

# Effectiveness of toughened glassware in terms of reducing injury in bars: a randomised controlled trial.

Author(s)

Warburton AL, Shepherd JP.

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## **Abstract**

**OBJECTIVE:** To evaluate the effectiveness, in terms of injury prevention, of toughened pint glassware in bars. **DESIGN:** Randomised controlled trial. **SETTING:** A random sample of 57 bars in South Wales, West Midlands, and West of England. **SUBJECTS:** A total of 1229 bar workers. **INTERVENTION:** Complete replacement of pint glasses with annealed (control) or toughened (intervention) glassware. **MAIN OUTCOME MEASURES:** Bar staff injuries recorded monthly: number, site, and severity (lifestyle impact; treatment need) of injuries. **RESULTS:** Ninety eight bar staff experienced 115 injuries: 43 in the control group, 72 in the intervention group. Adjusting for people at risk gave a relative risk (RR) of 1.48 (confidence interval (CI) 1.02 to 2.15). Similarly, adjusting for hours worked gave RR 1.57 (CI 1.08 to 2.29). Thus, injury rate was 60% higher in the intervention group ( $p < 0.05$ ), with no significant difference in severity. Most were hand injuries requiring first aid. Injuries tended to occur simultaneously in more than one body part in the intervention group, reportedly caused by spontaneous disintegration of toughened glassware. Impact resistance testing showed the energy required to break annealed glass ( $1.8 \pm 0.2$  J) was greater than that for toughened glass ( $1.4 \pm 0.2$  J), though the difference was not significant. **CONCLUSIONS:** Glass with lower impact resistance caused more injuries. "Toughened" glassware had lower impact resistance. Standards for toughening need to be developed.

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