Smartphone Use by Nurses in the Operating Room: A Quality Improvement Study

Melissa Aeschlimann, MSN, RN, NE-BC; Amy White, DNP, RN, CNOR; Dawn Finnie, MPA; Tage Runkle, MA, PMP; Xuan Zhu, PhD, MS; Heather Carmack, PhD

BACKGROUND

Perioperative stakeholders shared concerns about the lack of standardized communication processes within the surgical practice. Without clearly identified best practices, communication breakdowns can lead to safety concerns, delays, confusion, and frustration directly impacting patients as they move through the perioperative process[1].

Research also indicates staff may develop workarounds (an unconventional process or approach to problem solving, often related to technology) to meet communication needs[4]. Understanding and addressing the underlying reasons for workarounds is essential for enhancing patient care and preventing negative patient outcomes[1].

To better understand communication challenges, a qualitative study conducted within the surgical practice identified that inconsistent technology was contributing to communication issues. Staff emphasized the need and desire for a reliable communication platform.

In response, members of the research study team partnered with a dedicated project team, including a communication researcher, project manager, qualitative data analyst, and quantitative data analyst to systematically address communication breakdowns and workarounds by developing a Smartphone Implementation Plan.

METHODS

- The project team met bi-weekly to develop a plan to introduce smartphones into the surgical nursing practice. This implementation strategy included creating evaluation metrics, preparing technology education materials and training sessions, and designing assessment surveys.
- The smartphone implementation project was initiated to evaluate the effectiveness of using smartphones as a communication device with 24 circulating nurses within a single surgical specialty and 3 team leads across 3 work units. To further understand communication challenges, a control group of 25 circulating nurses from a different specialty area was also included.
- Training sessions were offered for nurses using smartphones, with weekly support provided by an RN clinical educator and regular team meetings were scheduled to assess progress. Survey data was collected prior to the intervention to create a baseline, and again at 3-month and 6-month intervals.

RESULTS

- The box plots (Figure 1) suggest that self-reported communication effectiveness in the smartphone group generally increased from baseline to 3-month follow-up, then remained stable from 3 to 6 months. The Control group showed no clear change over the same timeframe.
- The alluvial plot (Figure 2) illustrates how participants' responses to the effectiveness of communication shifted over time. In the Smartphone group, between baseline and 3-month follow-up, more participants increased than decreased their ratings. From 3 to 6 months, nearly all maintained those higher ratings. In contrast, the Control group showed a mixed pattern, with participants moving in both directions and several dropping out over time.
- The alluvial plot (Figure 3) shows that in the Smartphone group, most participants reported using workarounds less frequently between baseline and 3-month follow-up. From 3 to 6 months, all but one maintained or reported even less frequent use of workarounds. In contrast, the Control group showed a mixed pattern, with participants moving in both directions and several gradually dropping out.
- Over time, the tasks that benefited the most from the work smartphone include using a mobile staffing tool, communicating with other RNs, utilizing timekeeping and schedule requests, accessing email, and staying connected without needing a computer (see Figure 4).

FIGURE 1

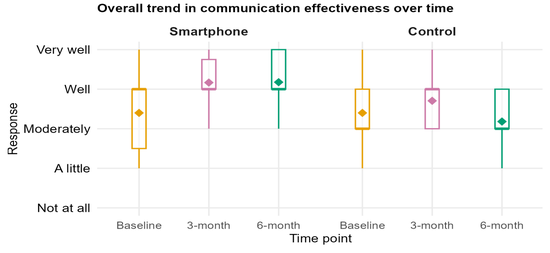


FIGURE 2

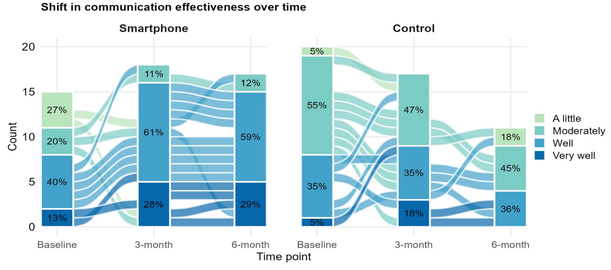


FIGURE 3

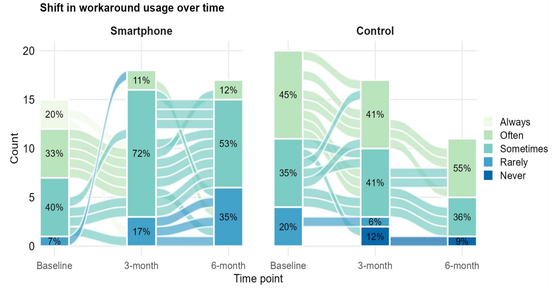
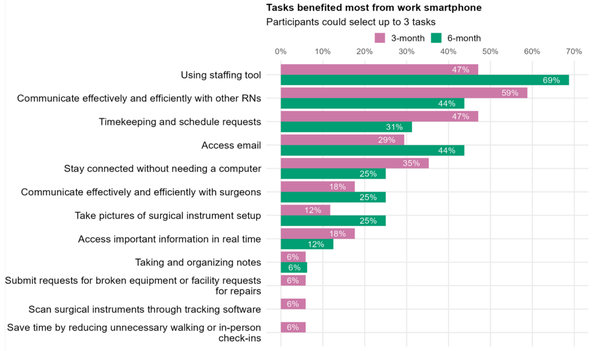


FIGURE 4



DISCUSSION

- Self-reported communication effectiveness and efficiency increased in the smartphone group from baseline to 3 months and remained stable at 6 months. The control group showed little change. Most smartphone users maintained or improved their ratings, while the control group had mixed results and higher dropout rates.
- Use of personal phones for work decreased, and most participants did not check work messages more frequently after hours. Adequate training and support increased over time, though some users desired more guidance on app selection and setup.

CHALLENGES

- Initial challenges included reported concerns about hardware issues and differences in mobile app functionality compared to desktop computers. Targeted education helped to address hardware issues and reduce staff concerns about using smartphones and apps.
- An additional challenge encountered was that some users declined to use the smartphones, expressing reluctance to learn new technology and perceiving little value for their practice. Addressing this issue will require a strong focus on change management if broader adoption of this technology is pursued.

IMPLICATIONS FOR PERIOPERATIVE NURSING

- The results of this quality improvement project show that smartphone use in the OR setting can positively impact communication, reduce reliance on personal devices, and improve workflow efficiency, therefore increasing possibilities of implementing this technology in other areas.
- Continued support, targeted training, and addressing technical limitations could further enhance these benefits and should be considered when implementing smartphones in other settings. Smartphones have the potential to assist perioperative teams in delivering safer, more coordinated patient care.

REFERENCES