

# Surgical Staff Perceptions of the Environmental Impact of Operating Rooms and Potential Sustainability Interventions

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## INTRODUCTION

- ~30% of worldwide health-related disease is surgical.<sup>1</sup>
- Over four billion pounds of waste are produced by operating rooms per year in the US.<sup>2</sup>
- The average operation in the US produces the carbon dioxide equivalent of traveling 400-700 miles in an average car.<sup>3</sup>
- ORs consume 3-6x more energy per square foot than any other location in hospitals.<sup>4</sup>
- Prior studies have been performed on a myriad of interventions that can be instituted to decrease the negative environmental impact of operating rooms.<sup>5-8</sup>
  - Nearly all studies that showed environmental benefit also showed a decrease in overall cost for the institution, estimated to be \$24,600 per operating room; one institution saved \$4 million in one year through sustainability strategies.

## METHODS

- An anonymous survey was sent to operating room stakeholders via RedCap from March to June 2024.
- The survey included 34 Likert-style questions regarding attitudes and perspectives about factors related to OR resource utilization & demographic information.
- Descriptive statistics were calculated.

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## RESULTS

- 197 OR staff members completed the survey:
- 35% attending surgeons and anesthesiologists
- 21% trainees
- 19% APPs
- 17% RNs
- 4% scrub techs
- 3% central processing staff
- 5% other roles

Figure 1. Extent to which participants thought each factor leads to waste (material, financial, energy) production in the OR

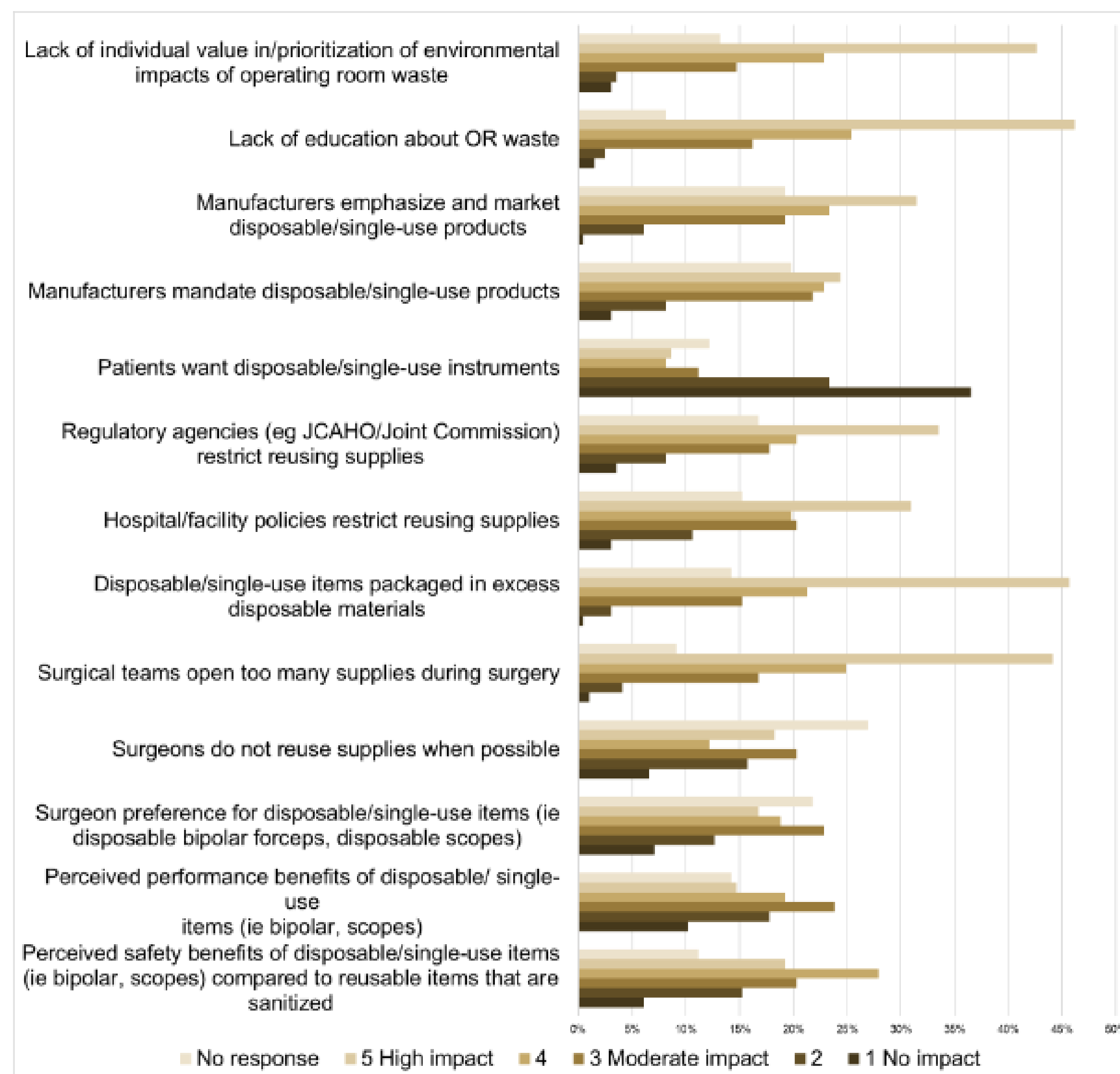
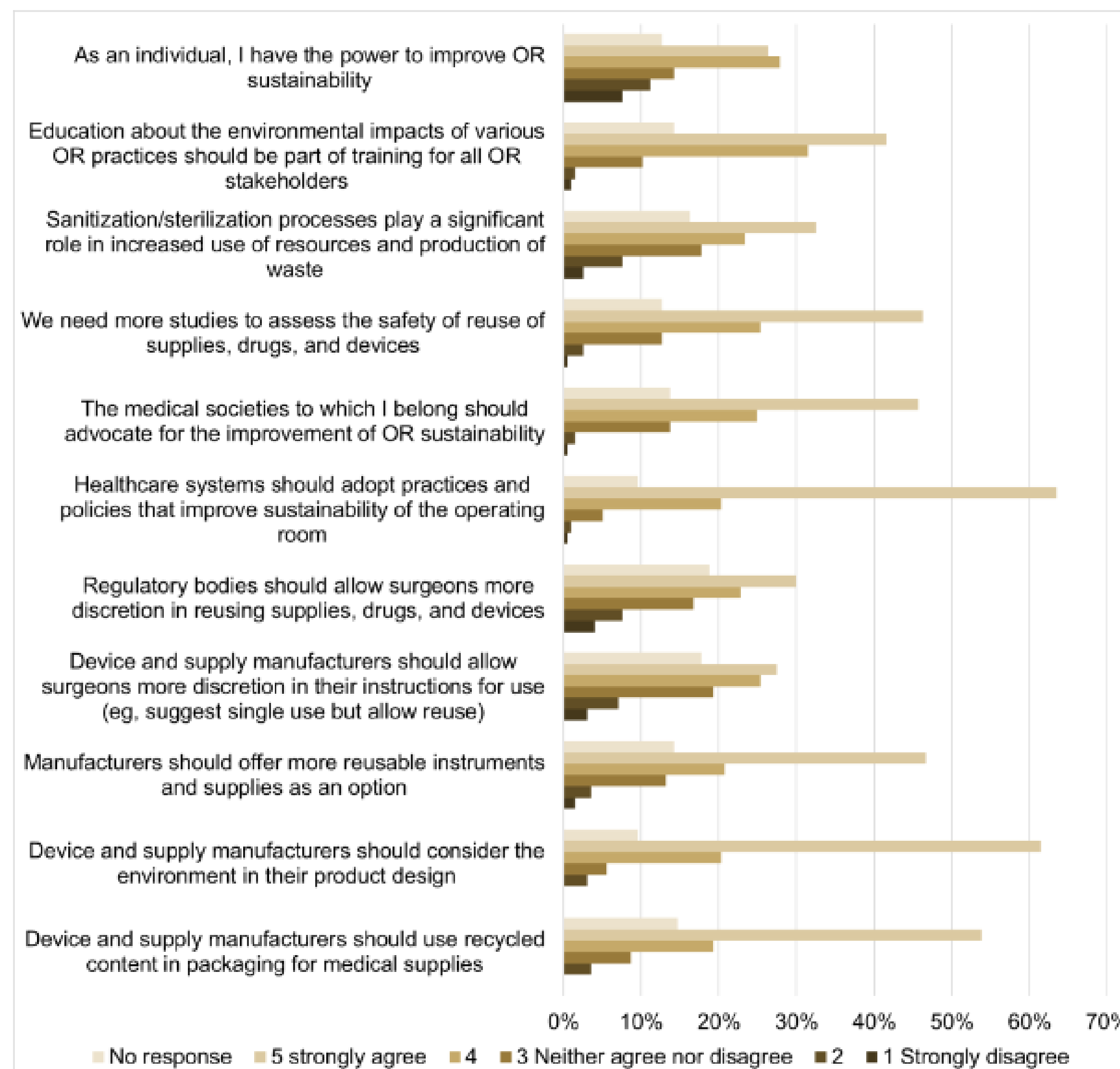
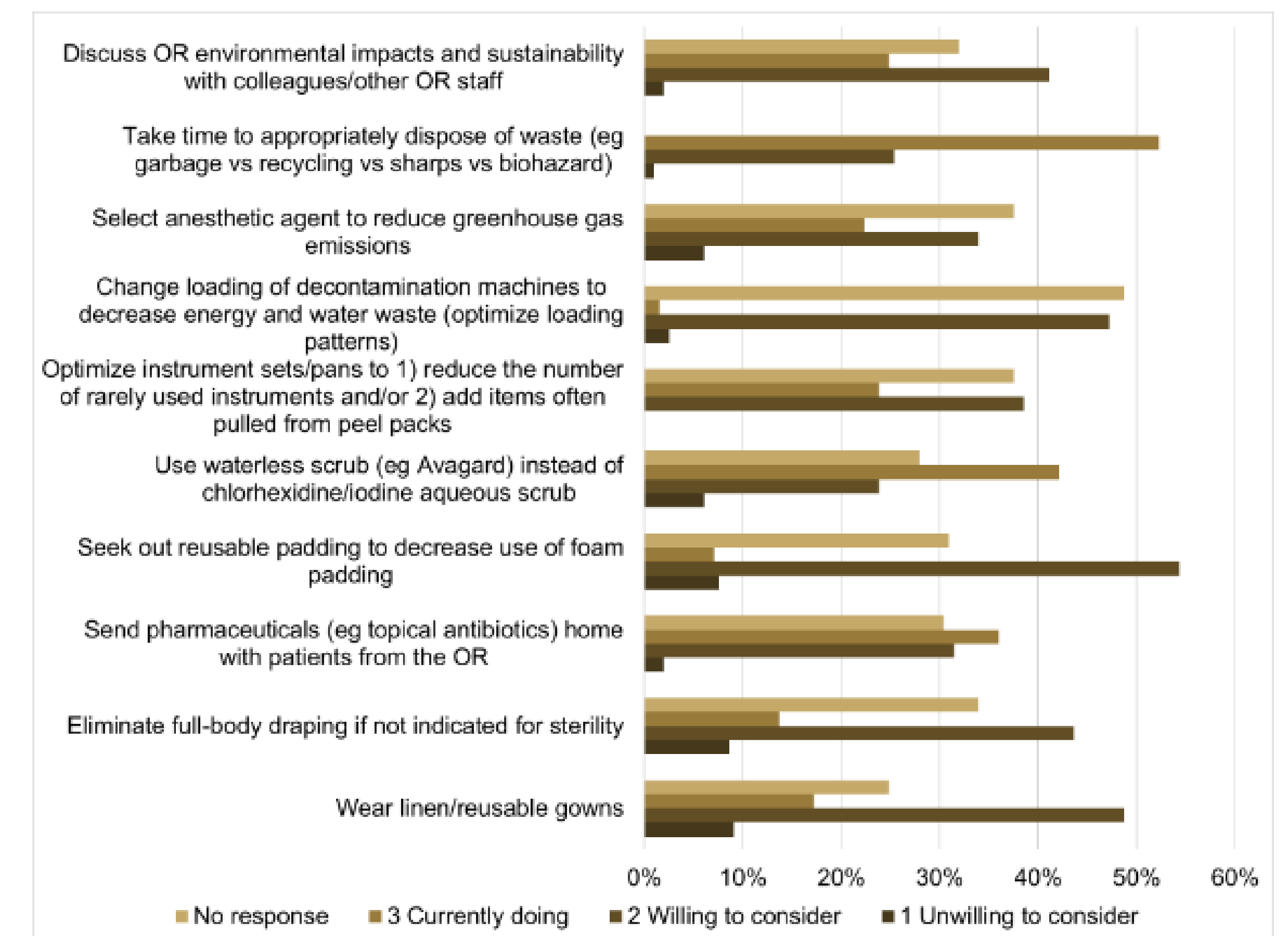


Figure 2. Extent of participant agreement or disagreement to proposed statements related to sustainability in the OR



## RESULTS

Figure 3. Willingness of the participant to perform proposed intervention



## CONCLUSIONS

There was a belief that a lack of education and individual value placed on sustainability concerns are significant drivers of environmental impact; however, many respondents did not believe the individual can make a difference. Topics such as perceived safety and performance benefits of single-use items were thought to play a smaller role. Most participants believed regulatory bodies, healthcare systems, professional societies, and manufacturers should play a larger role in promoting sustainability efforts.

## PROPOSED FUTURE INTERVENTIONS

- Transition from single-use devices to reusable devices and instruments
- Use waterless hand scrub
- Add motion sensors to scrub sinks
- More efficiently sanitize surgical instruments including avoidance of blue wrap
- Streamline preference cards
- Replace foam padding with gel
- Replace disposable sterile towels and gowns with washable options
- Eliminate use of desflurane, and minimize use of nitrous oxide
- Turn lights and equipment off at night
- Conveniently locate and clearly label recycling bins
- Avoid sterile gowning/draping for non-sterile cases
- Use cloth scrub hats
- Use reusable eye protection
- Donate and/or repurpose unused, clean, or expired medical supplies
- Replace all lights with LED
- Recycle batteries
- Increase education initiatives
- Send topical medications home with patients
- Build and support sustainability teams within institutions
- Advocacy and policy efforts