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Smart grab bars: Integrating artificial intelligence to bath grab bars to decrease falls among seniors.

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Introduction. Falls among seniors are a well recognized public health issue as they represent the leading causes of fatal and non-fatal injuries, hospitalisations and functional disabilities among this population. Encouraging the use of bath grab bars for safe and independent bathing has been an important role of occupational therapists. Studies have shown that bathtub grab bars are not always present nor used by seniors. Initiatives must be taken to increase their use and to decrease the risk of falls for this population. Lately, technology and artificial intelligence have been integrated to render living environments safer and more responsive to seniors' health needs. Although mainly used with people suffering from dementia, it is possible that such an approach could be useful to encourage grab bar use and decrease the risk of falls in seniors. A Smart grab bar which integrates artificial intelligence was developed to encourage grab bar use and decrease fall among seniors.

Objective. Present the results of two pilot studies to determine if artificial intelligence can entice the use of grab bars and which cue (visual, auditory or an audio-visual combination) is most effective.

Method. A mixed design where each participant serves as his/her own control was used in both studies. Overall, 80 participants completed the studies. Participants completed a series of bath entries/exits where the following cues were randomly presented: no cue, visual cue, auditory cue and a combination of visual and auditory cues. Frequency of bar use was recorded and statistical analysis completed. Participants also rated the different cues for helpfulness, safety and comfort.

Results. The smart grab bars increased the frequency of use of grab bars during bathtub transfers. The auditory cue seemed the most effective to encourage the use of grab bars although participants preferred the visual cue. The presence of grab bars increased the sense of security.

Clinical implications. Results suggest that Smart grab bars may be useful in training seniors to use bath grabs to ensure safe independent bathtub transfers. Smart bars may also prove helpful for encouraging individuals with mobility and/or cognitive problems to utilize grab bars more frequently and more consistently.