Clarifying the 'weekend effect'

A study on the association between the day on which a woman gives birth and obstetric outcomes made headlines in 2015. As some of the media coverage could cause anxiety, the authors have offered here to explain what the paper did and did not say.

In November 2015, a study on the association between day of delivery and obstetric outcomes caught the headlines (Palmer et al, 2015). There is a risk that some of the more shockingly worded headlines could create unnecessary anxiety. Recognising this, the authors would like to clarify what the paper did and did not say, which will hopefully help midwives to understand the research and, if necessary, explain the implications to pregnant women and their families.

The study was based on 2 years of NHS data (up to March 2012) covering some 1.3 million births. We looked to see whether there was an association between day of delivery—in particular, weekday versus weekend—and outcomes, namely perinatal mortality and (for both infant and mother) infections, emergency readmissions, and injuries. We used analytical techniques to control for differences in the complexity of each birth where data were available, such as delivery method, birth weight, gestational age and maternal age. In the paper, we also set out the key limitations of the approach, including incomplete data on case mix and difficulties in categorising the births by day.

In terms of main findings, the analysis suggested performance across four of the seven measures was significantly worse for women admitted, and babies born, at weekends (*Table 1*). However, in light of the limitations, we concluded that further research is needed to investigate the possible effect of unmeasured differences in case mix and to explore the nature of any causal relationship.

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There was considerable media coverage following the publication of the paper in the *BMJ*, with some attention-grabbing headlines such as 'Betrayal of our babies as weekend births puts hundreds of mums and newborns at risk' (Gregory, 2015). While we hope that our paper will contribute to improved understanding, over time, of differences in performance at the weekend, we recognise that the way the findings were reported may cause undue anxiety. It is, therefore, worth highlighting that:

- We did not recommend that the findings influence women's choices
- The analysis also shows that outcomes for the majority of women are generally good, with the average complication rate across the seven indicators ranging from 0.2–3% and, moreover, not all of the complications are avoidable
- The paper is based on data that are around 4 years old (albeit the latest available at the time of analysis) so the situation may have changed.

The paper was published at a time at which the 'weekend effect' was particularly politically sensitive. We did seek to investigate the effect of consultant presence (the only staff group for which data were available), but found no consistent association. We did not investigate the effect of junior doctor or midwifery staffing. **BJM**

Gregory A (2015) Betrayal of our babies as weekend births puts hundreds of mums and newborns at risk. http://tinyurl.com/qezuejw (accessed 22 March 2016)

Palmer WL, Bottle A, Aylin P (2015) Association between day of delivery and obstetric outcomes: observational study. *BMJ* **351**: h5774. doi: 10.1136/bmj.h5774

Table 1. Rates of poor outcomes on weekdays and at weekends

Indicator	Weekday % (unadjusted)	Weekend % (unadjusted)	Odds ratio (adjusted, weekday as reference)
Perineal tear	3.03	3.08	1.00
Puerperal infection	0.83	0.86	1.06*
3-day maternal readmissions	0.20	0.18	0.93
In-hospital perinatal mortality	0.64	0.73	1.07*
Injury to neonate	1.43	1.59	1.06*
Selected neonatal infections	1.99	2.01	1.01
3-day neonatal readmissions	1.19	1.22	1.04*

* Differences significant at the 95% confidence level
Note: Adjusted rates—as reported in some media—are available in the original manuscript