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### Economics

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*Document Version*

Publisher's PDF, also known as Version of record

*Publication date:*

1999

[Link to publication in University of Groningen/UMCG research database](#)

*Citation for published version (APA):*

Wijk, P. V. D. (1999). *Economics: charon of medicine?*. s.n.

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## **Chapter 5 Economic evaluation of alternatives for care in residential homes**

### **Summary**

In the Netherlands a trend can be seen in the development of services for the elderly, towards the provision of community care. Patterns of change are designed to produce downward substitution in the provision of care, moving away from institutional care, towards enhanced home care and developing improved coordination at client level by means of case management. The shift away from institutional care is motivated by both social and economic considerations.

In this article alternatives for residential care are compared to care in other settings (at home or in a service center). The societal cost comparison is based on individual data of all clients, concerning professional care, informal care, costs of other care auxiliaries, and costs of housing, food and transport. The method used is a static matched group comparison. Groups are matched with regard to the Activities in Daily Life (ADL) and Instrumental Activities of Daily Life (IADL) and with regard to mental functioning.

The results clearly suggest that home care is a cheaper option than is institutional care for all groups, no matter how severe their physical or mental disorders are. However, people with mental disorders using home care facilities appeared to be rare and confidence intervals were rather broad. Therefore, further research is necessary to establish the real cost savings of home care on a macroeconomic level. The amount of savings depends on the valuation method for informal care.

Cost comparison between the service center and a residential home showed no significant differences.

*The present chapter is partly based on the following paper:*  
Wijk, P. van der; Wolffensperger, E.W.; Heuvel, W.J.A.; Huijsman, R. (submitted).  
Economic evaluation of alternatives for care in residential homes.

## 5.1 Introduction

In the Netherlands multidisciplinary home care is considered an alternative for institutionalization of dependent elderly in need of support. Traditionally, home care was administered to elderly people in their own homes and only intended for people with minor health problems. When it was no longer possible to maintain an independent life style at home, not even with the help provided by home care organizations, the only remaining option was admission into an institution (a residential home or a nursing home). Several developments in Dutch society have changed this practice. Firstly, the increasing number of elderly people in our society leads to a growing number of dependent elderly people, which puts a strain on the health care budget. Home care is considered to be a cheap alternative for institutional care. Secondly, a large number of elderly people express a preference for receiving care at home. By that means they are able to lead an independent life, which is considered to have a positive impact on their well-being. In addition to this preference reversal, possibilities to provide care at home have grown due to technological innovations. These developments have led to an increase in the demand and use of home care alternatives.

However, effectiveness and efficiency seem to have been disregarded. Also, little attention has been given to the influence of the extent of need on costs and quality. Only for specific diseases or problems, like diabetes or hip replacements, evaluations of costs and consequences in comparison to hospital care have been made. Since the eighties the Dutch government has contrived the concept of substitution, replacing more expensive care methods with less expensive ones and stimulating extramural care at the expense of institutional care. Cost reductions were expected as a result of this policy shift, since extramural (home) care was expected to be much cheaper. Several pilot projects were started that were to reveal the problems and possibilities of delivery of home care to a group of elderly people with more complex health problems. Many of them included an economic analysis. The bulk of these studies concluded that provision of home care was cheaper (Ruissen, 1991; Hoeksma, 1991, Van der Giessen and Otten, 1992). However, this was assumed only to apply to elderly people with few problems in physical functioning and Instrumental Activities of Daily Life (IADL; the ability to take care of one's own personal and household care). People in need of more support were believed to be taken care of more efficiently in an institutional setting. However, most of these studies failed to take into account the fact that

different care modes are used to serve dissimilar target groups. This study contains an analysis of the costs of a group of elderly people cared for in different care alternatives that meets on two of the most factors concerning for the demand of care, physical functioning and cognitive impairment.

The aim of this cost analysis of care alternatives for a selected group of elderly people from a societal perspective. An analysis like this can contribute to a more efficient allocation of resources between different care arrangements on a national level. Instruments for such a reallocation include regulation of the supply of facilities, a selection of elderly people for certain care arrangements indicated on medical grounds, etc. In analyzing the information of this study one basic comparison is proposed: the comparison of costs by looking at characteristics of persons in various services in order to determine the relative cost structure of various service approaches, including compensating variations in demographic characteristics or support needs.

Three different care categories could be distinguished:

- 1- assistance was provided to elderly people in their own homes. A wide array of services is possible: home nursing care, domiciliary care, meals-on-wheels, alarm schemes, etc.;
- 2- senior citizens moved to a central housing complex, of a kind service center, where they can live in their own apartment with domiciliary care services. The advantage of this care mode can be that the overhead costs of travelling etc. are much lower because many elderly people are concentrated in the same neighborhood;
- 3- senior citizens in need of help were admitted into residential homes.

All of these facilities were provided in the same area, the Northern part of the city of Leiden in the Netherlands. The central research question was: What are the costs of different care modes for elderly people with a comparable need of support, corrected for different individual characteristics of persons in services?

## **5.2 Material and methods**

### *Population and scales*

A total of 163 clients were included in this study: 74 clients received home care services, 30 people moved to the service center and 59 were admitted to a

residential home. This sample consisted of all the people living in the service center and a random survey from a larger population of care-seeking elderly in the city of Leiden for the other alternatives. The sample proved to be a good reflection of the total population of elderly people in the city of Leiden (Van der Wijk and Wolffensperger, 1995).

#### *Costs estimates*

The objective of this study is to draw up an inventory of societal costs. This means all financial have been included, regardless by whom they were made. In other words: the question, whether it is the government, the insurance company, the nursing home or the elderly themselves pay, is not relevant in this context. For all clients a time registration procedure was conducted through interviewing staff members and through an observational study. The amount of time needed for particular care activities, like taking a bath, using the bathroom, making meals, etc., was scored in minutes per day (the care intensity). The following resources in hours and days were measured: use of individual help in a residential home, home help services by district nurses and assistant nurses and time spent on care by relatives (informal care). These care costs are denoted by a figure derived from a multiplication of the measured amount of care by the cost per item (for instance the costs of staff per hour based on the annual salary for the particular staff category concerned). Informal care is valued at the same salary level as the domiciliary care, as the activities are very similar.

Assessment of informal care is complex due to problems with valuing unpriced resources. Basically, two methods can be used to value informal care (Smith and Wright, 1995; Busschbach, 1998). The opportunity cost method establishes the value of informal care by assessing the best alternative to use that time. When time spent on informal care would otherwise have been spent working on a paid job, that time should be valued as being equal to the wage rate of the population involved (Gold, 1996) For this particular population this is a problem, because most informal caregivers are retired elderly people and they are primarily engaged in leisure time or voluntary work. No adequate method has been found yet to correct the wages of these individuals.

Another possibility to value informal care time is to assess the shadow price for the services delivered by the informal caregiver. The cost of informal care is valued according to the costs that would have been made as a professional caregiver had provided the service. A problem is that the time spent by informal

caregivers may be much higher than that of professionals. This means that activities should not be valued according to total time spent by informal caregivers, but according to the time professionals would have spent on that same activity (Busschbach et al., 1998). We used this method, asking professionals in institutional care explicitly how much time they spent on performing a certain care task. Thereafter, an hourly rate was assigned to each activity. This wage rate depends on the specific expertise needed to perform the service. For example, cooking is valued lower than nursing. The weighted average cost of informal care activities was valued at Dfl. 32,- per hour (based on the expertise that was necessary for each activity, for instance a home help for cooking and a district nurse for medical activities) (Groenenboom and Huijsman, 1995).

Other costs to be taken into account are : hotel costs, which are included in a residential home setting, while excluded in the other alternatives. Housing costs were based on individual data from clients. Costs of food are estimated based on information from the Dutch National Bureau of Statistics (CBS, 1994). Costs of other care services, like meals-on-wheels and daycare, are included based on a survey among elderly people. Overhead costs based on the care intensity of the individual.

### *Index of physical and mental functioning*

The clients were statically assessed by two instruments. Firstly, an IADL-scale was used to register physical functioning in Activities in Daily Life and Instrumental Activities of Daily Life. This scale runs from 0 to 28 and can be seen as an interval scale (Zijlstra, 1991; Kempen et al., 1995). The scale can be regarded as an adequate measure of the individuals ability to cope with activities that are necessary for living independently. The IADL-scale contains of 14 activities which are hierarchically arranged so that the ability to cope with a more difficult activity presupposes the ability to perform an easier one. The most basic activity is eating, followed by sitting/getting up, moving around in the house from one place to another, using the bathroom, etc., and the most difficult activity is: doing household chores. The degree of psychological functioning was established using the Cognitive Impairment Score (CIS), which measures problems with orientation of time and locality, memory and spatial capacity. This scale also has interval characteristics and the score can vary between 0 and 15 (Zijlstra, 1991). Baseline data for the different populations are shown in Table 1.

Table 1: Baseline data of the study populations (including standard deviation).

	Home care N = 74	Central housing N = 30	Residential home N = 59
Age (in years)	80,8	82,2	83,1
% single living	71,6 %	74,0 %	71,4 %
IADL-score	8,8 (6,2)	12,3 (5,0)	14,5 ( 9,2)
CIS-score	1,0 (2,3)	1,2 (1,9)	2,7 ( 5,0)
Income (in Dfl.)	1500	1550	1460

As can be seen, clients characteristics significantly vary between different populations (Scheffé,  $\alpha = 0,05$ ). These data make clear that a simple comparison of cost data will not suffice for an adequate cost comparison between settings. Therefore, four different subgroups were created using the IADL- and CIS-figures (according to Zijlstra et al., 1991):

- 1- clients with light IADL-problems (score 0, N=13);
- 2- clients with mild or moderate IADL problems (score 1 to 7, N=60);
- 3- clients with severe IADL-problems (score 8 to 14, N=45);
- 4- clients with very severe IADL-problems (score 15 to 28, N=44);
- 5- clients with very severe IADL-problems and severe CIS-problems (score

15 to 28 and CIS-score > 7, N=14).

People with high cognitive impairment were only found in the group of people with severe IADL-problems. Table 2 shows the results of this classification.

Table 2: Baseline data of the subgroups (including standard deviation)

	Home care	Central housing	Residential home
<b>Group 1</b>	N = 2	N = 0	N = 11
IADL-score	0 (0,0)	0 (0,0)	0 (0,0)
CIS-score	0 (0,0)	0 (0,0)	0 (0,0)
<b>Group 2</b>	N = 34	N = 9	N = 16
IADL-score	4,5 (2,3)	5,0 (3,0)	5,0 ( 1,9)
CIS-score	0,1 (0,3)	0,1 (0,5)	0,1 ( 0,5)
<b>Group 3</b>	N = 21	N = 10	N = 13
IADL-score	12,1 (1,8)	12,4 (2,2)	12,6 ( 1,5)
CIS-score	0,6 (1,2)	0,7 (1,0)	0,8 ( 0,9)
<b>Group 4</b>	N = 11	N = 11	N = 17
IADL-score	22,0 (4,1)	19,7 (2,7)	21,7 ( 3,6)
CIS-score	0,9 (2,1)	1,2 (1,9)	1,0 ( 2,3)
<b>Group 5</b>	N = 3	Na	N = 12
IADL-score	16,8 (6,2)	-	17,2 ( 9,2)
CIS-score	12,3 (2,3)	-	12,6 ( 2,4)

The demographic data were analyzed per group using a Scheffé-test, comparing multiple independent means. Cost figures are plotted with 95% confidence intervals. The level of costs dates from 1994 and the costs are represented as Dfl. (Dutch guilders; 1.6 Dfl = US\$1).

### 5.3 Result

#### *Population*

As can be seen in table 1 and 2, people with severe cognitive impairment are rarely found in the home care alternatives. Cognitive impairment seems a strong predictor for admission in a residential or nursing home. People without IADL-problems are scarcely found in our research group, only two in home care. There are no significant differences within groups from different settings. Therefore, a cost comparison for the groups 2, 3 and 4 seems valid.

#### *Care intensity*

In Table 3 the care intensity is shown for all different patient groups for distinct care givers within settings. According to our analysis the amount of time of individual care increases with higher IADL- and CIS-scores. This is true for all types of care, although the effect is less pronounced for informal and private care.

Table 3 Average care intensity per client group in each setting, in minutes per day (including standard deviation)

	Group 1 N = 13	Group 2 N = 59	Group 3 N = 44	Group 4 N = 39	Group 5 N = 15
<b>Home care</b>					
Domiciliary care	19 (8,1)	24 (15,2)	26 (17,3)	19 (12,7)	18 (12,2)
District nurse	0 (0)	2 ( 2,4)	5 ( 3,3)	11 (13,6)	61 (29,8)
Informal care	1 (1,4)	3 ( 2,9)	7 ( 6,6)	12 (13,9)	18 (23,9)
<b>Total</b>	<b>20 (6,8)</b>	<b>29 ( 9,8)</b>	<b>38 (16,3)</b>	<b>42 (13,4)</b>	<b>97 (24,3)</b>
<b>Service centre</b>					
Domiciliary care	-	25 (20,9)	52 (45,5)	96 (54,5)	-
District nurse	-	4 (5,5)	9 (7,6)	11 ( 5,2)	-
Informal care <sup>1</sup>	-	4 (3,3)	11 (9,8)	15 (11,7)	-
<b>Total</b>	-	<b>33 (20,7)</b>	<b>72 (34,4)</b>		<b>122 (45,8)</b>
<b>Residential home</b>	-	18 (12,7)	43 (29,4)	125 (76,1)	207 (102,1)

<sup>1</sup> Time of informal care activities are is measured

The clients at home with more complex complaints receive more attention from the district nurse. Furthermore, they use a greater range of services, as can be seen in Table 4. The people in a residential home receive an all-comprehensive care arrangement. This includes day care arrangements, meals, an alarm system, etc. These components are all included in the cost comparison with the home care alternatives. Cost of informal care mounted up between Dfl. 2,- to Dfl. 8,- per day for people in the service complex, when the activities are valued according to the shadow price method.

Table 4: Use of other services per client group in each setting

	Group 1 N = 13	Group 2 N = 59	Group 3 N = 44	Group 4 N = 39	Group 5 N = 15
<b>Home care</b>					
Private care (minutes per week)	2	9	17	11	7
Meals-on-wheels *	1,4	0,7	4,1	3,2	3,0
Alarm system (%)	0	6	16	37	53
Daycare in nursing home *	0	0,1	0,15	1	2
<b>Service centre</b>					
Private care	-	0	8	8	8
Meals-on-Wheels *	-	1,3	4,0	4,8	-
Alarm system (%)	-	90	95	100	-
Daycare in nursing home *	-	0,1	0,4	0,7	-

\* frequency per week

%: total percentage of people with alarm system.

### *Cost comparison*

Table 5 shows the cost comparison for all client groups in different settings. For all groups providing home care services seems more efficient than institutional care. Only the left side of the care continuum, i.e. people with many IADL- and CIS-problems, were rarely found in the home care settings. For these groups admission in an institution seems necessary, although there are indications that from a cost perspective this is not necessarily the most efficient form of care.

Table 5 Societal costs divided into 6 cost categories (in Dutch florins per day) for five client-groups.

Group	Home care					Service centre			Residential home				
	1 n=2	2 n=34	3 n=21	4 n=11	4G n=3	2 n=9	3 n=10	4 n=11	1 n=11	2 n=16	3 n=13	4 n=17	4G n=12
Care staff	11	20	24	29	70	22	44	75	11	10	22	58	109
Private care	1	4	7	5	5	0	5	5	0	0	0	0	0
Informal care	0	2	4	7	11	1	2	8	0	0	0	0	0
Housing	18	18	19	19	20	16	17	17	32	32	32	32	32
Food	10	10	10	10	10	8	8	8	13	13	13	13	13
Overhead	1	2	2	9	17	14	14	14	18	18	18	18	18
<b>TOTAL</b>	41	56	66	79	133	61	90	127	74	73	85	121	172
95% c.i.	28-54	40-69	37-95	50-108	104-162	47-77	61-117	64-179	59-89	63-83	73-97	77-120	136-208
Mean	<b>62</b>					<b>110</b>			<b>111</b>				
Informal care <sup>1</sup>	5	10	17	32	43	8	21	32	0	0	0	0	0
Total	46	64	79	104	165	68	109	156	74	73	85	121	172

Although people at home make more use of all kinds of additional services, this does not outweigh the facility and overhead costs in residential homes. Tailor-made care arrangements at home or in the service center lead to lower costs. Savings add up to at least Dfl. 17 to Dfl. 42, when informal care is valued at the shadow price.

#### **5.4 Discussion**

In this study the costs of two different kinds of home care arrangements have been compared to the costs of care in a residential home. Clients were divided into client groups, comparable with respect to some important individual characteristics (IADL, CIS, age, living arrangement). As the aim of this study was to compare total costs in different care settings, this relationships between these characteristics have not been examined. In several studies the characteristics mentioned above were seen as important factors to determine care intensity (Zijlstra, 1991, Kemper, 1992; Coughlin et al., 1992). These indicators are the best to be found so far. However, more research is necessary to establish the relationship between client characteristics, care intensity and costs.

Direct care costs for similar groups of clients are lower in home care facilities. This conclusion is in contradiction with findings of O'Shea and Blackwell (1993), who argue that community care is not a cheap option, once informal care is quantified and valued and day hospital and in-patient stays in acute hospitals are taken into consideration. Svensson et al. (1996) also conclude that group living is an expensive option. However, they analysed costs for a group of elderly patients with dementia, a group that is functionally and mentally more restrained than the elderly in our group. Furthermore, Svensson et al. (1996) argue that cost differences might be due to differences in the mental and physical conditions of the elderly included in their study. That is one of the major problems we tried to rule out in our cost analysis. On the other hand Greene et al. (1993) argue that 41% of the elderly in the United States would have a potential for net long-term cost reduction. However, this study was based on a simulation model.

The cost reductions of community care are partly owing to care by relatives, as Fuchs also found in 1995. However, due to the matched group comparison, there were no differences between groups in household status. Therefore, the way the mechanism works is not clear: were the partners of the individuals living in a residential home no longer able to assist in caring or were all care

tasks taken over by professionals? If the latter is the case, there is likely to be a considerable amount of supplier-induced demand in the all-comprehensive institutional care arrangement. Costs of residential care and costs of the service centre show no significant differences. The service center seems to generate more staff costs, probably due to the existence of a case manager. Furthermore, the service center has its own building for social activities at the expense of the total project. However, the present population is not at its maximum yet. If more people move into the service center, the cost per person will decrease.

The feasibility of substitution depends on the assumption that there are elderly people who require lower levels of care than provided in their present situation. In many studies this line of argument is based on a straightforward comparison of average costs (Challis, 1992). The comparisons that are made may not be between similar clients or between similar groups. In fact, if individual patient costs are calculated, it may be so that discharging people from institutional care to home care will raise average costs in both settings.

For a closer look at the developments that take place in the different care facilities, and their cost consequences, a large-scale longitudinal study seems useful instead of the current methodology that analyses three different care modes at one moment in time. Wimo (1995) employed such an approach and compared the use of care of demented patients six months before they went into group living with the elderly's consumption six months after their movement. In his view, the elderly people that moved into a group living arrangement generated lower care costs than they would have been in their old institution. However, Wimo points out that this sort of longitudinal study should go on for a number of years, because the group living arrangement will probably be changed after a couple of years, as the condition of the elderly becomes worse and the structure and the costs of the care delivery process will be changed.

The scope of this analysis was clearly cost-driven. For a good understanding of the working of different care delivery systems more evidence about effectiveness is needed. However, from a cost perspective some interesting points can be mentioned:

Many problems concerning an adequate allocation of care to clients have been reported (Lagergren, 1994). As demonstrated in this article the usage of different client characteristics to establish some kind of client mix can be an important step on the way to a better internal financial management and perhaps

to a better system of charging insurance companies. Substitution will create a demand for a range of other social services, in this study for instance: meals-on-wheels, daycare, private domestic care, etc.

Informal care plays an important role in assessing the possibilities of utilization of home care facilities. Although the percentage of single people was the same in all groups, individuals at home received more care from relatives. Generally, the effort of informal caregivers rises, when the care intensity of the elderly individual increases. Because the government does not pay directly for any informal care, from a public finance point of view home care seems a cheap alternative. This makes it even more difficult to understand why the Dutch government keeps such a tight budget for home care.

Cost saving of home care add up from 17% to 45% in comparison to residential care, when informal care is valued at the shadow price. When informal care is considered at the real cost, then savings are much lower, from 4% to 38%. Savings seem much higher when the less severe handicapped are cared for at home. Threshold values between different modes of care hardly exist, as cost calculation is based on individual data. In this study no general threshold was found. Only in one case a situation came up where a very acute problem came into being, as a result of which the costs surpassed those of a matched client in a residential home. This client, however, broke a hip and needed assistance twenty-four hours a day.

A tailor-made package of services at home will be cheaper for practically each situation, even if informal care is included in the analysis and valued against professional fees. Although a service center seems to be an appealing concept in which productivity gains can be established, the scale of such an operation is decisive. A large investment is needed to overcome the considerable take-off costs.

## References

- Alber, J.; Residential care for the elderly. *J Health Polit Policy Law*. 1992; 17, pp. 929-57.
- Baker, DI; Bice, TW. The influence of urinary incontinence on publicly financed home care services to low-income elderly people. *The Gerontologist*. 1995; 35, pp. 360-9.
- Branch, L. G.; Coulam, R. F.; Zimmerman, Y. A.. The PACE evaluation: initial findings. *The Gerontologist*. 1995; 35, pp. 349-59.
- Carriere, Y.; Pelletier, L. Factors underlying the institutionalisation of elderly persons in Canada. *Sci Soc Sci*. 1995; 50, pp. S164-72.
- Challis, D. Providing alternatives to long-stay hospital care for frail elderly patients: is it cost-effective? *International Journal of Geriatric Psychiatry*. 1992; 7, pp. 773-81.
- Coughlin, TA; McBride, TD; Perozek, M; Liu, K. Home care for the disabled elderly: Predictors and expected costs. *Health Services Research*, 1992; 27, pp. 453-69.
- Cummings, J. E.; Weaver, F. M. Cost-effectiveness of home care. *Clin Geriatr Med*. 1991; 7, pp. 865-74.
- Drummond, M.F.; Mohide, E.A.; Tew, M.; Streiner, D.L.; Pringle, D.M.; Gilbert, J.R. Economic evaluation of a support program for caregivers of demented elderly. *International Journal of Technology Assessment in Health Care*, 1991; 7, pp. 209-19.
- Fuchs, J. Versorgung von Pflegebedürftigen in Privathaushalte 1991: empirischen Analysen mit Daten des sozioökonomischen Panels. *Gesundheitswesen*, 1995, pp. 315-21.
- Greene, V. L.; Lovely, M. E.; Ondrich, J. I. The cost-effectiveness of community services in a frail elderly population. *Gerontologist*. 1993; 33, p. 177-189.
- Groenenboom, G.K.C.; Huijsman, R. *Ouderenzorg in economisch perspectief: kostenscenario's*. Utrecht, 1995.
- Horley, J; Lavery, JJ. Subjective well-being and age. *Social Indicators Research*. 1995; 34, pp. 275-82.
- Kemper, P. The use of formal and informal home care by disabled elderly. *Health Services Research*. 1994; 27, pp. 421-51.
- Ribbe, M. W. Care for the elderly: the role of the nursing home in the Dutch health care system. *Int Psychogeriatr*. 1993; 5, pp. 213-22.
- Rubenstein, LZ; Josephson, KR; Wieland, GD; English, PA; Sayre, JA; Kane, RL. Effectiveness of a geriatric evaluation unit. A randomized clinical trial. *The New England Journal of Medicine*. 1984; 311, pp. 1664-70.
- Smith, K; Wright, K. Informal care and economic appraisal: a discussion of possible methodological approaches. *Health Economics*. 1994; 3, pp. 137-48.
- Svensson, M; Edebalk, P G; Persson, U. Group living for elderly patients with dementia - a cost analysis. *Health Policy*. 1996; 38, pp. 83-100.
- Tak, J.; Gregoire, M. B.; Morcos, S. H. Commercial frozen meals: a cost-effective alternative for home-delivery in feeding programs for the elderly? *J Nutr Elder*. 1993; 12, pp. 15-25.

- Tsuji, I; Whalen, S; Finucane, TE. Predictors of nursing home placement in community-based long-term care. *Journal of the American Geriatrics Society*. 1995; 43, pp. 761-6.
- Tucker, MA; Davison, JG; Ogle, SJ. Day hospital rehabilitation-effectiveness and cost in the elderly: a randomised controlled trial. *British Medical Journal*. 1984; 289, pp. 1209-12.
- Wells, K. B.; Cost containment and mental health outcomes: experiences from US studies. *Br J Psychiatry Suppl*. 1995.
- Wijk, P van der; Wolffensperger, EW. Economische evaluatie Zorgvoorziening Zijloever. 1994. Northern Centre for Healthcare Research.
- Wimo, A; Mattson, B; Adolfsson, R; Eriksson, T; Nelvig, A. Dementia day care and its effect on symptoms and institutionalisation - a controlled Swedish study. *Scandinavian Journal of Primary Health Care*. 1993; 11, p. 117-23.
- Wimo, A; Krakau, I; Mattson, B; Nelvig, A. The impact of cognitive decline and workload on the costs of dementia care  
*International Journal of Geriatric Psychiatry*. 1994; 9, pp. 479-89.
- Wolffensperger, EW; Wolffensperger, JC; Wijk, P van der; Linschoten, CP van; Zijlstra, WO. Kwaliteitsontwikkeling en zorgvernieuwing in de ouderenzorg in Leiden-Noord. 1994, Northern Centre for Healthcare Research.