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Functional Goals and Predictors of their Attainment in Low-Income Community-Dwelling Older Adults

Brian W. Waldersen, MD, MPH,

MD/MPH, Class of 2016, Johns Hopkins School of Medicine and School of Public Health*, 2772 Lighthouse Point East #306, Baltimore, MD 21224,– 602-538-7122

Jennifer L. Wolff, PhD,

Associate Professor, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 624 North Broadway, Room 692 Baltimore, MD 21205

Laken Roberts, MPH,

Senior Research Assistant, Johns Hopkins School of Nursing, 525 North Wolfe St., Baltimore, MD 21205

Allysin E. Bridges, MA, OTR/L, CAPS,

Senior Occupational Therapist, Johns Hopkins School of Nursing, 525 N Wolfe St., Baltimore, MD 21205

Laura N. Gitlin, PhD, and

Professor, Johns Hopkins School of Nursing and Johns Hopkins School of Medicine, 525 North Wolfe St., Baltimore, MD 21205

Sarah L. Szanton, PhD, ANP

Associate Professor, Johns Hopkins School of Nursing and Bloomberg School of Public Health, 525 N Wolfe St., Baltimore, MD 21205

Abstract

Objective—To describe functional goals and factors associated with goal attainment among low-income older adults with disabilities living in the community.

Design—Secondary analysis from two studies of CAPABLE. Functional goals were coded using the International Classification of Functioning, Disability, and Health (ICF) framework. The percentage of goals attained at five months follow-up was computed within each ICF domain. Multivariate logistic regression was used to identify factors associated with goal attainment.

Address correspondence to: Jennifer L. Wolff, Ph.D., Associate Professor, Department of Health Policy and Management, Johns Hopkins Bloomberg School of Public Health, 624 N. Broadway, Room 692, Baltimore, MD 21205, jwolff@jhsph.edu, (410) 502-0458 phone; 410-955-0470 facsimile.

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Setting—Participants' homes in Baltimore, Maryland

Participants—CAPABLE participants (n=226)

Interventions—A five-month, home-based, person-directed, structured program delivered by an inter-professional team: occupational therapist (OT), registered nurse (RN), and handyman.

Main Outcome Measure(s)—Process of OT goal setting and attainment at the final OT visit.

Results—Participants identified 728 functional goals (average of 3.2 per participant), most commonly related to transferring (22.0%, n=160 goals), changing or maintaining body position (21.4%, n=156 goals), and stairclimbing (13.0%, n= 95 goals). Participants attained 73.5% (n=535) of goals. Goal attainment was highest for stairclimbing (86.3%), transferring (85.6%), and self-care (84.6%); walking goals were less likely attained (54.0%). Goal attainment was not associated with age, gender, education, depressive symptoms, function, or health-related quality of life but was less likely among participants who had severe pain compared to those without pain (aOR: 0.38, 95% CI: 0.17, 0.86). When participant readiness to change (RTC) score increases by one point on the four-point scale, goal attainment was 62% more likely (aOR 1.62; 95% CI: 1.14–2.29).

Conclusion—Home-based collaborative goal-setting between older adults and OTs is feasible and particularly effective when individuals are ready or willing to adopt new strategies to achieve identified goals.

Keywords

Physical Function; Self-management; Person-directed care; Older Adults

Introduction

Disability poses a direct challenge to older adults' widely held preferences for aging at home and in the community.^{1, 2} An estimated 10 million older Americans with disabilities live in the community.³ As neither Medicare nor Medicaid pay for help at home as a standard benefit, low-income older adults with disability are at heightened risk for nursing home placement.^{4, 5}

The home environment is foundational to older adults' ability to function in the presence of disability^{6, 7} and is amenable to change.⁸ Tailored interdisciplinary home-based programs that address physical features of the home and person-level factors have been shown to reduce disability and improve quality of life.^{9–13} The World Health Organization's (WHO) International Classification of Functioning, Disability, and Health (ICF) recognizes that disability does not depend solely on individual function, but rather involves the interplay between four domains: body function, body structure, activities and participation, and environmental factors.¹⁴ Since individuals vary within and across these domains, collaborative goal-setting may encourage participation and improve function by identifying person-directed goals. A recent Cochrane review concluded that goal setting in rehabilitation improves quality of life and self-efficacy, although the strength of the findings was limited by the quality of available evidence.¹⁵

Prior studies find individuals' functional goals vary widely,^{16–20} but few studies have described the functional goals of community-dwelling older adults with functional limitations or examined which factors are associated with goal attainment.²¹ Therefore, this paper was undertaken to examine functional goals of community-dwelling low-income older adults with disability who participated in CAPABLE (Community Aging in Place, Advancing Better Living for Elders), a structured, inter-professional model of person-directed care to improve daily function.^{9, 11, 22} CAPABLE is delivered in older adults' homes by an occupational therapist (OT), a registered nurse (RN), and a handyman who work with participants to identify strategies that address functional goals prioritized by the older adult.^{10, 13, 23}

This study examines one component of CAPABLE: functional goals collaboratively established by participants and OTs and factors associated with goal attainment. Drawing from the ICF framework, we examine socio-demographic, clinical, and contextual factors that may affect goal attainment. Our study has three objectives: (1) to describe the functional goals identified by participants with the OT, (2) to determine the extent to which functional goals were attained at the conclusion of the program (six OT visits), and (3) to determine which factors were associated with goal attainment or failure.

Methods

Study Population and Setting

Study participants were 226 low-income adults ages 65 years or older living in Baltimore, MD who completed either of two CAPABLE protocols, (1) the treatment arm of a National Institutes of Health (NIH) funded randomized trial (R01AG040100) that began in February 2012 and is ongoing (n=84) or (2) a Centers for Medicare and Medicaid Services (CMS) demonstration study (1C1CMS330970-01) conducted between November 2012 and November 2015 (n=142). Eligibility criteria for both studies included living at home, reporting difficulty in at least one activity of daily living (ADL)²⁴ or at least two instrumental activities of daily living (IADL),²⁵ the ability to stand with or without assistance, and income less than 200% of the poverty line (NIH trial) or income less than 135% of the poverty line (CMS study). Individuals who were hospitalized three or more times in the prior year, actively receiving cancer treatment or who had expected survival of less than one year, were cognitively impaired,²⁶ or had plans to relocate within one year were excluded.^{10, 23} The Johns Hopkins University Institutional Review Board approved all trial activities, and study participants provided informed consent.

The CAPABLE Model

Prior reports have described the CAPABLE protocol.^{10, 23} In CAPABLE, each older adult and OT collaboratively select up to three goals to address during six program visits of 60–90 minutes, adding additional goals if time allows. Based on these goals, the OT and the older adult prioritize a work order for the handyman. The program has a budget of \$1300 for assistive devices, home repair, or home modifications to support goal attainment. Other aspects of CAPABLE include RN visits that involve collaborative goal-setting in four 60–90 minute visits. RN-related goals predominantly focus on pain and mood management, fall

prevention, strength and balance, medication complexity, and primary care communications.²⁷ The RN and OT communicate about the respective goals, which may or may not correspond with each other. Although CAPABLE is an inter-professional, multicomponent program, the OT and RN assume distinct roles that are differentiated by discipline. The goals that CAPABLE participants select in partnership with the RN are guided by a RN-specific protocol that addresses more medically-oriented issues. Importantly, the goals that are pursued in CAPABLE are person-directed and selected in partnership with either the RN or the OT rather than together. Because of the complexity of evaluating goal-setting and the importance of understanding it as a granular process,¹⁵ we exclusively focus on OT-specific goal-setting.

CAPABLE OT Goal Setting

Using the Client-Clinician Assessment Protocol (C-CAP), the OT engages in a collaborative discussion with each participant to identify important, specific, and attainable functional goals following a structured protocol involving five steps.²⁸ To facilitate rapport and collaborative discussion, the first step involves open-ended questions regarding daily routine and function. Second, older adults rate their level of difficulty performing functional tasks, including functional mobility, ADLs, and IADLs. Third, the OT assesses the older adult's readiness to change (RTC), as described below under measures.²⁹ Fourth, the OT assesses functional ability in the three target areas the older adult prioritizes as being most important to learn new strategies. These usually relate to functional tasks identified by the older adult. Lastly, for each of the target areas, the OT assists the participant in establishing goals. The OT and participant work together over subsequent sessions to attain identified goals, adding additional goals if time permits.

Baseline Measures

Trained evaluators (not CAPABLE clinicians) collected baseline data from study participants during a face-to-face interview prior to program initiation. Participant demographic characteristics included age, gender, race (African American or other), and educational attainment (less than high school versus high school or more).

Physical function measures included self-reported ADLs and IADLs. Individuals were asked about their difficulty performing eight ADLs²⁴ and eight IADLs.²⁵ Response categories for each task varied from 0 to 2. Response items were summed to construct a single measure of function, which ranged from 0 to 32.^{25, 30}

Health status measures included depressive symptoms, pain, and health-related quality of life. Depressive symptoms were assessed with the Patient Health Questionnaire-9 (PHQ-9),^{31, 32} which were examined as a continuous measure ranging from 0 to 27. Pain and health-related quality of life were assessed using the European Quality of Life (EuroQOL) Group's EQ-5D.³³ Pain was assessed with the EQ-5D pain subscale in which pain or discomfort is categorized as "none" (1), "moderate" (2), or "extreme" (3). Health-Related Quality of Life was assessed with the EQ-5D visual analog scale, which ranges from 0–100.

Home hazards were measured using a 43 item Centers for Disease Control and Prevention checklist.³⁴ Domains evaluated include hazards present in the kitchen, bathroom, bedroom, stairways, as well as sitting and tripping hazards.

Process Measures

Two additional measures used in our study, RTC score and goal attainment, were obtained by one of four OTs. Guided by the transtheoretical model of change,³⁵ OTs used a structured process during the first visit to rate older adults' RTC through clinical interviewing and direct observation, which is the third step of the C-CAP described previously.^{26,32} Scores were based on older adults' understanding and recognition of their own functional limitations and attitudes toward engaging in compensatory strategies. The scale ranges from 1 to 4, where a rating of 1 (pre-contemplation) indicates a lack of self-awareness regarding functional limitations and a lack of willingness to change, and a rating of 4 (action/maintenance) indicates awareness of functional limitations and active practice in compensatory strategies.

Goal attainment was assessed at the final OT visit. Older adults were asked by the OT about each goal and whether the goal was attained "fully" (goal completely achieved with no need to take further steps), "partially" (the goal was not achieved but remained actively pursued or some of the goal was achieved), or "not at all" (the goal was not at all met). "Successful" attainment was conservatively defined as goals that participants reported as being met fully; partially or unmet goals were categorized as "failure." Relying on the OT for data collection on goal attainment creates the potential for interrater reliability bias. We attempt to minimize this bias by having the OT ask the participant to assess their own achievement of each goal.

Data Analysis

Our study is a secondary analysis of process data collected during two CAPABLE studies. Two members of the study team (BWW, AEB) independently reviewed and coded each participant goal to the closest corresponding International Classification of Functioning (ICF) category using linking procedures previously described.^{14, 36} Where goal categorization conflicts arose, the two reviewers discussed each goal until consensus was achieved. In total, 71 goal categories were identified (see Appendix 1), nested within the following ICF-defined groupings: 1) self-care, 2) domestic life, 3) general tasks and demands, 4) community, social, and civil life, 5) major life areas, 6) interpersonal interactions and relationships, 7) communication, 8) body functions, 9) products and technology, and mobility (10–14). We further categorized the mobility grouping to differentiate five subsections: 10) transferring oneself, 11) changing or maintaining body position, 12) climbing, 13) walking and moving around, and 14) hand and arm use. The resulting 14 groupings, which we hereafter refer to as domains, are listed with their ICF alphanumeric codes in Table 1.

We used graphic plots and descriptive statistics to characterize the study sample, locate missing data, and identify outliers. Item non-response was minimal. For the two study participants who were missing one of nine items of the PHQ-9 scale, values were assigned to the median for the study sample. We used descriptive analyses to characterize the study

sample, functional goals, and goal attainment. We examined the frequency of goals selected and the proportion of goals that were attained by domain. Logistic regression was used to evaluate the strength of association for individual and environmental factors in relation to goal attainment. To account for within-person clustering, we used generalized estimating equations (GEE) and robust variance estimation, employing each participant's unique study identifying number as the clustering variable with an exchangeable correlation matrix. Multivariate logistic regression models were constructed to examine the relationship of individual and environmental factors in relation to goal attainment after adjusting for other covariates. We assessed collinearity of covariates with variance inflation factors, which were all less than 2.0. Analyses were performed using Stata v. 13.

Results

Study participants were predominantly African-American (81.4%) and female (86.7%); nearly 60% had a high school education or more (Table 2). At baseline, participants reported a high degree of limitation in ADLs and IADLs (mean: 11.9, SD: 6.9, range: 1–30). Most participants reported moderate (72.6%) or severe (14.6%) pain. Study participants had an average RTC score of 2.2 (SD: 0.6, range: 1.0–4.0), which lies between the “contemplation” (score of 2.0) and “preparation” (score of 3.0) stages of “readiness to change.” At baseline, the presence of home hazards was high in the bathroom (89.8% of participants' homes) and kitchen (88.1% of homes). Also commonly present were tripping hazards (75.2% of homes), stairway hazards (73.0% of homes), lighting deficiencies (72.1% of homes), and sitting hazards (50.4% of homes), such as a lack of arm rests or chair instability.

Identified Goals and Goal attainment

Study participants selected 728 total goals (average of 3.2 goals per participant; see Table 1). The most commonly identified functional goals related to transferring (22.0%), changing or maintaining body position (21.4%), and stairclimbing (13.0%). Of the 728 identified goals, 535 (73.5%) were rated by participants as fully attained at five months follow-up. The goal attainment rate was highest for goals related to stairclimbing (86.3%), transferring (85.6%), and self-care (84.6%), and was lower for goals related to walking and moving around (54.0%) and the major life areas domain, (25.0%) which encompasses economic and educational goals (See Table 1 for examples). Nearly half (42.9%, n=97) of participants attained every goal and 96.0% (n=217) fully attained at least one goal (data not shown).

Correlates of Goal Attainment

In simple and multivariable regression models, participant age, gender, educational attainment, depressive symptoms, functioning, and general health were not associated with goal attainment (Table 3). Older adults' baseline RTC score was associated with goal attainment at the final OT visit: goals were 62% more likely to be attained (aOR 1.62, 95% CI: 1.14, 2.29) with each one point increase in baseline RTC. Goals of participants who were in severe pain (versus not in pain) were nearly two-thirds less likely to be attained (aOR: 0.38, 95% CI: 0.17–0.86); goal attainment among those with moderate pain was not significantly different from older adults without pain (aOR: 0.64, 95% CI: 0.33–1.25). Finally, goals of individuals with home stairway hazards, such as lack of railings or

insufficient lighting overhead, were significantly more likely to be attained than goals of individuals who did not have such hazards (aOR: 1.63, 95% CI: 1.05–2.52), as were goals of individuals with bathroom hazards, such as low toilet seats or slippery shower floors (aOR 2.05, 95% CI: 1.15–3.65).

Discussion

This study sought to describe the functional goals of older adults, to examine goal attainment, and to determine whether specific characteristics were associated with goal attainment. We found that home-based collaborative goal-setting between low-income older adults with disability and OTs is feasible and particularly effective when individuals are ready or willing to adopt new strategies. Nearly three-quarters of participant-identified functional goals were attained at five months follow-up. Goal attainment varied by domain, such that transferring and stairclimbing goals were more likely attained than goals related to community and interpersonal engagement. That participants identified a high number of bathroom-related goals may be multifactorial: the high propensity for bathroom injury due to wet and slippery surfaces and longstanding residential stability alongside slow onset of disability that may have rendered the bathroom environment ill-suited to facilitate daily functional needs. Although goal attainment did not differ by demographic factors or baseline function, functional goals were significantly more likely to be attained when the participant was more “ready to change” at the first OT visit.

The finding that RTC score was significantly related to functional goal attainment is consistent with a broader literature demonstrating the importance of individual motivation and willingness to engage in behavior change.^{29, 35, 37} In person-directed care models, the plan of care is guided by individuals with providers, and as a result, is more likely to address goals that are personally meaningful. Participants who were more ready and willing to change were more likely to achieve their goals than those who the OT rated as less ready to change, providing evidence for the importance of motivation to goal attainment.³⁸

Our finding that individuals’ baseline RTC score predicted goal attainment invites further investigation into individual and goal-oriented factors that affect RTC. Work by Rose and colleagues suggests that RTC is malleable rather than an intrinsic component of an individual’s personality. During the course of a similar program, RTC scores improved significantly from first to last visit as a result of the program itself.²⁹ Although we do not examine change in readiness, that baseline RTC score predicts goal attainment outcomes at the last visit suggests that participants rated as least ready to change might benefit from alternative approaches to goal-setting or strategies that increase motivation. These alternatives may include additional resources, such as providing more visits upfront focused on motivation, or a revised protocol, such as modifying the number and/or magnitude of goals identified for this subset of participants.

That collaborative OT-older adult goal setting during in-home visits was effective irrespective of most socio-demographic and health characteristics supports the utility of collaborative goal setting to address individually-identified functional goals. Relative to participants without pain, those in severe pain achieved functional goals less often,

suggesting that severe pain may interfere with attaining functional goals and, if addressed, may enable greater functional improvement. In contrast, participants with moderate (versus no) pain did not differ in their likelihood of attaining functional goals. These findings have important implications for the recent movement in the treatment of pain that encourages clinicians to set realistic pain goals with patients, which oftentimes means pain reduction rather than elimination.³⁹

Study Limitations

Our study has several limitations. Because the study sample was predominantly African-American, female, and urban community-dwelling, results may not generalize. Although the ICF provided a useful framework for coding of goals, some goals may fall into more than one category while others may be incompletely described. Because our study relied on process measures assessed by four OTs during clinical encounters with study participants, findings may be subject to inter-rater reliability bias. The OT, rather than a blinded third party, asked the participant about whether the goal was achieved or not. This approach might introduce bias from social pressure, whereby some participants may feel pressured to answer affirmatively that their goals were attained. Observed variability in goal attainment by OT ranged from 69.0%–92.3%, and could be due to bias from social pressure or differences in OT skill with respect to goal setting, identifying strategies to address underlying limitations, or motivating participants to undertake behavioral change. Finally, the focus of this study on OT goal setting and attainment precluded our ability to understand how progress with the RN may have affected OT-related goal attainment.

Conclusion

Contemporary payment policies that emphasize value, flexibility, and innovation in service delivery⁴⁰ have led to a growing appreciation and interest in addressing non-medical factors that affect health and function,^{41, 42} and attending to individual priorities, goals, needs, and values that drive the change central to person-directed care.^{38, 43, 44} Findings from this study suggest the importance of individual motivation and willingness to engage in behavior change and points to the potential benefit of tailored, person-directed goal setting to appropriately target behavioral change to facilitate attainment of functional goals.

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access to data in the study and all authors take responsibility for the integrity of the data and accuracy of the data analysis.

Conflict of Interest: The authors declare that they do not have a conflict of interest.

List of Abbreviations

OT	occupational therapist
RN	registered nurse
WHO	World Health Organization
ICF	International Classification of Functioning, Disability and Health
aOR	adjusted odds ratio
CI	confidence interval
NIH	National Institutes of Health
CMS	Centers for Medicare and Medicaid Services
C-CAP	Client-Clinician Assessment Protocol
RTC	readiness to change
ADLs	activities of daily living
IADLs	instrumental activities of daily living
PHQ-9	Patient Health Questionnaire-9
EuroQOL	European Quality of Life
GEE	generalized estimating equations

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Appendix 1: Coding of Goals using the International Classification of Functioning, Disability, and Health (ICF) Framework

Domain	ICF Code	ICF Goal
Body functions	b134	Sleep functions
	b210	Seeing functions
	b280	Sensation of pain
Communication	d360	Using communication devices and techniques
Community, social, and civil life	d920	Recreation and leisure
	d9205	Socializing
	d910	Community life
	d9100	Informal associations
	d9202	Arts and culture
Domestic life	d6402	Cleaning living area
	d630	Preparing meals
	d640	Doing housework
	d6505	Taking care of plants, indoors and outdoors
	d660	Assisting others
	d6403	Using household appliances
	d6401	Cleaning cooking area and utensils
	d650	Caring for household objects
	d6506	Taking care of animals
	d6404	Storing daily necessities
	d610	Acquiring a place to live
	d6200	Shopping
General tasks and demands	d2100	Undertaking a simple task
	d230	Carrying out daily routine
	d2303	Managing one's own activity level
	d2101	Undertaking a complex task
	d2102	Undertaking a single task independently
	d2401	Handling stress
Interpersonal interactions and relationships	d7702	Sexual relationships
	d750	Informal social relationships
Major life areas	d8700	Personal economic resources
	d855	Non-remunerative employment
	d820	School education
	d8450	Seeking employment
Changing or maintaining body position	d4103	Sitting
	d4154	Maintaining a standing position
	d4104	Standing
	d4105	Bending

Domain	ICF Code	ICF Goal
	d4100	Lying down
	d4102	Kneeling
	d415	Maintaining a body position
	d4153	Maintaining a sitting position
	d4101	Squatting
Climbing	d4551	Climbing
Hand and arm use	d445	Hand and arm use
	d4402	Manipulating
	d4302	Carrying in the arms
	d440	Fine hand use
	d4401	Grasping
	d4452	Reaching
Transferring oneself	d420	Transferring oneself
Walking and moving around	d4500	Walking short distances
	d4502	Walking on different surfaces
	d4600	Moving around within the home
	d4602	Moving around outside the home and other buildings
	d460	Moving around in different locations
	d4501	Walking long distances
	d465	Moving around using equipment
	d4702	Using public motorized transportation
	d4503	Walking around obstacles
Self-care	d540	Dressing
	d5400	Putting on clothes
	d5402	Putting on footwear
	d5403	Taking off footwear
	d510	Washing oneself
	d5202	Caring for hair
	d5203	Caring for fingernails
	d5204	Caring for toenails
	d530	Toileting
	d5702	Maintaining one's health
Environmental factors	e1151	Assistive products and technology for personal use in daily living
	e155	Design, construction and building products and technology of buildings for private use

Table 1

Goal Classification and Attainment Rates

Goal Domains (ICF Coding)	Example Goals	Frequency (% of total goals)	Attained (%)
Transferring oneself - d420 *	• Get in and out of tub safely and easily.	160 (22.0%)	137 (85.6%)
Changing or maintaining body position - d410–d415 *	• Getting up and down from toilet without help. • To be able to bend over to clean up after the dog.	156 (21.4%)	123 (78.8%)
Stairclimbing - d4551 *	• Climb a flight of steps easily, safely, and without shortness of breath using assistive equipment as needed.	95 (13.0%)	82 (86.3%)
Self-care – d5	• Manage zipping up coats. • Clean feet and back with modified independence.	65 (8.9%)	55 (84.6%)
Walking and moving around (excluding climbing, d4551) - d450–d470 *	• Walk a city block easily and safely using adaptive equipment as needed. • Get in and out of house with modified independence to participate in activities.	63 (8.7%)	34 (54.0%)
Hand and arm use - d440–d445 *	• To be able to hang clothes and reach into kitchen cabinet easier and safer using assistive equipment as needed. • Write legibly 75% of time using adaptive devices.	54 (7.5%)	43 (79.6%)
Domestic life - d6	• Clean mirrors on the wall. • Care for my cats more easily. • Be a better cook and learn new recipes that adhere to diet restrictions.	54 (7.5%)	37 (68.5%)
Body functions – b1–8 [†]	• Decrease pain score to 5/10 during activity • To get on a schedule in order to get better rest and sleep	25 (3.4%)	9 (36.0%)
General tasks and demands - d3	• Independently use compensatory strategies to increase memory. • To be able to hang draperies safely and efficiently with mod I.	18 (2.5%)	10 (55.6%)
Community, social, and civil life - d9	• Participate in out-of-home activity at least 1x/month with modified independence.	14 (1.9%)	8 (57.1%)
Major life areas – d8	• To use strategies to decrease debt on credit cards independently. • To get back to going to school and to increase my learning.	8 (1.1%)	2 (25.0%)

Goal Domains (ICF Coding)	Example Goals	Frequency (% of total goals)	Attained (%)
Interpersonal interactions and relationships – d7	• To be educated on sexual activity options.	6 (0.8%)	2 (33.3%)
Communication - d3	• To be able to operate cell phone independently.	4 (0.5%)	1 (25.0%)
Products and technology – e1[‡]	• Moving the bedroom from its current location to the second floor	2 (0.3%)	0 (0.0%)
	• To have an accessible toilet for use in the basement		
Total Goals		728	535 (73.5%)

* Domains within the “mobility” subgroup (d4) of the ICF coding system were further differentiated to reflect five refined categories of functional goals

[‡] Goals in the body functions domain addressed intrinsic impairments in function, relating to seeing, sleeping, or the sensation of pain

[‡] Goals in the products and technology domain were explicitly aimed towards modifying environmental factors limiting function

Table 2

Characteristics of Study Participants (n=226)

Characteristic	Value
Age (years; range: 65–94)	75.1 ± 7.4
Gender (female)	86.7%
Race (African American)	81.4%
Education (high school or beyond)	59.3%
Readiness to change score (range: 1–4)	2.21 ± 0.59
Functional impairment (range: 0–32) *	11.9 ± 6.9
Level of pain	
No pain	12.8%
Moderate pain	72.6%
Severe pain	14.6%
Health-related quality of life (range: 0–100)	63.8 ± 21.1
Depressive symptoms (range: 0–27)	6.63 ± 5.4
Housing deficits	
Bathroom hazards	89.8%
Kitchen hazards	88.1%
Tripping hazards	75.2%
Stairway hazards	73.0%
Lighting deficiencies	72.1%
Sitting hazards	50.4%

Note. Values are mean ± SD or percentages. Ranges describe the potential values of the referenced scale, not necessarily the observed data.

* Summary measure from responses regarding 8 ADLs and 8 IADL activities.

Table 3

Factors Associated with Goal Attainment

Variables	Unadjusted		Adjusted	
	Odds Ratio	(95% CI)	Odds Ratio	(95% CI)
Age	0.977	0.95, 1.00	0.981	0.95, 1.01
Gender				
Male	Reference Group		Reference Group	
Female	1.172	0.69, 1.99	0.976	0.57, 1.67
Education				
Less than high school	Reference Group		Reference Group	
High school or beyond	0.996	0.68, 1.45	0.780	0.52, 1.16
Readiness to change score	1.453 *	1.05, 2.01	1.615 *	1.14, 2.29
Functional impairment [†]	0.979	0.95, 1.01	0.998	0.97, 1.03
Level of pain				
No pain	Reference Group		Reference Group	
Moderate pain	0.620	0.33, 1.16	0.639	0.33, 1.25
Severe pain	0.455 *	0.22, 0.95	0.382 *	0.17, 0.86
Health-related quality of life	1.007	1.00, 1.02	1.004	0.99, 1.01
Depressive symptoms	0.987	0.95, 1.02	1.004	0.97, 1.04
Housing deficits				
Bathroom hazards	2.666 *	1.55, 4.60	2.048 *	1.15, 3.65
Kitchen hazards	0.875	0.49, 1.55	1.147	0.64, 2.04
Tripping hazards	0.883	0.57, 1.36	0.704	0.44, 1.13
Stairway hazards	1.780 *	1.20, 2.64	1.628 *	1.05, 2.52
Lighting deficiencies	1.261	0.89, 1.84	1.148	0.73, 1.81
Sitting hazards	1.092	0.75, 1.58	0.925	0.63, 1.36

* Covariates predicting goal attainment with statistical significance (p<0.05)

[†] summary measure from responses regarding 8 ADLs and 8 IADL activities