



Research Note:

Unmet need as an indicator of access to health care in Europe

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Summary

European governments seek to ensure that their citizens have access to safe and effective health care. At the EU level, improving access to health care is among the priority objectives for promoting social inclusion and equal opportunities for all. The accessibility of health services is complex and depends on a multitude of factors that relate to the health system and also to the patients themselves. This research note critically assesses one indicator of access to health care: self-reported unmet need. This indicator is included in two international surveys: the Survey on Health, Ageing and Retirement in Europe (SHARE) of individuals aged 50 years and older, and the EU Survey of Income and Living Conditions (EU-SILC) of residents of private households aged 16 years and older.

Across Europe there is quite a wide range in the proportion of the population who report an unmet need or who report to have forgone care in the past 12 months. When it is measured in an open-ended way, as in the EU-SILC, it is important to disaggregate the indicator by the reasons for unmet need in order to distinguish between those reasons that are more relevant to policymakers and those that reflect individuals' preferences and tastes. Perceived access problems would be expected to be greater among those with higher need for health care; indeed, in all countries (except Sweden) there is a relationship between reported forgone care and self-assessed health status. The few studies that have been conducted to examine unmet need in Europe have identified a strong association with both income and health whereby people who report unmet need tend to be in worse health and with lower income, after controlling for other measurable characteristics.

To better understand this indicator and to examine how it relates to the health system, we analyze the relationships between reporting forgone health care and both the use of and expenditure for health services in 12 countries included in SHARE. We find some evidence of a positive association between forgoing health care and using health services; people who report to forgo care appear to be relatively higher users of the health system than those who do not report this access problem. Based on this analysis we would suggest that subjective indicators of access require careful attention, and that they should be combined with additional indicators such as actual utilization of health services, waiting times for treatment, and quality of care.

In the effort to improve the design of surveys to elicit information on access to health care, it is important to include multiple questions and indicators. Such an approach would enable us to gain a better understanding of what unmet need means, and to what extent it represents barriers to access versus individual preferences. Interpretation of measures of unmet need requires a disaggregation of the indicator by the different reasons that are stated. Finally it is important to highlight that comparisons of subjective indicators across countries should be made cautiously; it is likely that some differences in the reporting of access problems relate to cultural differences, since perceived access problems depends on the recognition of a health problem, the individual's expectations and, ultimately, her experiences with the health system.

This Research Note has been produced for the European Commission by Sara Allin and Cristina Masseria (Health and Living Conditions Network of the European Observatory on the Social Situation and Demography at LSE). The views expressed are those of the authors and do not necessarily represent those of the European Commission.

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1. Introduction

European governments seek to ensure that their citizens have access to safe and effective health care. Indeed most countries have achieved universal coverage of health care. They have also made efforts to reduce barriers to accessing care for vulnerable groups and to more equitably distribute health services across the population. Moreover, at the EU level, improving access to health care is among the priority objectives for promoting social inclusion and equal opportunities for all (Atkinson, Cantillon, Marlier, & Nolan, 2002; European Commission, 2005, 2007).

This research note critically assesses one indicator of access to health care: self-reported unmet need. First, it reviews the evidence on the factors that affect the accessibility of health care. Then, it presents unmet need and forgone care as indicators of access, reviewing their prevalence across countries, and the associated factors. Third, the note presents some empirical evidence of the association between forgone care and use of health services drawing on the Survey of Health, Ageing and Retirement in Europe. Finally, the note concludes with a discussion of the policy relevance of this indicator and areas for future research.

2. What affects access to care?

The accessibility of health services depends on a multitude of factors that relate to the health system and also to the patients themselves. On the supply side, the design of statutory health care coverage and public benefits package, the volume and distribution of human resources and capital, waiting times, referral patterns, booking systems, how individuals are treated within the system (continuity of care), and quality of care can affect accessibility (Gulliford, Figueroa-Munoz, Morgan, Hughes, Gibson, Beech et al., 2002; Healy & McKee, 2004; Starfield, 1993; Whitehead, 1991).

Because of variations in the financing and organization of health care across countries, supply-side factors that affect access also vary. For example, some countries base entitlement to statutory coverage on residence (as in Greece, Sweden, Denmark, Italy, and France), and others require individuals to enroll in an insurance fund (as in Austria, Belgium, the Netherlands, Switzerland, Germany). However, there are some groups who may not have coverage, and for these groups there may be substantial financial barriers to accessing care. For all those legally resident in the country these barriers largely have been removed. Other

organizational features that affect access are gatekeeping and waiting times. Some countries require patients to either register with a gatekeeping doctor or to get a referral to access a specialist (as in Denmark, Italy, Netherlands and Spain). Referral rates may differ across socioeconomic groups and regions, as has been identified in other jurisdictions such as in England, Canada and the United States (Chan & Austin, 2003; Dixon, Le Grand, Henderson, Murray, & Poteliakhoff, 2007; Kikano, Schiaffino, & Zyzanski, 1996); therefore, difficulty getting a referral may present a barrier to access to specialist care for some patients.

Also important are the demand- or patient-side factors that affect access; these factors not only vary across countries but also within countries across different population groups. Characteristics of patients, such as their age, socioeconomic status, past experiences with health care, their perceptions of the benefits and quality of care, and level of health literacy may also affect their decisions to seek care (Aday & Andersen, 1974; Dixon et al., 2007; Fernandez, McDaid, Kite, Schmidt, Park, & Knapp, 2008). Characteristics of providers have also been identified as a determinant of access, over and above indicators of clinical need (Wennberg, 1984).

Studies have shown that individuals in higher socioeconomic groups make more use of health care services, in particular specialized, dental and preventive care, than individuals with less socioeconomic advantage (Allin, Masseria, & Mossialos, 2009; van Doorslaer, Masseria, & the OECD Health Equity Research Group Members, 2004). The documentation of these differential patterns of utilization has been extensive, however the causes are less well known. The literature suggests that these findings relate to individual characteristics mentioned above, such as different care-seeking behaviours across different socioeconomic groups, and more effective communication between physicians and better-educated patients; however, they also relate to supply factors, such as coverage by private insurance that expedites care for higher income groups

3. Unmet need as an indicator of (poor) access

There are many tools that are available to monitor the accessibility of health care, and to assess the extent of inequity in access to and use of services. One relatively simple tool is the direct questioning of individuals as to whether there was a time that they needed health care but did not receive it, or whether they had to forgo health care.

Self-reported unmet need for health care in the past 12 months period is included in two international surveys: the Survey on Health, Ageing and Retirement in Europe

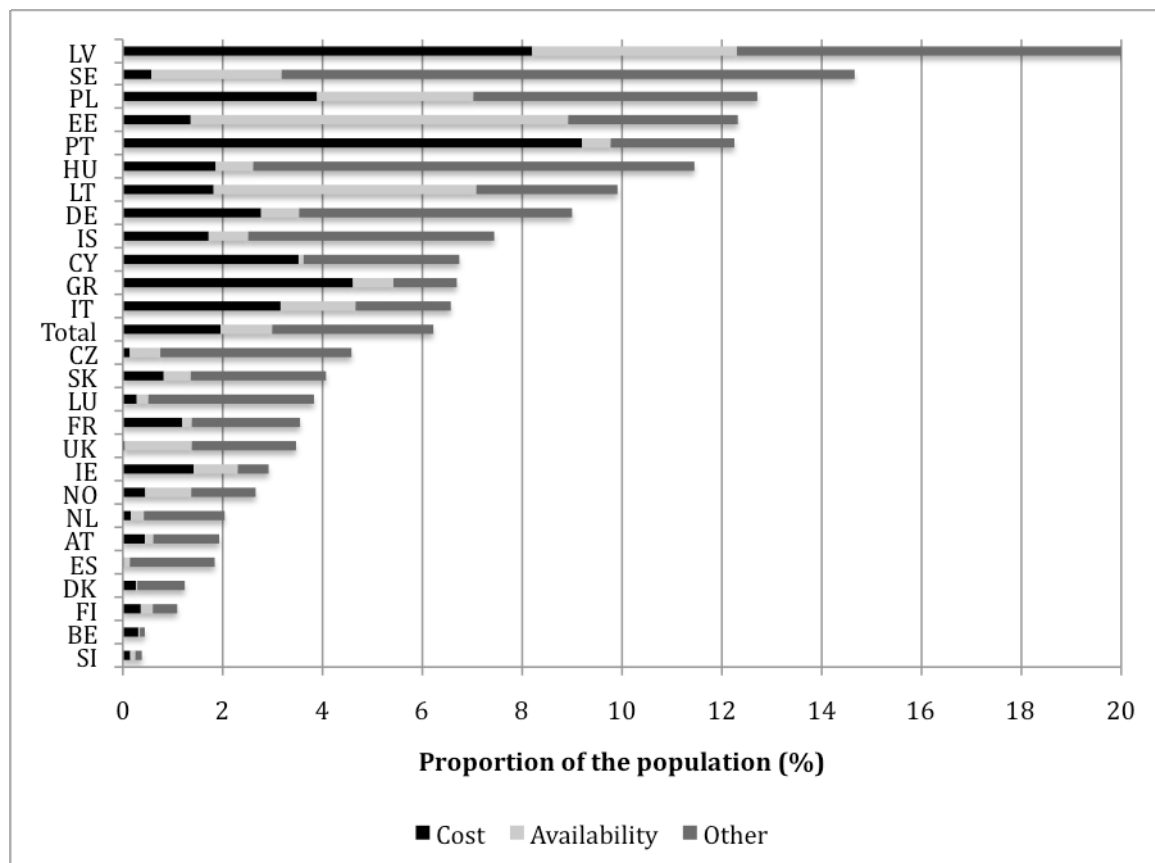
(SHARE) of individuals aged 50 years and older, and the EU Survey of Income and Living Conditions (EU-SILC) of residents of private households aged 16 years and older. These surveys present opportunities for cross-country comparative research on access to health care. However, the survey questions on unmet need differ, as do the samples. The phrasing of the question in EU-SILC is as follows: "Was there any time during the last 12 months when, in your opinion, you personally needed a medical examination or treatment for a health problem but you did not receive it?" Follow-up questions include the reasons for unmet need. Among these possible reasons for "unmet need" are those that are important from a policy perspective, such as the individual could not afford to (costs), waiting lists, and travelling-related problems, but also those that are less clearly relevant to policymakers, such as that the respondent wanted to wait to see if the problem got better on its own, didn't know any good doctor, fear of care, and could not take the time off work.

In SHARE the question focuses on forgone care that is either due to costs or unavailability of care. In this survey, the questions are: "During the last twelve months, did you forgo any types of care because of the costs you would have to pay?" and "During the last twelve months, did you forgo any types of care because they were not available or not easily accessible?" Follow-up questions then focus on the type of care (e.g. physician, medicine, dental) that the individual reported to forgo.

Prevalence of unmet need

Across Europe there is quite a wide range in the proportion of the population who report an unmet need or who report to have forgone care in the past 12 months. For any unmet need (in the adult population), the range is from less than 1% in Slovenia and Belgium in to 26% in Latvia followed by Poland, Sweden and Hungary (Figure 1). However, the diverse set of reasons for reporting unmet need (in EU-SILC) necessitates its disaggregation in order to gain meaningful information. For example, as shown in Figure 1, the prevalence of unmet need in 2004 in Sweden is 14.4% when all reasons are included (7.4% on average across all EU countries surveyed), but it falls to 1.9% (3.3% on average across countries) when only reasons related with costs and availability (defined as waiting time and travelling-related reasons) are included. Similarly, in Hungary it decreases from 14% to 2.3%. However in Latvia, the percentage of the surveyed population reporting unmet needs remains relatively high, 14.5%, also when only costs and availability are considered.

Figure 1. Percentage of the population who report unmet need, 2007



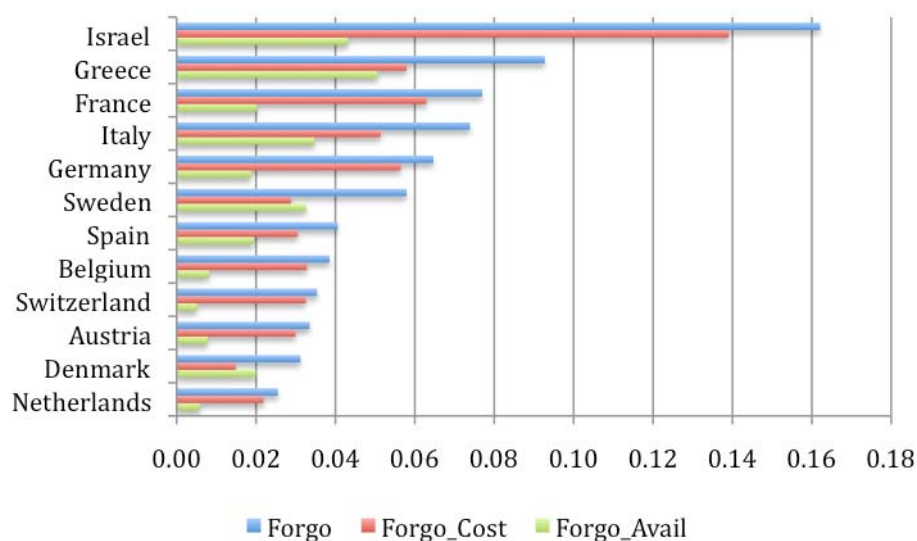
Source: Survey of Income and Living Conditions, 2007

Self-reported forgone care ranges (in the aged 50 years and over population) from 2.6% in the Netherlands to 16% in Israel (Figure 2). Austria and Denmark remain among the countries with the lowest reported access problems, and Greece, France and Italy are still among the countries with higher prevalence of access problems (over 6% in SHARE; over 4% in EU-SILC). The older population that is surveyed in SHARE would lead to higher estimates of access problems, given the relationship between age and health. In all countries except Sweden the proportion of the population who reports forgone care due to costs is greater than those who report forgone care due to unavailability.

Some national studies have revealed higher estimates of forgone care than those reported in cross-country surveys. Swedish studies of the 20-65 age group identified higher rates of forgone physician visits in the past three months, with 24% of those surveyed having refrained from a visit when needed (Westin, Ahs, Persson, & Westerling, 2004), and higher estimates among the unemployed population of the same age (42%) (Ahs & Westerling, 2006). The latter clearly reflects the relationship between being unemployed and in poorer health. Similarly, an earlier Swedish study found a high proportion (22%) of individuals who reported to have forgone primary health care due to the cost (Elofsson, Undén, & Krakau, 1998). Also

in France, 4% of adults reported unmet need due to financial reasons for general health care services over the past 12 months, but the proportion was much higher, at 12%, for dental care (Bocognano, Dumesnil, Frèrot, Le Fur, & Sermet, 1999).

Figure 2. Self-reported forgone care, forgone care due to costs, and forgone care due to unavailable/inaccessible care

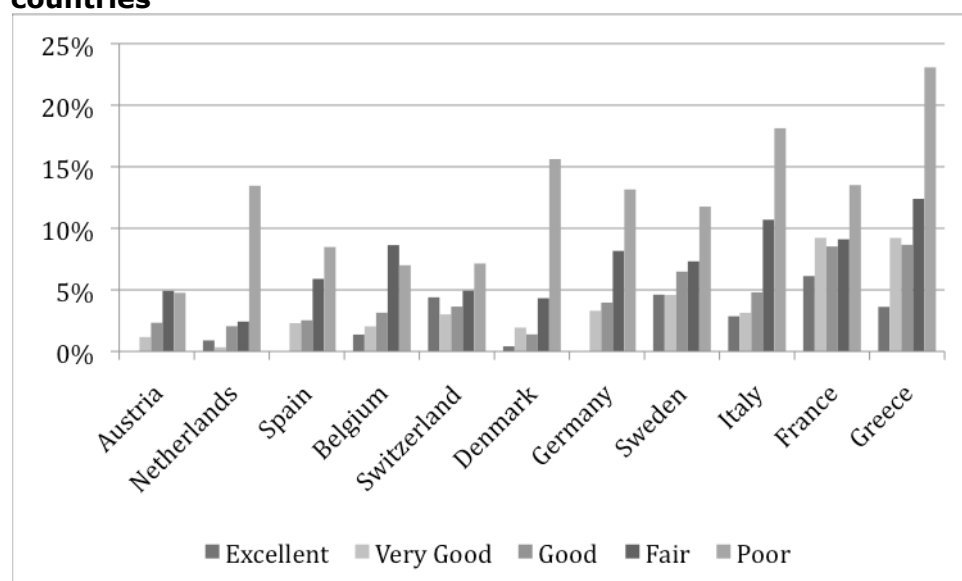


Source: Survey on Health, Ageing and Retirement in Europe, 2004

Who reports unmet need and forgone care?

Perceived access problems would be expected to be greater among those with higher need for health care. People with health problems, whether acute or chronic, and worse self-assessed health are expected to have greater prevalence of reported unmet need. Indeed, in all countries, there is a relationship between reported forgone care and self-assessed health status as shown by figure 3. On average, among those who report to forgo care there is a greater proportion of people in bad or very bad health. In some countries (Denmark, the Netherlands), almost all of those who report to forgo health care are in the worst general health, whereas in other countries (Spain, Germany, Sweden), there is an observable gradient in reporting forgone care by level of health. The reasons for differential reporting of access barriers across countries are complex, some would relate to the health system itself, but others are likely to be social and cultural.

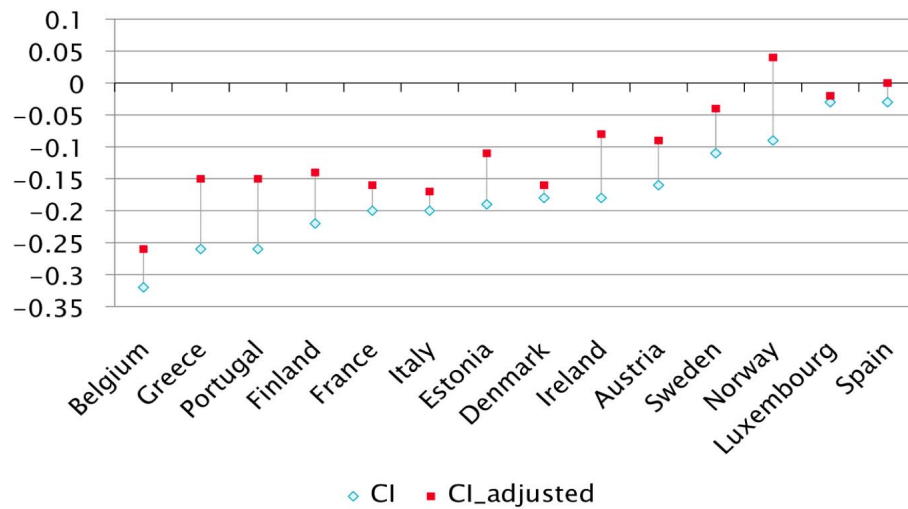
Figure 3. Health status of people who forgo care either because of costs and availability in comparisons with those who did not forgo care, average EU countries



Source: Survey of Income and Living Conditions, 2006

The few studies that have been conducted to examine unmet need in Europe have identified a strong association with both income and health whereby people who report unmet need tend to be in worse health and with lower income, after controlling for other measurable characteristics. For instance, an early study of the EU-SILC found that reporting any unmet need (i.e. not restricted to the more policy relevant reasons), in all countries, unmet need was concentrated among those with lower income in all countries, as signaled by a negative concentration index, and after adjusting for health (which tends to be worse among those with lower income), the relationship with income persists in all countries except in Luxembourg, Norway and Spain (see Figure 4) (Koolman, 2007). Analyses of SHARE also show an association between forgone care and income, whereby the authors found a higher likelihood of care foregone among individuals with lower income in all countries studied (Mielck, Kiess, van den Knesebeck, Stirbu, & Kunst, 2007), although paradoxically the highest income groups in Sweden and to a less extent in Greece, showed a higher prevalence than the middle-income groups.

Figure 4. Concentration Indices (CI) of the concentration of unmet need by income, and the CI after adjusting for differences in health status



Source: Adapted from (Koolman, 2007)

What are the patterns of utilization among those who forgo care?

Based on the higher levels of ill health among those who report to have forgone care, or who report an unmet health care need, one would expect to see higher levels of health care use among these populations if differences in health status are not statistically controlled for. Few studies have explicitly addressed the question of how forgone care, or unmet need, relates to patterns of health care utilization, and those that have in the United States have found that even after controlling for health status people with unmet needs had higher odds of emergency care use (Zuckerman & Shen, 2004) and more physician visits (Mollborn, Stepanikova, & Cook, 2005). Descriptive analyses of the above Swedish study revealed little relationship between foregone care and the number of physician visits made in the past year, though a slightly higher proportion of people reported to have forgone physician care among those with no previous physician contact (Elofsson et al., 1998).

Two recent studies from Canada explicitly assess the association between reported unmet need for health care due to system versus personal reasons and health care utilization (Allin, Grignon, & Le Grand, 2009; Hurley, Jamal, Grignon, & Allin, 2008). These show that for those unmet needs that can be attributed to the system, such as availability, costs, and waiting times, there is a systematic positive association with utilization after controlling for needs. In other words, individuals who report an unmet need for system-related reasons are also using

more services than would be expected on the basis of their need, whereas unmet need for personal reasons has either a negative or no significant association with utilization. It is possible that there is similar complexity in the access indicator currently available in Europe. The next section draws on SHARE data to examine this relationship between forgone care and health care utilization.

4. Empirical analysis of SHARE: forgone care and health care utilization

We analyze the relationships between reporting forgone health care and both the use of and expenditure for health services in 12 countries. To do so we draw on SHARE data on individuals' demographic, health and socio-economic characteristics, their reported use of health care, their reported out-of-pocket expenditures on health care, and reported forgone care in the twelve months prior to being interviewed.

Empirical strategy

The association first between forgone care and health care utilization, and, second, between forgone care and out-of-pocket health care expenditures is analyzed using regression methods. For the utilization model, we estimate a model of health care utilization (y) for each of the dependent variables, including the standard health and demographic (need-related) (X) and socioeconomic and regional (non-need-related) (Z) independent variables (described below). Included in these models are the variables that represent forgone care.

$$y = \alpha + X\beta + Z\delta + \varepsilon,$$

where, for the utilization models, $y=1$ if the individual used health care, and $y=0$ otherwise. For the expenditure models we run a simple OLS regression model on the same set of explanatory variables.

As a second stage to this analysis, we combine the two available survey years from SHARE in order to predict worsening of health, or death, in second survey year with the same independent variables, including whether they report to forgo health care. This second stage addresses the question of whether, and to what extent, forgoing health care increases the likelihood of reporting worse health, or of death, controlling for other health and socioeconomic characteristics.

Description of variables

We measure utilization with two sets of variables: self-reported utilization and self-reported out-of-pocket expenditure. For the models of utilization we estimate

the probability of accessing three services in the last 12 months: GP; specialist physician; and any physician.

The annual out-of-pocket payments for health care is used as the dependent variables in the second set of models, and are measured in Euros, for the following services: outpatient services (including physicians, dentists, and other prescribed therapies); prescription drugs; and total out-of-pocket payments. The skewed nature of these variables call for non-linear models. Therefore only respondents who had non-zero expenditures are included, and we use their natural logarithm with an OLS model.

The explanatory variable of interest for this study is self-reported forgone care, which accounts for about 7% of the total sample of 12 countries (this is reduced to 4% when forgone dental and home care are not considered). Across all countries, dental care accounts for 46% of the reported care forgone due to costs, and specialist care accounts for 38% of the care forgone due to availability. Most people only reported one type of care that was forgone, with few reporting multiple types of care.

For this analyses we measure the extent to which reported forgone health care is associated with the use of health services, after controlling for level of health care need and other non-need-related characteristics using the first wave of the SHARE data, 2004. We include a comprehensive set of demographic and health indicators to approximate need for health care. Age is measured in four categories (50-59; 60-69; 70-79; and 80+), and sex is a dummy variable that takes a 1 if the respondent is a female. Self-assessed health is measured in five groups, with "excellent" being the reference category, and the remaining groups are "very good", "good", "fair" and "poor". Also included is whether the individual has limited activities due to health that is moderate or severe compared to no limitations. Separate dummy variables indicate whether the respondent has at least two or more chronic conditions (chronic2), and at least two or more symptoms (symptom2). Finally, the survey question of employment status includes the category "permanently sick", which is also included as a dummy variable.

Individual-level information on socioeconomic status (education, income), employment, smoking, marital and migrant status (whether the individual was born outside the country), and coverage with voluntary health insurance are also

included in the models. Finally because the analysis pools all twelve countries, we include dummy variables to represent the country the respondent is in to control for country-level variations in utilization and access, in addition to clustering the standard errors by country.

For the second stage analysis, we run two models with dependent variables that measure a) worse health, and b) death following the first interview. We measure worse health in the second survey year (2006) by the question: "Compared with your health when we talked with you in [month and year of previous interview], would you say that your health is better now, about the same, or worse?"

Descriptive statistics

Descriptive statistics are reported in Table 1, showing the variable means for the independent and dependent variables for the total sample, the subgroup who reports any forgone care, those who report no forgone care (which is nearly identical to the total sample), and then for those who report forgone care due to costs versus to availability. Along with the sample means, the table also compares the variable means across subsamples who forgo versus who do not, and those who forgo due to costs versus to availability.

Compared to those who do not report forgone care, it appears that those who report forgone care are younger, female, and, as expected, are in poorer health as measured by self-assessed health, activity limitations, and reporting two or more chronic conditions and symptoms. Forgone care is associated with almost three times greater prevalence of self-assessed poor health, and twice the prevalence of severe limitations and permanent sickness. Socioeconomic differences can also be seen between these two population subgroups. Those with forgone care are slightly less represented by the highest education group, and have income at about 80% of the level of those without forgone care. A notable difference can be seen in the reporting rates across migrant versus national-born subgroups, where reporting is twice as high among those who are not born in the survey country.

There are some differences between those who had forgone care because of cost and availability; the former are, as expected, lower income, more often unemployed, and migrant. Perhaps surprisingly they are also more likely to have voluntary health insurance. Higher relative rates of forgone care due to costs can be seen in Austria, Germany, the Netherlands, France, Switzerland, Belgium and Israel, with the reverse pattern seen in the other countries.

Health care utilization is relatively higher among those who report forgone care than those who do not for all services except dental care (Table 1). Those who forgo care not only use more services, they also pay close to twice the amount out-of-pocket. Since the population who reports forgone care reports worse health, on average, these positive associations with utilization are not surprising. When we disaggregate reported forgone care into the two reasons, the picture is mixed. The positive association between forgone care and utilization appears largely to be driven by those with forgone care due to availability, as shown by higher relative levels of out-of-pocket expenditure (except for drugs) and higher use of physicians (except GPs) compared to the cost-related forgone care.

For the second stage analysis we include those individuals who were followed up the second year; therefore the sample size reduces from 22,777 in total to 18,461 across all countries (the sample also no longer includes Israel, since only one survey wave is available at present). About 39% of those who were interviewed both years report their health to be worse over the period; and 2.5% who were interviewed in the first year died between survey years. The proportion with worse health over the two-year period is higher in some countries (e.g. 69% in Greece, 50% in Switzerland and Belgium) and lower in others (e.g. 30% in Germany, 32% in Spain). However, in countries where a larger part of the sample declared worse health, relatively fewer people had died, and vice versa.

Table 1. Variable means for total population, and population subgroups

Variable	Total: N=2890	Forgo: N=1816	No Forgo: N=2708	Yes/ No	Forgo Cost	Forgo Avail	Cost/ Avail
<i>Demographics</i>							
age 50-59	0.35	0.38	0.35	1.08	0.38	0.36	1.06
age 60-69	0.30	0.28	0.30	0.91	0.29	0.24	1.19
age 70-79	0.23	0.23	0.23	1.00	0.21	0.24	0.88
age 80+	0.12	0.12	0.12	1.00	0.12	0.16	0.75
female	0.55	0.63	0.55	1.16	0.63	0.68	0.93
<i>Health status</i>							
excellent							
SAH	0.08	0.03	0.08	0.43	0.04	0.02	2.06
v. good SAH	0.17	0.11	0.18	0.60	0.11	0.09	1.21
good SAH	0.39	0.27	0.40	0.68	0.26	0.30	0.86
fair SAH	0.27	0.36	0.26	1.38	0.35	0.40	0.89
poor SAH	0.09	0.23	0.08	2.71	0.25	0.20	1.25
no limitations	0.56	0.37	0.58	0.64	0.36	0.33	1.11
moderate lim.	0.30	0.36	0.29	1.23	0.36	0.40	0.89

severe lim.	0.14	0.27	0.13	2.05	0.28	0.27	1.03
chronic2	0.43	0.59	0.42	1.41	0.60	0.61	0.97
symptom2	0.40	0.65	0.38	1.73	0.66	0.70	0.95
perm sick	0.03	0.05	0.03	1.98	0.05	0.05	1.03
<i>Socioeconomics</i>							
	28,07						
Income (€)	4	22,883	28,467	0.80	22,330	23,878	0.94
low educ	0.50	0.52	0.50	1.05	0.51	0.58	0.89
int educ	0.32	0.32	0.32	1.00	0.33	0.28	1.16
high educ	0.17	0.15	0.18	0.86	0.15	0.14	1.08
employed	0.27	0.23	0.27	0.84	0.23	0.20	1.11
retired	0.50	0.46	0.50	0.90	0.45	0.49	0.92
unemployed	0.03	0.05	0.03	1.58	0.05	0.03	1.70
homemaker	0.16	0.16	0.16	1.03	0.16	0.17	0.93
migrant	0.14	0.25	0.13	1.87	0.27	0.19	1.45
never smoked	0.57	0.56	0.57	0.98	0.56	0.59	0.94
current smoker	0.17	0.22	0.17	1.31	0.22	0.21	1.08
past smoker	0.26	0.22	0.26	0.83	0.22	0.20	1.10
live alone	0.29	0.35	0.28	1.24	0.36	0.37	0.98
VHI	0.35	0.34	0.35	0.98	0.35	0.27	1.29
<i>Utilization</i>							
Doctor							
probability	0.89	0.94	0.89	1.06	0.94	0.95	0.99
GP probability	0.83	0.90	0.83	1.09	0.91	0.90	1.00
Specialist prob.	0.46	0.59	0.45	1.32	0.58	0.65	0.90
GP visits	5.59	8.71	5.35	1.63	9.21	8.79	1.05
Specialist visits	2.11	3.75	1.98	1.89	3.78	4.38	0.86
Dentist prob.	0.50	0.46	0.51	0.91	0.46	0.42	1.10
Hospital prob.	0.13	0.19	0.13	1.46	0.19	0.21	0.91
Hosp nights	12.92	15.44	12.64	1.22	16.04	14.94	1.07
<i>Out-of-pocket payments (€)</i>							
Inpatient	22.67	38.48	21.47	1.79	36.16	50.27	0.72
	146.3						
Outpatient	5	222.90	140.56	1.59	173.48	347.06	0.50
	118.8						
Drugs	2	216.86	111.40	1.95	229.51	207.35	1.11
Nursing	45.94	70.94	44.05	1.61	65.66	94.01	0.70
	333.7						
Total	7	549.18	317.48	1.73	504.81	698.70	0.72

Results of empirical analysis: the association between forgone care and health care utilization

The models of utilization confirm some of the above descriptive statistics, in particular with regards to the probability of a specialist visit (Table 2 reports the coefficients of effect of the two types of forgone care on utilization, controlling for all other independent variables). Individuals who reported to forgo care due to availability had a 12% increased likelihood of visiting a specialist. These results should be interpreted cautiously because of the potential interaction between

reporting forgone care and the country of residence, which have not been adequately addressed in these preliminary specifications.

Table 2. Estimated effects of forgone care on the likelihood of health care utilization

	Probability of any doctor visit	Probability of GP visit	Probability of specialist visit
Forgo: cost	0.06	0.11	0.03
Forgo: availability	0.13	0.12	0.30

Note: bold is significant at $p < 0.05$. Estimates of effect are adjusted for all other independent variables.

The models of out-of-pocket expenditure reveal stronger associations between reporting to forgo care and spending on health care, along with significant differences across countries (Table 3). Forgone health care due to availability is associated with a 27% increase in out-of-pocket expenditure on outpatient care; whereas forgone care due to costs is associated with a 32% increase in out-of-pocket spending on drugs. For total spending, there is a significant association with both types of forgone care. There are significant differences across countries in the levels of expenditure, with residents of Italy and Spain spending significantly more than in Austria on outpatient care, and those in Germany and Israel spending less, all else being equal. For drug spending, Germans, Dutch and French people spend significantly less than Austrians, while residents of all other countries (except Spain) spend more. Total out-of-pocket spending is increased by about 80% in Switzerland and Greece, by about 60% in Belgium and Sweden, and by 50% in Denmark and Israel than in Austria.

Table 3. Estimated effects of forgone care on the extent of out-of-pocket (OOP) expenditure

	OOP for outpatient care	OOP for drugs	OOP TOTAL
Forgo: cost	0.14	0.322	0.238
Forgo: availability	0.276	-0.04	0.283

Note: bold is significant at $p < 0.05$. Estimates of effect are adjusted for all other independent variables.

From this preliminary analysis of utilization and expenditure in twelve countries, it seems that when people report to forgo care, they are more likely to have contacted a specialist and spent significantly more out-of-pocket on health care than otherwise identical individuals in terms of health status, socioeconomic status and demographics. This finding is consistent with analyses from Canada, even though the question that is used in SHARE more explicitly relates to system-level access problems (cost and availability) as opposed to the more open question on unmet need in Canada (similar to EU-SILC). The positive association with out-of-pocket expenditure implies that, in spite of reporting cost-related access problems, these individuals are still able to pay, and do so to a greater extent than those who do not report such access problems.

The effect of forgone care on worse health or death

The second stage of the empirical analysis investigates the factors that increase the likelihood of either reporting worse health in the second survey wave, or death following the initial survey. Table 4 reports the estimates of the effect of forgoing care in 2004 on death, and on reporting worse health in 2006. The only significant association is between forgoing health care due to cost and the likelihood of dying; whereby those who forgo care due to cost have reduced likelihood of death by about 26%.

Table 4. Estimated effects of forgone care on the likelihood of death and worse reported health

	Death following the 2004 survey	Worse health in 2006 compared to 2004
Forgo: cost	-0.267	-0.032
Forgo: availability	-0.093	-0.025

Note: bold is significant at $p < 0.05$. Estimates of effect are adjusted for all other independent variables.

Although not reported here, the factors that increase the likelihood of death are, as would be expected, older age, poor health, and having been admitted to hospital as an inpatient at least once in the past year. The factors that increase the likelihood of reporting worse health are less clear: poorer self-assessed health, but younger age, fewer symptoms and no limitations in activity. As stated above, these results should be interpreted with caution because of the possibility that the effects of forgone care differ across countries, and the need for more complex empirical models to adequately control for these potential interaction effects.

4. Policy implications of unmet need

The reporting of access problems as unmet need or forgone care presents opportunities for cross-country comparative research on access to health care. In this research note, we document some of the differences in perceived access problems across countries, and discuss the associations between health status, income and unmet need.

Self-reported unmet need and forgone care are, however, far from straightforward. The interpretation of these subjective indicators of access depend on the phrasing of the question and follow-up questions, as well as country-specific social and cultural factors, such as patients' expectations. Further complicating the reporting of access barriers with self-reported unmet need is the finding from this preliminary research that those who forgo care use more than an expected level of health services and spend more out-of-pocket than those who do not report this access problem but have otherwise similar levels of health; this is consistent with studies from Canada (Allin et al., 2008; Hurley et al., 2008). Moreover, drawing on newly available longitudinal data across two survey years, we find that reporting to forgo health care in one year does not lead to worsening of health or increased likelihood of death in subsequent years.

Further analyses that take a longer-term perspective would permit the investigation of the impact of reported access problems, and use of health services on health outcomes. A sufficiently long time period is needed in order to control for the many factors that affect health, such as changes in employment status, and other life events.

In the meantime, we would argue that, based on this study, this indicator should be interpreted with caution, and used alongside other access measures such as needs-adjusted utilization, travel distance to facilities, and waiting times.

Recommendations

The **accessibility of health care services depends on a multitude of supply- and demand-side factors**; therefore, it is unlikely that a single indicator will be sufficient in capturing this complex construct. Self-reported unmet need and forgone care provide one tool by which we can measure access; however, they measure perceived access and must be treated cautiously.

First, as measured in the EU-SILC, the reasons for unmet need vary from those that are more relevant to policy-makers (such as costs) to those that are less relevant (such as personal reasons); therefore, **unmet need should be disaggregated** by the individual reasons, or grouped into policy-, or system-related unmet need versus personal unmet need.

Second, **comparisons across countries should be made cautiously**. Cultural differences in the reporting of health status are well documented; therefore it is likely that some differences in the reporting of access problems, which depend on the recognition of a health problem, the individual's expectations and her experiences with the health system.

Third, access problems, as measured by the unmet need and forgone care, are not easily interpreted. There is a positive association between reporting such access problems and using health services. To the extent that the use of health services resulted from previous access barriers (i.e. health condition that worsened) is not known. Further research that takes a longer-term perspective is needed to disentangle the dynamic relationship between health status, access problems, and patterns of health care use.

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