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ORIGINAL RESEARCH

Impacts of Avoiding Emergency Department Visits During the COVID-19 Pandemic Among Patients With Acute Ischemic Heart Events

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Purpose: The COVID-19 pandemic significantly disrupted healthcare services as individuals avoided medical facilities to reduce the risk of infection. Despite Taiwan's effective public health measures and low SARS-CoV-2 case numbers in 2020, emergency department (ED) utilization patterns still changed, particularly for cases with acute ischemic heart events. This study investigated how the pandemic influenced medical avoidance in such cases and assessed potential collateral damage and adverse outcomes in an ED that managed limited COVID-19 instances during this period.

Methods: An observational cross-sectional study was conducted on adult ED visits at a tertiary hospital from January 2017 to December 2020, focusing on symptoms associated with acute ischemic heart events and complications. Data was retrospectively collected from electronic medical records (EMRs), including demographics, clinical characteristics, visit times, discharge times, disposition types, triage levels, International Classification of Diseases-9th Revision (ICD-9) and International Classification of Diseases-10th Revision (ICD-10)-based diagnoses, and vital signs.

Results: The study observed a 20–30% decline in adult ED visits in 2020, with a notable 29% decrease in semi-urgent (level 3) triage visits from February to May. The largest declines occurred among patients aged 80 and above, with reductions up to 44.4% in March. Acute ischemic heart cases decreased in early 2020 but rebounded by April and May. However, acute ischemic heart-related complications increased consistently throughout the year, particularly in January (61% vs 77%, p=0.02) and October (59% vs 77%, p=0.04).

Conclusion: These findings highlight the indirect impact of the pandemic on critical care access, even in regions with low prevalence. Medical avoidance reduced ED visits but increased the risk of complications of acute ischemic heart. Addressing barriers to timely care and implementing targeted response strategies are essential to ensure access to life-saving treatments and mitigate long-term adverse health consequences during public health crises.

Keywords: COVID-19, emergency care, medical avoidance, acute ischemic heart, acute myocardial infarction

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) rapidly spread worldwide starting in December 2019 as a public health emergency of international concern.[1] The coronavirus disease 2019 (COVID-19) pandemic placed immense pressure on health systems, especially during the first year, leading to overcrowded emergency departments (EDs), delays in patient assessment or treatment, and impediments to leaving the ED after treatment completion.[2] Overwhelmed EDs led to delayed treatment of patients and increased morbidity, mortality, medical errors, staff burnout, and cost of care for patients. The difficulty in accessing healthcare providers and hospitals was probably due to the diversion of resources focused on COVID-19 care. The COVID-19 pandemic also highlighted the impact on patient care

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and health outcomes for some acute diseases, including myocardial infarction, stroke, and pediatric conditions.[3,4] Suboptimal care has been identified as a possible risk factor for increased adverse outcomes.[3,4]

Taiwan is approximately 80 miles off mainland China's coast and was expected to have the second-highest number of cases of COVID-19 in early 2020.[5] The geographic proximity to China, frequent travel for the presidential election, and the upcoming Lunar New Year holiday made the Taiwanese government and population particularly cautious about emerging COVID-19. Heightened public anxiety warranted intensified disease prevention measures such as strict border control, early case identification and containment, and nonpharmaceutical interventions, including handwashing and mask wearing.[6] Therefore, limited cases of SARS-CoV-2 infection were observed in Taiwan in 2020; most were imported cases.[7]

Medical avoidance behaviors are disengagement that impedes an individual's health behavior or causes them to delay seeking healthcare, thus negatively influencing their well-being.[8] During the COVID-19 pandemic, there was indeed an increase in fear of being exposed to or contracting COVID-19 while receiving treatment in the hospital. This fear, in turn, led to a decrease in the utilization of medical services for many individuals. Additionally, subsequent public health measures such as social distancing, self-isolation, quarantining, and government restrictions on nonemergency medical visits contributed to medical avoidance behaviors. These factors, alongside the suspension of elective surgeries and outpatient services, exacerbated delays in diagnosing, managing, and surveillance of various health conditions, particularly vascular diseases, as observed during the pandemic (March 2020 to January 2021) in Southern Italy.[9] As a result, the observed number of admissions to emergency departments or outpatient visits for medical treatment dramatically decreased in the first few months of 2020, eg, a 57% drop in nonrespiratory emergency visits in Chile and a 40% drop in overall outpatient visits and 67% drop in outpatient visits per provider in the United States.[10] However, delayed treatment for some critical diseases may lead to increased morbidity and mortality with more severe consequences, especially for patients with myocardial infarction or other serious complications.[11] This study aimed to assess the effects of the COVID-19 pandemic on medical avoidance among emergency adult patients for acute ischemic heart events and investigate whether there was collateral damage and possible adverse outcomes in an ED that received limited COVID-19 cases in 2020.

Materials and Methods

Study Design and Setting

A cross-sectional observational study was conducted in the ED of a university hospital outfitted with 1320 beds, 124 of which are intensive care unit (ICU) beds. Adult ED patients from January 2017 to December 2020 were enrolled in our study. The ED data were retrospectively collected from electronic medical records (EMRs) and included demographics, clinical characteristics, time of visit, time of discharge, disposition type, triage level, International Classification of Diseases-9th and 10th Revisions (ICD-9 and ICD-10)-based diagnosis, vital signs during the presentation of the patient and the patient's medical condition. The modified Canadian Triage and Acuity Scale (CTAS) was employed as the triage tool (Taiwan Triage and Acuity Scale, TTAS).[12]

Nationwide confirmed COVID-19 cases were retrieved using statistics from the National Infectious Disease Statistics System and the Infectious Disease Statistics Query System of the Taiwan Centers for Disease Control. The numbers of confirmed COVID-19 cases in Taiwan, local and imported, from January to December 2020 were 19, 26, 330, 61, 9, 6, 29, 17, 25, 53, 120, and 128. Most were imported cases (11, 9, 303, 58, 9, 6, 29, 17, 25, 53, 120, and 127 from January to December). The peak month was March. Therefore, the period between February 1, 2020 (before the peak month) and May 31, 2020, during the COVID-19 outbreak year was defined as the initial epidemic period; the previous 3-year period from 2017 to 2019 was defined as the reference period.

Case Identification

Clinical diagnoses were based on International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM) and/or ICD-10-CM codes. The following clinical diagnoses that might be associated with AMI were separated into three different levels: chest pain and dyspnea (ICD-9-CM: 786.50, 786.09; ICD-10-CM: R07.9, R06.00, R06.09, R06.3, R06.83, R06.89), AMI without complications (ICD-9-CM: 410.XX; ICD-10-CM: I21.X), and AMI with any severe complications, such as acute pulmonary edema (ICD-9-CM: 518.4; ICD-10-CM: J81.0), cardiac arrest (ICD-

9-CM: 427.5; ICD-10-CM: I46.2, I46.8, I46.9), respiratory failure (CD-9-CM: 785.51; ICD-10-CM: R57.0) and cardiogenic shock (ICD-9-CM: 785.51; ICD-10-CM: R57.0).

Other primary underlying factors used for analysis included chronic kidney disease (CKD) and end-stage kidney disease (ICD-9-CM: 585; ICD-10-CM: N18), chronic obstructive pulmonary disease (COPD) (ICD-9-CM: 490–496; ICD-10-CM: J40-J47), diabetes mellitus (ICD-9-CM: 250; ICD-10-CM: E11), end-stage renal disease (ESRD) (ICD-9-CM: 585.6; ICD-10-CM: N18.6), ischemic heart disease (IHD) (ICD-9: 410–414; ICD-10: I20-I25), and neoplasms (ICD-9-CM: 140–239; ICD-10-CM: C00-97, D00-48).

Statistical Analysis

Graphs and histograms of the monthly changes and differences in adult ED visits during 2017–2020 are illustrated (2017-–2019: non-pandemic period; 2020: pandemic period). Frequencies and percentages are used to describe disposition type, sex, triage, and underlying diseases among adult ED patients. Pearson's chi-square test, Fisher's exact test, or Cochran–Mantel–Haenszel (CMH) tests were used to analyze the statistically significant differences in age, sex, months, symptoms that might be associated with coronary artery disease (chest pain), AMI, and complications (cardiac arrest, acute pulmonary edema, cardiogenic shock, and respiratory failure) between the COVID-19 pandemic (2020) and non-pandemic years (2017–2019). The covariates were age, sex, and calendar month. A two-tailed p-value <0.05 was considered significant. All analyses were conducted using SAS statistical software (version 9.4; SAS Institute, Cary, NC, USA).

Ethics Statement

All provisions of this study adhered to the regulations of the Declaration of Helsinki. Personal information was collected and anonymized, and patients were deidentified before analysis; therefore, the Institutional Review Board (IRB) waived the requirement for informed consent. The study protocols and data were reviewed and approved by the IRB (A-ER-110-219) of National Cheng Kung University Hospital in Tainan, Taiwan.

Results

The numbers of national SARS-CoV-2 cases and ED visits from 2017 to 2020 are illustrated in Figure 1. According to the Infectious Disease Statistics Query System of the Taiwan Centers for Disease Control, the total number of confirmed

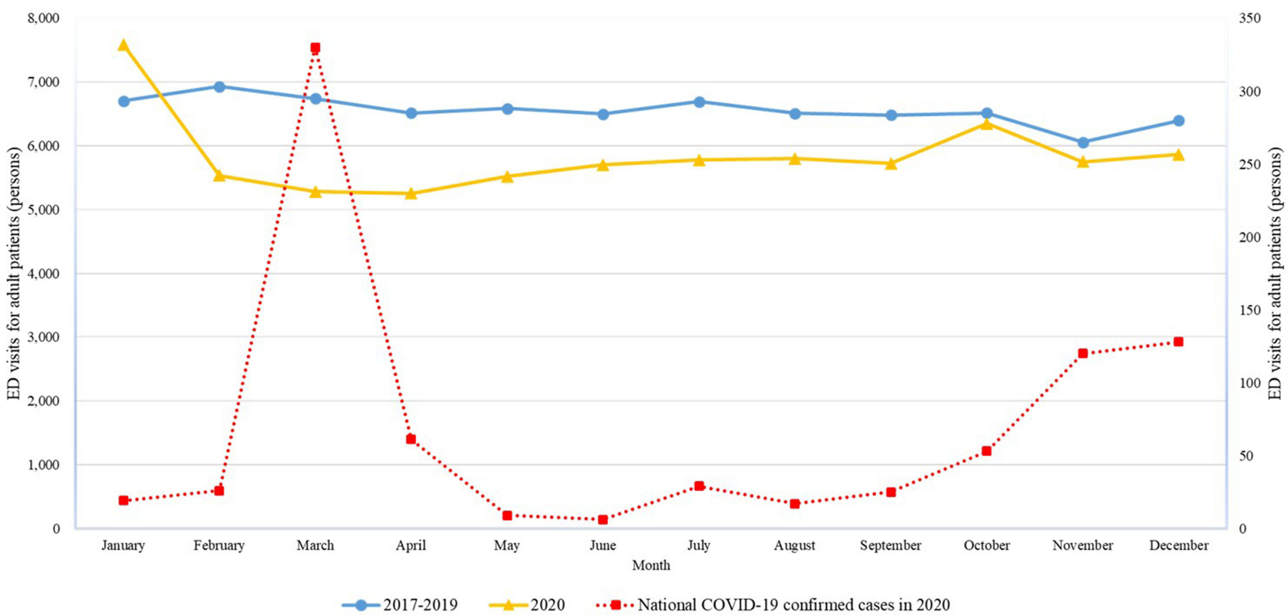

Figure 1 Adult ED visits from 2017 to 2020 versus monthly national confirmed SARS-CoV-2 cases. Left coordinate axis: ED patients; right coordinate axis: national confirmed SARS-CoV-2 cases.

COVID-19 cases in Tainan city, where the tertiary medical center in this study is located, remained relatively low during 2020 (January: 0, February: 1, March: 14, April: 1, May: 0, June: 0, July: 1, August: 0, September: 3, October: 7, November: 12, December: 2). The number of ED visits from February to December 2020 was lower than the corresponding months of the same period from 2017 to 2019.

Table 1 summarizes the demographic data of adult patients presenting to the ED of a medical center in southern Taiwan between 2017 and 2020. In the first year of COVID-19 pandemic (2020), the average age of ED patients was younger (52.6 ± 21.1) compared to the previous years (2019: 53.9 ± 21.1; 2018: 54.3 ± 21.2; 2017: 54.6 ± 21.4). Additionally, the proportion of triage level one patients in 2020 was slightly higher than in previous years (2020: 5.0%; 2019: 4.7%; 2018: 4.8%; 2017: 4.9%, respectively). In terms of comorbidities, the percentage of patients with IHD in 2020 was higher than in the prior 3 years (2020: 0.9%; 2019: 0.8%; 2018: 0.8%; 2017: 0.6%).

A detailed stratified analysis of sex, age, triage level, and underlying comorbidities for adult ED patients is presented in Table 2 and Figure 2. Compared to the corresponding months of the previous 3 years, ED visits dramatically dropped in February, March, April, and May 2020. In these months, the number of ED visits was significantly lower for both men and women compared to the three-year average (February: female: –22.8% vs male –17.2%; March: female: –24.4% vs male: –18.7%; April: female: –18.8% vs male: –20.1%; May: female: –18.3% vs male: –14.0%). The decrease in ED visits was more pronounced among older adults. For example, in February, the largest reduction in visits occurred in the ≥80 years age group (−31.2%), with a smaller reduction in the 18–39 years group (–10.9%, p<0.0001). Similar patterns were observed in March, April, and May, with older patients experiencing greater reductions in ED visits.

In terms of severity, the number of patients presenting triage level 3 decreased from February to May 2020 compared to the previous years. We also analyzed the number of ED patients with AMI. In February and March 2020, the number of AMI patients decreased compared to the same months in previous years (February: −10.9%, p=0.5008; March:

Table 1 Demographic Data of Adult ED Patients Between 2017 and 2020

	2017	2018	2019	2020	
No.	79,437	77,584	78,877	70,139	
Mean ± SD					
Age (years)	54.6 ± 21.4	54.3± 21.2	53.9±21.1	52.6 ± 21.1	<0.0001[a]
LOS (hr)	7.2 ± 11.1	7.8 ± 12.2	7.8 ± 12.6	7.8 ± 12.8	<0.0001[a]
Number (%)					
Sex					0.22[b]
Male	38449(48.4)	37,667(48.5)	38,083(48.3)	34,229(48.8)	
Triage level					<0.0001[b]
1	3879 (4.9)	3754 (4.8)	3682 (4.7)	3517 (5.0)	
2	12,162(15.3)	13,040(16.8)	12,434(15.8)	12,093(17.2)	
3	59,310(74.7)	57,032(73.5)	59,098(74.9)	50,716(72.3)	
Underlying comorbidities					
COPD	173 (0.2)	200 (0.3)	187 (0.2)	173 (0.2)	0.42[b]
DM	8727 (11.0)	8716 (11.2)	9303 (11.8)	8319 (11.9)	<0.0001[b]
ESRD and CKD	2970 (3.7)	3046 (3.9)	3204 (4.1)	3051 (4.3)	<0.0001[b]
IHD	510 (0.6)	595 (0.8)	592 (0.8)	613 (0.9)	<0.0001[b]
Liver cirrhosis	1349 (1.7)	1235 (1.6)	1114 (1.4)	914 (1.3)	<0.0001[b]
Neoplasms	214 (0.3)	258 (0.3)	297 (0.4)	361 (0.5)	<0.0001[b]
Pulmonary edema	1130 (1.4)	1311 (1.7)	1343 (1.7)	1224 (1.7)	<0.0001[b]
Admission type					
Ambulance	15330(19.3)	14,997(19.3)	14,157(17.9)	14,005(20.0)	<0.0001[b]
Disposition type					<0.0001[b]
Discharge	56099(70.6)	54,704(70.5)	56,218(71.3)	49,729(70.9)	
Hospitalization	19105(24.1)	18,397(23.7)	18,206(23.1)	17,396(24.8)	

Notes: [a]Kruskal–Wallis one-way analysis of variance by rank; [b]Pearson chi-square test.

Abbreviations: COPD, chronic obstructive pulmonary disease; DM, diabetes mellitus; ESRD, end-stage renal disease; IHD, ischemic heart disease; LOS, length of stay; SD, standard deviation.

Table 2 Changes in Adult ED Patients Between the COVID-19 Pandemic Period (2020) and the Previous 3 Years

Variables	2017–2019	2020	Changes in 2020[a]	p value
	Average Number (%) N1	N2 (%)	(N2-average N1)/N1	
Sex – February				0.019[b]
Male	3337 (48.2)	2764 (49.9)	−573 (−17.2%)	
Female	3593 (51.8)	2772 (50.1)	−821 (−22.8%)	
Sex – March				0.0185[b]
Male	3227 (47.9)	2624 (49.7)	−603 (−18.7%)	
Female	3514 (52.1)	2657 (50.3)	−857 (−24.4%)	
Sex – April				0.6104[b]
Male	3188 (48.9)	2548 (48.5)	−640 (−20.1%)	
Female	3330 (51.1)	2704 (51.5)	−626 (−18.8%)	
Sex – May				
Male	3179 (48.3)	2734 (49.5)	−445 (−14.0%)	0.0944[b]
Female	3407 (51.7)	2784 (50.5)	−623 (−18.3%)	
Triage level – February				<0.0001[c]
1 and 2	1352 (19.5)	1263 (22.8)	−89 (−6.6%)	
3	5233 (75.5)	3678 (66.4)	−1555 (−29.7%)	
Triage level – March				<0.0001[c]
1 and 2	1465 (21.7)	1089 (20.6)	−376 (−25.7%)	
3	4955 (73.5)	3478 (65.9)	−1477 (−29.8%)	
Triage level – April				<0.0001[c]
1 and 2	1326 (20.3)	1138 (21.7)	−188 (−14.2%)	
3	4850 (74.4)	3487 (66.4)	−1363 (−28.1%)	
Triage level – May				0.03[c]
1 and 2	1382 (21.0)	1266 (22.9)	−116 (−8.4%)	
3	4896 (74.3)	4011 (72.7)	−885 (−18.1%)	
AMI – February				0.5008[b]
Yes	55 (0.8)	49 (0.9)	−6 (−10.9%)	
AMI – March				0.8047[b]
Yes	53 (0.8)	40 (0.8)	−13 (−24.5%)	
AMI – April				0.0265[b]
Yes	42 (0.6)	49 (0.9)	7 (16.7%)	
AMI – May				0.1269[b]
Yes	43 (0.7)	47 (0.9)	4 (9.3%)	

Notes: [a]The number of ED visits in 2020 minus the average number of ED visits from 2017 to 2019 in the study hospital. [b]Pearson chi-square test; [c]Cochran–Mantel–Haenszel test.
Abbreviation: AMI, acute myocardial infarction.

−24.5%, p=0.8047). However, the number of AMI patients increased in April and May 2020 (April: +16.7%, p=0.0265; May +9.3%, p=0.1269).

A further analysis of AMI-associated symptoms and complications is shown in Figure 3 and Supplementary Table 1. In 2020, compared to previous years, a higher proportion of AMI patients presented with moderate-to-severe symptoms and complications across all months. Notably, the levels of complications in January, June, and October were significantly higher in 2020 (January: 61% vs 77%, p=0.02; June: 70% vs 50%, p=0.02; October: 77% vs 59%, p=0.04).

Key indicators for primary percutaneous coronary intervention (PCI) in adult ED patients with ST elevation myocardial infarction (STEMI) are assessed in Supplementary Table 1. The percentage of STEMI patients treated with PCI within 90 minutes increased in 2020, and the mean door to balloon (D2B) time was significantly shorter for emergency PCI patients in almost every month of 2020, with the exception of October.

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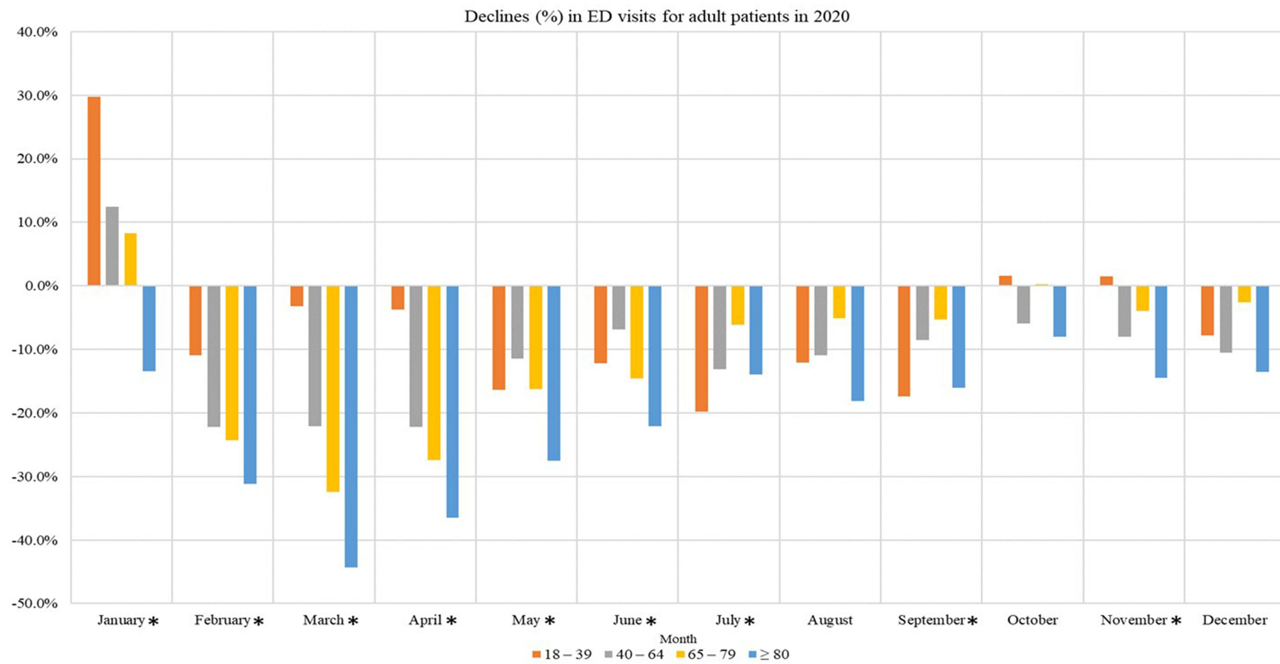

Figure 2 Changes in ED visits in 2020 compared to the average over the previous 3 years by age group. Changes (%) = (ED visits in 2020- average ED visits from 2017 to 2019)/(average ED visits from 2017 to 2019); *p<0.05 (chi square test).

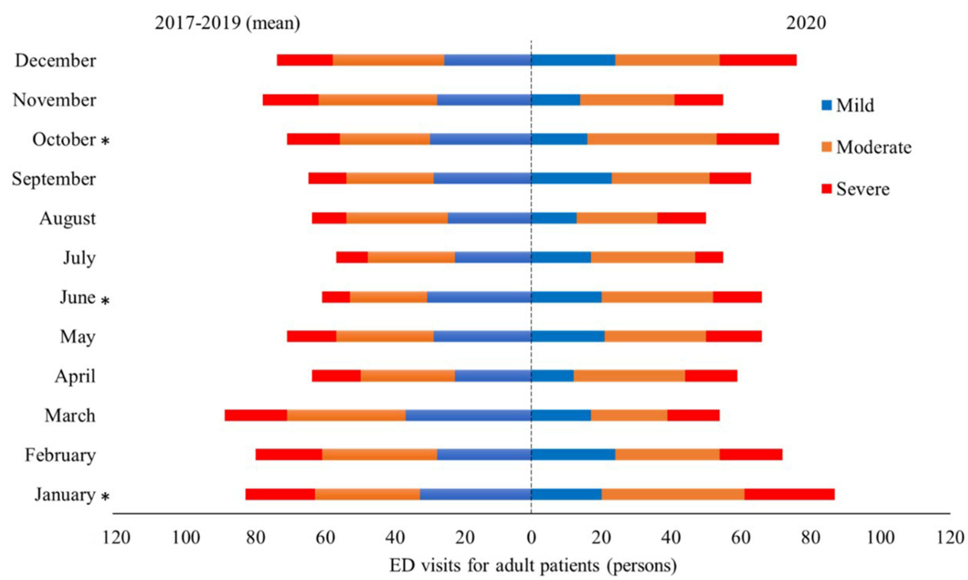

Figure 3 Comparison of different levels of AMI during 2020 and 2017–2019. Mild: dyspnea and chest pain; Moderate: AMI; Severe: AMI with any of the following complications: cardiac arrest, cardiogenic shock, acute pulmonary edema, respiratory failure in the ED; * p<0.05 (chi square).

Discussion

The COVID-19 pandemic has resulted in tremendous impacts on healthcare systems. Similar to previous influenza pandemic episodes, the services of healthcare systems were deeply influenced by SARS-CoV-2. During the COVID-19 pandemic, access to healthcare was also impeded by isolation, social distancing, restrictions on public transportation, and lost or reduced income and support. In addition, some healthcare services shifted to telemedicine or delayed nonurgent services.[13,14] Our study suggested a significant drop in the number of adult ED patients to 20–30% in 2020, especially in triage level three. The

AMI case number decreased in February (−10.9%) and March (−24.5%) but rebounded in April (+16.7%) and May (+9.3%). Furthermore, the levels of AMI-associated complications were much higher every month in 2020.

The decreased number of ED visits during the COVID-19 pandemic was associated with the avoidance of medical care. Patients' avoidance of healthcare was mainly due to a fear of contracting COVID-19. This phenomenon was reported in the United States,[15,16] Korea,[17] Britain,[18] and Australia,[19] regardless of COVID-19 incidence rates. Our study confirmed decreased adult ED patient visits in 2020. The national COVID-19 response administration agency (Central Epidemic Command Center, CECC) set on to implement a series of border controls in Taiwan on January 20, 2020.[20] There were national holidays for the lunar new year festival from January 23 to January 29, 2020. In the early phase of the COVID-19 pandemic, during 253 days from early April until December 2020, no cases originating in Taiwan were confirmed.[21] As of February 28, 2021, there had been 955 confirmed cases of COVID-19 in Taiwan, of which only 77 (8.1%) were locally acquired. The control measures included border control, case-based interventions for COVID-19 patients (case detection and isolation through sensitive surveillance systems, contact tracing of confirmed cases to facilitate early detection of secondary cases among close contacts, and 14-day quarantine of close contacts), and population-based measures for the general public, such as face masks, personal hygiene, and physical distancing. Therefore, Taiwan had one of the world's lowest incidence and mortality rates of COVID-19 in 2020.[7] Although Taiwan did not have a lockdown policy and the COVID-19 pandemic did not cause overwhelming healthcare system loading in 2020, patients still avoided visiting the ED and decreased emergency medical service utilization. This type of severe infectious disease has caused changes in the pattern and a decrease in the total number of medical visits, which were observed during the severe acute respiratory syndrome (SARS) outbreak in 2003.[22,23] In addition, patients with airway symptoms or fever received emergency medical services and treatment in a separate space and strategies. All ED patients were screened with SARS-CoV-2 nucleic acid amplification tests if they stayed for further treatment. Studies have suggested high mortality and comorbidities for elderly individuals who have SARS-CoV-2 infection. Therefore, elderly individuals avoided visiting the ED to contact COVID-19 patients. Our study proved that aged elderly individuals avoided visiting the ED to contact people who contracted SARS-CoV-2 infection.

AMI is a critical coronary artery disease that requires urgent medical care. Chest pain and dyspnea were common symptoms in the ED for acute coronary syndromes. Although most ED patients with dyspnea and chest tightness did not meet the criteria for acute coronary syndrome and were able to be discharged from the ED, patients with dyspnea and acute chest tightness were still advised to visit the ED before the COVID-19 pandemic. Our study suggested that adult patients who visited the ED for chest pain and dyspnea significantly decreased in 2020; however, patients who contracted AMI and severe AMI complications increased, especially in April and May. Longer time-to-presentation in patients with AMI is associated with higher mortality rates.[24,25] The behavior of medical avoidance delayed the necessary interventions for coronary artery diseases, and the effects could last for several months. Other countries also shared a similar phenomenon. In-hospital major adverse cardiac events (MACE), treatment delay, and decreased admission were significantly increased during the pandemic period in Turkey,[26] the Netherlands,[27] Austria,[28] Spain,[29] Belgium,[30] the United States,[31] and England.[32] The patient delay has been considered an avoidance of medical care due to lockdown measures, a general fear of contracting COVID-19, confusion of cardiac complaints with COVID-19-related symptoms, and restraint from burdening the hospitals suggested to be responsible for these delays.[27] Compared to these countries, Taiwan has extremely low COVID-19 patients; however, patients still chose to avoid ED visits for urgent conditions, resulting in disease progress and higher complications.

Improving crowding might improve the patient care quality in a previously busy tertiary ED. In areas with a high prevalence of COVID-19, delayed treatment of primary PCI was reported.[33,34] Our study implied that decreased patient numbers improved the care quality; healthcare professionals could achieve the goal of primary PCI. Delayed treatment of primary PCI was mainly associated with confirmed or excluded diagnoses of SARS-CoV-2 infection[33] and COVID-19 patients overwhelmingly in healthcare facilities. Compared to other countries, the low prevalence of COVID-19 in Taiwan in 2020 preserved medical resources for patients with acute coronary syndrome. Most STEMI patients received primary PCI in time if they arrived at the ED. However, preserving emergency medical services during the epidemic is challenging. Previous studies suggested a D2B alliance covering prehospital ambulances, network hospitals, and EKG diagnosis and prepared cardiac catheterization laboratories to shorten the waiting time of patients needing primary PCI.[35] Avoidance of medical care, prehospital transportation delay, and time to exclude infectious disease delayed the standard care of primary PCI. American

College of Cardiology suggested not delaying primary PCI by using some point-of-care diagnostic tools to confirm SARS-CoV-2 infection, personnel should wear suitable personal protective equipment to decrease the risk of contracting infection,[36] and identifying urgent patients with acute coronary syndrome earlier and providing standard AMI care in the face of a shortage of qualified staff and facilities remain challenging during the pandemic. On-site and telehealth Rapid Access Chest Pain Clinics (RACPCs) might be the solution to offer a rapid, comprehensive assessment of patients presenting with chest pain and effectively identify low-risk and high-risk patients of a fatal coronary event during the COVID-19 pandemic.[37,38] In the setting of COVID-19, a telehealth RACPC model with reduced use of additional testing facilitated social distancing and achieved clinical outcomes equivalent to face-to-face RACPC control.[38] These COVID-19 pandemic experiences have created new treatment choices for future epidemic challenges.

Our study has several strengths. First, we enrolled 4 years of ED visit data to illustrate adult patient visiting behaviors in the early COVID-19 pandemic period in a country with an extremely low COVID-19 prevalence rate. Our study suggested that medical avoidance behaviors existed everywhere, even in a country with a low COVID-19 prevalence rate and sufficient medical capacity. The phenomenon could last for several months, even in an epidemic stable condition. The delay could have great impacts in healthcare systems. Second, our data suggested that the imbalanced change in AMI-associated symptoms and complications highlights the importance of early AMI symptom identifications, treatment strategies, backup preparedness plans, and pathways for patients with high risks of developing acute coronary syndrome to eliminate the fear of visiting EDs.

The limitations of our study need to be addressed. First, this study was a cross-sectional observational study. Therefore, it did not provide evidence of a causal interference for subgroups or individuals. Second, generalizability may be an issue since only one tertiary teaching hospital was enrolled. However, this is the main AMI treatment center in a metropolitan city; our data covered patients of different ages and underlying conditions, which should reflect that avoidance behavior did have an impact on the prognosis of AMI patients.

In conclusion, the COVID-19 pandemic significantly impacted adult ED visits, even in settings with low disease prevalence. This study highlights the need for evidence-based implementation strategies to ensure uninterrupted access to urgent care for patients at risk of potential coronary artery disease and AMI-associated complications. Strengthening emergency medical services response plans to mitigate pandemic-related barriers can enhance timely critical care access and improve patient outcomes.

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Disclosure

All authors declare no conflicts of interest.

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