

Epidural Management in Labour: Cognitive Aids for Novice Anaesthetists

Veezhmhan S¹, Eleonara Gkigkelou¹, Shiny Sivanandan¹

1. Northwest Anglia Foundation Trust

Introduction

- Conversion of labour epidural analgesia to anaesthesia for operative delivery is common practice in obstetric units¹.
- These variations could potentially increase the risk of errors, impacting patient safety and trainee morale².
- Our objective was to develop a cognitive aid to improve confidence and standardise practices among novice anaesthetists, thereby enhancing patient safety.
- Variations in epidural top-up practices among departments may lead to uncertainty and diverse approaches among junior trainees.

Methods

- A departmental survey among senior anaesthetists was conducted to evaluate current clinical practices for epidural top-ups, revealing substantial variability.
- Inputs from departmental obstetric and educational leads were incorporated during the cognitive aid development phase.
- Based on the survey findings, a cognitive aid was developed specifically for novice anaesthetists, detailing the assessment of an epidural for top-ups, safe execution of top-ups, and a standardised pharmacological mixture for top-ups.
- Following the implementation of the cognitive aid, a post-intervention survey was conducted to assess outcomes and gather feedback for further refinement of the aid.

References

- Desai N, Carvalho B. Conversion of labour epidural analgesia to surgical anaesthesia for emergency intrapartum Caesarean section. BJA Education. 2020 Jan;20(1):26–31.
- White SM, Deacy N, Sudan S. Trainee anaesthetists' attitudes to error, safety and the law: European Journal of Anaesthesiology. 2009 Jun;26(6):463–8

CONVERSION OF LABOUR EPIDURAL ANALGESIA TO SURGICAL ANAESTHESIA FOR CAESAREAN SECTION

Do I have enough time for conversion?
Consider urgency/indication of the surgery (CAT 1/2)

YES NO

¹ What is the functional status of the epidural?

Senior help
- Spinal
- GA

Non-functional

Functional

² What top-up mixture to use?

(a) or (b)

³ How to top-up safely and assess the level of block?

Signs of intravascular/intrathecal injection

- Stop top-up
- ABCDE approach
Call for help
LAST protocol

Desired level of block not achieved

- Senior help
- Carefully consider more top-up solution
- Consider Spinal/GA

Proceed with surgery

Complains of pain/discomfort

- Stop surgery
- Reassure the patient
- Senior help
- ⁴ Depending on the stage of the surgery and severity of pain consider available options

Remove epidural catheter prior to transferring to recovery (check catheter tip)

Box 1 EPIDURAL ASSESSMENT

- Is the patient happy with epidural analgesia
- Use of N₂O for contraction pain
- Number of top-ups, dosages and effectiveness
- Level and symmetry of sensory/motor/sympathetic block
- Check catheter site

Box 2 TOP-UP MIXTURES

a) Lidocaine 2% 10ml + Fentanyl 100mcg + Levobupivacaine 0.5% 10ml
OR
b) Ropivacaine 0.75% 20ml + Fentanyl 100mcg
AND
Diamorphine 2.5-3mg (before removing epidural catheter)

Box 3 SAFE TOP-UP

Top-up as soon as patient is in the theatre and after establishing monitoring
- Aspirate before each top-up
- Administer 3ml of top-up solution as test dose
- Observe for signs and symptoms of intrathecal/intravascular administration
- If no concerns, proceed with top-up
- Assess level of block:
✓ S5 to T4 B/L for cold
✓ S5 to T5 B/L for touch - especially when using Ropivacaine as there can be motor sparing (Can be assessed using monofilament, thin cotton)

Box 4 AVAILABLE OPTIONS

- N₂O
- Alfentanil (up to 1mg)
- GA
Document options offered to patient

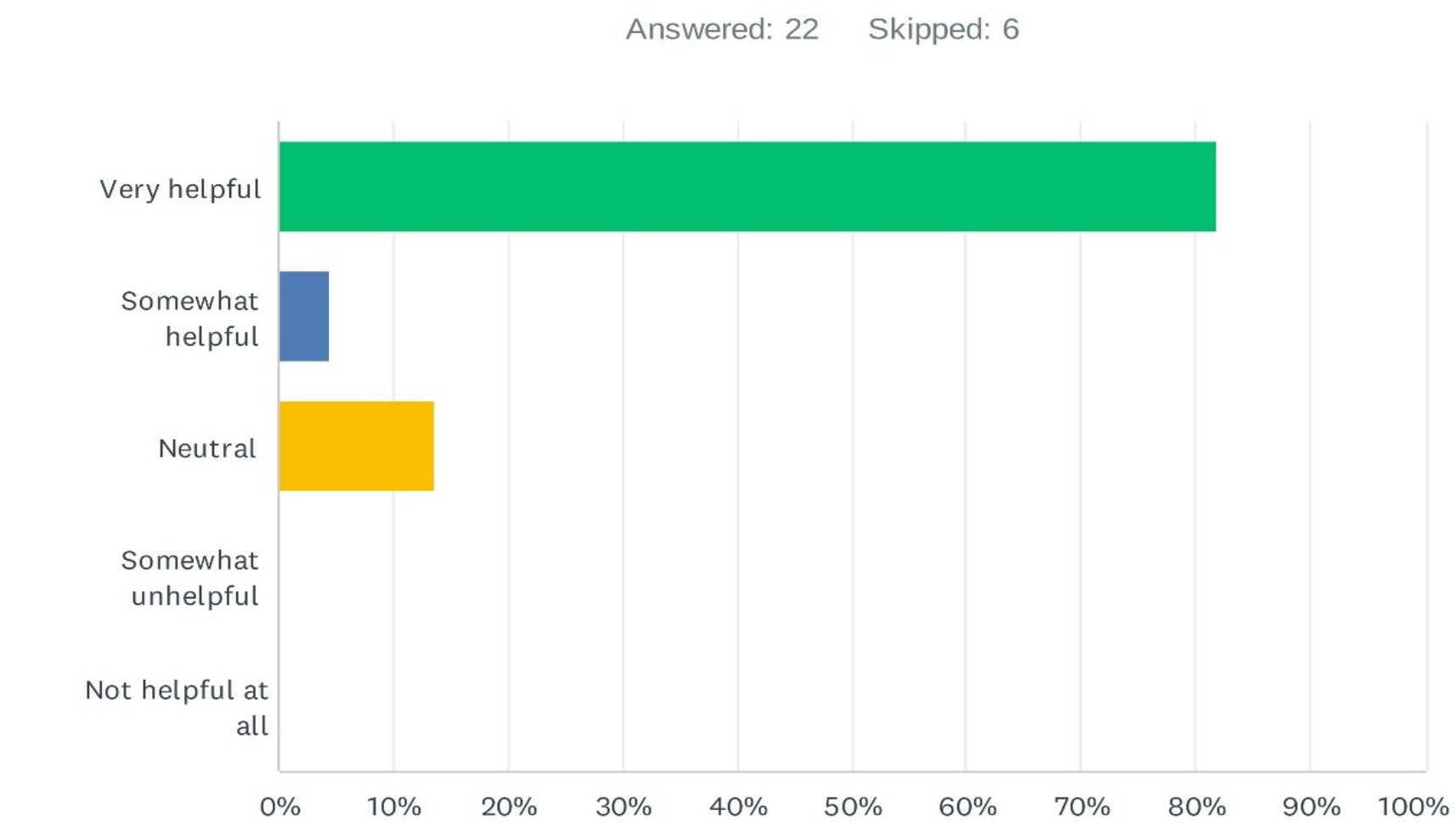
Box 5 ALTERNATIVE TOP-UP MIXTURES

Lidocaine/Adrenaline mixture for top-up
1. Using a 20 ml syringe, draw up 20ml of 2% Lidocaine into this syringe.
2. Using a 1 ml syringe add 0.1 ml of 1:1000 Adrenaline to the mixture.
3. Approximate concentrations of the final 20.1ml solution
2% Lidocaine
1:200 000 Adrenaline(5mcg/ml)

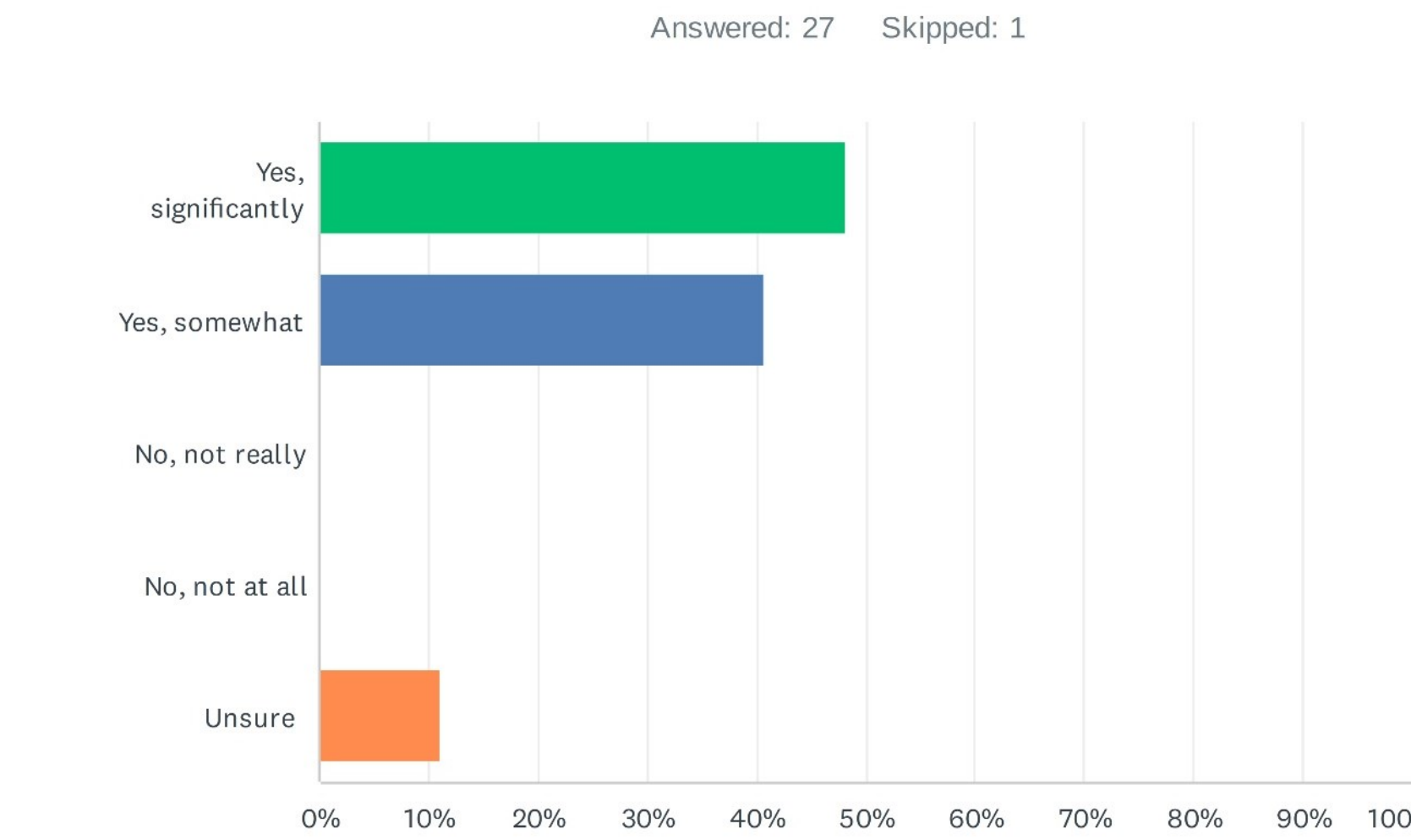
Results

- Post-implementation survey received responses from 28 anaesthetists(15 consultants and 13 trainees) . The majority (86.5%) found the Cognitive Aid(CA) beneficial for trainees.
- Enhanced confidence and safety: The CA was linked to improved outcomes. 75% of participants reported increased trainee confidence in managing epidurals, and 89% believed it enhanced patient safety.
- Recommendation for use: The CA received strong endorsement. Over 84% of participants were willing to recommend it for improving trainee confidence and patient safety.
- Neutral and negative responses: A small percentage of participants remained neutral (around 11-13.5%) or expressed reservations (7.69%) about recommending the CA.

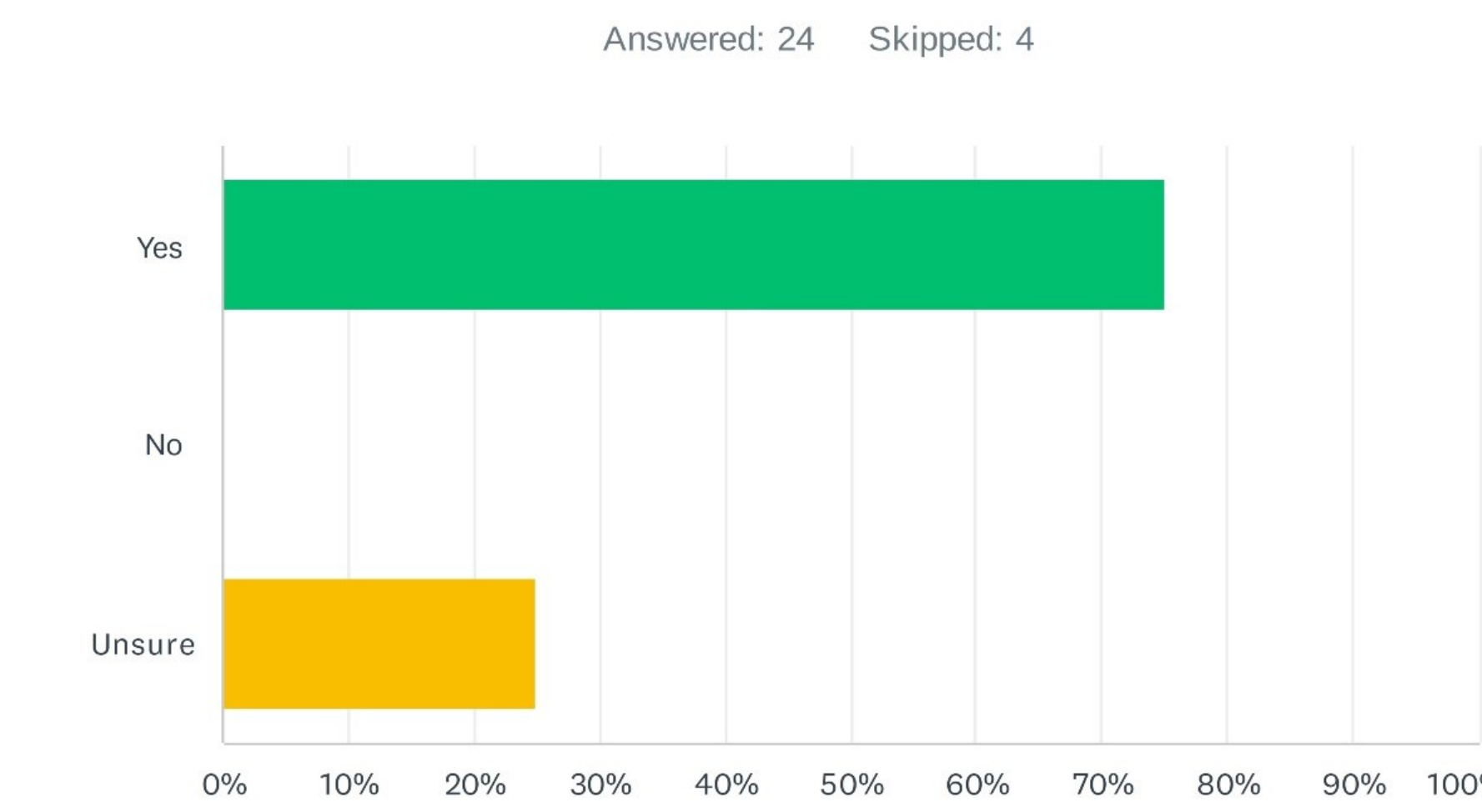
How helpful did you/your trainees find the help guides in managing epidurals?



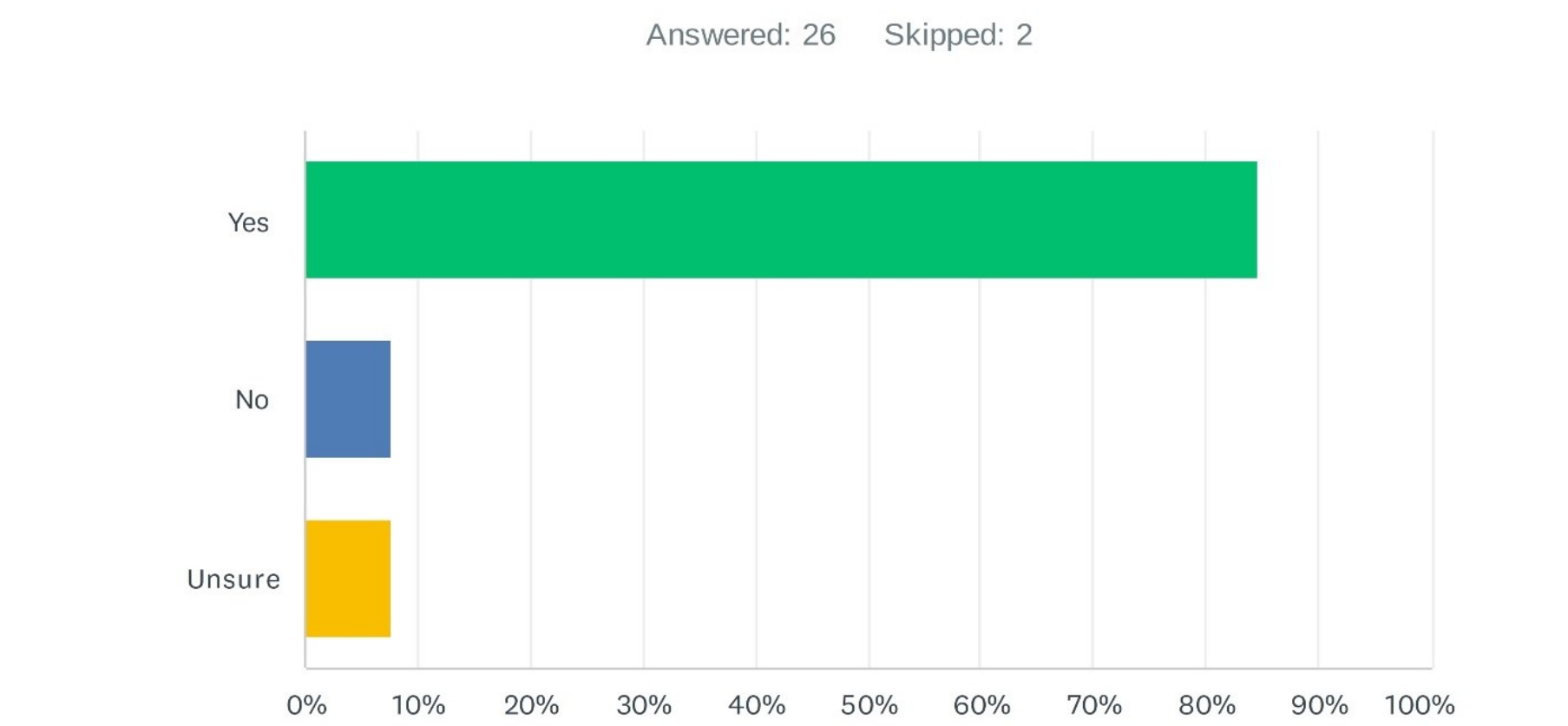
In your opinion, has/can the use of help guides improve patient safety?



Did the help guides improve your/your trainees' confidence in managing epidurals?



Have you recommended or would you recommend the use of the help guides to other trainees/trainers in anaesthesia?



Discussion

The majority of participants expressed that the introduction of the cognitive aid for troubleshooting and top-up of labour epidurals has helped novice anaesthetists feel confident and improve patient safety. This holds true in our department, as we have a relatively junior cohort of trainees delivering obstetric anaesthesia, often at the core trainee level. Departments with similar cohorts can benefit from developing similar aids tailored to their local needs.