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The wider implications of the COVID-19 pandemic: Assessing the impact of accident and emergency use for frequent attenders

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ABSTRACT

Introduction: Emergency departments have seen altered patterns of attendance since the beginning of the COVID-19 pandemic, with reductions in the number of attendances for non-COVID-19 – patients. We assessed the use of the emergency department by frequent attenders during the height of the COVID-19 pandemic and explored any changes in emergency department attendance by this group.

Methods: As part of ongoing improvement work, we utilised a cohort design to evaluate the difference in patterns of attendance for the frequent attender group in a single centre. We created a 2019 'top attender' cohort and a similar cohort for 2020. We compared admission patterns between the two time periods in order to understand the impact of the COVID-19 pandemic on this group.

Results: Both groups were predominately male. Mental health and substance misuse use problems were common across both cohorts. The majority of patients lived in a socio-economically deprived areas. The median number emergency department visits in 2019, for the top attender cohort was 6 (IQR: 4–9) vs 4 (IQR: 2–7) for the top attender cohort of 2020 ($p < .0013$).

Conclusion: This single centre evaluation has shown a significant reduction in emergency department attendances for a frequent attender cohort in a single centre. Future work should investigate the longer-term impact which the COVID-19 pandemic has had on this patient group.

1. Introduction

Coronavirus disease 2019 (COVID-19) is an infectious respiratory disease caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). As of 14th of August 2020, there have been over 20 million cases of the virus internationally, resulting in almost 800,000 deaths [1].

Emergency departments have seen altered patterns of attendance since the beginning of this pandemic, with reductions in the number of attendances for non-COVID-19 - patients [2]. It is unclear how this has affected those patients who utilise emergency services frequently. So-called 'frequent attenders' have been defined as those patients who attend a health care facility repeatedly [3]. While there remains no clear definition on the exact number of attendances which defines 'frequent', it is widely recognised that those who attend repeatedly have poorer outcomes [4]. This is an important issue for the nursing workforce, as these patients interact most frequently with nursing staff in the emergency setting. Emergency Department nurses' experiences and perception of attendees with issues experienced by frequent attenders highlight - increased time burden, workload and required resource when caring for this patient group [5–7].

We therefore sought to assess the use of the emergency department by frequent attenders during the height of the COVID-19 pandemic and explore any changes in emergency department attendance by this group.

2. Methods

As part of ongoing service improvement work, we identified the top 80 frequent attenders to an inner-city hospital in Scotland in 2019 (*2019 cohort*). We defined the 'top 80′ as the 80 patients with the greatest

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number of attendances at the emergency department during 2019. The emergency department had 99,436 attendances during this timeframe; this top 80 group represented 1940 of these attendances (approximately 2% of all emergency department visits) [8].

We created a second cohort, of the top 80 frequent attenders between October 2019 and July 2020 (*2020 cohort*). This group represented the 80 patients with the highest number of attendances to the emergency department during this timeframe. To assess differences in attendance during the height of the pandemic (1st of March-31st of May) we compared attendances in the top 80 frequent attenders between 2019 and 2020. The NHS Greater Glasgow and Clyde Caldicott Guardian approved this study (February 25th, 2020). As this was an evaluation of routine care, there was not Patient or Public Involvement in the design, conduct, or reporting of this evaluation.

Demographics, including age, gender, comorbidities, and socio-economic status were identified via electronic medical records. Postcode was recorded on the first admission. Socio-economic status was derived using the Scottish Index of Multiple Deprivation (SIMD), the Scottish Government's tool for identifying socio-economic demographics. It is broken into quintiles, with one representing the most deprived [9]. Individuals experiencing homelessness were identified by a non-fixed abode or homeless postcode, and their primary care physician postcode determined SIMD for these patients. Mental health concerns, alcohol and substance misuse status were identified from health records (these were assessed separately from physical issues). All data were anonymised after extraction.

Statistical analysis was performed using R (Version 3.63). We utilised a Mann-Whitney *U* test to explore differences across the two cohorts. Further analysis examined the change in attendance of the 2019 cohort using the Wilcoxon signed-rank test.

3. Results

Demographics of the two frequent attender cohorts from 2019 and 2020 are shown in Table 1. Both groups were predominately male; mental health and substance misuse use problems were common. The majority of patients lived in a socio-economically deprived area (SIMD, Median 1 (IQR 1–2)).

The 2019 top attender cohort (80 patient) were found to be 62.5% male with a median age of 43 years (IQR: 30–54) with all patients being from areas of socio-economic deprivation; 25% were homeless. Mental health issues affected this cohort with 68.8% having issues including suicidal ideation, self-harm, personality disorders and depression. Alcohol misuse affected 75% and substance misuse 41.3%, indicating broad addictions issues within this cohort (Table 1).

In the 2020 top attender cohort , 65% were male, the median age was 40 years (IQR: 29.3–54) and all patients came from socio-economically deprived areas. Homelessness affected 37.5% (Table 1). Addictions issues were prevalent, with almost 60% experiencing ongoing alcohol misuse and 42.5% substance misuse. Over 70% had ongoing mental health issues, including self-harm, suicidal ideation, depression, and personality disorders.

Table 1
Demographics of the two FA cohorts analysed.

Demographic	2019 Cohort (n = 80)	2020 Cohort (n = 80)
Age, Years (Median, IQR)	43 (30–54)	40 (29.3–54)
Gender, Male (%)	50 (62.5)	52 (65)
SIMD Quintile (Median, IQR)	1 (1–2)	1 (1–2)
Homeless status (%)	20 (25)	30 (37.5)
Alcohol Misuse (%)	60 (75)	47 (58.75)
Substance Misuse (%)	33(41.3)	34 (42.5)
Smoking	40(50)	44 (55)
Mental Health Problems	55(68.8)	58 (72.5)
Co-morbidities:		
Cardiac	13 (16.3)	12 (15)
Renal	2 (2.5)	1 (1.25)
Pulmonary	25 (31.3)	25 (31.3)
Neurological	32 (40)	21 (26.25)
Hepatic	13(16.3)	18 (22.5)
Pancreatic	12(15)	6 (7.5)
Gastrointestinal	24(30)	31 (38.75)
Vascular	9 (11.3)	8 (10)

3.1. Emergency department visits

The median number emergency department visits in 2019 (March-May) for the top 80 frequent attender cohort was 6 (IQR: 4–9) vs 4 (IQR: 2–7) for the top 80 cohort of 2020 (March-May). This difference in median attendances was significant ($p < .0013$) (Fig. 1).

Of the 2019 top attender cohort, 46 of these patients presented to the emergency department between 1st of March 2020 and May 31st 2020. Comparing their attendances for the period 1st of March to May 31st in both 2019 and 2020, there was a reduction in attendances from 552 (2019) to 166 (2020) for the three-month period. The median number of attendances reduced from 6 (IQR: 3.25–8) in 2019 to 2 (IQR: 2–4.75) in 2020 ($p < .001$) (Fig. 2). Of the 80 patients in the 2019 cohort 10 (12.5%) had died by, and a further 22 had no attendances between, the 1st of March 2020 and 31st May 2020. In March 2020, 2 patients died of non– COVID-19 related illnesses and had no attendances to the emergency department.

4. Discussion

This evaluation has revealed that emergency department visits for frequent attenders in one hospital have decreased during the COVID-19 pandemic. This is consistent with other research demonstrating a reduction in emergency department attendance during the lockdown period internationally [10]. There may be several mechanisms for this reduction including the necessary, proactive approach to homelessness which was undertaken by the local authority during the pandemic to reduce further spread. Patients may have also found alternative services to support ongoing health needs. Further investigation and research is required to understand what services patients did and did not interact with during the COVID-19 pandemic.

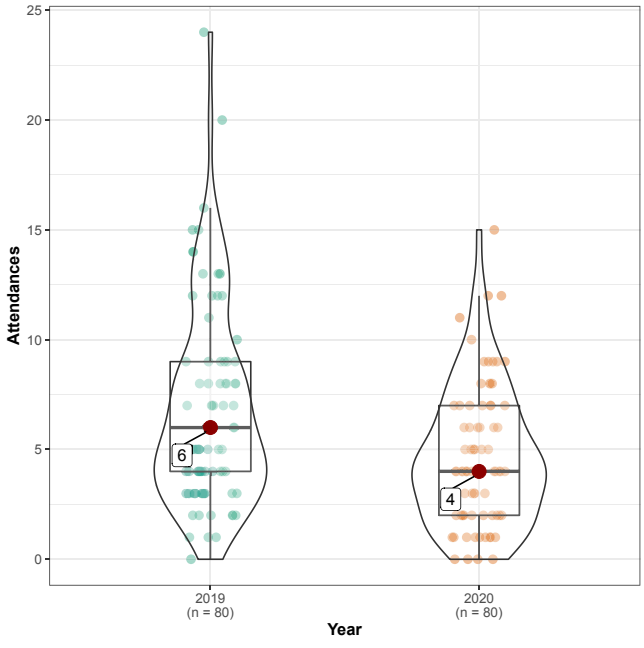

Fig. 1. Distribution of the number of attendances, alongside the median (2019 cohort vs 2020 cohort).

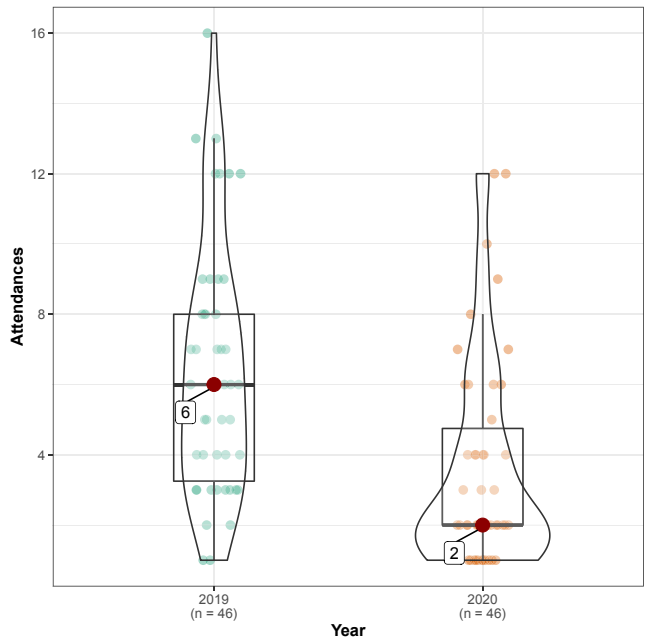

Fig. 2. Distribution of the number of attendances of the 2019 cohort in 2019 and 2020, alongside the median.

The patients examined in this evaluation have similar demographics to other previously described frequent attender cohorts, with high rates of socio-economic deprivation and mental health problems [11]. As such, patients with chronic conditions, especially those with mental health problems, may have seen a deterioration in their health during the COVID-19 pandemic. Due to the socio-economic status of this group, this may be another route by which health inequalities have been exacerbated during the COVID-19 pandemic [12]. Careful attention should be paid to this group in order to understand their experiences of pandemic care. Future research must also examine why patients did not attend and understand if other community services were utilised to support care. Crucial work is also needed outwith the pandemic, to understand how we improve mental health care overall, and how we can help people live independently, in the community. Nurses are ideally placed to undertake this work, as they are the staff group which interact most frequently with this vulnerable group of patients.

This works contributes to a growing international evidence base around the impact of COVID-19 on emergency services. Limitations of this work include its single centre nature. We have also not examined how other emergency services interacted with this group. For example, we did not explore how the ambulance service and other community services interacted with this cohort.

In conclusion, this single centre evaluation has shown a significant reduction in emergency department attendances for a group of known frequent attenders. Future work should investigate the longer-term impact which the COVID-19 pandemic has had on this patient group and the processes of care utilised throughout the pandemic period.

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Author contributions

DK and JM conceived and designed the study. JM obtained research funding. JM and DM supervised the conduct of the data collection. AL and MS provided statistical advice on study design and analysed the data; DK, MS and JM drafted the manuscript, and all authors contributed substantially to its revision. DK takes responsibility for the paper as a whole.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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