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ORIGINAL RESEARCH

The Prediction of Mortality by Disability Among Dutch Community-Dwelling Older People

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Objective: To predict mortality by disability in a sample of 479 Dutch community-dwelling people aged 75 years or older.

Methods: A longitudinal study was carried out using a follow-up of seven years. The Groningen Activity Restriction Scale (GARS), a self-reported questionnaire with good psychometric properties, was used for data collection about total disability, disability in activities in daily living (ADL) and disability in instrumental activities in daily living (IADL). The mortality dates were provided by the municipality of Roosendaal (a city in the Netherlands). For analyses of survival, we used Kaplan–Meier analyses and Cox regression analyses to calculate hazard ratios (HR) with 95% confidence intervals (CI).

Results: All three disability variables (total, ADL and IADL) predicted mortality, unadjusted and adjusted for age and gender. The unadjusted HRs for total, ADL and IADL disability were 1.054 (95%-CI: [1.039;1.069]), 1.091 (95%-CI: [1.062;1.121]) and 1.106 (95%-CI: [1.077;1.135]) with p-values <0.001, respectively. The AUCs were <0.7, ranging from 0.630 (ADL) to 0.668 (IADL). Multivariate analyses including all 18 disability items revealed that only "Do the shopping" predicted mortality. In addition, multivariate analyses focusing on 11 ADL items and 7 IADL items separately showed that only the ADL item "Get around in the house" and the IADL item "Do the shopping" significantly predicted mortality.

Conclusion: Disability predicted mortality in a seven years follow-up among Dutch community-dwelling older people. It is important that healthcare professionals are aware of disability at early stages, so they can intervene swiftly, efficiently and effectively, to maintain or enhance the quality of life of older people.

Keywords: disability, mortality, community-dwelling older people, activities of daily living

Introduction

The Department of Economic and Social Affairs of the United Nations forecasts that by 2050 33.2% of the population in the Netherlands will be 60 years of age or older.[1] Population ageing is accompanied by an increase in the number of people with disability. Prevalence figures of disability among Dutch people aged ≥75 years range from 25.2% to 34.8%, in samples of 377 and 234 individuals, respectively.[2,3] There are many different conceptual definitions of disability in circulation. Frequently, disability is defined as having difficulty in carrying out activities of daily living (ADL) and/or instrumental activities of daily living (IADL).[4,5] Examples of ADL are washing and drying your whole body, feeding yourself and going up and down the stairs. Activities such as preparing dinner, doing household activities and making the beds belong to IADL. In general, IADL disability

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precedes ADL disability and represents a less severe form of disability;[6] this was demonstrated in a study showing that 54.6% and 67.4% of 377 older people had at least one ADL and IADL disability, respectively.[2] Besides a greater age,[5,7] gender (women), and low educational level were predictors of disability.[8]

Previous studies have shown that people with ADL and/or IADL disability have a higher risk of adverse outcomes. Well-known adverse outcomes are an increase in the use of care and related costs,[9] and a lower quality of life.[2,8,10] In addition, disability is associated with premature death.[11–18] Only one study has been conducted in the Netherlands;[13] disability was measured using three disability indicators (ADL, mobility and the Organization for economic co-operation and development measure) representing different levels of severity of disability in a sample of 15,208 people aged ≥55 years. People suffering from severe disability (ADL, mobility) had an especially higher risk for death compared to people without a disability using a follow-up period of five years.[13] It is therefore important that healthcare professionals pay attention to older people with disability and use interventions to prevent disability, and do delay its further progress.

The aim of the present study is to predict mortality by disability in a sample of Dutch community-dwelling older people. Our study distinguished itself from previous studies in several areas. First, the sample only included people aged 75 years or older. Second, the follow-up period was seven years. Third, unlike other studies, we selected the Groningen Activity Restriction Scale (GARS) for assessing disability;[19,20] because the GARS contains two subscales (ADL and IADL), we had the opportunity to determine the predictive value of total, ADL and IADL disability for mortality. Finally, we also examined whether mortality could be predicted by individual ADL and IADL items of the GARS.

Methods

Study Population and Data Collection

In June 2008, a questionnaire including validated measures about disability, frailty, quality of life and questions about healthcare utilisation and socio-demographic characteristics was sent to a sample of 1154 community-dwelling individuals aged 75 years or older living in Roosendaal, a municipality with 78,000 inhabitants. The sample was randomly drawn from the register of this municipality. A total of 484 people filled out the questionnaire and returned it, reflecting a response rate of 42%.[21]

Measures

Disability

As mentioned in the introduction we chose to use the GARS to determine disability.[19,20] The GARS is a self-reported questionnaire which contains two subscales. One subscale is focused on ADL disability; this scale includes 11 items; the other subscale measures IADL disability, this scale contains seven items. Each of the 18 items has four response categories: 1) able to perform the activity without any difficulty, 2) able to perform the activity with some difficulty, 3) able to perform the activity with great difficulty, and 4) unable to perform the activity independently. The score for total disability ranges from 18 (no disability) to 72 (maximum disability). For the ADL and IADL subscales the scores ranges from 11 to 44 and from 7 to 28, respectively. A cut-off point of 29 has been established for total disability.[22] No cut-off points are known for the ADL and IADL subscales. The GARS has been validated in the Netherlands and demonstrated having good psychometric properties to determine disability among older people.[19,20]

Mortality

In August 2015, the municipality of Roosendaal provided the dates of death of the people who filled out the questionnaire in June 2008; this created a follow-up period of approximately seven years.

Statistical Analyses

We used descriptive statistics to analyse the baseline characteristics of the participants. Categorical variables were presented as numbers and percentages. Continuous variables were presented as means together with the standard deviations. We defined a time-to-event outcome using the date of mortality of the participants. The time in days was set to 0 (zero) at the time point the first participant died and the time was set to 2613 for participants who were still alive.

For bivariate and multivariate analyses of survival, we used Kaplan–Meier analyses and Cox regression analyses to calculate hazard ratios (HR) with 95% confidence intervals (CI). Predictors in these analyses included the total GARS score, the ADL score, the IADL score and associated items. Since there are no cut-off points for both subscales of the GARS (ADL and IADL), we determined data-driven cut-off points by using a grid of cut-off values

for each of these scores. For each cut-off value of a score, sensitivity (se) and specificity (sp) for the prediction of mortality with Cox regression was calculated. The cut-off value that minimised $\sqrt{(1-se)^2+(1-sp)^2}$ was then defined as the best cut-off value.[23] The comparison of the survival curves was carried out using the Log rank test. In additional analyses, we adjusted for age and gender. For all analyses we considered a p-value <0.05 as significant. Variables with a bivariate p-value <0.20 were used in the multivariate analysis.[24]

The predictive performance of the models was measured using the AUC, the area under the receiver operating characteristics (ROC) curve. An AUC >0.7 was considered as an indication for good predictive performance.[24] For the analyses we used R version 3.4.4.[25]

Ethical Considerations

For this study, medical ethics approval was not necessary as particular treatments or interventions were not offered or withheld from respondents. The integrity of respondents was not encroached upon as a consequence of participating in this study which is the main criterion in medical-ethical procedures in the Netherlands.[26] Informed consent in relation to detailing the study and maintaining confidentiality was observed.

Results

Participants Characteristics

As in a previous study using the same sample the data of five participants were not used, because they had too many missing values;[27] this resulted in carrying out our analyses on 479 participants. At baseline, the mean age of the participants was 80.3 years (sd=3.8); the majority of the sample was female (56.8%), and 238 participants (49.8%) were married or cohabiting. See Table 1 for more detailed information. Table 1 also presents the scores of the participants for total disability (GARStot), ADL disability (GARSADL) and IADL disability (GARSIADL) at the item level. The items "Dress yourself" to "Take care of your feet and toenails' belong to ADL and the items" Prepare breakfast or "lunch" through "Do the shopping" belong to IADL. The most prevalent ADL disability was "Take care of your feet and toenails" (38.6%), followed by "Go up and down the stairs" (10.6%). As far as IADL disability is concerned, the participants had the most substantial problems with doing "heavy" household activities (43.6%) and making the beds (26.2%).

Prediction of Mortality by Total, ADL and IADL Disability Scores

Table 2 shows the HRs for total, ADL and IADL disability with related 95%-CIs. All three disability variables predicted mortality, unadjusted and adjusted for age and gender, with all p-values <0.001. The unadjusted and adjusted AUCs ranged from 0.630 (ADL) to 0.668 (IADL) and 0.680 (ADL) to 0.696 (IADL), respectively.

Prediction of Mortality by Total, ADL and IADL Disability Based on Cut-off Points

The cut-off values were determined as described in Statistical analyses. For GARStot, GARSADL and GARSIADL the cut-off-values were 25, 14, and 11, respectively. Scores higher then these cut-off values indicated disability. Figure 1 presents the survival plots distinguishing disability from non-disability. The p-values of the Log rank test for the comparison of the survival curves are shown in each plot. In each plot, the survival curves differed significantly (p-values <0.001).

Prediction of Mortality by the Individual Items of Disability

Visualisation of Bivariate Associations

To get insight into the bivariate associations between the 18 items of the GARS and the association of these items with mortality, we generated a web graph. The thickness of the lines in the graph is based on Cramers V (CV), a statistic derived from the Chi-square statistic, that ranges from 0 to 1 (values towards 1 indicate stronger association). Figure 2 presents the associations between the 18 items of the GARS and mortality with CV ≥0.25. See Table 1 for interpreting the numbers in the graph. The graph shows that mortality was associated with the items "8. Get around in the house (if necessary, with a cane)", "14. Do 'light' household activities", and "18. Do the shopping" (CV-values 0.27, 0.28, and 0.30 respectively).

Multivariate Analyses

First, we imputed data for the missing values with regard to the total disability items using the MICE package in the R software (m=5 and methods= "polyreg").[28] Subsequently, bivariate analyses were carried out which aimed to determine which of the 18 individual items had

Table 1 Participant Characteristics

Characteristics	Category	n	%
Sex	Man	207	43.2
	Woman	272	56.8
Marital status	Married or cohabiting	238	49.8
	Not married	45	9.4
	Divorced	15	3.1
	Widowed	180	37.7
Ethnicity	The Netherlands	461	96.6
	Other	16	3.4
Education	No or primary	181	38.1
	Secondary	221	46.5
	Higher	73	15.4
1. Dress yourself	Able to perform the activity without any difficulty	396	83.2
	Able to perform the activity with some difficulty	57	12.0
	Able to perform the activity with great difficulty	9	1.9
	Unable to perform the activity independently	14	2.9
2. Get in and out of bed	Able to perform the activity without any difficulty	416	87.0
	Able to perform the activity with some difficulty	54	11.3
	Able to perform the activity with great difficulty	5	1.0
	Unable to perform the activity independently	3	0.6
3. Stand up from sitting in a chair	Able to perform the activity without any difficulty	379	79.3
	Able to perform the activity with some difficulty	84	17.6
	Able to perform the activity with great difficulty	12	2.5
	Unable to perform the activity independently	3	0.6
4. Wash your face and hands	Able to perform the activity without any difficulty	461	96.6
	Able to perform the activity with some difficulty	11	2.3
	Able to perform the activity with great difficulty	3	0.6
	Unable to perform the activity independently	2	0.4
5. Wash and dry your whole body	Able to perform the activity without any difficulty	395	82.8
	Able to perform the activity with some difficulty	53	11.1
	Able to perform the activity with great difficulty	11	2.3
	Unable to perform the activity independently	18	3.8
6. Get on and off the toilet	Able to perform the activity without any difficulty	451	94.4
	Able to perform the activity with some difficulty	20	4.2
	Able to perform the activity with great difficulty	4	0.8
	Unable to perform the activity independently	3	0.6
7. Feed yourself	Able to perform the activity without any difficulty	467	97.9
	Able to perform the activity with some difficulty	9	1.9
	Able to perform the activity with great difficulty	1	0.2
8. Get around in the house (if necessary, with a cane)	Able to perform the activity without any difficulty	420	88.2
	Able to perform the activity with some difficulty	39	8.2
	Able to perform the activity with great difficulty	15	3.2
	Unable to perform the activity independently	2	0.4
9. Go up and down the stairs	Able to perform the activity without any difficulty	282	59.7
	Able to perform the activity with some difficulty	89	18.9

(*Continued*)

Table 1 (Continued).

Characteristics	Category	n	%
	Able to perform the activity with great difficulty	51	10.8
	Unable to perform the activity independently	50	10.6
10. Walk outdoors (if necessary, with a cane)	Able to perform the activity without any difficulty	354	74.8
	Able to perform the activity with some difficulty	63	13.3
	Able to perform the activity with great difficulty	29	6.1
	Unable to perform the activity independently	27	5.7
11. Take care of your feet and toenails	Able to perform the activity without any difficulty	211	44.2
	Able to perform the activity with some difficulty	50	10.5
	Able to perform the activity with great difficulty	32	6.7
	Unable to perform the activity independently	184	38.6
12. Prepare breakfast or lunch	Able to perform the activity without any difficulty	444	93.5
	Able to perform the activity with some difficulty	15	3.2
	Able to perform the activity with great difficulty	6	1.3
	Unable to perform the activity independently	10	2.1
13. Prepare dinner	Able to perform the activity without any difficulty	382	80.6
	Able to perform the activity with some difficulty	36	7.6
	Able to perform the activity with great difficulty	12	2.5
	Unable to perform the activity independently	44	9.3
14. Do "light" household activities	Able to perform the activity without any difficulty	372	78.0
	Able to perform the activity with some difficulty	59	12.4
	Able to perform the activity with great difficulty	15	3.1
	Unable to perform the activity independently	31	6.5
15. Do "heavy" household activities	Able to perform the activity without any difficulty	166	35.1
	Able to perform the activity with some difficulty	59	12.5
	Able to perform the activity with great difficulty	42	8.9
	Unable to perform the activity independently	206	43.6
16. Wash and iron your clothes	Able to perform the activity without any difficulty	266	57.2
	Able to perform the activity with some difficulty	69	14.8
	Able to perform the activity with great difficulty	31	6.7
	Unable to perform the activity independently	99	21.3
17. Make the beds	Able to perform the activity without any difficulty	245	52.1
	Able to perform the activity with some difficulty	67	14.3
	Able to perform the activity with great difficulty	35	7.4
	Unable to perform the activity independently	123	26.2
18. Do the shopping	Able to perform the activity without any difficulty	327	68.8
	Able to perform the activity with some difficulty	47	9.9
	Able to perform the activity with great difficulty	29	6.1
	Unable to perform the activity independently	72	15.2
		mean	sd
Continuous variables	Age	80.3	3.8
	GARStot	26.7	9.6
	GARSADL	14.6	4.8
	GARSIADL	12.2	5.4

Table 2 HRs, CIs, p-values and AUCs for Mortality

GARS	HR	Unadjusted		AUC	HR	Adjusted		AUC
		95%-CI	p-value			95%-CI	p-value	
tot	1.054	[1.039;1.069]	<0.001	0.657	1.052	[1.036;1.068]	<0.001	0.693
ADL	1.091	[1.062;1.121]	<0.001	0.630	1.093	[1.062;1.125]	<0.001	0.680
IADL	1.106	[1.077;1.135]	<0.001	0.668	1.097	[1.067;1.128]	<0.001	0.696

a p-value <0.20 with respect to mortality; the items that complied were included in the multivariate analyses, which applied to all disability items. The Cox regression including all 18 items showed an unadjusted AUC of 0.682 and an adjusted AUC of 0.715. The multivariate analyses revealed that only the disability item "Do the shopping" predicted mortality. The unadjusted HR was 1.288 [1.050; 1.580], with p-value 0.015 and the adjusted HR was 1.320 [1.069; 1.631] with p-value 0.010. For the HRs of the other disability items we refer to Table 3.

For the determination of the predictive value of the disability items belonging to the GARS ADL subscale and the GARS IADL subscale we followed exactly the same steps as aforementioned. The results are also presented in Table 3. For ADL, "Get around in the house (if necessary with a cane)" was the only item that predicted mortality. The unadjusted HR was 1.694 [1.141; 2.514] with p-value 0.009 and the adjusted HR was 1.871 [1.239; 2.825] with a p-value 0.003. For IADL, not surprisingly "Do the shopping" was the item that predicted mortality. The unadjusted and adjusted HR was 1.244 [1.041; 1.486] with p-value 0.016 and 1.280 [1.064; 1.540] with p-value 0.009, respectively. No other IADL item predicted mortality. See Table 3 for further details.

Discussion

Our study showed that all three disability variables (total, ADL and IADL) predicted mortality, unadjusted and adjusted for age and gender. This finding was supported by comparing the prediction of mortality by disabled and non-disabled older people. All

AUCs were <0.7, ranging from 0.630 (ADL) to 0.668 (IADL). As mentioned in the introduction, to the best of our knowledge, just one other study carried out in the Netherlands has examined the prediction of mortality by disability.[13] This study also showed that ADL disabled people had a higher risk of mortality than ADL non-disabled people; their life expectancy reduced by 10 years. However, it should be noted that a good comparison of the results is not possible because the samples are very different in age (≥75 years versus ≥55 years) and the instruments used for data collection varied (GARS versus an ADL measure including 5 items: eating and drinking, dressing, washing oneself completely, washing face and hands, transfer from a chair).

Other previous studies showing that disability predicted mortality were in particular conducted in the USA.[11,12,14,15,18] For instance, in a sample consisting of 1495 patients aged ≥70 years or older discharged from a hospital ADL disability predicted 1-year mortality, after adjustment for other independent variables in a prognostic index (e.g. gender, medical diagnoses, laboratory values as creatinine level).[12] In addition, ADL disability, as well as IADL disability stages, predicted three-year mortality in Medicare beneficiaries of

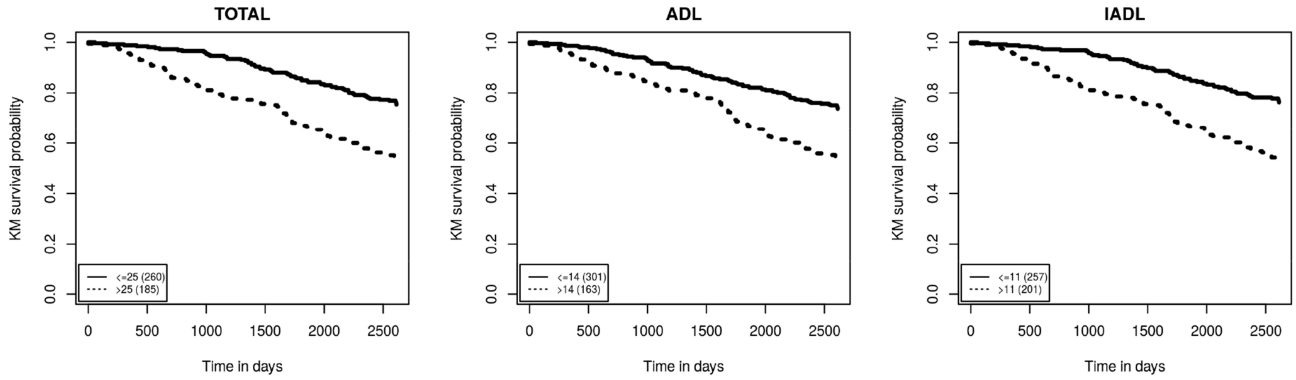

Figure 1 Survival plots distinguishing disability from non-disability.

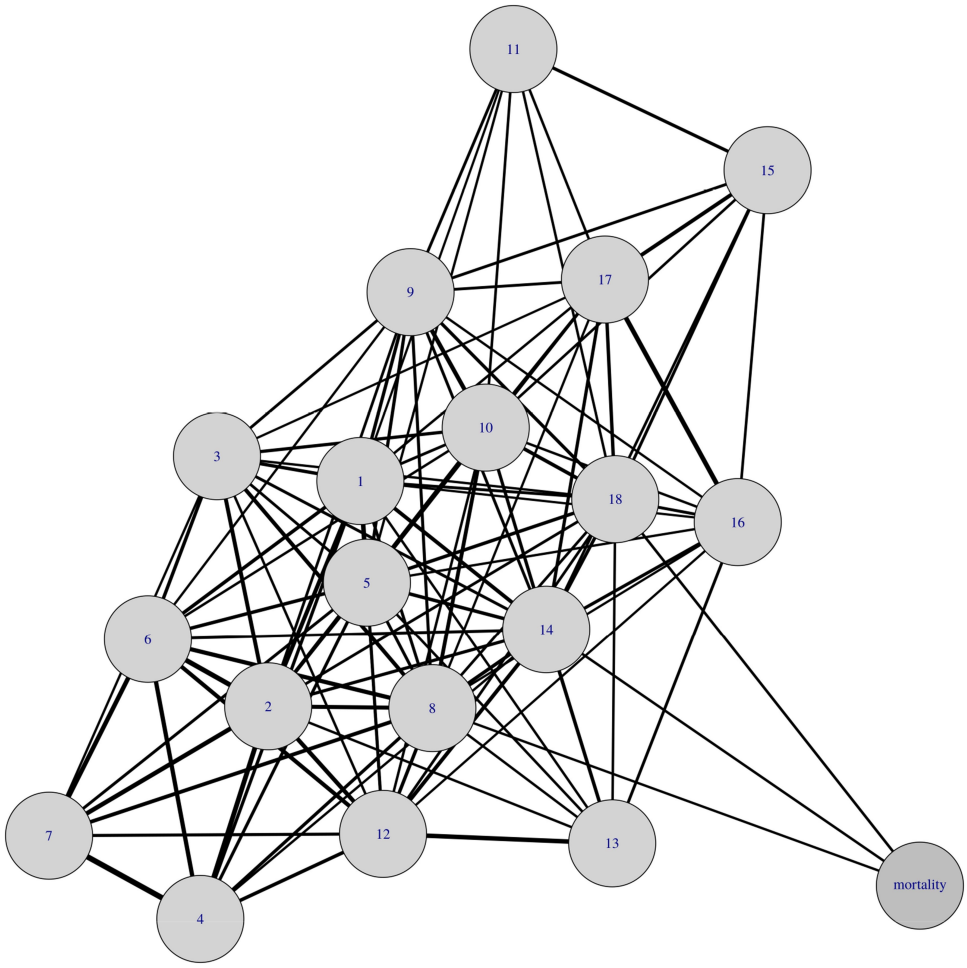

Figure 2 Association mortality and GARS items.

65 years or older; the HRs between the two types were similar.[15] Moreover, in a sample of 4516 community-dwelling older people (≥70 years), ADL and IADL disability predicted two-year mortality.[14] Finally, analyses based on data from the National Health and Nutrition Examination Survey, including 1834 people in the age range 60–84 years demonstrated an HR 2.23 (95%-CI: 1.29–3.85), after adjustment for potential confounders (e.g. age, gender) during a follow-up of 5.7 years.[18] The adjusted HRs for ADL and IADL were 1.74 (95%-CI: 0.72–4.16) and 1.57 (95%-CI: 0.76–3.27), respectively.

Our results are also supported by studies carried out in countries other than the Netherlands and the USA. In Spain, in a sample of 598 older persons (≥65 years) a significant association was found between disability in ADL and IADL and mortality.[16] In Brazil, using data from 1333 community-dwelling persons aged 60 years or older the overall mortality rate appeared to be 46.1 per 1000 person-years at risk. The HRs for ADL disability in men and women were 1.65 (95%-CI: 1.11–2.45) and 1.43 (95%-CI: 1.05–1.95), respectively. For IADL, the HR for men was 2.07 (95%-CI: 1.53–2.79) and for women 1.43 (95%-CI: 1.11–1.84).[17]

In addition, multivariate analyses including all 18 disability items demonstrated AUCs of 0.682 (unadjusted) and 0.715 (adjusted) and revealed that only the item "Do the shopping" predicted mortality. Moreover, multivariate analyses focusing on 11 ADL items and 7 items separately, showed that only the ADL item "Get around in the house (if necessary with a cane)" and the IADL item "Do the shopping" significantly predicted mortality. Multivariate analyses in a USA study showed for "Dependency in shopping" an adjusted OR of 1.9 (95%-CI: 1.5–2.5) for predicting two-year mortality.[14] In the same study, bivariate analyses demonstrated that "Walking across the room" was associated with two-year mortality (OR 4.6 95%-CI: 3.6–5.3).[14]

Table 3 HRs, CIs and p-values for Mortality per Item for Total Disability and Domains

Items	Unadjusted			Adjusted		
	HR	95%-CI	p-value	HR	95%-CI	p-value
Total disability						
Dress yourself	1.047	[0.703;1.561]	0.820	1.137	[0.762;1.697]	0.530
Get in and out of bed	1.035	[0.601;1.781]	0.902	1.066	[0.617;1.843]	0.819
Stand up from sitting in a chair	0.643	[0.411;1.007]	0.054	0.713	[0.455;1.115]	0.138
Wash your face and hands	1.352	[0.721;2.535]	0.347	1.190	[0.630;2.248]	0.592
Wash and dry your whole body	0.846	[0.602;1.188]	0.334	0.786	[0.564;1.095]	0.154
Get on and off the toilet	0.963	[0.479;1.938]	0.917	0.802	[0.401;1.600]	0.531
Feed yourself	0.880	[0.314;2.469]	0.809	1.329	[0.479;3.683]	0.585
Get around in the house (if necessary, with a cane)	1.459	[0.952;2.238]	0.083	1.557	[0.992;2.444]	0.054
Go up and down the stairs	1.167	[0.913;1.491]	0.217	1.103	[0.868;1.402]	0.422
Walk outdoors (if necessary, with a cane)	0.874	[0.648;1.178]	0.377	0.897	[0.662;1.215]	0.482
Take care of your feet and toenails	1.024	[0.874;1.199]	0.770	1.070	[0.917;1.248]	0.389
Prepare breakfast or lunch	1.096	[0.752;1.599]	0.633	1.176	[0.811;1.706]	0.393
Prepare dinner	1.046	[0.844;1.296]	0.682	0.985	[0.793;1.224]	0.891
Do “light” household activities	1.158	[0.904;1.483]	0.245	1.177	[0.917;1.510]	0.200
Do “heavy” household activities	0.952	[0.788;1.149]	0.608	0.947	[0.786;1.141]	0.565
Wash and iron your clothes	1.118	[0.911;1.372]	0.284	0.998	[0.802;1.243]	0.988
Make the beds	1.062	[0.850;1.328]	0.596	1.085	[0.869;1.353]	0.472
Do the shopping	1.288	[1.050;1.580]	0.015	1.320	[1.069;1.631]	0.010
ADL						
Dress yourself	1.117	[0.767;1.627]	0.564	1.239	[0.851;1.803]	0.264
Get in and out of bed	1.168	[0.703;1.942]	0.549	1.276	[0.763;2.135]	0.353
Stand up from sitting in a chair	0.668	[0.436;1.023]	0.064	0.724	[0.473;1.106]	0.135
Wash your face and hands	1.511	[0.826;2.763]	0.180	1.276	[0.689;2.364]	0.439
Wash and dry your whole body	1.021	[0.742;1.403]	0.900	0.951	[0.695;1.302]	0.755
Get on and off the toilet	0.851	[0.443;1.635]	0.628	0.665	[0.344;1.283]	0.223
Feed yourself	0.927	[0.342;2.510]	0.882	1.298	[0.483;3.491]	0.605
Get around in the house (if necessary, with a cane)	1.694	[1.141;2.514]	0.009	1.871	[1.239;2.825]	0.003
Go up and down the stairs	1.133	[0.898;1.431]	0.293	1.086	[0.862;1.369]	0.485
Walk outdoors (if necessary, with a cane)	1.055	[0.808;1.376]	0.695	1.050	[0.794;1.388]	0.734
Take care of your feet and toenails	1.112	[0.966;1.279]	0.138	1.144	[0.994;1.316]	0.061
IADL						
Prepare breakfast or lunch	1.221	[0.906;1.646]	0.189	1.268	[0.945;1.701]	0.114
Prepare dinner	1.013	[0.825;1.243]	0.903	0.956	[0.778;1.175]	0.669
Do “light” household activities	1.202	[0.962;1.500]	0.105	1.229	[0.988;1.529]	0.064
Do “heavy” household activities	0.973	[0.821;1.154]	0.753	0.977	[0.822;1.162]	0.793
Wash and iron your clothes	1.112	[0.919;1.345]	0.274	1.012	[0.829;1.235]	0.906
Make the beds	1.054	[0.853;1.303]	0.627	1.082	[0.879;1.331]	0.458
Do the shopping	1.244	[1.041;1.486]	0.016	1.280	[1.064;1.540]	0.009

A few limitations of our study should be noted. Firstly, disability was assessed subjectively, because these data were based on self-report. However, we used an instrument with good psychometric properties, the GARS, for measuring disability.[19,20] Secondly, sampling was carried out by only one municipality in the Netherlands; therefore, there may be doubts about the generalisability of the results. Thirdly, we only adjusted for age and gender. Other predictors of mortality such as educational level and frailty were disregarded.[29,30]

In conclusion, in this longitudinal study we found that disability (total, ADL and IADL) predicted mortality in a seven years follow-up among Dutch community-dwelling people aged 75 years or older. It is important that healthcare professionals are aware of disability at an early stages, so they can intervene swiftly, efficiently and effectively, with the aim to maintain the independence and autonomy of older individuals and prevent or delay adverse effects of disability, which do not necessarily affect their quality of life. In particular, attention should be paid to the IADL disability item "Do the shopping", because this item was significantly associated with mortality, and besides that, a substantial part of the participants indicated they were longer able to do this activity themselves (15.2%).

Disclosure

The authors report no conflicts of interest for this work.

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