ وكان ٧٤,٣ في المائة منهم من الذكور. في كلا المجموعتين (قبل كوفيد و كوفيد) ، جاء معظم المرضى من مناطق ريفية. كانت الأدوات غير الحادة هي الأدوات الأكثر استخدامًا في العنف. كانت المشاجرات هي السبب الأكثر شيوعًا للاصابات حيث حدث ٧٤,٥٪ من عنف ما قبل كوفيد أثناء المشاجرات ، بينما حدث ٨٣,٢٪ من عنف اثناء فيروس كورونا بسبب المشاجرات. كانت الجروح البسيطة هي الأكثر شيوعًا بنسبة ٦٢,٩٪ في مجموعة ما قبل كوفيد و ٧٢,٤٪ في مجموعة ما بعد كوفيد. كان المرضى في مجموعة ما قبل المرض وبعده في الغالب من الشباب ٦٦,٩٪ و ٧٥,٣٪ على التوالي. في مجموعة ما قبل كوفيد ، وصلت ٣٠,٥٪ من الحالات في المساء ، وفي مجموعة كوفيد ، شكلت الحالات التي وصلت بعد الظهر ٣٠,٩٪ من جميع الحالات.