

Spinal Hydromorphone versus Morphine for Post-Cesarean Delivery Analgesia: A Non-Inferiority Trial

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Background

- Intrathecal (IT) morphine is the gold-standard for post-cesarean delivery analgesia
- Morphine is associated with a wide range of adverse events¹
- Hydromorphone may offer a promising alternative²
- Limited number of studies to-date assess the use of IT hydromorphone as a post-cesarean analgesic^{2, 3}

1. Armstrong S et al. Drug Saf. 2016; 39(5): 381-99
2. Sviggum HP et al. Anesth Analg. 2016; 123(3): 690-7
3. Sharpe EE et al. Anesthesiology. 2020; 132(6): 1382-91

Hypothesis

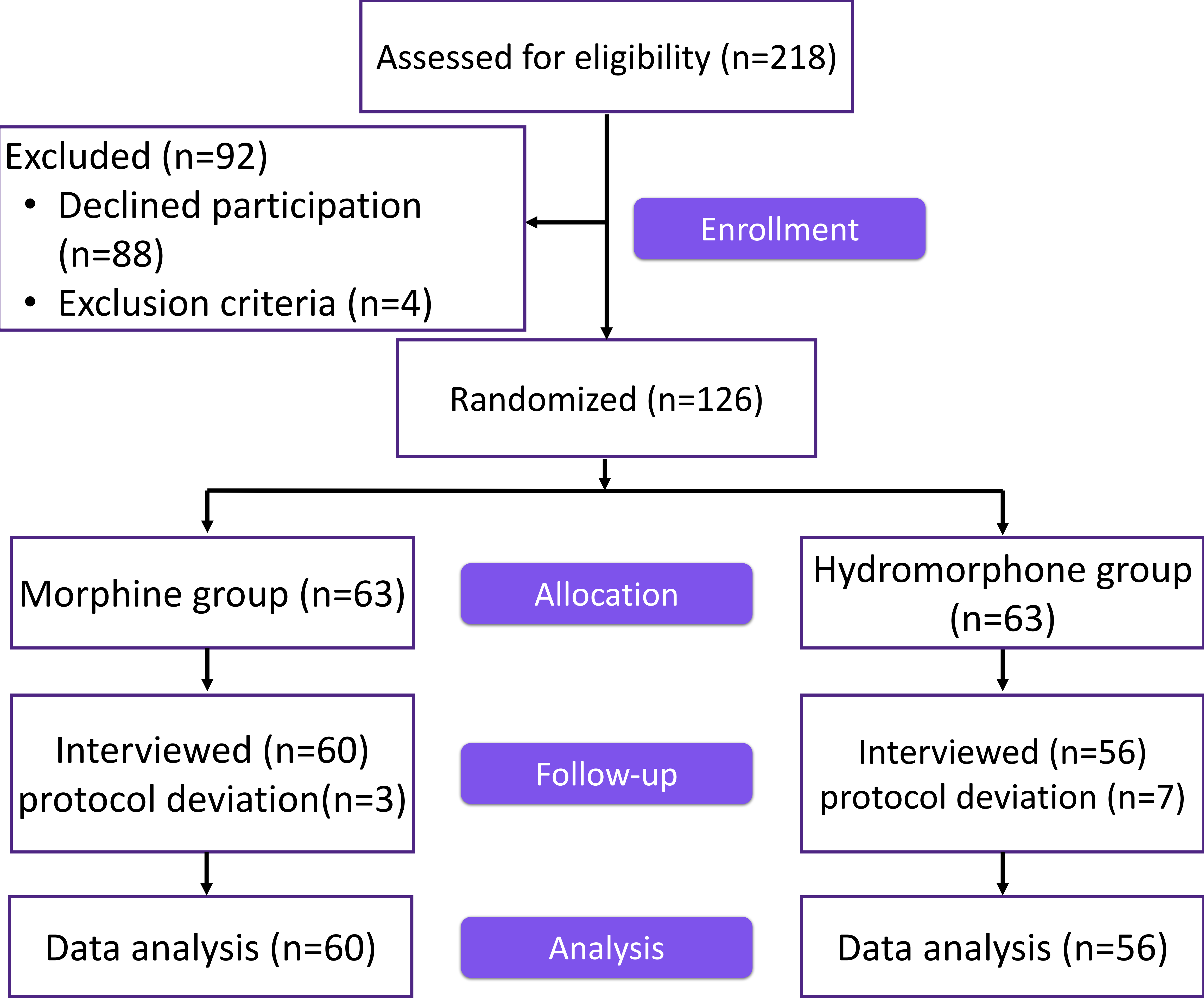
IT hydromorphone is not inferior to IT morphine when average Numeric Rating Scale (NRS) pain scores are compared during the first 24 hours after its administration for spinal anesthesia for elective cesarean delivery

Methodology

- Blinded randomized controlled trial
 - Inclusion: age >18, ASA $\leq$ 3, term >37 weeks gestational age, elective, spinal anesthesia
- Interventional Arms
 - IT morphine 150 mcg
 - IT hydromorphone 75 mcg
- Follow up at 24 hours post-delivery
 - **Primary Outcome:** *Difference in average NRS pain scores during first 24 hours*
 - **Secondary Outcomes:** *Obstetric Quality of Recovery survey (ObsQoR-11), 24-hour opioid consumption and request time, NRS scores every 6 hours, incidence of adverse events, (pruritus, nausea, respiratory depression) and APGAR scores*

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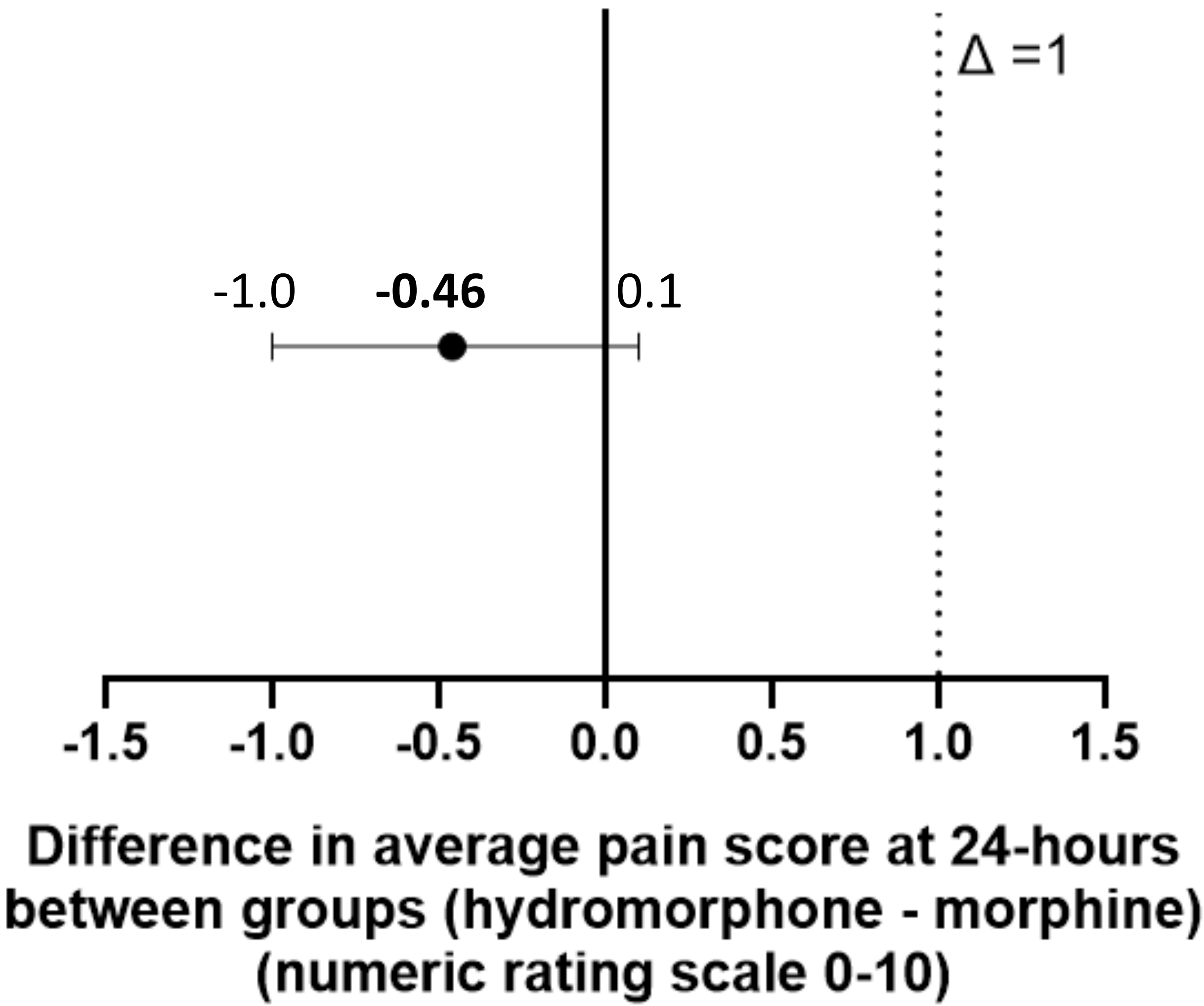
Consort Flow Diagram



Primary Outcome

Table 1: Average Pain Scores at 24 hours Post Operation

Time	Morphine n=60	Hydromorphone n=56	Difference (95% CI of the difference)	P- value
mean (SD)	4.0 (1.7)	3.6 (1.5)	-0.46 (-1.0 to 0.1)	0.12
median [IQR]	4 [3-5]	3.5 [2-5]	-0.5 (-2.2 to 1.2)	0.56



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Secondary Outcomes

Table 2: Secondary outcome assessments

Outcome	Morphine	Hydromorphone	P-value
Length of Stay (h)(SD)	49.1 (9.7)	51.0 (11.0)	0.33
Mean 24 hr opioid consumption (mg) (SD)	4.2 (6.5)	4.1 (8.0)	0.98
Time to first opioid (h) (SD)	9.6 (7.0)	8.9 (7.29)	0.62
ObsQoR-11 score (SD)	84.5 (14.9)	85.5 (16.5)	0.73
1- min. APGAR Scores (SD)	8.4 (1.2)	8.6 (0.9)	0.31
5-min. APGAR Scores (SD)	8.9 (0.4)	8.9 (0.2)	0.99
Nausea Treatment, n (%)	20 (33%)	21 (38%)	0.94
Pruritus Treatment, n (%)	19 (32%)	17 (30%)	0.92

Conclusions

- IT hydromorphone is non-inferior to IT morphine for post-cesarean delivery analgesia.
- Both opioids provide effective analgesia and hydromorphone may be a suitable alternative to morphine.

