AOTA Critically Appraised Papers Series Evidence Exchange *A product of the American Occupational Therapy Association's Evidence-Based Literature Review Project

CRITICALLY APPRAISED PAPER

Focused Question

What is the length of time ABLE participants sustain a survivorship benefit, and do survivorship benefits differ according to the level of risk for mortality at time of study enrollment?

Gitlin, L., Hauck, W., Dennis, M., Winter, L., Hodgson, N., & Schinfeld, S. (2009). Long-term effect on mortality of a home intervention that reduces functional difficulties in older adults: Results from a randomized trial. *Journal of the American Geriatrics Society*, *57*(3), 476–481. http://dx.doi.org/10.1111/j.1532-5415.2008.02147.x

CLINICAL BOTTOM LINE:

Overall, the study found that older individuals with functional difficulties can add additional years to their life by participating in the ABLE intervention, especially those at moderate risk. The findings are consistent with recent literature on the dynamic interaction between frailty and living environments. Additionally, as a post-hoc study, researchers were able to determine the effectiveness of ABLE up to 2, 3, and 4 years after the initial intervention took place.

Limitations of this study include that the database did not allow for multivariate risk adjustments to control on clinical variables such as comorbidities, health service utilization, or hospitalization. Also, survival analyses were unplanned and post hoc.

Programmatically, ABLE is client-centered; uses problem-solving strategies; actively engages older adults in problem identification and strategy-generating processes; and individualizes strategies to fit needs, cultural preferences, and environment. ABLE appears to be in line with emerging vision for older adult care as the findings of the study imply that client-centered care and symptom management should be integrated with medical management and become standard practice, particularly in occupational therapy.

Educationally, information from the study may be incorporated into the classroom to teach students how to apply a client-centered, problem-solving approach to caring for older adults. The techniques and strategies used in ABLE may be taught to older adults to either prevent functional difficulties or ameliorate functional difficulties, thus prolonging health and longevity.

Further research is needed to solidify mortality findings using a preplanned, hypothesis-driven randomized trial study. Physiological mechanisms to support ABLE as well as the effects of ABLE on health utilization and cost/cost-effectiveness of the ABLE program need to be identified in future research.

RESEARCH OBJECTIVE(S)

A follow-up study to evaluate the long-term mortality effect of Advancing Better Living Elders (ABLE), a home-based intervention previously shown to reduce functional difficulties, fear of falling, and home hazards as well as enhance self-efficacy and use of control-oriented strategies. This study also evaluated whether survivorship benefits from ABLE differ according to initial mortality risk level.

DESIGN TYPE AND LEVEL OF EVIDENCE:

Design Type: Post-hoc exploratory study **Level of Evidence:** Level I randomized control two-group trial

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *Circle yes or no, and if no, explain.*

YES/NO

SAMPLE SELECTION:

How where subjects selected to participate?

Participants were recruited for the initial study between 2000 and 2003 from an area agency on aging, media announcements, and posters at senior housing and community settings. Study procedures were explained to interested persons whom the research team contacted or who called the research office, and a brief telephone screen was administered to determine eligibility. (Recruitment details reported in Gitlin, Hauck, Winter, Dennis, & Schulz, 2006; Gitlin et al., 2006)

Inclusion Criteria

Inclusion criteria in were as follows: (1) persons ages 70 years or older, (2) English-speaking, (3) cognitively intact (Mini-Mental State Examination score >23), (4) community dwelling, (5) ambulatory, (6) were not receiving home care, (7) reported the need for help or difficulties with 2 IADLs or 1 or more ADLs. (Recruitment details reported in Gitlin, Hauck, et al, 2006; Gitlin et al., 2006)

Exclusion Criteria

No additional criteria were reported.

SAMPLE CHARACTERISTICS

N = 319 (159 in control group; 160 in intervention group) data reported for initial study (Gitlin, Hauck, et al, 2006; Gitlin et al., 2006)

% Dropouts	 300 (94%) were available at 6 months. 285 (89%) were available at 12 months. By 12 months, 34 (11%) participants were discontinued. 14 had died, 8 were lost to follow-up, 5 entered a nursing home, 4 were dissatisfied, 2 were unable to complete the batteries due to poor health, and 1 was hospitalized. 			
#/ (%) Male	Control Group: 30/18.9% Intervention Group: 49/17.5% Total: 79/18.2%	#/ (%) Female	Control Group: 128/81.1% Intervention Group: 132/ 82.5% Total: 260/81.8%	
Ethnicity	WhiteControl Group: 83/5Intervention Group:African American:Control Group: 74/4Intervention Group:Other:Control Group: 3/1.9Intervention Group:	2.2% 85/53.1% 5.9% 72/45.0% 9% 3/1.9%		
Disease/disab	ility diagnosis At bas condit catara cardio mellit	At baseline, participants reported a mean of 7 health conditions: arthritis (84.3%), hypertension (70.5%), cataracts or macular degeneration (43.0%), cardiovascular problems (39.0%), and diabetes mellitus (23.3%).		

Check appropriate group:

<20/study	20-50/study	51-100/study	101-149/study	150-200/study
group	group	group	group	group 🗸

INTERVENTION(S) AND CONTROL GROUPS Data reported for initial study (Gitlin, Hauck, et al, 2006; Gitlin et al., 2006)

Group 1: Intervention

Brief Description	During the first 6 months, occupational therapists conducted a semi-		
	structured clinical interview to identify and prioritize problem areas. For		
	each targeted area, a therapist observed the participant's performance for		
	safety, efficiency, and difficulty and for the presence of environmental		
	barriers. In the following sessions, the therapist engaged the participants in		
	problem solving to identify behavioral and environmental contributors to		

	performance difficulties. Then, the therapist instructed participants in		
	strategies customized to needs, preferences, and environmental		
	contingencies. Strategies included cognitive (e.g., reframing), behavioral		
	(e.g., pace self), and environmental (e.g., grab bars) modifications.		
	In the 4th session, physical therapists provided balance and muscle- strengthening and fall recovery techniques. In the 5th session, which was done over telephone, the occupational therapist reinforced strategy use. Before the 6th-month sessions, the area agency on aging ordered and installed home modifications (grab bars, rails, raised toilet seats), which were paid for through grant funds. Then in the 6th session, the occupational therapist reviewed problem solving, refined strategy use, and provided education and resources to address future needs for environmental adjustments		
	In the following 6 months, occupational therapists conducted 3 telephone calls to reinforce use of intervention-derived strategies and generalize these strategies to new problem areas. Then a final home visit was conducted to obtain closure as well as review and reinforce strategies.		
Setting	In participant's home.		
Who Delivered?	5 occupational therapists and 1 physical therapist.		
Frequency?	During the first 6 months, occupational therapists conducted 4 visits and 1 brief telephone contact. Physical therapists met with participants once.		
	In the last 6 months (maintenance phase), participants received 3 brief telephone calls from occupational therapists, followed by a final home visit.		
Duration?	Occupational and physical therapy90 minutes per visit.		

Group 2: Control

Brief Description	Participants who were assigned to the control group did not receive ABLE intervention. At the conclusion of the 12-month follow-up interview, they were provided educational materials on home safety and safe performance techniques.
Setting	Baseline interviews were done at the participant's home.
Who Delivered?	5 occupational therapists and 1 physical therapist.
Frequency?	N/A
Duration?	N/A

Post-hoc Study

Brief Description	Data from the initial study described above was used in combination with death records up to Dec. 31, 2005. Participants were categorized and grouped into 1 of 3 risk levels according to mortality risk level scores on 11 items. The 3 risk level groups were compared on each risk factor and demographic characteristics.
Setting	N/A; post-hoc study.

Who Delivered?	Researchers from the original study conducted the follow-up.
Frequency?	One review of death records up to Dec, 31, 2005.
Duration?	N/A

Intervention Biases: Circle yes or no and explain, if needed.

Contamination	
YES	
Co-intervention	
YES	
Timing	
YES	
Site	
YES	
Use of different the	prapists to provide intervention

MEASURES AND OUTCOMES

YESÍNO

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article – yes/no/NR [not reported]), and how frequently the measure was used.

This post-hoc study explored mortality through establishment of risk groups in order to compare death rates of control and intervention groups 2, 3, and 4 years post intervention. Risk groups were devised using 11 out of 23 items from a validated prognostic indicator based on assignment risk point (1–15) scoring for age, sex, comorbidities and health behavior, and functional difficulties. The low risk group is Group I (risk score of 1–5), the moderate-risk group is Group II (risk score of 6–9), and the high-risk group is Group III (risk score ≥ 10).

What outcome was measured?

Survival

Is this measure reliable (as reported in article)? yes/no/NR [not reported]

N/A

Is this measure valid? (as reported in article) yes/no/NR [not reported]

N/A

Once

Measurement Biases

Were the evaluators blind to treatment status? Circle yes or no, and if no, explain.

YES		

Recall or memory bias. Circle yes or no, and if yes, explain.

YES/NO

Others (list and explain):

'NO

RESULTS

List results of outcomes relevant to answering the focused question:

Include statistical significance where appropriate (p < 0.05). Include effect size if reported.

At study cut-off date, Dec. 31, 2005, 55% (n = 42/159) of the control group participants and 45% (n = 34/160) of the intervention group participants had died. As the initial study was conducted from 2000 to 2003, follow up ranged from 2.5 years to 5.25 years. At 2 years (p = .02), there was a 5.6% (n = 9 deaths/160) mortality rate for participants in the intervention group compared with a 13.2% (n = 21/159) mortality rate for participants in the control group. At 3 years (p = .25), intervention participants had a 16.2% mortality rate, compared with 20.3% mortality rate for control group participants. At 4 years (p = .24), intervention participants had a 24.0% mortality rate and the control participants had a 28.7% mortality rate. Mortality rates remained lower for intervention participants up to 3.5 years from study entry.

The estimated 2-year mortality rate for participants in the intervention group was 0.0% for Group I, 3.0% for Group II, and 15.0% for Group III. Compared to the intervention group, the estimated 2-year mortality rate for participants in the control group was 11.0% for Group I, 14.0% for Group II, and 13.0% in Group III. Treatment assignment had a statistically significant effect on survival for participants at moderate risk of mortality (p = .02). However, no statistically significant differences were observed between groups at the lowest and highest levels of risk.

Was this study adequately powered (large enough to show a difference)? *Circle yes or no, and if no, explain.*

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Were appropriate analytic methods used? Circle yes or no, and if no, explain.

(YES)NO

Were statistics appropriately reported (in written or table format)? *Circle yes or no, and if no, explain.*

(YES)NO

CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

Mortality rates for the intervention group were lower than for the control group for up to 2 years. For ABLE participants, mortality rates stayed lower for up to 3.5 years. Participants at all levels of mortality risks derived an intervention benefit; however, participants rated as at moderate risk showed a 2-year survival advantage over the control group. Overall, the intervention, ABLE, appears to aid older people in the use of cognitive, behavioral, and environmental strategies to reach self-identified functional goals and may enhance survivorship.

References

Gitlin, L. N., Hauck, W. W., Winter, L., Dennis, M., & Schulz, R. (2006). Effect of an in-home occupational and physical therapy intervention on reducing mortality in functionally vulnerable older people: Preliminary findings. *Journal of the American Geriatrics Society*, *54*, 950–955. http://dx.doi.org/10.1111/j.1532-5415.2006.00733.x

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This work is based on critical appraisal of the article completed by Abigail C. McPherson, MSOT student at the University of South Alabama, under the direction of and as part of an evidence-based literature review conducted by Rebecca I. Estes, PhD, OTR/L, CAPS, Nova Southeastern University, <u>REstes@Nova.edu</u>.

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