Reasons for unmet needs for health care: the role of social capital and social support in some Western EU countries

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November 2017

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Draft November 2017

Abstract

Purpose. The paper focus on the patient-side factors that determine access to health care and analyzes the issues of unmet needs and reasons for unmet needs for health care in Western EU countries. The paper has two main objectives: first, to study the determinants of unmet health care needs (UN) with a particular hub on social capital and social support; second, to analyze whether social capital and social support are predictors of the reasons for unmet needs (RUN).

Methodology. A probit model is estimated from the whole population sample accounting for the possibility of individual selection in unmet needs for health care (UN) (selection equation). Then expanded probit models (including inverse Mills ratio) are used on the reasons for unmet needs (RUN) with social capital and social support as determinants and using the European Union Statistics on Income and Living Conditions (EU-SILC) dataset carried out in 2006.

Findings. In UN equation, results indicate higher unmet health care needs for younger, people with tertiary education, low economic situation, unemployed and in poor health status. Moreover, the frequency of visiting relatives and friends and the ability to ask for help are correlated with a lower likelihood of declaring unmet needs, instead volunteering and participation in formal organizations present a higher probability of not visiting a doctor when needed. In RUN equations, findings show that female, large households, people with low economic situation and financial constraints, unemployed and in poor health status have a higher probability of declaring unmet needs due to economic costs. Additionally, people with tertiary education, high income and employed have a higher probability of not visiting a doctor when needed due to time availability. Furthermore, the frequency of contact with friends and the ability to ask for help are related with a lower probability of unmet needs due to economic costs, while the frequency of contact with relatives is related with a lower probability of unmet needs due to time availability and distance. However, the ability to ask for help is also correlated with a higher probability of not having medical care due to time availability and wait and see.

Research limitations/implications. The paper is unable to prove causality. EU health policies should look to the demand side of health care access with policy designed to support individuals to participate fully in employment and social life.

Originality. This is the first empirical studies that addresses the role of social capital and social support as predictors of RUN in EU countries.

Keywords. Unmet needs for healthcare, reasons for unmet needs, social capital, social support, EU Western countries, EU-SILC data, Heckman selection model

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1. Introduction

Access to health care – whether individuals who need care get into the health care system or not - is a fundamental determinant of health (Aday and Andersen 1975). Access to health care and universal coverage characterize many health care systems in Europe (McKee et al. 2013; Toth 2016). Nevertheless, more than 1,5 million of European people declared unmet needs for health care at the beginning of the economic crises in Europe (Reeves et al. 2015). The concept of unmet needs, defined as individuals' subjective assessments that they have not received the care that they need (Allin et al. 2010), represents a measure used to monitor the accessibility to health care (Herr et al. 2013; Fjaer et al. 2017). The use of subjective unmet needs for health care allows both to account for those perceived medical needs that do not turn into demand and to investigate the subjective barriers that individuals with health needs meet in accessing to medical care (Cavalieri 2013). The literature explains unmet needs for health care with both the features of the health care system and the characteristics of the individuals seeking care. The former considers availability of service, waiting times before receiving care, referral patterns, booking system, etc… The latter judges patients socio-economic status, lifestyle, health status, social capital and social support (Allin and Masseria 2009; Bryant et al. 2009; Herr et al. 2013).

This study focuses on the patient-side factors that determine access to health care and analyzes the issues of unmet needs (UN) and the raisons for unmet needs for health care (RUN) with a focus on social capital and social support for 14 EU countries using the European Union Statistics on Income and Living Conditions (EU-SILC) dataset carried out in 2006. While in health economics and public health literature there are huge studies who hold the role of social capital and support in improving health status (see Kumar et al. 2012; Fiorillo and Sabatini 2015), in heath care access literature only few papers have paid attention to social capital and social support as predictors (Derose and Varda 2009). Indeed, social capital and social support can play a role in ensuring access to health care services and facilities through economic, material and psychological support.

This paper has two main objectives: first, to study the determinants of UN with a particular hub on social capital and social support; second, to analyze whether social capital and social support are predictors of RUN. In pursuing its aims, the paper uses bivariate probit models to take into account for the possibility of individual selection in unmet needs for health care by a Heckman selection model.

To the best of our knowledge this is the first empirical studies that addresses the role of social capital and social support as predictors of RUN in EU countries.

The remainder of the paper is as follows. ''Related literature and hypotheses' reviews the related literature focusing on social support and social capital and provides our empirical hypotheses. ''Data" and "Methodology'' describes data and the descriptive statistics and sets up the empirical models used in the analysis. The estimation results are presented in ''Results'' and summarized in ''Summary'' and ''Conclusion'' concludes.

2. Related literature and hypotheses

In the health economics and public health literature the positive association between health, social support and social capital, such as social trust, social relations and membership in various kinds of associations, is one of the most robust findings (Fiorillo and Sabatini 2015). Following Song (2011) social support represents various forms of aid individuals receive or perceive from their network members such as emotional support (e.g. care), instrumental support (e.g. goods and services) and informational support (e.g. knowledge and skills). Following Putnam (1993) social capital is usually referred as "features of social organisation such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions" (Putnam 1993, 167). Social capital can be both an individual and collective attribute and presents a cognitive and a structural component (Uphoff 1999; Kawachi et al. 2004). On the one hand, while community social capital regards the aggregate level of trust, interactions and networks in the community, individual social capital indicates the social capital of a particular individual. On the other, cognitive social capital derives from individuals' perceptions resulting in norms, values and beliefs while structural social capital concerns individuals' behaviors and mainly takes the form of networks (Fiorillo 2016). The literature has proposed several mechanisms for the potential positive relationship between social support, social capital and individual health: (1) Social capital and social support may provide information regarding the appropriate doctor and treatment fostering matching procedure, as a result of more intense social relations. (2) Social capital and social support can play a role in ensuring access to health care services and facilities through financial assistance, transportation services and help in dealing with doctors. (3) Social capital and social support may provide moral and effective support which mitigates the psychological distress related to sickness (buffering effect) (Fiorillo and Sabatini 2011).

In the health care access literature, measured also trough unmet needs, much of research has focused on individual characteristics such as sociodemographics and health status. Studies

have reported lower health care access for female, younger, people with secondary and tertiary education, low income, unemployed and poor health status (Ahs and Westerling 2006; Allin et al. 2010; Chaupain-Guillot and Guillot 2015; Litaker and Ezra Love 2005; Lee et al. 2015).

However, recently, there has been increasing interest in the role of social factors, such as social capital and social support, above e beyond individual factors (Derose and Varda 2009). Derose and Varda (2009) present the first systematic review of the literature on the relationship between social support and social capital and access to health care. Focusing on structural and cognitive social capital at individual level Lindstrom et al (2006), for Sweden, and Wan and Lin (2003), for Kazakhstan, find that individual structural and cognitive social capital (membership in organizations and general trust) is positively correlated, respectively, with access to regular doctor and health service use. Moving on aggregate level, Greenberg and Rosenheck (2003) and Hendryx et al. (2002), for US, show that indexes of aggregate structural and cognitive social capital (membership in organizations and general trust) are related, respectively, positively and negatively with the regularity of health care and access problems. Moreover, Perry et al. (2008) for US find a negative relationship between social support and barriers to health care. Finally, Bryant et al. (2009) for Canada show a negative relationship between individual structural social capital (membership in organizations) and unmet healthcare needs while the association between social support and unmet needs is not statistically significant.

The present paper tries to fill two gap existing in previous investigations. The first lack is connected to the researches conducting on European countries. Indeed, there are few previous studies which have analyzed the link between social capital, social support and unmet needs for health care in European countries.

The second gap is associated to the reasons for unmet needs. The literature considers three categories including accessibility (related to cost and proximity), availability (related to timely provision of health service) and acceptability (related to personal attitudes and circumstances) (Pappa et al. 2013). While some studies examine the correlates of these categories (Chen and Hou 2002; Cavalieri 2013; Fjaer et al. 2017), they do not regard social capital and social support as determinants.

Our hypothesis is that networks of social relations are a place to share economic, material and psychological support able to cope with healthcare issues. Indeed, economic support may cover the out-of pocket costs of health care, material support may face lack of time as well as transportation services, while psychological support may overcame "wait and see" attitude in

4

taking medical appointment and treatment. Hence, our prediction is that social capital and social support variables are associated with a lower probability of unmet needs for health care due to economic costs, time availability, proximity and personal attitudes.

3. Data and descriptive statistics

The data come from the Income and Living Conditions Survey carried out by the European Union's Statistics on Income and Living Conditions (EU-SILC) in 2006. The EU-SILC database provides comparable cross-section and longitudinal information on income, poverty, social exclusion and living conditions in the European countries. The 2006 wave of EU-SILC contains cross-sectional data on income, education, health, demographic characteristics, housing features, neighbourhood quality, size of municipality, social and cultural participation. Information on social and cultural participation regards respondents aged 16 and above. No panel dimension is available.

We accomplish the empirical investigation on 14 Member State of the EU: Austria (AT), Belgium (BE), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Greece (GR), Ireland (IR), Italy (IT), the Netherlands (NL), Portugal (PT), Sweden (SE), United Kingdom (UK). These EU countries shared Universal (or near universal) Health Coverage (UHC) in 2006 (OCSE 2013). The UHC is in place where (i) there is legislation explicitly stating that the entire population is covered by a defined health plan and (ii) that population has access to at least skilled attendance at birth and 90% of them have insurance coverage (Stuckler et al. 2010; McKee et al. 2013).

Unmet needs

Access to health care is addressed through a question on subjective unmet needs for health care. The phrasing is as follows: "Was there any time during the last twelve months when, in your opinion, you needed a medical examination or treatment for a health problem but you did not receive it?". Individual who answers in a positive way – "Yes, there was at least one occasion when (he/she) really needed examination or treatment but did not" – is then asked to report the main reason why he/she did not access to health care. Eight possible answers are provided: (1) "Could not afford to (too expensive)", (2) "Waiting list"; (3) "Could not take time because of work, care for children or for others"; (4) "Too far to travel/no means of transportation"; (5) "Fear of doctor/hospitals/examination/ treatment"; (6) "Wanted to wait and see if problem got better on its own"; (7) "Didn't know any good doctor or specialist"; (8) "Other reasons".

Our first dependent variables is *Unmet needs* coded 1 if the individual reported that, at least once in the past 12 months, he/she needed a medical examination or treatment but did not consult, whatever the reason was. Furthermore, because our hypothesis is that social capital and social support provide economic, material and psychological support able to cope with healthcare issues, we restrict the analysis to the reasons of unmet needs related to cost, proximity, personal attitudes and circumstances. Hence, we build the following variables:

Expansive coded 1 if the reason for unmet needs is "Could not afford to (too expensive)".

No time equal 1 if the reason for unmet needs is "Could not take time because of work, care for children or for others".

Distance coded 1 is the reason for unmet needs is "Too far to travel/no means of transportation".

Wait and see equal 1 if the reason for unmet needs is "Wanted to wait and see if problem got better on its own".

Social capital and social support

Social capital and social support are measured through the module on social participation in which an individual is asked to report frequency of getting/being in contact with relative and friends, ability to ask for help, participation in formal voluntary activities and participation in activities of other formal organizations.

Four (structural) social capital variables are built: *Relatives*, *Friends*, *Volunteering* and *Group*. *Relatives* and *Friends* are dummy variable that are equal to 1 if the respondent got, respectively, with relatives and friends every day during a usual year. *Volunteering* is a dummy variable that is equal to 1 if the respondent worked unpaid for charitable organizations, groups or clubs during the previous twelve months. *Group* is a dummy variable that is equal to 1 if the respondent, during the last twelve months, participated in an activity of at least of the following organizations: political parties or trade unions, professional, religious recreational and other organizations.

Social support is evaluated considering the individual ability to ask for help whether the individual has needed it or not. *Ability to ask* is a dummy variable equal to 1 if the respondent had the ability to ask for help from any relative, friend or neighbor (who do not live in the same household as the respondent should be considered).

Control variables

In order to account for factors that may influence simultaneously health care access and social capital and support, we include in the analysis a full set of control variables: demographic characteristics as well as socioeconomic features.

We account for gender (*female*), marital status (*married*), age (*age 30-39*, *age 40-49*, *age 50-59*, *age 60-69*, *age 70-79*, *age 80*), the number of individuals living in the household (*household size*) and the respondent country of birth (*EU birth*). Based on the International Standard Classification of Education (ISCED), three indicators are built to represent the level of educational attained (*low secondary*, *secondary*, and *tertiary*), while four variables account for economic feature: the natural logarithm of annual net household income (*household income(ln)*), tenure status (*homeowner*), arrears on utility bills (*arrears utility*) and incapacity to face unexpected financial expenses (*unexpected expenses*). We further control for self-defined current economic status (*employed*, *unemployed*, *inactive*) and for health status: self-perceived good health (*SPGH*), self-perceived bad health (*SPBH*), chronic (long-standing) illness or condition (*CC*) and limitations in activities of daily living (*limits ADLs*). We also control for categories of the size of municipality (*densely populated area*, *intermediate area*) and for country fixed effects to account for the high heterogeneity in health care access existing in EU countries.

Sample selection variables

Individuals' recognition of their needs for services and their decisions to seek medical care form the first step in the process of accessing services. The probability of utilising care services depends on the balance between individuals' perceptions of their needs and their attitudes, beliefs and previous experiences with health services. Access to health services implies that individuals accept their need for services and acknowledge socially generated resources that they are willing to utilise. These processes of access are subject to social and cultural influences as well as environmental constraints (Gulliford et al. 2002). Hence, in order to identify the exclusion variables that may account for the possibility that an individual selection himself in unmet needs for health care answers (selection equation), we use two variables of subjective perception of the quality of the surrounding environment where an individual lives - *noise* and *crime* – and a variable that considers general practitioners (per 1000 population), *Gps*. These variables are supposed to discourage health care access and uncorrelated with the reasons of unmet needs of health care.

Descriptive statistics

The international sample includes about 260000 respondents. After removing not selected respondents and missing variables (about 5% of the sample) on the key dependent and independent variables, the final data-set is a cross-section sample of about 205000 observations of which about 12000 regards unmet needs for health care.

Table 1 presents the summary weighted statistics of the unmet needs, social capital and social support variables while Table 2 reports the weighted correlation matrix. In the whole sample 7 percent of individuals aged 16 and over indicated that, at least once in the last twelve months, they needed a medical examination or treatment but they did not receive it. In terms of the key independent variables, respectively 83 percent of individuals have the ability to ask for help (from any relative, friend or neighbor), 57 and 63 percent of individuals meet relatives and friends every day during a usual year, and 43 percent participate in an activity of at least one organizations. Finally, 8 percent of the sample supply volunteering in formal organizations. Note that the dependent variable and the key independent variables are negatively correlated (Table 2).

Among respondents who experienced unmet needs, one-third reported that they did not access care because *Expansive*. The other reasons quoted are *Wait and see* (21%), *No time* (12,9%). Less mentioned is *Distance* (Table 3). The weighted correlation matrix between reasons of unmet needs and social capital and social support is shown in Table 4. Table 5 presents weighted descriptive statistics of control and sample selection variables.

4. Methodology

To study the relationship between social capital, social support and reasons for unmet needs we need to reflect on the self-selection of an individual in the health care services. An individual may choose to stay out of the health care services because of perceived problems regarding the quality of the surrounding environmental where he/she lives. Thus we use a selection model which takes into account the possibility of selection of an individual into health care services (selection into the sample). The model consists of two probit equations: unmet need (UN) equation and reasons for unmet need (RUN) equation (Maddala 1983; Cameron and Trivedi 2005; Green 2012).

Table 1. Weighted descriptive statistics of unmet needs, social capital and social support

	Mean	Std. dev.	Min	Max
Unmet needs	0.071	0.257	0	1
Relatives	0.571	0.494	0	1
Friends	0.634	0.482	0	1
Volunteering	0.083	0.275	0	1
Group	0.435	0.496	0	1
Ability to ask	0.843	0.363	0	1
Observations	205832			

Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Table 2. Weighted correlation between unmet needs, social capital and social support

	Relatives	Friends	Volunteering	Group	Ability to ask
Unmet needs	-0.036**	-0.045**	-0.008**	-0.021**	-0.009**

Note: ** Significant at 5% level
Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Table 3. Weighted descriptive statistics of reasons for unmet needs

	Mean	Std. dev.	Min	Max
Expansive	0.326	0.469	0	1
No time	0.129	0.336	0	1
Distance	0.013	0.113	0	1
Wait and see	0.208	0.406	0	1
Observations	11783			

Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Table 4. Weighted correlation between reasons of unmet needs, social capital and social support

	Relatives	Friends	Volunteering	Group	Ability to ask
Expansive	-0.007	-0.064**	-0.065**	-0.094**	-0.038**
No time	-0.013	-0.062	0.027**	0.024**	0.082**
Distance	-0.014	0.006	0.007	0.009	0.010
Wait and see	-0.011	0.018	0.006	0.031**	0.129**

Note: ** Significant at 5% level
Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Suppose that UN_i^* is a dichotomous latent variable associated with the decision to access in health care services. This can be expressed as

$$UN_i^* = Z_{1i}\beta_1 + \alpha SC_i + \theta SS_i + \varepsilon_{1i} \tag{1}$$

Table 5. Weighted descriptive statistics of control and sample selection variables

	Mean	Std. dev.	Min	Max
Female	0.527	0.499	0	1
Married	0.541	0.498	0	1
Age 30-39	0.178	0.382	0	1
Age 40-49	0.187	0.390	0	1
Age 50-59	0.154	0.361	0	1
Age 60-69	0.136	0.343	0	1
Age 70-79	0.103	0.305	0	1
Age 80	0.051	0.220	0	1
Household size	2.765	1.327	1	16
EU birth	0.013	0.113	0	1
Low secondary education	0.226	0.418	0	1
Secondary education	0.393	0.488	0	1
Tertiary education	0.231	0.422	0	1
Household income (ln)	10.130	0.719	1.098	14.664
Homeowner	0.666	0.472	0	1
Arrears utility	0.063	0.243	0	1
Unexpected expenses	0.307	0.461	0	1
Employed	0.518	0.500	0	1
Unemployed	0.053	0.224	0	1
Inactive	0.205	0.404	0	1
SPGH	0.652	0.476	0	1
SPBH	0.100	0.298	0	1
CC	0.316	0.465	0	1
Limits ADLs	0.254	0.435	0	1
Densely populated area	0.499	0.500	0	1
Intermediate area	0.283	0.450	0	1
Noise	0.250	0.433	0	1
Crime	0.170	0.375	0	1
GPs[a]	0.972	0.365	0.3	2.1
AT	0.025	0.158	0	1
BE	0.032	0.175	0	1
DK	0.010	0.100	0	1
ES	0.136	0.343	0	1
FI	0.008	0.091	0	1
FR	0.052	0.222	0	1
GR	0.034	0.182	0	1
IR	0.008	0.088	0	1
IT	0.188	0.390	0	1
NL	0.027	0.162	0	1
PT	0.033	0.179	0	1
SE	0.016	0.127	0	1
UK	0.167	0.373	0	1
Observations	205832			

Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)
   a. OECD (2007) (Author computations)

where Z_{1i} is a vector containing individual characteristics that influence the decision to enter in health care services, SC_i, SS_i are individual social capital and social support variables, β_1, α and χ are vectors of parameters to be estimated and ε_{1i} is a random error term. UN_i^* is unobservable but relates to the observable binary variable UN_i, that takes the value of 1 if the individual chooses to stay out of the health care services and 0 otherwise.

The reason for unmet need equation can be written as

$$RUN_i^* = Z_{2i}\beta_2 + \delta SC_i + \phi SS_i + \varepsilon_{2i} \tag{2}$$

where RUN_i^* is the dichotomous latent variable indicating the reason for unmet needs for health care; SC_i, SS_i are individual social capital and social support variables; Z_{2i} is a matrix of all control variables. β_2, δ, ϕ, are parameters to be estimated and ε is a random-error term.

Equation (2) is the equation of primary interest. However, RUN_i is observed only when $UN_i = 1$. Hence, Fitting (2) to the observed data raises the question of selection bias. The proposed solution involves two steps

Step 1. Estimate the probit model (1) by likelihood techniques.

Step 2. Fit the expanded probit model

$$P(RUN_i = 1) = \Phi(Z_{2i}\beta_2 + \delta SC_i + \phi SS_i + \varphi\lambda_i) \tag{3}$$

to the data on individuals i with $UN_i = 1$. This time $\lambda_i = \phi(Z_{1i}\beta_1) / \Phi(Z_{1i}\beta_1)$ is the inverse Mills ratio for unmet need equation where $\phi(.)$ is the normal probability distribution and $\Phi(.)$ is the normal cumulative distribution.

5. Results

In this section we present estimations of the empirical models described in Section 4. We start by estimating the unmet need equation (1) and we compute the inverse Mills ratio. The estimates are shown in Table 6. Then we fit the expanded probit model (3) for *Expansive*, *No time*, *Distance* and *Wait and see*. For all estimates, we compute the robust standard errors.

5.1. Unmet needs for health care

Table 6. Results for unmet need equation

	dy/dx	Robust Std. Err.
Noise	0.013***	0.001
Crime	0.010***	0.001
GPs	-0.101***	0.004
Relatives	-0.002**	0.001
Friends	-0.006***	0.001
Volunteering	0.005***	0.001
Group	0.006***	0.001
Ability to ask	-0.010***	0.002
Female	0.001	0.001
Married	-0.001	0.001
Age 30-39	0.012***	0.002
Age 40-49	0.010***	0.002
Age 50-59	0.000	0.002
Age 60-69	-0.006***	0.002
Age 70-79	-0.011***	0.002
Age 80	-0.016***	0.002
Household size	0.000	0.000
EU birth	0.001	0.003
Low secondary education	-0.005***	0.001
Secondary education	-0.005***	0.001
Tertiary education	-0.003**	0.001
Household income (ln)	-0.006***	0.001
Homeowner	-0.002**	0.001
Arrears utility	0.045***	0.002
Unexpected expenses	0.024***	0.001
Employed	0.015***	0.002
Unemployed	0.013***	0.003
Inactive	0.003**	0.002
SPGH	-0.026***	0.001
SPBH	0.003**	0.001
CC	0.003***	0.001
Limits ADLs	0.025***	0.002
Densely populated area	0.002**	0.001
Intermediate area	0.001	0.001
AT	-0.010***	0.002
BE		
DK	-0.038***	0.001
ES	-0.023***	0.001
FI	-0.039***	0.001
FR	0.063***	0.008
GR	-0.041***	0.001
IR	-0.039***	0.001
IT	-0.025***	0.001
NL	-0.042***	0.001
PT	0.047***	0.006
SE	-0.009***	0.002
UK	-0.038***	0.001
Observations	190486	
Pseudo R^2	0.121	
Log likelihood	-36141.52	

Note: *, **, *** Significant at 10, 5 and 1 percent level, respectively.
Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Looking first to the demographic and socioeconomic characteristics, gender and marital status are not statistically significant. Same findings are found for household size and country of origin.

The probability of reporting unmet needs is negatively and significantly correlated with age. The youngest age groups remain at the highest risk of unmet needs. By contrast, old people are more likely to see a doctor when they feel they need do.

The probability of not visiting a doctor when needed is weaker among individuals with higher education than individuals with lower education. Moreover, individuals with tertiary education have higher likelihood of declaring unmet needs than individuals with secondary education. Following the literature a possible explanation is that individuals with tertiary education have greater time constrains which may lead them to postpone medical visits and treatments (Chaupain-Guillot and Guillot 2015).

The likelihood to forgo medical examination or treatment is correlated with the economic situation of the household. Individuals living in higher-income household with home ownership are less likelihood to report unmet medical care. Individuals who have arrears on utility bills and are unable to face unexpected financial expenses present, respectively, a 4.5 and 2.4 percent higher probability to declare unmet needs for medical care. Hence, the poor household economic situation is a burden in the healthcare access. Furthermore, the likelihood to declare unmet needs for medical care is also positively correlated with occupational status: employed, unemployed and inactive. While for employed a feasible explanation of unmet needs may be that they have "time constrains", for unemployed unmet needs may be due to economic burden (Lee et al. 2015). Finally, the probability of declaring unmet needs has a strong positive relationship with poor perceived health. Individuals perceiving to be in bad or very bad health are more likely to declare unmet medical need (the opposite occurs for individuals who perceive good and very good health). Having chronic conditions is also positively correlated with the probability of experiencing an unmet medical need, as the fact of being hampered in daily activities because of health problems. These results may reveal the fact that less healthy people have multiple or recurrent care needs but they might decide to forgo or delay some examinations or treatments for economic burden.

These findings on demographic and socioeconomic characteristics are overall consistent with previous studies mentioned in Section 2 (Ahs and Westerling 2006; Allin et al. 2010; Chaupain-Guillot and Guillot 2015; Litaker and Ezra Love 2005; Lee et al. 2015).

Looking to social capital and social support, we find that all variables are statistically significant but with mixed sign. On one hand, individuals with higher frequency of visiting

relatives and friends, and the higher ability to ask for help have smaller probability of reporting unmet needs. On the other hand, individuals who offer voluntary work and participate in at least one formal organizations exhibit higher likelihood to forgo medical examination or treatment. The former findings may find an explanation in the observation that networks of social relations (friends and family) are a place to share economic, material and psychological support able to cope with healthcare issues. By contrast, volunteering and participation in formal organization may operate as temporal, economic and psychologic constrains in health care access. We test these potential explanations in section 5.1

Looking to sample selection variables, we show that all variables are statistically significant with different sign. The quality of the surrounding environment where the individuals live, measured by *noise* and *crime*, enter in the unmet need equation with positive sign. This means the lower is perceived the environmental quality where an individual lives higher is the likelihood of not visiting a doctor when needed. Instead, the number of general practioners (per 1000 inhabitants) presents a negative sign, indicating that as the number of *GPs* rises the probability of declaring unmet needs decreases.

Finally, looking to country fixed effect, taking Germany as reference category, we show that France and Portugal have higher probability of unmet need, respectively, with 6.3 and 4.7 percent while the Netherlands and Greece the lower likelihood (4.2 and 4.1 percent).

5.1. Reasons for unmet needs

Regarding demographic and socioeconomic characteristics, female is found positively associated with *Expansive* and negatively related to *Wait and see*. These evidences show that women are more likely to face unmet needs due to economic cost but they are less willing to wait and see when they need to visit a doctor. The marital status is correlated with negative sign to *Distance*, indicating that a spouse is a material support when needed. Age is shown negatively associated with the likelihood of declaring unmet needs due to economic costs (70 years and over) and time availability (50 years and over). These results seem point out that old people have more economic and time availability than younger individuals.

Table 7. Results regarding reasons for unmet needs

	Expansive		No time		Distance		Wait and see	
	dy/dx	Robust Std. Err.	dy/dx	Robust Std. Err.	dy/dx	Robust Std. Err.	dy/dx	Robust Std. Err.
Mills ratio	0.039	0.059	-0.049	0.037	-0.000	0.010	0.157***	0.048
Relatives	0.017*	0.009	-0.012**	0.006	-0.004***	0.002	-0.007	0.007
Friends	-0.021**	0.010	-0.013**	0.006	0.001	0.002	0.004	0.008
Volunteering	0.012	0.018	-0.013	0.009	-0.000	0.003	0.010	0.013
Group	-0.015	0.010	-0.000	0.006	0.002	0.002	0.010	0.008
Ability to ask	-0.102***	0.017	0.028***	0.009	0.004*	0.002	0.028**	0.012
Female	0.034***	0.009	0.007	0.006	0.001	0.001	-0.021***	0.007
Married	-0.010	0.011	0.007	0.007	-0.005***	0.002	-0.002	0.009
Age 30-39	0.019	0.019	0.003	0.011	0.005	0.004	-0.010	0.014
Age 40-49	0.008	0.018	-0.007	0.010	0.003	0.003	0.006	0.014
Age 50-59	0.021	0.019	-0.039***	0.009	0.002	0.003	-0.004	0.014
Age 60-69	0.001	0.022	-0.049***	0.011	-0.000	0.036	-0.009	0.017
Age 70-79	-0.070***	0.022	-0.059***	0.012	0.003	0.005	0.003	0.022
Age 80	-0.130***	0.020	-0.039*	0.019	0.018**	0.012	0.021	0.031
Household size	0.015***	0.004	-0.000	0.003	-0.002***	0.001	-0.001	0.003
EU birth	0.083**	0.042	0.006	0.023	0.011*	0.009	-0.044*	0.024
Low secondary education	-0.020	0.014	-0.005	0.010	-0.002	0.002	-0.005	0.012
Secondary education	-0.020	0.014	0.008	0.010	-0.003	0.002	-0.013	0.012
Tertiary education	-0.051***	0.016	0.027**	0.012	-0.005**	0.002	-0.017	0.013
Household income (ln)	-0.070***	0.009	0.021***	0.006	0.003*	0.001	-0.001	0.007
Homeowner	-0.030***	0.011	0.006	0.007	-0.000	0.002	0.008	0.009
Arrears utility	0.128***	0.027	-0.031**	0.013	0.000	0.004	0.005	0.021
Unexpected expenses	0.193***	0.017	-0.042***	0.011	0.001	0.003	-0.015	0.014
Employed	-0.050**	0.020	0.128***	0.015	-0.007**	0.004	0.002	0.017
Unemployed	0.042*	0.026	0.039*	0.023	-0.006**	0.002	-0.022	0.019
Inactive	-0.034**	0.016	0.056***	0.018	-0.001	0.002	-0.002	0.015
SPGH	-0.011	0.019	0.010	0.012	-0.000	0.003	-0.020	0.015
SPBH	0.058***	0.015	-0.024**	0.010	0.003	0.002	-0.074***	0.010
CC	0.020*	0.012	-0.011	0.007	-0.000	0.002	-0.018*	0.009
Limits ADLs	0.019	0.018	-0.013	0.011	0.001	0.003	0.032**	0.015
Densely populated area	0.018	0.012	0.013*	0.008	-0.012***	0.002	-0.041***	0.009
Intermediate area	0.033***	0.012	0.003	0.008	-0.006***	0.001	-0.030***	0.009
AT	-0.162***	0.021	0.218***	0.064	0.005	0.014	-0.088***	0.022
BE	0.065	0.104	0.048	0.084	0.038	0.061	-0.147***	0.008
DK	-0.077	0.062	0.581***	0.100	0.003	0.017	-0.154***	0.004
ES	-0.272***	0.007	0.227***	0.021	0.006	0.005	-0.008	0.014
FI	-0.058	0.038	-0.092***	0.010	-0.007	0.002	-0.163***	0.004
FR	-0.076***	0.023	0.124***	0.033	0.023**	0.015	-0.093***	0.014
GR	0.150***	0.029	0.071***	0.023	0.015**	0.009	-0.155***	0.006
IR	-0.026	0.041	-0.027	0.031	0.004	0.010	-0.150***	0.006
IT	-0.012***	0.017	0.073***	0.015	-0.002	0.003	-0.164***	0.009
NL	-0.196***	0.013	0.108**	0.062	-0.001	0.008	-0.159***	0.004
PT	0.128***	0.041	0.043	0.032	0.006	0.009	-0.169***	0.005
SE	-0.198***	0.011	0.057***	0.021	-0.002	0.003	0.030	0.022
UK	-0.250***	0.006	-0.070***	0.011	-0.003	0.004	-0.149***	0.007
Observations	10646		10646		10646		10646	
Pseudo R^2	0.291		0.177		0.130		0.139	
Log likelihood	-4626.28		-3675.44		-700.71		-4555.63	

Note: *, **, *** Significant at 10, 5 and 1 percent level, respectively.
Source: EU-SILC UDB 2006 – version 1 of March 2008 (Author computations)

Size of the household is found to be positively associated to *Expansive* and negatively correlated to *Distance*. These findings seem to indicate that living in large family generates to opposite effects: it increases the household costs of health care and it decreases the distance-related costs for accessing to health care. Being born in EU countries is found to have a positive correlation with *Expansive* and *Distance* while a negative relationship with *Wait and see*. So, individuals born in EU countries have a higher likelihood of declaring unmet needs due to economic costs and proximity but a smaller probability due to personal attitudes.

Tertiary education and household income are both found negatively correlated to *Expansive* and positively associated to *No time*. Hence, people with more individual and household economic resources are less likelihood to face unmet needs due to economic constrains. However, more time spend to get economic resources means less time to use for visiting a doctor when needed. These explanations seem also supporting results on employed, which is negatively related to *Expansive* and positively to *No time*. Furthermore, tertiary education and homeowner are found negatively related, respectively, to *Distance* and *Expansive*. Financial constrain, i.e. arrears utility and unexpected expenses, are found positively correlated to the probability of unmet needs due to costs and negatively related to the likelihood of not visiting a doctor when needed for lacking of time availability. Unemployed is shown positively correlated with a higher likelihood of declaring unmet needs for cost and lack of time and with a smaller probability of unmet needs for proximity. Inactive is found to be associated with *Distance* and *No time*, respectively, with negative and positive sign.

In terms of health status, self perceived bad heath and chronic conditions are associated with higher probability to have unmet needs due a economic costs. Moreover, self perceived bad health is related to a lower probability of declaring unmet needs for lacking of time and personal attributes. The last result is also found for chronic conditions. Finally, limitations in ADLs is shown to be associated with higher likelihood of being unmet needs due to wait and see.

The findings indicating that female, younger, individuals with tertiary education, low income, financial constrain, unemployed and low health status present a higher likelihood of declaring unmet needs due to economics costs (accessibility) are in line with previous studies (Cavalieri 2013; Fjaer et al. 2017).

Looking to social capital and social support, the frequency of visiting friends and ability to ask for help are negatively correlated with the likelihood of declaring unmet needs due to economic costs, respectively, at 2.1 and 10.2 percent, instead the frequency of visiting

relatives is positively associated with the probability of stating unmet needs due to economic costs at 1.7 percent. These results seem to indicate that friendship and ability to ask are important features in shearing economic support able to cope with economic costs related to healthcare. Instead, visiting relatives seems to rise economic constraints of visiting a doctor when needed.

The frequency of visiting relatives is correlated with a lower probability to have unmet needs due to time availability and distance while ability to ask is found correlated with a 2.8 percent higher likelihood of not visiting a doctor due to time constrains. The former findings indicate that relatives are a place to share material support in case of healthcare issues. The latter results show that ask for help is a time consuming activity which has the effect of postponing medical care.

Furthermore, ability to ask is found correlated with a 2.8 percent higher probability of declaring unmet needs due to wait and see. This result seems point out that ask for help has another downside: individuals who ask for help can be persuaded to postpone a medical examination or treatment while waiting and seeing what happens.

Volunteering and participation in formal group are never statistically significant in RUN equations. So, *Volunteering* and *Group* are not correlated with unmet needs due to economic costs, time availability, proximity and wait and see. As doing unpaid work and participate in formal group is found significantly correlated with higher likelihood of declaring (overall) unmet needs, we have to conclude that other personal attitudes and motivations are driving the results in UN equation.

The inverse Mills ratio marginal effect is only statistically significant in *Wait and see* equation and it is positive meaning that there is an underestimation of the probability of declaring unmet needs due to personal attitudes if we do not account for the possibility that an individual selection himself in unmet needs for health care.

Looking to country fixed effect, taking Germany as reference category, Spain and United Kingdom have lower probability of unmet needs due to economic costs, respectively, with 27.2 and 25.0. Denmark and Spain show higher probability of declaring unmet needs due to time constrain with 58.1 and 22.7 percent while United Kingdom exhibits lower probability with 0.70 percent. Portugal and Italy present lower likelihood of unmet needs due wait and see with 16.9 and 16.4 percent.

6. Summary

The aims of the present analysis were to identify the role of social capital and social support in overall unmet needs for health care and in the main causes for unmet needs, considering the demand side. The analysis identified a positive role for the frequency of contact with relatives and friends and for the ability to ask for help but not for volunteering and participation in formal group. In UN equation, the frequency of contact with relatives and friends and the ability to ask for help are correlated with a lower probability of not visiting a doctor when needed. In RUN equations, the frequency of contact with friends and the ability to ask for help are related with a lower probability of unmet needs due to economic costs, while the frequency of contact with relatives is related with a lower probability of unmet needs due to time availability and distance. However, the ability to ask for help is also correlated with a higher probability of not having medical care due to time availability and wait and see. Nevertheless, the overall marginal effects of *Ability to ask* is that to reduce the probability of unmet need for healthcare. These findings seem to support the hypothesis according to which the network of social relations (family, friends and ability to ask) is a place to share economic and material support able to cope with healthcare issues. However, the results seem also to point out that ask for help is a time consuming activity as well as a psychological activity whose consequences are to postpone medical care.

The results on demographic and socioeconomic characteristics confirm for the Western EU countries the findings of previous studies. Young individuals, with tertiary education, economic and financial constraints, unemployed and in poor health status present a higher likelihood of reporting difficulties in meeting their health care needs.

For women, people living in large household, with economic and financial constraints, unemployed and in poor health status the higher probability of declaring difficulties in meeting their health care needs is due to economic costs. Additionally, for people with tertiary education, high income and employed the higher probability of not visiting a doctor when needed is due to time availability.

The objective of facilitating access to better and safer health care for Union citizens is a part of the EU Health Programme which is the main instrument used by European Commission to implement the EU health. In spite of the European Commission efforts, the findings of this paper showed, first of all, that are still high the health inequalities among EU citizens and, secondly, that it is relevant to consider economic and social factors that contribute in important ways to the difficulties EU citizens encounter in accessing to health

care. Hence, EU health policies should also look to the demand side of health care access with policy designed to support individuals to participate fully in employment and social life.

A limitation of the paper is reverse causality. Individuals who do not visit a doctor when needed might be forced to use their network of social relations against their will. Because the paper uses cross-sectional data it cannot rule out the possibility of reverse causality in driving the findings. Hence, it cannot prove causality.

7. Conclusion

Even though access to health care and universal coverage characterize many health care systems in EU countries, economic costs and time availability appeared as barrages for European citizens in accessing to health care. The network of social relationships (family, friends and ability to ask) to which the individual is part plays a role in sharing economic and material support able to cope with healthcare barriers.

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