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Our findings demonstrate that medical glove size is a critical factor influencing glove integrity during episiotomy repair. Both undersized and oversized gloves were associated with significantly higher perforation rates compared with correctly fitted gloves, potentially increasing the risk of occupational exposure to bloodborne pathogens. Ensuring the availability and use of appropriately sized gloves represents a simple, low-cost, and effective strategy to enhance healthcare worker safety, maintain barrier protection, and improve patient safety during clinical procedures.

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Does Size Affect the Rate of Perforation? A Cross-sectional Study of Medical Gloves

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Abstract

Objectives: Healthcare workers often have unnoticed minor abrasions on their hands, putting them at risk of contracting infectious diseases from patients, if the integrity of the medical gloves is compromised. This study aimed to compare the rate and location of glove perforation between well-fitted and ill-fitted gloves.

Methods: The participants of this cross-sectional study were 45 midwives in the maternity ward of a hospital in Shiraz city, Iran. A total of nine pairs of medical gloves including three pairs of fit size, three pairs of gloves with one size smaller (tight), and three pairs of gloves with one size larger (loose) were given to subjects, and asked them to use the gloves during episiotomy repair operations. After completing the task, all gloves were collected safely and gloves perforation was investigated based on water test (NF EN 455-1).

Results: The perforation rate of the fit, tight, and loose medical gloves was 20, 37.78, and 34.81%, respectively. The results showed a significant difference between glove perforation of different glove sizes ($P < 0.05$). In general, there was a significant difference between the perforation rate of the fit glove and ill-fitted gloves ($P = 0.013$).

Conclusions: Wearing the wrong size gloves may increase the glove perforation rate. Providing a wide range of glove sizes by the hospital management, and choosing the best glove size can be very effective in reducing the glove perforation and increasing safety for healthcare workers and patients.

Keywords: medical gloves; perforation; safety; size
