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The influence of social deprivation on length of hospitalization

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Introduction

- Context
  - Implementation of the activity based payment (T2A) since 2004
  - Competition public, private-not-for-profit, private-for-profit
  - Low income people go more often to public hospitals
  - Two distinct tariffs coexist, one public and one used in private for profit hospitals

→ **Social deprivation is often one of the explanations used to justify these differences**

- Objective
  - analyze the impact of social deprivation on the length of stay

Background

- International studies
  - Esptein et al., 1990
  - Clozon et al., 1998

- In France,
  - Study carried on inpatients in Hospitals of Paris
    - The impact on length of stay : +5% for low income, +20% for the homeless variable
  - Maty C. and Bensadon M., 2002,
    - social isolation

Content

- **Definition of ‘social deprivation’, multidimensional concept**
- **Data**
- **Estimation and results**

Defintion of « social deprivation »

Qualitative study conducted by a team of researchers (compagny IRIS) :

Maric M., Grégoire E, Leporcher L, La prise en charge des populations dites précaires dans les établissements de soins, document de travail, DREES, november 2008.

- **Objective**
  - To review the concept of social deprivation
  - To identify the different kinds of extra costs associated with caring for this type of inpatient
- **Method** : review of de literature, interviews of personnel from three hospitals
- **Results** : 4 dimensions of social deprivation
  - social relations
  - quality of housing
  - income level
  - access to rights
- **Impact** on 4 costs items : nursing care, social accompagnement, length of stay, degree of severity

Collecting information on social deprivation - 1/2 -

From PMSI (Frensh DRG-based information system)

- **Information about the inpatients'characteristics (age, gender, place of residence, ...)**

- **Information on their hospitalisation**
  - medical : diagnostics, treatment given on their hospitalisation
  - administrative : date and mode of entry and discharge, origin, destination, length of stay ...)

At the end, a stay report classifies into a GHM, the equivalent of DRG in USA

Collecting information on social deprivation - 2/2 -

- **Social relations**
  - education and family situation : increase in the time needed for explanations during the consulation medical
  - social isolation : population is marginalised and isolated, people living alone and dependants requiring assistance at home at the time they were admitted

- **Housing**
  - homeless
  - people linving in inadequate housing (camping-cars, mobile-home, squats, ...)

- **Financial instability**
  - low income : recipients of basic and complementary universal health assurance or guaranteed minimum income allowance)
  - unemployment : dynamic perspective

- **Acces to rights**
  - people without compulsory healthcare coverage

Data

- **Source and field**
  - Specific survey on the hospitals participating in the national costs study in November and December 2008
  - Coding guidelines (DREES, ATIH)
  - 27 healthcare facilities on 99 were retained

- **Data**
  - RSA - anonymised discharge reports - hospitalizations except stays of less 48 hours
  - Eliminating stays with extreme lengths of stay (1% of the sample)
  - DRG whose hospitalization frequency was inferior to 15 were also eliminated

- **The final sample**
  - 57 175 hospitalizations with 180 DRG
  - These 180 DRGs retained represent 2/3 hospitalizations in the general populations in 2008

Descriptive statistics

- The average length of stay (ALS) of stays in situations of social deprivation is 1,6 days longer than stay of those qualified as not being in situations of social deprivation

	Frequency	Average	Variance	1st quartile	3rd quartile
Patients not suffering from social deprivation	50,375	6.5	37.6	3	8
Patients suffering from social deprivation	6,800	8.1	54.3	3	10
All	57,175	6.7	39.8	3	8

- This difference could be explained by differences in morbidity
  - The ALS vary notably with the range of cases treated proper to each hospital
  - The stays of patients suffering from social deprivation are more present in DRG with ALS longer

- Finally, it's necessary to proceed with a multivariate analysis to measure the effect of social deprivation everything else being equal

Multivariate analysis - 1/2 -

- two types of social deprivation indicators were introduced
  - a global indicator : a stay will be qualified “social deprivation” if it presents at least of the social deprivation codes retained
  - finer indicators : distinguished separately the differents dimensions of social deprivation taking into account the links between them
- Control variable :
  - To adjust the lengths of stay according to the case-mix, we used the DRG associated with the stay
  - Age (classified)
  - gender
  - mode of discharge (transfer, home, death)

Multivariate analysis - 2/2 -

- The depending variable ‘Length of stay” may be considered to be a count variable : discrete and non-negative values, distribution cannot be considered to be Gaussian (Quantin et al, 1997)

- Count model
  - We chose negative binomial model to take into account that variance > mean

Results - 1/2 -

- Length of stay for social deprivation : +16%
- Social relations and quality of housing most significantly influence the length of stay
- The financial instability taken individually do not significantly influence the length of stay

		Model 1*		Model 2*	
		Coeffcient	P-value	Coeffcient	P-value
Social characteristics of hospitalisation					
Hospitalisations of patients not suffering from social deprivation		*Ref.*		*Ref.*	
Hospitalisations of patients suffering from social deprivation		**0.16**	**<0.001**	-	-
One single dimension of social deprivation	social relations	-	-	**0.17**	**<0.001**
	housing	-	-	**0.18**	**0.0176**
	financial instability	-	-	0.04	0.0756
	access to rights	-	-	0.11	0.0986
Two dimensions of social deprivation	social – housing	-	-	**0.26**	**0.0007**
	social – financial	-	-	**0.24**	**<0.001**
	social – rights	-	-	0.16	0.1058
	housing – financial	-	-	**0.38**	**<0.001**
	housing – rights	-	-	**0.47**	**<0.001**
	financial - rights	-	-	0.07	0.507
Three or more dimensions		-	-	**0.32**	**<0.001**

** The models are controlled by gender, age and medical characteristics of the hospitalisations as measured with 180 GHMs common to both subpopulations.*

Results - 2/2 -

- Social relations : The need for assistance is the criterion most influencing the length of stay (+21%)
- Quality of housing : the homeless factor has the greatest influence : +40%

		Model 3*	
		Coefficient	P-value
Social characteristics of stay			
Hospitalisations of patients not suffering from social deprivation		*Ref.*	
One single dimension of social deprivation	Needs assistance and hygiene care	**0.10**	**0.0147**
	Needs assistance at home	**0.21**	**<0.0001**
	Needs assistance (both together)	**0.26**	**<0.0001**
	Needs assistance and other	**0.29**	**<0.0001**
	Other social relations	0.07	0.0928
	Homeless	**0.40**	**0.0004**
	Inadequate housing	-0.01	0.9335
	Low income	0.04	0.1367
	Unemployment	0.12	0.1983
	Low income and unemployment	0.01	0.9075
	Access to rights	0.11	0.0989
Two dimensions of social deprivation	social – housing	**0.26**	**0.0007**
	social – financial	**0.24**	**<0.0001**
	social – rights	0.16	0.1056
	housing – financial	**0.38**	**<0.0001**
	housing – rights	**0.47**	**0.001**
	financial - rights	0.06	0.5129
Three or more dimensions		**0.32**	**<0.0001**

** The models are controlled by gender, age and medical characteristics of the hospitalisations as measured with 180 GHMs common to both subpopulations.*

Conclusion

- Our results confirmed the positive impact of social deprivation on the length of stay

- This effect is differentiated according to the different dimensions of social deprivation
  - the increase in length of stay is much marked for inpatients who are socially isolated and dependant as well as for the homeless

- Financial poverty alone does not influence the length of stay. Nonetheless, low income associated with poor living conditions significantly increases the length of stay