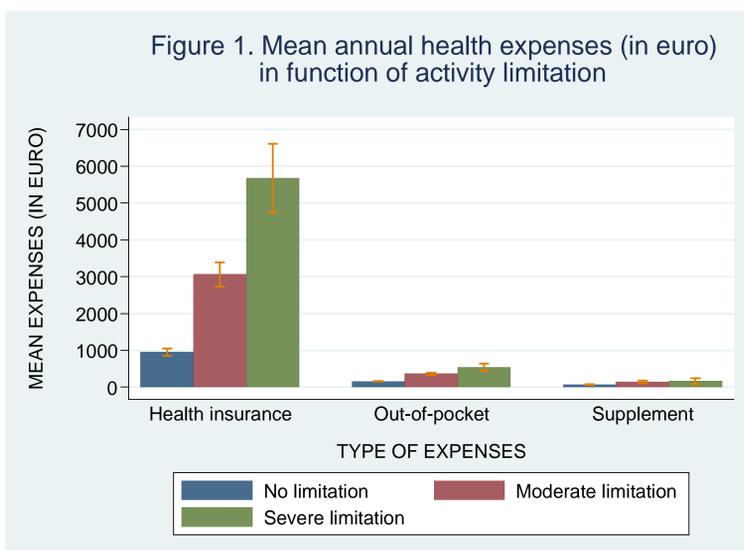


## BACKGROUND

- The need for a global indicator on function resulted in the past 15 years in the development of the Global Activity Limitation Indicator (GALI), which identifies via one question subjects with longstanding (at least 6 months) limitations due to a health problem by severity level. The GALI has been designed particularly for health expectancy comparisons across Europe and has been validated in Belgium and other EU countries.
- To date, no studies have specifically looked at the impact of activity limitations on health expenditure. Although some studies assessed the link between disability and health expenditure, most of them were done in the US, focused on either health insurance expenses or out-of-pocket expenses and did not take into account at the same time the presence of chronic diseases and disability.
- In our study we investigated the impact of activity limitations on health expenses in Belgium, in which the health system is quite different from the one in the US. Differences in health expenses by severity level of activity limitations were studied taking into account the prevalence of chronic conditions. The association between health expenditure and activity limitations was assessed for the total health expenses, but also for reimbursed and out-of-pocket expenses separately. Furthermore it was investigated to which extent differences in health expenses by activity limitation could be explained by socio-demographic characteristics and chronic conditions.



## RESULTS

- Within the study population of 15 years and older, 5406 individuals (79.7%) had no activity limitations, 1297 (15.6%) moderate activity limitations and 405 (4.7%) severe activity limitations. Overall average yearly health expenses increased from 1170 euro per year among people with no limitation, over 3560 euro among people with moderate limitations to 6376 euro among people with limitations. The differences in the average yearly health expense, covered by the health insurance appear to be on average 6.0 times higher among people with severe activity limitations than among people without activity limitations. For out-of-pocket expenses this was 3.5 times higher.
- Both activity limitations and chronic conditions contribute independently to health expenditure (Table 1). It is striking that differences in cost ratios both in function of activity limitations and chronic conditions are more pronounced for payments covered by the health insurance than for out-of-pocket expenses.
- When trying to explain the gap in the health care expenditure between people with activity limitation and people without activity limitation, we observe that 22.9% is explained by age and gender and equally 22.9% by chronic conditions. Socio-demographic factors, such as income, nationality, household type and the degree of urbanisation of the municipality where the person lives, do not contribute in explaining this gap. Education has a small, but significant effect; it explains 3.2% of the gap.

## CONCLUSION

- Although differences in health expenditure between individuals with and without activity limitations can partially be explained by chronic disease, activity limitation is also an independent predictor of health expenditure.
- In Belgium the majority of health costs are covered by the compulsory health insurance. Differences in health expenditure in function of activity limitation are more pronounced for health insurance costs than for out-of-pocket payments, which is in line with the Belgian health policy to reduce financial barriers in health care access.
- The overall results are consistent with studies looking at disability and medicare costs in the US and contribute to the validation of the GALI as public health indicator.

## METHODS

- Data from the Belgian National Health Interview 2008 were linked with data from the compulsory Belgian health insurance. The study was limited to individuals of 15 years and older ( $n = 7108$ ).
- Activity limitations were measured with the GALI. Chronic conditions were considered to be eligible for inclusion in the multivariate model if there appeared to be, after adjustment for age, gender and the other chronic conditions, an independent association with health expenditure.
- Health expenses were calculated for a period of 12 months starting with the expenses during the month of the participation in the HIS. Descriptive results on overall health expenses, and health expenses by reimbursement modalities, were presented in function of the prevalence of activity limitation.
- Multivariate linear regression models were used to explore the association of health expenses with activity limitations in relation to chronic conditions and potential socio-demographic determinants. Differences in expenditure were expressed as cost ratios (CR) of the logarithm of the expenses compared to a reference category.
- To study the factors that contribute to the difference in health expenditure between persons with and without activity limitations, the Blinder-Oaxaca decomposition method was used.

### THE BLINDER-OAXACA DECOMPOSITION

The counterfactual decomposition technique, popularized by Blinder and Oaxaca, is widely used to study mean outcome differences between groups. The assumptions of the Blinder-Oaxaca decomposition are that the outcome variable,  $y$ , is linearly related to the covariates,  $x$ , and that the error term,  $\epsilon$ , is independent of  $x$ . Assuming that the difference in expenditure,  $y$ , between limited and non-limited respondents is explained by a vector of determinants,  $x$ , in a regression model (1) where the vectors of  $\beta$  parameters include intercepts:

$$Y_i = \begin{cases} \beta^L x_i + \epsilon_i^L \\ \beta^{NL} x_i + \epsilon_i^{NL} \end{cases} \quad (1)$$

The gap between the mean outcomes of  $y^{NL}$  and  $y^L$  is equal to

$$y^L - y^{NL} = \beta^L x^L - \beta^{NL} x^{NL} \quad (2)$$

where  $x^L$  and  $x^{NL}$  are vectors of explanatory variables evaluated at the means for the limited and non-limited groups.

Table 1 Cost ratios (CR) of health expenses by activity limitations and chronic conditions, adjusted for age, gender, education, income, nationality, household type and degree of urbanisation, in function of payment modalities\*

	Covered by health insurance		Out of pocket	
	CR	95% CI	CR	95% CI
<b>Activity limitations and chronic conditions combined</b>				
No activity limitation - no chronic condition	1.00		1.00	
No activity limitation - chronic condition	2.24	(1.95-2.59)	2.07	(1.84-2.33)
Moderate activity limitation - no chronic condition	2.47	(1.74-3.50)	1.80	(1.34-2.41)
Moderate activity limitation - chronic condition	4.24	(3.49-5.16)	3.18	(2.73-3.71)
Severe activity limitation - no chronic condition	4.37	(2.34-8.16)	2.82	(1.66-4.79)
Severe activity limitation - chronic condition	7.37	(5.72-9.51)	4.14	(3.30-5.18)
<b>Activity limitations adjusted for chronic conditions</b>				
No limitation	1.00		1.00	
Moderate activity limitation	2.04	(1.73-2.41)	1.61	(1.41-1.84)
Severe activity limitation	3.49	(2.78-4.38)	2.12	(1.70-2.46)
<b>Chronic condition adjusted for activity limitations</b>				
No chronic disease	1.00		1.00	
At least one chronic disease	2.15	(1.88-2.46)	2.01	(1.80-2.24)

\*Defined as: having suffered in the past 12 months from at least one of the following health problems: asthma, chronic bronchitis, myocardial infarction, coronary heart disease, hypertension, osteoarthritis, neck disorder, depression, peptic ulcer, problem large bowel, diabetes, thyroid problems, kidney problems except for kidney stones, cancer