Impact of body mass index on obstetric and anaesthetic outcomes

A three-month observational audit at Ysbyty Glan Clwyd

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Introduction

- 29% of mothers in Wales have a booking body mass index (BMI) of ≥ 30
- Maternal obesity is associated with poorer obstetric outcomes and anaesthetic challenges
- Aims of the audit: correlate BMI with obstetric and anaesthetic outcomes; determine if local standards adhere to those recommended by the Royal College of Anaesthetists (RCOA), including failure rates for regional anaesthesia [2]



Methods

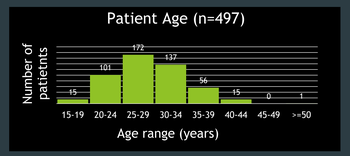
Approval and Data Collection
- Approved by BCUHB
- Dec 2019-Feb 2020
- Audit forms, records

Data Entry and Stratification
- BMI groups (NICE classification)
- Anaesthetic difficulty and failure rates

Statistical Analysis
- SD
- Odds ratios
- Chi square tests

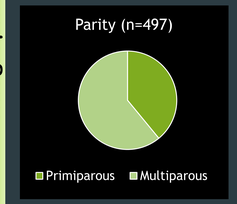
Results

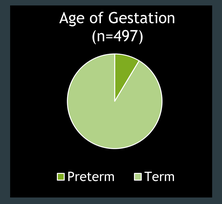
Demographics

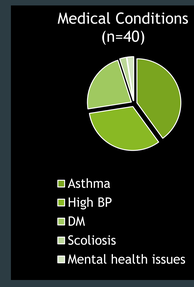


	Age (years)
Range	16 - 53
Mean	28.59±5.49
Median	28

497 patients were included in the study, with age 16-53 years (mean 28.59±5.49).





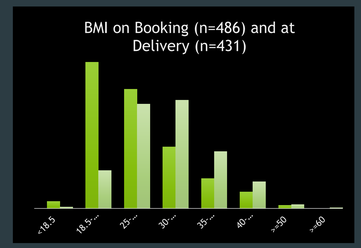


- Two-thirds of the patients were multiparous
- 91.37% were at full term
- The most common medical co-morbidty was asthma

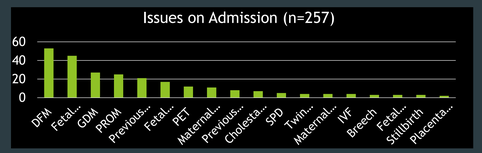
Demographics

	BMI Booking	BMI delivery
Mean	27.47 ± 6.4	31.36 ± 6.4
Median	26.5	31.0

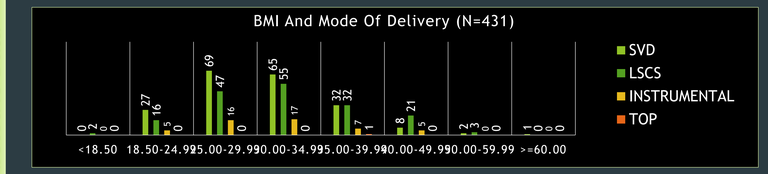
- 486 (97.79%) patients had a recorded BMI at booking, vs 431 (86.72%) on admission
- Mean BMI on delivery was 31.36 ± 6.4
- 30.62% were overweight on delivery (BMI 25-29.9 kg/m²); 31.79% were in obesity class 1 (BMI 30-34.9 kg/m²), 16.70% in class 2 (BMI 35-39.9 kg/m²), and 9.28% in class 3 (BMI ≥ 40 kg/m²).

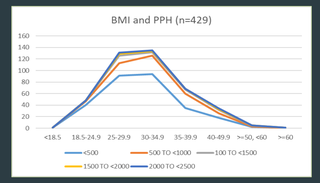


Obstetric Data



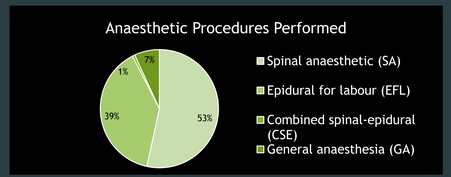
- The most common obstetric issue was decreased fetal movement (DFM)





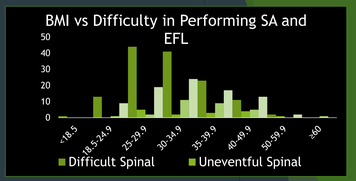
- There is a positive correlation between increasing BMI on delivery and the risk of having a caesarean section or an instrumental delivery (correlation coefficients of 0.9355 and 0.9632)
- There is no correlation between BMI ≥ 30 and PPH (p=0.081).

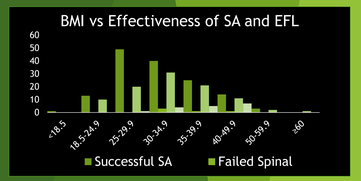
Anaesthetic Data



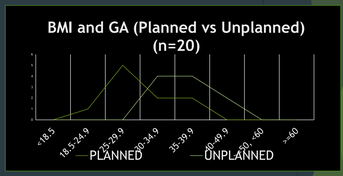
- 256 patients (51.50%) underwent an anaesthetic procedure
- 83% of anaesthetics procedures were spinal blocks

Anaesthetic Data





Difficulty and Success Rates of Neuraxial Anaesthesia vs BMI		
	SA (percentage, p)	EFL (percentage, p)
Difficulty rate	10.0% (0.15)	25.6% (0.14)
Success rate	96.7% (0.59)	85.1% ((0.047)



- 7 failed EFLs (6.1%) were resited
- 8 failed EFLS (7.0%) were discontinued prior to surgery, instead proceeding to SA or GA
- Three failed EFLs were due to catheter dislodgment, all in patients BMI > 30.
- 20 patients had GA, of which 10 were unplanned. All ten cases occurred in patients with BMI ≥ 30

Discussion

- BMI recording on delivery was only moderately compliant with the recommended rate of 100%.
- The increased risk of surgical or instrumental delivery with high BMI is consistent with literature.
- The association of PPH is best assessed with other surgical or maternal factors in a larger cohort.
- The EFL failure rate (14.91%) is comparable to that recommended by RCOA, though the SA failure rate (3.23%) is higher than a cited figure of 1.5% overall and is not associated with BMI.
- Failure of regional anaesthesia in obese patients leading to GA highlights the need to improve success rates. This may be accomplished with simple measures such as the use of an epidural catheter fixation device.

References

1. Welsh Government. (2021). *Maternity and birth statistics: quality report*. https://gov.wales/maternity-and-birth-statistics--quality -report-html
2. Royal College of Anaesthetist. (2020). *Raising the standard: RCoA quality improvement compendium*, 4th edn. https://rcoa.ac.uk/safety-standards-quality/quality-improvement/raising-standards-rcoa-quality-improvement-compendium