

# Frequency of health-care service use and severity of illness in undocumented migrants in Catalonia, Spain: a population-based, cross-sectional study



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## Summary

**Background** In Spain, legislation was passed in 2012 excluding undocumented migrants from the public health-care system. Catalonia was one of the Spanish regions that did not implement this legislation, and continued to guarantee access to health care to the whole population. We aimed to analyse health-care use and health status among undocumented migrants in Catalonia, and compare health-care use and health status with legal residents classified according to their socioeconomic position (SEP).

**Methods** We did a population-based, cross-sectional study, with administrative individual data. The study included the resident population in Catalonia, Spain, in 2017, aged younger than 65 years and with a maximum annual income of less than €18 000 per year, and classified into three socioeconomic (SEP) groups—low SEP, very low SEP, and undocumented migrants. Indicators regarding health-care service use (primary care, emergency care, mental health care, acute care), drug prescriptions, and selected chronic and infectious diseases were analysed.

**Findings** Between Jan 1 and Dec 31, 2017, 4 071 988 residents of Catalonia were included in this study; undocumented migrants represented 2·8% (n=113 450) of this population. Of all undocumented migrants, 25 942 (61·0%) female participants aged 15–64 years and 19 819 (46·0%) male participants aged 15–64 years attended primary health-care centres: these rates were lower than in individuals with a very low SEP (84·8% in female participants and 72·1% in male participants). Hospital admission rates among male participants aged 15–64 years in the very low SEP group were more than three times as high as in undocumented migrants (111·6 vs 35·7). The highest tuberculosis rate was found in undocumented male migrants (incidence rate 4·35 [95% CI 3·55–5·16]).

**Interpretation** Undocumented migrants made less use of health-care services than those in the low and very low SEP groups, but for some infectious diseases, incidence was higher in undocumented migrants. These results constitute an additional argument to support the maintenance of universal health coverage for all citizens.

**Funding** None.

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## Introduction

Throughout history, Europe has been a crossroads of global migration systems. During the past 10 years, Europe has received increasing numbers of refugees (from 200 000 in 2008 to 600 000 in 2019), reaching a peak in 2015, a time that has become known as the refugee and migrant crisis.<sup>1</sup> In 2019, countries in the European Economic Area resettled 30 264 refugees through national and EU programmes.<sup>2</sup> In addition to those refugees who obtain legal status in a new country, many undocumented migrants come to Europe in an irregular or clandestine manner. Once there, they seek to legalise their situation and earn a living. Since 2015, Spain has greatly increased its migrant intake. In 2019, Spain received 664 557 regular migrants,<sup>3</sup> and 32 513 undocumented migrants.<sup>4</sup>

In parallel, the salience of migration as a political and social concern has intensified in Europe. The European Council has implemented measures to improve the

control of its external borders and of migration flows. Some countries have taken political action to limit the entry of undocumented migrants. In Spain, in 2012, legislation to exclude undocumented migrants from the public health-care system was approved.<sup>5</sup> Catalonia was one of the Spanish regions that did not implement this legislation, and immediately announced that all people living in Catalonia would have access to health-care services, including undocumented migrants.<sup>6</sup> In July, 2018, the Spanish legislation was repealed.<sup>7</sup> However, the maintenance of universal coverage in Catalonia over the intervening period obliged the Catalan Government to register undocumented migrants and to identify them as a special interest group.

Previous studies done in Europe, using surveys or administrative data from small regions, found a lower use of primary care and less contact with general practitioners by undocumented migrants than regular

*Lancet Planet Health* 2021;  
5: e286–96

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### Research in context

#### Evidence before this study

The only quantitative (survey-based) study found in the literature reported no differences in the use of health-care services between legal and illegal migrants when ill; two relevant systematic reviews showed that undocumented migrants in Europe faced particular problems when using health-care services, especially regarding maternal and child health care. In Spain, in 2012, legislation was passed that excluded undocumented migrants from the public health-care system. Catalonia did not implement this legislation, and continued to guarantee access to health care to the whole population.

#### Added value of this study

The individual data of 4 071 988 residents of Catalonia (113 450 undocumented migrants) were included in this study,

detailing socioeconomic characteristics, use of health-care services, and disease diagnosis, collected from administrative databases. We found that undocumented migrants made less use of health-care services than those in the low and very low socioeconomic position groups. Also, the tuberculosis rate is higher in undocumented migrants.

#### Implications of all the available evidence

The results of this study challenge the claims that undocumented migrants make higher than average use of health-care services, and thus support the maintenance of universal health coverage.

migrants or the native population.<sup>8–10</sup> Maternal health-care services were also underused by or inadequate for undocumented migrants.<sup>11,12</sup>

One of the arguments used by far-right political parties to oppose immigration is that foreign-born people use health-care services more intensively than the native population; at the other end of the political spectrum, left-oriented parties have argued that migrants face barriers restricting their access to these services.<sup>13</sup>

We aimed to analyse health-care use and health status among undocumented migrants in Catalonia and to make a comparison with the legally resident population classified by socioeconomic position (SEP).

## Methods

### Study design and participants

We did a population-based, cross-sectional study, with administrative individual data in Catalonia, Spain. Health care in Catalonia is organised as a National Health System, funded through taxation.<sup>14</sup> All residents (7 348 275 as of 2017) are granted universal public health-care coverage by law. Public health-care spending represents 5·4% of Catalan's gross domestic product.<sup>15</sup> The use of publicly funded health-care services is free; the sole exception is drug prescriptions, which are based on a copayment system calculated according to the individual's income (or, if appropriate, according to the social security benefits received). Each resident is assigned a unique personal health-care identification number, which can be used to trace their use of health-care services and prescribed drugs, and link administrative databases.

Because only 4·3% of undocumented migrants were aged 65 years or older, this population group was excluded from the study. Individuals with an annual income of €18 000 or more were also excluded, as the practice of contracting voluntary private insurance in higher income groups entails a lower use of public health-care services among these sectors, and would thus have introduced a bias in the study that might have compromised the

comparison between the different population groups. The following SEP groups were defined for this study: (1) low SEP, which includes individuals receiving unemployment allowance, individuals receiving unemployment benefit, and individuals in employment earning less than €18 000 per year; (2) very low SEP, which includes individuals receiving some form of universal benefit, individuals who no longer receive unemployment allowance, and individuals who no longer receive unemployment benefit and do not qualify for unemployment allowance (benefits and allowances definitions have been previously published<sup>16</sup>); and (3) undocumented migrants, identified as a special interest group. The need for written informed consent is waived for this study type.

### Procedures

A database including the population resident in Catalonia in 2017, up to the age of 64 years was created, containing information on their use of health-care services, drug prescriptions, and selected chronic and infectious diseases. SEP was defined according to the information obtained from the levels of pharmacy copayment and undocumented migrants after their recognition as a special interest group. Children were assigned the SEP of their parents or guardian. The following sources of information were used: (1) The Catalan Government's central registry of insured individuals, as of Jan 1, 2017, for demographic information, SEP, and undocumented migrant status; (2) the databases for primary care (Conjunt Minim Basic de Dades [CMBD]-primary care), acute hospitals (CMBD-hospital), emergencies (CMBD-emergencies), mental health outpatient centres (CMBD-ambulatory mental health), and psychiatric hospitalisation (CMBD-psychiatric hospitalisation; 2017); and (3) the pharmacy billing database (2017).

As these databases are used to monitor health-care quality and also for reimbursement purposes, data quality is checked both at the provider level and systematically by the Catalan Health Department.

## Outcomes

We assessed the percentage of people who attended primary care services and mean number of visits to primary care services; the percentage of people who attended emergency services (acute hospital, primary care emergency centres, or emergency medical services) and the mean number of visits to emergency services; the percentage of people who attended mental health centres and the mean number of visits to mental health centres; the hospital admission rate; childbirth hospital admission rate, surgical hospital admission rate, and psychiatric hospital admission rate (excluding children <5 years) per 1000 inhabitants; the percentage of individuals prescribed at least one drug, mean number of prescriptions, percentage of individuals prescribed psychoactive drugs (anxiolytics, antidepressants, or anti-psychotics, excluding children <5 years); the percentage of attendant individuals diagnosed with diabetes, chronic obstructive pulmonary disease (COPD), asthma, cirrhosis, or neoplasms (appendix pp 1–3 for International Classification of Diseases, ninth revision, clinical modification disease codes); and the percentage of attendant individuals diagnosed with HIV, tuberculosis, or hepatitis C virus (HCV; see appendix pp 1–3 for disease codes).

## Statistical analysis

We did a descriptive analysis of sex, age group, and nationality stratified by SEP, and the results are presented with absolute and relative frequencies. Next, the number of individuals and use of public health-care services in each SEP group were calculated (percentages, means, or rates). Incidence rates were calculated taking into account the exposure time (person-years) in each SEP, by means of the information on registrations and cancellations in the central registry of insured individuals, to make the SEP groups comparable (appendix p 4). 5-year age-adjusted Poisson models were used to model the data, with individuals (or number of visits) as the dependent variable, SEP as the exposure variable, and person-years as observation time. The average predicted incidence rate for each SEP through marginal effect for each indicator with its respective 95% CI was calculated and results presented by 100 person-years. Finally, incidence rate ratio, with low SEP as the reference group, was included with its respective 95% CI and p value. The results were stratified by two age groups (<15 years and 15–64 years) and sex, and are presented for the different SEP groups (very low SEP, low SEP, and undocumented migrants). All the analyses were done with Stata, version 14.2, statistical software.

## Role of the funding source

There was no funding source for this study.

## Results

Between Jan 1 and Dec 31, 2017, 4071988 residents of Catalonia aged younger than 65 years and with an income

	Very low SEP (n=269 915)	Low SEP (n=3 688 623)	Undocumented migrants (n=113 450)	p value*
Sex	..	..	..	<0.01
Female	143 345 (53.1%)	1 884 374 (51.1%)	56 154 (49.5%)	..
Male	126 570 (46.9%)	1 804 249 (48.9%)	57 296 (50.5%)	..
Age, years	..	..	..	<0.01
<15	59 524 (22.1%)	689 614 (18.7%)	29 100 (25.7%)	..
15–64	210 391 (77.9%)	2 999 009 (81.3%)	84 350 (74.4%)	..
Region	..	..	..	<0.01
Spain (Europe)	191 614 (71.0%)	2 743 251 (74.4%)	NA	..
Latin America and Caribbean	10 719 (4.0%)	232 829 (6.3%)	38 734 (34.1%)	..
Europe and central Asia	9742 (3.6%)	209 366 (5.7%)	19 761 (17.4%)	..
Middle East and north Africa	39 657 (14.7%)	162 665 (4.4%)	9015 (7.9%)	..
Sub-Saharan Africa	358 (0.1%)	74 273 (2.0%)	23 309 (20.5%)	..
South Asia	5987 (2.2%)	61 432 (1.7%)	9632 (8.5%)	..
East Asia and Pacific	1783 (0.7%)	54 607 (1.5%)	4802 (4.2%)	..
North America	40 (<0.1%)	2130 (0.1%)	354 (0.3%)	..
Unknown	10 015 (3.7%)	148 070 (4.0%)	7843 (6.9%)	..

Data are n (%), unless specified. SEP=socioeconomic position. NA=not applicable. \* $\chi^2$  test.

Table 1: Population characteristics by SEP in Catalonia, 2017

less than €18000 per year were included in this study. Undocumented migrants represented 2.8% (n=113 450) of the whole study population, those with very low SEP 6.6% (n=269 915), and those with low SEP 90.6% (n=3 688 623). Among undocumented migrants, 57 296 (50.5%) were male and 84 350 (74.3%) were aged 15–64 years; the most common origin was Latin American or Caribbean (34.1%), followed by sub-Saharan African (20.5%), European or central Asian (17.4%), south Asian (8.5%), and Middle Eastern or north African (7.9%; table 1).

For primary care, of all undocumented migrants, 76.1% of female and male participants younger than 15 years attended primary health-care centres and these rates were lower than in individuals with low and very low SEP. The incidence rate for attendance at primary care centres was 92.25% (95% CI 90.48–94.03) of undocumented female migrants younger than 15 years and 91.78% (90.05–93.50) of undocumented male migrants younger than 15 years (table 2). The corresponding figures for the low SEP group were 88.42% (95% CI 88.09–88.74) for female participants younger than 15 years and 88.29% (87.98–88.61) for male participants younger than 15 years (table 2). In the 15–64 years age group, the age-adjusted incidence rate of undocumented migrants who attended primary care centres was 82.59% (95% CI 81.58–83.60) for female participants and 64.25% (63.35–65.15) for male participants (table 3). The corresponding figures were lower in the low SEP group for female participants (77.96%) and similar for male participants (66.89%) and higher in the very low SEP group (female

See Online for appendix

participants 84·82%, male participants 72·18%; table 3). The mean number of age-adjusted visits also differed between socioeconomic groups, with undocumented migrants presenting the lowest values: a mean of 6·35 visits for female participants younger than 15 years and 6·41 in male participants younger than 15 years, 4·61 for female participants aged 15–64 years, and 3·37 for male participants aged 15–64 years (tables 2, 3).

For emergency care, undocumented migrants made less use of emergency services than the very low SEP group. Incidence rate was 35·59% of female participants younger than 15 years and 38·71% of male participants younger than 15 years; this population group made the lowest mean number of visits (0·71 in female participants and 0·81 in male participants; table 2). Among undocumented migrants aged 15–64 years, these figures were 34·94% for female

participants and 28·54% for male participants, in whom female participants made a mean of 0·75 visits and male participants made a mean of 0·60 visits (table 3). The very low SEP group presented the highest incidence rate of emergency service use, between 6 to 11 points higher than the undocumented migrants in both age groups and for both sexes. In all SEP groups, more male participants younger than 15 years attended emergency services than female participants younger than 15 years. This relation was reversed in individuals aged 15–64 years, in which female participants attended more than male participants.

Regarding mental health care, the highest incidence rate of those younger than 15 years who attended mental health centres were found in the very low SEP group (male participants 8·43%, female participants 4·35%). The values were lower among undocumented male

	Female participants younger than 15 years				Male participants younger than 15 years			
	Number	IR (95% CI)	IRR (95% CI)	p value	Number	IR (95% CI)	IRR (95% CI)	p value
<b>Individuals attended in primary care</b>								
Low SEP	283 360 (84·8%)	88·42% (88·09–88·74)	1 (ref)	..	301 096 (84·7%)	88·29% (87·98–88·61)	1 (ref)	..
Very low SEP	25 353 (87·7%)	90·67% (89·56–91·79)	1·03 (1·01–1·04)	<0·001	26 814 (87·6%)	90·58% (89·50–91·67)	1·03 (1·01–1·04)	<0·001
Undocumented migrants	10 357 (76·1%)	92·25% (90·48–94·03)	1·04 (1·02–1·06)	<0·001	10 838 (76·1%)	91·78% (90·05–93·50)	1·04 (1·02–1·06)	<0·001
<b>Mean primary care visits</b>								
Low SEP	2 187 475 (6·6%)	6·77% (6·77–6·78)	1 (ref)	..	2 376 006 (6·7%)	6·91% (6·90–6·92)	1 (ref)	..
Very low SEP	200 337 (6·9%)	7·52% (7·48–7·55)	1·11 (1·10–1·11)	<0·001	214 348 (7·0%)	7·63% (7·60–7·67)	1·10 (1·10–1·11)	<0·001
Undocumented migrants	71 273 (5·2%)	6·35% (6·30–6·39)	0·94 (0·93–0·94)	<0·001	76 147 (5·3%)	6·41% (6·36–6·45)	0·93 (0·92–0·93)	<0·001
<b>Individuals attended at emergency services</b>								
Low SEP	119 239 (35·7%)	36·99% (36·78–37·20)	1 (ref)	..	138 664 (39·0%)	40·47% (40·26–40·68)	1 (ref)	..
Very low SEP	11 225 (38·8%)	41·58% (40·81–42·35)	1·12 (1·10–1·15)	<0·001	12 895 (42·1%)	44·99% (44·21–45·77)	1·11 (1·09–1·13)	<0·001
Undocumented migrants	3999 (29·4%)	35·59 (34·49–36·70)	0·96 (0·93–0·99)	0·02	4587 (32·2%)	38·71% (37·59–39·83)	0·96 (0·93–0·98)	0·003
<b>Mean emergency services visits</b>								
Low SEP	247 353 (0·7%)	0·76% (0·76–0·77)	1 (ref)	..	295 546 (0·8%)	0·86% (0·86–0·86)	1 (ref)	..
Very low SEP	24 872 (0·9%)	0·95% (0·93–0·96)	1·24 (1·22–1·25)	<0·001	29 129 (0·9%)	1·05% (1·04–1·06)	1·22 (1·21–1·24)	<0·001
Undocumented migrants	7995 (0·6%)	0·71% (0·70–0·73)	0·93 (0·91–0·95)	<0·001	9649 (0·7%)	0·81% (0·80–0·83)	0·94 (0·93–0·96)	<0·001
<b>Individuals attended at mental health centres</b>								
Low SEP	10 304 (3·1%)	3·30% (3·24–3·37)	1 (ref)	..	20 705 (5·8%)	6·20% (6·12–6·29)	1 (ref)	..
Very low SEP	1341 (4·6%)	4·35% (4·12–4·58)	1·32 (1·24–1·39)	<0·001	2765 (9·0%)	8·43% (8·12–8·75)	1·36 (1·31–1·41)	<0·001
Undocumented migrants	323 (2·4%)	2·91% (2·59–3·23)	0·88 (0·79–0·98)	0·02	538 (3·8%)	4·64% (4·25–5·03)	0·75 (0·69–0·81)	<0·001
<b>Mean number of mental health centre visits</b>								
Low SEP	62 952 (0·2%)	0·20% (0·20–0·20)	1 (ref)	..	134 892 (0·4%)	0·40% (0·40–0·41)	1 (ref)	..
Very low SEP	8331 (0·3%)	0·27% (0·26–0·28)	1·34 (1·31–1·37)	<0·001	17 901 (0·6%)	0·54% (0·54–0·55)	1·35 (1·32–1·37)	<0·001
Undocumented migrants	1902 (0·1%)	0·17% (0·16–0·18)	0·85 (0·81–0·89)	<0·001	3173 (0·2%)	0·27% (0·26–0·28)	0·68 (0·65–0·70)	<0·001
<b>Hospital admission rate, per 1000 inhabitants</b>								
Low SEP	16 276 (48·7%)	50·10% (49·33–50·87)	1 (ref)	..	23 906 (67·2%)	69·25% (68·37–70·13)	1 (ref)	..
Very low SEP	1501 (51·9%)	58·83% (55·85–61·81)	1·17 (1·11–1·24)	<0·001	1968 (64·3%)	72·10% (68·91–75·29)	1·04 (0·99–1·09)	0·09
Undocumented migrants	601 (44·2%)	53·50% (49·22–57·78)	1·07 (0·98–1·16)	0·11	833 (58·5%)	69·87% (65·13–74·62)	1·01 (0·94–1·08)	0·80

(Table 2 continues on next page)

	Female participants younger than 15 years				Male participants younger than 15 years			
	Number	IR (95% CI)	IRR (95% CI)	p value	Number	IR (95% CI)	IRR (95% CI)	p value
(Continued from previous page)								
<b>Surgical hospital admission rate, per 1000 inhabitants</b>								
Low SEP	7112 (21.3%)	22.07% (21.55–22.58)	1 (ref)	..	12 571 (35.4%)	36.68% (36.04–37.32)	1 (ref)	..
Very low SEP	736 (25.5%)	27.00% (25.05–28.95)	1.22 (1.13–1.32)	<0.001	1103 (36.0%)	38.14% (35.89–40.40)	1.04 (0.98–1.11)	0.21
Undocumented migrants	305 (22.4%)	27.12% (24.07–30.16)	1.23 (1.10–1.38)	<0.001	458 (32.1%)	38.61% (35.08–42.15)	1.05 (0.96–1.16)	0.28
<b>Psychiatric hospital admission rate, per 1000 inhabitants</b>								
Low SEP	348 (1.0%)	1.14% (1.02–1.26)	1 (ref)	..	214 (0.6%)	0.65% (0.57–0.74)	1 (ref)	..
Very low SEP	38 (1.3%)	1.27% (0.87–1.67)	1.11 (0.80–1.56)	0.53	41 (1.3%)	1.28% (0.89–1.68)	1.97 (1.41–2.75)	<0.001
Undocumented migrants	12 (0.9%)	1.11% (0.48–1.74)	0.97 (0.55–1.73)	0.92	9 (0.6%)	0.79% (0.27–1.31)	1.21 (0.62–2.37)	0.57
<b>Mean number of prescriptions</b>								
Low SEP	1 075 413 (3.2%)	3.34% (3.33–3.34)	1 (ref)	..	1 318 797 (3.7%)	3.85% (3.84–3.85)	1 (ref)	..
Very low SEP	147 478 (5.1%)	5.46% (5.43–5.48)	1.64 (1.63–1.65)	<0.001	170 859 (5.6%)	5.98% (5.95–6.01)	1.55 (1.55–1.56)	<0.001
Undocumented migrants	32 664 (2.4%)	2.91% (2.87–2.94)	0.87 (0.86–0.88)	<0.001	38 305 (2.7%)	3.23% (3.20–3.26)	0.84 (0.83–0.85)	<0.001
<b>Individuals prescribed at least one drug</b>								
Low SEP	205 731 (61.6%)	63.98% (63.70–64.25)	1 (ref)	..	223 338 (62.8%)	65.28% (65.01–65.55)	1 (ref)	..
Very low SEP	20 432 (70.7%)	74.14% (73.12–75.16)	1.16 (1.14–1.18)	<0.001	21 887 (71.5%)	75.05% (74.05–76.04)	1.15 (1.13–1.17)	<0.001
Undocumented migrants	6923 (50.9%)	61.59% (60.14–63.04)	0.96 (0.94–0.99)	0.002	7445 (52.2%)	62.87% (61.44–64.30)	0.96 (0.94–0.99)	0.001
<b>Individuals prescribed psychoactive drugs</b>								
Low SEP	13 497 (4.0%)	4.17% (4.10–4.24)	1 (ref)	..	15 972 (4.5%)	4.66% (4.58–4.73)	1 (ref)	..
Very low SEP	1542 (5.3%)	5.74% (5.46–6.03)	1.38 (1.31–1.45)	<0.001	1985 (6.5%)	6.90% (6.59–7.20)	1.48 (1.41–1.55)	<0.001
Undocumented migrants	469 (3.5%)	4.17% (3.79–4.54)	1.00 (0.91–1.09)	0.96	552 (3.9%)	4.65% (4.26–5.04)	1.00 (0.92–1.09)	0.98

Data are n (%) unless specified. IR=incidence rate. IRR=incidence rate ratio. SEP=socioeconomic position.

**Table 2: Use of health-care services in those younger than 15 years by sex and SEP in Catalonia, 2017**

migrants younger than 15 years (4.64%) and undocumented female migrants (2.91%; table 2). Among individuals aged 15–64 years, the differences between the lowest SEP group and undocumented migrants were greater—eg, 9.19% of female participants in the very low SEP group attended mental health centres compared with 1.45% of female participants in the undocumented migrant population (table 3). Similarly, the mean number of visits was highest in the very low SEP group, in both age groups and for both sexes. In all SEP groups, more male participants younger than 15 years attended mental health centres and made more visits than female participants younger than 15 years. The relationship was reversed in the attended adult population, in which female participants attended more often than male participants. This pattern was observed in all SEP groups.

For acute care, hospital admission rates among male participants with a very low SEP were more than three times those of undocumented migrants and male participants with a low SEP. Among female participants, hospital admission rates were 69% higher in the very low SEP group (136.52%) than in the undocumented migrant group (80.98%). Childbirth hospital admission incidence rates among undocumented migrants (34.78%) were

lower than those in the very low SEP group (41.29%; table 3).

Regarding sex differences, hospital admission incidence rates per 1000 inhabitants among those younger than 15 years were higher in male participants (69.87% in undocumented migrants and 72.10% in the very low SEP group) than in female participants (53.50% in undocumented migrants and 58.83% in the very low SEP group; table 2). Female participants aged 15–64 years had the highest hospital admission incidence rates across all groups. Among those younger than 15 years, no differences in surgical hospital admission incidence rates between very low SEP and the undocumented migrant group were observed, but the rate was higher in male participants than in female participants. By contrast, among individuals aged 15–64 years, the very low SEP group had higher rates (58.73% in female participants and 51.99% in male participants) than undocumented migrants (female participants 39.33%, male participants 36.64%), who had the lowest rates.

Individuals with a very low SEP had the highest psychiatric hospital admission incidence rates per 1000 inhabitants (10.01% [95% CI 9.39–10.63]), while rates were similar in the low SEP (4.62% [4.49–4.74]) and

undocumented migrants groups (5.63% [4.34–6.92]; table 3). In the case of male participants younger than 15 years, the psychiatric hospital admission incidence rate ranged between 0.65% (95% CI 0.57–0.74) in those with a low SEP and 1.28% (0.89–1.68) in those with a very low SEP (table 2). Among individuals aged 15–64 years, incidence rates of psychiatric hospitalisation were higher in male participants than in female participants across all SEP groups.

Approximately 72% of individuals younger than 15 years in the very low SEP group had been prescribed at least one drug, compared with 61% in the low SEP group and 51% in the undocumented migrant group; the values for male participants and female participants were similar (table 2). Among individuals aged 15–64 years, the proportion of drug prescriptions was higher in female participants than in male participants for all SEP

groups, and the lowest proportion of prescriptions was found in undocumented migrants (table 3).

Individuals younger than 15 years in the very low SEP group had the highest percentage of prescriptions of psychoactive drugs, with higher values in male participants (6.5%) than in female participants (5.3%). In the other groups, the rates ranged from 3.5% in female participants who were undocumented migrants to 4.5% in male participants with a low SEP. Among individuals aged 15–64 years, psychoactive drug prescription was higher in female participants than in male participants across all SEP groups. The number of individuals prescribed psychoactive drugs in the very low SEP group (female participants 37.4%, male participants 25.7%) was between three or four times higher than in undocumented migrants (female participants 8.5%, male participants 4.6%).

	Female participants aged 15–64 years				Male participants aged 15–64 years			
	Number	IR (95% CI)	IRR (95% CI)	p value	Number	IR (95% CI)	IRR (95% CI)	p value
<b>Individuals attended in primary care</b>								
Low SEP	1 188 697 (76.7%)	77.96% (77.82–78.10)	1 (ref)	..	940 639 (64.9%)	66.89% (66.75–67.02)	1 (ref)	..
Very low SEP	97 245 (85.0%)	84.82% (84.29–85.36)	1.09 (1.08–1.10)	<0.001	69 138 (72.1%)	72.18% (71.64–72.73)	1.08 (1.07–1.09)	<0.001
Undocumented migrants	25 942 (61.0%)	82.59% (81.58–83.60)	1.06 (1.05–1.07)	<0.001	19 819 (46.0%)	64.25% (63.35–65.15)	0.96 (0.95–0.97)	<0.001
<b>Mean primary care visits</b>								
Low SEP	8 271 791 (5.3%)	5.44% (5.43–5.44)	1 (ref)	..	5 654 627 (3.9%)	4.13% (4.13–4.14)	1 (ref)	..
Very low SEP	896 395 (7.8%)	7.49% (7.47–7.50)	1.38 (1.37–1.38)	<0.001	528 230 (5.5%)	5.31% (5.30–5.33)	1.29 (1.28–1.29)	<0.001
Undocumented migrants	134 258 (3.2%)	4.61% (4.59–4.64)	0.85 (0.84–0.85)	<0.001	87 691 (2.0%)	3.37% (3.35–3.40)	0.82 (0.81–0.82)	<0.001
<b>Individuals attended at emergency services</b>								
Low SEP	494 016 (31.9%)	32.46% (32.37–32.55)	1 (ref)	..	408 375 (28.2%)	28.69% (28.60–28.78)	1 (ref)	..
Very low SEP	46 932 (41.0%)	43.16% (42.77–43.56)	1.33 (1.32–1.34)	<0.001	34 613 (36.1%)	37.31% (36.92–37.71)	1.30 (1.29–1.31)	<0.001
Undocumented migrants	11 783 (27.7%)	34.94% (34.31–35.57)	1.08 (1.06–1.10)	<0.001	9517 (22.1%)	28.54% (27.96–29.11)	0.99 (0.97–1.02)	0.61
<b>Mean emergency services visits</b>								
Low SEP	1 047 855 (0.7%)	0.69% (0.69–0.69)	1 (ref)	..	805 092 (0.6%)	0.57% (0.57–0.57)	1 (ref)	..
Very low SEP	131 912 (1.2%)	1.24% (1.23–1.24)	1.79 (1.78–1.80)	<0.001	92 336 (0.96%)	0.99% (0.98–0.99)	1.74 (1.73–1.75)	<0.001
Undocumented migrants	25 902 (0.6%)	0.75% (0.74–0.76)	1.09 (1.08–1.10)	<0.001	19 393 (0.5%)	0.60% (0.59–0.61)	1.06 (1.04–1.07)	<0.001
<b>Individuals attended at mental health centres</b>								
Low SEP	57 207 (3.7%)	3.83% (3.80–3.86)	1 (ref)	..	44 079 (3.0%)	3.17% (3.14–3.20)	1 (ref)	..
Very low SEP	11 223 (9.8%)	9.19% (9.02–9.36)	2.40 (2.35–2.45)	<0.001	8321 (8.7%)	8.30% (8.12–8.48)	2.62 (2.56–2.68)	<0.001
Undocumented migrants	402 (0.9%)	1.45% (1.31–1.59)	0.38 (0.34–0.42)	<0.001	417 (0.9%)	1.41% (1.27–1.54)	0.44 (0.40–0.49)	<0.001
<b>Mean mental health centre visits</b>								
Low SEP	366 298 (0.2%)	0.24% (0.24–0.24)	1 (ref)	..	335 892 (0.2%)	0.24% (0.23–0.24)	1 (ref)	..
Very low SEP	87 695 (0.8%)	0.71% (0.71–0.72)	2.95 (2.92–2.97)	<0.001	76 742 (0.8%)	0.76% (0.75–0.76)	3.22 (3.19–3.24)	<0.001
Undocumented migrants	2013 (0.1%)	0.07% (0.07–0.07)	0.29 (0.28–0.31)	<0.001	2754 (0.1%)	0.09% (0.09–0.09)	0.38 (0.37–0.40)	<0.001
<b>Hospital admission rate, per 1000 inhabitants</b>								
Low SEP	137 376 (88.6%)	88.86% (88.39–89.34)	1 (ref)	..	98 847 (68.2%)	74.95% (74.47–75.42)	1 (ref)	..
Very low SEP	15 622 (136.5%)	134.09% (131.98–136.21)	1.51 (1.48–1.53)	<0.001	10 709 (111.6%)	104.19% (102.20–106.18)	1.39 (1.36–1.42)	<0.001
Undocumented migrants	3445 (81.0%)	109.66% (105.98–113.33)	1.23 (1.19–1.28)	<0.001	1536 (35.7%)	74.09% (70.37–77.82)	0.99 (0.94–1.04)	0.66
<b>Childbirth hospital admission rate, per 1000 inhabitants aged 15–49 years</b>								
Low SEP	31 331 (28.2%)	27.62% (27.31–27.93)	1 (ref)	..	..	..	..	..
Very low SEP	2392 (34.9%)	41.29% (39.63–42.95)	1.49 (1.43–1.56)	<0.001	..	..	..	..
Undocumented migrants	924 (41.9%)	34.78% (32.53–37.02)	1.26 (1.18–1.34)	<0.001	..	..	..	..

(Table 3 continues on next page)

	Female participants aged 15–64 years				Male participants aged 15–64 years			
	Number	IR (95% CI)	IRR (95% CI)	p value	Number	IR (95% CI)	IRR (95% CI)	p value
(Continued from previous page)								
<b>Surgical hospital admission rate, per 1000 inhabitants</b>								
Low SEP	70 460 (45.5%)	46.26% (45.92–46.61)	1 (ref)	..	60 208 (41.6%)	45.35% (44.98–45.72)	1 (ref)	..
Very low SEP	7623 (66.6%)	58.73% (57.41–60.06)	1.27 (1.24–1.30)	<0.001	5316 (55.4%)	51.99% (50.58–53.40)	1.15 (1.11–1.18)	<0.001
Undocumented migrants	979 (23.0%)	39.33% (36.86–41.80)	0.85 (0.80–0.91)	<0.001	796 (18.5%)	36.64% (34.08–39.20)	0.81 (0.75–0.87)	<0.001
<b>Potentially avoidable hospital admission rate, per 1000 inhabitants</b>								
Low SEP	4469 (2.9%)	3.01% (2.92–3.09)	1 (ref)	..	5702 (3.9%)	4.62% (4.49–4.74)	1 (ref)	..
Very low SEP	1069 (9.3%)	8.31% (7.81–8.81)	2.77 (2.59–2.96)	<0.001	1031 (10.7%)	10.01% (9.39–10.63)	2.17 (2.03–2.32)	<0.001
Undocumented migrants	98 (2.3%)	4.22% (3.38–5.06)	1.40 (1.15–1.72)	<0.001	74 (1.7%)	5.63% (4.34–6.92)	1.22 (0.97–1.54)	0.09
<b>Psychiatric hospital admission rate, per 1000 inhabitants</b>								
Low SEP	5345 (3.5%)	3.48% (3.38–3.57)	1 (ref)	..	7308 (5.0%)	4.94% (4.83–5.06)	1 (ref)	..
Very low SEP	1718 (15.0%)	14.47% (13.77–15.16)	4.16 (3.94–4.39)	<0.001	2194 (22.9%)	23.03% (22.05–24.02)	4.66 (4.44–4.89)	<0.001
Undocumented migrants	93 (2.2%)	3.06% (2.44–3.69)	0.88 (0.72–1.08)	<0.001	188 (4.4%)	5.35% (4.58–6.12)	1.08 (0.94–1.25)	0.29
<b>Mean number of prescriptions</b>								
Low SEP	17 805 981 (11.5%)	11.95% (11.94–11.95)	1 (ref)	..	13 989 629 (9.7%)	10.80% (10.79–10.80)	1 (ref)	..
Very low SEP	3 265 954 (28.5%)	24.97% (24.95–25.00)	2.09 (2.09–2.09)	<0.001	1 990 103 (20.7%)	18.95% (18.92–18.98)	1.75 (1.75–1.76)	<0.001
Undocumented migrants	176 748 (4.2%)	7.68% (7.65–7.72)	0.64 (0.64–0.65)	<0.001	99 657 (2.3%)	5.67% (5.64–5.71)	0.53 (0.52–0.53)	<0.001
<b>Individuals prescribed at least one drug</b>								
Low SEP	1 076 223 (69.4%)	70.63% (70.49–70.76)	1 (ref)	..	801 898 (55.4%)	57.30% (57.17–57.43)	1 (ref)	..
Very low SEP	94 035 (82.2%)	81.25% (80.73–81.78)	1.15 (1.14–1.16)	<0.001	64 655 (67.4%)	66.17% (65.66–66.68)	1.15 (1.15–1.16)	<0.001
Undocumented migrants	21 519 (50.6%)	69.63% (68.69–70.56)	0.99 (0.97–1.00)	<0.001	15 297 (35.5%)	52.17% (51.34–53.00)	0.91 (0.90–0.93)	<0.001
<b>Individuals prescribed psychoactive drugs</b>								
Low SEP	325 812 (21.0%)	21.21% (21.13–21.28)	1 (ref)	..	179 671 (12.4%)	12.81% (12.75–12.87)	1 (ref)	..
Very low SEP	427 66 (37.4%)	32.77% (32.46–33.09)	1.55 (1.53–1.56)	<0.001	24 667 (25.7%)	23.64% (23.35–23.94)	1.85 (1.82–1.87)	<0.001
Undocumented migrants	3605 (8.5%)	14.26% (13.79–14.73)	0.67 (0.65–0.69)	<0.001	1957 (4.6%)	7.67% (7.33–8.01)	0.60 (0.57–0.63)	<0.001

Data are n (%) unless specified. IR=incidence rate. IRR=incidence rate ratio. SEP=socioeconomic position.

**Table 3: Use of health-care services in individuals aged 15–64 years by sex and SEP in Catalonia, 2017**

For chronic diseases, the same SEP pattern was observed in COPD, cirrhosis, and neoplasms: the highest diagnosis incidence rate was observed in the very low SEP group, followed by the low SEP group, and then by the undocumented migrants (table 4). The highest absolute differences between the very low SEP and undocumented migrants were observed in asthma for female participants (very low SEP 9.28%, undocumented migrants 2.71%). In terms of relative differences, COPD diagnosis incidence rate was 76% lower in female participants who were undocumented migrants (0.55 per 100 person-years, incidence rate ratio 0.24 [95% CI 0.20–0.29]) than in female participants with a low SEP (2.29 per 100 person-years). COPD and cirrhosis were more prevalent in male participants than in female participants, but asthma, diabetes, and cancer were more prevalent in female participants.

For infectious diseases, the very low SEP group had the highest diagnosis rate of HIV and HCV, followed by undocumented migrants and the low SEP group. In tuberculosis, male undocumented migrants presented the highest diagnosis incidence rate (4.35 per 100 person-years), followed by the very low SEP group (1.90 per 100 person-years), and the low SEP group (0.77 per 100 person-years).

For all infectious diseases, male participants had higher diagnosis rates than female participants (table 4).

## Discussion

The results of this study showed that undocumented migrants made less use of health-care services than individuals in the low and very low SEP groups. The diagnosis rate of chronic diseases was also lower among undocumented migrants than in their peers with a low or very low SEP. By contrast, the diagnosis rate of HIV and HCV in undocumented migrants was higher than in the low SEP group but lower than in the very low SEP group, and tuberculosis rates in male undocumented migrants were the highest compared with the other groups.

Sex and age differences were also observed in most of the indicators and for all SEP groups. These results are similar to those observed in previous work by our group for the general population, in different age and SEP groups.<sup>16</sup> It was found that although undocumented migrants made less use of health-care services than legal residents, their patterns of use of health-care services with regard to sex and age were similar. For example, male participants younger than 15 years attended emergency care more frequently than female participants;

	Female participants aged 15–64 years				Male participants aged 15–64 years			
	Number	IR (95% CI)	IRR (95% CI)	p value	Number	IR (95% CI)	IRR (95% CI)	p value
<b>Diabetes</b>								
Low SEP	54 698 (3.5%)	3.76% (3.73–3.79)	1 (ref)	..	81 125 (5.6%)	6.51% (6.47–6.56)	1 (ref)	..
Very low SEP	9015 (7.9%)	6.63% (6.50–6.77)	1.76 (1.72–1.80)	<0.001	8720 (9.1%)	8.08% (7.91–8.25)	1.24 (1.21–1.27)	<0.001
Undocumented migrants	1043 (2.5%)	5.49% (5.16–5.83)	1.46 (1.37–1.55)	<0.001	798 (1.9%)	6.22% (5.79–6.66)	0.96 (0.89–1.02)	0.20
<b>Chronic obstructive pulmonary disease</b>								
Low SEP	33765 (2.2%)	2.29% (2.27–2.32)	1 (ref)	..	45 605 (3.2%)	3.66% (3.63–3.70)	1 (ref)	..
Very low SEP	5702 (5.0%)	4.27% (4.16–4.38)	1.86 (1.81–1.91)	<0.001	6291 (6.6%)	6.02% (5.87–6.17)	1.64 (1.60–1.69)	<0.001
Undocumented migrants	118 (0.3%)	0.55% (0.45–0.65)	0.24 (0.20–0.29)	<0.001	192 (0.5%)	1.35% (1.16–1.54)	0.37 (0.32–0.42)	<0.001
<b>Asthma</b>								
Low SEP	109 760 (7.1%)	7.24% (7.19–7.28)	1 (ref)	..	86 600 (6.0%)	6.15% (6.11–6.19)	1 (ref)	..
Very low SEP	10 271 (9.0%)	9.28% (9.10–9.46)	1.28 (1.26–1.31)	<0.001	5706 (5.9%)	6.65% (6.47–6.82)	1.08 (1.05–1.11)	<0.001
Undocumented migrants	882 (2.1%)	2.71% (2.53–2.89)	0.37 (0.35–0.40)	<0.001	636 (1.5%)	1.73% (1.59–1.86)	0.28 (0.26–0.30)	<0.001
<b>Cirrhosis</b>								
Low SEP	4287 (0.3%)	0.29% (0.28–0.30)	1 (ref)	..	8640 (0.6%)	0.68% (0.67–0.70)	1 (ref)	..
Very low SEP	881 (0.8%)	0.63% (0.59–0.67)	2.15 (2.00–2.32)	<0.001	1559 (1.6%)	1.36% (1.29–1.43)	1.99 (1.89–2.10)	<0.001
Undocumented migrants	49 (0.1%)	0.26% (0.19–0.33)	0.89 (0.67–1.18)	0.41	76 (0.2%)	0.58% (0.45–0.71)	0.85 (0.67–1.06)	0.15
<b>Neoplasms</b>								
Low SEP	67 616 (4.4%)	4.52% (4.49–4.56)	1 (ref)	..	42 565 (2.9%)	3.39% (3.36–3.43)	1 (ref)	..
Very low SEP	6857 (6.0%)	5.02% (4.90–5.14)	1.11 (1.08–1.14)	<0.001	3478 (3.6%)	3.41% (3.29–3.52)	1.00 (0.97–1.04)	0.81
Undocumented migrants	486 (1.1%)	2.31% (2.10–2.52)	0.51 (0.47–0.56)	<0.001	244 (0.6%)	1.60% (1.40–1.80)	0.47 (0.42–0.53)	<0.001
<b>HIV</b>								
Low SEP	3730 (0.2%)	0.23% (0.22–0.24)	1 (ref)	..	11 590 (0.8%)	0.79% (0.78–0.81)	1 (ref)	..
Very low SEP	1394 (1.2%)	1.00% (0.95–1.06)	4.34 (4.08–4.62)	<0.001	2718 (2.8%)	2.31% (2.22–2.40)	2.91 (2.78–3.03)	<0.001
Undocumented migrants	155 (0.4%)	0.58% (0.49–0.68)	2.53 (2.15–2.97)	<0.001	509 (1.2%)	1.97% (1.80–2.15)	2.48 (2.27–2.71)	<0.001
<b>Tuberculosis</b>								
Low SEP	759 (0.5%)	0.48% (0.45–0.52)	1 (ref)	..	1096 (0.8%)	0.77% (0.72–0.82)	1 (ref)	..
Very low SEP	121 (1.1%)	1.02% (0.84–1.20)	2.11 (1.74–2.56)	<0.001	198 (2.1%)	1.90% (1.63–2.17)	2.47 (2.12–2.88)	<0.001
Undocumented migrants	34 (0.8%)	1.09% (0.72–1.46)	2.25 (1.60–3.18)	<0.001	119 (2.8%)	4.35% (3.55–5.16)	5.66 (4.67–6.86)	<0.001
<b>Hepatitis C virus</b>								
Low SEP	5419 (3.5%)	3.50% (3.40–3.59)	1 (ref)	..	10 293 (7.1%)	7.43% (7.28–7.57)	1 (ref)	..
Very low SEP	1527 (13.3%)	10.67% (10.13–11.21)	3.05 (2.88–3.23)	<0.001	3359 (35.0%)	26.55% (25.64–27.46)	3.57 (3.44–3.72)	<0.001
Undocumented migrants	112 (2.6%)	5.01% (4.08–5.94)	1.43 (1.19–1.73)	0.001	405 (9.4%)	22.35% (20.15–24.55)	3.01 (2.72–3.32)	<0.001

Data are n (%) unless specified. IR=incidence rate. IRR=incidence rate ratio. SEP=socioeconomic position.

**Table 4: People attended with chronic and infectious diseases aged 15–64 years by sex and SEP in Catalonia, 2017**

female participants aged 15–64 years attended primary care and emergency care more frequently than male participants; and male participants younger than 15 years attended mental health services more frequently than female participants and had a higher prescription of psychoactive drugs.<sup>16</sup>

Therefore, the results of this study challenge the claims often made in Spain by some political parties that undocumented migrants make greater use of health-care services than the native population.<sup>17</sup> In general, as the results show, the use of undocumented migrants is lower than that of the native population. This finding has two implications: undocumented migrants are accessing the health-care system, but, their lower usage might indicate some barriers to access. Related to this point, we have no way of knowing whether the use of health-care

services by undocumented migrants matches their needs.

In this study, we restricted our analysis to the population with earnings less than €18 000 per year. We did so because in Catalonia, 25% of the population has additional private insurance, a proportion that rises to 47% in the high-income bracket.<sup>18</sup> People with higher incomes tend to use private services that offer greater comfort and faster access to care for minor conditions; for serious diseases and interventions, all SEP groups access the public health-care system. Thus, because our aim was to compare undocumented migrants with the native population according to SEP group, we decided to exclude middle and upper socioeconomic groups because their lower use of public health-care services would probably skew the results. We should also emphasise that individuals are assigned to a particular pharmacy copayment group on the basis of



their income tax declarations, a procedure that is not guaranteed to provide an accurate assessment of their income. Regarding undocumented migrants, because of their particular characteristics, we decided to treat them as a unique group and compare them with legal residents of diverse SEPs. Moreover, as they do not have legal employment, they cannot be classified in an earnings group.

The study has important strengths. Firstly, it analysed the health and health-care use of undocumented migrants, whose data are exhaustively recorded in administrative databases, as is the case for all Catalan citizens. The Catalan Health Department does not routinely cross-check registration requests with other Catalan Governmental institutions, nor with the Spanish Government, as undocumented migrants are considered full citizens with a right to health. We do not know the exact percentage of those who are registered because there were no alternative data sources available with which to validate our figures, but we believe it to be high based on the fact that the objective of the Catalan Health Department is to maintain universal coverage. Registration as a special interest group is very easy: it can be achieved by approaching the health-care system or by means of third-sector mediators and citizen services officers.

Second, this paper analysed individual information from more than 4 million people in Catalonia, with no additional cost and without jeopardising data anonymisation, and thus shows the value of reusing administrative data for research purposes, something that European authorities recommend. Especially relevant is the fact that individual SEP could be obtained from administrative registries.<sup>19,20</sup>

Government policies related to health care, but primarily those related to migration, have a profound influence on migrant health, and restrictive entry and integration policies have been linked to poor migrant health outcomes in high-income countries.<sup>21</sup> Between 2012 and 2018, the Catalan Government continued to allow undocumented migrants the same access to health care as the native population. There were three reasons for this decision: to avoid damaging migrants' health status; to avoid increasing their susceptibility as a group at risk of social exclusion; and to prevent public health issues caused by the spread of some infectious diseases. Some preliminary evaluations of the Spanish legislation have shown substantial reductions in specialist visits and hospital admissions among undocumented migrants,<sup>22</sup> but also increased mortality in this group.<sup>23</sup> However, these studies have been unable to accurately identify the undocumented migrant population.

Studies done in Spain of the regular migrant population have not identified any clear patterns in health-care use, as the differences recorded depend mainly on the migrants' country of origin.<sup>24–26</sup> Although migrants make less use of specialised care and more use of emergency care,<sup>25</sup> these differences often disappear when adjusting for other confounders, such as employment status or

housing situation.<sup>24</sup> Regarding the undocumented migrant population, the only quantitative (survey-based) study found in the literature reported no differences in the use of health-care services between legal and illegal migrants when ill, but a significantly lower use of health services was associated with lower levels of education.<sup>27</sup> Two relevant systematic reviews in the international literature showed that undocumented migrants in Europe faced particular problems when using health-care services, especially with regard to maternal and child health care.<sup>28,29</sup>

Health status, disease spectra, and use of prescribed medication have been reported to vary in different groups of migrants and according to the different phases of migration.<sup>30,31</sup> Migration is an independent determinant of health, but it also interacts with other socioeconomic factors.<sup>30</sup> Migrants are usually reported to be healthier than their peers, a phenomenon known as the healthy migrant effect.<sup>32</sup> Other factors that interact are the precarious living and working conditions, legal barriers, cultural and language barriers, and even severe forms of exclusion, fear, and stigma.<sup>33</sup> Earlier studies assessed the use of primary health services by different groups of migrants,<sup>34,35</sup> including children.<sup>36–38</sup> Similar studies of undocumented migrants are scarce, as their legal status makes it impossible to identify them in administrative databases, or even to quantify them.<sup>39</sup>

Regarding chronic diseases, the statistics for COPD and asthma suggest that these conditions are likely to be underdiagnosed among undocumented migrant adults in primary care settings. The low rates observed might be due to the lower frequency of their visits to primary care services, or to lower disease severity.<sup>40</sup> Access barriers due to sociocultural norms or fear of deportation might also play a role.<sup>41,42</sup>

In the case of HCV and HIV, the results showed slightly higher rates in undocumented migrants than in the low SEP group, and similar rates to those in the very low SEP group. In 2014 in Europe, around 40% of people diagnosed with HIV were migrants. Sub-Saharan African and Latin American or Caribbean migrants are the most at-risk migrant populations for HIV,<sup>43</sup> and these two groups accounted for most of the undocumented migrant population in our study. In addition, HCV diagnosis rate is higher in low-income and middle-income countries than in Europe, and studies have shown rates ranging between 9% in migrants from sub-Saharan Africa and 15% in migrants from Eastern Europe.<sup>44</sup>

Our results showed a much higher tuberculosis rate among undocumented migrants than in all the other SEP groups. Approximately three out of ten cases of tuberculosis in the EU and European Economic Area are reported among individuals born outside of Europe, and Spain, France, Germany, and the UK account for 74.9% of cases of foreign origin.<sup>45</sup> The country of origin of migrants also influences tuberculosis rates, due to the high prevalence (>250 per 100 000 population in some

countries), which might explain the higher diagnosis rate observed in our study, at least in men.

For WHO, universal health coverage is, by definition, a practical expression of the concern for health equity and the right to health, and is an essential component of its new Sustainable Development Goals.<sup>46,47</sup> To quote the declaration on universal health coverage by economists from 44 countries published in *The Lancet* in 2015, “the intrinsic value of improved health...points to maintaining and expanding commitment to health through investing in pro-poor pathways to universal health coverage”.<sup>48</sup> Health care is not universal if undocumented migrants are excluded.<sup>49</sup>

Cohort studies taking into account country of origin, time spent in the host country, individual characteristics, and SEP group would be valuable to analyse the relative effect of such variables on the use of health-care services and disease diagnosis over time. More sound evidence is needed to disprove populist arguments.<sup>50</sup>

#### Contributors

All authors had full access to all the data in the study and had final responsibility for the decision to submit for publication. AD-B did all the data management, statistical analysis, and table preparation. AG-A did the final write-up of the Article and coordinated the project. EV and MC helped in the planning of the project and supervised the statistical analysis and the manuscript preparation. CVP did the data extraction and data curation. JMA had the idea for the article and led the project. AD-B, EV, and CVP have verified the underlying data. No medical writer or editor has been involved in the creation of the manuscript.

#### Declaration of interests

We declare no competing interests.

#### Data sharing

Requests for data should be sent to the corresponding author.

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