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Do Individuals Using the 21 Health Care Centres Participating in the EPIDAURE-CDS Study Have a Lower Socio-Economic Status?

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The exploratory project EPIDAURE-CDS aims at analysing the specificity of 21 polyvalent health care centers[1] (HCC[2]) in the supply of health care and evaluating their role in the reduction of health inequalities, notably in terms of access to primary care. Preliminary results show that compared to general medicine patients within the population as a whole, HCC patients are more socio-economically disadvantaged and self-report poorer health.

The level of individual socio-economic deprivation is assessed using the EPICES score which takes into account the broader, multidimensional aspects of socio-economic conditions, contrary to traditionally used socio-administrative indicators. This score shows that over 60% of HCC patients have a low socio-economic status against less than 40% within the population as a whole. Individual deprivation is associated with a lower probability of self-reporting good health and a higher consumption of general medicine. Furthermore, socio-economic deprivation appears to be concentrated among beneficiaries of a complementary health insurance (CHI) other than the state-funded CHI for low-income individuals[3].

If these results indicate that HCCs supply care to a more vulnerable population thereby contributing to facilitate access to health care, the quality of care delivered needs to be evaluated, and more generally whether the services supplied effectively correspond to the health care needs of socio-economically deprived populations.

The research project EPIDAURE-CDS is based on a sample of 21 *medical or polyclinic centres* which only deliver medical care or broader services (dental, nursing…). Health Care Centres (HCC) participated on a voluntary basis and were essentially municipality run (5% of HCCs), In conformity with article L 6323-1 of the Public Health Code, HCCs provide health care services without full-time admission and participate in public health actions concerning preventive health, health education and social actions. France counts 1,700 HCCs which provide medical care, nursing care, dentistry care or a combination of the above, and run by either municipalities, non profit insurance companies or associations (Acker, 2007). They are characterised by a specific status situated between private practice and hospital that allow them to benefit from a contract with the National Health Insurance (NHI). Care supplied by sector 1 (state regulated fees) health professionals are reimbursed by the NHI, and HCCs cannot charge patients for fees exceeding the regulated scheme and patients are exonerated from third party payment. The majority of HCCs participating in this study are loca-

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1 Most of the outpatient facilities participating in this study are runned by municipalities.

2 Centre(s) de santé.

3 Copy editor's note: Couverture maladie universelle complémentaire (CMU-C).

ted in territories considered as being socio-economically disadvantaged and are grouped together within 11 management centres in 11 different municipalities (Belfort, Champigny-sur-Marne, Gennevilliers, Grenoble, Ivry, La Courneuve, Mala¬koff, Montreuil, Nanterre, Paris-Association for the Development of Social Medicine (ADMS) and Vitry).

The EPIDAURE project's main objective is to analyse the specificity of HCC in the health care provision and to determine whether they play a specific role in reducing social health inequalities notably by facilitating access to primary care among socio-economically deprived or vulnerable populations; an aspect of health care rarely researched to date.

Recent studies show that vulnerable individuals with low socio-economic status or living in deprived areas are equally disadvantaged in terms of health status and access to health care. Universal Health Insurance (CMU) beneficiaries, for example, experience difficulties in accessing health care due to financial difficulties but also through the 'refusal' of treatment by certain health professionals (Cases *et al.*, 2008; Boisguérin et al,, 2010). People living in deprived areas are more likely to self-report poorer health than others (Afrite *et al.*, 2010) whereas access to specialised medical care is more difficult and unmet needs for financial reasons more commonplace (Allonier *et al.*, 2007; Onzus 2007; Parizot *et al.*, 2004).

Using socio-economic, socio-demographic, health status and deprivation indicators, this study aims at evaluating the differences between HCC general medicine patients and those within the population as a whole. By what means do these CDSs render themselves accessible to socio-economically deprived or vulnerable populations? What is the link between deprivation, health status and health care use?

Insert 1
The EPIDAURE-HCC study 'patient' survey

The 'patient' survey constitutes one of the four EPIDAURE study modules. The three others concern the monographic analysis of each HCC concerned (services delivered, organisation…), an environmental analysis (populations served) and a cost analysis (Statutory Health Insurance data).

The EPIDAURE socio-demographic survey is conducted among a sample of patients aged 18 and over that consulted a GP and/ or a general practice dentist between March and June 2009 in 21 polyvalent centres de santé (HCC), members of the Fédération nationale des centres de santé that agreed to participate in the study.

The sampling method is based on a stratified sample plan. The selection criteria retained is the fact of having consulted a GP, and sample selections were carried out independently for general medicine and general practice dentistry. For all the participating HCC combined, 14,877 visits for 11,598 general medicine patients were selected. Among these, 10,051 patients for 13,046 visits accepted to answer the questionnaire; that is an 87% patient **participation rate**.

As patient participation and visit rates among the 21 HCC studied are unequal because they respectively depend on the number of visits per patient and the size of the patient register per HCC, patient and visit **adjustments** were effectuated allowing us to conduct analyses HCC by HCC and all HCCs combined.

Data collection is based on a questionnaire administered face-to-face by around 30 interviewers. Its aim was to collect socio-demographic data among HCC patients (age, gender, level of education, occupation and socio-professional category…), patients' self-perceived health status and, in particular, a description of their socio-economic deprivation status by means of 11 questions permitting the calculation of their EPICES score (insert 3).

EPIDAURE Survey and Health, Health Care and Insurance (ESPS) survey

The analysis of HCCs user characteristics is based on a survey (insert 1) conducted among a sample of 10,051 patients aged 18 and over for 13,046 general medicine visits observed in the 21 participating HCCs. This survey aims at collecting socio-demographic data together with the individual deprivation level and health status of HCC general medicine patients. Comparisons with the population as a whole are carried out using a sub-sample of 9,970 NHI beneficiaries aged 18 and over that had declared a total of 41,027 general medical visits in the 2008 ESPS survey[4], whether in a HCC or not[5]. Data regarding health care utilisation and the related purchase of medical products was collected for 5,016 of these patients and their 31,429 observed general medicine visits by matching the ESPS survey with the permanent sample of NHI beneficiaries[6] visit (insert 2).

Individual deprivation was assessed by means of the EPICES[7] score developed by the CETAF[8] , and collected annually from approximately 600,000 individuals benefitting from a periodic medical examination in a NHI medical centre.

The EPICES score, a multidimensional measure of individual socio-economic deprivation

Insert 2
The 2008 Health, Health Care and Insurance Survey

The multidisciplinary Health, Health Care and Insurance survey (ESPS) is conducted every two years by IRDES since 1998. It explores the relationships between health status, access to health care services, private and public health insurance and respondents' socio-economic status. As a general population survey, it represents over 96% of ordinary households residing in metropolitan France in which at least one member is covered by one of the three main National Health Insurance schemes.

Conducted by telephone or face-to-face interview, the ESPS survey is based on a main questionnaire administered during two contact sessions separated by around two weeks. In the interval, each member of the respondent household is asked to complete a series of questionnaires including the economic and social questionnaire (QES) aimed at individuals aged 18 and over exclusively and in which has been introduced the questions permitting the calculation of the EPICES score.

In 2008, over 8,000 households and 22,000 individuals were interrogated, of which 16,985 respondents aged 18 and over received the QES. The EPICES score was able to be calculated for 11,903 respondents. Among these, 9,970 (84%) respondents declared having consulted a GP at least once over the last twelve months and for 5,016 of these (42%), at least one effective general medicine visit was observed after matching ESPS and data from a sample of National Health Insurance beneficiaries (EPAS) for half the ESPS sample).

[4] CE's note: Enquête santé protection sociale – *Health, Health Care and Insurance Survey.*

[5] Given the low number of HCC in France, the probability of finding HCC patients in this survey is relatively low.

[6] CE's note: Echantillon permanent des assurés sociaux (EPAS) - *Permanent Sample of National Health Insurance Beneficiaries*.

[7] CE's note: Evaluation of Precarity and Social Health Inequalities in Medical Examination Centres).

[8] CE's note: Centre technique d'appui et de formation des centres d'examen de santé.

T1

Socio-demographic characteristics and health status of the population seeking care in general practice

	ESPS-Epas data matching 2008		Epidaure 2009 survey	
	Patients (%) N = 5,016	Use rate (%) N = 31,429	Patients (%) N = 14,576	Use rate (%) N = 25,519
Gender				
Men	44.8	38.3	40.5	39.7
Women	55.2	61.7	59.5	60.3
Age				
Average age	47.8	51.9	45.4	46.6
Age range				
18-29 years old	18.2	13.6	22.5	19.9
30-44 years old	25.8	21.3	28.3	28.2
45-64 years old	33.4	34.2	33.3	34.7
65 and over	22.7	31.0	15.9	17.2
Socio-professional status				
Economically active	61.0	51.1	47.1	45.9
Inactive	39.0	48.9	52.9	54.1
Socio-professional categories				
Farmers	1.0	0.9	-	-
Craftspersons-shopkeepers	4.5	3.0	1.7	1.4
Executives and higher intellectual professions	8.9	6.0	4.5	4.0
Middle level professions	14.7	11.6	3.5	3.2
Employees	22.1	23.0	30.9	30.5
Manual workers	20.0	19.2	6.5	6.8
Retired	21.5	28.8	20.4	21.8
Other economically inactive persons	0.3	0.4	21.8	21.5
Unemployed persons previously in employment	6.9	7.1	10.6	10.8
Socio-professional categories (employed)				
Farmers	1.4	1.3	-	-
Craftspersons-shopkeepers	6.2	4.4	3.7	3.1
Executives and intellectual professions	13.5	10.6	9.6	8.7
Middle level professions	21.8	19.8	7.3	7.0
Employees	29.9	35.3	65.6	66.3
Manual workers	27.3	28.5	13.9	14.9
Type of work contract (employed)				
Open-ended contract	85.6	84.8	79.0	79.9
Fixed-term contract	7.7	8.8	13.7	12.6
Temporary worker	2.9	2.7	4.0	4.3
Specific contract	3.9	3.7	3.3	3.3
Work time (employed)				
Full-time	82.6	79.4	78.1	77.8
Part-time	17.4	20.6	21.9	22.2
Choice of part-time work (employed on part-time contracts)				
Part-time chosen	56.6	52.5	43.8	43.5
Part-time not chosen	43.5	47.6	56.3	56.5
Highest diploma obtained				
No diploma	13.8	17.5	29.5	31.4
CEP[a]	11.6	15.8	6.7	6.8
Primary/elementary certificate of education, BEPC[b]	7.1	7.1	7.8	7.9
CAP, BEP[c]	29.8	29.3	20.4	20.7
Baccalauréat[d] (Bac)	14.0	12.3	15.0	14.1
Bac + 2 years of higher education	10.9	8.6	7.2	6.7
> Bac + 2 years of higher education	12.8	9.6	13.5	12.4
Complementary health insurance (CMU-C, other CHI...)				
Beneficiaries	95.3	95.0	77.2	78.1
Non beneficiaries	4.7	5.0	22.8	21.9
Type of complementary health insurance				
CMU-C (CHI for low-income individuals)	5.7	8.2	15.8	16.4
Other types of CHI	94.3	91.8	84.3	83.6
General health status				
Very good	17.0	10.5	13.3	11.9
Good	54.0	45.5	41.1	38.9
Fair	24.0	34.2	35.7	37.0
Poor	4.4	8.4	7.7	9.5
Very poor	0.7	1.5	2.2	2.7
Epices Score				
Average Score	25.9	28.8	38.2	39.5
Deprivation status (Cetaf Epices score cut-off value)				
Non-deprived (score < 30.17)	61.7	56.0	36.6	33.9
Deprived (score ≥ 30.17)	38.3	44.0	63.5	66.1

[a] CE's note: Certificate of primary education taken at the age of 11/13 (no longer exist)

[b] CE's note : Certificate of primary education taken at the age of 14/15.

[c] CE's note: Certificate taken during secondary education, at the age of 15/16.

[d] CE's note: School-leaving certificate taken at the age of 17/18.

Data: IRDES. Health. Health Care and Insurance survey (ESPS) 2008 – Permanent Beneficiaries Sample (EPAS); EPIDAURE-HCC 2009 Patients survey. **Exploitation :** IRDES, adjusted data.

To download data : www.irdes.fr/EspaceRecherche/Qes/Qes165/Qes165_CentresDeSantePrecarite.xls

goes beyond the traditionally used socio-administrative indicators such as the allocation of basic welfare benefits. It is based on 11 socio-economic questions taking into account the material, financial and psycho-social determinants of deprivation and permits calculating an individual score ranging from 0 (no deprivation) to 100 (maximum deprivation) [insert 3]. The CETAF cut-off value dividing the population between the least and the most deprived sub groups is established at 30.17.

HCC general medicine patients are more socio-economically deprived and self-report poorer health

In comparison with general medicine patients within the population as a whole, those consulting in a HCC (table 1) are more frequently women (59% in HCCs against 55%), on average slightly younger (45 against 48 years old), with a lower level of education (21% with an education level at least equivalent to BAC + 2 years against 24%). HCC patients are equally proportionately more numerous to declare being not occupied (53% against 39%) and occupied patients more frequently declare working part-time (22% against 17%) without having chosen to work part-time (56% against 44%). Employees are more numerous among HCC patients (31% against 22%) whereas skilled workers are significantly fewer (6% against 20%) with the exception of Belfort HCC. The percentage of general medicine patients covered by CHI is lower in HCCs (77% against 95%), with a higher percentage benefitting from the state-funded CHI for low-income individuals (CMU C) (16% against 6%). Finally, 46% of HCC respondents self-report a fair to very poor health status against 29% within the population as a whole.

HCC general medicine patients are more socio-economically deprived

The EPICES score, indicating a deprivation *continuum* ranging from 0 to 100, is on average higher for HCC general medicine

patients than for those within the population in general (38 against 26) [table 1]. The score difference between HCC patients and the population in general increases further the higher the level of deprivation. One third of HCC general medicine patients thus obtain a score above 53 against 37 for general medicine patients within the general population.

In EPICES score models comparing HCC general medicine patients with non-HCC patients and other socio-demographic or health status variables, the absolute average gap is of 12 percentage points dropping to 7 points all other things being equal[9]. It varies according to HCC from 3 points for the Mistral HCC in Grenoble to 14 points for the HCC in Belfort (table 2). In addition, individuals that declare being occupied but unemployed or belonging to lower paid socio-professional classes (manual workers, employees, farmers and agricultural workers…) having a lower level of education or a poorer health status, have a significantly higher deprivation score.

Over 60% of HCC patients are socio-economically deprived against less than 40% within the general population

In order to isolate the population with a high deprivation score, the analysis of deprivation is no longer effectuated on the basis of a *continuum* scale but as a dichotomous value. Individual deprivation is identified from an EPICES score greater or equal to the CETAF cut-off value established at 30.17, or greater or equal to the last quintile of the score's distribution within the general population.

We are thus able to estimate that 63.5% of the sample using HCC general medicine is socio-economically deprived in the sense that individual scores are greater or equal to 30.17 whereas this is the case for only 38% within the general population (table 1). This 24 point gap drops

[9] The modelling of deprivation level (EPICES score as a continuum) among HCC patients in comparison with general practice patients among the population in general produces a coefficient estimated at 11.637***. It drops to 7.524** when adjusted on socio-demographic characteristics and health status.

T2 Individual socio-economic deprivation status model

		EPICES deprivation score model					
		Deprivation *Continuum* scale Coefficient		**Deprivation** EPICES score ≥ 30.17 dy/dx		**High deprivation** EPICES score ≥ 53.84 dy/dx	
Age *(Ref: 18-30 years, 65 and over)*							
30-45 years		2.824	***	0.0586	***	0.0869	***
45-65 years		1.850	***	0.0311	*	0.0811	***
Gender *(Ref: women)*							
Men		-0.535		-0.014		-0.0112	
Diploma *(Ref: no diploma, CEP, BEPC, brevet des collèges, brevet élémentaire)*							
CAP, BEP[a]		-5.766	***	-0.141	***	-0.0491	***
Baccalauréat (Bac)[b]		-8.750	***	-0.210	***	-0.0850	***
≥ Bac +2		-12.50	***	-0.302	***	-0.111	***
Occupation *(Ref: economically active in employment)*							
Active unemployed		2.373	***	0.0351	*	0.0423	***
Retired		-5.495	***	-0.143	***	-0.0210	**
Socio-professional category *(Ref: farmers, employees and workers)*							
Executives and higher education professions		-14.05	***	-0.391	***	-0.143	***
Middle level professions		-7.684	***	-0.197	***	-0.0901	***
Craftspersons-shopkeepers, company directors		-6.284	***	-0.124	***	-0.0623	***
Health status *(Ref: poor)*							
Good		-10.16	***	-0.228	***	-0.131	***
HCC[c] general medicine patients *(Ref: ESPS-Epas general medicine patients)*							
Paris[d]		8.451	***	0.187	***	0.0855	***
Nanterre	*Thorez*	12.32	***	0.246	***	0.191	***
	Parc	8.559	***	0.198	***	0.0762	**
Gennevilliers	*Paix*	8.130	***	0.192	***	0.0859	***
	Chandon	7.381	***	0.144	***	0.0877	**
Malakoff	*Barbusse*	5.441	***	0.114	***	0.0584	*
	Ténine	8.000	***	0.151	***	0.128	***
Vitry		9.575	***	0.211	***	0.136	***
Ivry		7.597	***	0.175	***	0.109	***
Champigny	*Rouquès*	8.512	***	0.208	***	0.0920	***
	Ténine	8.796	***	0.206	***	0.0941	***
Montreuil	*Renoult*	5.229	***	0.141	***	0.0470	*
	Savaterro	10.07	***	0.176	***	0.148	***
La Courneuve		3.146	***	0.112	***	-0.0227	
Belfort		13.58	***	0.271	***	0.188	***
Grenoble[e]	*Abbaye*	6.169	***	0.153	***	0.0600	*
	Arlequin	4.618	***	0.127	***	0.0699	***
	Les Géants	3.113	***	0.117	***	0.0279	
	Mistral	2.801	**	0.0780	**	-0.00587	
	Vieux Temple	7.512	***	0.151	***	0.126	***
N		14,813		14,813		14,813	
R^2 ou pseudo-R^2		0.2801		0.1617		0.1353	

Significance thresold: * p<0,05 ; ** p<0,01 ; *** p<0,001.

a CE's note: Certificate taken during secondary education, at the age of 15/16.

b CE's note: School-leaving certificate taken at the age of 17/18.

c HCC or management centres

d CE's note: Association pour le développement de la médecine générale (ADMS).

e CE's note: Association de gestion des centres de santé de la ville de Grenoble (Agecsa).

Method: Individual deprivation considered as a continuum scale ranging from 0 to 100 is modelled using the linear regression method; the probability of being socio-economically deprived (EPICES score ≥ 30.17) and highly deprived (EPICES score ≥ 53.84) using the logistic regression methods.

Reading guide: In the linear regression analysis (first column), each estimated coefficient is interpreted as the variation in EPICES score units for individuals in one category relative to individuals in the reference category selected, all other things being equal. The EPICES score is thus 10 percentage points lower for individuals in good health compared to those who are not, all other things being equal. In the second column, the marginal effect dy/dx expresses the variation in the probability of being in a situation of individual deprivation for individuals in one category in relation to a reference category, all other things being equal. Thus, the probability of being deprived, that is to say having an EPICES score equal to or greater than 30.17, is 23 percentage points (-0.228*100=-22.8) lower for individuals in good health compared to those who are not, all other things being equal. These probabilities are significant at a 0.1% threshold.

Data: IRDES Health, Health Care and Insurance survey (ESPS) 2008 – Permanent Sample of Beneficiaries (EPAS); EPIDAURE-HCC 2009. Patients survey. **Exploitation :** IRDES. Adjusted data.

To download data : www.irdes.fr/EspaceRecherche/Qes/Qes165/Qes165_CentresDeSantePrecarite.xls

T3 Modelling of the probability of being socio-economically deprived according to complementary health insurance (CMU-C or other)

	CMU-C beneficiaries		Non-beneficiaries of complementary health insurance		Beneficiaries of other complementary health insurance	
	EPICES deprivation score ≥ 30.17 dy/dx	High EPICES deprivation score ≥ 53.84 dy/dx	EPICES deprivation score ≥ 30.17 dy/dx	High EPICES deprivation score ≥ 53.84 dy/dx	EPICES deprivation score ≥ 30.17 dy/dx	High EPICES deprivation score ≥ 53.84 dy/dx
Age *(Ref: 18-30 years, 65 and over)*						
30-45 years	0.0485 **	0.132 ***	0.0337 ***	0.181 ***	0.0360 *	0.0478 ***
45-65years	0.0666 ***	0.210 ***	0.0510 ***	0.187 ***	0.0213	0.0502 ***
Gender *(Ref: women)*						
Men	0.0199	0.0401	-0.00593	-0.0315	0.0097	0.00916 *
Diploma *(Ref: no diploma, CEP, BEPC, brevet des collèges, brevet élémentaire)*						
CAP, BEP[a]	-0.0664 **	-0.022	-0.00394	-0.0285	-0.101 ***	-0.0181 ***
Baccalauréat (Bac)[b]	-0.129 ***	-0.128 ***	-0.0914 ***	-0.158 ***	-0.150 ***	-0.0333 ***
≥ bac +2	-0.127 ***	-0.157 ***	-0.142 ***	-0.188 ***	-0.255 ***	-0.0566 ***
Occupation *(Ref: economically active in employment)*						
Active unemployed	-0.0307	-0.0267	0.00278	0.0194	-0.0243	0.0136
Retired	-0.0855 *	-0.0389	0.00264	0.0271	-0.105 ***	0.0063
Socio-professional category *(Ref: farmers, employees and workers)*						
Executives and higher education professions	-0.347	---	-0.275 **	-0.275 **	-0.286 ***	-0.0656 ***
Middle level professions	-0.019	-0.149	-0.0575	-0.199 *	-0.133 ***	-0.0304 ***
Craftspersons-shopkeepers, company directors	0.0427	0.0373	-0.148 *	-0.270 ***	-0.107 ***	-0.0260 *
Health status *(Ref: poor)*						
Good	-0.0785 ***	-0.180 ***	-0.0725 ***	-0.216 ***	-0.223 ***	-0.0746 ***
HCC[c] general medicine patients *(Ref: ESPS-Epas general medicine patients)*						
Paris[d]	-0.065	-0.108 *	-0.00396	0.00782	0.197 ***	0.0313
Nanterre – *Thorez*	0.0657 **	0.0714	0.0236	0.128 *	0.169 ***	0.0618 *
Nanterre – *Parc*	-0.0194	-0.0796	0.0178	-0.0241	0.224 ***	0.0685 **
Gennevilliers – *Paix*	0.0173	-0.0833	0.0328 *	0.0194	0.185 ***	0.0556 **
Gennevilliers – *Chandon*	-0.0345	-0.0903	0.0263	0.0579	0.137 ***	0.0546 *
Malakoff – *Barbusse*	0.0169	-0.164 *	-0.017	0.0384	0.122 ***	0.0454 *
Malakoff – *Ténine*	-0.0268	-0.0641	0.00822	0.0796	0.143 ***	0.0920 ***
Vitry	0.0423	0.0541	0.0571 ***	0.0333	0.143 ***	0.0639 *
Ivry	-0.0168	0.0931	-0.000821	0.0649	0.171 ***	0.0296
Champigny – *Rouquès*	0.0728 **	-0.0592	0.0350 *	0.0663	0.180 ***	0.0294 *
Champigny – *Ténine*	0.000292	0.0212	0.0403 **	0.0138	0.179 ***	0.0369 *
Montreuil – *Renoult*	-0.0773	-0.054	0.0173	0.0657	0.162 ***	0.0174
Montreuil – *Savaterro*	0.0495	0.0797	0.00985	0.118 *	0.109 ***	0.0184
La Courneuve	-0.0837 *	-0.259 ***	-0.00548	-0.106	0.132 ***	0.0028
Belfort	0.0883 ***	0.143 *	0.0596 ***	0.158 *	0.294 ***	0.129 ***
Grenoble[e] – *Abbaye*	0.0716 **	0.0198	0.0263	0.184	0.175 ***	0.0455 *
Grenoble[e] – *Arlequin*	0.0459	-0.0679	0.0183	0.0924	0.146 ***	0.0747 ***
Grenoble[e] – *Les Géants*	-0.019	-0.108	0.0637 ***	0.00798	0.138 ***	0.0426 *
Grenoble[e] – *Mistral*	-0.00367	-0.0583	0.0153	-0.12	0.0938 **	0.00917
Grenoble[e] – *Vieux Temple*	-0.0338	-0.0772	0.0266	0.135 *	0.142 ***	0.0833 ***
N	1,717	1,717	2,366	2,366	10,590	10,590
R^2 ou pseudo-R^2	0.1108	0.0917	0.1664	0.0984	0.1282	0.1179

a CE's note: Certificate taken during secondary education, at the age of 15/16.

b CE's note: School-leaving certificate taken at the age of 17/18.

c HCC or management centres.

d CE's note: Association pour le développement de la médecine générale (ADMS).

e CE's note: Association de gestion des centres de santé de la ville de Grenoble (Agecsa).

Method: The probabilities of being socio-economically deprived (Epices score ≥ 30.17) and highly deprived (Epices score ≥ 53.84) are modelled using the logistic regression method.

Significance thresold: * p<0,05 ; ** p<0,01 ; *** p<0,001.

Reading guide: The marginal effect dy/dx expresses the variation in the probability of being in a situation of socio-economic deprivation among individuals in one category in relation to a reference category, all other things being equal. Here, the probability of being socio-economically deprived (an EPICES score of 30.17) for CMU-C beneficiaries is 8 percentage points (-0.0785*100=-7.85) lower for individuals in good health compared with individuals who are not, all other things being equal. This probability is significant at the threshold 0.1%.

Data: IRDES Health, Health Care and Insurance survey (ESPS) 2008 – Permanent Sample of Beneficiaries (EPAS); EPIDAURE-HCC 2009. Patients survey.

Exploitation : IRDES. Adjusted data.

To download data : www.irdes.fr/EspaceRecherche/Qes/Qes165/Qes165_CentresDeSantePrecarite.xls

Context

The EPIDAURE-HCC* project initiated by the French National Federation of Medical Care Centres (FNCS) was carried out in collaboration with the FNCS, the Bobigny National Health Insurance Medical Health Examination Centre and IRDES. IRDES participation falls within the framework of the emerging PROSPERE team (Research Partnership on the Organisation of Primary Care) research programme on primary care, forms of ambulatory care organisation and their performance. The EPIDAURE-HCC project was financed by the High Commissioner for Active Solidarity against Poverty (HCSA) within the framework of a call for 'Social Experimentation' projects in 2008 launched by the Ile-de-France and Rhone-Alps Regional Councils, the Belfort Territory General Council and the town of Belfort, the Ile-de-France Regional Union of National Health Insurance Funds and the medical care centre Management Centres).

* The key results of the EPIDAURE-HCC project concern the medical structures (history and organisation of primary medical care centres, HCCs), HCC patients and their health care consumption (in general medical, paramedical and dental care) and the analysis of HCC geographical locations and will be published in a forthcoming IRDES report.

to 19 percentage points in deprivation models with all other things being equal[10]. It varies according to HCC, from 8 points for the Mistral HCC in Grenoble to 27 points for the HCC in Belfort (table 2).

When considering a threshold value corresponding to an EPICES score greater or equal to the score's last quintile among the general population (53.84), individual deprivation is proportionally higher among general medicine patients in all the participating HCCs with gaps of between 5 and 19 percentage points compared with the population in general, excepting in La Courneuve HCC and the Géants and Mistral HCCs in Grenoble (table 2).

[10] The modelling of deprivation level (EPICES score cut-off value at 30.17) among HCC patients in comparison with general practice patients among the population in general produces a marginal effect dy/dx of 0.237***. It drops to 0.187*** when adjusted on socio-demographic characteristics and health status

Scores of 'high deprivation' are concentrated among beneficiaries of any CHI but the CMUC (free state-funded CHI)

Dividing HCC patients into three sub-samples (individuals not covered by a CHI, beneficiaries of the state-funded CHI (CMUC) and beneficiaries of any CHI but the CMUC) permits studying the impact of CHI on deprivation, given that it is an item used in the construction of the EPICES score. It reveals that socio-economic deprivation among HCC general medicine patients, as compared with general medicine patients within the population as a whole, is essentially concentrated among beneficiaries of any CHI but the CMUC.

Retaining 30.17 as the EPICES score cut-off value establishing individual deprivation or not, we find an 18 percentage point difference with the population in general that varies from 9 points for the Mistral HCC to 29 points for the

Insert 3
EPICES score calculation

The EPICES score was established on the basis of a socio-economic questionnaire administered during the course of survey conducted on a sample of 7,208 individuals aged 16 to 59 examined in one of the 18 voluntary HCCs. The questionnaire consisted of 42 questions broaching the different dimensions of socio-economic deprivation defined by P. Townsend (1987) and J. Wrezinsky (1987): material conditions and serious childhood experiences, level of education, professional status, income, household composition, housing, social protection, social relationships, leisure and culture, financial difficulties, use of health care and self-perceived health status.

A factor analysis of questionnaire variable correspondence revealed a major factorial axis interpreted by the authors as the reflexion of 'a social gradient related to socio-economic deprivation': an individual's position on this axis quantitatively determines their level of deprivation. A multiple regression analysis then permitted the selection of a sub-set of 11 dichotomous questions explaining 91% of the variance on this deprivation axis.

The resulting regression coefficients constitute the 'weight' associated with each question giving the EPICES score calculation rule varying from 0 (no deprivation) to 100 (maximum deprivation) [Sass *et al.* 2006].

Score calculation: each coefficient is added to a constant (+75.14) if the answer to the question is 'yes'.

Questions	Coefficients
• Do you occasionally meet a social worker (social worker, educator …)?	+10.06
• Do you benefit from complementary health insurance coverage (mutual benefit)?	-11.83
• Do you live as a couple?	-8.28
• Do you own your home (or first-time property owner)?	-8.28
• Are there periods during the month when you encounter real financial difficulties in meeting your needs (food, rent, electricity…)?	+14.8
• Have you taken part in any type of sport over the last twelve months?	-6.51
• Have you been to a show (cinema. theatre…) over the last twelve months ?	-7.1
• Have you been on holiday over the last 12 months ?	-7.1
• Have you been in contact with members of you family (other than your parents or children) over the last 6 months?	-9.47
• In the event of difficulties (financial, family, health…) is there anyone in your family or circle of friends that you can count on to house you for a few days if the need arises?	-9.47
• In the event of difficulties (financial, family, health…) is there anyone in your family or circle of friends that you can count on for material assistance (including a loan)?	-7.1

Belfort HCC (table 3). Taking a higher cut-off value, such as the last quintile of the deprivation score within the population in general, this concentration of deprivation among beneficiaries of any CHI but the CMUCHCC seeking care in a HCC remains significant among 50% of the sample (*cf.* Belfort, Nanterre, Malakoff, Gennevilliers, Vitry, Champigny and Grenoble HCCs, with the exception of Abbaye HCC) [table 3].

Individual deprivation is associated with poor health status and more frequent use of general medicine

HCC general medicine patients are significantly fewer to self-report good health than those within the population in general all other things being equal, notably at equivalent deprivation status (EPICES score quintiles) (table 4).

More especially, the fact of being considered as 'socio-economically deprived' lowers the probability of self-reporting good health (table 4). An individual in the fifth quintile of the EPICES score has a lower probability of self-reporting good health than an individual in the first quintile.

Using the ESPS survey, we demonstrate that, all other things being equal, socio-economic deprivation is associated with a higher utilisation of general medicine care services especially among individuals with a high EPICES score. Indeed, the GP visit rate increases by 12% between individuals with scores, respectively, in the fifth and the first quintiles of the EPICES score (table 4).

* * *

Over 60% of sample subjects consulting a GP in a HCC are socio-economically deprived against less than 40% among subjects consulting a GP among the general population as a whole. This higher level of individual deprivation is concentrated among beneficiaries of a complementary health insurance (CHI) other than the state-funded CHI for low-income individuals (CMU-C). This result raises the question of access to CHI among socio-economically deprived HCC patients. Two possible solutions could be envisaged to improve the situation: favouring access to the CMU-C or to the CHI voucher program (ACS scheme[11]) on the one hand and on the other, generalising the exemption to third party payment for the part covered by the CHI; not currently the case in all HCCs.

If the EPICES score constitutes an interesting means of measuring socio-economic

T4 Modelling of the probability of self-reporting good health and the intensity of general medicine use

	Good health status (EPIDAURE and ESPS-EPAS)		General medicine use (ESPS-EPAS)	
	dy/dx		Relative risk	
General medicine patients *(Ref: ESPS-EPAS patients)*				
HCC users	-0.0879	***	---	
Health status *(Ref: poor)*				
Good	---		0.595	***
Epices quintiles *(Ref: first quintile)*				
Second	-0.0484	**	1.020	
Third	-0.166	***	0.981	
Fourth	-0.243	***	1.023	
Fifth	-0.344	***	1.119	**
Age *(Ref: 18-30 years, 65 and over)*				
30-45 years	-0.0471	***	0.952	
45-65 years	-0.177	***	1.083	*
Gender *(Ref: men)*				
Women	-0.0320	***	1.253	***
Diploma *(Ref: no diploma, CEP, BEPC, brevet des collèges, brevet élémentaire)*				
CAP, BEP [a]	0.0699	***	0.944	
Baccalauréat[b] (Bac)	0.148	***	0.913	*
≥ Bac +2	0.158	***	0.870	***
Occupation *(Ref: economically active in employment)*				
Active unemployed	-0.0457	**	1.058	
Retired	-0.279	***	1.341	***
Socio-professional category *(Ref: farmers, employees and manual workers)*				
Executives and higher education professions	0.0654	**	0.834	**
Middle level professions	0.0286		0.924	
Craftspersons-shopkeeper, company directors	0.0404		0.771	***
Complementary health insurance (CHI)				
CHI beneficiary other than CMU-C (CHI for low-income individuals)	0.0139		*Ref.*	
CMU-C beneficiary	*Ref.*		1.304	***
Non-beneficiary of a CHI	*Ref.*		0.955	
N	15 067		4 977	
Pseudo-R^2	0.1346		0.0410	

a CE's note: Certificate taken during secondary education, at the age of 15/16.

b CE's note: School-leaving certificate taken at the age of 17/18.

Method: The probability of self-reporting good health (versus poor health) is modelled using the logistic regression method. The intensity of general medicine use (number of effective visits) is modelled using a zero-truncated negative binomial regression.

Significance thresold: * p<0,05 ; ** p<0,01 ; *** p<0,001.

Reading guide: The marginal effect dy/dx expresses the variation in the probability of being in a situation of socio-economic deprivation in one category of individuals in relation to another category, all other things being equal. Here, the probability of being in good health is 9 percentage points (-0.0879*100= -8.79) lower for individuals using HCC general medicine compared to the population in general, all other things being equal (left-hand column). This result is significant at the 0.1% threshold.

Belonging to the fifth quintile of the EPICES score compared to the first quintile increases the number of general medicine visits by 1.1 or the equivalent of 12% (= (1.119-1)*100), all other things being equal (right-hand column). This result is significant at the 1% threshold.

Data: IRDES Health, Health Care and Insurance survey (ESPS) 2008 – Permanent Sample of Beneficiaries (EPAS); EPIDAURE-HCC 2009 Patients survey.

Exploitation : IRDES, adjusted data.

To download data : www.irdes.fr/EspaceRecherche/Qes/Qes165/Qes165_CentresDeSantePrecarite.xls

11 CE's note: Aide complémentaire santé.

deprivation, the choice of cut-off value can mask the continuous nature of deprivation through time and thus questions its use in clinical practice. What cut-off values should be used and for what type of intervention? Furthermore, if it has been demonstrated that the sample HCCs provides medical care to a more deprived population and thus contribute in facilitating its access to health care, the quality of the care and services supplied has not been evaluated. This additional factor appears essential in order to analyse whether the HCC health care provision is adapted to the specific health care needs of socio-economically deprived populations. ♦

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