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Gender differences in healthcare utilization across Europe: Evidence from the European Health Interview Survey

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ABSTRACT

Background: Understanding gender-based disparities in healthcare utilization is crucial for informing equitable health policy. However, cross-national evidence across multiple service domains in Europe remains limited.
Objective: To examine gender differences in healthcare utilization across 27 European countries and explore variability across service types.
Methods: We analyzed data from 257,388 adults in the third wave of the European Health Interview Survey (2019–2020). Twelve healthcare utilization indicators were evaluated, including hospital admissions, outpatient care, mental health services, and medication use. Gender disparities were estimated using regression models with inverse probability weighting based on random forest propensity scores.
Results: Women had significantly higher odds of using nearly all outpatient and preventive services, including general practitioners, specialists, dental care, physiotherapy, psychotherapy, and home care. They also reported higher use of both prescribed and non-prescribed medications. No significant gender differences were observed in hospitalization rates. Sensitivity analyses adjusting for health needs confirmed these findings. Considerable heterogeneity emerged across countries and service domains: Latvia, Lithuania, and Poland showed the largest disparities (e.g., ORs 1.52–1.75 for recent specialist visits), while Denmark, the Netherlands, and Ireland displayed relatively small overall gaps but large differences for specific services, such as psychotherapy and home care.
Conclusions: Women consistently utilize more non-acute healthcare services than men, while comparable hospitalization rates suggest differences in disease severity or care-seeking behaviors. The magnitude of these disparities varies considerably across European countries, highlighting the need for context-sensitive policies to address gender inequities in healthcare utilization.

Research in context

What is already known about the topic?

Gender disparities in healthcare utilization have been widely reported, with women generally using outpatient and preventive services more often than men. However, most studies are limited to single countries or specific services. Cross-national evidence using harmonized data across multiple healthcare domains in Europe remains scarce.

What does this study add to the literature?

Using data from over 257,000 adults in 27 EU countries, this study provides a comprehensive assessment of gender differences in healthcare utilization across Europe. By applying regression models weighted with inverse probability weights derived from random forest propensity scores, it delivers robust, adjusted estimates of disparities across a wide range of services, including general practice, specialist care, mental health, medication use, and hospitalizations.

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What are the policy implications?

Findings highlight the need for gender-sensitive health policies at both EU and national levels. While women consistently use more non-acute services, near parity in hospitalization rates suggests differences in healthcare-seeking behavior and systemic utilization. Policies should address structural and normative barriers, promote equitable access for underserved groups, and incorporate gender as a key dimension in health system planning and evaluation. Substantial cross-country variation further highlights the need for context-specific strategies to reduce disparities.

1. Background

Access to healthcare services is a key determinant of population health, influencing both individual outcomes and public health equity. Understanding the factors that shape healthcare utilization is essential for informing policies aimed at reducing disparities. These determinants are complex and multifaceted, including individual characteristics, socioeconomic conditions, cultural norms, and systemic structures [1].

Although healthcare use largely reflects medical need, multiple non-clinical factors also play a significant role [2,3]. Socioeconomic status (SES) is a critical factor: individuals with higher income and education levels often utilize services more frequently, while those with lower SES may face financial and logistical barriers [4,5]. Geographic location also plays a pivotal role, as rural residents may experience shortages of medical professionals and longer travel times [6]. Cultural and social factors, including language and stigma, can further limit access—especially for sensitive issues like mental health [7,8]. Health literacy is another significant determinant: individuals with lower literacy may underuse preventive care or struggle with chronic disease management [9–11].

Gender also influences healthcare utilization through biological, social, and behavioral patterns [12,13]. Women have specific health needs (e.g., reproductive care) and higher rates of certain conditions [14–16], but social roles and expectations may further affect their use of services. For example, caregiving responsibilities may heighten women's engagement with healthcare—both for themselves and for others [17]. At the same time, gendered norms shape health-seeking behavior: women are generally more proactive in using care, while men may delay care due to social expectations [18].

However, it remains unclear whether higher utilization among women reflects greater need or other systemic and social factors [13]. In particular, we lack a comprehensive understanding of how these disparities vary by type of services [19], such as hospitalizations, outpatient visits, mental health support, and medication use. Prior research suggests that women tend to use outpatient services more frequently than men, including visits to general practitioners (GPs), specialists, and preventive screenings [20,21]. The evidence on gender differences in hospitalization is less consistent, while mental health services are often used more by women—possibly due to both a higher prevalence of psychological conditions and a greater willingness to seek support [22,23]. Understanding these service-specific patterns of utilization across countries is essential, as it can inform more effective, targeted and equitable health policies. Specifically, identifying cross-national differences in gender disparities supports mutual learning among EU Member States and contributes to the broader EU health integration. Such insights are vital for designing context-specific strategies that address not only clinical needs, but also structural and cultural barriers.

The European context adds further complexity. Health systems across Europe differ in structure, funding, and organization, influencing service availability and access [24–26]. In addition, countries vary by demographics, cultural backgrounds, and public health priorities and profiles, potentially contributing to gendered patterns of use [27–30]. Such heterogeneity underscores the need for detailed and comparable data to inform policies adapted to each country's context [31].

The European Health Interview Survey (EHIS) provides harmonized, population-based data on health status, determinants, and service use across European Union (EU) countries [32]. Its standardized design enables valid cross-country comparisons, making it a valuable tool for assessing gender disparities in healthcare utilization.

While gender disparities in healthcare use have been explored within specific countries or service types, there is limited evidence on whether—and how—these patterns differ across Europe and across multiple domains of care [31].

1.1. Aim of the study

This study aims to investigate gender differences in the use of healthcare services across Europe using data from the most recent wave of the EHIS. We examine a broad range of services, including hospital admissions, primary and specialist care, mental health services, and medication use. By examining overall and country-specific patterns of disparity, the study seeks to contribute to the development of gender-sensitive policies that promote equitable access to care.

2. Methods

2.1. Study design, data source, and participants

We performed a cross-sectional analysis based on the EHIS Wave 3 dataset to assess gender differences in healthcare utilization across 27 European countries.

We used data from the third and most recent wave of EHIS (years 2019–2020), provided by Eurostat, including 257,388 individuals aged 20 years and older from 27 European countries (ages below 20 were dropped due to country-specific inconsistencies in age-group definitions). EHIS utilizes a harmonized questionnaire that ensures comparability across participating countries.

2.2. EHIS survey

The EHIS is conducted across EU Member States to collect harmonized data every six years on health status, healthcare utilization, health determinants, and the socio-economic background of the population [33]. Its main objective is to provide comparable health information at the European level to support the planning and evaluation of public health policies.

The survey consists of four core modules covering: (1) health status (self-perceived health, chronic conditions, limitations in daily activities, specific morbidity, and physical/sensory functional limitations), (2) healthcare use (hospital admissions, consultations, unmet needs, medication use, and participation in preventive measures), (3) health determinants (body mass index [BMI], fruit and vegetable consumption, smoking, alcohol use, and other health-related behaviors), and (4) socioeconomic background (age, sex, education, and employment).

EHIS targets individuals aged 15 years and older living in private households, with data collected through face-to-face, telephone, or self-administered questionnaires depending on national practices. Nationally representative samples are selected using population registers, censuses, or other statistical sources.

2.3. Statistical analysis

We conducted three sets of analyses: a main analysis estimating pooled gender differences across countries, a secondary analysis exploring country-specific heterogeneity, and a sensitivity analysis testing the robustness of results to additional adjustment for health needs and behaviors.

2.3.1. Definition of outcomes and covariates

Twelve outcome variables were derived from the EHIS Wave 3 dataset to represent a broad range of healthcare services: hospital admissions (both inpatient and day cases), consultations with GPs, specialists, psychologists and physiotherapists, home care services, and both prescribed and unprescribed medicines. Several EHIS items were recoded to harmonize response categories and ensure consistency in the interpretation of odds ratios (ORs) across models. For example, we collapsed some ordinal responses into three-level ordered categories and recoded numerical variables into ordered factors to facilitate the use of ordinal logistic regression models. Full details of outcome construction are reported in the analytical scripts and supplementary materials.

The main exposure of interest was gender (women vs. men). Of note, we use the term "gender" in this manuscript, although the EHIS variable is labeled ``sex of respondent'' and includes the binary categories male/female. In line with existing literature, we interpret this measure as a proxy for gender-related social patterns in healthcare use.

The following variables were considered to adjust for potential confounding: age group, country of birth, citizenship, degree of urbanization, partnership status, legal marital status, level of education, employment status, household size, BMI, height, and weight.

2.3.2. Main analysis

To account for confounding by observed covariates, we applied inverse probability weighting (IPW) based on propensity scores estimated via random forests. For each outcome, a country-pooled random forest classifier was trained to predict the probability of being female, using the full set of covariates listed above. The procedure was implemented with 100 trees, maximum depth 5, and Stata's default tuning parameters. A unique random seed was assigned per country and outcome to ensure reproducibility while maintaining independence across models.

Predicted probabilities were then used to generate weights, where each individual received the inverse of their estimated probability of being of the observed gender. To limit the impact of extreme weights, we truncated the distribution at the 99th percentile, a common strategy to improve the stability of IPW estimators [34]. This threshold was chosen after exploratory analysis of weight distributions, which revealed marked right skewness with a long upper tail. We considered alternative thresholds (i.e., 90th, 95th, 99.5th, and 99.9th percentiles), but the 99th provided a balanced compromise — limiting the influence of outliers while ensuring consistency and comparability across all outcomes.

Weighted regression models were then estimated as follows: for ordinal outcomes, we fitted proportional odds models, with gender as the main exposure and weights applied; for binary outcomes, we used standard logistic regression. The proportional odds assumption was assessed using the Brant test and was considered met across outcomes (results not shown) [35].

Missing values in the covariates used for propensity score estimation were handled via listwise deletion (complete-case analysis). For outcome variables, observations with missing values were excluded on a case-wise basis for each regression model (pairwise deletion).

2.3.3. Secondary analysis

To assess whether gender disparities in outpatient care varied by age, we tested for interaction between gender and age group (20–49 vs. ≥50 years) on two outcomes potentially affected by reproductive healthcare needs: consultations with GPs and with medical or surgical specialists during the past 12 months. Both interaction terms were statistically significant ($p < 0.001$), suggesting age-related effect modification. We therefore conducted stratified analyses for these two outcomes and reported the results in the main text.

To explore heterogeneity across countries, we replicated the IPW analysis separately for each country and outcome. For each stratum, we re-estimated gender propensity scores using country-specific random forest models, generated individual-level weights, and ran separate regressions. This approach enabled visual inspection of cross-country variability in gender disparities. Results were summarized as ORs (women vs. men) and presented graphically using caterpillar plots.

2.3.4. Sensitivity analysis

To assess the robustness of our findings, we performed sensitivity analyses by re-estimating the IPW models after including a broader set of covariates. Specifically, for each outcome, we applied stepwise selection to identify additional variables related to unmet healthcare needs, chronic health problems, health monitoring, mental health, and health-related behaviors (e.g. smoking and alcohol consumption). Gender was forcibly retained in all models. The extended covariate set was then used in a weighted regression framework, applying the same IPW weights derived in the main analysis. This approach allowed us to test whether the observed gender disparities persisted after accounting for a wider range of potentially relevant factors. The same inverse probability weights were applied without re-estimating the propensity scores, ensuring that any changes in effect estimates could be attributed solely to the expanded adjustment in the outcome models.

2.3.5. Statistical software

All analyses were conducted in Stata version 18 (StataCorp LLC, College Station, TX, USA). Random forest models were implemented using the 'rforest' package [36], and IPW regression models were estimated using standard `ologit' and `logit' procedures with probability weights.

The significance level was set at 0.05, and all tests were two-sided.

2.4. Ethical considerations

This study is based on microdata from the EHIS, which were collected by national statistical authorities under the coordination of Eurostat. Eurostat granted access to the microdata following approval of the research proposal RPP 11/2023-EHIS, submitted by the University of Bologna. The data are fully anonymized, and all analyses were conducted in accordance with the confidentiality agreement signed by the research team. As this was a secondary analysis of anonymized data, ethical approval was not required.

3. Results

The main characteristics of the study population are reported in Table 1, which summarizes key demographic and socio-economic variables. The sample includes 257,388 individuals aged 20 and older and is broadly representative of the adult population across 27 European countries. With the sole exception of hospitalization, preliminary descriptive frequencies revealed notable gender disparities in healthcare utilization across the range of healthcare services (Table 2). What follows presents the results of IPW regression models, adjusted for confounding variables (Table 3).

The OR for women engaging in GP consultations was 1.56 (95 % confidence interval [CI]: 1.53–1.59, $p < 0.001$). Similarly, women were more inclined to seek specialist medical services (OR = 1.60; 95 % CI: 1.58–1.63, $p < 0.001$). Stratified analyses by age group revealed that these gender disparities were more pronounced among individuals aged 20–49 years. Specifically, the OR for GP consultations was 1.68 (95 % CI: 1.64–1.72, $p < 0.001$) in the 20–49 group and 1.43 (95 % CI: 1.39–1.47, $p < 0.001$) in those aged ≥50. For specialist consultations, the OR was 2.15 (95 % CI: 2.10–2.21, $p < 0.001$) in the younger group and 1.28 (95 % CI: 1.26–1.31, $p < 0.001$) in the older group. The frequency of consultations in the four weeks preceding the interview was also higher among women.

A pronounced gender disparity was observed in the use of psychological or psychotherapeutic services: women had 59 % higher odds of using such services compared to men (OR = 1.59; 95 % CI: 1.53–1.65, $p < 0.001$).

Medication use also differed by gender. Women were more likely to

Table 1
Characteristics of the Wave 3 European Health Interview Survey (EHIS) sample (n = 257,388).

Sex of respondent	
Male	118,100 (45.9 %)
Female	139,288 (54.1 %)
Age of respondent at the time of the interview	
20–24	12,690 (4.9 %)
25–29	13,889 (5.4 %)
30–34	16,024 (6.2 %)
35–39	18,323 (7.1 %)
40–44	21,064 (8.2 %)
45–49	21,968 (8.5 %)
50–54	23,629 (9.2 %)
55–59	24,080 (9.4 %)
60–64	24,860 (9.7 %)
65–69	24,123 (9.4 %)
70–74	20,774 (8.1 %)
75 or more	35,964 (14.0 %)
Country of residence	
Cyprus	5563 (2.2 %)
Austria	14,606 (5.7 %)
Belgium	8527 (3.3 %)
Bulgaria	6857 (2.7 %)
Croatia	4736 (1.8 %)
Czechia	7597 (3.0 %)
Denmark	5592 (2.2 %)
Estonia	4562 (1.8 %)
Finland	5164 (2.0 %)
Germany	21,077 (8.2 %)
Greece	7474 (2.9 %)
Hungary	5114 (2.0 %)
Iceland	3403 (1.3 %)
Ireland	3252 (1.3 %)
Italy	42,748 (16.6 %)
Latvia	5474 (2.1 %)
Lithuania	4529 (1.8 %)
Luxembourg	3652 (1.4 %)
Malta	3804 (1.5 %)
Netherlands	7245 (2.8 %)
Poland	16,113 (6.3 %)
Portugal	13,517 (5.3 %)
Romania	15,268 (5.9 %)
Slovakia	5279 (2.1 %)
Slovenia	8785 (3.4 %)
Spain	19,280 (7.5 %)
Sweden	8170 (3.2 %)
Country of birth	
Native-born	233,216 (90.6 %)
Born in another EU Member State	9584 (3.7 %)
Born in non-EU country	14,588 (5.7 %)
Country of citizenship at time of data collection	
National/has citizenship of the reporting country	244,128 (94.8 %)
Non-national/does not have citizenship of the reporting country but national of other EU Member States	6456 (2.5 %)
Non-national/does not have citizenship of the reporting country but non-EU country nationality	6804 (2.6 %)
Degree of urbanization	
Densely populated area	92,336 (35.9 %)
Intermediate-populated area	85,745 (33.3 %)
Thinly populated area	79,307 (30.8 %)
Partners living in the same household	
Person living with a legal or a de facto partner	153,543 (59.7 %)
Person not living with a legal or a de facto partner	92,734 (36.0 %)
Not applicable	11,111 (4.3 %)
Legal marital status	
Never married and never been in a registered partnership	61,139 (23.8 %)
Married or in a registered partnership	145,128 (56.4 %)
Widowed or in registered partnership that ended with death of partner (not remarried or in new registered partnership)	29,345 (11.4 %)
Divorced or in registered partnership that was legally dissolved (not remarried or in new registered partnership)	21,776 (8.5 %)
Highest level of education completed (Educational attainment)	
Early childhood development, pre-primary education	5473 (2.1 %)
Primary education	28,376 (11.0 %)
Lower secondary education	40,940 (15.9 %)
Upper secondary education	96,834 (37.6 %)
Post-secondary but non-tertiary education	10,708 (4.2 %)
Tertiary education; short cycle	14,248 (5.5 %)
Tertiary education; bachelor level or equivalent	26,593 (10.3 %)
Tertiary education; master level or equivalent	31,392 (12.2 %)
Tertiary education; doctoral level or equivalent	2824 (1.1 %)
Self-declared labour status	
Full-time employed	104,957 (40.8 %)
Part-time employed	23,657 (9.2 %)
Unemployed	13,113 (5.1 %)
Retired	81,466 (31.7 %)
Unable to work due to long-standing health problems	5091 (2.0 %)
Student, pupil	8015 (3.1 %)
Fulfilling domestic tasks	16,038 (6.2 %)
Compulsory military or civilian service	345 (0.1 %)
Other	4706 (1.8 %)
N. of persons living in household, including the respondent	
1	55,378 (21.5 %)
2	91,500 (35.5 %)
3	48,381 (18.8 %)
4	40,900 (15.9 %)
5	13,836 (5.4 %)
6	4766 (1.9 %)
7 or more	2627 (1.0 %)
Body mass index without clothes and shoes, kg/m^2	
Mean ± standard deviation	22.4 ± 9.9
Median [interquartile range]	24.8 [21.0–28.1]
Height without shoes, cm	
Mean ± standard deviation	169.4 ± 9.6
Median [interquartile range]	169 [163–176]
Weight without clothes and shoes, kg	
Mean ± standard deviation	75.3 ± 15.6
Median [interquartile range]	74 [64–85]

report using prescribed medications (OR = 1.40; 95 % CI: 1.38–1.42, $p <$ 0.001), and non-prescribed medicines, herbal products, or supplements (OR = 1.70; 95 % CI: 1.68–1.73, $p < 0.001$).

A notable gender difference emerged for home care services, with women showing higher use than men (OR = 1.49; 95 % CI: 1.43–1.56; $p < 0.001$). Women were also more likely to report dental consultations (OR = 1.26; 95 % CI: 1.24–1.28; $p < 0.001$), as well as physiotherapy or kinesiotherapy consultations (OR = 1.40; 95 % CI: 1.37–1.43; $p <$ 0.001), confirming consistent gender differences across a variety of healthcare services.

In contrast, hospitalization rates did not exhibit significant gender differences. The OR for women was 1.02 (95 % CI: 1.00–1.05, $p =$ 0.072), suggesting near parity between genders. All these results were virtually unchanged in sensitivity analyses, which adjusted for

Table 2
Utilization of healthcare services and medicines in the past 12 months (unless otherwise specified), by gender.

	Men		Women	
	n	%	n	%
N. of nights spent as a patient in a hospital (n = 246,229)				
0	99,980	88.8	118,234	88.5
1–2	3531	3.1	4220	3.2
3–7	4674	4.2	6185	4.6
8–30	3958	3.5	4599	3.4
>30	426	0.4	422	0.3
N. of times admitted as a day patient in a hospital (n = 204,495)				
0	80,050	86.0	95,539	85.7
1	6882	7.4	8192	7.3
2	2563	2.8	3212	2.9
3 or more	3534	3.8	4523	4.1
Last time of a visit to a dentist or orthodontist (n = 256,735)				
Never	2541	2.2	1939	1.4
12 months ago, or longer	51,274	43.5	54,148	39.0
6 to 12 months ago	24,890	21.1	30,817	22.2
<6 months ago	39,083	33.2	52,043	37.5
Last time of a consultation of a GP or family doctor (n = 256,790)				
Never	2167	1.8	1434	1.0
12 months ago, or longer	31,201	26.5	26,656	19.2
<12 months ago	84,438	71.7	110,894	79.8
N. of consultations of a GP or family doctor during the past 4 weeks (n = 247,134)				
0	79,297	69.7	83,230	62.4
1	25,743	22.6	36,967	27.7
2–3	7187	6.3	10,834	8.1
4–5	1110	1.0	1682	1.3
>5	427	0.4	657	0.5
Last time of a consultation of a medical or surgical specialist (n = 255,594)				
Never	11,550	9.9	8608	6.2
12 months ago, or longer	50,972	43.5	48,965	35.4
<12 months ago	54,733	46.7	80,766	58.4
N. of consultations of a medical/surgical specialist in the past 4 weeks (n = 248,837)				
0	94,424	82.3	102,957	76.7
1	14,622	12.7	22,393	16.7
2–3	4617	4.0	7244	5.4
4–5	757	0.7	1178	0.9
>5	269	0.2	376	0.3
Consultation of a physiotherapist or kinesiotherapist (n = 256,100)				
No	100,029	85.1	111,659	80.6
Yes	17,490	14.9	26,922	19.4
Consultation of a psychologist or psychotherapist (n = 255,585)				
No	112,297	95.7	129,196	93.4
Yes	4991	4.3	9101	6.6
Use of any home care services for personal needs (n = 256,880)				
No	114,610	97.3	133,199	95.8
Yes	3224	2.7	5847	4.2
Use of any prescribed medicines during the past 2 weeks (excl. contraception) (n = 255,840)				
No	61,152	52.1	60,290	43.5
Yes	56,123	47.9	78,275	56.5
Use of unprescribed medicines, herbal medicines or vitamins in the past 2 weeks (n = 255,727)				
No	82,872	70.7	81,274	58.7
Yes	34,338	29.3	57,243	41.3

Table 3
Gender differences in healthcare utilization: adjusted odds ratios (ORs) for women relative to men.

	OR	95 % CI	p-value
Nights spent as a patient in a hospital	1.02	1.00–1.05	0.072
Times admitted as a day patient in a hospital	1.03	1.00–1.06	0.020
Last time of a visit to a dentist or orthodontist	1.26	1.24–1.28	<0.001
Last time of a consultation of a GP or family doctor	1.56	1.53–1.59	<0.001
Consultations of a GP or family doctor during the past 4 weeks	1.36	1.34–1.39	<0.001
Last time of a consultation of a medical or surgical specialist	1.60	1.58–1.63	<0.001
Consultations of a medical/surgical specialist in the past 4 weeks	1.40	1.38–1.43	<0.001
Consultation of a physiotherapist or kinesiotherapist	1.40	1.37–1.43	<0.001
Consultation of a psychologist or psychotherapist	1.59	1.53–1.65	<0.001
Home care services for personal needs	1.49	1.43–1.56	<0.001
Any prescribed medicines during the past 2 weeks (excl. contraception)	1.40	1.38–1.42	<0.001
Unprescribed medicines, herbal medicines or vitamins in the past 2 weeks	1.70	1.68–1.73	<0.001

Notes: ORs and 95 % confidence intervals (CIs) represent the likelihood of healthcare utilization among women compared to men (reference category). Estimates were obtained from regression models weighted using inverse probability weighting (IPW), with propensity scores estimated via a random forest model to balance covariates across gender groups. The models adjust for age, country of residence, birthplace, citizenship, degree of urbanization, number of partners in the household, legal marital status, highest educational attainment, main employment status, household size, body mass index, height, and weight. Ordered logistic regression was applied to ordinal outcomes, while logistic regression was used for binary outcomes.

additional variables, including unmet health needs and chronic conditions (Supplementary Tables S1–S12).

3.1. Country-specific variation in gender disparities

Gender disparities in healthcare utilization were consistently observed across countries, though their magnitude varied (Fig. 1). The largest differences were seen in Lithuania, Latvia, Poland, and Portugal, where women showed markedly higher odds of using most healthcare services. For example, Latvia, Lithuania, and Poland showed the largest odds ratios for women vs. men utilization across several services (e.g., ORs between 1.52 and 1.75 for specialist visits in the last 4 weeks). Similarly, countries such as Slovenia, Malta, and Slovakia exhibited substantial gender gaps, but these were less consistent across services. For instance, in Slovenia, ORs ranged from 0.83 for day hospital admissions to 1.92 for unprescribed medicines; in Malta, from 0.86 for nights spent in hospital to 2.27 for home care services; and in Slovakia, from 1.20 for nights spent in hospital to 1.81 for unprescribed medicines.

In contrast, countries like Denmark, Finland, the Netherlands, and Ireland exhibited relatively minimal differences, with ORs close to one. However, patterns were not uniform across outcomes within countries. For example, Denmark — overall showing modest disparities — displayed one of the highest odds ratios for psychotherapy (OR = 2.09) and non-prescribed medicines (OR = 1.98). Similarly, Germany exhibited relatively small differences in several services but showed the highest disparity in physiotherapy (OR = 1.78). Finland, often considered a low-gap country, had elevated odds for psychotherapy (OR = 2.22) and non-prescribed medicine use (OR = 2.28). Conversely, the Netherlands had generally low gender gaps but a marked difference in home care services (OR = 2.18). These examples highlight that cross-country heterogeneity reflects both system-level factors and service-specific dynamics.

In other European nations, including Germany, Italy, and Sweden, the results were more heterogeneous overall, showing either modest

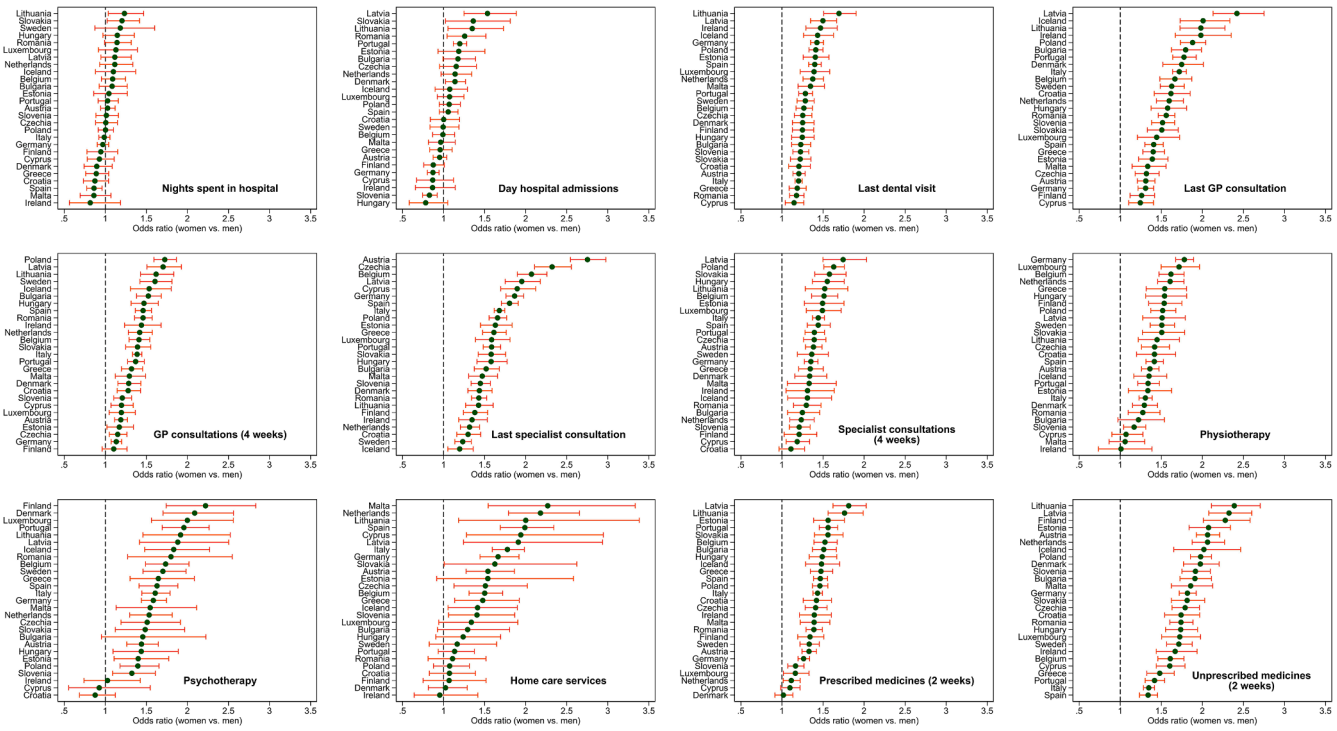

Fig. 1. Country-specific adjusted odds ratios (women vs. men) for the twelve healthcare utilization outcomes. *Notes:* No data are available for day hospital admissions in Italy. All outcomes refer to the 12 months preceding the EHIS interview, unless otherwise specified. Models adjusted using inverse-propensity-weighting regression.

disparities or patterns without a clear systematic direction. These findings underscore that the magnitude of gender disparities is strongly influenced by national contexts.

4. Discussion

Based on data from the EHIS Wave 3 [32], our study highlights persistent gender disparities in healthcare utilization across Europe. We found that women consistently exhibited higher use of most healthcare services, particularly outpatient and preventive care, and these patterns remained largely unchanged after adjustment for sociodemographic and health-related factors.

These findings are consistent with our observation that the odds ratios for women vs. men utilization were significantly elevated for nearly all services, especially for GP and specialist visits. This pattern suggests that women may be more proactive in seeking medical care and engaging with preventive services compared to men. Such behaviors may be influenced by both individual-level factors and broader social expectations, as documented by previous research [37,38]. For instance, social norms often portray women as more health-conscious and attentive to bodily changes [39,40], whereas men may be more likely to delay care due to societal expectations associating masculinity with stoicism and self-reliance.

Beyond differences in health-seeking behaviors, our findings may also reflect patterns of potential overuse and underuse of services. For instance, higher utilization among women could, in part, include cases of unnecessary consultations or low-value care. At the same time, the lower use among men may indicate missed opportunities for early detection and management of the disease. These considerations align with previous evidence suggesting that gender norms can influence both excessive and insufficient healthcare utilization, which may have important implications for the efficiency and equity of health systems [17,41,42].

The notably lower engagement of men with psychological and psychotherapeutic services stands out as a critical finding. Despite mental health being a major contributor to disease burden in men [41], our results suggest that men underutilize these services compared to women. This disparity deserves particular policy attention, as it may reflect not only gender norms but also structural barriers to using appropriate care.

Women report higher prevalence of non-fatal chronic conditions—particularly mental, neurological, and musculoskeletal disorders—which require ongoing management and may contribute to their greater engagement with outpatient services. As shown in the Global Burden of Disease Study, women have higher years lived with disability, while men have higher years of life lost, mainly due to acute and fatal conditions [42]. This distinction supports our finding of gender parity in hospitalization rates despite broad differences in service use elsewhere. In this context, the underuse of mental health services among men is particularly concerning, as it may contribute to late detection of psychological distress and exacerbate avoidable health risks.

Our sensitivity analyses further attempted to disentangle the role of need versus systemic and behavioral factors. By adjusting for chronic conditions, self-reported unmet needs, depressive symptoms, and engagement in preventive health measures, we partially accounted for gendered differences in health status and care-seeking behaviors. The persistence of gender disparities after these adjustments suggests that additional factors—such as differences in health literacy, carer roles, and the stigma that may delay care-seeking among men—could contribute to the observed patterns. While the EHIS includes items on unmet needs and delays in seeking care, these measures may not fully capture the complexity of gendered behaviors, and some residual confounding is likely to remain. Future studies should explore these mechanisms in more depth using longitudinal and qualitative approaches.

Cross-country differences in the magnitude of gender disparities were substantial, reflecting the diversity of healthcare systems, welfare models, and cultural norms across Europe. Prior research suggests that in Southern and Eastern European countries, women report poorer self-rated health and more activity limitations compared with men, while gender gaps appear narrower in Northern Europe [43]. These patterns

may reflect differences in welfare state regimes: social-democratic countries (e.g., Sweden, Denmark, Finland) typically provide universal coverage and promote gender equality, potentially narrowing disparities [44]. For example, countries with social-democratic welfare models and strong primary care infrastructures, such as the Netherlands, tend to promote more equitable access, which may partly explain their smaller gender gaps [24,45]. Importantly, these smaller gender gaps are observed across several types of services—not only GP visits but also specialist consultations and preventive care—suggesting that comprehensive coverage rather than primary care alone contributes to equity. As reported in previous studies [46,47], there are no notable differences in the use of services between native-born individuals and immigrants in the Netherlands, and the only significant gender differences were found related to contact with GPs and outpatient mental health care. In contrast, countries with weaker primary care gatekeeping and more fragmented systems often display larger disparities. In Eastern European and transition economies (e.g., Poland, Latvia, Lithuania), limited public resources, geographic barriers, and out-of-pocket (OOP) costs may further constrain access, especially for women living in rural areas or with complex health needs [45]. In Latvia, for example, higher cost-sharing mechanisms for public health services introduced between 2009 and 2012 contributed to generally lower overall utilization and high inequality levels [48]. However, despite lower average income, Latvian women report substantially higher utilization than men across most services [49], suggesting that cultural norms, stronger health-seeking behaviors, and a higher burden of chronic conditions may partly offset financial constraints. Similar dynamics, where elevated OOP coexist with gender gaps in utilization, have been observed in Lithuania and Poland [45], indicating that financial barriers interact with structural and behavioral factors beyond economic capacity alone.

In addition to institutional and economic factors, cross-country variation may also reflect cultural differences shaping attitudes toward health, perceptions of illness, and trust in healthcare systems. For example, previous research has shown that countries with higher health literacy and stronger cultural norms supporting preventive care often exhibit smaller gender gaps in utilization [50].

The substantial variation in gender disparities across countries likely reflects structural factors — such as the organization, financing, and availability of healthcare services — as well as deeper sociocultural influences. Beyond structural factors, gendered norms around help-seeking and perceptions of illness may also play a role. Previous research suggests that masculine norms emphasizing stoicism may discourage men from seeking preventive care, while women are more likely to engage in regular consultations [44,51]. These contextual factors, acting together, may thus amplify or attenuate cross-country gender differences in healthcare utilization. Accordingly, our findings underscore the importance of considering both institutional and sociocultural factors when interpreting country-specific disparities.

4.1. Limitations

This study has several limitations. First, the EHIS relies on self-reported data, which may be subject to recall or reporting bias, potentially differing by gender. Second, although we interpret "sex of respondent" as a proxy for gender in line with previous literature, the binary nature of the variable does not capture non-binary identities or intersectional dimensions of gender. Third, despite extensive covariate adjustment, residual confounding by unmeasured factors—such as income, healthcare quality, or informal care—remains possible. Fourth, while the EHIS is designed for comparability, differences in national implementation may influence cross-country comparisons. Lastly, the EHIS dataset does not include information on pregnancy or recent childbirth, limiting our ability to account for reproductive healthcare needs when interpreting gender differences in outpatient care. To explore potential effect modification, we conducted stratified analyses by age group. Notably, the wider gender gap observed among individuals aged 20–49 years suggests that reproductive or age-specific factors may partly underlie the observed disparities. However, the absence of direct reproductive indicators precludes definitive conclusions. Future research should explore data sources that allow for more precise identification of gendered healthcare needs during the reproductive life phase.

4.2. Policy implications

Reducing gender disparities in healthcare use requires policy interventions that are responsive to both national contexts and service-specific needs. For instance, countries like Denmark and Finland—despite overall small gaps—show large disparities in psychotherapy, whereas Germany stands out for physiotherapy and the Netherlands for home care. These patterns imply that targeted efforts focusing on service-specific inequalities may be more effective than uniform, system-wide approaches. Men's underuse of outpatient and preventive services—particularly mental health care—calls for targeted public health campaigns that challenge gender norms discouraging help-seeking behavior. At the same time, policies must ensure women's ability to utilize care in settings where caregiving responsibilities, precarious employment, or lack of formal coverage reduce service uptake.

Healthcare professionals should receive training to recognize and mitigate gender biases in clinical decision-making, improving the appropriateness and equity of care. Integrating a gender perspective into health workforce policies can help address the specific challenges faced by women in the health sector, contributing to more inclusive health systems. Health systems and training institutions should also identify and promote practical tools to reduce gender bias in clinical practice, which is essential to achieving this goal [52].

Finally, investing in research and data infrastructure is crucial. Disaggregated data and equity-sensitive indicators are needed to routinely monitor progress and inform responsive interventions. While some countries have advanced gender-sensitive health policies, implementation remains uneven and often slow across Europe [50]. Achieving substantive equity will require sustained political commitment and cross-sector collaboration to address both health system design and the broader social determinants of gendered healthcare behavior.

5. Conclusions

This study provides robust evidence of gender disparities in healthcare service use across Europe. Women are consistently more likely to engage in outpatient and preventive care, while hospitalization rates remain comparable between genders. Importantly, the extent of these disparities differs substantially across countries. For instance, Latvia and Lithuania show the largest gender gaps in healthcare utilization, whereas countries such as Italy and the Netherlands demonstrate relatively small differences. These findings highlight the importance of policy interventions that address gender-specific barriers and promote equitable healthcare utilization. Tailored, context-sensitive strategies are needed to effectively reduce these disparities and ensure that health systems meet the needs of all individuals, regardless of gender.

CRediT authorship contribution statement

Davide Golinelli: Writing – review & editing, Writing – original draft, Project administration, Investigation, Conceptualization. **Francesco Sanmarchi:** Writing – review & editing, Writing – original draft, Investigation. **Giovanni Guarducci:** Writing – review & editing, Writing – original draft, Investigation, Conceptualization. **Jacopo Palombarini:** Writing – review & editing, Writing – original draft. **Paolo Benetti:** Writing – review & editing, Writing – original draft. **Simona Rosa:** Validation, Methodology, Investigation, Formal analysis, Data curation. **Jacopo Lenzi:** Writing – review & editing, Visualization,

Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no conflict of interest.

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Supplementary materials

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