

Chronic Diseases, Living Arrangements and Mobility Limitations in the Elderly

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Introduction

In this chapter data are presented concerning the self-reported prevalences of specific chronic diseases, comorbidity and mobility limitations. The role of chronic medical conditions as a cause of mobility limitations is intuitively important, but not well defined (Boult *et al.* 1994). Particularly, the influence of specific chronic diseases on functional ability, or physical functioning, has, until recently, received little attention (Van der Velden *et al.* 1993). Apart from the presence of chronic diseases, other, non-medical, factors appear to be important in determining physical health. For instance, several studies have shown that people who are married experience higher survival rates during long-term follow-up as compared to people who are single (Broadhead *et al.* 1983). Whether marital status, or other indicators of social support, have an influence on functional abilities, is unknown. Clinical experience with patients suffering from chronic diseases indicates that, even among patients with comparable levels of disease-severity, functional ability may vary widely. Therefore, it seems to be very relevant to also include non-medical aspects in studies on physical functioning. The central question that will be dealt with in this chapter is the following:

What is the association between presence of specific chronic diseases and living arrangement on the one hand, and the presence of mobility limitations on the other hand?

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Methods

Apart from age and sex, the following measurements from the LASA baseline interview were used: living arrangements, the presence of chronic diseases and the presence of mobility limitations. *Living arrangements* were operationalized by using two variables, namely whether the participant was living together with a partner in the same house or not, and whether he or she was living in an institution (residential home, nursing home or psychiatric hospital) or not. The *presence of chronic diseases* was determined by asking the participants whether they had or had had any of the following diseases or disease events: chronic obstructive pulmonary disease or COPD (asthma, chronic bronchitis or pulmonary emphysema), cardiovascular disease or CVD, stroke (excluding transient ischemic attacks), diabetes mellitus, joint disorders (rheumatoid arthritis or osteoarthritis) and malignant neoplasms. *Mobility limitations* were considered to be present when the participant reported to experience difficulty when performing at least one of the following three activities: climbing stairs, using own or public transportation, or cutting his or her own toenails.

The analyses include frequency distributions and contingency tables. Finally, logistic regression analysis was performed with the presence of mobility limitations as the dependent variable.

Results

When we compare the presence of the specific chronic diseases in males and females, we see that COPD, cardiovascular disease and stroke are more often reported by men. Diabetes, diseases of the joints and malignancies are more often reported by women (table 1). In other studies in the Netherlands similar differences between men and women are found, although the prevalences in LASA appear to be somewhat higher. All diseases are reported more often by respondents who are older, with the exception of malignancies (table 1). A high percentage of the participants reports to have more than one chronic disease (comorbidity). This is somewhat more common among women. Comorbidity is especially common among the participants in the highest age group. Among those aged 55 to 65 years less than 15% reports to have more than one of the explicitly asked chronic diseases, whereas this is the case in more than 35% of those aged 75 to 85 years (table 1). The presence of mobility limitations is also more often reported by participants who are older. Moreover,

women experience these limitations more often than men (47.5% versus 35.0%; table 1).

Table 1
Characteristics of the study population: presence of chronic diseases, comorbidity and mobility limitations (% present) according to sex and age

	Sex		Age		
	males (n=1491)	females (n=1595)	55-64 years (n=987)	65-74 years (n=957)	75-84 years (n=1143)
COPD	13.3	10.2	7.6	12.1	14.8
CVD	29.9	21.6	17.0	23.5	34.9
stroke	7.0	4.5	1.9	4.8	9.7
diabetes	7.3	8.4	3.9	7.0	12.1
joint disorders	28.1	48.0	29.4	40.5	44.3
malignancies	6.9	11.5	6.5	10.9	10.4
no disease	39.4	34.5	50.8	35.1	26.4
1 disease	37.4	37.9	35.5	40.8	36.9
≥ 2 diseases	23.2	27.6	13.8	24.1	36.7
mobility limitations	35.0	47.5	18.3	38.1	64.7

In table 2 the distribution of living arrangements is presented according to sex, age, number of chronic diseases and the presence of mobility limitations. When we look at the percentage of people living together with their partner, we see that this is significantly more common among men as compared to women. Also, as would be expected, the proportion of people living with a partner is highest among the 55 to 65 years-old, namely almost 80%. In the oldest age group, those who are 75 years or older, less than 50% lives together with a partner. The presence of chronic diseases is also significantly associated with living arrangements. Of the people with no disease, almost 70% is living together with a partner. Among those who report one disease, and especially among the people reporting more than one disease, living with a partner is significantly less frequent. Finally, respondents who experience mobility limitations are living without a partner in almost 50% of the cases. For people without limitations this is the case in only 25%. A comparable picture emerges when we look at institutionalization, although the number of institutionalized people is relatively small. There is no difference between

the proportions of institutionalized men and women. Proportions are higher for those who are older, those who report more chronic diseases and those with mobility limitations.

As was the case with age and sex, living arrangements, both living together with a partner and institutionalization, are associated with the other independent, as well as with the dependent variable. It is, therefore, appropriate to include these variables in our final logistic regression analysis.

Table 2
Living arrangements according to sex, age, comorbidity and presence of mobility limitations

	living with partner		institutionalized	
	n	%	n	%
males	1124	78.9	58	3.9
females	780	51.6	66	4.1
55-64 years	766	79.1	1	0.1
65-74 years	630	68.5	12	1.2
75-84 years	508	48.5	111	9.7
no disease	794	69.9	14	1.2
1 disease	694	64.0	46	4.0
≥ 2 diseases	409	58.6	57	7.3
no limitations	1295	74.4	13	0.7
limitations present	595	51.4	104	8.2

Included in the logistic regression model are sex, age, institutionalization, living with a partner and the presence of specific chronic diseases, as reported by the respondents (table 3).

From the odds ratios and their confidence intervals it is clear that all variables included contribute significantly to the prediction of mobility limitations in the LASA study population. It is interesting to note that, independent of the presence of diseases and institutionalization, sex, age and living together with a partner have an association with the presence of mobility limitations. Women carry a higher risk of having mobility

limitations than men. The same is true for those who are older. On the other hand, living together with a partner appears to protect against mobility limitations to some extent.

Table 3

Results of the logistic regression analysis with the presence of mobility limitations as the dependent variable (n = 2888; lower n because of missing data on one or more variables)

determinant	Odds Ratio	95% CI
sex (♀ vs. ♂)	1.7	1.4 - 2.0
age (per 5 years older)	1.6	1.5 - 1.7
living arrangements (yes vs. no):		
- institutionalized	5.8	2.4 - 13.7
- living with partner	0.6	0.5 - 0.8
specific diseases (yes vs. no):		
- COPD	2.5	1.9 - 3.3
- CVD	2.1	1.7 - 2.6
- stroke	3.8	2.4 - 5.9
- diabetes mellitus	1.9	1.3 - 2.6
- joint disorders	3.3	2.8 - 4.1
- malignancies	1.4	1.0 - 1.9

A regression model with all odds ratios significantly different from 1, does not necessarily imply that it gives an accurate prediction of the dependent variable. The proportion of people that is correctly classified with our model as having mobility limitations or not, is limited to 75%. As could be expected, there are apparently additional aspects that have to be taken into account in further analyses.

Conclusions

Summarizing, it can be concluded that the presence of mobility limitations is indeed associated with sex, age, living arrangements and the presence of specific chronic diseases. However, the data we have used so far, suffer from some important limitations. The data are collected cross-sectionally. As a result, no causal relationships can be established. The re-

sults are only associations at one moment in time. Another problem is that all data that were used are self-report data. Whether a chronic disease that is reported by a respondent is really present according to medical or clinical standards, is not sure. Perhaps the most important limitation is that it has not yet been possible to take into account the severity of the individual chronic diseases. It is especially this aspect of the various chronic diseases that can be presumed to have a profound influence on mobility limitations in the elderly. To give an example, it is not very likely that an elderly person with adequately controlled diabetes mellitus without complications will experience problems with his mobility due to the diabetes. However, when complications are present, such as severe neuropathy, vision-loss due to retinopathy or macrovascular angiopathy, the story becomes quite different.

In future analyses these limitations will have to be dealt with, and fortunately, the possibilities are available within LASA. In a few years longitudinal data will be available. This will enable us to study changes in physical functioning in relation to both the presence and the course of specific chronic diseases. Moreover, other data-sources will be included in the further analyses of the cross-sectional data, such as the results of the physical performance tests and data on the specific chronic diseases that are collected via the general practitioners of the LASA participants. At this moment classifications are being developed for the severity of the various chronic diseases. For this purpose the disease-specific questions that were included in the interview are used, in combination with the data from the general practitioners. In this way, it will be possible to study the influence of disease-specific severity on physical functioning of elderly people.

References

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