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Healthcare use among people with diabetes mellitus in Europe: a population-based cross-sectional study

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ABSTRACT

Objective This study aimed to determine the association of health determinants, lifestyle and socioeconomic variables on healthcare use in people with diabetes in Europe.

Design A cross-sectional study was conducted using data from the European Health Interview Survey wave 2 (ie, secondary analysis).

Setting The sample included data from 25 European countries.

Participants The sample included 16 270 patients with diabetes aged 15 years or older (49.1% men and 50.9% women).

Results The survey data showed that 58.2% of respondents had seen their primary care physician in the past month and 22.6% had been admitted to the hospital in the past year. Use of primary care was associated with being retired (prevalence ratio (PR) 1.13, 95% CI 1.07 to 1.19) and having very poor self-perceived health (PR 1.80, 95% CI 1.51 to 2.15), long-standing health problems (PR 1.14, 95% CI 1.04 to 1.24), high blood pressure (PR 1.06, 95% CI 1.03 to 1.10) and chronic back pain (PR 1.07, 95% CI 1.04 to 1.11). Hospital admission was associated with very poor self-perceived health (PR 3.03, 95% CI 2.14 to 4.31), accidents at home (PR 1.54, 95% CI 1.40 to 1.69), chronic obstructive pulmonary disease (COPD) (PR 1.34, 95% CI 1.22 to 1.47), high blood pressure (PR 1.08, 95% CI 1.01 to 1.17), chronic back pain (PR 0.91, 95% CI 0.84 to 0.98), moderate difficulty walking (PR 1.33, 95% CI 1.21 to 1.45) and severe difficulty walking (PR 1.67, 95% CI 1.51 to 1.85).

Conclusions In the European diabetic population, the high cumulative incidences of primary care visits and hospital admissions are associated with labour status, alcohol consumption, self-perceived health, long-standing health problems, high blood pressure, chronic back pain, accidents at home, COPD and difficulty walking.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ People with diabetes have a worse quality of life and a greater presence of comorbidities, which are associated with a higher health cost. However, no research on the use of healthcare in people with diabetes in Europe has been published to date.

WHAT THIS STUDY ADDS

⇒ Factors associated with high cumulative incidences of use of health services in the European diabetic population.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

⇒ Our results show a greater use of health services by the European diabetic population and suggest that interventions aimed at lifestyle focused on specific sectors of the population could be associated with an improvement in the quality of life of people with diabetes and promote more efficient use of health services in Europe.

INTRODUCTION

Factors contributing to the increasing incidence of diabetes include sedentary lifestyle, obesity and population ageing.[1] In this regard, the disease has been associated with a poorer quality of life, physical inactivity, obesity and other comorbidities, as well as to non-modifiable factors such as advanced age and male sex.[2]

Diabetic mellitus (DM) is a chronic disease that constitutes a considerable public health problem, negatively impacting on patients' quality of life and influencing healthcare policy.[2 3] The worldwide prevalence of diabetes and impaired glucose tolerance in adults has increased in the past few decades.[2 4 5] According to recent estimates by the International Diabetes Federation, in 2019, there were 463 million people living with diabetes worldwide (9.3% of adults aged between 18 years and 99 years), and this figure is set to reach 578 million (10.2%) by 2030 and 700 million (10.9%) by 2045.[5] Moreover, half of people with diabetes (50.1%) are undiagnosed.[5] This high prevalence has important social, financial and developmental repercussions, particularly in low-income and middle-income countries.[6] Diabetes is among the 10 leading causes of death in adults, and was responsible for an estimated 4.2 million deaths worldwide in 2019.[5] As a result, the impact of diabetes on healthcare systems and

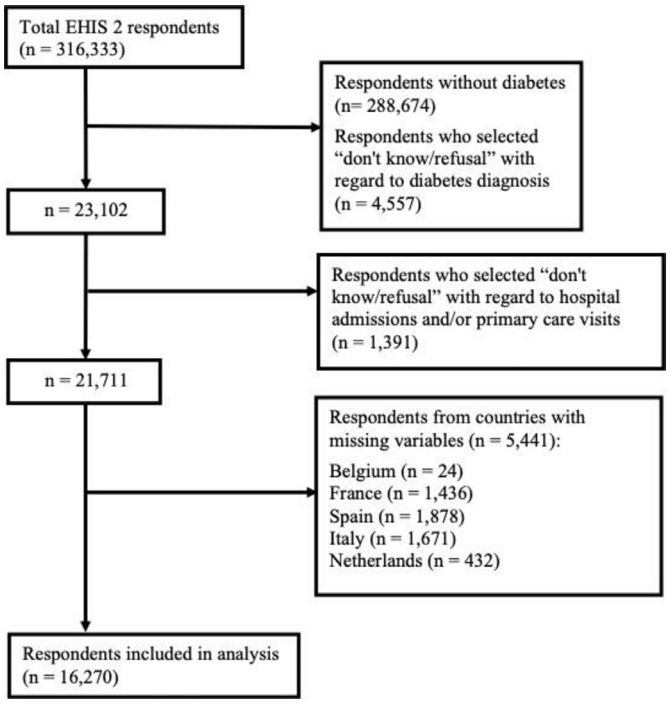

Figure 1 Inclusion of patients in the analysis. EHIS, European Health Interview Survey.

national economies is of increasing concern. In 2019, the global healthcare expenditure linked to diabetes was US$760 billion, and this sum is projected to reach 825 billion by 2030 and 845 billion by 2045.[5]

The main social repercussions of diabetes are related to use of healthcare and social resources, as the medical costs of diabetes patients are three times that of people without the disease.[7–9] In addition, the increase in prevalence, combined with the increase in medical cost per capita, suggests that the burden of diabetes on health systems will continue to increase.[10] This disease represents a public health challenge as it requires more efficient social and healthcare strategies. This justifies analysis of healthcare use among patients with diabetes, with a view to guiding health policies and ensuring appropriate allocation of healthcare resources.[9]

The costs traditionally associated with diabetes include medical visits, emergency care, hospitalisation and medicines,[11] and various studies have shown that the presence of complications and hospital admission are the main cost factors.[9 12–14] Indeed, costs associated with hospitalisation account for more than two-thirds of the total costs attributable to diabetes.[8 14–16] People with diabetes are at increased risk of hospitalisation because of macrovascular complications (eg, coronary artery, cerebrovascular and peripheral vascular disease) and microvascular complications (eg, retinopathy, nephropathy and neuropathy).[17 18] Within this population, type 2 DM accounts for 90% of all cases of DM[19] and is usually managed in primary care settings, saving many of these costs. For example, a larger UK-enhanced primary care-based DM cost comparison analysis confirms significant cost savings, likely driven by economies of scale.[20] Hence, these benefits could be multiplied if services are implemented at a nationwide level.

Although the universal healthcare model predominates in Europe, people with diabetes show different patterns of healthcare use, depending on their level of education or economic status.[21 22] Low socioeconomic status has been associated with a higher incidence of diabetes,[7] poorer healthcare, worse management of complications and greater use of healthcare services.[21–23] To achieve greater health equity, it is crucial to measure and interpret the socioeconomic inequalities related to health and healthcare.[8 16 22] To date, however, there is a lack of published research on healthcare use in people with diabetes,[24] and most studies do not take into account healthcare use indirectly attributable to the disease (eg, for mental health comorbidities in the diabetic population).[25]

To harmonise health data and obtain common indicators, the European Union (EU) statistical office (Eurostat) decided to implement the European Health Interview Survey (EHIS). Thus far, no published studies have used EHIS data to analyse indicators of health and healthcare use in people with diabetes. This study aims to determine how health determinants, lifestyle and socioeconomic variables relate to healthcare use (primary care visits and hospital admissions) in people with diabetes in Europe.

METHODS

Sample

We performed a population-based cross-sectional study (ie, secondary analysis) to identify determinants of health, lifestyle and socioeconomic variables associated with healthcare use in people with diabetes in Europe. The data used for this purpose were obtained from the results of EHIS wave 2, provided by Eurostat.[26] The main goal of this health questionnaire, administered through a computer-assisted personal interview, is to obtain harmonised data on EU citizens' health status, lifestyles and other health determinants, and on the use they make of healthcare services. In accordance with Commission Regulation (EU) No 141/2013, the survey was carried out in the following countries: Belgium and the UK in 2013; Bulgaria, Czech Republic, Estonia, Greece, Spain, France, Croatia, Italy, Cyprus, Latvia, Lithuania, Luxembourg, Hungary, Malta, Netherlands, Austria, Poland, Portugal, Romania, Slovenia, Slovakia, Finland and Sweden in 2014; and Denmark, Germany, Ireland, Italy, Iceland and Norway in 2015.[27]

Eligible survey respondents were non-institutionalised adults (aged 15 years or older) living in private households. The inclusion criteria for our study were being diabetic and having answered either yes or no (as opposed to 'don't know/refusal') to the questions regarding primary care visits in the past month and hospital admissions in the past year. In Belgium, France, Spain, Italy and the Netherlands, some of the variables required to meet the objective of this study were missing from the

administered questionnaire; as a result, all participants residing in these countries were excluded from our population.

Study variables

The independent variables included in this study are shown in online supplemental table S1, grouped into sociodemographic variables, health determinants and healthcare use. The two dependent variables were primary care visits in the past month (yes/no) and hospital admissions in the past year (yes/no).

Statistical analysis

We performed a descriptive analysis by calculating the frequencies of all qualitative variables and the minimum, maximum, mean and SD of all quantitative variables. The factors associated with primary care visits and hospital admissions were analysed using contingency tables, applying the χ^2 test for the categorical variables and the Student t-test for the quantitative variables. To estimate magnitudes of association, we fitted Poisson multivariate models with robust variance.[28] The possible overdispersion of the models was evaluated. Prevalence ratios (PRs) were calculated with the corresponding 95% CIs. We applied a stepwise variable selection process based on the Akaike information criterion, taking into account the possible multicollinearity of the variables. Goodness-of-fit indicators and the area under the receiver operating characteristic curve were also calculated. As this analysis included two dependent variables, we set the level of significance at 0.025, according to the Bonferroni method, to avoid problems related to multiplicity.

To obtain representative estimates of the European population, we took into account the complexity of the sample using as a weighting factor the raising factor of the survey divided by its mean in each country, obtaining weights centred on the means.[29] The statistical analyses were performed using SPSS V.26 and R V.4.0.2 (R Core Team; R Foundation for Statistical Computing, Vienna, Austria).

Ethical and data access-related issues

The legal framework for developing the EHIS is Regulation (EC) No 1338/2008 of the European Parliament and of the Council of 16 December 2008 on Community statistics on public health and health and safety at work.[26] This framework regulation specifies in its annexes the use of population surveys such as the EHIS to collect every 5-year statistics on health status, access and use of healthcare and health determinants. All the permissions for accessing EHIS data were managed by the Office for Responsible Research of the Miguel Hernández University of Elche.

RESULTS

The total number of respondents to EHIS 2 was 316 333. After applying the inclusion and exclusion criteria, we were left with 16 270 eligible respondents (figure 1). In this sample, which represents the adult diabetic population of 25 countries, 50.9% of respondents were women; 55.5% were aged over 65 years; 11.1% had a university education; 59.3% were retired; 37.7% were overweight; 36.4% had obesity; 75.9% did no recreational physical activity; and 13.6% were smokers. Regarding health status, 28.1% reported bad or very bad self-perceived health; 94.3% had a long-standing health problem; 62.1% had high blood pressure; 38.7% had chronic back pain; 26.2% had chronic neck pain; 24.1% and 23.6% had a moderate or severe difficulty walking, respectively; and 24.1% and 14.7% had moderate or severe bodily pain in the past month, respectively. In total, 58.2% of respondents had seen their primary care physician in the past month, and 22.6% had been admitted to the hospital in the past year (online supplemental table S1).

The data reveal considerable variability between European countries with regard to healthcare use (figure 2). The factors associated with primary care visits and hospital admissions in the bivariate analysis are displayed in online supplemental tables S2 and S3.

The factors in the Poisson multivariate model that were significantly associated with primary care visits in the past month were being retired versus working, with a PR of 1.13 (95% CI 1.07 to 1.19); consumption of alcohol 2–3 days a month vs every day (PR 1.16, 95% CI 1.08 to 1.24); self-perceived health, with PRs increasing with worsening health, up to 1.80 (95% CI 1.51 to 2.15) for very bad vs very good self-perceived health; having a long-standing health problem (PR 1.14, 95% CI 1.04 to 1.24); high blood pressure (PR 1.06, 95% CI 1.03 to 1.10); and chronic back pain (PR 1.07, 95% CI 1.04 to 1.11) (table 1). We also found that non-response to the questions on alcohol consumption and self-perceived health had similar PRs to the worst health situation of these variables.

The factors in the Poisson multivariate model that were significantly associated with hospital admission in the past year were alcohol consumption 2–3 days a month vs every day (PR 1.18, 95% CI 1.02 to 1.36); self-perceived health, with PRs increasing with worsening health, up to 3.03 (95% CI 2.14 to 4.31) for very bad vs very good self-perceived health; having had an accident at home in the past year (PR 1.54, 95% CI 1.40 to 1.69); chronic obstructive pulmonary disease (COPD) (PR 1.34, 95% CI 1.22 to 1.47); high blood pressure (PR 1.08, 95% CI 1.01 to 1.17); chronic back pain (PR 0.91, 95% CI 0.84 to 0.98); moderate difficulty walking (PR 1.33, 95% CI 1.21 to 1.45); and severe difficulty walking (PR 1.67, 95% CI 1.51 to 1.85) (table 2). Non-response to the questions on self-perceived health, accidents at home and difficulty walking had similar PRs to the worst health situation of these variables. Non-response to the question on high blood pressure showed a higher PR than having high blood pressure (PR 1.62, 95% CI 1.13 to 2.32).

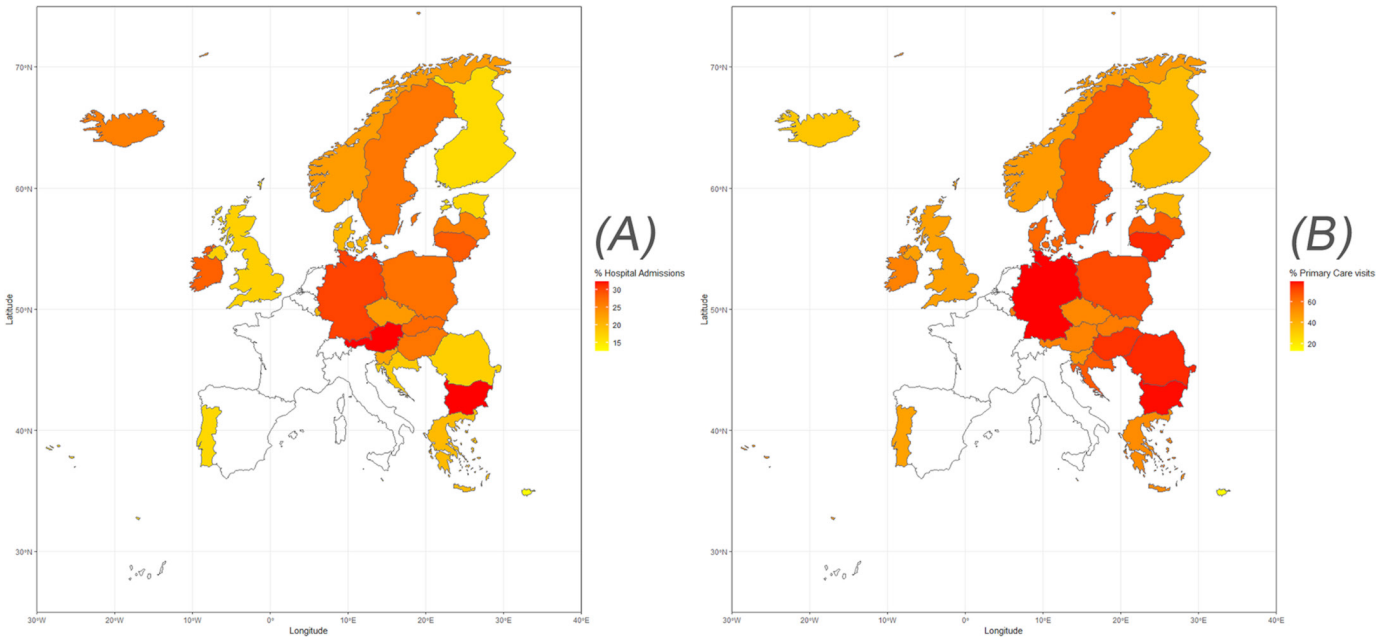

Figure 2 Proportion by country of primary care visits in the past month and hospital admissions in the past year.

DISCUSSION

This study, based on a large and representative sample of the European population, shows high healthcare use among people with diabetes in Europe, with 58.2% consulting their primary care physician in the past month and 22.6% being admitted to the hospital in the past year. The factors associated with primary care visits were labour status, alcohol consumption, self-perceived health, long-standing health problems, high blood pressure and chronic back pain. The factors associated with hospital admission were alcohol consumption, self-perceived health, having an accident at home in the past year, COPD, high blood pressure, chronic back pain and difficulty walking.

These findings are in line with other studies, which have shown that healthcare use and cost in people with diabetes are two to three times greater than in people without diabetes.[9 10 30 31] In our sample, 72% of patients who had seen their primary care physician in the past month had also been admitted to the hospital in the past year, and, inversely, 28% of those who had been admitted to the hospital in the past year had visited their primary care physician in the past month. The high proportion of healthcare use among people with diabetes is reflected in high costs for European healthcare systems. In this regard, one previous study showed that 70% of healthcare costs associated with diabetes resulted from hospital admissions.[9] Another study performed in the USA estimated the total cost of diabetes at US$327 billion, of which US$237 billion (73%) represented healthcare costs directly attributable to diabetes, and US$90 billion (27%) represented loss of productivity due to absenteeism, loss of productivity at work and at home, unemployment due to chronic disability and premature death.[30]

Regarding factors associated with primary care visits, our findings show greater healthcare use in retired versus working people. The relationship of socioeconomic status and older age with use of healthcare services among people with diabetes has been well defined in other studies.[1 3–5 19] In addition, ageing is known to influence the risk of developing type 2 diabetes, which accounts for 90% of diabetes cases worldwide.[6]

In contrast, we found an inverse relationship between alcohol consumption and healthcare use. Lower diabetes risk has been associated with varying levels of alcohol consumption in previous studies, possibly owing to differences between the different study populations in terms of age, race and geography, as well as differences in follow-up time and/or adjustment variables.[32]

In our sample, respondents who had visited their primary care physician in the past month were more likely to have very poor self-perceived health, a long-standing health problem, high blood pressure and chronic back pain. In this regard, a previous longitudinal study showed that self-perceived health is a subjective measure that can predict healthcare use.[33] Other studies have found that poor self-reported health is related to higher rates of mortality, hospitalisation and use of outpatient services.[34]

Regarding comorbidities, previous publications have associated physical inactivity, obesity, high blood pressure and chronic back pain with healthcare use in the diabetic population.[3 35–38] Our results are consistent with those of other authors,[2–4] in that they show a greater tendency to inactivity (75.9%) and a high prevalence of overweight (37.7%) and obesity (36.4%), all of which are frequently associated with high blood pressure and chronic back pain.[37 38]

Table 1 PRs of primary care visits in the past month, estimated through Poisson multivariate models

	PR*	95% CI**	P value
Labour status			
In work	1		
Unemployed	1.06	(0.96 to 1.17)	0.27
Studying	0.90	(0.68 to 1.18)	0.43
Retired	1.13	(1.07 to 1.19)	<0.001
Domestic tasks	1.05	(0.95 to 1.17)	0.36
Other	1.19	(1.12 to 1.27)	<0.001
Don't know/refusal	1.11	(0.96 to 1.28)	0.152
Alcohol consumption			
Every day or almost every day	1		
3–6 days a week	1.07	(0.98 to 1.17)	0.139
1–2 days a week	1.12	(1.04 to 1.20)	0.002
2–3 days a month	1.16	(1.08 to 1.24)	<0.001
Don't know/refusal	1.14	(0.99 to 1.30)	0.071
Self-perceived health			
Very good	1		
Good	1.31	(1.10 to 1.55)	0.002
Fair	1.60	(1.35 to 1.90)	<0.001
Bad	1.76	(1.48 to 2.09)	<0.001
Very bad	1.80	(1.51 to 2.14)	<0.001
Don't know/refusal	1.75	(1.39 to 2.20)	<0.001
Long-standing health problem			
No	1		
Yes	1.14	(1.04 to 1.24)	0.004
Don't know/refusal	1.00	(0.69 to 1.45)	0.99
High blood pressure			
No	1		
Yes	1.06	(1.03 to 1.10)	0.001
Don't know/refusal	0.93	(0.73 to 1.17)	0.52
Chronic back pain			
No	1		
Yes	1.07	(1.04 to 1.11)	<0.001
Don't know/refusal	0.96	(0.85 to 1.08)	0.51

Likelihood ratio test=986.6 (p<0.001).
Overdispersion test=9268.8/16216=0.57 (p=1.00).
Area under the receiver operating characteristic curve=0.71.
n=16 270, number of primary care visits=9353.
*PR adjusted for age, sex, country of residence and body mass index.
PR, prevalence ratio.

As regards factors associated with hospital admission in the past year, we found an inverse relationship between alcohol consumption and healthcare use, with the most frequent users in the group who drank two to three drinks a month. Other associated factors are having very poor self-perceived health and comorbidities such as COPD and high blood pressure. Hospital admissions in the diabetic population were also linked to greater risk of accidents at home in the past year and moderate or severe difficulty walking. In our study population, 28.7% and 26.8% of participants were aged over 64 years and over 74 years, respectively. Our findings therefore confirm the relationship between ageing and physiological and functional decline that can increase disability, fragility and risk of falls.[39] In contrast, the prevalence of chronic back pain was relatively low in people who had been admitted to

Table 2 PRs of hospital admissions in the past year, estimated through Poisson multivariate models

	PR*	95% CI	P value
Alcohol consumption			
Every day or almost every day	1		
3–6 days a week	0.99	(0.82 to 1.20)	0.91
1–2 days a week	1.01	(0.87 to 1.17)	0.93
2–3 days a month	1.18	(1.02 to 1.36)	0.023
Don't know/refusal	1.12	(0.86 to 1.46)	0.39
Self-perceived health			
Very good	1		
Good	1.23	(0.87 to 1.74)	0.25
Fair	1.80	(1.28 to 2.52)	<0.001
Bad	2.63	(1.87 to 3.70)	<0.001
Very bad	3.03	(2.14 to 4.31)	<0.001
Don't know/refusal	2.29	(1.47 to 3.57)	<0.001
Accident at home in past 12 months			
No	1		
Yes	1.54	(1.40 to 1.69)	<0.001
Don't know/refusal	1.30	(1.02 to 1.65)	0.035
Chronic obstructive pulmonary disease			
No	1		
Yes	1.34	(1.22 to 1.47)	<0.001
Don't know/refusal	0.96	(0.71 to 1.29)	0.77
High blood pressure			
No	1		
Yes	1.08	(1.01 to 1.17)	0.036
Don't know/refusal	1.62	(1.13 to 2.32)	0.008
Chronic back pain			
No	1		
Yes	0.91	(0.84 to 0.97)	0.006
Don't know/refusal	0.91	(0.65 to 1.26)	0.56
Difficulty walking			
No difficulty	1		
Moderate difficulty	1.33	(1.21 to 1.45)	<0.001
Severe difficulty	1.67	(1.51 to 1.85)	<0.001
Don't know/refusal	1.57	(1.02 to 2.42)	0.040

Likelihood ratio test=1131.4 (p<0.001).
Overdispersion Test=9810.78/16217=0.60 (p=1.00)Area under the receiver operating characteristic curve=0.70.
n=16 270; number of hospital admissions=3748.
*PR adjusted for age, sex, country of residence and body mass index.
PR, prevalence ratio .

the hospital in the past year, which may be attributable to the medical supervision received and control of their analgesic regimen during the hospital stay.[40]

The main driver of diabetes costs is the treatment of associated complications. Our results suggest that lifestyle-directed interventions (eg, educational self-management workshops or promotion of physical activity and weight loss) focused on specific sectors of the population (eg, people who are retired or who have comorbidities) could be associated with an improvement in the quality of life of people with diabetes and encourage a more efficient use of health services in Europe. In view of the ageing populations and increasing socioeconomic and demographic diversity in multinational and multicultural regions like Europe, effective prevention of diabetes requires multidimensional public health programmes that incorporate

patients' perspectives (ie, physical, emotional and social functioning), lifestyles and socioeconomic status (education, income and healthcare costs). This innovative approach—based on improving life expectancy and socioeconomic indicators by taking into account the experience of an increasingly demanding population—should focus on promoting healthy lifestyles and providing chronic disease self-management education, with the aim of reducing hospital admissions and thus reducing diabetes-related healthcare costs. In this regard, the holistic and preventive approach to primary care presents itself as the best setting to assess the nature of this impact. Future studies could assess the impact of this approach on diabetes care, which represents a considerable financial burden on healthcare systems.

This study has some limitations. First, owing to the cross-sectional design, we were unable to evaluate longitudinal trends or causal relationships. Second, all the data examined in our study were collected through self-reporting, and could therefore be affected by recall bias and social desirability bias, although the EHIS was designed and validated to minimise the effects of non-response and self-reporting biases.[41] Third, diabetes itself is a cause of poor self-perceived health, and many of the poorest health indicators in our population could be due to the disease and not risk factors for the disease. Nonetheless, the results of our study could help to better understand the possible consequences of diabetes on health and healthcare use in a large sample of European citizens. Fourth, the questionnaire excludes gestational diabetes and does not distinguish between type 1 and type 2 diabetes. However, given the large sample size and the high prevalence of type 2 diabetes in Europe,[5 6] we can assume that the great majority of respondents in our study had type 2 diabetes. Fifth, statistical tests tend to give significant results when sample sizes are large; for this reason, we tried to evaluate clinical as well as statistical significance, taking effect size into account. Sixth, as more than half of people with diabetes are undiagnosed,[5] under-reporting could be an issue in our study. We assumed, however, that self-reported diabetes in the EHIS 2 was based on a previous clinical diagnosis. Seventh, the data were collected between 2013 and 2015 in the participating countries, so this fact must be considered as an additional limitation since they do not represent the same time frame. Finally, five countries (Spain, Belgium, France, Italy and the Netherlands) did not provide information on certain variables analysed in this study. Since these variables were included in the multivariate logistic model, the resulting estimates are not representative of those countries.

CONCLUSIONS

This study found that half of the people with diabetes in Europe had visited their primary care physician in the past month, and one in four had been admitted to the hospital in the past year, though these percentages varied considerably between the 25 European countries included in the study. The factors associated with primary care visits were labour status, alcohol consumption, self-perceived health, long-standing health problems, high blood pressure and chronic back pain. On the other hand, the factors associated with hospital admission were alcohol consumption, self-perceived health, having an accident at home in the past year, COPD, high blood pressure, chronic back pain and difficulties in walking.

Contributors JAQR analysed the data. ÁF-M drafted the manuscript. DOB, RR, JAQR and ÁF-M devised the study concept and design. All authors took part in the interpretation of the results, commented on the manuscript and had final responsibility for the decision to submit for publication. All authors have read and agreed to the published version of the manuscript. ÁF-M acts as guarantor for this study.

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The attached supplementary information serves to describe and complement the information on our study population and variables. It adds value to the tables in the main document. For this reason, we ask that it be considered for future publication.

Supplementary Material

Table S1 Frequencies and percentages of all study variables

	n (%)
Primary care visit in past 4 weeks	
No	6,806 (41.8)
Yes	9,464 (58.2)
Hospital admission in past 12 months	
No	12,588 (77.4)
Yes	3,682 (22.6)
Sex	
Man	7,994 (49.1)
Woman	8,276 (50.9)
Age	
<40	847 (5.2)
40-54	2,403 (14.8)
55-64	3,981 (24.5)
65-74	4,672 (28.7)
>74	4,367 (26.8)
Country of residence	
Bulgaria	452 (2.8)
Czech Republic	751 (4.6)
Denmark	298 (1.8)
Germany	1,556 (9.6)
Estonia	321 (2.0)
Ireland	320 (2.0)
Greece	922 (5.7)
Croatia	436 (2.7)
Cyprus	378 (2.3)
Latvia	388 (2.4)
Lithuania	272 (1.7)
Luxembourg	223 (1.4)
Hungary	474 (2.9)
Malta	415 (2.6)
Austria	678 (4.2)
Poland	1,820 (11.2)
Portugal	2,046 (12.6)
Romania	923 (5.7)
Slovenia	424 (2.6)
Slovakia	449 (2.8)
Finland	425 (2.6)
Sweden	123 (0.8)
United Kingdom	1,645 (10.1)
Iceland	179 (1.1)

Norway	352 (2.2)
Country of birth	
Native-born	14,906 (91.6)
Born in another country	1,337 (8.2)
Don't know/refusal	27 (0.2)
Degree of urbanization	
Densely-populated area	6,117 (37.6)
Intermediate-populated area	4,746 (29.2)
Thinly-populated area	5,383 (33.1)
Don't know/refusal	24 (0.1)
Marital status	
Never married, never in registered partnership	1,638 (10.1)
Married/in registered partnership	9,836 (60.5)
Widowed/with regard partnership that ended in death of partner	3,433 (21.1)
Divorced/with regard partnership that was legally dissolved	1,310 (8.1)
Don't know/refusal	53 (0.3)
Educational attainment	
Primary education	4,126 (25.4)
Secondary education	9,179 (56.4)
Tertiary education; short cycle	1,094 (6.7)
Tertiary education; bachelor, master or doctoral level	1,805 (11.1)
Don't know/refusal	67 (0.4)
Labor status	
In work	3,685 (22.6)
Unemployed	656 (4.0)
Studying	138 (0.8)
Retired	9,641 (59.3)
Domestic tasks	672 (4.1)
Other	1,379 (8.5)
Don't know/refusal	100 (0.6)
Body mass index	
Normal	3,283 (20.2)
Overweight	6,140 (37.7)
Obese	5,928 (36.4)
Don't know/refusal	920 (5.7)
Frequency of recreational physical activity	
Never	12,354 (75.9)
1 to 3 hours a week	2,354 (14.5)
3 to 7 hours a week	1,124 (6.9)
> 7 hours a week	437 (2.7)
Frequency of eating fruit	
Once or more a day	9,525 (58.5)
4 to 6 times a week	2,564 (15.8)
1 to 3 times a week	2,614 (16.1)
Less than once a week	908 (5.6)
Never	175 (1.1)
Don't know/refusal	484 (3.0)
Frequency of eating vegetables	
Once or more a day	8,215 (50.5)

4 to 6 times a week	3,715 (22.8)
1 to 3 times a week	3,111 (19.1)
Less than once a week	617 (3.8)
Never	105 (0.6)
Don't know/refusal	507 (3.1)
Smoking	
Daily smoker	2,207 (13.6)
Occasional smoker	422 (2.6)
Non-smoker	13,592 (83.5)
Don't know/refusal	49 (0.3)
Frequency of exposure to tobacco smoke indoors	
Never or almost never	12,913 (79.4)
Less than 1 hour a day	1,273 (7.8)
1 hour or more a day	1,419 (8.7)
Don't know/refusal	665 (4.1)
Alcohol consumption	
Every day or almost every day	1,562 (9.6)
3 to 6 days a week	1,095 (6.7)
1 to 2 days a week	4,496 (27.6)
2 to 3 days a month	8,531 (52.4)
Don't know/refusal	586 (3.6)
Number of close people to count on	
None	494 (3.0)
1 or 2	6,164 (37.9)
3 to 5	6,177 (38.0)
6 or more	2,893 (17.8)
Don't know/refusal	541 (3.3)
Number of persons living in household	
One	3,876 (23.8)
Two	7,318 (45.0)
Three	2,341 (14.4)
Four	1,438 (8.8)
Five or more	1,272 (7.8)
Don't know/refusal	24 (0.1)
Type of household	
One-person household	3,871 (23.8)
Lone parent with child(ren) aged less than 25	246 (1.5)
Couple with child(ren) aged less than 25	1,537 (9.4)
Couple without child(ren) aged less than 25	6,652 (40.9)
Other	3,851 (23.7)
Don't know/refusal	114 (0.7)
Net income	
Below 1st quintile	3,382 (20.8)
Between 1st and 2nd quintile	3,935 (24.2)
Between 2nd and 3rd quintile	3,290 (20.2)
Between 3rd and 4th quintile	2,709 (16.6)
Between 4th and 5th quintile	2,106 (12.9)
Don't know/refusal	848 (5.2)
Self-perceived health	
Very good	463 (2.8)

Good	3,507 (21.6)
Fair	7,239 (44.5)
Bad	3,564 (21.9)
Very bad	1,008 (6.2)
Don't know/refusal	489 (3.0)
Longstanding health problem (lasting ≥ 6 months)	
Yes	15,350 (94.3)
No	883 (5.4)
Don't know/refusal	37 (0.2)
Asthma in past 12 months	
Yes	1,355 (8.3)
No	14,582 (89.6)
Don't know/refusal	333 (2.0)
Chronic obstructive pulmonary disease in past 12 months	
Yes	1,388 (8.5)
No	14,549 (89.4)
Don't know/refusal	334 (2.1)
MI* or chronic consequences of MI in the past 12 months	
Yes	1,190 (7.3)
No	14,740 (90.6)
Don't know/refusal	340 (2.1)
Kidney problems in the past 12 months	
Yes	2,524 (15.5)
No	13,429 (82.5)
Don't know/refusal	317 (2.0)
High blood pressure in the past 12 months	
Yes	10,111 (62.1)
No	6,070 (37.3)
Don't know/refusal	89 (0.5)
Stroke or chronic consequences of stroke in past 12 months	
Yes	878 (5.4)
No	15,043 (92.5)
Don't know/refusal	348 (2.1)
Arthrosis in the past 12 months	
Yes	4,570 (28.1)
No	11,382 (70.0)
Don't know/refusal	318 (2.0)
Low back disorder or other chronic back defect in past 12 months	
Yes	6,298 (38.7)
No	9,748 (59.9)
Don't know/refusal	224 (1.4)
Neck disorder or other chronic neck defect in the past 12 months	
Yes	4,256 (26.2)
No	11,720 (72.0)
Don't know/refusal	294 (1.8)
Allergy in the past 12 months	
Yes	2,604 (16.0)
No	13,392 (82.3)
Don't know/refusal	274 (1.7)
Cirrhosis of the liver in the past 12 months	

Yes	276 (1.7)
No	15,671 (96.3)
Don't know/refusal	323 (2.0)
Urinary incontinence in the past 12 months	
Yes	2,414 (14.8)
No	13,594 (83.6)
Don't know/refusal	262 (1.6)
Kidney problems in the past 12 months	
Yes	1,613 (9.9)
No	14,365 (88.3)
Don't know/refusal	292 (1.8)
Depression in the past 12 months	
Yes	2,137 (13.1)
No	13,843 (85.1)
Don't know/refusal	291 (1.8)
Road traffic accident in the past 12 months	
Yes	173 (1.1)
No	15,931 (97.9)
Don't know/refusal	166 (1.0)
Accident at home in the past 12 months	
Yes	978 (6.0)
No	15,145 (93.1)
Don't know/refusal	146 (0.9)
Leisure accident in the past 12 months	
Yes	462 (2.8)
No	15,654 (96.2)
Don't know/refusal	154 (0.9)
Glasses or contact lenses	
Yes	13,082 (80.4)
No	3,166 (19.5)
Don't know/refusal	22 (0.1)
Hearing aid	
Yes	1,249 (7.7)
No	14,979 (92.1)
Don't know/refusal	42 (0.3)
Difficulty walking	
No difficulty	8,463 (52.0)
Moderate difficulty	3,922 (24.1)
Severe difficulty	3,839 (23.6)
Don't know/refusal	46 (0.3)
Intensity of bodily pain during the past 4 weeks	
None	4,363 (26.8)
Very mild	1,831 (11.3)
Mild	2,477 (15.2)
Moderate	3,914 (24.1)
Severe	2,385 (14.7)
Very severe	809 (5.0)
Don't know/refusal	491 (3.0)
Depression severity (PHQ-8)†	
None/minimal (0-4)	10,035 (61.7)

Mild (5-9)	3,281 (20.2)
Moderate (10-14)	1,248 (7.7)
Severe (15-24)	776 (4.8)
Don't know/refusal	930 (5.7)

*MI, myocardial infarction
†PHQ-8, eight-item patient health questionnaire

Table S2 Proportion of primary care visits in the past month, at each level of the explanatory variables.

	Primary care visits in past month		
	Yes	**No**	
	n (%)	**n (%)**	***P* value**
Hospital admission in past 12 months			
No	5,776 (45.9)	6,812 (54.1)	<0.001
Yes	1,030 (28.0)	2,653 (72.0)	
Sex			
Man	3,576 (44.7)	4,418 (55.3)	<0.001
Woman	3,230 (39.0)	5,047 (61.0)	
Age			
<40	467 (55.1)	380 (44.9)	<0.001
40-54	1,090 (45.4)	1,313 (54.6)	
55-64	1,702 (42.8)	2,278 (57.2)	
65-74	1,896 (40.6)	2,777 (59.4)	
>74	1,651 (37.8)	2,716 (62.2)	
Country of residence			
Bulgaria	97 (21.4)	355 (78.6)	<0.001
Czech Republic	341 (45.4)	410 (54.6)	
Denmark	110 (36.8)	188 (63.2)	
Germany	326 (20.9)	1,230 (79.1)	
Estonia	196 (61.1)	125 (38.9)	
Ireland	141 (44.0)	179 (56.0)	
Greece	435 (47.2)	487 (52.8)	
Croatia	145 (33.3)	291 (66.7)	
Cyprus	330 (87.2)	48 (12.8)	
Latvia	133 (34.3)	255 (65.7)	
Lithuania	65 (23.8)	207 (76.2)	
Luxembourg	94 (42.2)	129 (57.8)	
Hungary	119 (25.2)	355 (74.8)	
Malta	228 (54.8)	188 (45.2)	
Austria	299 (44.1)	379 (55.9)	
Poland	533 (29.3)	1,287 (70.7)	
Portugal	1,106 (54.1)	939 (45.9)	
Romania	221 (24.0)	702 (76.0)	
Slovenia	209 (49.4)	215 (50.6)	
Slovakia	188 (41.9)	261 (58.1)	
Finland	267 (62.8)	158 (37.2)	
Sweden	41 (33.0)	82 (67.0)	
United Kingdom	880 (53.5)	765 (46.5)	
Iceland	119 (66.6)	60 (33.4)	
Norway	183 (52.0)	169 (48.0)	
Country of birth			
Native-born	6,240 (41.9)	8,666 (58.1)	0.66
Born in another country	557 (41.7)	780 (58.3)	
Don’t know/refusal	9 (32.5)	18 (67.5)	
Degree of urbanization			
Densely-populated area	2,582 (42.2)	3,535 (57.8)	0.80

Intermediate-populated area	1,985 (41.8)	2,761 (58.2)	
Thinly-populated area	2,226 (41.4)	3,156 (58.6)	
Don't know/refusal	11 (47.6)	13 (52.4)	
Marital status*			
Never married	775 (47.3)	864 (52.7)	<0.001
Married	4,204 (42.7)	5,631 (57.3)	
Widowed	1,276 (37.2)	2,157 (62.8)	
Divorced	540 (41.2)	770 (58.8)	
Don't know/refusal	11 (20.5)	42 (79.5)	
Educational attainment			
Primary education	1,887 (45.7)	2,239 (54.3)	<0.001
Secondary education	3,595 (39.2)	5,584 (60.8)	
Tertiary education; short cycle	518 (47.3)	576 (52.7)	
Tertiary education; bachelor/master/doctoral	782 (43.3)	1,023 (56.7)	
Don't know/refusal	24 (36.3)	43 (63.7)	
Labor status			
In work	1,870 (50.8)	1,815 (49.2)	<0.001
Unemployed	307 (46.8)	349 (53.2)	
Studying	86 (62.3)	52 (37.7)	
Retired	3,739 (38.8)	5,902 (61.2)	
Domestic tasks	319 (47.4)	353 (52.6)	
Other	459 (33.3)	920 (66.7)	
Don't know/refusal	26 (26.4)	74 (73.6)	
Body mass index			
Normal	1,426 (43.4)	1,857 (56.6)	<0.001
Overweight	2,635 (42.9)	3,504 (57.1)	
Obese	2,318 (39.1)	3,610 (60.9)	
Don't know/refusal	427 (46.4)	493 (53.6)	
Frequency of recreational physical activity			
Never	4,969 (40.2)	7,385 (59.8)	<0.001
1 to 3 hours a week	1,096 (46.5)	1,259 (53.5)	
3 to 7 hours a week	538 (47.9)	585 (52.1)	
> 7 hours a week	202 (46.3)	235 (53.7)	
Frequency of eating fruit			
Once or more a day	4,049 (42.5)	5,476 (57.5)	0.107
4 to 6 times a week	1,067 (41.6)	1,497 (58.4)	
1 to 3 times a week	1,030 (39.4)	1,584 (60.6)	
Less than once a week	373 (41.1)	535 (58.9)	
Never	76 (43.6)	98 (56.4)	
Don't know/refusal	209 (43.3)	274 (56.7)	
Frequency of eating vegetables			
Once or more a day	3,516 (42.8)	4,699 (57.2)	0.068
4 to 6 times a week	1,533 (41.3)	2,183 (58.7)	
1 to 3 times a week	1,233 (39.6)	1,878 (60.4)	
Less than once a week	263 (42.6)	354 (57.4)	
Never	46 (44.2)	59 (55.8)	
Don't know/refusal	215 (42.5)	292 (57.5)	
Smoking			

Daily smoker	953 (43.2)	1,254 (56.8)	0.31
Occasional smoker	174 (41.3)	248 (58.7)	
Non-smoker	5,662 (41.7)	7,929 (58.3)	
Don't know/refusal	16 (32.7)	33 (67.3)	
Exposure to smoke indoors			
Never or almost never	5,454 (42.2)	7,459 (57.8)	0.188
Less than 1 hour a day	521 (40.9)	752 (59.1)	
1 hour or more a day	561 (39.5)	858 (60.5)	
Don't know/refusal	270 (40.6)	395 (59.4)	
Alcohol consumption			
Every day or almost every day	819 (52.4)	743 (47.6)	<0.001
3 to 6 days a week	509 (46.5)	586 (53.5)	
1 to 2 days a week	2,008 (44.7)	2,488 (55.3)	
2 to 3 days a month	3,225 (37.8)	5,306 (62.2)	
Don't know/refusal	245 (41.7)	342 (58.3)	
Number of close people to count on			
None	224 (45.4)	270 (54.6)	<0.001
1 or 2	2,367 (38.4)	3,797 (61.6)	
3 to 5	2,665 (43.1)	3,513 (56.9)	
6 or more	1,320 (45.6)	1,573 (54.4)	
Don't know/refusal	229 (42.4)	312 (57.6)	
Number of persons living in household			
One	1,516 (39.1)	2,360 (60.9)	<0.001
Two	3,021 (41.3)	4,297 (58.7)	
Three	1,092 (46.7)	1,248 (53.3)	
Four	688 (47.8)	750 (52.2)	
Five or more	482 (37.9)	790 (62.1)	
Don't know/refusal	5 (22.7)	19 (77.3)	
Type of household			
One-person household	1,515 (39.1)	2,356 (60.9)	<0.001
Lone parent with child(ren) aged < 25	107 (43.4)	139 (56.6)	
Couple with child(ren) aged < 25	757 (49.3)	779 (50.7)	
Couple without child(ren) aged < 25	2,788 (41.9)	3,864 (58.1)	
Other	1,612 (41.9)	2,238 (58.1)	
Don't know/refusal	26 (22.4)	88 (77.6)	
Net income			
Below 1st quintile	1,387 (41.0)	1,995 (59.0)	<0.001
Between 1st and 2nd quintile	1,526 (38.8)	2,409 (61.2)	
Between 2nd and 3rd quintile	1,387 (42.2)	1,903 (57.8)	
Between 3rd and 4th quintile	1,166 (43.0)	1,543 (57.0)	
Between 4th and 5th quintile	1,018 (48.3)	1,088 (51.7)	
Don't know/refusal	322 (38.0)	526 (62.0)	
Self-perceived health			
Very good	321 (69.4)	142 (0.6)	<0.001
Good	1,916 (54.6)	1,591 (45.4)	
Fair	2,936 (40.6)	4,303 (59.4)	
Bad	1,143 (32.1)	2,421 (67.9)	

Very bad	280 (27.8)	728 (72.2)	
Don't know/refusal	209 (42.7)	280 (57.3)	
Longstanding health problem (lasting ≥ 6 months)			
Yes	6,298 (41.0)	9,052 (59.0)	<0.001
No	492 (55.7)	391 (44.3)	
Don't know/refusal	16 (43.6)	21 (56.4)	
Asthma†			
Yes	490 (36.1)	865 (63.9)	<0.001
No	6,189 (42.4)	8,393 (57.6)	
Don't know/refusal	127 (38.2)	206 (61.8)	
Chronic obstructive pulmonary disease†			
Yes	435 (31.3)	953 (68.7)	<0.001
No	6,240 (42.9)	8,309 (57.1)	
Don't know/refusal	131 (39.4)	202 (60.6)	
MI or chronic consequences of MI†			
Yes	413 (34.7)	777 (65.3)	<0.001
No	6,264 (42.5)	8,476 (57.5)	
Don't know/refusal	128 (37.6)	212 (62.4)	
Kidney problems†			
Yes	748 (29.6)	1,776 (70.4)	<0.001
No	5,929 (44.2)	7,500 (55.8)	
Don't know/refusal	129 (40.6)	189 (59.4)	
High blood pressure†			
Yes	3,849 (38.1)	6,262 (61.9)	<0.001
No	2,904 (47.8)	3,166 (52.2)	
Don't know/refusal	53 (59.2)	37 (40.8)	
Stoke or chronic consequences of stroke†			
Yes	308 (35.0)	571 (65.0)	<0.001
No	6,366 (42.3)	8,677 (57.7)	
Don't know/refusal	132 (37.8)	216 (62.2)	
Arthrosis†			
Yes	1,618 (35.4)	2,952 (64.6)	<0.001
No	5,061 (44.5)	6,321 (55.5)	
Don't know/refusal	126 (39.7)	192 (60.3)	
Low back disorder or other chronic back defect†			
Yes	2,246 (35.7)	4,052 (64.3)	<0.001
No	4,458 (45.7)	5,289 (54.3)	
Don't know/refusal	102 (45.3)	123 (54.7)	
Neck disorder or other chronic neck defect†			
Yes	1,516 (35.6)	2,740 (64.4)	<0.001
No	5,173 (44.1)	6,547 (55.9)	
Don't know/refusal	116 (39.6)	178 (60.4)	
Allergy†			
Yes	1,051 (40.3)	1,554 (59.7)	0.076
No	5,652 (42.2)	7,740 (57.8)	
Don't know/refusal	103 (37.6)	171 (62.4)	
Cirrhosis of the liver†			

Yes	110 (39.8)	166 (60.2)	0.35
No	6,572 (41.9)	9,099 (58.1)	
Don't know/refusal	124 (38.4)	199 (61.6)	
Urinary incontinence†			
Yes	839 (34.8)	1,575 (65.2)	<0.001
No	5,854 (43.1)	7,740 (56.9)	
Don't know/refusal	112 (43.0)	149 (57.0)	
Kidney problems†			
Yes	534 (33.1)	1,079 (66.9)	<0.001
No	6,151 (42.8)	8,214 (57.2)	
Don't know/refusal	121 (41.3)	171 (58.7)	
Depression†			
Yes	751 (35.1)	1,386 (64.9)	<0.001
No	5,937 (42.9)	7,906 (57.1)	
Don't know/refusal	118 (40.5)	173 (59.5)	
Road traffic accident†			
Yes	61 (34.9)	113 (65.1)	<0.001
No	6,703 (42.1)	9,228 (57.9)	
Don't know/refusal	42 (25.3)	124 (74.7)	
Accident at home†			
Yes	327 (33.4)	651 (66.6)	<0.001
No	6,441 (42.5)	8,704 (57.5)	
Don't know/refusal	38 (25.7)	109 (74.3)	
Leisure accident†			
Yes	181 (39.2)	281 (60.8)	<0.001
No	6,588 (42.1)	9,065 (57.9)	
Don't know/refusal	36 (23.3)	118 (76.7)	
Glasses or contact lenses			
Yes	5,362 (41.0)	7,720 (59.0)	<0.001
No	1,435 (45.3)	1,731 (54.7)	
Don't know/refusal	9 (39.4)	14 (60.6)	
Hearing aid			
Yes	428 (34.3)	820 (65.7)	<0.001
No	6,361 (42.5)	8,618 (57.5)	
Don't know/refusal	17 (39.2)	26 (60.8)	
Difficulty walking			
No difficulty	4,150 (49.0)	4,313 (51.0)	<0.001
Moderate difficulty	1,353 (34.5)	2,569 (65.5)	
Severe difficulty	1,282 (33.4)	2,556 (66.6)	
Don't know/refusal	20 (44.2)	26 (55.8)	
Intensity of bodily pain during the past month			
None	2,435 (55.8)	1,928 (44.2)	<0.001
Very mild	835 (45.6)	995 (54.4)	
Mild	1020 (41.2)	1,457 (58.8)	
Moderate	1319 (33.7)	2,596 (66.3)	
Severe	757 (31.7)	1,628 (68.3)	
Very severe	229 (28.3)	580 (71.7)	
Don't know/refusal	211 (42.9)	280 (57.1)	
Depression severity (PHQ-8) ††			

None/minimal (0-4)	4,676 (46.6)	5,359 (53.4)	<0.001
Mild (5-9)	1,126 (34.3)	2,155 (65.7)	
Moderate (10-14)	400 (32.1)	848 (67.9)	
Severe (15-24)	240 (30.9)	536 (69.1)	
Don't know/refusal	363 (39.0)	567 (61.0)	

* Being married includes being in a registered partnership, and being divorced or widowed includes having been in a registered partnership that was legally dissolved or that ended with the death of a partner, respectively.

† in the past 12 months

**MI, myocardial infarction

††PHQ-8, eight-item patient health questionnaire

Table S3 Proportion of hospital admissions in the past year, at each level of the explanatory variables

	Hospital admissions in past year		
	Yes	**No**	
	n%	**n %**	***P* value**
Primary care visit in the past month			
No	5,776 (84.9)	1,030 (15.1)	<0.001
Yes	6,812 (72.0)	2,653 (28.0)	
Sex			
Man	6,159 (77.1)	1,835 (22.9)	0.34
Woman	6,429 (77.7)	1,848 (22.3)	
Age			
<40	665 (78.6)	182 (21.4)	<0.001
40-54	1,93 (80.4)	471 (19.6)	
55-64	3,156 (79.3)	825 (20.7)	
65-74	3,650 (78.1)	1,022 (21.9)	
>74	3,185 (72.9)	1,182 (27.1)	
Country of residence			
Bulgaria	306 (67.7)	146 (32.3)	<0.001
Czech Republic	577 (76.8)	174 (23.2)	
Denmark	237 (79.7)	61 (20.3)	
Germany	1,085 (69.8)	471 (30.2)	
Estonia	266 (83.0)	55 (17.0)	
Ireland	230 (71.8)	90 (28.2)	
Greece	738 (80.0)	184 (20.0)	
Croatia	356 (81.7)	80 (18.3)	
Cyprus	330 (87.4)	48 (12.6)	
Latvia	289 (74.5)	99 (25.5)	
Lithuania	194 (71.4)	78 (28.6)	
Luxembourg	178 (79.6)	45 (20.4)	
Hungary	348 (73.5)	126 (26.5)	
Malta	342 (82.4)	73 (17.6)	
Austria	459 (67.7)	219 (32.3)	
Poland	1,331 (73.1)	489 (26.9)	
Portugal	1,701 (83.2)	344 (16.8)	
Romania	760 (82.3)	163 (17.7)	
Slovenia	330 (77.9)	94 (22.1)	
Slovakia	325 (72.4)	124 (27.6)	
Finland	355 (83.5)	70 (16.5)	
Sweden	90 (73.6)	33 (26.4)	
United Kingdom	1,353 (82.3)	292 (17.7)	
Iceland	133 (74.3)	46 (25.7)	
Norway	271 (77.0)	81 (23.0)	
Country of birth			
Native-born	11,527 (77.3)	3,379 (22.7)	0.60
Born in another country	1,038 (77.7)	299 (22.3)	
Don’t know/refusal	23 (84.5)	4 (15.5)	
Degree of urbanization			
Densely-populated area	4,826 (78.9)	1,292 (21.1)	0.003

Intermediate-populated area	3,638 (76.7)	1,108 (23.3)	
Thinly-populated area	4,105 (76.3)	1,278 (23.7)	
Don't know/refusal	20 (81.6)	4 (18.4)	
Marital status*			
Never married	1,267 (77.3)	372 (22.7)	<0.001
Married	7,724 (78.5)	2,112 (21.5)	
Widowed	2,564 (74.7)	869 (25.3)	
Divorced	991 (75.6)	319 (24.4)	
Don't know/refusal	42 (79.5)	11 (20.5)	
Educational attainment			
Primary education	3,268 (79.2)	858 (20.8)	0.002
Secondary education	7,011 (76.4)	2,168 (23.6)	
Tertiary education; short cycle	873 (79.8)	221 (20.2)	
Tertiary education; bachelor/masters/doctoral	1,386 (76.8)	419 (23.2)	
Don't know/refusal	50 (75.4)	16 (24.6)	
Labor status			
In work	3,094 (84.0)	591 (16.0)	<0.001
Unemployed	515 (78.5)	141 (21.5)	
Studying	102 (74.1)	36 (25.9)	
Retired	7,316 (75.9)	2,324 (24.1)	
Domestic tasks	560 (83.4)	112 (16.6)	
Other	934 (67.8)	444 (32.2)	
Don't know/refusal	66 (65.8)	34 (34.2)	
Body mass index			
Normal	2,479 (75.5)	804 (24.5)	0.004
Overweight	4,827 (78.6)	1,313 (21.4)	
Obese	4,585 (77.4)	1,342 (22.6)	
Don't know/refusal	696 (75.7)	223 (24.3)	
Frequency of recreational physical activity			
Never	9,461 (76.6)	2,893 (23.4)	<0.001
1 to 3 hours a week	1,857 (78.9)	497 (21.1)	
3 to 7 hours a week	929 (82.6)	195 (17.4)	
> 7 hours a week	341 (77.9)	97 (22.1)	
Frequency of eating fruit			
Once or more a day	7,402 (77.7)	2,123 (22.3)	0.069
4 to 6 times a week	2,020 (78.8)	544 (21.2)	
1 to 3 times a week	1,986 (76.0)	629 (24.0)	
Less than once a week	685 (75.4)	223 (24.6)	
Never	133 (76.4)	41 (23.6)	
Don't know/refusal	362 (74.9)	121 (25.1)	
Frequency of eating vegetables			
Once or more a day	6,376 (77.6)	1,838 (22.4)	0.003
4 to 6 times a week	2,906 (78.2)	810 (21.8)	
1 to 3 times a week	2,383 (76.6)	728 (23.4)	
Less than once a week	480 (77.8)	137 (22.2)	
Never	66 (62.7)	39 (37.3)	
Don't know/refusal	377 (74.3)	130 (25.7)	
Smoking			
Daily smoker	1,739 (78.8)	468 (21.2)	0.191

Occasional smoker	323 (76.5)	99 (23.5)	
Non-smoker	10,492 (77.2)	3,100 (22.8)	
Don't know/refusal	34 (69.4)	15 (30.6)	
Exposure to smoke indoors			
Never or almost never	9,975 (77.2)	2,938 (22.8)	0.017
Less than 1 hour a day	1,003 (78.8)	270 (21.2)	
1 hour or more a day	1,123 (79.1)	296 (20.9)	
Don't know/refusal	488 (73.3)	177 (26.7)	
Alcohol consumption			
Every day or almost every day	1,282 (82.1)	280 (17.9)	<0.001
3 to 6 days a week	890 (81.3)	205 (18.7)	
1 to 2 days a week	3,636 (80.9)	859 (19.1)	
2 to 3 days a month	6,347 (74.4)	2,184 (25.6)	
Don't know/refusal	432 (73.7)	154 (26.3)	
Number of close people to count on			
None	386 (78.1)	108 (21.9)	0.24
1 or 2	4,724 (76.6)	1,440 (23.4)	
3 to 5	4,794 (77.6)	1,383 (22.4)	
6 or more	2,274 (78.6)	619 (21.4)	
Don't know/refusal	410 (75.7)	131 (24.3)	
Number of persons living in household			
One	2,915 (75.2)	961 (24.8)	<0.001
Two	5,612 (76.7)	1,706 (23.3)	
Three	1,903 (81.3)	437 (18.7)	
Four	1,135 (78.9)	304 (21.1)	
Five or more	1,007 (79.1)	266 (20.9)	
Don't know/refusal	16 (64.6)	9 (35.4)	
Type of household			
One-person household	2,910 (75.2)	961 (24.8)	<0.001
Lone parent with child(ren) aged < 25	188 (76.3)	58 (23.7)	
Couple with child(ren) aged < 25	1,252 (81.5)	284 (18.5)	
Couple without child(ren) aged < 25	5,110 (76.8)	1,542 (23.2)	
Other	3,046 (79.1)	805 (20.9)	
Don't know/refusal	82 (72.1)	32 (27.9)	
Net income			
Below 1st quintile	2,509 (74.2)	873 (25.8)	<0.001
Between 1st and 2nd quintile	3,003 (76.3)	932 (23.7)	
Between 2nd and 3rd quintile	2,564 (77.9)	726 (22.1)	
Between 3rd and 4th quintile	2,132 (78.7)	576 (21.3)	
Between 4th and 5th quintile	1,714 (81.4)	392 (18.6)	
Don't know/refusal	665 (78.4)	183 (21.6)	
Self-perceived health			
Very good	414 (89.5)	49 (10.5)	<0.001
Good	3,047 (86.9)	460 (13.1)	
Fair	5,821 (80.4)	1,418 (19.6)	
Bad	2,371 (66.5)	1,193 (33.5)	
Very bad	572 (56.8)	436 (43.2)	
Don't know/refusal	362 (74.0)	127 (26.0)	
Longstanding health problem (lasting ≥ 6 months)			

Yes	11,835 (77.1)	3,515 (22.9)	<0.001
No	729 (82.5)	154 (17.5)	
Don't know/refusal	24 (64.3)	13 (35.7)	
Asthma†			
Yes	927 (68.4)	428 (31.6)	<0.001
No	11,414 (78.3)	3,169 (21.7)	
Don't know/refusal	248 (74.4)	85 (25.6)	
Chronic obstructive pulmonary disease†			
Yes	856 (61.6)	532 (38.4)	<0.001
No	11,480 (78.9)	3,069 (21.1)	
Don't know/refusal	252 (75.7)	81 (24.3)	
MI or chronic consequences of MI†			
Yes	663 (55.7)	527 (44.3)	<0.001
No	11,668 (79.2)	3,072 (20.8)	
Don't know/refusal	257 (75.6)	83 (24.4)	
Kidney problems†			
Yes	1,586 (62.8)	938 (37.2)	<0.001
No	10,765 (80.2)	2,665 (19.8)	
Don't know/refusal	237 (74.8)	80 (25.2)	
High blood pressure†			
Yes	7,624 (75.4)	2,487 (24.6)	<0.001
No	4,902 (80.8)	1,167 (19.2)	
Don't know/refusal	61 (68.7)	28 (31.3)	
Stoke or chronic consequences of stroke†			
Yes	506 (57.6)	372 (42.4)	<0.001
No	11,819 (78.6)	3,225 (21.4)	
Don't know/refusal	263 (75.6)	85 (24.4)	
Arthrosis†			
Yes	3,297 (72.2)	1,272 (27.8)	<0.001
No	9,052 (79.5)	2,330 (20.5)	
Don't know/refusal	238 (74.8)	80 (25.2)	
Low back disorder or other chronic back defect†			
Yes	4,685 (74.4)	1,613 (25.6)	<0.001
No	7,732 (79.3)	2,015 (20.7)	
Don't know/refusal	171 (76.0)	54 (24.0)	
Neck disorder or other chronic neck defect†			
Yes	3,138 (73.7)	1,118 (26.3)	<0.001
No	9,225 (78.7)	2,495 (21.3)	
Don't know/refusal	225 (76.4)	69 (23.6)	
Allergy†			
Yes	1,962 (75.3)	642 (24.7)	0.018
No	10,419 (77.8)	2,973 (22.2)	
Don't know/refusal	207 (75.5)	67 (24.5)	
Cirrhosis of the liver†			
Yes	159 (57.6)	117 (42.4)	<0.001
No	12,190 (77.8)	3,481 (22.2)	
Don't know/refusal	239 (74.0)	84 (26.0)	

Urinary incontinence[†]			
Yes	1,599 (66.2)	816 (33.8)	<0.001
No	10,792 (79.4)	2,802 (20.6)	
Don't know/refusal	197 (75.4)	64 (24.6)	
Kidney problems[†]			
Yes	979 (60.7)	634 (39.3)	<0.001
No	11,387 (79.3)	2,978 (20.7)	
Don't know/refusal	222 (76.0)	70 (24.0)	
Depression[†]			
Yes	1,520 (71.1)	617 (28.9)	<0.001
No	10,851 (78.4)	2,992 (21.6)	
Don't know/refusal	218 (74.9)	73 (25.1)	
Road traffic accident[†]			
Yes	118 (68.0)	55 (32.0)	<0.001
No	12,362 (77.6)	3,569 (22.4)	
Don't know/refusal	108 (65.1)	58 (34.9)	
Accident at home[†]			
Yes	583 (59.6)	395 (40.4)	<0.001
No	11,908 (78.6)	3,238 (21.4)	
Don't know/refusal	97 (66.4)	49 (33.6)	
Leisure accident[†]			
Yes	297 (64.2)	165 (35.8)	<0.001
No	12,193 (77.9)	3,461 (22.1)	
Don't know/refusal	98 (63.5)	56 (36.5)	
Glasses or contact lenses			
Yes	10,087 (77.1)	2,994 (22.9)	0.089
No	2,486 (78.5)	680 (21.5)	
Don't know/refusal	15 (64.7)	8 (35.3)	
Hearing aid			
Yes	882 (70.7)	366 (29.3)	<0.001
No	11,678 (78.0)	3,302 (22.0)	
Don't know/refusal	28 (66.8)	14 (33.2)	
Difficulty walking			
No difficulty	7,139 (84.4)	1,323 (15.6)	<0.001
Moderate difficulty	2,973 (75.8)	950 (24.2)	
Severe difficulty	2,444 (63.7)	1,394 (36.3)	
Don't know/refusal	31 (67.8)	15 (32.2)	
Intensity of bodily pain during the past month			
None	3,669 (84.1)	694 (15.9)	<0.001
Very mild	1,540 (84.1)	291 (15.9)	
Mild	1,998 (80.6)	479 (19.4)	
Moderate	2,919 (74.6)	995 (25.4)	
Severe	1,599 (67.0)	786 (33.0)	
Very severe	494 (61.1)	314 (38.9)	
Don't know/refusal	370 (75.2)	122 (24.8)	
Depression severity (PHQ 8) ††			
None/minimal (0-4)	8,227 (82.0)	1,808 (18.0)	<0.001
Mild (5-9)	2,393 (72.9)	888 (27.1)	

Moderate (10-14)	833 (66.7)	415 (33.3)
Severe (15-24)	463 (59.6)	313 (40.4)
Don't know/refusal	672 (72.3)	258 (27.7)

* Being married includes being in a registered partnership, and being divorced or widowed includes having been in a registered partnership that was legally dissolved or that ended with the death of a partner, respectively.

† in the past 12 months

**MI, myocardial infarction

††PHQ-8, eight-item patient health questionnaire