


# Deprivation and SARS-CoV-2 in Obstetric Patients

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## Introduction

The UK Obstetric Surveillance System (UKOSS) has reported on risk factors for admission to hospital amongst obstetric patients with SARS -CoV-2, however, it did not evaluate deprivation as a risk factor. Deprivation is a recognised risk factor for mortality from COVID-19 amongst the general population. We, therefore, investigated the demographics of obstetric patients diagnosed with SARS-CoV-2 within our health board, NHS Greater Glasgow & Clyde (NHS GGC).

## Methods

Ethical approval was waived by the West of Scotland Research Ethics Service, and Caldicott Guardian approval obtained. Details of all obstetric patients diagnosed with SARS-CoV-2 using reverse RT-PCR assay in NHS GGC were obtained from regional infection surveillance reports and local obstetric unit reports. Patient data were obtained using electronic patient record systems (Clinical Portal, NHS Scotland / Badgernet, Clevermed) and were de-identified prior to analysis. Ethnicity was classified using 2011 census categories.[3] Residential area deprivation was classified using The Scottish Index for Multiple Deprivation (SIMD), with quintile 1 representing the most deprived and quintile 10 representing the least deprived.[4] R version 4.0.3 (R Foundation for Statistical Computing) was used to perform all analyses.

## Results

From 16/03/2020 to 18/12/2020, 97 pregnant or recently pregnant patients (within 6 weeks post-partum) tested positive for SARS-CoV-2. Demographics are shown in Table 1 and comparison between those in the lowest and highest SIMD quintiles is shown in Table 2. Those from a black or ethnic minority background accounted for 31.9% of positive test results and 50% of admissions to critical care.

| SIMD Quintile | Positive SARS-CoV-2 test (n=97) | Admitted to hospital with COVID-19 (n=43) | Admitted to Critical Care with COVID-19 (n=8) |
|---|---|---|---|
| 1 (Most Deprived) | 40 (41.2%) | 22 (51.2%) | 6 (75%) |
| 5 (Least Deprived) | 14 (14.4%) | 7 (16.2%) | 1 (12.5%) |

Table 2: Comparison between most and least deprived areas

## Discussion

In this cohort of patients, mothers from socioeconomically disadvantaged areas accounted for a higher proportion of SARS -CoV-2 positive cases (and hospital / critical care admissions) than those from more affluent areas. This is, to our knowledge, the first study to investigate this association in obstetric patients. The relationship demonstrated between ethnicity, deprivation and SARS-CoV-2 requires further investigation and may have implications for future resource allocation and service planning.

| Characteristic | Study population n=97 |
|---|---|
| **Age; years** | 30 (27-33 [20-42]) |
| **Booking weight; kg** | 71 (62-85 [40-132]) |
| **Booking BMI; kg/m$^2$** | 28.0 (23.5-31.3 [16.4-51.0]) |
| **Current smoker; number** | 4 (4.1%) |
| **Co-morbidities** | |
| **Asthma** | 6 (6.2%) |
| **Pre-eclampsia** | 5 (5.2%) |
| **Diabetes Mellitus** | 3 (3.1%) |
| **Gestational Diabetes Mellitus** | 9 (9.3%) |
| **Gestation at SARS-CoV-2 diagnosis; weeks** | 28 (18-34 [1-41]) |
| **Pregnancy outcome** | |
| **Ongoing pregnancy** | 57 (58.8%) |
| **Completed pregnancy** | 40 (41.2%) |
| **Gestation at end pregnancy; weeks** | 37 (35-39 [11-40]) |

Table 1 Demographics of obstetric patients testing positive for SARS-CoV-2 within NHS Greater Glasgow and Clyde. Values are median (IQR [range]) or number (proportion) as appropriate.

## References

1.Knight M, Bunch K, Vousden N et al. Characteristics and outcomes of pregnant women admitted to hospital with confirmed SARS-CoV-2 infection in UK: national population based cohort study. BMJ 2020;369:m2107

2. Office for National Statistics. Deaths involving covid-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 31 May 2020. 12 June 2020. www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand31may2020.

3. Patient identification and demographic information. Edinburgh: NHS National Services Scotland; 2019.

4.Scottish Index of Multiple Deprivation. Edinburgh: Scottish Government; 2016.