



KEY POINT SUMMARY

OBJECTIVES

This pilot study compares toilet room designs to the Americans with Disabilities Act Accessibility Guidelines (ADAAG), resulting in recommendations for designing patient bathrooms for assisted toileting.

An Investigation of Noncompliant Toilet Room Designs for Assisted Toileting

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Key Concepts/Context

The American Disability Association created the Accessibility Guidelines (ADAAG) in 1991 to address the needs of the physically disabled population. A large percentage of the U.S. population requires assistance for daily routine activities, whether it be the aging population or those with conditions that limit mobility, such as arthritis, stroke, or poor balance.

For those with limited mobility, 90% of the population stands to transfer from the wheelchair to the toilet. Therefore, it is important that the toilet room and its amenities are designed appropriately to protect both the patient and nursing staff from injury. According to the ADAAG toilet room regulations, there must be 18 inches from the sidewall to the centerline of the toilet, a grab bar must be mounted to the side wall, and another grab bar mounted behind the toilet. Unfortunately, the way these toilet rooms are designed does not leave adequate space for assistants to move around comfortably nor does it serve the diverse needs of patients with different levels of mobility. These toilet designs must take a diverse pool of patients into consideration, whether it be children, elderly, bariatric, amputee, stroke, spinal cord, or brain injury patients, to name a few. They must also consider the increased future use of patient handling and lifting technologies, which can be sizeable and require adequate spacing.

Little research has been devoted to the topic of toilet design and how it relates to patient and staff injury. This study explores both patient and staff experiences with different size toilet rooms, grab bar designs, and unit layouts.

Methods

18 caregivers and 20 patient residents participated in assisted toileting for different toilet configurations. The data was collected in Atlanta, Georgia in August and September of 2011. The results were evaluated using a repeated measures design, meaning the same subjects are used through all phases of the study.



DESIGN IMPLICATIONS

Fewer incidents documented with the fold-down grab bars compared to side-mounted grab bar

Fewer incidents when toilet space is larger, especially for one-person assistance

Caregivers prefer a toilet room configuration that increases the distance from the toilet centerline to the sidewall (greater than the ADAAG 18-inch requirement)

Lifting and transferring technologies should be

Stats on the participants:

Nurses: 83% were certified nursing assistants (CNAs), 17% were licensed practical nurses (LPNs).

Experience: mean 9.5 years, average age 37.6 years, 100% female

Residents: Average age 87 years old, 70% females, cause of disability due to wide range of illnesses including blindness, Parkinson's, stroke, stenosis of the spine, etc.

10 patients were a one-caregiver transfer assist, 10 patients were a two-caregiver transfer assist

The test site was in the lobby space in a continuing care community and included a 5 x 7 ft. portable bathroom unit developed at Georgia Tech with adjustable support structures. The moveable parts compared in this study include the adjustable grab bars and sidewalls.

Four different toilet room configurations were tested:

Configuration 1: toilet 18 inches from sidewall without a rear grab bar

Configuration 2: toilet 18 inches from sidewall + wall-mounted grab bar on sidewall + one swing-away grab bar on the left side of toilet (toilet 18 inches from sidewall)

Configuration 3: toilet 24 inches from sidewall + swing-away grab bars on both sides of toilet at 18 inches

Configuration 4: toilet 30 inches from sidewall + swing-away bars on both sides of toilet at 18 inches

All participants signed consent forms and were allotted a specific schedule to participate in the study. Caregivers, individually or in teams of two, assisted patients on and off the toilet. This was done for each patient four times, once for each of the four configurations, in a randomized order. The total time spent on each resident in the four configuration assistants was 20-30 minutes.

Nurses were asked to answer five questions immediately after completing each transfer. All transfers were videotaped and analyzed afterwards by an occupational therapist. The post-transfer 5-point Likert scale questionnaire (1= strongly disagree, 2 = strongly agree) was intended to capture the caregivers' perceptions of safety in regards to the space, the grab bar location, and the type of grab bar. They were also asked which configuration they liked best. The videotape was also scored by an occupational therapist on a 5-point Likert scale for transfer technique/body mechanics by the nurses (0 = no proper mechanics, 4 = all proper mechanics), level of physical exertion by the nurses, location of the transfer assistance, and incidents that put the resident at risk of injury.



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Findings

- Majority of caregivers preferred Configuration 4 with the largest space.
- 88% of caregivers had configuration preferences that deviated from the ADAAG requirements.
- Significant preference for grab bar style in Configuration 4 compared to Configuration 1
- Indication that difficulty decreases on caretakers progressively from Configuration 1 to 4
- No significant differences found between one- and two-person assistant transfers across all questions
- No significant findings among four configurations for transfer mechanics and amount of physical assistance
- No significant difference among configurations in amount of assistance provided

Limitations

- This study took place at a single location and should be followed up with further research.
- The study also took place in a lobby, which may have influenced patients' comfort and sense of privacy.