An investigation into which individual instrumental activities of daily living are affected by a home visiting nurse intervention

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Abstract

Background: to our knowledge no research has investigated the effect of home visiting nurse (HVN) interventions on individual instrumental activities of daily living (IADL).

Objective: to investigate the effects of an HVN intervention on the difficulty or dependence in six individual IADLs.

Design: a secondary analysis of a randomised controlled study comparing an HVN intervention (n = 237) with usual care (n = 262) at 22 months after study entry.

Setting: home care linked to primary care.

Subjects: a total of 499 Medicare patients needing or receiving help with at least three IADLs or two ADLs, who had recent significant health-care use.

Methods: the intervention consisted of monthly home visits by trained nursing staff. Unadjusted and adjusted (binary and multinomial logistic regression) analyses were performed.

Results: unadjusted analyses found less difficulty or dependence for the HVN group for meal preparation, telephone use, shopping and ordinary housework, and more difficulty or dependence for medication management. After adjustment, in addition to an effect through health-care services use, the HVN group had less difficulty or dependence for meal preparation and shopping and more difficulty or dependence for medication management.

Conclusions: an HVN intervention had mixed results for individual IADLs. The negative effect on medication management questions the validity of a total IADL score as an outcome measure, and implies that other medication management measures should be considered for outcome evaluation. Future research is needed to confirm and better understand these findings.

Keywords: instrumental activities of daily living, homecare, nursing, aged, older people

Introduction

Instrumental activities of daily living (IADLs) [1] are vital for everyday life. Although they are not considered to be as basic to human life as activities of daily living (ADLs) [2] such as bathing and toileting, IADLs (e.g. meal preparation, household chores) are nevertheless critical to living in a modern society [3–5]. This is especially true for older adults with chronic illnesses who may have difficulty performing them because of their illnesses. Home visiting nurse (HVN) interventions have been used for many years to attempt to improve functional status or delay its worsening. Despite this, little is known about HVN effects on IADLs. This is because, to the best of our knowledge, all previous HVN studies have focused on the number of IADLs rather than the individual IADLs themselves [6–13]. It is imperative to know which individual IADLs are successfully affected by HVN interventions and which are not.

One arm of the Medicare Primary and Consumer-Directed Care (PCDC) Demonstration, a randomised controlled study in parts of three US states, was an HVN intervention. A goal of the Demonstration was to improve
IADLs or slow down their rate of worsening. A previous study found that there was no effect of the HVN intervention on the sum (count) of IADL dependence [14]. However, the effects on individual IADLs were not examined. The goal of the study reported here was to determine which individual IADLs the HVN intervention affected.

Methods

Study design

A total of 1,605 Medicare beneficiaries enrolled in the Medicare PCDC Demonstration (1998–2002). The demonstration was designed as a multi-centre, stratified (by site), unblinded, controlled, four-arm parallel-group (1:1:1:1 balanced randomisation) study (two sites). The patient was the unit of randomisation. There were no important changes in methods after trial commencement. The Demonstration was approved by the U.S. Health Care Financing Administration (HCFA) and the University of Rochester Research Subjects Review Board.

Study setting and participants

There were four eligibility criteria: (i) needed or received help with 2+ ADLs or 3+ IADLs; (ii) recent significant health-care utilisation (hospital inpatient, nursing home or skilled home care during the past year, or 2+ emergency department visits during the previous 6 months); (iii) community dwelling and (iv) enrolment in Medicare parts A and B. The exclusionary criteria included enrolment in: (i) formal case management/care coordination; (ii) a Medicare Risk (TEFRA) HMO; (iii) the Program for All Inclusive Care for the Elderly (PACE) or (iv) the Medicare Hospice or End Stage Renal Disease (ESRD) programmes. There were several mandatory disenrolment criteria for patients after they enrolled in the Demonstration (e.g. leaving the study area for >6 consecutive months [15]).

The demonstration recruited 307 primary care physicians. Each physician sent letters that encouraged demonstration enrolment to at least some of their patients. The patients also received an application form. The demonstration took place in two sites: (i) New York State (8 counties) and (ii) West Virginia/Ohio (11 counties).

Intervention

The Demonstration had three intervention groups and a control (care as usual) group. The three interventions were the HVN intervention, a consumer-directed voucher and the combination of the HVN intervention plus the voucher. The present study included two groups—the HVN and control groups—since its aim was to examine the effects of the HVN intervention only (not combined with the voucher intervention) on individual IADLs. The other two interventions are not described because of lack of space.

The HVN intervention was a disease management-health promotion intervention that included nurse home visiting and was affiliated with primary care [16, 17] (see Supplementary data available in Age and Ageing online, Appendix A).

We expected that the HVN intervention would have affected individual IADLs through two pathways: First, directly, through patient goals and other strategies targeting specific IADLs, and, second, indirectly, through the general impact of the intervention on patient health and functional status.

Outcomes

Outcomes are defined below in the outcome measures section. No changes were made to outcomes after the study commenced.

Sample size

An a priori power calculation was carried out during the demonstration’s application phase. The approved sample size was 400 per group. This was calculated based on expected financial savings in Medicare expenditures between the intervention and control groups [18].

Randomisation

A computer program generated random assignment and so there would be equal numbers in each group within both sites. The randomisation sequence was created using SAS statistical software and was stratified by site with a 1:1:1:1 allocation using a blocked randomisation scheme.

Blinding

No one was blinded to group assignment due to its impracticability. Participants told their primary care physicians and demonstration data collection staff which group they were in.

The interviewers who collected the study data were not the nurses who conducted the intervention.

Outcome measures

At baseline and 22 months all patients were asked questions about the difficulty and dependence of 6 IADLs: meal preparation, medication management, money management, ordinary housework, shopping and telephone use. That is, self-reported IADL measures were used. For each IADL, the 22-month interview response was used as the dependent variable in the regression models (see below). The baseline and 22-month interviews were conducted by trained interviewers (primarily nurses) in the patients’ homes. The follow-up data were collected at 22 months rather than at the demonstration’s end at 24 months because there was concern that losing the demonstration benefits at 24 months might affect the subjects’ questionnaire responses.
**IADL dependence**

The six questions for IADL dependence were: ‘How did the patient participate in meal preparation/managing medications/managing finances/ordinary housework/shopping/using the telephone in the past week?’ The responses were: 0 = independent, 1 = some help, 2 = full help and 3 = performed by others only [19].

**IADL difficulty**

Six questions asked how difficult it would be for the patient to perform the IADLs. The responses were: 0 = no difficulty, 1 = some difficulty and 2 = great difficulty [20].

**Covariates**

We identified 50 potential risk or protective factors for functional disability [21, 22]. We then selected covariates for each individual IADL from these 50 factors and categorised them into six groups: variables for the HVN intervention (yes/no), IADLs/ADLs (e.g. number of ADL dependencies at baseline), demographics, health status, lifestyle, health insurance and health services utilisation (for the variables included in each final model, see Supplementary data available in Age and Ageing online, Appendix C).

**Analyses**

Chi-square and $t$ tests were used to compare the descriptive characteristics between the HVN and control groups. Unadjusted and adjusted analyses were performed to analyse the effects of the HVN intervention on individual IADLs. The adjusted analyses, controlling for other factors, included binary and multinomial logistic regression models. In the binary logistic regression models, the dependent variables were either (i) difficulty performing each individual IADL ($0 = \text{no difficulty}; 1 = \text{any difficulty}$), or (ii) dependence for each individual IADL ($0 = \text{no dependence}; 1 = \text{some dependence}$). In the multinomial logistic regression models the dependent variable had three choices for each IADL difficulty question and four choices for each IADL dependence question.

Initially, each adjusted model included all 50 independent variables. To minimise the likelihood of over-fitting, variables with high (statistically insignificant) $P$-values were removed until each model had 33 independent variables (15 observations per independent variable, the minimum recommended [23]). All analyses were performed using STATA 11.

**Results**

**Recruitment**

Medicare patients were recruited from May 1997 to June 2000. The Demonstration study period, July 1998 to June 2002, lasted for 24 months after each patient entered the treatment phase or until he/she died, withdrew or was disenrolled.

**Participant flow**

Application screens were received from 19,469 Medicare enrollees who were patients of 307 primary care physicians. A total of 2,279 had a baseline interview conducted by research staff. Of these, 493 (21.6%) were unable to enter the Demonstration because of any of the following reasons: they were no longer interested or had died, the approved sample size of 1,600 had been reached or for several other reasons (see Supplementary data available in Age and Ageing online, Appendix D).

**Baseline data numbers analysed**

Of the 766 patients in the HVN intervention ($n = 382$) and control ($n = 384$) groups who entered the Demonstration treatment phase, 499 (65%) provided information on their IADL status at the 22-month interview.

**Subject characteristics, participation and retention**

At 22 months a total of 267 (35% of 766) persons were no longer participating: 139 (18%) because they had died, 73 (10%) because they met previously defined disenrolment criteria and 59 (8%) because they had voluntarily dropped out. The most serious potential threat to internal validity is differential dropout between the HVN (38.0%; $n = 145$) and control (31.8%; $n = 122$) groups. However, while HVN patients were more likely to voluntarily drop out (9.7 versus 4.7%), there was little attrition difference due to death (18.3 versus 18.0%) or involuntarily disenrolment (10.7 versus 9.4%). The 267 participants who provided no information at the 22-month interview had worse cognitive functioning, lower body mass index and older mean age than the 499 participants who were analysed in the present study.

The average age of the 499 participants available for follow-up was 77 years, 70% was female and 97% was Caucasian. Each participant was dependent in meal preparation/ordinary housework/shopping/using the telephone in the past week? The responses were: $0 = \text{independence}; 1 = \text{some assistance}; 2 = \text{full assistance}$ and $3 = \text{performed by others only}$ [19].

**Any difficulty or dependence (binary results)**

In unadjusted analyses at 22 months, compared with the control group fewer patients in the HVN group had any difficulty or any dependence in meal preparation or any dependence in telephone use. After adjustment, in addition to an effect through health-care services, fewer HVN than control group subjects were dependent in meal preparation [odds ratio (OR) = 0.44], while significantly more subjects in the HVN group had difficulty (OR = 2.18) or dependence (OR = 2.59) in medication management (see Table 2; for more details, see Supplementary data available in Age and Ageing online, Appendix E).
Categories of difficulty or dependence (multinomial results)

We then examined specific categories of difficulty (no, some and great difficulty) and dependence (independent, had some help, performed only with help and performed by others only) to gain a finer-grained understanding of the results just presented.

In unadjusted difficulty analyses, compared with the control group, fewer patients in the HVN group had great difficulty with shopping, whereas more had some difficulty with medication management. After adjustment, in addition to an effect through health-care services, more HVN patients had some (OR = 2.59) or great (OR = 2.32) difficulty with medication management, whereas fewer had great difficulty with shopping (OR = 0.33).

In unadjusted dependence analyses a lower proportion of the HVN group had meal preparation, ordinary housework and shopping performed by others only. However, for medication management more in the HVN group had some help. After adjustment more HVN patients had some help (OR = 3.78) with medication management or had it performed by others only (OR = 4.35). Fewer had some help with meal preparation (OR = 0.44) or had it performed by others only (OR = 0.36) (see Table 3 and for details, Supplementary data are available in Age and Ageing online, Appendix F).

Harms

We are unaware of any adverse events due to the HVN intervention.

Discussion

Interpretation

Compared with the control group, the HVN intervention had effects on several but not all IADLs. In both unadjusted and adjusted analyses fewer HVN patients were dependent in meal preparation. In unadjusted analyses fewer had meal preparation performed by others only. After adjustment fewer had some help or had meal preparation performed by others only. Goals relating to meal preparation were developed collaboratively between the nurse and the patient/family to address, for example, cognitive decline or sensory loss. Nurses collaborated with primary care physicians to target meal preparation through community referrals (e.g. to meals on wheels).

Table 1. Descriptive characteristics (n = 499)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Overall population (n = 499)</th>
<th>HVN group (n = 237)</th>
<th>Control group (n = 262)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD)</td>
<td>76.84 ± 11.75</td>
<td>77.03 ± 10.92</td>
<td>76.67 ± 12.47</td>
</tr>
<tr>
<td>≤65</td>
<td>60 (12)</td>
<td>26 (11)</td>
<td>34 (13)</td>
</tr>
<tr>
<td>65–74, n (%)</td>
<td>117 (23)</td>
<td>56 (24)</td>
<td>60 (23)</td>
</tr>
<tr>
<td>75–84, n (%)</td>
<td>199 (40)</td>
<td>99 (42)</td>
<td>100 (38)</td>
</tr>
<tr>
<td>≥85, n (%)</td>
<td>124 (25)</td>
<td>56 (24)</td>
<td>68 (26)</td>
</tr>
<tr>
<td>Female, n (%)</td>
<td>349 (70)</td>
<td>176 (70)</td>
<td>183 (70)</td>
</tr>
<tr>
<td>Household income ≥$10,000, n (%)</td>
<td>170 (34)</td>
<td>83 (35)</td>
<td>87 (33)</td>
</tr>
<tr>
<td>$10,000–$19,999, n (%)</td>
<td>176 (33)</td>
<td>76 (32)</td>
<td>90 (34)</td>
</tr>
<tr>
<td>$20,000–$29,999, n (%)</td>
<td>90 (18)</td>
<td>45 (19)</td>
<td>45 (17)</td>
</tr>
<tr>
<td>≥$30,000, n (%)</td>
<td>73 (15)</td>
<td>33 (14)</td>
<td>40 (15)</td>
</tr>
<tr>
<td>Married, n (%)</td>
<td>213 (43)</td>
<td>96 (41)</td>
<td>117 (45)</td>
</tr>
<tr>
<td>No high school diploma, n (%)</td>
<td>185 (37)</td>
<td>96 (41)</td>
<td>89 (34)</td>
</tr>
<tr>
<td>Living in urban areas, n (%)</td>
<td>352 (71)</td>
<td>173 (69)</td>
<td>189 (72)</td>
</tr>
<tr>
<td>New York site, n (%)</td>
<td>330 (66)</td>
<td>156 (66)</td>
<td>174 (66)</td>
</tr>
</tbody>
</table>

Table 2. Any difficulty or dependence of individual IADLs (binary analysis): unadjusted absolute percent difference and adjusted odds ratio (OR) of the home visiting nurse intervention group when compared with the control group at 22 months

<table>
<thead>
<tr>
<th>IADL</th>
<th>Any difficulty</th>
<th></th>
<th>Any dependence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted difference</td>
<td>Adjusted OR</td>
<td>Unadjusted difference</td>
</tr>
<tr>
<td>Meal preparation</td>
<td>-9.1 (P = 0.03)</td>
<td>0.61 (P = 0.12)</td>
<td>-11.7 (P = 0.01)</td>
</tr>
<tr>
<td>Medication management</td>
<td>+1.0 (P = 0.82)</td>
<td>2.18 (P = 0.03)</td>
<td>+1.2 (P = 0.79)</td>
</tr>
<tr>
<td>Money management</td>
<td>-5.6 (P = 0.20)</td>
<td>0.73 (P = 0.26)</td>
<td>-4.7 (P = 0.28)</td>
</tr>
<tr>
<td>Ordinary housework</td>
<td>-4.9 (P = 0.10)</td>
<td>0.52 (P = 0.09)</td>
<td>-4.4 (P = 0.18)</td>
</tr>
<tr>
<td>Shopping</td>
<td>-2.1 (P = 0.31)</td>
<td>0.64 (P = 0.24)</td>
<td>-3.4 (P = 0.27)</td>
</tr>
<tr>
<td>Telephone use</td>
<td>-4.1 (P = 0.49)</td>
<td>1.08 (P = 0.76)</td>
<td>-7.0 (P = 0.03)</td>
</tr>
</tbody>
</table>

Note: Unadjusted differences are absolute (not relative) differences. A minus sign means that the intervention group has a smaller proportion with difficulty or dependence than the control group. OR is the odds ratio. The number in the parentheses is the P-value.
Table 3. Categories of difficulty or dependence for individual IADLs (multinomial analysis): unadjusted absolute percent difference and adjusted odds ratio (OR) of the home visiting nurse intervention group when compared with the control group at 22 months

<table>
<thead>
<tr>
<th>IADL</th>
<th>Difficulty</th>
<th>Unadjusted difference</th>
<th>Adjusted OR</th>
<th>Dependence</th>
<th>Unadjusted difference</th>
<th>Adjusted OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meal preparation</td>
<td>No difficulty</td>
<td>+9.1 (P = 0.03)</td>
<td>Reference</td>
<td>Independent</td>
<td>+11.7 (P &lt; 0.01)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>−4.2 (P = 0.26)</td>
<td>0.55 (P = 0.08)</td>
<td>Had some help</td>
<td>−4.7 (P = 0.20)</td>
<td>0.44 (P = 0.03)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−5.0 (P = 0.27)</td>
<td>0.89 (P = 0.77)</td>
<td>Performed only with help</td>
<td>+2.5 (P = 0.41)</td>
<td>0.73 (P = 0.51)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−9.2 (P = 0.03)</td>
<td>0.36 (P = 0.04)</td>
</tr>
<tr>
<td>Medication management</td>
<td>No difficulty</td>
<td>−1.0 (P = 0.82)</td>
<td>Reference</td>
<td>Independent</td>
<td>−1.2 (P = 0.79)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>+6.1 (P = 0.04)</td>
<td>2.59 (P = 0.01)</td>
<td>Had some help</td>
<td>+6.0 (P = 0.04)</td>
<td>3.78 (P &lt; 0.01)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−5.1 (P = 0.23)</td>
<td>2.32 (P = 0.04)</td>
<td>Performed only with help</td>
<td>−3.1 (P = 0.23)</td>
<td>1.23 (P = 0.64)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−1.7 (P = 0.66)</td>
<td>4.35 (P &lt; 0.01)</td>
</tr>
<tr>
<td>Money management</td>
<td>No difficulty</td>
<td>+5.6 (P = 0.20)</td>
<td>Reference</td>
<td>Independent</td>
<td>+4.7 (P = 0.28)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>+2.1 (P = 0.53)</td>
<td>0.86 (P = 0.62)</td>
<td>Had some help</td>
<td>−1.3 (P = 0.63)</td>
<td>0.92 (P = 0.85)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−7.7 (P = 0.08)</td>
<td>0.55 (P = 0.08)</td>
<td>Performed only with help</td>
<td>+1.8 (P = 0.40)</td>
<td>1.11 (P = 0.81)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−5.2 (P = 0.24)</td>
<td>0.76 (P = 0.46)</td>
</tr>
<tr>
<td>Ordinary housework</td>
<td>No difficulty</td>
<td>+4.9 (P = 0.10)</td>
<td>Reference</td>
<td>Independent</td>
<td>+4.4 (P = 0.18)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>+2.2 (P = 0.55)</td>
<td>0.66 (P = 0.34)</td>
<td>Had some help</td>
<td>+2.5 (P = 0.52)</td>
<td>0.65 (P = 0.30)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−7.1 (P = 0.10)</td>
<td>0.48 (P = 0.10)</td>
<td>Performed only with help</td>
<td>+2.1 (P = 0.53)</td>
<td>0.60 (P = 0.28)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−8.9 (P = 0.04)</td>
<td>0.46 (P = 0.10)</td>
</tr>
<tr>
<td>Shopping</td>
<td>No difficulty</td>
<td>+2.1 (P = 0.48)</td>
<td>Reference</td>
<td>Independent</td>
<td>+3.4 (P = 0.27)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>+10.4 (P = 0.48)</td>
<td>1.19 (P = 0.71)</td>
<td>Had some help</td>
<td>+6.2 (P = 0.09)</td>
<td>0.97 (P = 0.93)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−12.5 (P &lt; 0.01)</td>
<td>0.33 (P = 0.02)</td>
<td>Performed only with help</td>
<td>+0.4 (P = 0.91)</td>
<td>0.70 (P = 0.44)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−10.0 (P = 0.03)</td>
<td>0.52 (P = 0.15)</td>
</tr>
<tr>
<td>Telephone use</td>
<td>No difficulty</td>
<td>+7.1 (P = 0.05)</td>
<td>Reference</td>
<td>Independent</td>
<td>+8.0 (P = 0.03)</td>
<td>Reference</td>
</tr>
<tr>
<td></td>
<td>Some difficulty</td>
<td>−3.1 (P = 0.30)</td>
<td>1.21 (P = 0.58)</td>
<td>Had some help</td>
<td>−3.7 (P = 0.10)</td>
<td>0.48 (P = 0.07)</td>
</tr>
<tr>
<td></td>
<td>Great difficulty</td>
<td>−4.0 (P = 0.11)</td>
<td>1.32 (P = 0.53)</td>
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</tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Performed by others only</td>
<td>−2.2 (P = 0.39)</td>
<td>1.20 (P = 0.78)</td>
</tr>
</tbody>
</table>

Note: Unadjusted differences are absolute (not relative) differences. A minus sign means that the intervention group has a smaller proportion with difficulty or dependence than the control group. OR is the odds ratio. The number in the parentheses is the P-value.

In both unadjusted and adjusted analyses fewer HVN patients had great difficulty with shopping, and in unadjusted analyses fewer had shopping performed by others only. The nurses worked with patients and family caregivers to develop shopping goals that targeted strategies to help them better manage sensory losses impeding independent shopping ability (e.g. purchase of hearing aids), create links with formal and informal support systems to assist with transportation to stores (e.g. senior buses) and utilise community resources (e.g. escorts to stores) to help participants with mild cognitive challenges.

Surprisingly, the HVN intervention had a negative effect on medication management. Analyses found more difficulty or dependence in a number of categories including, for example, more with some help or with medication management performed by others only. The nurses’ tasks were consistent with medication management practice guidelines such as the Agency for Healthcare Research and Quality’s evidence-based nurse handbook [24]. The nurses regularly reviewed the patients’ medications, educated them about safe drug administration strategies, monitored medications’ therapeutic effects and worked in collaboration with patients and caregivers to set medication goals.

A possible explanation for the negative HVN effect is that patients may have perceived medication management to be more difficult because they received an increased amount of information and tasks to carry out. However, the finding of greater difficulty/dependence could be considered a success rather than a failure. More medication management difficulty might simply reflect the fact that the nurse encouraged patients to set up pillboxes or carry out other self-medication tasks, whereas the control group did not do these tasks. Importantly, the negative effect on medication management as a possibly beneficial effect questions the validity of a total IADL score as an outcome measure, and implies that other measures of medication management [25, 26] should be considered for outcome evaluation of preventive studies in older people.

Generalisability

Generalisability may be limited because the participants were from 19 counties in three US states. Also, the sample predominantly consisted of Caucasian Americans; minorities were underrepresented due to limited numbers of older minorities in the Demonstration counties.

Limitations

An issue with our study is adequate control over the Type I error since we are exploring 96 possible effects. Some would use an approach such as Bonferroni correction or simply reduce the P-value from the customary value of 0.05 to 0.01 or another value. However, in a study such as
ours that is examining an issue for the first time, we believe that it is better to use the conventional value of 0.05 and err on the side of falsely accepting the test [27–29]. A second potential limitation is that some participants did not complete the study due to death and other reasons. Because IADL data on these participants were not available at 22 months, the intervention effects on them are unknown. Thirdly, this study utilised self-reported IADL assessment. While self-report and performance-based IADL measures may lead to somewhat different results [30], self-report measures are widely used. Fourthly, any inference as to the effects reported can only be made while the intervention is ongoing. It is unknown whether any detected effects would continue after the end of the intervention period and, if so, for how long.

A major strength of our study was the adjusted analyses, which controlled for health-care services received during the study (e.g. physical and occupational therapy or hospitalisation) that could have affected the IADLs at 22 months. In conclusion, the HVN intervention resulted in less difficulty/dependence for several IADLs and more difficulty/dependence for medication management. Future research is needed to confirm and better understand these findings.

Key points

• Although IADLs are vital for everyday life, little is known about the effects of HVN interventions on individual IADLs.

• We compared the effects of the HVN intervention with the control group on difficulty and dependence for six individual IADLs at 22 months in the Medicare Primary and Consumer-Directed Care Demonstration.

• Unadjusted analyses found less difficulty or dependence for the HVN group for meal preparation, telephone use, shopping and ordinary housework, and more difficulty or dependence for medication management.

• Adjusted analyses found, in addition to the effect through health-care services, less difficulty or dependence for the HVN group for meal preparation and shopping, and more difficulty or dependence for medication management.

• The negative effect on medication management questions the validity of a total IADL score as an outcome measure, and implies that other medication management measures should be considered for outcome evaluation.

Acknowledgements

We also thank Professor David Oakes for performing a specialised statistical review.

Conflicts of interest

The funding bodies had no role in the design or analysis of the study and no influence on the decision to publish. There is no conflict of interest to declare.

Funding

The Medicare Primary and Consumer-Directed Care (PCDC) Demonstration was funded by the Centers for Medicare and Medicaid Services (CMS 95-C-90467). The corresponding author is currently a University of Rochester postdoctoral research fellow supported by the Agency for Healthcare Research and Quality T32 training grant (AHRQ T32 MH000044).

Supplementary data

Supplementary data mentioned in the text is available to subscribers in Age and Ageing online.

References


Fat-free mass index predicts mortality

Low fat-free mass as a marker of mortality in community-dwelling healthy elderly subjects†

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†This work has been presented as a poster at the Congress of the European Society of Parenteral and Enteral Nutrition in Gothenburg, 2011.