Fit for all! Surgical glove fit is critical to performance and needs improvement

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1. BACKGROUND & OBJECTIVE

- Surgical glove performance and safety evidence is documented in the literature, but appropriate glove fit remains under reported.
- Poor glove fit negatively impacts performance and safety.[1]

Too loose

- Work time increase by 7–10%[2]
- Loss of tactile sensitivity[3,4]
- Glove perforation rate increases by 10–30%[5]
- Manual dexterity decrease[2,4]

Too tight

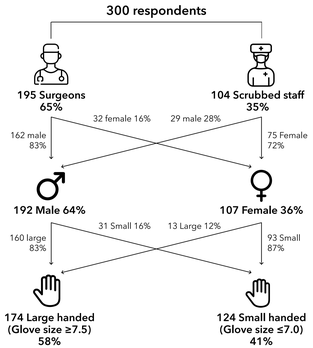
- Cause pain to the wearer[2]
- Likely to increase fatigue[2,4]
- Constrain hand motion[2,4]
- Compensatory movements in shoulders[6]

Study aim: to understand user perceptions of surgical glove fit with respect to hand size

2. METHOD & RESPONSE RATE

- An online survey was conducted in USA, UK, Germany, Sweden, and Japan to understand surgeon and scrubbed surgical staff perspectives on various aspects of surgical gloving practice (Aug–Sept 2023). Responses were anonymous.
- Subjects had 2–30 years experience and 5+ surgeries per week.
- Data was aggregated, segmented, and analyzed by hand size.
- Females represent 75% of small hand and 7% of large hand group (Fig 1).

Figure 1: Survey respondent demographics

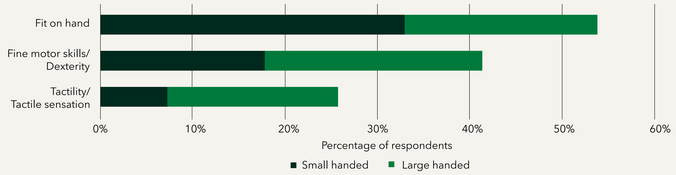


3. RESULTS

- **Glove fit is #1** feature for choosing surgical gloves (Fig 2)
- 66% with **small hands** rank fit within top 3
- **More adequate/customized sizing** is the most requested improvement
  - **– 32% of small hand**
  - – 20% of large hand

There is a need for more adequate sizing

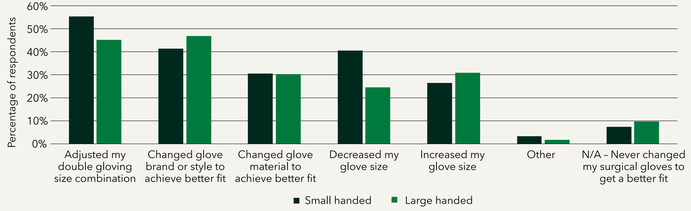
Figure 2: Top 3 most important features when choosing surgical gloves



- **91% of respondents have taken action to improve surgical glove fit** (Fig 3)
- **Small handed** clinicians more often **decreased glove size** (Fig 3)
- **Large handed** clinicians more often **increased glove size** (Fig 3)

Most have taken action to improve fit, but many still have fit issues

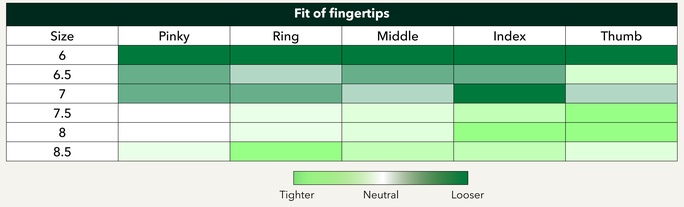
Figure 3: Actions taken by clinicians over their career to achieve better surgical glove fit



- **Areas too tight/too loose is the most important fit issue identified**
  - – #1 issue for 19%
  - – Top 3 issue for 48%
- **Loose fingertip fit** is identified by small handed respondents (Fig 4)

Clinicians wearing smaller sizes tend to rate fingers looser

Figure 4: Surgical glove fingertips fit rating



4. DISCUSSION

- Previous studies have shown **surgical glove fit can impact hand performance and safety;** therefore, it is not surprising that **glove fit was the most important factor** when choosing surgical gloves.
- Nearly all respondents have taken action to achieve better glove fit, yet **areas of the glove being too loose or too tight are still identified as the most important issue**.
- Despite small handed clinicians more often decreasing their glove size, they continue to **experience poor fit specifically loose fingertips**.
- Clinicians request more customized glove fit.

5. CONCLUSIONS

- Glove fit was the most important factor when choosing a surgical glove.
- Despite most respondents trying available options to achieve better glove fit, a large portion still reported the need for improved sizing and areas of their gloves being too tight or too loose.
- Surgical glove users with small hands more often rate fit as their top priority, identify issues specific to loose finger areas, and more often suggest the improvement of customized sizing.

There is an opportunity to improve surgical glove fit for a significant portion of surgical staff, particularly for smaller hands and females.

1. Chatterjee A, et al. Journal of Clinical Medicine. 2025 Det 30;14(21):7695. **2.** Drabek T, et al. Journal of Occupational and Environmental Hygiene. 2010 Jan 25;7(3):152-5. **3.** Man T, et al. Heliyon. 2022 Dec 1;8(12). **4.** Dianat I. et al. Ergonomics. 2012 Nav 1:55(11):1429-51. **5.** Gunasekera PC, et al. Journal of the Royal College of Surgeons of Edinburgh. 1997 Apr 1:42(2):95-7. **6.** Yoo IG, et al. Industrial health. 2011;49(5):575-81.

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