

Bathroom Redesign

Aiding Visually Impaired Older Adults AIP

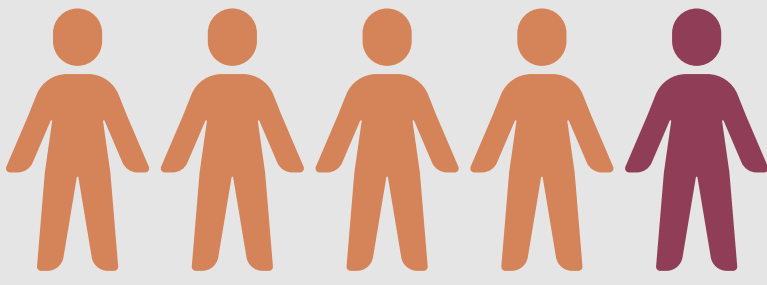
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588,000,000

people will be diagnosed with moderate-severe visual impairment by the year 2050



4 out of 5 of people with moderate to severe visual impairment are over 50 years old

Visual impairment and independence



Aging in place has greater independence compared to moving to a facility

Greater independence is linked to increased quality of life and in turn increased life expectancy

The visually impaired are significantly more likely than their sighted peers to be moved to a facility

Visual inaccessibility of a home community nullifies independence and quality of life increases associated with aging in place

The bathroom is a common home space to be perceived as dangerous due to visual inaccessibility

Visual Impairments Targeted



Age-related Macular Degeneration



Hazy Vision



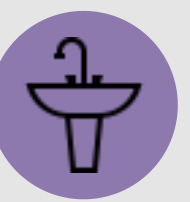
Peripheral Vision Loss

Methods

The suggestions for our bathroom redesign are based on the extensive research of older adults diagnosed with visual impairments and have been identified as having challenges when interacting with bathrooms. The challenges of non-accessible bathrooms identified through literature reviews can be grouped into 5 categories: lighting, washing, toilets, flooring, and clutter.



- The lack of lighting in hallways, caused frustration for some older adults (Lee)
- Some older adults would rely on night vision in order to find there way home (Lee)
- Insufficient lighting was the third most reoccurring issue after narrow space" and "no handrail" (Liu)
- Also depending on lighting used, the eyes of older adults would take longer to adjust to changes in brightness (Liu)
- Older adults who aged at home, experienced more fear about nighttime trips to the bathroom in comparison to those who lived at care homes (Lee)



- Older adults with vision loss are dependent on caregivers in order to go through daily task such as washing (Hans-Werner)
- Older adults also had trouble remembering to wash their hands (Knighton)
- Hygiene is also not seen as a priority for some older adults due to the difficulty these task take (Siswati)



- Older adults with Age-related Macular Degeneration (AMD), have to adjust to toileting due to changes in their vision (Gopinath)
- The experience of getting onto a toilet is difficult for individuals with vision impairments and mobility impairments (Pillissy)
- Visually impaired older adults are un able to discern the position of the toilet due to the fact that there is no color contrast between the toilet and the wall (Lee)
- Older adults have trouble safely getting on and off the toilet due to the lack of grab rails (La Grow)
- Older adults also have some trouble bending down to sit on the toilet which causes stress on the knee and legs (Yuan)



- Showers can cause a fall risk for older adlts with visual impairments (Riazi)
- Access to the shower was considered poor, or in-accessible, for some older adults' (Kim)
- Lack of grab bars within showers or bathrooms can hinder independent living (Ng)
- There were also many degrees of assistance needed to perform ADL tasks such as showering (Marx)
- Glass shower doors were considered a hazard (Riazi)

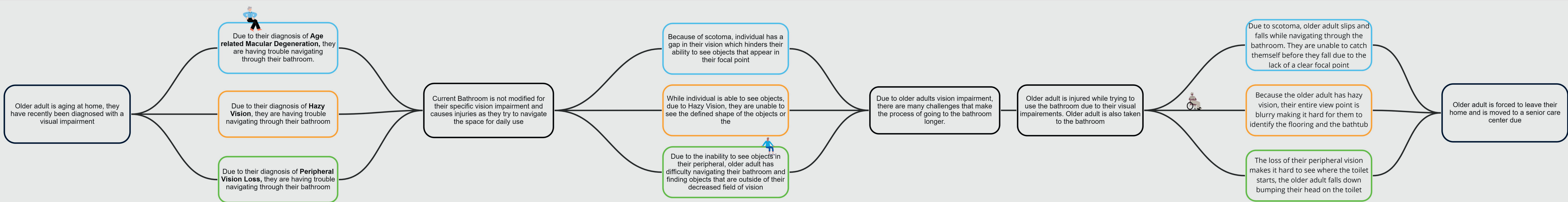


- Flooring were identified as hazardous for some individuals (Swenor)
- Flooring Hazards were due to the flooring being slippery (Riazi)
- Floor level obstacles can cause problems with visual impairments (Enkelaar)



- Clutter on bathroom countertops caused daily task to become more difficult for individuals with Visual Impairments (Leat)
- Visual Impairments also caused older adults to have difficulty identifying objects on their countertops due to the objects having similar textures

Journey Map



Design Opportunity



- ① LED strip lights
- ② Motion sensors activating pathway lighting
- ③ Automatic lighting



- ④ Color contrast safety stair nosing
- ⑤ Smooth, slip-resistant flooring



- ⑥ Shower booth with a flat bottom rather than bathtub or shower with sharp slopes for drainage
- ⑦ Plastic doors instead of glass for shower
- ⑧ Smooth Flooring
- ⑨ Grab bars in shower



- ⑩ Single lever taps
- ⑪ Low Clutter



- ⑫ Motorized height and tilt adjusting mechanisms for toilet
- ⑬ Contrasting toilet color against wall color



Conclusion

When designing for the future, it is important to anticipate the needs of the user group. Technological advancements can have a significant impact in the design of spaces. Specifically, through the use of virtual reality, researchers can simulate the bathroom environment to better understand the challenges faced by visually impaired older adults gaining in place.

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