Reimagining Assistive Walkers: An Exploration of Challenges and Preferences in Older Adults

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INTRODUCTION

- By 2050, over 2.1 billion people will be aged 60+ [1]
- Older adults often face mobility and daily living challenges [2]
- These challenges lead to reduced independence, social isolation, and a higher fall risk [3]

Role of Assistive Technologies

- Support gait and activity levels
- Enhance safety and autonomy

Walkers [4]

- Alter posture and natural gait
- Can cause biomechanical disorders
- Do not support specific user requirements

This study seeks to address the need for **user-centered insights** in developing a new generation of robotic and smart walkers.

- Identify user challenges and desired features
- Interview older adults, caregivers, and clinicians
- Guide future designs of assistive walkers

METHODOLOGY

1 QUALITATIVE APPROACH

Knowledge, Attitude, and Practice → Close-Ended Questions → Open-Ended Questions

About the use of walkers

About functionalities and limitations

About suggestions, improvements, and ideal features

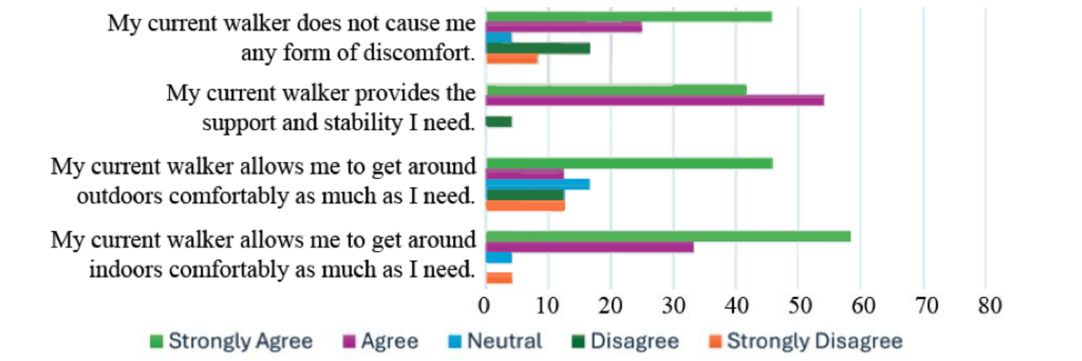
2 EXPERIMENTAL SETTING

- Conducted in two residential care homes in the south-west of England, and
- Healthcare professionals from health institutions.

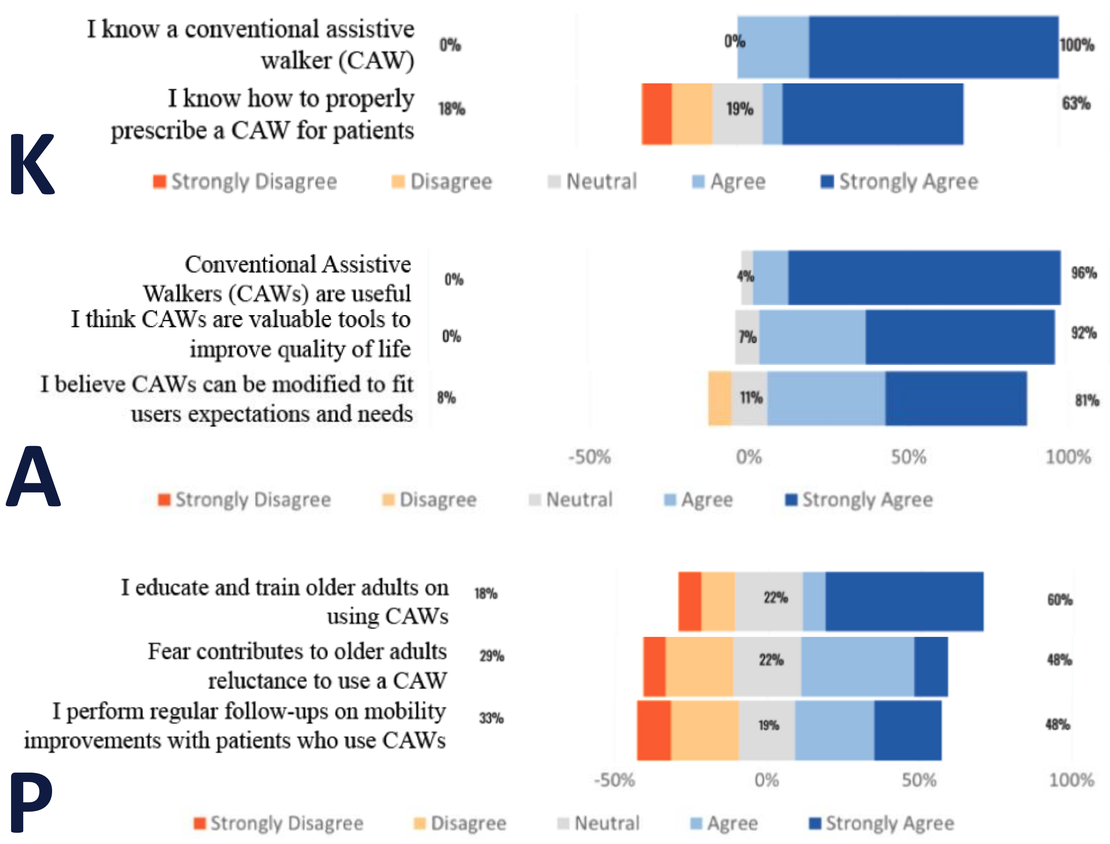
Older Adults	6 ♂ 18 ♀	**82.4 ± 4.4** years old Vision problems **79.0%** Hearing problems **58.0%** Mobility difficulty **92.0%**
Caregivers	**n = 30**	+2 years of experience **60.0%** Cared for +10 older adults **64.0%**
Healthcare Professionals	**n = 27**	+2 years of experience **78.0%** Cared for +10 older adults **59.0%**

RESULTS

3 OLDER ADULTS' OPINIONS ON FUNCTIONALITIES



4 KAP RESPONSES FROM CAREGIVERS AND PROFESSIONALS



CONCLUSIONS

- Caregivers and professionals value walkers but report frequent falls due to poor balance, cognitive issues, and walker design flaws (e.g. faulty brakes, unstable wheels).
- Walkers are often too heavy, lack adequate weight support, and cause physical and psychological strain, especially for higher-weight users.
- Noise from brakes and wheels triggers stress and agitation, reducing willingness to use the device.
- Users struggle with maneuverability in tight spaces (stairs, bathrooms), turning radius, and poor adaptability to confined environments.
- Suggested smart features: emergency alarms, obstacle detection, posture guidance, grip force sensors, and ergonomic adjustments for size and stability.
- Limitations: Non-random sample of 81 participants, with inconsistent device use data and potential self-reporting bias; future studies should broaden scope and methods.

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