

Time spent on care & costs for patients with Alzheimer disease living at home, in France

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Outline

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- Research question
- Methods
- Results
- Discussion

Background of the study

- In France: patients with Alzheimer's disease (AD): about 2.7% of population aged 60 and over, in 2009
- Economic burden of AD patients estimated: €177 billion in Europe, in 2008
- Incidence is expected to quadruple by 2050 and the cost to increase
- Assistance for home living patients with AD in their activities of daily living (ADL): greatest part of costs besides direct medical & social costs
- Since 2002, a meanstested allowance, called "Allocation personnalisée d'autonomie" to assist people of 60yrs & over for ADL

Background (ctd)

- In France, few studies focusing on both care provided by professional services (formal care) or/and by relatives & friends (informal care)
 - Assistance required resources that have to be valued
 - Regional differences observed in the proportions of informal care
 - All dimensions of severity levels not always included in previous research
- Substitution between formal & informal care: to be estimated & endogeneity between the two types of care: to be addressed

Research objectives

- Assessing time spent on formal and informal care and their related costs for home-living patients with AD in F.
- Analyzing the factors impacting informal care & testing the substitution between formal & informal care

Methods : Population studied

- 57 patients selected
 - from three memory clinics, in three Regional university hospitals (Nice, Rennes, St Etienne)
 - Patients diagnosed at least a year before
- Interviews conducted from September 2009 to June 2010, and second interview 6 months later
- Patients' trajectories collected (qualitative part)
- Resources used per patients: collected via "*Resource Utilization in Dementia*" - RUD questionnaire

Micro-costing method to value resources used

Resource			Unit	Unit value in euros
<u>Formal costs</u>	<u>Medical costs</u>	Medical and nursing care	Procedure	Tariff
		Hospital care	DRG	Tariff (2009 for public sector hospitals)
		Drugs	Dose	Price per dose
	<u>Non-medical costs</u>	Home service	Hour	<u>Home help</u> : average gross salary <u>Nurse</u> : average gross salary <u>Nurse assistant</u> : average gross salary <u>Transportation</u> : price
		Respite care	Day or hour	<u>Day center</u> : average tariff assessed <u>Memory workshop</u> : average gross salary of a neuropsychologist
<u>Informal costs</u>		Non-medical care	Hour	Two methods: <u>Replacement cost method</u> : average gross salary of formal carer <u>Opportunity cost method</u> : average income of caregiver

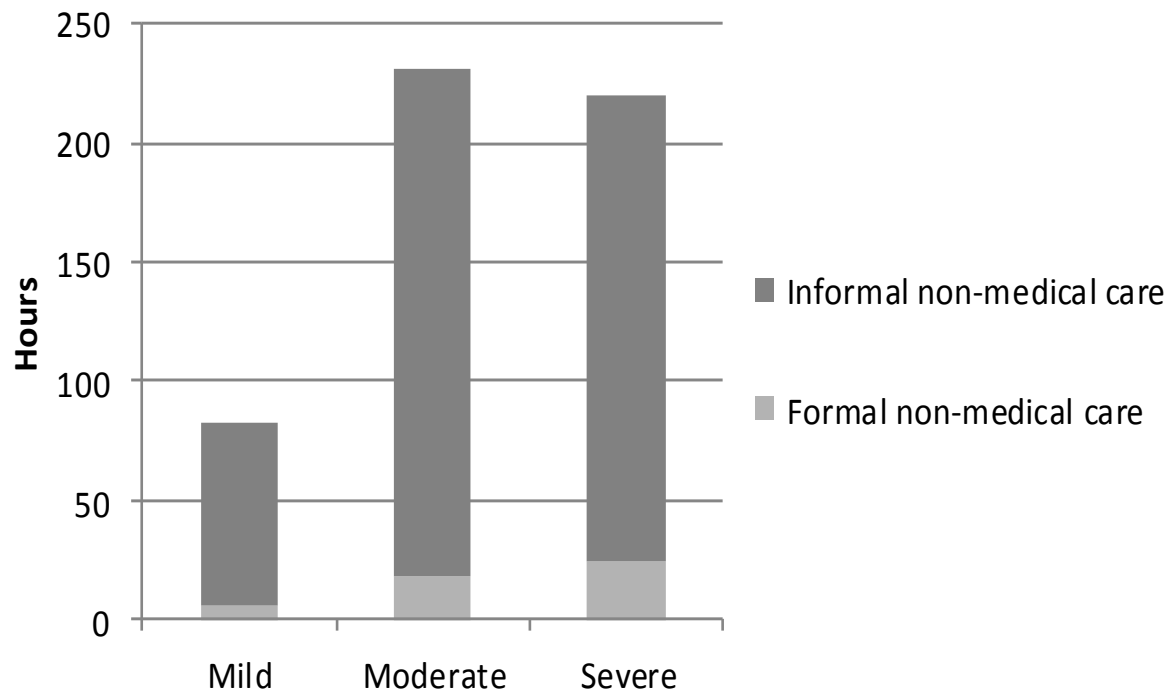
Statistical analysis

- Multiple linear regression model
 - Monthly hours dedicated to informal care influenced by:
 - Patients & caregivers' characteristics (age, gender..)
 - Patients' health state :
 - severity of dementia (Mini Mental State Examination 0 to 30: severe below 10, moderate (19 to 10) and mild (above 19)
 - Other Comorbidities or not
 - Place of residence: urban area or not
 - Informal caregivers' income, wheter he/she lives with the patient.....
 - Monthly hours dedicated to formal non medical care
 - A two-stage least squares (2SLS) regression used: to correct the endogeneity bias
 - Instrument chosen: variable the patient benefits or not from a public allowance
 - (F-statistic in the first stage: 11.82 but Haussman tests ($p=0.87$))

Results

- Average age: 79 yrs (min: 62; max 91)
- Moderate stage of severity: Mean MMSE score = 19 (± 5)
- 70% of patients married & 2/3 living in urban area
- 1/3 of patients benefited from APA, mean: €341(± 333)
- 80% of patients living with their caregiver whose mean age = 71yrs (± 11), mostly female (77%) and retired (76%)
- Male caregivers: systematically spouse

Figure 1. Monthly hours of non medical care according to severity levels



Formal non-medical care: positively correlated to public financial support (correlation of 0.42, $p = 0.001$) and with patients being over 85 yrs

Table 1. Costs related Alzheimer's disease

	Mean	Standard deviation	Minimum	Maximum
Medical cost	497	1 391	0	7 197
Formal non-medical cost	269	468	0	2 196
Informal non-medical cost with the replacement method	1 871	2 695	0	8 440
Informal non-medical cost with the opportunity cost	2 732	4 386	0	19 596
Total cost computed with the replacement method	2 636	3 241	0	10 970
Total cost computed with the opportunity costs	3 450	4 711	0	19 908

Table 2. Linear model of monthly hours spent on caregiving (Square-root transformed)

	Coefficient	Robust Std. Err.	P value
Male patient	3.765	2.168	0.090
Patient's age	-0.156	0.192	0.421
MMSE score	-0.532	0.199	0.011
Absence of comorbidity	-0.301	1.871	0.873
Urban	-1.347	1.821	0.464
Caregiver's income	0.001	0.001	0.142
Living with the informal caregiver	6.341	1.845	0.001
Monthly hours dedicated to formal non-medical care	0.857	0.368	0.025
_cons	20.438	17.085	0.239

Discussion

- Higher estimates of costs with the opportunity cost method
 - Caregiver's income higher than professional salary
- Informal care: 40% of total costs
 - range varying from 36 to 85 % in different studies
 - 42% in the World Alzheimer Report (2010)
 - Quantity of informal care strongly depends whether the caregiver lives or not with the patient, as in other studies
- Monthly direct costs : €966 in our study (average pension : €1,196)
 - 2008 Estimates in a European study: €826 per month
 - Within direct cost: drugs= €99 per month
 - France: 1st consumer of AD drug in Europe far ahead of Germany and the UK, (Health Insurance source)

Discussion

- The question of whether to substitute or complement formal & informal care times arises from our findings, as in previous studies with conflicting conclusions.
 - H1: the more important the use of professional home services is, the less the informal caregiver needs to devote time (substitute)
 - H2: professionals 'use increase results from an aggravation of patients' health state, therefore, informal caregivers increase their time as well (Complement)

Discussion

Some limitations

- Weakness of instruments used
 - explaining less than 30% of the variance of the variables replaced
- Small size of our sample and non randomized
- Estimations with replacement cost method: simplified
 - E.g. : additional informal needed on available human resources
- Indirect costs: based upon informal care time
 - but the indirect economic burden of AD might include estimation of loss of the caregiver's QOL

Conclusion

- Importance of valuing resources used
- Policy level: lessons to be learnt for the coordination of care made by the informal caregiver/family : key actor of the LTC system

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