

Problematic paracetamol prescribing in paediatric patients with obesity

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Introduction

In Australia, 25% of children are considered overweight or obese.¹ Obesity in children is defined as body mass index (BMI) above the 95th centile. Obesity can alter body composition and pharmacokinetic parameters, such as absorption, volume of distribution, metabolism and clearance. These changes can significantly impact the therapeutic index of medications, including paracetamol, a commonly prescribed drug for children.²

With the increasing incidence of childhood obesity, there is an associated increasing risk of medicines not being prescribed appropriately in this patient group. To ensure safe paracetamol dosing in children with obesity, the Australian Medicines Handbook Children's Dosing Companion (AMH-CDC) recommends using ideal body weight (IBW) to calculate the dose.³

Aim

To assess the appropriateness of paracetamol prescribing in children with obesity, who are admitted to the paediatric ward in Joan Kirner Women's and Children's Hospital.

Method

- A retrospective audit was conducted for children admitted to the paediatric ward in August 2022
- Data was collected from electronic medical records (EMR), including weight and height, if documented.
- BMI was calculated to determine whether dose adjustment is required for their paracetamol dose.
- Data was analysed and assessed for appropriateness against the AMH-CDC recommendation

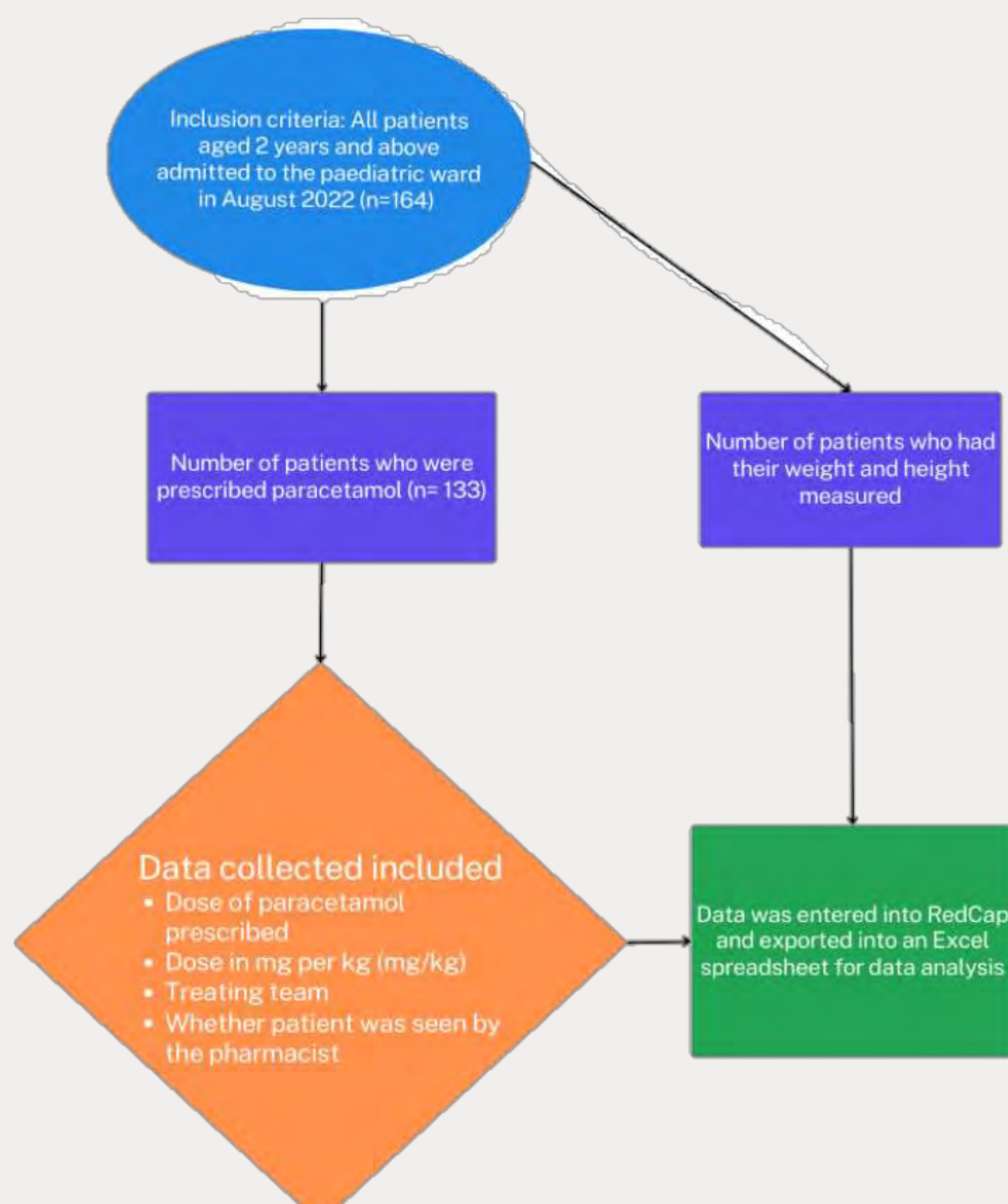
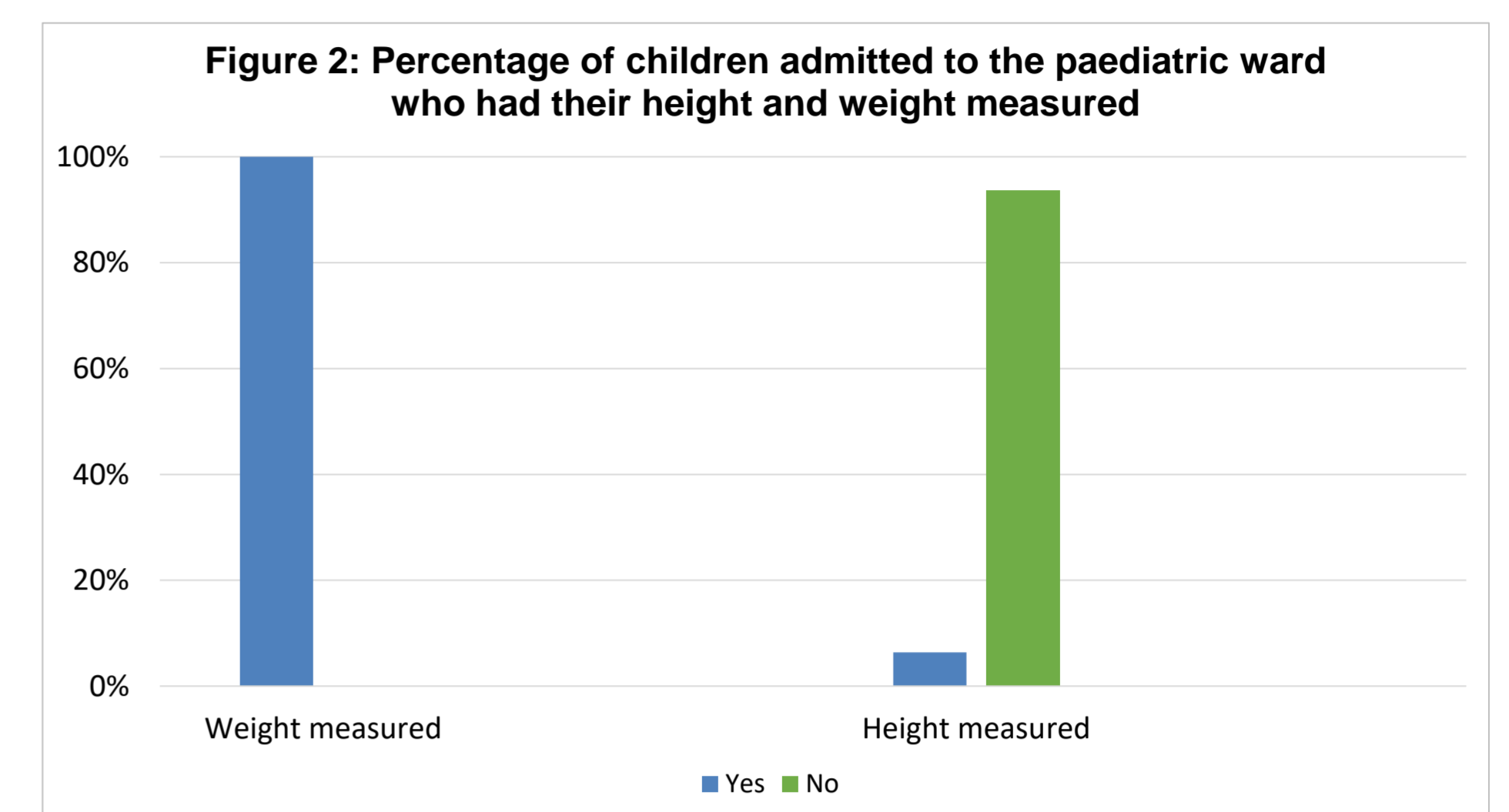


Figure 1. Method flow chart

Results

Of the 164 children admitted to the ward during the study period, 81% (133/164) were prescribed paracetamol. Weight was recorded for all patients, but height was recorded for only 6% (10/164) of the admitted children, as shown in figure 2. Across the 133 children with paracetamol prescribed, 29% (n=39) met the childhood criteria for obesity and required dose adjustment for paracetamol.



Thirty-three of the 39 children (85%) received paracetamol doses above the recommendation for their IBW (see figure 3). Where the dose was not adjusted, children with obesity received an average of 20 mg/kg/dose based on IBW instead of 15mg/kg/dose as recommended by AMH-CDC.

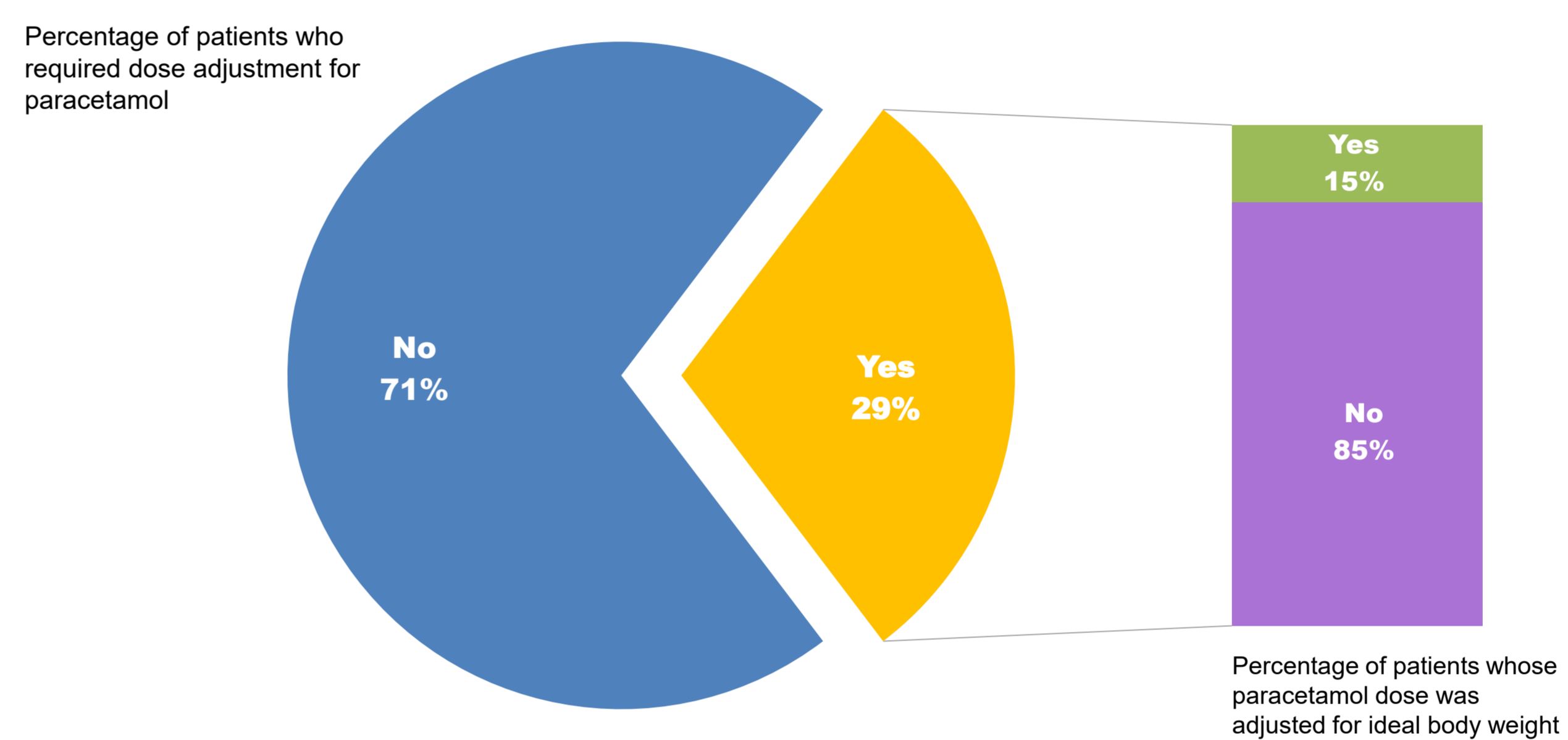


Figure 3. Percentage of patients who required dose adjustment for paracetamol and percentage of patients whose paracetamol dose was adjusted for ideal body weight

Discussion

Similar audits have been conducted in Australia and the United Kingdom, which demonstrated that paediatric patients with obesity received paracetamol doses greater than 20 mg/kg/dose; more than 30% above the recommended dose of 15 mg/kg/dose.^{4, 5} This is consistent with the findings of this audit.

Conclusion

This audit demonstrates the need to increase healthcare professionals' awareness in documenting both height and weight for paediatric patients, and to consider the requirement for dose adjustment for those who are obese. As part of the multidisciplinary team, pharmacists are well-placed to implement targeted feedback to ensure safe use of paracetamol in paediatric patients.

References

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Limitations	Implications
<ul style="list-style-type: none"> • Only 6 % of patients have their height recorded thus IBW for majority of these children were based on assumption that they are of average height. • The findings may lack generalisability due to limited sample size and data collected was from one hospital, which may not be representative of other healthcare settings. • The study was only conducted over a period of one month, which might not capture long term trends. 	<ul style="list-style-type: none"> • Healthcare professionals need to be educated on the importance of following dosage recommendations, due to the risk of overdosing and safety concerns. • Pharmacists have an essential role in providing feedback and interventions to ensure the safe use of paracetamol in paediatric patients. • Additional research may be needed to support the results of this audit.