Original approach to the individual characteristics associated with forgone healthcare

A study in underprivileged areas, Paris region, France, 2001–2003

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Background: The social inequalities in health have endured or even worsened comparatively throughout different social groups since the 1990s. Our objective was to identify the individual characteristics (socio-economic status, living conditions, individuals’ social integration, health beliefs, expectations and representation and psychological characteristics) statistically associated with the fact of stating (or not) that healthcare had been forgone because of cost. Methods: In this cross-sectional, multi-centre study we randomly selected a study sample from five underprivileged areas in the Paris region. A multiple logistic regression model was used to calculate the odds ratios (OR) and 95% confidence interval (CI). The validity of the model was assessed by goodness-of-fit tests (Pearson and deviance) and by the study of 100 bootstrap samples. Results: After making adjustments for numerous individual socio-economic and health characteristics, we observed a higher occurrence of reported forgone healthcare among people who have had financial worries during adulthood [OR financial = 5.47 (1.44 – 20.75)], a life-course experience of violence, sexual or psychological abuse [OR abuse = 2.86 (1.40 – 5.84)]; who have experienced childhood difficulties [OR inner difficulties = 5.28 (1.81 – 15.39), OR abnor = 7.62 (2.69 – 21.57), OR abnor = 8.57 (2.39 – 30.80)]; who have expressed a low degree of sickness orientation [OR low/high = 2.62 (1.33 – 5.14)], a high worry/concern about health [OR high/low = 2.71 (1.33 – 5.50)] and a low self-esteem [OR medium/high = 8.28 (1.44 – 47.64), OR low/medium = 16.44 (2.81 – 96.24)]. Conclusion: Aside from purely financial hurdles, other factors play a role in the non-use of healthcare services. Health policies mainly promoting equal financial access to healthcare have little chance of abating health inequalities. Keywords: health behaviour, healthcare access, life change events, logistic models, psychosocial factors

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Subjects and methods

Our study population was randomly selected from the general population living in five underprivileged areas. These areas are five of the 157 Zones urbaines sensibles, i.e. areas that French urban policy in the Ile-de-France region has designated as sensitive urban areas based on three main criteria (ratio of inhabitants under 25 years of age, ratio of long-term unemployed people, and ratio of foreigners). We randomly selected households from the population and then randomly chose one individual (18–75 years old) per household to put together a sample of 525 individuals from a total population of 50,000. Every non-respondent was replaced by another individual randomly selected in the same way. All told, 836 households were contacted since 27% of the eligible respondents refused to answer, 8% did not speak French and 2% could not answer for health reasons. Seven persons were not included in our analysis because they did not answer the question about forgone healthcare. We ended up with an analysed sample of 518 people.

Our questionnaire including both factual and subjective questions and was administered to the respondents during face-to-face interviews at home. Demographic information included age, gender, nationality (current and at birth), and respondent's intra-national and international migration history. Socio-economic variables included: household size and structure; level of education; socio-economic group coded into low (working class, unskilled employees), medium (skilled employees, technicians) or high (engineers, senior executives, company managers); occupational status (employees with a work contract, the unemployed with and without unemployment benefits, and other people); monthly income per household unit (HU);31 financial worries during adulthood; health insurance status.

For self-reported health, we defined a 'chronic disease status', i.e. people were asked whether they suffered (at the time of the interview) from any of the chronic diseases on a 33-item list, and then further dichotomised as 'yes' (at least one positive answer) or 'no'.

Social integration and social disruption variables included participation in social activities, religious affiliation and practices, feelings of loneliness, feelings of exclusion, experience of discrimination, perceived stress, life-course experience of physical, sexual or psychological abuse, number of striking events during childhood and adulthood. The question on the feeling of isolation was graded according to a 10-point scale ranging from 1 (feeling of complete loneliness) to 10 (presence of many supportive people) and then dichotomised as 'high' (<5) versus 'low' (≥5). Questions on striking events during childhood and adulthood were taken from a list of 20 and 12 items, respectively.9

Immunisation

For our analysis, we retained respondents' money troubles, parents' disputes, run-ins with the law, family alcoholism, or serious relational problems with the family occurring before the age of 18; and run-ins with the law, heavy debts, children in institutions, alcohol or drug problems, or serious marital fights occurring after the age of 18.

Health perceptions included five items from the French translation of one question per subscale from the 33 statements in the Health Perceptions Questionnaire. The question on resistance to illness was scored by the level of agreement with the following statement: 'I seem to get sick a little easier than other people'; the question on prior health by: 'I was so sick once that I thought I might die'; the question on health worry/concern by: 'I worry about my health less than other people worry about their health' and also by: 'My health is a concern in my life'; and sickness orientation by 'I don't accept that sometimes I'm just going to be sick'. All these items were further dichotomised as 'yes' (strongly agree and agree) or 'no' (strongly disagree and disagree). The question on the person's health outlook was assessed by: 'In the future, I expect to have better health'; and dichotomised as 'yes' (strongly agree) or 'no' (agree, strongly disagree or disagree).

Finally, people were questioned about their psychological characteristics: self-efficacy, self-esteem, and sense of coherence. We scored self-efficacy by adding up the points matching the level of agreement with the two following statements taken from the Schwarzer General Self-efficacy Scale.33 'I can solve most problems if I invest the necessary effort' and 'If I am in trouble, I can usually think of a solution'. The score was dichotomised as 'low' or 'high'. Similarly, we scored self-esteem based on responses to the following statements taken from the Rosenberg Scale.34 'On the whole, I am satisfied with myself', 'I feel that I have a number of good qualities', 'I am able to do things as well as most other people', 'I certainly feel useless at times' and 'I feel I do not have much to be proud of'. The score was then broken down into 'high', 'medium' or 'low'. Third, two questions were used for determining a sense of coherence additive score. They were: 'Do you usually feel that your daily life is a source of personal satisfaction' and 'Do you usually feel that the things that happen to you in your daily life are hard to understand?'. The score was broken down into 'high', 'medium' or 'low'.

Throughout our analysis, our outcome variable is the response (yes/no) to the question: 'During your life, have you ever forgone healthcare because you could not afford it?'. A question was asked in the annual health consumption surveys conducted in France.

We started by using logistic regression models to select potential covariates for forgone healthcare, after making adjustments for age, gender, household size, chronic disease status, health insurance status, income level, and occupation. We then included all the variables showing a univariate (adjusted) association with our dependant variable with a P value <0.25 in the final multivariable regression model, and then we backward selected them. Decisions concerning potential covariates for the model (P < 0.05) were based on the Hosmer and Lemeshow approach.

We calculated the generalised coefficient of determination (R²) to assess the proportion of variance explained by the final model. Additionally, we calculated the Pearson chi-square (X²Pearson) test statistic for a corrected specified model, the test divided by its degrees of freedom should be equal to 1. To identify which observations did not fit the model, we calculated the degree to which the model increased when we withdrew individuals one after the other. Using this method, we were able to detect how many individuals (and with which characteristics) did contribute heavily to a disagreement between the observed data and the predicted values of the final fitted model. Furthermore,
was retained in the final 100 regression analysis. We also calculated the frequency with which each co-variable (adjusted systematically to the same seven variables as above).

Table 1 Association of usual socioeconomic factors with foregone healthcare because of cost (multiple logistic regression)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>OR (95% CI)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td>0.14</td>
</tr>
<tr>
<td>Female</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.66 (0.67–1.15)</td>
<td></td>
</tr>
<tr>
<td>Age (years)</td>
<td></td>
<td>0.98</td>
</tr>
<tr>
<td>18–24</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>25–34</td>
<td>0.97 (0.93–1.01)</td>
<td></td>
</tr>
<tr>
<td>35–54</td>
<td>1.02 (0.98–1.06)</td>
<td></td>
</tr>
<tr>
<td>≥ 55</td>
<td>0.85 (0.33–2.18)</td>
<td></td>
</tr>
<tr>
<td>Household size</td>
<td></td>
<td>0.04</td>
</tr>
<tr>
<td>≥ 3</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>2–3</td>
<td>2.07 (1.10–3.91)</td>
<td></td>
</tr>
<tr>
<td>Lives alone</td>
<td>2.57 (0.93–7.10)</td>
<td></td>
</tr>
<tr>
<td>Has a chronic disease</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2.62 (1.52–4.53)</td>
<td></td>
</tr>
<tr>
<td>Health insurance (HI) status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Has always had HI</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Has HI but didn’t have any at least once in the past</td>
<td>1.43 (0.68–3.02)</td>
<td></td>
</tr>
<tr>
<td>Has never had HI</td>
<td>6.37 (1.98–23.16)</td>
<td></td>
</tr>
<tr>
<td>Monthly income per household unit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt; €550</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>≤ €550</td>
<td>2.62 (1.41–4.85)</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td></td>
<td>0.03</td>
</tr>
<tr>
<td>Work contract</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Unemployed (welfare recipient)</td>
<td>2.53 (1.13–5.66)</td>
<td></td>
</tr>
<tr>
<td>Unemployed (non-welfare recipient)</td>
<td>0.38 (0.10–1.38)</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>0.81 (0.41–1.61)</td>
<td></td>
</tr>
</tbody>
</table>

OR, odds ratio; CI, confidence interval; ref., reference category.

the area under the receiver operating characteristic curve (AUC) was calculated to provide an additional, more easily interpretable criterion of our model assessment. Finally, we assessed the stability of our model by studying 100 bootstrap samples from our study population. Each sample was the same size as the population under study.10 We did a backward selection of our covariates using logistic regression models fitted to each sample (adjusted systematically to the same seven variables as above). We also calculated the frequency with which each co-variable was retained in the final 100 regression analysis.

### Results

The breakdown of the study population was 44.2% men and 55.8% women; average age was 36.7. In the study population,
Health perceptions

<table>
<thead>
<tr>
<th>Life-course experience of physical, sexual or psychological abuse</th>
<th>OR (95% CI) a</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4.99 (2.81–8.88)</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of striking events during childhood</th>
<th>OR (95% CI) a</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>5.49 (1.97–15.28)</td>
<td></td>
</tr>
<tr>
<td>≥ 5</td>
<td>10.71 (4.02–25.52)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>25.81 (8.06–85.63)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of striking events during adulthood</th>
<th>OR (95% CI) a</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.00 (ref.)</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2.64 (1.42–4.91)</td>
<td></td>
</tr>
<tr>
<td>≥ 2</td>
<td>3.25 (1.45–7.28)</td>
<td></td>
</tr>
</tbody>
</table>

Psychological characteristics

<table>
<thead>
<tr>
<th>Psychological characteristics</th>
<th>OR (95% CI) a</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived self-efficacy</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Perceived self-esteem</td>
<td>&lt;10⁻³</td>
<td></td>
</tr>
<tr>
<td>Perceived sense of coherence</td>
<td>&lt;10⁻³</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows a logistic regression model between our outcome variable and the usual socio-economic factors observed in the general French population. Table 2 shows the association between our outcome and each of the studied covariables after they were adjusted for the variables in table 1. Associations are significant with some lifestyle characteristics, some integration and disruption characteristics, some health perceptions, and some psychological characteristics.

Figure 1 presents the result of the multivariable analysis. Among the adjustment variables, only the income level was associated with our outcome [odds ratio (OR) <£550/£550 = 2.58 (1.23–5.43)]. Our final model retained six individual variables statistically associated with our outcome. The variables were financial worries during adulthood, life-course experience of physical, sexual or psychological abuse, the number of striking events during childhood (with a dose–effect relationship), the sickness orientation, health worry/concern and finally one psychological characteristic (self-esteem). For this final model, R² was equal to 0.23. This figure is much higher than the R² computed for the model containing only adjustment variables (table 1), which was 0.08. For the final model, the area under the curve (AUC) was equal to 0.84 (which expresses a very good discrimination), 73.4% of our study population was well predicted by our model and χ² Pearson was equal to 1.00. Figure 1 shows that very few individuals contributed heavily to a disagreement between the observed data and the predicted values of the final fitted model. In our 100 bootstrap samples, the six variables in our final model...
showed a frequency higher than 70% among the first seven that were the most frequently selected in the models. The seven variables were in order of decreasing frequency: sickness orientation (96%), life-course experience of physical, sexual or psychological abuse (94%), number of striking events during childhood (93%), self-esteem (86%), lifelong residents of France (82%), health concern (81%), and financial worries during adulthood (70%).

Figure 1: Factors associated with forgone healthcare because of cost (multiple logistic regression). \( a \), Adjustment variables; \( b \), significant variables; ref., reference category; \( m \), multinomial logistic regression.
Discussion

Our results suggest that, at least in underprivileged areas in the Paris region, forgoing healthcare because of cost is associated with lifestyle, social integration, social disruption characteristics, and psychological characteristics as well. After making adjustments for many individual demographic, health, and socio-economic characteristics, we found that the occurrence of reported forgone healthcare is higher among people who have had financial worries in adulthood, who have had a life course experience of physical, sexual or psychological abuse, who have experienced childhood difficulties, and who express a low degree of sickness orientation, a low self-esteem and/or a high worry/concern about health.

This study has four main limitations. First, our sample size was quite small, but our final model seems to be adequately fitted and robust, as shown by our complementary bootstrap analysis. Second, our random sample is only representative of the five areas where the study was conducted and further studies are needed to estimate the role of psychological characteristics in the general (and more socially-mixed) population. Third, non-French speakers could not be interviewed due to a lack of translators. So, a small proportion of the study population was not included. Finally, our multivariable model explains only a limited fraction of the variance ($R^2 = 0.23$), but this limitation is not uncommon when modelling social and behavioural variables.

Our outcome variable – forgoing healthcare because it is unaffordable – is a standard question in the annual health consumption studies in France. When there is only one question on this subject, respondents’ answers are very global, encompassing both temporality (since the question pertained to the whole life course of the individuals, we adjusted our model to the respondents’ ages) and meaning. Indeed, we did not have any data on the detailed occasions when healthcare was forgone (e.g. medications, dental care, medical consultations, etc.). We only knew that 50% of the respondents felt that the care they had forgone was for an emergency. Actually, the question on forgoing healthcare because of cost may measure more than a mere perceived financial hurdle. It may also assess a feeling of forgoing healthcare because of cost may be a need for healthcare concurrent with a certain ‘inertia’ that might be expressed – or reinterpreted – as forgoing healthcare because of cost. Lastly, the association may also work in reverse, i.e. forgoing healthcare because it is unaffordable may be a significant stage (the impossibility of coping with certain basic needs) for an individual in his/her process of social precariousness or even social disaffiliation; a stage that entails a loss of self-esteem.

As for the descriptions found in the literature, our results show that a broader approach to health determinants may be particularly useful for a better understanding of the social inequalities of healthcare observed in industrialised countries, including the countries in Western Europe, which provide their populations with universal health coverage. Following other authors, our results suggest that the observed socio-economic gradients in healthcare utilisation are more the results than the causes of other social inequalities in health. Although our study (because of both its observational and cross sectional design) does not allow us to conclude in terms of causality, it does suggest that events during childhood and life-course experiences, as well as health beliefs and expectations (which are also socially constructed and determined), may be among the many causal pathways for the gradients observed.

From the standpoint of both public health and health policies, our results show that universal health insurance and fewer financial hurdles to healthcare are necessary but not sufficient requisites for achieving an equitable healthcare system. Our results expressly suggest that health is a concern that varies according to the social group and that it does so to a greater extent than usually expected and considered by health policy decision-makers and health professionals. Consequently, health policies mainly promoting equal financial access to healthcare may have little chance of abating health inequalities if they are not supplemented by programmes (e.g. outreach care services) and discretionary local policies tailored to the needs of those with poor health concerns.

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Key points

- In France, despite a universal health insurance system, a substantial share of the population repeatedly state that they have forgone healthcare because they could not afford it.
- We aimed to identify individual characteristics associated with the fact of stating (or not) that healthcare has been forgone because of cost.
- Our results show that forgoing healthcare because of cost is associated with lifestyle, social integration, social disruption and psychological characteristics.
- Universal health insurance and fewer financial hurdles to healthcare are necessary, but not sufficient, requisites for achieving an equitable healthcare system.

References
