

# Functional status and the care network among elderly residents of sheltered housing

by

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## Abstract

*Service flats and serviced housing complexes are two housing-cum-care facilities for the elderly that have seen an explosive growth since the beginning of the nineties. At the end of 1993, a representative sample of residents (n = 620) in Flanders was interviewed orally in accordance with a structured questionnaire. The survey aimed—among other things—to draw up a profile of the population. This article will focus on the functional status, and the correlates of the care network. It was found that most of the service-flat residents are able to take care of their personal hygiene by themselves, but that they need help with a variety of domestic chores. Although help is most commonly requested from formal services, an important role is also played by the informal network. Residents who receive help from informal carers are less likely to use formal services. But, in case of a fairly great need of care—which means that ADL self-dependence is no longer sustainable and therefore, a more specialized help usually proves indispensable—informal help is not a substitute for formal services. Different models of the relationship between formal and informal support are discussed.*

## Key-words

The elderly, sheltered accommodation, functional status, care network.

## Introduction

Making *sheltered housing* more widespread is one possible way of turning the desire of elderly people for “dignity and independence” into reality. The elderly prefer to live in housing where they can (continue to) live their own lives, even once they need to be looked after. This preference is a well-known phenomenon. This article will focus on one specific type of sheltered housing for the elderly in the Flemish region of Belgium: service flats and serviced housing projects<sup>1</sup>. In order to ensure the integration of the elderly in society, the concept of sheltered housing for the elderly was included in the Flemish Decree for the Elderly of 5 March 1985. It describes service flats and serviced housing projects as: “*One or more buildings which, regardless of their name, are a functional whole, consisting of individual housing areas inhabited by pensioners and common service facilities which may be used by them.*” (1). Service flats strive to provide their residents with a maximum of autonomy in a sheltered housing environment as well as with a package of services within easy reach. They aim at people over 60 still able to fend for themselves relatively well. Highly dependent elderly can resort to more specialised facilities such as rest homes or nursing homes (2).

Service flats may be run by the public sector, by non-profit organisations or by private organisations<sup>2</sup>. In principle, residents pay a rent covering the “naked” rent plus a (highly) limited service package. The aim is by no means to provide a broad “standard care package” to all tenants, regardless of whether it is needed. A number of services are charged for only if used. The residents decide by themselves whether they use them or not. At least, in theory. In practice, the situation varies considerably, which partly accounts for the substantial

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<sup>1</sup> Service flats and serviced housing projects both refer to the same housing concept. For legibility's sake the term service flats will be used to refer to both throughout.

<sup>2</sup> The term “public sector” refers to service flats managed by Public welfare Centres (“OCMW's”), “non-profit sector” to service flats controlled by non-profit associations (“VZW's”) and “private sector” to commercially run service flats.

difference in price between the public and the private sector. Service flats run by private organizations are more expensive but offer a wider range of services included in the rent (3).

This article explores the functional status<sup>3</sup> of elderly residents of service flats and the differential utilization of formal services—which means services provided by professionals—and informal care. To what extent and for which daily activities do residents need help and from whom do they obtain this help? Which factors play a role in receiving help or not, and also in the nature of the care circuit which is called on? Can we speak of a substitution between informal and formal care or is it rather a matter of complementary care circuits? These and related questions were examined through analysis of a survey of elderly residents of sheltered housing in Flanders.

## Previous research

### *Correlates of formal/informal support*

Many characteristics of elderly people have been tested for their contributions to utilization of *formal care*. Empirical investigation into the factors affecting the use of formal care arrangements by elderly people largely occurs on the so-called Andersen and Newman model (4) in which the use determinants are classed under predisposing, enabling and need factors. Predisposing factors refer to individual characteristics which more or less predestine an individual for the use of formal care services (age, sex, living arrangement, health beliefs,...). The factors from the enabling category relate to the opportunities people have to make use of the formal services (supply and knowledge of services, income,...). The need component refers to the health status and represents the most direct reason for services' use. Studies on this topic have been performed in various care settings, with several independent variables which are included in the explanatory models and with varying results. To a large extent, need factors—oper-

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<sup>3</sup> In this article the term "functional status" means the physical abilities of the residents to perform personal and domestic activities, regardless of whether they are carried out by the persons themselves. Functional status is used as an indicator for the degree of assistance needed. Allowance for the mental abilities was not explicitly made here.

ationalised in different ways, i.e. through functional deficits regarding (I)ADL-activities, impairments, health complaints, health perception,...—have emerged as a major predictor of the use of formal services (5-8).

The greatest predictors of *informal support* are both deteriorated health and availability of an informal network, particularly spouse and children. The availability of a spouse is a guarantee of informal support, followed by having children. If elderly people cannot call on relatives they first apply to connections and only next to formal organisations (9-11).

Few studies pattern themselves specifically on the determinants of the use of *private services*<sup>4</sup> by elderly people. A representative sample survey of elderly people living at home in Flanders pointed to rather a modest involvement of commercial services. Elderly people from a higher income bracket, persons seriously in need of care and people living alone more often than other people called in commercial help with (I)ADL activities (9). Investigations in metropolitan regions (Antwerp and Brussels) resulted in a considerable higher involvement of private services (12, 13). It is to be expected that in blocks of service flats, where a whole range of non-profit services (i.e. home nursing, home help, cleaning service) are normally made available to the residents, the involvement of the commercial circuit (i.e. independent nurses, cleaning lady) will be comparatively limited.

#### *The formal/informal support relationship*

In literature there is no agreement on the kind of relationship between formal and informal support. According to the “hierarchical compensatory model” (14, 15) formal care services would be used less if informal care is available. Elderly people first call on informal care, only next on the formal circuit. This model postulates the substitutability of one service for another, but within a preferred ordering. Utilisation of the formal care system is determined not by health needs alone but in combination with the availability of informal support. Litwak’s (16) “task-specificity model” emphasis the complementarity of both systems. The informal and the formal network have each their own

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<sup>4</sup> Private services, commercial services, paid private help/assistance all refer to the same concept in this article.

“specialities”. Therefore, for some kinds of activities the availability of informal assistance might not much affect formal service use (especially where specialized training or facilities are required). According to Chappell et al. (17) neither the substitution hypothesis, nor the task-specificity model is an accurate reflection of reality. There is indeed a complementary relationship between both systems, not through a task division of labour, but through a sharing of overall tasks. In other words, the complementarity between the two systems is a sharing when the informal network cannot do it all.

## The present study

### *The sample*

At the end of 1993, a survey was carried out among a random sample of residents ( $n = 620$ ) of service flats in Flanders. A comparison between the universe and the surveyed sample did not show up significant differences in age, gender or marital status. The respondent's spread according to the buildings' type of managerial regime (public, non-profit or private) likewise indicated that the sample was sufficiently representative (see Table 1).

TABLE 1

*The distribution of residents according to the management regime in the service flat: comparison between the universe and the sample (1993, in %)*

Managerial regime	Universe ( $n = 3\ 100$ )	Sample ( $n = 620$ )
Public	58	59
Non-profit	24	25
Private	18	16
Total	100	100

The residents were questioned orally following a structured questionnaire. The survey aimed to sketch and to analyze an updated and differentiated picture of the position in service flats for older people, e.g. resident characteristics, the reasons for admission, psychological and physical health, the care network, social contacts, the costs of sheltered housing, provision and use of services, facilities and accommodation. This article will cover three aspects: socio-demographic characteristics, functional status and the care network.

## Research methods

### *The functional status*

Different health measures were used in the survey, i.e. health perception, morbidity, medical consumption, functional capacities. In this article we focus on the functional status as an indicator for the degree of assistance needed. According to Kane (18) "*function is the best available common language of aging. It provides a better way to discuss the distribution of care than chronological age. It is the result of a number of different, sometimes competing forces*". Two indicators for functional status are commonly used: the extent to which respondents can perform important activities of daily living (ADL) and the extent to which they can perform important instrumental activities of daily living (IADL).

In literature there is no agreement on the number and the content of the items to be used in the so-called ADL-scale (Activities of Daily Living). The original scale of Katz (19) uses six items. Later on several items were added, i.e. items concerning mobility (20, 21). In our survey a list of nine items was used to check the residents' capacities to carry out activities regarding personal hygiene and mobility. This includes daily personal hygiene (washing oneself, brushing one's teeth, shaving etc.), getting dressed and putting on one's shoes, eating and drinking, having a bath or a shower, foot care, getting into and out of bed, going to the toilet, moving around in the house and troubles with incontinence. Four answers could be given to each item: I can perform the activity without another person's assistance, with a little assistance, only with a lot of assistance, or not at all. The last answer indicates that the respondent is fully dependent on other people's help to carry out the task. For the interpretation of the results it is important to bear in mind that the questions referred to the physical ability to perform the task, *not* to whether the activity was actually carried out by the person in practice.

Apart from the functional status regarding personal care and mobility, the physical ability to perform domestic chores (IADL activities) is also crucial to maintaining an independent lifestyle. A series of seven items was mentioned: light household tasks (washing up, dusting etc.), cooking a hot meal, washing and ironing, going shopping, small repairs around the house, administrative tasks (filling in forms, financial matters etc.), heavy domestic chores (mopping the floor, cleaning the windows etc.). Again, the focus was on the physical

ability to carry out such tasks, not whether the activities were actually carried out by the person him/herself in practice. As with the questions on ADL activities, four answers were possible per item. Mental abilities were not included.

A reliability analysis of the ADL scale (nine items) provided a Cronbach's Alpha value of 0.73. The reliability was raised to 0.82 by eliminating three items: foot care, taking a bath or shower and incontinence. The seven IADL items together formed a reliable scale: Alpha = 0.88. Moreover, an Alpha value of 0.87 was found for the combined scale (TADL), consisting of the above-mentioned selected ADL and IADL items. In this article, we use the TADL-scale in order to measure the degree of assistance needed by the resident population (cf. *infra*). The advantage of a combined index is that the concept of "functional status" is taken in a broader sense than by using separate indexes (20).

Numerous studies have observed a ranking in order of difficulty between the (I)ADL items (for an overview cf., *inter alia*, 21, 11). Using the MSP procedure ("Mokken Scale Analysis for Polychotomous items"), as developed by Molenaar et al. (22), the ADL and IADL items were classified according to degree of difficulty.

#### *The degree of assistance needed*

To summarise the results the resident population is divided into four categories of impairment. This is done on the basis of the hierarchical relation between ADL and household activities—problems on a household level arise first, ADL impairments appear later, as indicated above—and the fact that ADL dysfunctions are more serious because such activities are daily necessities, thus making assistance essential. This would appear to be a "viable" division in order to measure the degree of assistance needed by a resident population. The definition of the different levels is taken from the "ODO project" in the Netherlands (23, 24). The categories of assistance needed are defined as follows:

- No need for assistance: autonomous in all ADL activities, may need help for one household task at most. The resident requires little or no help.
- Some need for assistance: autonomous in all ADL activities, help needed for at least two household tasks. Home help is recommended.

- Considerable need for assistance: help needed for one or two ADL activities, regardless of help needed for household tasks. Some care is needed as well as home help.
- Serious need for assistance: help is needed for more than two ADL activities, almost always in combination with constraints in the household. Far-reaching help is needed.

### *The care network*

The functional status stresses the physical abilities of the residents regarding personal and domestic activities, regardless of whether they are carried out by the person in question in practice. When looking at "care" the focus shifts to daily reality: does the resident perform a number of activities him/herself, or does (s)he receive help? In the last case, the person was asked to indicate who provides such help. Respondents studied a list of eight tasks related to ADL activities and seven tasks related to domestic chores and administrative formalities.

Residents that regularly receive help for a variety of activities were questioned about who provided the help. No detailed information on the intensity of support is available. In order to make the processing of the answers more accessible it was decided to pool the carers into broad categories. The following groups of carers<sup>5</sup> were drawn up: resident person/partner (*i*); child(ren)/family/acquaintances (*i*); service-flat staff and/or staff of related facilities (*np*); external ambulatory non-profit services (*np*) (home help/help for the elderly, cleaning service, home nursing etc.); other resident(s) (*i*); volunteer (organisations) (*i*); paid private assistance (*p*) (cleaning lady, laundrettes etc.).

Logistic regression analysis (25) checked which variables influence/do not influence the use of non-profit, informal and private services. The selected variables with a significant net effect on the use of the (in)formal care network are subsequently analysed applying Chaid (Chi-squared Automatic Interaction Detector). The analysis is based on successive Chi-squared tests—in which the *p*-value is an indicator of significance ( $p < 0.05$ )—and provides a tree structure with

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<sup>5</sup> *i* = informal care circuit *np* = non-profit care circuit *p* = private care circuit.



a clear visual reflection of the relations between the different variables (26, 27).

## Results

### *Socio-demographic characteristics*

The resident population of service flats is quite old. Almost six out of ten residents are aged 80 or over. Residents in flats run by organisations in the non-profit or private sector are older than those in publicly-owned flats (see Table 2). Three quarters of the resident population is made up of women, three quarters of whom are widowed. No less than 93% of the current widowed residents was already a widow(er) when moving into the service flat. Most of them spent several years alone before deciding to move.

TABLE 2

*Age distribution of service-flat residents, according to the management regime (in %)*

Age group	Public sector	Non-profit sector	Private sector	Total
<75	25	18	13	21
75<80	23	17	20	20
80<85	29	23	34	29
85 and +	23	42	33	30
<i>n</i> (100%) =	354	150	100	604

$p < 0.001$ .

Only one fifth of the service-flat population consists of couples. A considerable part of the men (some 40% altogether) live with their spouse, even at an advanced age. Women, however, apparently tend to move into a service flat once they are on their own: only 13% of the female residents is still married, and most of these are under 70 years of age.

Since most residents do not have a partner, parent-child relationships play an important role in the contact and care pattern. Three quarters of the residents have children that are still alive; seven out of ten can also fall back on grandchildren. In one in five cases, one or more children can be reached by the resident on foot (3, 28).

### *Functional status*

The survey results pointed out that, once they have moved, most people want to stay in the service flat. If they could choose, seven out of ten residents would prefer to stay in the service flat even if they became highly dependent on care (3). This wish to stay stirs some serious thinking. Given the residents' on average advanced age—almost six in ten is older than 80—the increased dependence on care of part of them in the very near future looks likely to become one of the main challenges for policy-makers. “What if we become infirm?” is one of the current residents' main concerns (3). To what extent is this already the case? After this, the functional capacities of service-flat residents regarding ordinary day-to-day occupations will be elaborated.

A first finding is that almost 7% of the service-flat residents have no functional deficit. This means that they do not need any assistance with the general activities of daily life. On the other hand, 12% of the residents depend on others to carry out over seven of the thirteen tasks. This dependence is largely related to household tasks. More than eight out of ten residents (82%) are completely autonomous in activities of personal hygiene, compared to 7% in household tasks. Bivariate analysis shows that the private sector has quite a different profile in its residents' care aspect than the public and the non-profit sectors. Residents of commercially-run flats require by far the most help.

As expected, residents first lose their functional capacities for household tasks—starting with heavy domestic chores and small repairs and odd jobs around the house—while those concerning personal hygiene decline later. “Eating and drinking” scores lowest, meaning that residents with dysfunctions at this level also need assistance for the other twelve activities.

### *Degree of assistance needed*

On the basis of the above-mentioned description of the need for assistance, some 16% of the service-flat residents turns out to be self-sufficient. They require little or no help with ordinary day-to-day activities. Two out of three are considered to have “some need for assistance”, which means they only need some household help. A somewhat broader range of services, including a measure of personal

care, is required for 13% of the population. This group will no doubt need more intensive care in the near future. A minority of residents (4%) can no longer look after itself.

TABLE 3

*Division of service-flat residents according to age and degree of assistance needed (in %)*

Degree of assistance needed*	Age				Total
	<75	75 <80	80 <85	85 and +	
None	27	23	12	6	16
Some	64	64	70	68	67
Considerable	6	10	14	21	13
Serious	3	3	4	5	4
<i>n</i> (100%) =	121	120	163	167	571

\* Cf. research methods for a description of the categories.

A person's self-sufficiency drops as his/her age rises. Whereas over a quarter of people under 75 have few or no problems, this is true for only 6% of those over 85. Moreover, it would appear that in each age category, more men than women can look after themselves completely. Broken down according to managerial regime it turns out that the population in the private sector needs most help while that in the public sector requires least. Nearly nine out of ten residents in publicly-owned flats need some household help at most (no need or some need for assistance). In commercially-run flats, this is the case for only six out of ten residents, while in the non-profit sector the ratio is eight to ten.

### *Care*

So far, the stress has been on the residents' functional capacities, regardless of whether the activities were carried out by the person in question him/herself. The focus now changes to daily reality: does the resident actually perform a number of activities him/herself or does (s)he usually receive assistance?

### *Selfcare or assistance*

Excepting foot care and taking a bath or shower, all other personal hygiene tasks are carried out by most residents themselves (87 to

98%). For foot care, two out of three residents resort to others. 8% of those questioned stated they no longer took baths or showers; some four out of ten receive assistance. Selfcare is least common for general household tasks, and in particular for heavy household chores, small repairs and odd jobs around the flat and washing and ironing.

Further analysis shows that help for household chores increases with age. Leaving aside physical ability, there are two tasks whose performance depends entirely on age: cooking a hot meal and washing and ironing. Older residents more frequently request help for these tasks than younger residents with a comparable functional status. The results according to gender clearly reflect traditional role patterns. Men tend to be responsible for the shopping, repairs and odd jobs around the house as well as administrative tasks. Women on the other hand take care of the "real" household chores: washing and ironing, light household tasks. The role pattern applies even after checking the individuals' physical abilities, although the differences become less remarkable.

#### *The care network*

Attention has already been drawn to the residents' large degree of self-sufficiency concerning their personal hygiene (ADL-activities). In those cases where assistance is provided, non-profit services far exceed informal and commercial care. With the exception of taking a bath or shower, in which the help of service-flat staff is decisive, external ambulatory and in-house services are roughly represented equally. Private services are called in only for foot care. Almost a quarter of the residents resort to paid private help for their feet.

The assistance network for household chores (IADL-activities) is completely different. For the administrative tasks, washing, ironing and shopping, the help of children and relatives is crucial. For more than one in three residents they are the main source of help in this respect. For the remaining household chores, service-flat staff and/or staff from related facilities, such as a rest home or service centre, are usually called in. External ambulatory non-profit services and private services cover at most 15% of the household help.

Given that three quarters of the resident population live alone, the contribution by partners for the population as a whole is rather limited. For the group of non-singles separately, the partner's help is certainly important for a number of tasks. For light household tasks, cooking a hot meal and even for heavy household chores, the partner's help

turns out to be more important than that of the children or other relatives.

In general, non-profit services—provided by in-house staff or external ambulatory services—make up the most important care circuit. It is the one which is called in most frequently. This observation is not just true for tasks in general, but also for household and in particular for personal hygiene activities. In total, nine out of ten residents receive assistance from the non-profit circuit: almost half for personal hygiene (mean number of tasks = 1.8)<sup>6</sup> and 86% for household and/or administrative tasks (mean number of tasks = 2.9). As was to be expected, non-profit services are provided first and foremost by the staff of the service flat and/or that of related facilities. For help with personal hygiene, the share of external ambulatory services (home help, home nursing) and of in-house staff is practically the same.

Beside the non-profit circuit the informal network also plays an important role in providing care for residents. In total, 75% of the residents receive assistance from the informal circuit: 13% for personal hygiene (mean number of tasks = 1.6) and 74% for household and/or administrative tasks (mean number of tasks = 2.6). People from outside the service flat — children, relatives, friends, acquaintances — are the prime movers in this respect. Of the residents cohabiting with another person ( $n = 140$ )—usually the spouse—some 57% is helped by the partner. Out of the residents with children (in-law) ( $n = 460$ ), some 71% is helped by the children (in-law).

A third of the residents also resort to private services. The share of the private circuit is divided equally between personal hygiene—practically restricted to foot care—and household tasks, in particularly the use of laundrettes.

### *Combinations of care circuits*

Table 4 shows the combinations of the use of various circuits. Only 13% of the residents exclusively call on the non-profit circuit. A combination of non-profit and informal care is most frequent, but for household tasks only. In most cases, assistance in personal hygiene

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<sup>6</sup> 8 ADL tasks and 7 IADL tasks were checked. No detailed information on the intensity of support is available.

and care seems to be provided by the non-profit circuit (in-house staff and/or external ambulatory services).

TABLE 4

*Percentage of residents using various care circuits to perform ADL and IADL tasks*

Care circuits	% helped by		
	ADL tasks	IADL tasks	Total
No care	30.0	2.1	1.6
Informal circuit only	6.7	9.2	4.9
Non-profit circuit only	36.5	15.6	13.1
Private circuit only	14.4	0.8	0.7
Informal + non-profit	4.1	50.4	44.2
Informal + private	1.0	2.1	3.1
Non-profit + private	6.6	7.7	10.2
Informal + non-profit + private	0.7	12.0	22.2
<i>n</i> (100%) =	609	609	609

#### *Determinants of the care network*

In order to explore factors associated with differential utilization of the care circuits, the dependent variables—the use of informal, non-profit and private services—have been dichotomised: code 0 for non-users, code 1 for users. The ranking as user/non-user has taken account of (possible) sources of care when performing personal hygiene or household tasks. The table below shows the independent variables involved, which can be ordered into broad categories: predisposing, need and enabling factors. The figures reflect their net effect (logistic regression coefficients) on the use of the various care circuits. Since there were insufficient data available, the income variable was replaced by the highest professional status within the family. The research results show a strong correlation between these two variables.

The logistic estimated results for the three care circuits can be summed up as follows. The use of non-profit and informal help is determined most strongly by the degree of assistance needed (need-factor). The more impaired residents become in their activities, the more likely they are to use informal or non-profit care. No significant impact of the help needed or the perceived health on the use of private services was observed. Only two factors have a net effect on the use or non-use of commercial care. A lower number of services provided by the service flat is offset by a higher usage of private services

TABLE 5

Logistic estimates for the use of non-profit, informal and private services (n=523)  
(b-values)\*

Independent variables	Non-profit services	Informal services	Private services
<i>Predisposing variables</i>			
• Age	ns	<sup>2</sup>	ns
75 < 80 (versus < 75)	ns	ns	ns
80 < 85 (versus < 75)	ns	ns	ns
85 and + (versus < 75)	ns	0.608 <sup>2</sup>	ns
• Living arrangement (alone/not alone)	ns	0.898 <sup>2</sup>	ns
• Highest occupation	ns	ns	ns
Unskilled worker (versus management)	ns	ns	ns
Skilled worker (versus management)	ns	ns	ns
Employee (versus management)	ns	ns	ns
• Number of children	ns	<sup>2</sup>	<sup>1</sup>
1 (versus none)	ns	ns	-0.430 <sup>1</sup>
2 (versus none)	ns	ns	ns
3 and + (versus none)	ns	ns	ns
<i>Need-variables</i>			
• Help needed	<sup>2</sup>	<sup>2</sup>	ns
None (versus serious)	ns	-1.505 <sup>2</sup>	ns
Some (versus serious)	ns	ns	ns
Considerable (versus serious)	ns	1.082 <sup>1</sup>	ns
• Perceived health	<sup>1</sup>	<sup>1</sup>	ns
(Very) Good (versus (very) bad)	-0.542 <sup>1</sup>	-0.490 <sup>2</sup>	ns
Moderate (versus (very) bad)	ns	ns	ns
<i>Enabling-variables</i>			
Use of care services			
• Non-profit (no/yes)	—	-1.195 <sup>2</sup>	ns
• Informal (no/yes)	-1.268 <sup>2</sup>	—	ns
• Private (no/yes)	ns	ns	—
<i>Organisational characteristics service flat</i>			
• Number of services incl. in rent (few/many)	0.834 <sup>1</sup>	ns	ns
• Related to rest home/service centre (no/yes)	ns	ns	ns
• Number of services available through service flat	ns	ns	<sup>2</sup>
0-3 (versus 8 to 10)	ns	ns	0.486 <sup>1</sup>
4-7 (versus 8 to 10)	ns	ns	ns
• Capacity	ns	ns	ns
< 30 flats (versus 90 and +)	ns	ns	ns
30 < 90 (versus 90 and +)	ns	ns	ns
Constant	ns	1.665 <sup>2</sup>	ns
Chi-squared model	91.426 <sup>2</sup>	120.807 <sup>2</sup>	50.846 <sup>2</sup>
Classification table: % predicted correctly			
— non-user	16.44	32.81	86.14
— user	97.56	94.18	31.94
Total	86.23	79.16	66.35

\* Logistic regression coefficient *b*; <sup>1</sup>  $p < 0.05$ ; <sup>2</sup>  $p < 0.01$ ; ns: not significant.

(enabling factor); the use of commercial help is less likely for residents with children ( $\exp[-0.430] = 0.65$ ) compared to childless residents (predisposing variable).

The use of informal help has a significant adverse effect on the use of non-profit services and vice-versa. This negative relationship continues to exist if the assistance network for ADL and IADL tasks is analysed separately.

These results could support the substitution theory according to which less use is made of formal services if informal assistance is available (14, 15). It is furthermore noteworthy that the number of services included in the rent makes a significant positive contribution to explaining the use of non-profit facilities. The chance of calling on formal care is 2.3 times as great ( $= \exp[0.834]$ ) for residents whose rent covers an extensive package of services, as for residents without an extensive standard care package, all other variables being constant.

Regarding the so-called predisposing factors, age would appear to have a positive effect on the use of informal care. The number of children alive also shows a positive correlation with the use of informal assistance. Fewer children triggers a proportionally lower use of informal care. The housing situation is only relevant for the use of informal assistance, since the percentage of users of informal help is higher amongst people cohabiting. This is due to the fact that the assistance is provided by the partner. The selected predisposing variables have no net effect on the use of non-profit services.

Based on the variables included in the regression, almost 98% of the users of non-profit services is ranked correctly as user. Of the users of informal care, 94% is correctly considered to be a user. The use of private services, however, is less easily predicted by this procedure.

#### *A breakdown of the main determinants*

Using CHAID (Chi-squared Automatic Interaction Detector) a tree structure is drawn up reflecting the links between the independent and dependent variables and among the independent variables themselves. For clarity's sake, the tree structure was kept to three levels. In this procedure, the categories of an independent variable showing no significant difference in usage are joined together on the basis of previously established criteria. For example: the independent variable



“need” (degree of assistance needed), which initially consisted of four categories, is reduced to three in the tree structure (no need for assistance, some need for assistance and considerable/serious need for assistance). The two last classes were joined because no significant difference in the usage of (in)formal care was observed between the two subgroups.

The first analysis, with the use of non-profit services as the dependent variable and four independent variables (degree of assistance needed, perception of health, number of services included in the rent and use of informal assistance), provides a total of six “definitive” subgroups (shown by numbers in the figure).

The segment with the largest proportion of users covers, as expected, residents who need considerable to serious assistance: 99% of them uses the non-profit care circuit (segment 6). Within this

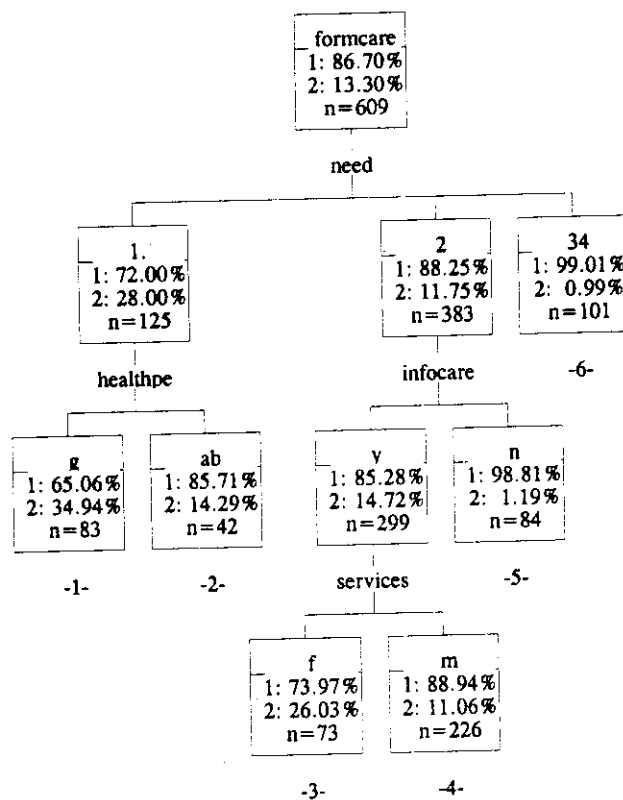


Fig. 1: Use of non-profit services, broken down on the basis of four predictors. Key: formcare = use of non-profit services (1: yes 2: no); need = degree of assistance needed (1: none; 2: some; 34: considerable/serious); healthperc = perception of health (g: good and very good; av: average, bad and very bad); infocare = use of informal care (y: yes n: no); services = number of services included in rent (f: few m: many).

segment no further significant breakdown is possible on the basis of the independent variables selected. The subgroup with the second largest share of users of non-profit care (segment 5) consists of residents with some need for care who don't use informal help. Furthermore, there is segment 4, which covers residents with some need for care that use informal care and pay a rent that includes a broad range of services. This means that residents who need some domestic help and already make use of informal assistance are more likely to resort to non-profit help if all kinds of services are included in the rent than if they have to pay for such services separately. Segment 4 covers a not inconsiderable group within the service-flat population ( $n = 226$  or 37%).

Taking informal assistance as the dependent variable, the independent variables were as follows: degree of assistance needed, age, living arrangement, health perception, number of children and use of non-profit services. Seven subgroups were thus formed. The largest share of users (100%) is found amongst residents with a considerable to serious need for assistance cohabiting with another person, usually their partner. Informal care in this case stands above all for "care by the partner". Residents with some need for assistance not receiving non-profit care come second (97.8%).

Which group of residents makes comparatively *least* use of informal care? In the figure they belong to segment 1, i.e. residents ranked as self-sufficient and living alone. These are followed by residents with some need for care, receiving help from non-profit services and without children (segment 3). Of the latter, 38% does not use the informal network for personal, household or administrative tasks.

## Summary and conclusions

The recognition of the elderly as fully-fledged citizens of society, and the necessary respect for their dignity and autonomy, were the principal issues of the "European Year for the Elderly", held several years ago. Growing attention is being paid in all European countries to initiatives and developments that underpin and optimise an independent lifestyle, covering much more than just housing. Apart from all kinds of housing initiatives focusing on living autonomously, the number of housing projects built and/or equipped especially for the elderly while stimulating independent functioning in so far as possible, is also on the increase. Some examples from the list of facilities show

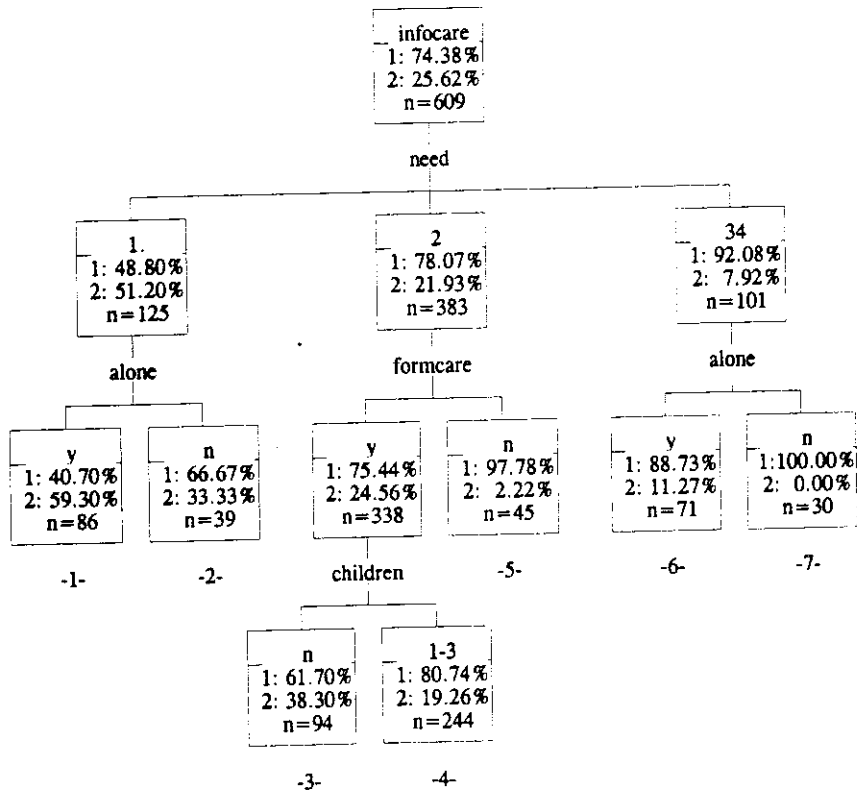


Fig. 2: Use of informal care, broken down according to six predictors.  
 Key: infocare = use of informal care (1: yes 2: no); need = degree of assistance needed (1: none 2: some 34: considerable or serious); alone = living alone (y: yes n: no); formcare = use of non-profit care (y: yes n: no); children = number of children (0: none 1-3: 1 or more).

that different kinds of housing are viable in the latter category as well: semi-serviced flats in the Netherlands, grouped housing in Sweden, Category Two and a half-sheltered housing in the U.K., pensioners flats in Denmark and service flats in Flanders are just some options (29, 30).

In the past few years, service flats in Flanders have been going through a boom. For particular groups of elderly, living in a service flat is the most fitting answer to their search for security and autonomy, in an environment that is in line with their capacities, constraints and aspirations. According to government standards service flats should strive to provide their residents with a maximum of autonomy in a sheltered housing environment and with a package of services within easy reach. They are intended for people over 60 who are still able to fend for themselves fairly well. The object is that highly dependent elderly resort to more specialized facilities such as rest homes or

nursing homes (2). This article has drawn attention to the functional status and the care network of the current service-flat population.

As concerns the functional status, the residents to a large extent conform to the target profile set out by the government. Most require little or no assistance with their personal hygiene or to move about, but do need some help for household tasks. The degree of assistance needed by residents in the private sector differs quite clearly from that of residents in the non-profit and public sectors. Commercially-run buildings host considerably more residents needing extensive care, both at a household and at a personal level. Nearly four out of ten residents in commercially-run flats need considerable or serious help. In publicly-owned flats, this is the case for only one out of ten residents, while in the non-profit sector the ratio is nearly two to ten. Institutions run by private organisations also include a comparatively broader service package in their rents—thus contravening the legal requirements—than is the case for the non-profit or public sectors (3). It is not clear which is the cause and which the effect. Is the larger proportion of infirm residents the reason for including an extended service package in the rent? Or do residents feel that there are a number of things they can no longer do precisely because those services are included in the rent anyway? We believe that a broader service package included in the rent—for everyone, regardless of their needs—will be more likely to induce dependence rather than stimulate self-sufficiency.

Although on the whole service-flat residents currently don't need extensive care, a change is likely in the near future, given the residents' generally advanced age. It was observed that the functional status goes down—and more help is needed—as age goes up. Regarding physical and mental capacities there is currently a big difference between the residents of rest homes and those in service-flats. The former are clearly more dependent on help for ADL activities, and hence even more so for IADL activities. This is partly due to the average (admission) age of the population of rest homes, which tends to be more advanced than that of service-flat residents (31). Presumably this difference with (part of) the current service-flat population will cease to be so clear-cut in the near future.

Regarding the provision of care in service flats, it was found that non-profit services—provided by in-house staff and/or ambulatory non-profit organizations—are the ones used most frequently. However, the informal network also plays an important role, particularly in

household and administrative tasks. Help provided by commercial services is restricted to foot care and the use of laundrettes. A small minority of the population in service flats can only fall back on one care circuit. In the majority of cases care in service flats is a combination of informal and non-profit arrangements.

The optional nature of the services is essential if the residents' self-sufficiency is to be stimulated. The results showed that residents with only little need for assistance and already receiving informal help are more likely to make use of formal assistance as well if such assistance is included in the rent than if they had to pay for it separately.

Some of our findings seem consistent with the view that informal support substitutes for formal services: residents who receive help from informal carers are less likely to use formal services. But, the task-specific model alerts us to the possibility that formal services may be the most appropriate source of support for some tasks. Analyses demonstrate that if it is a matter of a fairly great need of care—which means that ADL self-dependence is no longer sustainable and normally a more "specialized" help is needed—the use of formal assistance is not influenced by the use of informal help. In the case of residents with less serious dysfunctions, the use of informal assistance *does* affect formal service use. These results seem to point to the direction of Litwak's task-specificity-model (16). However, further research is needed in order to investigate whether the complementarity of the two care systems relates to task specificity, or rather, to a sharing of overall task load, as Chappell (17) pointed out. In that case, formal services are called in when the informal network cannot do it all.

## Résumé

*Dans le cadre des soins dispensés aux personnes âgées il y a lieu de noter que les complexes résidentiels et appartements avec services ont pris un essor extraordinaire depuis le début des années quatre-vingt-dix. A la fin de 1993, un échantillon représentatif de résidents (n = 620) en Flandre a été interrogé oralement au moyen d'un questionnaire structuré. L'enquête visait, entre autres, à établir le profil de cette section de la population. Le présent article se concentre sur la condition fonctionnelle et les facteurs corrélatifs qui ont une incidence sur l'utilisation du réseau des soins. On a constaté que la plupart des occupants des appartements avec services sont en état de s'occuper de leur hygiène personnelle, mais qu'ils ont besoin d'assistance dans toutes sortes de travaux domestiques. Bien que cette aide soit le plus souvent dispensée par le réseau formel, un rôle important est confié au réseau informel. Les résidents qui reçoivent une assistance informelle sont moins enclins à faire usage des services formels. Mais dans le cas d'un*

*besoin d'assistance plutôt grand, qui normalement justifie une aide plus spécialisée parce que l'autonomie dans les activités quotidiennes ne peut plus être maintenue, il est inconcevable de remplacer l'assistance formelle par l'assistance informelle. Différents modèles concernant la relation entre l'assistance formelle et l'assistance informelle sont discutés.*

## References

1. MINISTRY OF THE FLEMISH COMMUNITY. Reglementering betreffende de bejaardenvoorzieningen. Handleiding. (Regulations on facilities for the elderly. Manual). Brussels: Administration of the Family and Social Welfare 1992.
2. MARTENS L. Toelichting bij de werking van de serviceflatgebouwen en woningcomplexen met dienstverlening. (Guidelines on the running of service-flat buildings and serviced housing projects). Brussels 1996.
3. VANDEN BOER L. Serviceflats in Vlaanderen. Een haalbaar en betaalbaar alternatief? (Service flats in Flanders. A viable and affordable alternative?). Brussels: CBGS-Monograph 1994/3.
4. ANDERSEN R, NEWMAN J F. Societal and individual determinants of medical care utilization in the United States. *Milbank Memorial Fund Quarterly* 1973; 51: 95-124.
5. WAN T T H, GILL ODELL B. Factors affecting the use of social and health services among the elderly. *Ageing and Society* 1981; 1: 95-115.
6. BOWLING A, FARQUHAR M, BROWNE P. Use of services in old age: data from Three Surveys on Elderly People. *Social Science and Medicine* 1991; 33: 689-700.
7. KRAUSE N. Illness behavior in later life. In: Binstock R H, George L K (eds.), *Handbook of Aging and the Social Sciences* (3rd ed.). San Diego: Academic Press, 1990.
8. MEYER J W. Research on services for the elderly. *Urban Geography* 1990; 11: 394-401.
9. DOOGHE G, VANDEN BOER L, VANDERLEYDEN L. De leefsituatie van bejaarden (Living conditions of the elderly). Brussels: CBGS-monograph 1988/3.
10. STOLLER E, EARL L. Help with activities of everyday life: sources of support for the noninstitutionalized elderly. *The Gerontologist* 1983; 23: 64-70.
11. HUIJSMAN R. Model van voorzieningen voor ouderen. (Model of facilities for the elderly). Dissertation. Kerkebosch-Zeist: State University of Maastricht, 1990.
12. CRETS S. Determinanten van het gebruik van ambulante sociale zorg door hoogbejaarden. *Tijdschrift voor sociologie* 1994; 15: 275-306.
13. LEROY X, NEIRYCNK I. Sociale solidariteit en gezondheid van de bejaarden. Deel 1: De thuiswonende bejaarden. Eindverslag. Brussel: Centre Interdisciplinaire sur le vieillissement 1994.
14. CANTOR M H. Neighbors and friends: an overlooked resource in the informal support system. *Research on ageing* 1979; 1: 434-463.
15. CICIRELLI V. Adult children and their elderly parents. In: Brubaker T H (ed.), *Family relationships in later life*. Beverly Hills CA: Sage 1983.
16. LITWAK E. Helping the elderly: the complementary roles of informal networks and formal systems. New York: the Guilford press 1985.

17. CHAPPELL N, BLANDFORD A. Informal and formal care: exploring the complementarity. *Ageing and society* 1991; 11: 299-317.
18. KANE R L. Introduction. In: Kane R L et al. (eds.), *Improving the health of older people: a world view*. Oxford: Oxford University Press 1990; 15-18.
19. KATZ S et al. Studies of illness in the aged. *Journal of the American medical association* 1963; 12: 914-919.
20. KATZ S. Assessing self-maintenance: activities of daily living, mobility and instrumental activities of daily living. *Journal of the American Geriatrics Society* 1983; 31: 721-727.
21. KEMPEN G I J M, SUURMEIJER T P B M. The development of a hierarchical poly-chotomous ADL-IADL scale for non-institutionalized elders. *Gerontologist* 1990; 30, 4: 497-502.
22. MOLENAAR I W, DEBETS P, SIJTSMA K, HEMKER B T. MSP. A program for Mokken Scale analysis for Polytomous Items, version 3.0. Groningen: iec Pro-GAMMA 1994.
23. ODO (Onderzoekers Demonstratieprojecten Ouderenzorg). Demonstratieprojecten Ouderenzorg: evaluatie van zes projecten in het kader van het substitutiebeleid. (Care for the Elderly Demonstration Projects: evaluation of six projects in the framework of the substitution policy). Nijmegen: Institute for Applied Social Sciences 1991.
24. COMMISSIE MODERNISERING OUDERENZORG. Ouderenzorg met toekomst. Achtergrondstudies bij het advies van de commissie modernisering ouderenzorg. (Care for the elderly with a future. Background studies accompanying the advice of the commission for the modernisation of care for the elderly). Rijswijk: Central Directorate for Information, Documentation and Libraries of the Ministry of Welfare, Public Health and Culture 1994.
25. MENARD S. Applied logistic regression analysis. Sage university papers, series: Quantitative applications in the social sciences, 106. Thousand Oaks: Sage publications 1995.
26. MAGIDSON J. SPSS for Windows: Chaid, Release 6.0. United States of America: Statistical Innovations Inc. 1993.
27. NORUSIS M J. SPSS for Windows: Advanced statistics release 6.0. Chicago: SPSS Inc. 1993.
28. VANDEN BOER L. Bewoners van Serviceflats. (Residents of service flats). Brussels: CBGS-Monograph 1996/1.
29. VANDEN BOER L. Concluding Remarks. In: Dooghe G, Vanden Boer L. (eds.). Sheltered Accommodation for Elderly People in an International Perspective. Amsterdam/Lisse: NIDI/CBGS Publications 29, Swets & Zeitlinger 1993; 133-142.
30. DOOGHE G, VANDEN BOER L (eds.), Sheltered accommodation for elderly people in an international perspective. Amsterdam/Lisse: NIDI/CBGS Publications 29, Swets & Zeitlinger 1993.
31. VANDEN BOER L. De aanbodzijde: krachtlijnen, uitdagingen en reflecties met betrekking tot zorg voor ouderen. (The supply side: major developments, challenges and reflections on present and future old age care). In: Breda J, Deleeck H. Welzijnszorgplan. Een kwantitatieve benadering. Universiteit Antwerpen — UFSIA: Departement Sociologie en Sociaal Beleid 1996: 349-376.