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Institutionalisation Favours Access to Health Care for Disabled Persons Aged under 60 in France

Exploitation of the Health and Disability Households and Institutions survey (2008-2009)

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To date, disabled persons' access to health care has essentially been studied in relation to people without a disability. The literature shows that physical difficulties in accessing care, together with the more disadvantaged socioeconomic conditions to which disabled persons are subject, are among the main explanatory factors regarding their lower use of health care services. Moreover, if disabled persons' access to health care is well documented for those living at home, it is less well documented for those living in institutions. The rare studies comparing access to health care between these two populations have been focused on dental care and have shown that life in an institution appears to increase the probability of having access to the care in question. Does this result concerning dental care also apply to other types of health care?

The Health and Disability Households (HSM, 2008) and Institutions (HSI, 2009) survey, conducted by the DREES and INSEE made it possible to compare the use of health care services between people with disabilities living at home and those living in institutions for three types of routine care (dental, ophthalmological and gynaecological care) and four types of preventive care (screening against breast cancer, colorectal cancer, cervical cancer and vaccination against hepatitis B). In order to compare these two populations, the retained definition of disability was based on activity limitations in the domain of personal care (*Activities of Daily Living*, ADL) or domestic life (*Instrumental Activities of Daily Living*, IADL) reported by survey respondents.

Numerous studies have shown that access to routine and preventive care is reduced for persons suffering from a disability compared with persons without a disability: access to a general practitioner (Popplewell *et al.*, 2014), a dentist (Lengagne *et al.*, 2014, Mahmoudi and Meade, 2015), preventive care (Osborn *et al.*, 2012), breast cancer screening (Horner-Johnson *et al.*, 2014)… Other than problems related to physical access to care, the more disadvantaged socio-economic conditions to which disabled persons are subject are generally associated with a lower of use of health care services.

If the problem of access to care among people with a disability is well-documented for people with disabilities living at home, far fewer studies have been conducted in institutions (Bravo *et al.*, 2014; Bussière *et al.*, 2013). Rarer still are studies comparing persons living at home with those living in institutions (Tiller *et al.*, 2001; Pradhan *et al.*, 2009). These few studies, essentially focused on access to dental care, show that institutionalisation can be associated with a higher probability of having access

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Disability and care needs

Disability is likely to increase certain routine or preventive care needs. Disability can thus potentially increase the need for **oral health care** as immune disorders, certain medications, tabacco or alcohol consumption, frequent among individuals suffering from psychological disabilities, or psychotropic medications that alter the quality and quantity of saliva, can have an influence on the development of infectious diseases such as dental caries and periodontal disease (Hescot and Moutarde, 2010). Concerning **ophtalmological care needs**, the prevalence of ocular motility disorders appears higher among people with mental deficiencies, whereas there is a higher prevalence of vision problems among persons suffering from Down syndrome (HAS, 2011). The **gynaecological care needs** of women with disabilities are neither higher nor lower than those of other women (Jacob, 2013).

In parallel, increased life expectancy among disabled persons, a relatively recent phenomenon, is accompanied by preventive care needs to avoid the appearance of additional disabilities with age, such as deafness, blindness or reduced mobility or the worsening of previous disabilities (*Inspection générale des affaires sociales*, Igas, 2011). In these conditions, persons with disabilities should be able to have access to public health screening programmes designed for the population as a whole. Certain screening procedures selected for this study are part of public health or organised screening programmes in France. In 2004, organised screening for **breast cancer** for women aged between 50 to 75 years old was generalised. It includes a mammogram and a breast examination. There is no organised screening against **cervical cancer** in France, with the exception of four départements. Indvidual screening by cervical smear is on the contrary widespread and many women use the service more frequently than the recommended three year interval. **Colon cancer screening** by a fecal occult blood test was generalised in 2008 to the whole of the French territory for persons aged from 50 to 74 years old. In force since 1982, **vaccination against hepatitis B** is not mandatory. It is however recommended for all children before the age of 15 and persons with a high risk of exposure, such as children and adolescents living in institutions for disabled children and young persons, and children and adults in psychiatric institutions.

T1

Characteristics of disabled persons reporting an ADL[a] or IADL[b] by age bracket and place of residence

		20-29 years		30-39 years		40-49 years		50-59 years		60-74 years		Total population of 20-74 years olds	
		Institution	Household	Institution	Household	Institution	Household	Institution	Household	Institution	Household	Institution	Household
Individual characteristics													
Average age		24.98	24.91	34.99	35.06	44.64	44.97	54.11	54.88	66.56	67.65	45.67	52.05
Gender	Man	44.9	50.0	38.9	54.7	44.5	61.4	43.5	60.8	49.5	65.7	44.1	60.3
	Woman	55.1	50.0	61.1	45.3	55.5	38.6	56.5	39.2	50.5	34.3	55.9	39.7
Activities of daily living grid (ADL) - Katz* indicator													
Independent		63.8	81.9	58.9	86.7	63.3	90.3	60.6	91.6	50.2	84.7	59.3	86.7
Dependent	for 1 ADL	5.5	4.8	6.8	4.8	7.1	3.7	8.4	4.0	9.4	5.5	7.6	4.7
	for 2 to 4 ADL	6.9	6.9	8.1	5.6	7.7	3.8	8.2	2.9	11.8	6.0	8.5	5.2
	for 5 to 6 ADL	16.2	6.5	19.1	2.9	17.1	2.1	19.3	1.5	26.5	3.8	19.5	3.4
Katz*: don't know		7.6	0.0	7.1	0.0	4.8	0.0	3.3	0.0	2.1	0.0	5.1	0.0
Average cumulated score of types of disability		2	1.82	2.23	1.67	2.24	1.54	2.36	1.54	2.28	1.58	2.22	1.6
Socio-demographic characteristics													
With a diploma		14.6	39.9	13.8	49.9	14.6	54.8	19.2	64.7	27.0	56.3	17.7	54.5
Employment status	Employed	2.6	12.9	3.5	21.1	2.1	26.1	2.3	18.2	0.0	2.4	2.6	16.1
	Employment reserved for disabled persons	19.9	13.7	17.9	15.7	17.6	7.1	14.3	2.5	0.4	0.0	13.9	4.1
	Has worked in the past	16.4	26.6	17.5	39.3	29.4	52.8	38.5	68.4	65.3	87.0	33.5	64.0
	Has never worked	60.6	46.8	60.6	23.8	50.1	13.9	43.1	10.8	30.9	10.6	48.6	15.8
Social protection													
Complementary Health Insurance coverage		61.7	67.4	62.3	68.5	63.4	69.7	63.9	75	61.1	80.4	62.7	75
CMUC beneficiary		21.1	15.3	19.9	19.9	21.2	19.1	17.1	14.1	12.7	7	18.4	13
No complementary health insurance		9.2	16.1	9.6	11.4	7.7	10.2	8.2	10.1	13.1	12.1	9.4	11.3
Don't know		8	1.2	8.2	0.2	7.7	1	10.8	0.8	13.1	0.5	9.5	0.7
Total gross numbers		**622**	**248**	**879**	**483**	**1,113**	**889**	**1,019**	**1,458**	**822**	**1,832**	**4,455**	**4,910**

[a] Activity limitation in carrying out personal care according to the activities of daily living grid (ADL).

[b] Activity limitation in carrying out domestic tasks according to the instrumental activities of daily living grid (IADL).

* The Katz indicator assesses the person's ability to carry out six activities of daily living (washing, dressing, going to and using the lavatory, getting into or out of bed or sitting down or getting up from a seat, bowel or urine control, eating prepared food).

Sources: HSM-HSI surveys 2008-2009. Calculation IRDES.

Data available for download.

Context

This issue of Isues in *Health Economics* presents the second series of results obtained within the framework of a research project aimed at examining access to routine health care (dental, ophthalmological and et gynaecological care), screening and preventive care (cervical smear, mammogram, colon cancer screening and vaccination against hepatitis B) among persons with a disability living at home or in an institution. The complete results of this study are available in an IRDES report to be published in June 2015. This IRDES project was entirely financed by the National Solidarity Fund for Autonomy (*Caisse nationale de solidarité pour l'autonomie*, CNSA) within the framework of a call for projects launched by the Public Health Research Institute (*Institut de recherche en santé publique* (IRESP)) in 2011.

to care than home life for disabled persons. However, outside dental care, there are insufficient studies to confirm the conclusions on the consequences of institutionalisation for other types of care.

In France, the survey on Health and Disability divided into two sections, Households (HSM, 2008) and Institutions (HSI, 2009) makes it possible to conduct comparative studies. If the Household section has been exploited in several publications (Lengagne *et al.*, 2014, Bussière *et al.*, 2014), the two sections have rarely been exploited conjointly (Thiébaut *et al.*, 2013). The aim of this study is to compare the use of health care services between people with a disability living at home with those living in an institution for three routine types of care (dental, ophtalmological and gynaecological) and four types of preventive care (screening against breast, cervical and colorectal cancers and vaccination against hepatitis B). The types of care analysed in this study were selected because of the challenges they represent in terms of access (Disability and Care Needs insert).

In order to determine the impact of institutionalisation on access to routine and preventive care among people with a disability, the use of health care among people living in institutions is compared with that of people with an equivalent disability who continue to live at home (Sources and Data insert). Contrary to the choice of disability indicators retained in the previous publication (functional limitations or administrative recognition of disability, Lengagne *et al.*, 2014), the definition of disability retained here includes persons having reported activity limitations in carrying out personal care (according to the *Activities of Daily Living* (ADL) grid), and more particularly difficulties washing, shopping, preparing meals, or doing basic housework without assistance,… This change in methodology is justified by the fact that here, the aim of the comparison is not to focus on the use of health care among people with a disability compared with those without a disability, but to retain an indicator of disability enabling the selection of relatively comparable disabled populations from both sections of the survey. Selected according to the same criteria (ADL/IADL), the populations living at home and in institutions can nevertheless be differentiated according to numerous parameters (structure by age and gender, social status...) [Table 1].

Dental care and vaccination against hepatitis B: higher use rate among people living in institutions

In a first analysis that did not neutralise differences between persons living in institutions and those living at home, whether in terms of demographic characteristics, level of disability or social status, disparities in the use of health care appear according to the type of care analysed. The use of health care services is not significantly different between the two populations for Ophthalmological or gynaecological care or colorectal cancer screening (Table 2).

However, the use of health care services is higher for dental care among people living in institutions [+9 points] and vaccination against hepatitis B [+13 points] compared with those living at home. It is, on the

T2 Comparison of average use of health care between disabled persons living at home and those living in institutions

		Gross numbers	Average use	Chi² test Value	Chi² test Probability	Average gap between persons in institutions compared to those in households
Dental care						
Persons	living at home	3,077	0.4859	**-7.86**	**<0.0001**	**0.0964**
	in institutions	3,523	0.5823			
Ophthalmological care						
Persons	living at home	3,073	0.2344	1.58	0.1137	-0.0163
	in institutions	3,618	0.2181			
Gynaecological care						
Persons	living at home	1,818	0.3533	1.3	0.1946	-0.0212
	in institutions	1,552	0.3321			
Cervical cancer screening						
Persons	living at home	2,089	0.6421	**10.8**	**<0.0001**	**-0.1869**
	in institutions	1,310	0.4552			
Breast cancer screening						
Persons	living at home	2,078	0.6938	**7.40**	**<0.0001**	**-0.1576**
	in institutions	709	0.5362			
Colorectal cancer screening (the whole of France)						
Persons	living at home	2,061	0.1339	0.28	0.7804	-0.0032
	in institutions	1,363	0.1307			
Vaccination against hepatitis B						
Persons	living at home	2,780	0.3428	**-9.55**	**<0.0001**	**0.1305**
	in institutions	2,362	0.4733			

Reading: The probability of using dental care in households is 0.48 against 0.58 in institutions; the use of dental care increases significantly by 10 points for persons in institutions at the 1% threshold.

Sources: HSM-HSI surveys 2008-2009. Calculation IRDES. Data available for download.

Method

The matching method aims at selecting comparable individuals from the two survey populations, households and institutions, so as to estimate the effects of institutionalisation on the probability of using health care services. The matching model is adapted to the situation in which treatment can be administered to an individual or not, the notion of treatment here applies to the fact of living in an institution. Access to an institution is represented by a variable T that takes the value of 1 if the person lives in an institution and 0 otherwise. The fact of using health care is expressed as Y with Y1 pour to designate use of care among individuals living in an institution, and Y0 for those living in households. The variables Y1 and Y0 cannot be observed on the same date for a same individual. In effect, for persons in an institution, Y1 is observed whereas Y0 is not. In this case, Y0 is the counterfactual result; that is to say the rate of use that would prevail if the person lived at home rather than in an institution. The aim is to estimate the counterfactual result for each individual living in an institution so as to evaluate the causal effect of institutionalisation on the use of health care. The causal effect corresponds to the average effect of treatment in the population of treated individuals (ATT: *Average Effect of Treatment on the Treated*), that is to say, the difference between the average use of health care among people living in institutions and the average of their estimated counterfactuals:

$\Delta^{TT} = E\{Y_{1i} - Y_{0i} | T_i = 1\}$ with i individuals

The matching method by propensity score with a kernal function estimator (*kernel matching*) uses each non-treated individual (in a household) for the counterfactual construction of the treated individual i (in an institution), with a variable importance according to the distance between their score and that of the individual being considered. The major advantage of this method of estimation is the weak variance due to the high volume of information used. An essential factor in the efficient matching of individuals is the good definition of the common support (Caliendo *et al.*, 2008). The common support makes it possible to exclude from the analysis individuals living in institutions that are too dissimilar to be matched with those living at home. Statistically, individuals living in institutions are considered outside the support when their propensity scores are higher than the maximum or lower than the minimum propensity scores obtained for individuals living at home. In order to evaluate the variability of estimated parameters, the bootstrap method is applied with 100 replications. This method thus allows for the calculation of a 95% confidence interval for each average effect estimated.

Explanatory or so called matching variables

Limiting the scope to persons reporting limitations in activities of daily living (ADL) or limitations in instrumental activities of daily living (IADL) allows for the selection of a population considered as suffering from a disability whether at living at home or in an institution. However, the degree of difficulty encountered varies considerably within this population and more particularly between individuals living in an institution and those living at home. As a result, and in order to neutralise this heterogeneity, two indicators specifying level of disability were introduced as matching variables: the Katz indicator and the cumulated score of types of disability.

The Katz indicator designates the degree of disability to which the individual is subject whereas the cumulated score of types of disability makes it possible to identify the number and types of impairment (motor, intellectual, psychological, sensory or speech impairments) affecting a given individual. Motor difficulties are measured by functional limitations: respondents must have reported great difficulty or not being able to carry out at least one of the activities included in the list of functional limitations: "walking 500 metres", "going up or down one flight of stairs", "lifting an arm", "using one's hands and fingers", "grasping an object with each hand", "bending or kneeling down" or "carrying a shopping bag weighing 5 kilos". Concerning intellectual impairments, the answers provided on functional limitations, deficiencies and illnesses were used to construct an indicator. This indicator includes individuals having reported suffering from autism (illness n° 35), Down syndrome, trisomy 21 (illness n°37) or mental retardation (deficiency n°58). It also includes individuals reporting learning difficulties (report of a deficiency (deficiency n°56) and a functional limitation with the response modality "often" (BCOMP)). The psychological difficulty indicator uses both reported functional limitations and deficiencies. It includes individuals reporting anxiety problems (deficiency n°54 and illness n°33) and/or depressive disorders (illness n°34 and deficiency n°53). The psychological difficulty indicator also includes individuals suffering from schizophrenia (illness n°36). The sensory difficulties indicator includes individuals having reported blindness or deafness or considerable functional limitations in terms of vision or hearing (B2VUE, B3VUE, B2OUI). Finally, the indicator of speech difficulties includes individuals having reported a speech deficiency (deficiencies n°41 to 45). The score of cumulated types of disability thus varies from 0 to 5.

Other than these variables characterising level of disability, variables describing demographic characteristics (age and gender), care needs and individuals' social status (employment status, education, complementary health insurance coverage) were integrated for the matching phase. Age and gender thus constitute the demographic variables. Specific care needs in relation to each type of care studied are defined in terms of equivalence with the analysis of care needs in households (Lengagne *et al.*, 2015).

The descriptive statistics (Table 1) made it possible to show that the characteristics of populations living in both institutions and households, whether in demographic terms, level of disability or social status, are fairly similar in the first age brackets but tended to differ in the higher age brackets. Given this variable heterogeneity according to age bracket, the matching method was conducted by 10 year age strata. The differences in health care use were calculated by age group and then an average difference in use was calculated for the population as a whole.

contrary, lower for two other types of care (cervical cancer screening [-19 points] and breast cancer screening [-16 points]) in relation to the same reference. It appears that women with disabilities living in institutions have greater difficulty accessing female cancer screening services than those living at home. These differences in the use of care can be due to the higher level of disability among women living in institutions coupled with the fact that these acts are particularly difficult to perform on women with severe disabilities, whether physical or mental.

For an equivalent level of disability, persons living in institutions have a higher use of health care services than those living at home for all the types of care analysed

These first results obtained from a comparison of averages requires an explanation. As the populations of disabled persons living at home and in institutions are heterogeneous (Table 1), a matching method was used that made it possible to compare each institutionalised disabled person's use of care with that of a comparable disabled person living at home according to the matching variables (Methods insert). This method makes it possible to create a common support from which are excluded persons living in institutions that are too dissimilar to be compared with persons living at home (6% of persons living in institutions for all the types of care studied). The results obtained from the matching method (Tables 3 and 4) reveal a higher probability of using health care services among persons living in institutions compared with those living at home presenting the same characteristics, and for all the types of care considered with the exception of breast cancer screening for which the result was non-significant. This gap however varies according to type of care: it is narrow for two types of care (colon cancer screening +3 points; ophthalmological care +4 points), higher for cervical smears (+9 points) and gynaecological care (+13 points); and higher still for vaccination against hepatitis B (+17 points) and dental care (+18 points).

T3

Average effect of institutionalisation on the use of routine health care in the population of disabled persons living in institutions by age bracket

	Use in institutions	Use in households after matching	Difference	confidence interval at 95% Bootstrap method	
Dental care					
20-29 years	0.6210	0.4641	0.1569	0.1490	0.1658
30-39 years	0.6714	0.4533	0.2181	0.2109	0.2329
40-49 years	0.6064	0.3317	0.2747	0.2669	0.2803
50-59 years	0.4983	0.3696	0.1287	0.1219	0.1368
Together	0.5712	0.3896	0.1816	0.1543	0.2136
Ophthalmological care					
20-29 years	0.2125	0.1831	0.0295	0.0180	0.0419
30-39 years	0.2416	0.1829	0.0587	0.0566	0.0669
40-49 years	0.2447	0.1701	0.0745	0.0673	0.0811
50-59 years	0.2216	0.1335	0.0880	0.0837	0.0940
Together	0.2173	0.1776	0.0400	0.0304	0.0522
Gynaecological care					
20-29 years	0.3711	0.2224	0.1487	0.1352	0.1633
30-39 years	0.3958	0.1663	0.2294	0.2249	0.2443
40-49 years	0.3355	0.1817	0.1538	0.1404	0.1654
50-59 years	0.3063	0.2471	0.0592	0.0474	0.0795
Together	0.3396	0.2122	0.1274	0.1079	0.1679

Reading: Among the 20-29 year olds belonging to the common support, 62% of disabled persons living in institutions reported having used dental care services. If these individuals had lived at home, 46% of them would have used dental care services. Therefore, among those living in institutions aged between 20 and 29 belonging to the common support, institutionalisation increases the probability of using dental care by 16 points. Application of the bootstrap method indicates the estimated parameter's weak variability ranging from 15 to 17 points in 95% of cases.

Sources: HSM-HSI surveys 2008-2009. Calculation IRDES.

Scope: Individuals aged from 20 to 59 years old, having responded to the Health and Disability survey (HSM or HSI), having reported at least one activity limitation and belonging to the common matching support.

Data available for download.

For each type of care, differences in health care use fluctuate according to age bracket

For a given type of care, the differences in the use of health care can fluctuate considerably according to age bracket. The overall 18 point gap in the use of dental care measured for the whole population aged from 20 to 59 years old belonging to the common support, drops to 13 points for the 50 to 59 age bracket and increases to 27 points for the 40 to 49 age bracket. The variability of the differential is also particularly accentuated for cervical cancer screening (a 4 point gap among people aged from 55 to 64 *versus* a 22 point gap among those aged from 35 to 44 years old).

In the case of breast cancer screening, the 60 year old age boundary implies that the effect of institutionalisation results in a high differentiation in the use of screening. For women aged between 50 and 59 living in an institution and belonging to the common support, institutionalisation is related to a 14 point increase in the probability of using screening whereas for women aged between 60 to 74, institutionalisation is on the contrary associated with a 7 point lower probability of using screening.

Sources and data

The Health and disability survey, representative of the population living in metropolitan France, was conducted by the National Institute of Statistics and Economic Studies (*Institut national de la statistique et des études économiques*, INSEE) and the Ministry of Health Directorate for Research, Studies, Assessment and Statistics (*Direction de la recherche, des études, de l'évaluation et des statistiques*, DREES) and was divided into two sections, one focused on households (*Handicap-Santé Ménages*, HSM) and the other on institutions (*Handicap-Santé Institutions,* HSI). In order to obtain sufficiently robust statistics on people with a disability, a first filter survey was conducted to create a sample of households over-representing individuals whose level of disability was presumed high.

In the Household section, 29,930 individuals, whether suffering from a disability or not, were interviewed between March 31st and July 19th 2008. The Household survey contains personal information on the respondent (age, gender, level of education, income level...), health status (presence of illness, health care use, prevention...), identification of disabilities (deficiencies, functional limitations, activity limitations) and finally elements related to respondents' social participation and environment (family environment and existence of family and/or professional careers, housing characteristics, accessibility, education, employment, income and benefits, leisure activities and perceived discrimination). The Institutions survey initially consisted of 9,104 individuals living in institutions for disabled persons or retirement homes. The final exploitable sample, however, was made up of 8,841 individuals. As the two sections of the survey use identical questions, they can be exploited conjointly to analyse health care use.

The populations interviewed in each of the surveys are, however, potentially fairly different. The HSM survey population included both persons with and without disabilities, whereas the HSI survey population included persons living in long-stay institutions and thus more probably disabled. An indicator was retained to select relatively comparable populations in terms of disability from the two surveys. Reported limitations in activities of daily living (ADL) or instrumental activities of daily living (IADL) were retained as the criteria allowing for the selection of individuals suffering from a disability in each of the two surveys and because it was the closest to the definition of disability as defined by the Law of 2005[1].

Once the ADL/IADL filter applied, the size of the HSM sample dropped from 29,930 individuals to 8,397 whereas the HSI sample dropped from 8,841 to 7,480 individuals.

For the three routine types of care and vaccination against hepatitis B, the choice was made to limit the sample population to the adult population aged from 20 to 60 years old, the 60 year old age boundary marking the transition from social protection for disabled adults towards that for elderly dependent persons in France. For the other preventive care measures, the age boundaries were modified to take specific national recommendations into account (25 to 64 years old for cervical cancer screening, 50 to 74 years old for colon and breast cancer screening).

The populations selected both in households and institutions were, however, still too heterogeneous to envisage a direct comparison of health care use (Table 1), justifying the use of the matching method (Methods insert).

[1] Article L.114 of law n° 2005-102 of 11th February 2005 on the equality of rights and opportunities, participation and citizenship of disabled persons.

Screening campaigns have a greater impact in households

Organised screening against colon cancer was first introduced as an experiment from 2004 in certain pilot regions. The results show that among persons with a disability living at home, those living in a pilot region recorded a significantly higher use of screening (28% *versus* 4%) whereas for disabled persons living in an institution, the difference between pilot and non-pilot regions was less flagrant (16% *versus* 13%).

* * *

Comparisons in the use of health care services between disabled persons living in institutions and those living at home, before taking differences in level of disability or social status into account, indicate a lower use of female cancer screening services among institutionalised disabled women. After rebalancing distributions using the matching method, the results highlight a positive impact of institutionalisation on the use of care for all the types of care studied. It should nevertheless be underlined that the matching method excludes by definition the more severely disabled persons living in institutions for which it is impossible to find comparable individuals living at home. The differences in health care use vary according to type of care; from three points higher for mammograms to 18 points for dental care, the latter results being consistent with those of Tiller *et al.*, 2001 and Pradhan *et al.*, 2009. The results for mammograms indicate particularly significant disparities on either side of the 60 year old age boundary with a higher use rate among women living in institutions aged less than 60 and a lower use rate among those aged over 60. This age boundary also appears to apply to dental care. The results show that the use of dental care among disabled persons aged less than 60 living in institutions is higher than among those living in households. These results are not consistent with the results of a study conducted by Thiébaut *et al.* (2013) on persons aged over 60 which showed that the use of dental care among dependent persons living in institutions was lower than among their counterparts living at home. It is possible that organisational differences according to type of establishment explain these results. The age of 60 corresponds to the pivotal age at which establishments for elderly dependent people (*Établissement d'hébergement pour personnes âgées dépendantes* (Ehpad), retirement homes, long-term care units (*Unités de soins de longue durée*, USLD)) replace those for disabled adults (Specialised Care Homes (*Maison d'accueil spécialisé* (MAS)), Medical-care Homes (*Foyer d'accueil médicalisé* (FAM)) Residential Homes, Residential Centres). Finally, the results concerning colon cancer screening show that awareness campaigns have a greater impact in households than in institutions. This result can be related to the reticence of institutional personnel to accompagny disabled persons for the Hemoccult® test (Couëpel *et al.*, 2011).

Several organisational hypotheses are likely to explain a higher use of health care and prevention services among disabled persons living in institutions: access to information by professionals and external care structures (hospitals, private practices...) capable of dealing with disabled persons (for example: presence of a coordinating doctor in certain medical-care institutions, care networks...). In addition,

T4 Average effect of institutionalisation on the use of preventive care among the population of disabled persons living in institutions by age bracket

	Use in institutions	Use in households after matching	Difference	confidence interval at 95% Bootstrap method	
Cervical smear					
25-34 years	0.4363	0.2892	0.14701	**0.1326**	0.1628
35-44 years	0.5307	0.3156	0.2151	**0.2009**	0.2299
45-54 years	0.5421	0.4315	0.1107	**0.0986**	0.1238
55-64 years	0.3900	0.3485	0.0415	**0.0278**	0.0544
Together	**0.4544**	**0.3625**	**0.0919**	**0.0685**	**0.1119**
Mammogram					
50-59 years	0.7258	0.5882	0.1377	**0.1188**	0.1509
60-74 years	0.4417	0.5071	-0.0654	**-0.0792**	-0.0425
Together	**0.5807**	**0.5520**	**0.0287**	**-0.0159**	**0.0477**
Colon cancer (pilot region)					
50-59 years	0.1951	0.3127	-0.1175	**-0.1341**	-0.0895
60-74 years	0.1575	0.2033	-0.0458	**-0.0725**	-0.0342
Together	**0.1616**	**0.2792**	**-0.1177**	**-0.1319**	**-0.0888**
Colon cancer (outside the pilot regions)					
50-59 years	0.1525	0.0376	0.1150	**0.1074**	0.1253
60-74 years	0.1088	0.0503	0.0585	**0.0503**	0.0659
Together	**0.1307**	**0.0446**	**0.0860**	**0.0727**	**0.0962**
Colon cancer					
Together	**0.1367**	**0.1071**	**0.0296**	**0.0402**	**0.0743**
Vaccination against hepatitis B					
20-29 years	0.5104	0.3978	0.1126	**0.1118**	0.1301
30-39 years	0.4830	0.2990	0.1840	**0.1682**	0.1996
40-49 years	0.4561	0.2900	0.1661	**0.1576**	0.1802
50-59 years	0.3719	0.2019	0.1700	**0.1605**	0.1899
Together	**0.4648**	**0.2991**	**0.1657**	**0.1595**	**0.1914**

Reading: Among women aged from 50 to 74 years old belonging to the common support, 58% of persons living in an institution reported having had a mammogram. If these women had lived in a household, it is estimated that 55% of them would have used this preventive care service. Application of the bootstrap method, however, shows a high variability of the estimated parameter ranging from around -2 points to +5 points in 95% of cases. This variability of results seems to be due to the considerable heterogeneity in the use rates according to age bracket (less than or over 60 years old).

Sources: HSM-HSI 2008-2009 survey. Calculation IRDES.

Scope: Individuals having responded to the Health and Disability survey (HSM or HSI), having reported at least one activity limitation and belonging to the common matching support.

Data available for download.

establishments often have a room available for use by private practitioners or are able to organise the logistics to transport disabled persons to private practices. Finally, care provision can be facilitated by the presence of a professional from the institution that can act as an intermediary between the doctor and the disabled patient.

It is thus likely that improved access to health care among disabled persons living at home involves better access to information on the health professionals and structures able to receive them: map of adapted care capacities and accompagniement of disabled persons at local level (Jacob, 2013). This information can be relayed by health professionals on the health terrritory (institutions, Departmental Homes for Disabled Persons (*Maisons départementales des personnes handicapées* (MDPH)), health care networks...) susceptible of generating common actions on the theme of access to health care for disabled persons, whether living in an institution or not. Such improvements in the dissemination of information regarding health care supply would need to be accompanied by some reflection, involving organisational factors, on the ways in which health professionals could satisfy households' demands for access to health care (mobilisation of health professionals involved in the said establishments, logistics...). ♦

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