

**Towards a Dignity-Conscious Assistive Technology:
Transformation of Shower Chair Design
Driven by User Feedback**

Volume 2 of 2

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A supplementary volume submitted in partial fulfillment of the requirements of
Liverpool John Moores University for the degree of Doctor of Philosophy.

This research programme was carried out in collaboration with
Transart Institute for Creative Research



Design of Dignity-Conscious Shower Chair by Participatory Design Approach

This portfolio serves as a compilation of work, documenting the design practice submitted as part of a practice-based PhD research degree.

It is accompanied by a written thesis (Volume 1) that offers further insight into the design process.

Introduction

This PhD contributes original knowledge through the practice-based design of an iterative assistive shower-transfer device (expand on dignity here). Knowledge is generated through the act of designing, testing, and refining the artefact, with each iteration functioning as a site of inquiry. The resulting device embodies experiential and design-specific knowledge that cannot be fully articulated through text alone. Together, the artefact and the written thesis (Volume 1) demonstrate how practice-based research can advance understanding of dignity and user-informed, iterative design in assistive technology.

Based on the aim of research, promoting dignity through the use of assistive technology, this portfolio demonstrates the practical application of research findings by developing a dignity-conscious shower chair for eldercare facilities. While Volume 1 detailed the theoretical foundations, methodology, and iterative design process, this portfolio provides a visual and practical overview of the project's key stages. It showcases the design development (including sketches and CAD models), prototype manufacturing, and a demonstration video of the final dignity-conscious shower chair's features.

Background

Dignity is essential in eldercare but often overlooked in assistive technology design. This practice-based research examined how assistive technology, dignity, and caregiving interrelate, focusing on shower assistance and the limits of a function-centered approach. Maintaining dignity is challenging, as current technologies often do not adequately balance functional needs with the subjective experiences of older adults and caregivers.

Aim

This study aimed to develop and evaluate a dignity-conscious framework for designing shower chairs, addressing the limitations of function-centered approaches and promoting a more comprehensive, relational approach to dignified care for older adults.

Methodology

The research adopted a constructivist epistemology and participatory design with an iterative process and user testing at two Chinese eldercare facilities. Data analysis involved a theory-informed thematic synthesis. Key frameworks—Gallagher's dual dimensions of dignity, Nolan's Senses Framework, and Continuity Theory—guided data collection, involving semi-structured interviews and focus groups.

Key Findings

The research found a tension between caregiver priorities (efficiency and safety) and older adult values (comfort and autonomy), causing trade-offs in dignity. Evidence showed that design for one stakeholder often affects the other, highlighting dignity's relational nature. A key contribution was identifying design principles and strategies to reduce these trade-offs and improve dignity for both caregivers and older adults.

Contribution

This study contributes by: (1) developing a dignity-focused design framework for assistive technology, (2) providing empirical insights into dignity trade-offs in care relationships, (3) shifting from functional to relational design perspectives, and (4) proposing practical recommendations emphasizing relationality, customization, and stakeholder empowerment. It also provides new insights for critiquing and contextualizing existing theories in the design of eldercare assistive technology

Conclusion

This research integrated user perspectives and theories to create a framework for designing assistive technologies that promote dignity for older adults and caregivers. Future initiatives should incorporate ecosystem-level interventions and relational design strategies to fully realize technology's potential in eldercare.

Research Questions

1

How is dignity upheld or compromised in the relationship between older adults and carers when using assistive technology for shower assistance?

2

How can the features of an assistive shower chair be transformed into dignity-conscious solutions that prioritise the stakeholders' dignity, leading to enhanced quality of care?

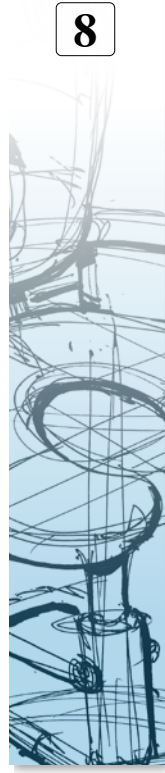
Phase 1

understand



7

Exploration



8

Realization



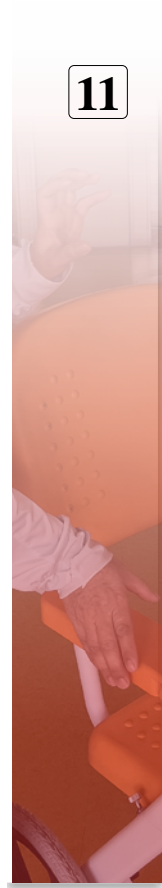
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Finalization



10

Evaluation



11

Dignity-Conscious
Shower Chair



12

Content

Understand

As outlined in Section 5.5 of Volume 1, focus groups were conducted to explore the multi-faceted care experiences of older adults and carers in elder care facilities. It included 13 care activity cards based on their perceived physical and emotional difficulty (for caregivers) and value and enjoyment (for older adults).



Caregivers' Perceptions



Older Adults' Perceptions



Exploration

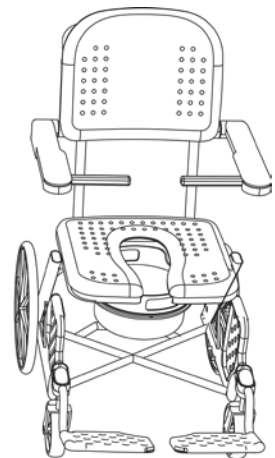
Based on the design principles outlined in Section 5.2.3 of Volume 1, the shower chair was developed through an iterative process with user feedback. This design process included ideation sketches and three-dimensional CAD models for user demonstration. The detailed design synopsis and user feedback, including 2D rendering images, are available in Section 5.3 and Appendices 8-10 of Volume 1.



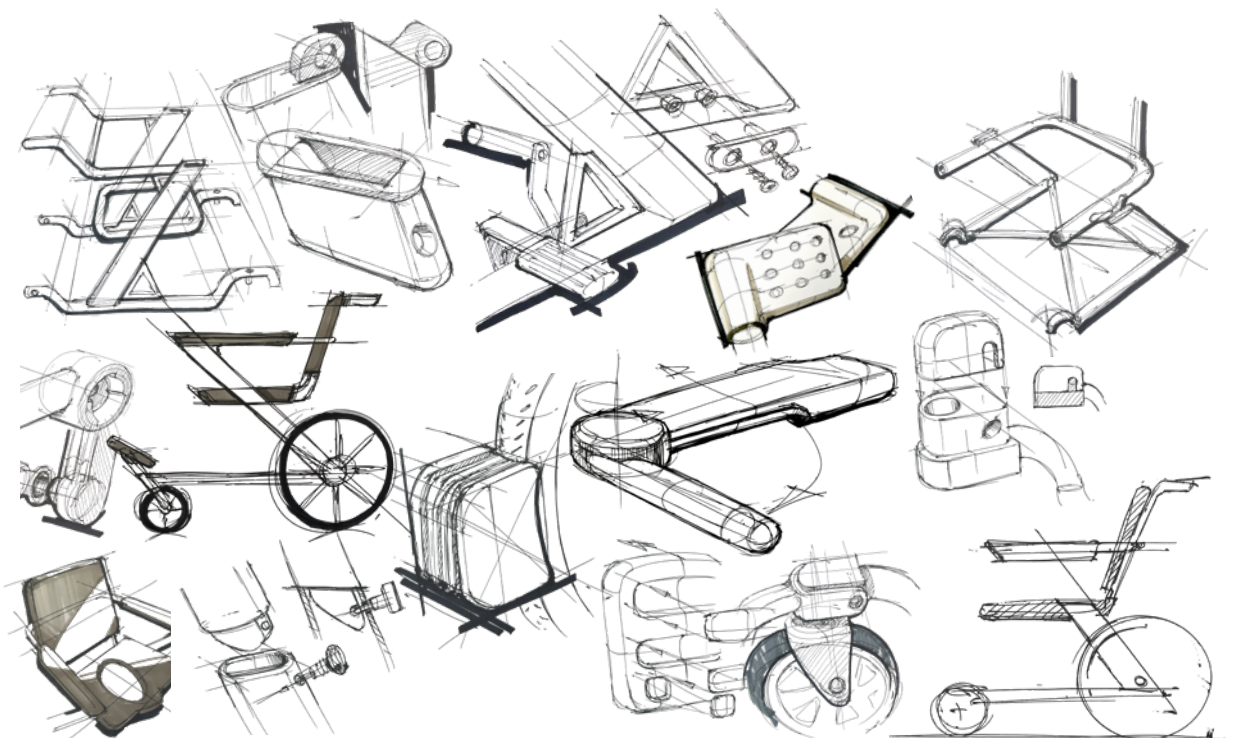
Initial design



Iteration 1



Iteration 2



Realization

Research Phase 1 served as the foundation for the design and production of the shower chair prototype. The process included mechanism design for the structure, moving components, and plastic components. A comprehensive report of each refinement step and its design-decision relations is available in Chapter 6 of Volume 1.



Finalization

The final prototype for user testing was produced in two colors, enabling participants to select the option based on their personal preference to assess its impact on their dignity experience.

The report detailing this final prototype refinement is available in Section 6.5 of Volume 1.



Evaluation

The shower chair prototype was evaluated in two stages, including Function and Aesthetics Evaluation and User Testing. The first stage aimed to gather insights into the prototype's functionality and aesthetics without using the prototype directly (a detailed report available in Section 6.4 of Volume 1). The second stage involved users testing the prototype during their shower routine at the facility, providing essential feedback for analysis (a detailed report is available in Chapter 7 of Volume 1).

Function and Aesthetics Evaluation



Post-test Evaluation



Dignity-Conscious Shower Chair

The design and evaluation of a dignity-conscious shower chair prototype were based on the Design Scheme. It includes three categories - Experienced Dignity, Factors Influencing Dignity (Safety), and Factors Influencing Dignity (Comfort) - which guided the design of each feature and ensured its effectiveness. Detailed descriptions of these are available in Section 5.4 of Volume 1.



Dignity-Conscious Assistive Shower Chair

Features Demonstration

*for
Experienced dignity
Factors influencing dignity
-Safety
-Comfort*