

Trends in obstetric emergency department attendance the first months of the coronavirus pandemic

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Abstract

Many medical disciplines reported a decline in patient attendance during the coronavirus pandemic. Our paper examines the effects that the coronavirus pandemic had on obstetric Emergency Department (ED) attendances in a tertiary maternity centre in the Republic of Ireland. A retrospective cross-sectional analysis was performed on administrative data regarding the number of obstetric patients attending the ED from January to July in 2019 and 2020. These numbers were compared to the number of reported coronavirus cases in Ireland as released in official government publications. A paired sample t-test was carried out to see if there was a significant difference in attendance in the obstetric ED in 2020 compared to in 2019. When COVID-19 cases peaked at 17,377 in April 2020, ED attendance showed their largest decline of 27%. The cumulative decline in ED attendances from January to July in 2019 to 2020 was 13%. However, this decline was not found to be statistically significant. In contrast to other disciplines,

the COVID-19 pandemic did not cause a decrease in obstetric ED attendance.

Introduction

The first case of COVID-19 in Ireland was confirmed on Saturday the 29th of February. Partial lockdown was put into place on the 6th of March and on the 27th of March a full lockdown was imposed nationwide restricting all non-essential activities.

The effect that these restrictions had on healthcare services were significant. Hospitals saw a dramatic change in the type of attendances. Non-essential clinics and elective surgeries were cancelled. Visiting restrictions were put in place. Emergency Departments (EDs) were still open, but patients were encouraged to attend only if necessary. This led to a decline in ED attendance rates.

In Irish public hospital EDs, this was reflected by 45.4% fewer attendances on the week ending on the 29th of March in comparison to the week ending on the 1st of March when the pandemic was just beginning.¹ One urban hospital in the United Kingdom (UK) found that ED attendances decreased by more than half (51.7%) during lockdown. During this period the rate of patients attending the ED that required admission rose from 17.3% to 24.0%, with 4% requiring direct admission to the intensive care unit (as compared to 1% prior to lockdown).²

A similar clinical picture was seen in North America. One cross-sectional study of 24 EDs across five states in North America found that the pandemic caused a decrease in visits ranging from 41.5% to 63.5%.³

Specialist EDs also saw diminished numbers. The number of paediatric ED attendances in two British hospitals decreased by 30.4% in March 2020.⁴ An Italian study encompassing 15 hospitals noted that the rate of patients attending with acute coronary syndrome decreased from 18.9 admissions per day in 2019 (incidence rate ratio 0.70; 95% CI 0.63-0.78; $p < 0.001$) to 13.3 admission per day in 2020.⁵

Worldwide, the coronavirus pandemic had far reaching effects on hospital attendance throughout many different specialties. This paper aims to examine the extent to which the obstetric ED was affected by increasing cases of COVID-19.

Materials and Methods

Study design, setting and population

Data was collected in a tertiary maternity hospital in Dublin in the Republic of Ireland. This hospital has a catchment area of 1 million people throughout 6 different counties. In 2019, care was provided to 10,200 mothers and 8,410 babies were delivered. A retrospective cross-sectional analysis of prospectively collected administrative data from the months of January to July in the years of 2019 and 2020 was per-

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formed. Obstetric patients of any gestation that attended the ED during their pregnancy were included. This information was compared to the monthly numbers of coronavirus cases as recorded by the Irish government in official daily briefings.^{6,7}

Variables and data sources

Anonymised administrative data on obstetric ED attendance in January to July 2019 and January to July 2020 was obtained. 21,985 attendances were analysed in total. This data contained information on the number of obstetric patients that attended the ED each month. Other patient variables were not included as part of this study.

Data analysis

To examine the differences between the two periods, we performed a paired sample t-test comparing ED attendances in 2019 to 2020. A p value of less than 0.05 was considered statistically significant.

Results

The catchment area covered by our hospital accounted for a significant proportion of cases of coronavirus. The total number of cases recorded in this area in the six month period observed was 16,727, which comprised of 66% of all cases recorded in the Republic of Ireland in that period (n=25,474, Table 1, Figure 1).

The data was collected from the hospital ED for the first six months of both 2019 and 2020 (January to June). The overall drop

in obstetric emergency department attendances from 2019 to 2020 was 1,557, a drop of 13% (Table 2). This is despite the numbers of babies >500g delivered in the months of January to July remaining stable at 3,949 in 2019 compared to 4,028 in 2020. Data was analysed to see whether the change in the number of people attending the hospital emergency department was statistically significant. Appendix 1 shows that there are no missing values in the data and all of the observations are valid. Test of normality was conducted to see whether the data was normally distributed or not. Appendix 2 shows that in 2019 $p > 0.05$ and in 2020 $p > 0.05$. This indicates that the data was normally distributed.

Figure 2 and Figure 3 shows that in the years 2019 and 2020 there are no outliers in the data. The sample size is small, but as the data is normally distributed and there are no significant outliers, we proceeded with the further inferential analysis. A paired sample t-test was carried out to see if there was a significant difference in attendance of the people in hospital emergency department in 2020 compared to in 2019.

Table 3 shows that in 2019, the average attendance ($M=1946.83, SD=37.10$) was greater than the average attendance in Year 2020 ($M=1717.33, SD=168.24$).

Table 4 shows that there is insignificant positive weak correlation between 2019 and 2020. $r = 0.266, p = 0.611$.

Table 5 shows the paired sample statistics. Attendance in 2020 compared with attendance in 2019 was statistically insignificant $t(5)=2.168, p=0.082$. Hence, we accept the null hypothesis and can conclude that there is no significant difference in people attending the emergency department in 2020 compared to 2019.

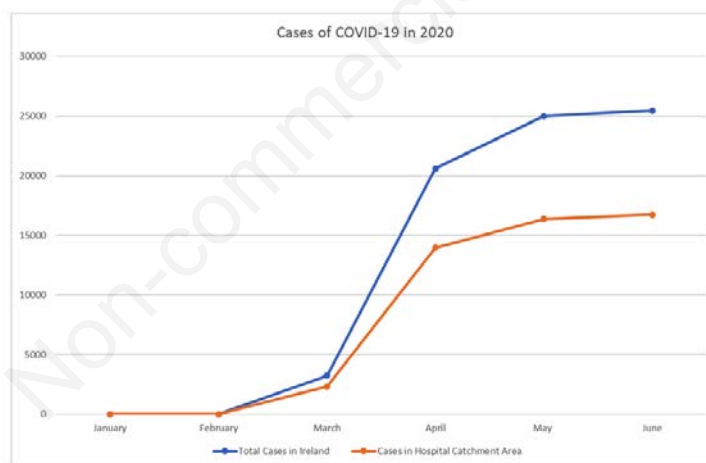


Figure 1. Officially reported COVID-19 cases in Ireland (2020).

Table 1. Officially reported COVID-19 cases (2020).

	January	February	March	April	May	June	Total
Cases in hospital catchment area	0	1	2328	11631	2423	344	16727
Total cases in Ireland	0	1	3234	17377	4378	484	25474

Table 2. Obstetric emergency department attendances from Jan-Jun 2019 vs. Jan-Jun 2020.

	January (%)	February (%)	March (%)	April (%)	May (%)	June (%)	Total (%)
2019	2049	1795	1985	1904	2013	1935	11861
2020	2159	1821	1507	1390	1678	1749	10,304
	+110 (+5.4)	+26 (+1.4)	-478 (-24.1)	-514 (-27)	-335 (-16.6)	-186 (-9.6)	1557 (13)

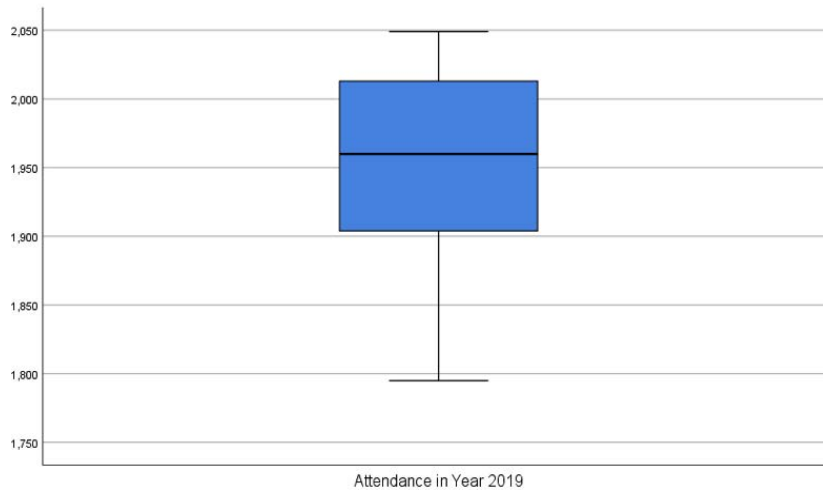


Figure 2. Attendance in year 2019.

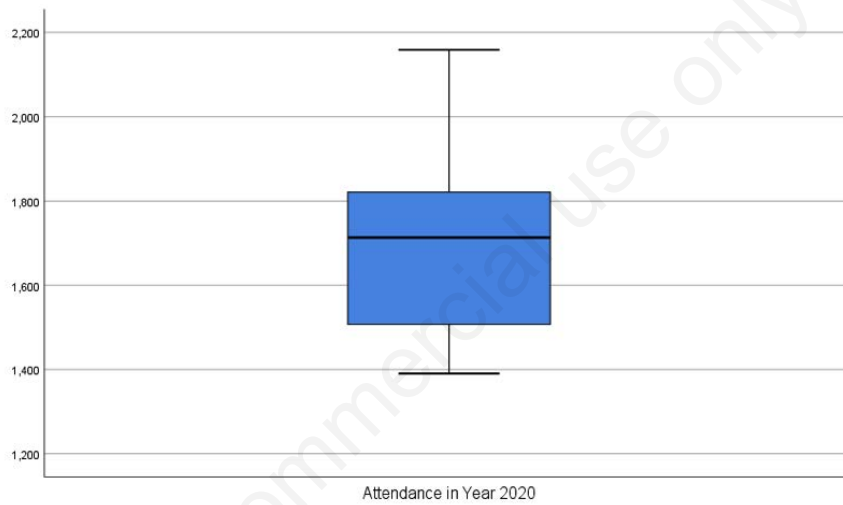


Figure 3. Attendance in year 2020.

Table 3. Paired samples statistics.

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Attendance in year 2019	1946.83	6	90.885	37.104
	Attendance in year 2020	1717.33	6	268.236	109.507

Table 4. Paired samples correlations.

		N	Correlation	Sig.
Pair 1	Attendance in year 2019 & Attendance in year 2020	6	0.266	0.611

Table 5. Paired samples test.

		Mean	Std. deviation	Paired differences Std. error mean	95% confidence interval of the difference			df	Sig. (2-tailed)
					Lower	Upper	t		
Pair 1	Attendance in year 2019 - attendance in Year 2020	229.500	259.328	105.870	-42.648	501.648	2.168	5	.082

Discussion

Our results indicate that the decreased number of obstetric patients attending the ED during the coronavirus pandemic was not statistically significant. The pandemic and its associated lockdown did not impact our obstetric ED to the extent that other specialties have been affected.

A concern associated with pandemic situations is that patients with valid concerns may be discouraged from attending the ED due to their fear of contracting the virus. During the coronavirus pandemic, general emergency departments in Ireland reported a decline of 27% in cases classified as very urgent/immediate. Less urgent attendances were also found to have declined by 32%.¹ If these numbers were replicated in our obstetric ED, this would likely impact maternofoetal health in a significant way.

Poor antenatal attenders of maternity services have a higher rate of perinatal mortality. They also exhibit higher proportions of birth weights <2500g, babies born before 37 weeks gestation and babies requiring admission into the special care baby unit (SCBU).⁸ Other adverse pregnancy outcomes associated with poor antenatal attendance include chorioamnionitis, placental abruption and neonatal death.⁹

Our hospital took steps to educate obstetric patients about potential red flag symptoms that require hospital attendance and create clear pathways for women to attend hospital. A telephone hotline was staffed by healthcare professionals 24/7 to provide advice to those who were unsure if their symptoms warranted hospital attendance. Rapid triage and assessment to minimise time in hospital as well as adequate social distancing measures were also implemented to minimise the risk of exposure to coronavirus for those patients that needed to attend hospital. These steps may have played a role in ensuring that obstetric ED attendances did not decrease significantly.

One would expect that the pandemic would decrease non-urgent attendances, as patients with less urgent complaints would be deterred due to the fear of contracting the virus. Around 15% of attendances to general EDs are for non-urgent reasons.¹⁰ The numbers of non-urgent attendances appear to be higher in the obstetric population, with up to 84% of pregnant women receiving emergency care at some point during their pregnancy and 35.6% of these patients having at least one visit to the ED that is classified as non-urgent.¹¹

Without examining the type of presentations that caused people to attend the ED, as well as the severity of these presentations, it is impossible to say whether non-urgent ED attendances decreased during the pandemic. This highlights a limitation of this study. The absence of data on the reasons why patients attended the ED in the periods before and after the pandemic makes it difficult to comment on whether or not the ratio of urgent to non-urgent attendances changed or remained the same.

Conclusions

Despite a decreased attendance in response to the COVID-19

pandemic in many disciplines throughout the world, this was not replicated in our obstetric ED. Pathways put in place by our hospital created an effective route through which those with valid concerns were able to attend and this may have helped to prevent a significant decline. However, examining the reasons for ED attendance would provide valuable information as to whether the demographic of those attending changed during the pandemic.

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