

Patient and staff satisfaction and confidence in a continuous wearable monitor to detect respiratory depression following neuraxial opioid use for postoperative pain relief after cesarean section.

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Background

- Respiratory depression following neuraxial opioid administration for cesarean section is rare but potentially catastrophic.
- Best practice is to monitor high-risk women every 1-2 hours for the first 24 hours. (1)
- Respiratory rate is typically measured manually, or by expired carbon dioxide, direct movement or changes in resistance across the chest.
- All methods may interfere with sleep, breastfeeding, bonding, and early mobilization, and are labor-intensive for maternity staff.
- Remote monitoring with Current Health, an FDA-cleared platform with an upper-arm wearable, enables continuous transmission of heart rate, respiratory rate, SpO₂, and activity, without disturbing the patient or confining them to a bed. It may also reduce the time to detect respiratory depression through smart alarming.
- We are conducting an open-label, prospective, randomized non-inferiority study comparing Current Health to standard of care in detecting respiratory depression, alongside measures of patient and staff experience.
- Target recruitment is 100 women at high risk of respiratory depression following neuraxial opioid administration.
- Participants randomized to the intervention arm wear the Current Health device for 24 hours postpartum.
- At the study end-point, both groups, and maternity staff complete satisfaction surveys. We present a preliminary assessment of these surveys from the first tranche of patients and staff members.

Methods

- Patients rated 8 statements on a 5-point Likert scale (“strongly disagree” to “strongly agree”), alternating between positive and negative language. The survey was administered to both intervention and control groups 24- hours post-cesarean.
- Staff rated 10 statements regarding Current Health monitoring compared to standard monitoring, alongside a modified version of the Telehealth Usability Questionnaire (TUQ), following their shift caring for a patient in the intervention group. (2)



Results

15 responses to the patient survey (eight from the intervention group, Figure 1).

The intervention group “**strongly agreed**” with four of five positive statements and “strongly disagreed” with three of three negative statements.

Responses were **more favorable** in the intervention group compared to the control group (who only “strongly agreed” with two of five positive statements).

25 responses to the staff survey (shift patterns meant there could be up to two staff responses for every patient response) (Figure 2).

Staff “**agreed**” to five statements in favor of Current Health and were “**neutral**” to three.

They “**strongly agreed**” that Current Health did not give more false alarms than standard monitoring.

The **average scores** of TUQ subdomains (usefulness, ease of use, interface quality, reliability, and satisfaction) were **5 out of 7** (“somewhat agree”) (Table 1).

Table 1. Median responses to TUQ by maternity staff.

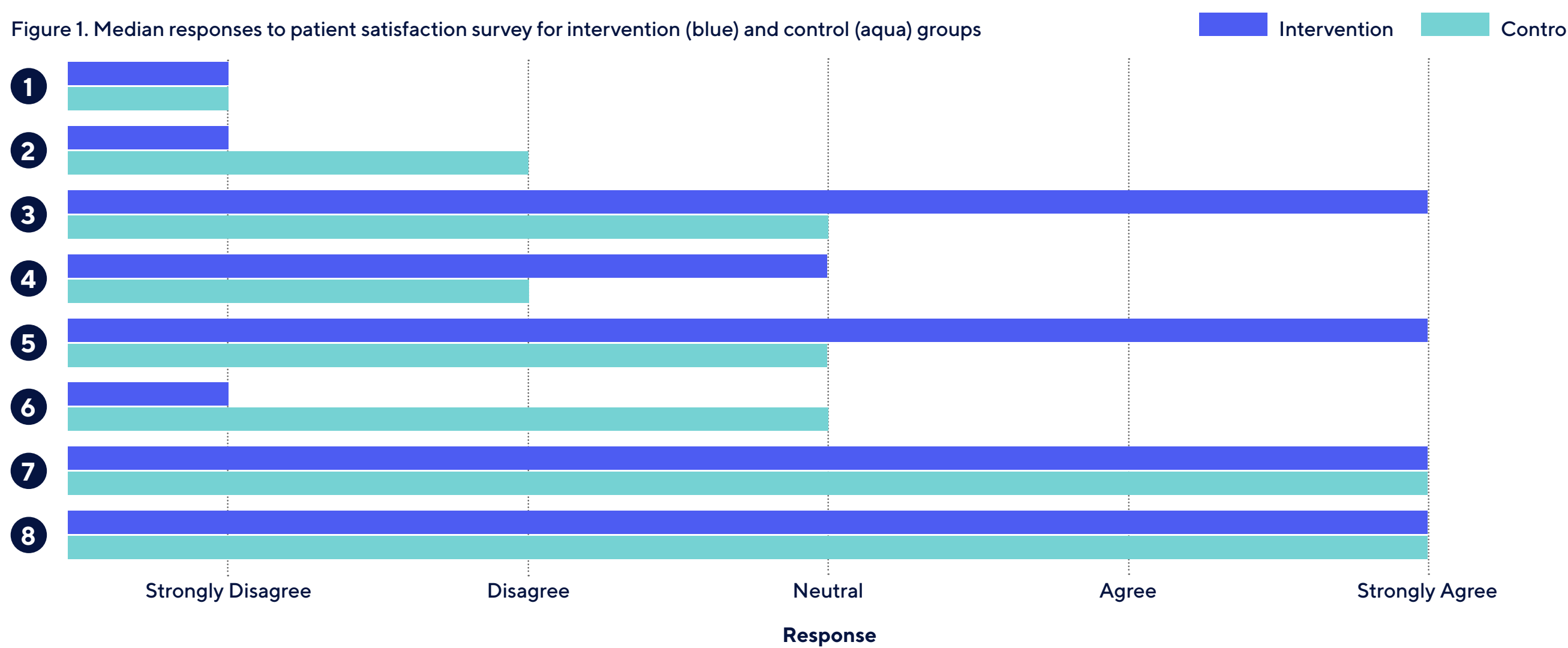
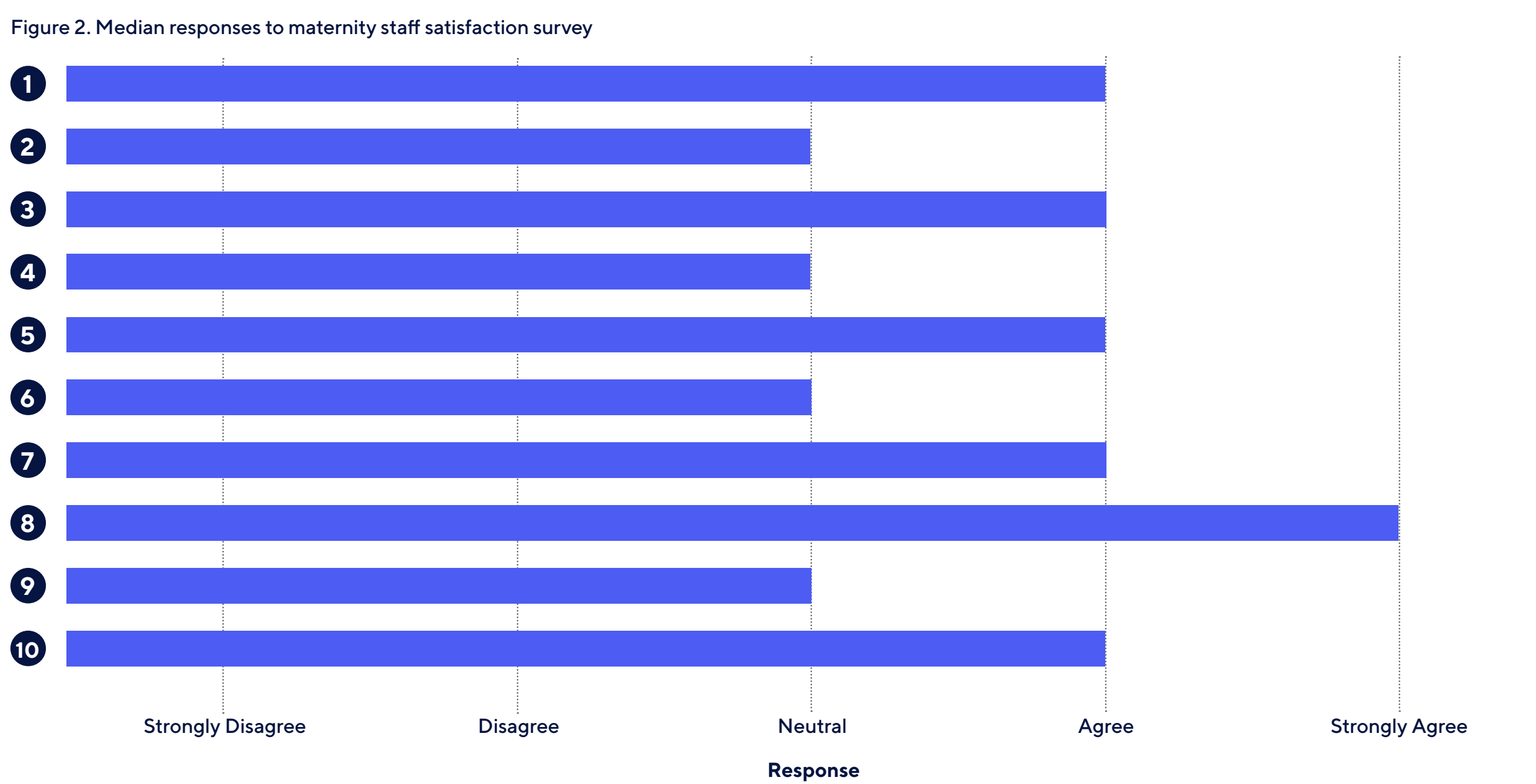
TUQ Subdomain	Score
Usefulness	5
Ease of Use	5
Interface Quality	5
Reliability	5
Satisfaction	5

Questions

- The way in which my vitals were monitored prevented me from performing my daily routine activities (i.e. brushing my teeth, getting dressed, etc.).
- The way in which my vitals were monitored interfered with my sleep.
- The way in which my vitals were monitored allowed me to bond with my baby and breastfeed (if applicable).
- The postpartum staff visited my room infrequently.
- I would choose the same method of monitoring my vitals again.
- I would prefer an alternative method of monitoring my vitals.
- I have trust in the method used to monitor my vitals.
- My postpartum care exceeded my expectations.

Questions

- Monitoring for respiratory depression takes less time and effort with Current Health compared to standard vitals monitoring.
- I spent less time charting and responding to my postpartum patients who wore the Current Health device compared to standard vitals monitoring.
- The Current Health device, including its central monitoring, was easier to use than standard vitals monitoring.
- I visited the patient room infrequently when the Current Health device was in use compared to standard vitals monitoring.
- The Current Health device can reduce the time it takes for staff to detect clinical deterioration compared to standard vitals monitoring.
- I would choose to monitor my patient with the Current Health device again instead of standard vitals monitoring.
- I have trust in the Current Health device's ability to monitor my patient's vitals the same amount as standard vitals monitoring.
- Current Health didn't give more false alarms than standard vitals monitoring.
- Current Health reported consistent vitals compared to standard vitals monitoring.
- My patient wearing the Current Health device appeared more satisfied with their postpartum care relative to the other postpartum patients who received standard vitals monitoring.



Conclusion

The preliminary assessment of mother and maternity staff satisfaction and confidence in Current Health monitoring was very positive. Mothers strongly agreed that Current Health did not interfere with sleep, and allowed them to breastfeed and bond with their baby better than standard of care. Staff had confidence in Current Health and its ability to match (and potentially exceed) standard monitoring.

References

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