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A Short Functional Survey is Responsive to Changes in Functional Status Among Vulnerable Elders

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Abstract

OBJECTIVES—To investigate whether an abbreviated 5-item functional status survey consisting of 5 activities of daily living (ADLs) reflects changes measured over time in a full 12-item functional status survey (12 ADLs).

DESIGN—Longitudinal evaluation with mean follow-up of 11 months.

SETTING—Two managed-care organizations in the United States.

PARTICIPANTS—420 community-dwelling elders at moderate to high risk of death and functional decline enrolled in the Assessing Care of Vulnerable Elders (ACOVE) observational study.

MEASURES—Number of ADL abilities by the short (range 0–5) and full functional status surveys (range 0–12). Change in function as defined by a 1-point change in short score and 1–2 point change in full survey scores.

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Conflict of Interest Disclosures

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Author contributions:

Lillian Min: concept and design, analysis and interpretation of data, drafting and revision of manuscript, final approval of published manuscript.

David Reuben: interpretation of data, revision and final approval of manuscript

Neil Wenger: acquisition of subjects and data, interpretation of data, revision and final approval of manuscript

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RESULTS—Changes in short functional status survey scores were highly correlated to changes in long survey scores ($r=.88$). On average, a 1-point change in the short survey score was associated with a 1.4 point change on the long survey score ($p<.001$). The short survey correctly classified 93% of those who declined by the long survey adjusting for chance agreement ($\kappa=.82$) and was responsive to decline in function (sensitivity 82–94%, specificity 94–97%, and area under the receiver operating curve 0.91–0.93 for 1–2 point decreases in full survey ADL counts).

CONCLUSION—The short functional status survey is an efficient way to detect changes in functional status among vulnerable older populations for clinical and research purposes.

Keywords

Vulnerable Elders; Functional Decline; Functional Change

INTRODUCTION

Despite the importance of functional status as a prognostic indicator^{1–4} and an influential factor in creating care plans for older persons,^{5–7} the rates of screening community-dwelling older persons for functional impairment by doctors and health care systems are poor.^{8–11} To facilitate screening, a short functional status survey was developed to minimize the time required to effectively identify older individuals with instrumental and basic activity of daily living (ADL) disabilities.¹² Using cross-sectional data from the 1993 Medicare Current Beneficiary Survey (MCBS), this short function survey (shopping, light housework, managing finances, bathing, and walking across a room) correctly identified 93% of the MCBS subjects with any of 11 disabilities (shopping, light housework, meal preparation, managing finances, using the telephone, bathing, walking across a room, dressing, transferring, using the toilet, and feeding).

The short function survey has been incorporated into the Vulnerable Elders-13 Survey (VES-13),¹³ a risk-prediction tool that includes the short function survey and 8 other items from the MCBS (age, self-rated health, and 6 physical tasks, e.g., self-report ability to lift 10 pounds or grasping small objects). In a prospective study of older managed care patients, the VES-13 predicted death and development of functional status decline at one year.^{14, 15} Due to its efficient screening and predictive properties, the VES-13 has subsequently been used as a baseline measure of risk in various clinical and research settings.^{16–22} For those screened by the VES-13, the short functional survey included in the VES-13 may serve as the baseline measure of their overall functional status.

One additional utility of the short survey, therefore, would be to perform follow-up measurements to capture changes in functional status over time in either clinical or research settings. However, change in the short function survey score has not yet been validated as a measure of change in overall functional status. An instrument that reliably discriminates differences in health status between subjects in cross sectional studies or that predicts future change in health status may not accurately measure change in health status over time and is often subject to ceiling or floor effects.²³ Although several methods to evaluate for responsiveness have been proposed (e.g., a “responsiveness index”),^{24, 25} we adopted a more clinically-oriented approach proposed by Deyo and Canter²⁶: that responsiveness of functional status indices can be considered like diagnostic tests, where the proposed test should change if meaningful changes in functional status have occurred (sensitivity) and should not change if function remains stable (specificity).

Using data from the Assessing the Care of Vulnerable Elders (ACOVE) study¹⁴, we analyzed whether a change in the short functional survey was responsive to change in function as measured by a longer 12-item instrumental and basic ADL survey that we

considered as a gold standard. We also hypothesized that the short survey would have a floor effect because individuals with all 5 short survey disabilities at baseline could not decline any further on follow-up but could continue to accumulate additional disabilities on the long survey.

METHODS

We used data from the Assessing the Care of Vulnerable Elders (ACOVE) study, which enrolled 420 older individuals (age ≥ 65) from 2 large managed-care organizations to participate in a 13-month measurement of quality of care.

The ACOVE target population was a group of elders who were at increased risk of functional decline and death compared to the general older population. Of 3207 community-dwelling plan members age 65 or older, 88% (n=2810) were successfully contacted by telephone and 90% of these (n=2521) agreed to be screened. Ten percent (n=243) did not meet ACOVE study inclusion criteria: not health plan members (n=54), elder or proxy unable to participate in screening due to poor health (n=18) or non-English speaking (n=122), or receiving cancer therapy (n=49). Twenty-one percent (n=475) of these elders were identified as vulnerable by VES-13 criteria¹³, which required a total of three or more points from any of the following items: having any of the 5 short-survey impairments (four points for any impairments, zero points if no impairments), advanced age category (1 point for age 65–74; 2 points for age ≥ 75), having difficulty with physical tasks (1 point for each task up to 2 points), and fair or poor self-rated health (1 point). Forty-two percent of the sample received points for having a functional impairment. Of the 475 identified as vulnerable, 88% (n=420) consented to participate in a comprehensive assessment of the quality of their medical care, including a baseline enrollment interview and follow-up interview (in approximately one year). The 55 who refused did not significantly differ from the 420 participants in terms of age, gender, or baseline VES-13 score.

Both baseline and follow-up interviews were administered via telephone using non-clinical personnel and included 12 instrumental and basic ADLs (bathing, walking across a room, dressing, transferring, using the toilet, feeding, shopping, light housework, meal preparation, managing finances, using the telephone, and medication management). Participants were allowed to respond by surrogate respondents.

We defined disability in any activity if the respondent reported “having difficulty and receiving help to perform the activity” or “not doing the activity due to their health”.¹³ We considered functional ability as all other responses (“no difficulty”, “difficulty but do not receive help”, or “not doing the activity, but for reasons other than health”).

In addition to the baseline and follow-up interviews, we also obtained mortality data from the National Death Index during an observation window that began from enrollment until the day of the last follow-up interview. Statistical analysis was performed using Stata/IC 10.0 (StataCorp, Texas).

Variables

To calculate the short survey scores, we added one point for each ability on the short survey (shopping, light housework, managing finances, bathing, and walking across a room; possible range 0–5). To calculate the full survey scores, points for all 12 ADLs were considered (possible range 0–12).

The change in abilities between baseline and follow-up was calculated by subtracting the baseline abilities from the follow-up abilities so that the result was negative if there was a decline in function and positive if there was an improvement.

We also categorized each patient according to a binary outcome (decline versus no decline) using the short and full survey. The primary definition of decline for each scale was a decrement in ADL count by 1 or more for that scale. An alternative, more “stringent” definition of functional decline (employed in prior work on functional decline 13, 15) was also considered for the full survey only: decrement in 2 or more ADLs, or decrement in any ADLs if independent of all ADLs at baseline. Next, we considered a trinomial outcome for each scale where subjects could decline (decline in ≥ 1 ADL), remain stable (no change in ADL count), or improve (improve in ≥ 1 ADL).

Analysis

The relationship between the short and full survey change scores was evaluated with correlation and simple regression. We also used multivariate regression to control for age, gender, use of proxy respondent for baseline, follow-up, or both interviews.

To evaluate how well the short and full surveys agreed with respect to binomial (decline versus no decline) and trinomial (no decline, stable, versus improvement) categorical outcomes, we used percent agreement and kappa tests, which adjusted percent agreement for agreement by chance. We used a weighted kappa test for the trinomial outcome (weight of 1 for agreement, weight of .5 for a one-degree disagreement, weight of zero for a two-degree disagreement). Responsiveness to decline was evaluated using sensitivity, specificity, and area under the receiver operating curve (AUC), where the long survey outcome was considered the “gold standard” and the short survey outcome was considered the “test”. In order to calculate sensitivity and specificity (and the AUC) using the trinomial outcome we compared any change in functional status (decline or improvement) versus no change. We also tested a measure of decline that included death as part of the definition of functional decline. This commonly used approach for defining functional decline is consistent with our understanding of functional decline that occurs prior to death^{2, 27, 28} and allows us to consider outcomes of participants who would otherwise have been considered as lost to follow-up. Thus, the resulting test characteristics would be useful for clinicians or researchers desiring to consider death in the definition of functional decline.

Last, possible floor effects were considered by tabulating the change in full ADL counts only for the group of the individuals with limitations in all 5 short survey ADL limitations at baseline, and we considered whether death occurred in these individuals during the observation window.

RESULTS

Of the 420 vulnerable elders in the baseline sample, 276 were re-interviewed after a mean follow-up time of 11 months (range: 9–14 months). Proxy respondents were interviewed for 98 (23%) of the baseline interviews and 67 (24%) of the follow-up interviews. The mean age was 81 years at baseline ($n=420$) as well as at follow-up ($n=276$). The baseline sample and follow-up samples were 35% and 33% male ($p<.05$), respectively. Thirty-three elders died during the observation window. At baseline, half of the elders were “fully functional” (i.e., could perform all twelve ADLs at baseline) and 57% could perform all five ADLs on the short survey. There were few elders at the “floor” of the functional status scales: less than one percent could not perform any of the twelve ADLs at baseline, whereas 4% could not perform all five short survey items.

The change in full survey scores ranged from a decline of 6 to an improvement in 8 abilities, with a median decline of zero abilities. The change in short survey scores ranged from a decline of 4 to improvement in 4 abilities, also with a median decline of zero abilities. The correlation between the two change scores was $r=.88$ ($p<.001$) (Figure 1).

Using simple regression, a change in 1 ADL by the short survey was associated on average with a change in 1.4 in the number of ADLs by the long survey ($p<.001$). In multivariate regression predicting full survey change scores, use of a proxy respondent on either the baseline or follow-up survey, respondent age, and gender were not significant predictors and after their inclusion in the model the effect of short survey scores were unchanged.

Binary categorization of outcomes: decline versus no decline (Table 1)

Of the 276 elders evaluated for functional status by both baseline and follow-up interviews, the short survey identified 60 of the 66 decliners identified by the long survey. There was a 93% agreement, with excellent change classification reliability (Kappa=.82 [95% CI .73–.90]). The sensitivity of the “test” (short survey) for detecting decline by the “gold standard” (long survey) was 82% [70–90%], specificity 97% [94–99%], and the AUC was .89 [.85–.94] (Table 1). Adding deaths to the definition of decline improved the percent agreement to 94%, Kappa to .87 [.81–.93], sensitivity to 89% [81–94%], specificity to 97% [94–99%], and AUC to .93 [.90–.96]. When we increased the gold standard definition of decline to the “stringent” criteria (2-ADL decrement or 1-ADL decrement if no baseline impairments) and included deaths in the definition of decline, the sensitivity improved to 93% [85–97%] but specificity decreased to 94% [90–97%].

Trinomial categorization of outcomes: decline versus no change versus no decline (Table 1)

When considering improvement, no change, and decline as outcomes, the short survey identified 60 of the 66 decliners and 45 of the 63 who improved by the full survey. There was an 86% agreement, with good change score reliability (weighted Kappa=.79 [.73–.85]) (Table 1). The short survey was sensitive to 82% [70–90%] change in any direction on the long survey, with 97% [94–99%] specificity, and the AUC was .89 [.85–.94]. Using deaths in the definition of decline improved the reliability (weighed Kappa=.83 [.78–.88] and responsiveness (sensitivity 89% [81–94%], specificity 97% [94–99%], and AUC .93 [.90–.96]).

Testing for floor effects

Of 420 elders who participated in the baseline survey, there were 18 elders who were unable to do any of the five short survey items at baseline and therefore could not decline any further on the follow-up short survey. Of these 18 elders, 7 improved or remained stable (agreement), 1 underwent further decline on the long follow-up survey (misclassified), 1 underwent further decline on the long survey but died shortly afterwards during the observation window (correctly classified if death was considered as decline), 6 died but did not participate in the follow-up interview (correctly classified if death is considered as decline), and 3 survived but could not be reached for the follow-up interview (could not be classified).

DISCUSSION

In this analysis of a short functional status survey, we found that the brief survey is responsive to changes in functional status during a 9–14 month longitudinal study of vulnerable elders. The sensitivity of the short survey is modest (82%) when detecting functional changes as defined by this study (i.e., a one-ADL change) but highly specific

(97%). Sensitivity was improved when death was included in the definition of decline, an approach that is based on known trajectories of functional decline prior to death.^{27, 28} Sensitivity was also increased by increasing the definition of functional decline to a 2-ADL change in function, but at the expense of decreased specificity. Lastly, we did not find an appreciable floor effect, regardless of whether we considered death as a possible outcome.

This study adds to our understanding of this short functional survey, which was designed to increase the feasibility of including functional status items in initial screening assessments by decreasing the number of functional activity items. The short functional survey performs well when used to detect difficulties with instrumental and basic activities of daily living¹² and when used within the VES-13 survey to detect future functional status decline and death.¹⁵ The current analysis shows that the short survey can also be used to track change in functional status over time, reliably reflecting changes in ADL counts as measured by a longer 12-item survey. The reported test characteristics of the short survey can be used by those who wish to estimate sensitivity and specificity for capturing change in function over time. We estimate the time savings associated with a 5-item versus 12-item survey (2 minutes versus less than 5 minutes, based on experience with the VES-13 and other short interviews)^{13, 15, 29} is approximately 2 minutes, a substantial difference in light of a busy office-based practice.

The strength of this study is that various definitions of functional change were considered, which will allow adaptation to data collection efforts to track functional decline as well as improvement. We also considered the possibility that proxy respondents may report disabilities at higher rates than subject respondents, but we found no proxy effect in prediction of change scores. One limitation of our results is that our sample was selected based upon elders with VES-13 scores of 3 or higher, and therefore may only be generalizable to vulnerable elders (i.e., those who are older, have poorer self-rated health, or those with functional or physical impairments at baseline). For most clinical and research purposes, for example tracking functional changes within a clinic with older at-risk elders or in a longitudinal study of elders with baseline co-morbidities or physical impairments, we believe that this will not pose a serious limitation. We also measured change over a relatively short observation window. Lastly, because there is no accepted “gold standard” for functional status, which may also include other physical abilities or performance-based testing, our results should be interpreted in light of the limited definition of overall functional status (i.e., defined as the 12-item ADL inventory) employed in this study.

In conclusion, this short survey of functional status which can be administered in a few minutes can be used in future clinical and research data collection efforts to respond to functional changes with good overall test characteristics.

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References

1. Fried TR, Pollack DM, Tinetti ME. Factors associated with six-month mortality in recipients of community-based long-term care. *J Am Geriatr Soc.* 1998; 46:193–197. [PubMed: 9475448]
2. Guralnik JM, LaCroix AZ, Branch LG, et al. Morbidity and disability in older persons in the years prior to death. *Am J Public Health.* 1991; 81:443–447. [PubMed: 2003621]

3. Carey EC, Walter LC, Lindquist K, et al. Development and validation of a functional morbidity index to predict mortality in community-dwelling elders. *J Gen Intern Med.* 2004; 19:1027–1033. [PubMed: 15482555]
4. Reuben DB, Rubenstein LV, Hirsch SH, et al. Value of functional status as a predictor of mortality: results of a prospective study. *Am J Med.* 1992; 93:663–669. [PubMed: 1466363]
5. Fortinsky RH, Granger CV, Seltzer GB. The use of functional assessment in understanding home care needs. *Med Care.* 1981; 19:489–497. [PubMed: 6785540]
6. Goodlin S, Boulton C, Bubolz T, et al. Who will need long-term care? Creation and validation of an instrument that identifies older people at risk. *Dis Manag.* 2004; 7:267–274. [PubMed: 15671784]
7. Laakkonen P, Leskinen E, Kauppinen M, et al. Health and functional capacity as predictors of community dwelling among elderly people. *J Clin Epidemiol.* 2000; 53:257–265. [PubMed: 10760635]
8. Calkins DR, Rubenstein LV, Cleary PD, et al. Failure of physicians to recognize functional disability in ambulatory patients. *Ann Intern Med.* 1991; 114:451–454. [PubMed: 1825267]
9. Bogardus ST Jr, Towle V, Williams CS, et al. What does the medical record reveal about functional status? A comparison of medical record and interview data. *J Gen Intern Med.* 2001; 16:728–736. [PubMed: 11722685]
10. Pinholt EM, Kroenke K, Hanley JF, et al. Functional assessment of the elderly. A comparison of standard instruments with clinical judgment. *Arch Intern Med.* 1987; 147:484–488. [PubMed: 3827424]
11. Chodosh J, Petitti DB, Elliott M, et al. Geriatric screening and physician recognition of functional impairment. *J Am Geriatrics Society.* 2003; 51:s213–214.
12. Saliba D, Orlando M, Wenger NS, et al. Identifying a short functional disability screen for older persons. *J Gerontol A Biol Sci Med Sci.* 2000; 55:M750–756. [PubMed: 11129398]
13. Saliba D, Elliott M, Rubenstein LZ, et al. The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community. *J Am Geriatr Soc.* 2001; 49:1691–1699. [PubMed: 11844005]
14. Wenger NS, Solomon DH, Roth CP, et al. The quality of medical care provided to vulnerable community-dwelling older patients. *Ann Intern Med.* 2003; 139:740–747. [PubMed: 14597458]
15. Min LC, Elliott MN, Wenger NS, et al. Higher vulnerable elders survey scores predict death and functional decline in vulnerable older people. *J Am Geriatr Soc.* 2006; 54:507–511. [PubMed: 16551321]
16. Sternberg SA. The Vulnerable Elders Survey: a tool for identifying vulnerable older people in the community. *J Am Geriatr Soc.* 2003; 51:139–140. [PubMed: 12534867]
17. Wenger NS, Roth CP, Shekelle PG, et al. A controlled trial of a practice-based intervention to improve primary care for falls, incontinence and dementia. Scientific abstract, SGIM 28th Annual Meeting *J Gen Intern Med.* 2005; 20:S28.
18. Arora VM, Johnson M, Olson J, et al. Using assessing care of vulnerable elders quality indicators to measure quality of hospital care for vulnerable elders. *J Am Geriatr Soc.* 2007; 55:1705–1711. [PubMed: 17979894]
19. Arora VM, Chen S, Siddique J, et al. Relationship between quality of care and patient outcomes for hospitalized elders. Scientific abstract, SGIM 30th Annual Meeting *J Gen Intern Med.* 2007; 22:S10.
20. McGee HM, O'Hanlon A, Barker M, et al. Vulnerable older people in the community: relationship between the Vulnerable Elders Survey and health service use. *J Am Geriatr Soc.* 2008; 56:8–15. [PubMed: 18184202]
21. Nelson JM, Dufraux K, Cook PF. The relationship between glycemic control and falls in older adults. *J Am Geriatr Soc.* 2007; 55:2041–2044. [PubMed: 17971138]
22. Mohile SG, Bylow K, Dale W, et al. A pilot study of the vulnerable elders survey-13 compared with the comprehensive geriatric assessment for identifying disability in older patients with prostate cancer who receive androgen ablation. *Cancer.* 2007; 109:802–810. [PubMed: 17219443]
23. Guyatt GH, Deyo RA, Charlson M, et al. Responsiveness and validity in health status measurement: a clarification. *J Clin Epidemiol.* 1989; 42:403–408. [PubMed: 2659745]

24. Guyatt GH, Kirshner B, Jaeschke R. Measuring health status: what are the necessary measurement properties? *J Clin Epidemiol.* 1992; 45:1341–1345. [PubMed: 1460470]
25. Sprangers MA, Moinpour CM, Moynihan TJ, et al. Assessing meaningful change in quality of life over time: a users' guide for clinicians. *Mayo Clin Proc.* 2002; 77:561–571. [PubMed: 12059127]
26. Deyo RA, Centor RM. Assessing the responsiveness of functional scales to clinical change: an analogy to diagnostic test performance. *J Chronic Dis.* 1986; 39:897–906. [PubMed: 2947907]
27. Covinsky KE, Eng C, Lui LY, et al. The last 2 years of life: functional trajectories of frail older people. *J Am Geriatr Soc.* 2003; 51:492–498. [PubMed: 12657068]
28. Lunney JR, Lynn J, Foley DJ, et al. Patterns of functional decline at the end of life. *JAMA.* 2003; 289:2387–2392. [PubMed: 12746362]
29. Mitchell AJ, Coyne JC. Do ultra-short screening instruments accurately detect depression in primary care? A pooled analysis and meta-analysis of 22 studies. *Br J Gen Pract.* 2007; 57:144–151. [PubMed: 17263931]

Figure 1. Change in Short Function Survey Reflects Change in Full Function Survey over 11 months (n=276)

Change in count of five functional abilities (bathing, walking, shopping, light housework, and managing finances) obtained by a short survey of 276 vulnerable elders were highly correlated ($r=.88$) with change in count of twelve functional abilities (bathing, walking across a room, dressing, transferring, using the toilet, feeding, shopping, light housework, meal preparation, managing finances, using the telephone, and medication management) obtained by a long survey of the same elders. Positive change scores = improvement in function; negative change score = decline. Random jitter was added to the plot to separate overlapping data points.

Table 1
Test Characteristics of a Short Functional Status Survey (the “Test”) to Respond to Changes in a Long Functional Status Survey (the “Gold Standard”)

<u>Test</u>	Performance using binomial categorization: decline versus no decline			Performance using trinomial categorization: decline versus no change versus improvement		
	Main Result*	Alternate Result 1 [†]	Alternate Result 2 [‡]	Main Result*	Alternate Result 1 [†]	Alternate Result 2 [‡]
Percent Agreement	93%	94%	95%	86%	88%	88%
Kappa (95% CI)	0.82 (.73–.90)	0.87 (.81–.93)	.84 (.78–.91)	0.79 [§] (0.73–0.85)	0.83 [§] (0.78–0.88)	0.83 [§] (0.78–0.88)
Sensitivity (95% CI)	82% (70–90%)	89% (81%–94%)	93% (85–97%)	82% (70%–90%)	89% (81%–94%)	89% (81%–94%)
Specificity (95% CI)	97% (94–99%)	97% (94%–99%)	94% (90–97%)	97% (94%–99%)	97% (94%–99%)	97% (94%–99%)
AUC (95% CI)	.89 (0.85–0.94)	0.93 (0.90–0.96)	.93 (.90–.97)	.89 (0.85–0.94)	.93 (0.90–0.96)	.93 (0.90–0.96)

Legend for Table 1:

ADL = activities of daily living; AUC = Area under the receiver operating curve 95% CI = 95% Confidence Interval

* Criteria for main analyses: 1-ADL unit of change defines a decline or improvement for both the short and long surveys

[†] Criteria for alternate result 1: Death (n=33) was added to definition of decline for both short and long surveys

[‡] Criteria for alternate result 2: Stringent criteria of decline was employed for the long survey (2-ADL decrement OR 1-ADL decrement if zero impairments at baseline), while the 1-ADL decrement requirement remained unchanged for short survey, and death was included in definition of decline for both.

[§] Kappas were weighted (1 for agreement, .5 for one-degree disagreement, zero for two-degree disagreement) for the trinomial categorical outcomes.