Invited Article III

Health Literacy and Outpatient Physician Visits in Switzerland

by Mark Pletscher*

Introduction

Health literacy has been identified as an important contributor to health inequalities in industrialised countries (Kickbusch, 2002). Health literacy can be defined as “the capacity to obtain, interpret and understand basic health information and services and the competence to use such information and services to enhance health” (United States Department of Health and Human Services, 2000). Limited health literacy is associated with poor health (DeWalt et al., 2004) and high health care cost (Eichler et al., 2009). One possible explanation for these disparities is different health service utilisation. It has been shown that people with limited health literacy use diagnostic interventions less frequently (Bennett et al., 2009; Garbers, 2004; Guerra et al., 2005; Peterson et al., 2007; White et al., 2008), have lower immunisation rates (Bennett et al., 2009; Howard et al., 2005; Scott et al., 2002; Sudore et al., 2006), are more likely to be admitted to emergency departments (Cho et al., 2008; Howard et al., 2005; Murray et al., 2009), and have more inpatient hospital stays (Cho et al., 2008; DeWalt et al., 2004; Hope et al., 2004; Paasche-Orlow et al., 2005). Outpatient physician visits, however, are not well covered in the literature (Baker et al., 2004) and most studies analysing service utilisation are limited to very specific patient groups. Our study investigates the association between health literacy and outpatient physician visits based on data from a Swiss population survey.

Data

We exploit the fact that five questions regarding health literacy were added to the 2007 wave of the Swiss health survey. This survey is conducted every five years among Swiss residents living in private households. After an initial telephone interview, respondents receive a written questionnaire with questions that require consultation of documents or that are too personal to be answered over the phone. The 2007 wave covers 18,760 participants, 14,432 of which returned the written questionnaire.

In the written questionnaire participants were asked how confident they feel “in consumer and patient behaviour in the health and insurance system (e.g. choice of health insurance, communication with physician)” on a five level scale. Forty-nine per cent felt confident or very confident, 24 per cent chose the central category, and 18 per cent assessed their state of knowledge on the lower two levels, indicating limited health literacy in patient behavior (Figure 1).

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The variables on outpatient physician visits contain the number of visits during the 12 months before the interview. In this analysis we focus on the number of visits to physicians in general, to general practitioners (GP) and to specialists. Figure 2 shows that 80.5 per cent of participants had seen a physician at least once in the previous 12 months: 66.2 per cent visited a GP, but only 34.8 per cent had seen a specialist. In all categories most people reported small numbers of physician visits and only a few people visited their physicians frequently.

**Figure 2:** Frequency distribution of the number of physician visits during the previous 12 months

Model

We employ a logit-negative binomial (GLM) hurdle model. Likelihood-based goodness of fit measures (LL, AIC and BIC) and a test for overdispersion favour this model over the one-part or the zero-inflated versions of the Poisson and negative binomial models. A hurdle model assumes that the probability to have a positive number of physician visits and the number of visits after the first consultation are determined by two different processes. Within the legal catalogue of benefits, a standard Swiss health insurance plan does not impose any restrictions on the type or amount of services used, and insurees can choose providers freely. Under these conditions it seems plausible to assume that the initial
decision to seek care is made by patients while the further service utilisation is determined in an interaction between health professionals and patients. With respect to health literacy this model allows to assess the role of health literacy in the decision to seek treatment and in the decision about further course of treatment. Control variables include age, sex, nationality, residence in French- or Italian-speaking part, residence in urban areas, educational level, self-rated health, a health-oriented lifestyle, the type of insurance plan, the deductible, and the equivalised monthly household income.

Results

The regressions show no significant association between health literacy and the number of outpatient physician visits. Neither the propensity to have a positive number of visits nor the number of visits after the first contact are correlated with the health literacy variable used. The educational level, however, is positively associated with the probability to have contacted a specialist and negatively associated with the number of GP visits. If everybody had a university degree the model would predict 1.53 GP visits for those who are in GP care. This is 0.53 visits less than in a population of people with mandatory schooling. On the other hand a university degree is expected to increase the probability to have been in specialist care by 12.7 percentage points to 41.3 per cent. Individuals who pursue a health-oriented lifestyle (89.4 per cent of the sample) are more likely to have visited a physician. If everyone pursued a healthy lifestyle, the model would predict a proportion of 81.8 per cent (+6.8 per cent) of participants who had seen a physician in the previous 12 months.

Table 1: Average marginal effects of the logit-negative binomial hurdle model

<table>
<thead>
<tr>
<th></th>
<th>all physicians</th>
<th></th>
<th>general practitioners</th>
<th></th>
<th>specialists</th>
<th></th>
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<tbody>
<tr>
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<td>Pr(y&gt;0)</td>
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<td>E(y</td>
<td>y&gt;0)</td>
<td></td>
<td></td>
<td>E(y</td>
<td>y&gt;0)</td>
<td></td>
</tr>
<tr>
<td>health literacy level 2</td>
<td>0.015</td>
<td>-0.260</td>
<td>0.008</td>
<td>0.042</td>
<td>0.016</td>
<td>0.000</td>
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<td>-0.007</td>
<td>-0.128</td>
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<td>0.006</td>
<td>-0.320*</td>
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<td>-0.184</td>
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<tr>
<td>educ4 (higher prof. educ.)</td>
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<td>-0.008</td>
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<tr>
<td>educ5 (academic degree)</td>
<td>0.017</td>
<td>-0.330</td>
<td>-0.018</td>
<td>-0.534***</td>
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<td>health-oriented lifestyle</td>
<td>0.068***</td>
<td>0.378</td>
<td>0.069***</td>
<td>0.163</td>
<td>0.032**</td>
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<tr>
<td>N</td>
<td>8,704</td>
<td>7,048</td>
<td>8,704</td>
<td>5,814</td>
<td>8,704</td>
<td>3,169</td>
</tr>
</tbody>
</table>

*p<0.05, **p<0.01, ***p<0.001

Discussion

The fact that we did not find a correlation between health literacy and utilisation of outpatient physician services indicates that user behaviour in this domain cannot explain the reduced health of people with limited health literacy. Unfortunately what the self-rated state of knowledge really measures is not clear. Validated assessments of health literacy in future waves of the Swiss health survey would allow to test whether our results persist with more specific concepts of health literacy.

In the face of the results on education, one could hypothesise that better educated people are more likely to be referred to a specialist when they visit a GP. The two estimations, however, were not connected and our model does not account for interactions between different types of physician visits. The use of simultaneous equations GMM models could help to account for the interrelation of the dependent variables.

It is unclear whether the observed gradients in outpatient service utilisation over education indicate over- or underuse in some groups. To shed more light on the role of service utilisation in the association between education and health, one could focus on services where needs are constant across
individuals or where the optimal amount can be objectively determined such as immunisation or certain diagnostic interventions. The cost of services used could also give hints to the meaning of different service utilisation patterns.

References


