

Seasonal Variation in Severe Maternal Morbidity: An Institutional Experience

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Dear Editor,

The seasonal variation in medical conditions has been noted in many areas of medicine, including in pregnancy.¹ It has been demonstrated that hypertensive disorders of pregnancy appear to have a higher likelihood of occurring in pregnancies that have a summer conception in the Northern Hemisphere¹; however higher rates have also been found through the winter months.² We aimed to examine if there seasonal variations of Severe Maternal Morbidity (SMM) existed in our population.

We conducted a retrospective review of all SMM over a seven year period (January 2013 to December 2019) in a tertiary level maternity hospital with circa 8500 births per year in the Republic of Ireland. Descriptive statistics were initially performed, and a consistent peak in SMM rates was identified. This data was further interrogated to examine patterns in the incidence of SMM.

During the study period, there were 59048 births, and 71107 maternities, with a SMM rate range of 6.1 to 13 per 1000 maternities. When this was examined on a monthly basis, a peak in SMM was noted consistently in August annually (falling two standard deviations above the mean). There were no differences between maternal age (31.8 years v 32.5 years) and body mass index (26.09 kg/m² v 26.5 kg/m²) when the peak month (August) SMMs were compared to other months or the overall numbers. This peak could not be accounted for by a higher birth rate, with August overall being the 4th busiest month of the year annually (715 births in 2020, within one standard deviation of the mean).

Examining those women who had an SMM in August, they are more likely to be of non-Irish origin (41.8% vs 61.2%, $P=0.039$). Women experiencing a SMM were more likely to be in the third trimester or the postnatal period. The majority ($n=55$; 58.2%) were less than 37 weeks gestation. There was a higher likelihood of having a hypertensive disorder of pregnancy meeting the criteria for a SMM in August (60.0% vs 45.0%, $p<0.034$) than at other points of the year, which was more statistically significant if the conditions of HELLP (haemolysis, Elevated Liver Enzymes and Low Platelets) and eclampsia were excluded.

Through this analysis, we identified a peak in SMM rates annually each August, which is independent of age, parity, body mass index and mode of delivery. We also identify that there is a predilection for hypertensive disorders of pregnancy in this group. Our data contributes to the conflicting results elsewhere internationally.³ Further work should be performed to further analyse these findings, but this information could also be crucial to inform staffing levels particularly with a peak in activity during a time of the year where staffing levels may be reduced.

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