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UNMET NEEDS, UNEQUAL ACCESS: SOCIOECONOMIC INEQUALITIES AND INEQUITIES IN MENTAL HEALTH CARE IN EUROPE

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Title: Unmet needs, unequal access: Socioeconomic inequalities and inequities in mental health care in Europe

Abstract:

Objectives: Unmet mental health care needs remain prevalent and persistent, coexisting with unequal patterns of service utilisation that disproportionately affecting vulnerable populations. Yet, despite their policy relevance, cross-country empirical evidence remains limited.
Methods: We use data from the 2019 wave of the European Health Interview Survey (EHIS), covering a wide set of European countries to examine affordability-related unmet mental health care needs in Europe by analysing their determinants, quantifying and decomposing income-related inequalities across countries and regions, and assessing inequity in access to mental health professionals. A two-level mixed effects logistic regression model was used to investigate the relationship between unmet needs and individual characteristics also accounting for country-level factors. Socioeconomic inequalities in unmet needs due to affordability and inequity in access to mental health care were assessed using the concentration index framework.
Results: Overall, we observe socioeconomic inequalities in affordability-related unmet mental health care needs and inequity in utilisations of mental health care across Europe. The inequalities are shaped not only by individual characteristics, but also by the broader institutional and macroeconomic contexts in which care is provided.
Conclusions: Policy responses aimed at reducing unmet needs should account for cross-country differences in health system organisation, financial protection, and the availability of mental health services.

JEL Codes: I14; I18; I38; D63.

Keywords: Unmet Needs, Mental health care, Income-related Inequalities, Europe

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1. Introduction

Access to mental health care services and their equitable distribution across the population have been recurrently placed at the centre of the health policy debate in many advanced economies, including countries with universal health coverage (WHO, 2022; Vargas Lopes and Lleras-Nozal, 2025). In many high-income settings, public coverage for mental health services remains limited (OECD, 2020; Corrado et al., 2025), waiting times are often excessively long (Punton et al., 2022; EC, 2023; Costantini, 2025; Siciliani, 2025), and psychotherapy is frequently delivered in private practice and financed through out-of-pocket payments or private insurance (WHO, 2022). As a result, both financial and non-financial barriers to access have been associated with unmet mental health care needs, with heterogeneous impacts across population groups.

Financial barriers include out-of-pocket payments for consultations, psychotherapy, medication, and insurance premiums, which may disproportionately affect individuals with lower incomes or unstable employment. Non-financial barriers, such as long waiting times, shortages of mental health professionals, transportation difficulties, limited service availability, administrative complexity, low mental health literacy, and stigma, can further discourage or delay access to care. These barriers interact with socioeconomic disadvantage and social vulnerability, concentrating unmet needs among low-income groups, individuals with poorer health status, women, unemployed persons, migrants, and those with limited social support.

Substantial disparities in unmet mental health care needs due to financial reasons have been reported in high-income countries (Vargas Lopes and Llena-Nozal, 2025). In Europe, prevalence ranges from just above 1.0% in Romania and Spain to more than 30.0% in Iceland (Eurostat, 2025). High levels of unmet mental health needs and related socioeconomic inequalities have been

documented in other advanced economies (e.g., Sunderland and Findlay, 2013; Bartram and Stewart, 2019; Hashmi et al., 2023; Meiselbach et al., 2024).

Unmet health care needs, especially in the mental health domain, may have important consequences for both individuals and societies (Smith and Connolly, 2020). Previous research suggests that insufficient or delayed treatment, and consequently unmet needs, may lead to higher prevalence of chronic mental and physical conditions (Scott et al., 2015; Reichert and Jacobs, 2018; Kim et al., 2019; Bergeot and Jusot, 2024), increased mortality risk (Alonso et al., 1997; Chesney et al., 2014; Lindström et al., 2020; GBD, 2021), adverse labour market outcomes (Prudon, 2025; Dodd et al., 2025), and reduced quality of life (Kortrijk et al., 2014; Ko, 2017).

Despite their increasing use in research and policy, measures of unmet health care needs remain conceptually and empirically contested. Unmet need indicators are most commonly based on individuals' subjective assessment[1] of whether they required care but did not receive it, either partially or entirely. As such, these measures may reflect not only actual barriers to access, but also differences in expectations, health literacy, preferences, cultural norms, and help-seeking behaviour (Allin et al., 2010; Smith and Connolly, 2020). In the context of mental health care, these concerns are particularly relevant given that stigma is a well-documented barrier to help-seeking, symptom recognition and mental health literacy shape perceived need and service use, and attitudes towards psychological treatment vary across socioeconomic groups and countries (Rüsch et al., 2011; Gulliver et al., 2012; Andrade et al., 2014; Picco et al., 2016; Schnyder et al., 2017; Thornicroft et al., 2022; Conde et al., 2026).

[1] Unmet needs can also be assessed by health professionals and are therefore viewed as more objective. These assessments generally rely on predefined clinical criteria and specific patterns of service utilisations (Gibson et al., 2019).

A substantial body of literature has examined the determinants of unmet health care needs related to access barriers such as waiting times, transportation difficulties, and affordability. This evidence has been generated both at the national level (e.g., Cavalieri, 2013; Pappa et al., 2013; Hoebel et al., 2017; Moran et al., 2021; Maslyankov and Hernandez, 2024) and comparatively across European countries (e.g., Chaupain-Guillot and Guillot, 2015; Fjær et al., 2017; Carnazza et al., 2023; Moran et al., 2025; Smolic et al., 2025). Similar analyses have also been conducted in other developed economies, including the United States (Diamant et al., 2004; Shi and Stevens, 2005; Manuel, 2018) and Canada (Bryant et al., 2009; Allin et al., 2010; Bataineh et al., 2019). Overall, this literature consistently shows that unmet health care needs are more prevalent among individuals reporting poorer health status, multimorbidity, and functional limitations. In addition, lower income, limited social support, unhealthy lifestyles, lack of insurance coverage, and belonging to certain ethnic minorities are all associated with a higher likelihood of reporting unmet needs. The effects of age and educational attainment remain less conclusive. Cross-country differences in health system characteristics, including financing arrangements, the share of out-of-pocket expenditure in total health expenditure, and physician density, also appear to play an important role in explaining variation in unmet needs (Chaupain-Guillot and Guillot, 2015; Israel, 2016; Fjær et al., 2017).

However, despite the growing relevance of mental health policy, relatively few studies have specifically examined unmet needs related to unaffordable mental health services in Europe[2]. Exceptions include Hoebel et al. (2017) revealing large perceived unmet needs in mental health care due to economic reasons among the elderly and low socio-economic status in Germany. Large unmet needs for mental healthcare due to cost have been reported among individuals with

[2] See, for example, Roll et al. (2013), Walker et al. (2015), and Meiselbach et al. (2024) for evidence from the United States.

disabilities in both the UK (Sakellariou and Rotaru, 2017) and Greece (Rotaru and Sakellariou, 2019). Maslyankov and Hernandez (2024), who found significantly higher odds of unmet mental health needs among individuals with depressive symptoms, chronic illness, activity limitations, and lower education levels in Bulgaria. Using EHIS data for Luxembourg, Moran et al. (2021) reported a higher risk of unmet needs due to financial reasons among individuals with poor self-reported health, women, daily smokers, and those outside the labour market, whereas lower risks were found among married individuals, those with stronger social support, and those in the highest income quintile.

Similarly, relatively limited evidence exists on socioeconomic inequalities in unmet mental health care needs. Bartram (2019) computed need-standardised concentration indices for Canada and found that unmet mental health care needs were disproportionately concentrated among lower-income individuals. Bartram and Stewart (2019) further showed that unmet psychotherapy needs were disproportionately concentrated among lower socioeconomic groups and larger in Australia than in Canada. Evidence from Germany also points in the same direction for unmet healthcare needs more broadly: Hoebel et al. (2017) found that low socioeconomic status was associated with higher perceived unmet needs for mental care among adults aged 50-64, while inequalities were not statistically significant among those aged 65 and over. This suggests that financial and access barriers may be socially patterned, although their magnitude and significance can vary across age groups. More recently, Urbanos-Garrido and Agúndez (2025) analysed socioeconomic inequalities in unmet mental health needs due to financial reasons, as well as horizontal inequity in the utilisation of psychiatric professionals and psychotropic medication in Spain using data from the EHIS for 2014 and 2020. Their results showed that unmet needs were concentrated among lower

socioeconomic groups, although inequalities declined over time, while pro-rich inequities in utilisation persisted for both men and women in 2020.

Against this background, the aim of this paper is threefold. First, we examine the determinants of perceived unmet needs for mental health care due to affordability constraints in a pool of European countries using a two-level mixed effects logistic regression model. Second, we quantify the degree of income-related inequalities in unmet needs across countries and broad European regions and decompose these inequalities into their main contributing factors. Third, we assess the existence of inequity in mental health care utilisation by examining access to mental health professionals.

This study makes several contributions to the existing literature. First, to the best of our knowledge, it is the first study to examine both the determinants and income-related inequalities in perceived unmet mental health care needs across European countries. In contrast to previous comparative European studies, which have mainly focused on unmet health care needs more broadly or on different dimensions of access (Carnazza et al., 2023; Moran et al., 2025), our analysis specifically concentrates on affordability-related barriers to mental health care.

Second, while much of the existing evidence on inequalities in mental health, service utilisation, and unmet needs has relied on single-country analyses –for example in the United Kingdom (Mangalore et al., 2007), Canada and Australia (Bartram and Stewart, 2019), or Spain (Urbanos-Garrido and Agúndez, 2025)– this paper adopts a cross-country comparative perspective that allows us to explore how individual socioeconomic characteristics interact with broader health system and regional contexts. In particular, the analysis considers differences in health care system organisation and regional patterns in mental health care provision and access across Europe.

Third, the paper contributes to the relatively limited literature jointly examining unmet needs and realised utilisation as complementary dimensions of access to mental health care. By analysing both perceived unmet need and access to mental health professionals, the study provides a more comprehensive assessment of potential inequities in mental health care access, in line with recent calls to consider unmet need and utilisation jointly rather than as interchangeable measures of access (Moran et al., 2025).

Finally, by combining EHIS data with a harmonised measure of equivalised household income derived from EU-SILC (Eurostat, 2019), this study estimates country-specific inequality indices and decompose inequalities across European regions. In doing so, it provides new evidence on the socioeconomic distribution of unmet mental health care needs and inequities in service use, generating findings that are directly relevant for European mental health and health equity policies.

2. Methods

2.1. Data

We used individual-level data from the European Health Interview Survey (EHIS) wave 3 conducted between 2018 and 2020[3] in all EU Member States[4], Iceland, Norway and Serbia (Eurostat, n.d.). The EHIS is a comprehensive cross-sectional health survey collecting harmonised information on health status, health care utilisation and unmet needs, health determinants and socio-economic and demographic characteristics of individuals aged 15 years and over living in private households. It is particularly valuable for this study as it includes a dedicated question on unmet need for mental health care in all participating countries except Belgium, which was

[3] Data collection was conducted in 2019 in most countries, between 2018 and 2019 in Austria, in 2018 in Belgium, and between 2019 and 2020 in Germany and Malta.
[4] Data for France were collected, but access to EHIS wave 3 microdata is not granted for scientific purposes by the French statistical office.

therefore excluded from the corresponding analysis. The surveys are nationally representative, with sampling strategies differing across countries (e.g., population censuses, dwelling registers or other statistical sources). Sampling designs were typically either multi-stage (stratified or cluster-based) or single-stage (random, stratified, systematic, or cluster). The non-response rates varied between 12% and approximately 78%, remaining below 40% in 15 countries, with household income being particularly affected (Eurostat, 2022). Additional methodological details can be found in Eurostat (2022). Country-level information on psychiatrist density, mental health expenditures, and income and income inequality, unemployment and price level for 2019 were sourced from Eurostat (2025), Arango et al. (2025) and OECD (2026). The study sample of individuals with mental health care needs (met and unmet) comprised 116,398 individuals across 28 European countries. Of these, 101,343 individuals had complete data on all relevant variables and were therefore included in the estimation of the determinants and inequalities of unmet mental health care needs. In addition, the sample used to assess inequity in mental health care utilisation included 305,002 individuals across Europe, including Belgium. The proportion of missing values for the imputed income variable was of 1.0%.

2.2. Dependent variables

EHIS provides a comprehensive assessment of unmet health care needs, covering barriers related to waiting times, distance or transportation, and financial constraints. We selected the item indicating whether individuals had sought care from a psychologist, psychotherapist, or psychiatrist in the past 12 months but were unable to afford it to construct a binary variable measuring unmet need for mental health care. Responses included “yes”, “no”, or “no care need”, with the latter coded as missing. The resulting variable therefore captures unmet mental care needs among individuals reporting a need for care.

To assess inequity in the use of mental health care, we defined a binary variable equal to 1 for individuals who reported having had a consultation with a psychologist, psychotherapist, or psychiatrist in the past 12 months, and 0 for those who had not or whose last consultation occurred earlier.

2.3. Individual-level characteristics

The following individual-level variables are included, based on prior evidence of their association with unmet health care needs (Cavallieri, 2013; Fjær et al., 2017; Moran et al., 2021; Maslyankov and Hernández, 2024). These variables are grouped into need and non-need variables. Need factors include age, sex and health status. Age is categorised into 7 groups (15-24, 25-34, …, 75+), sex is a dummy variable. Health status is proxied by a set of binary indicators –less than good self-assessed health and the presence of a long-standing health illness– as well as multimorbidity, measured by the number of chronic conditions. Mental health is captured using two variables: one indicating whether the individual reported experiencing depression in the past 12 months and another assessing the depression severity over the previous two weeks. The latter is based on the Patient Health Questionnaire (PHQ-8) score and classifies individuals into five categories: no depression, mild, moderate, moderately severe and severe (Kroenke et al., 2009). We define a dichotomic measure of adverse mental health based on the PHQ-8 score, coded as 1 for scores of 10 or higher, corresponding to the standard threshold for likely major depressive disorder, i.e., from moderate to severe depression (Kroenke et al., 2010; Arias de la Torre et al., 2023; Löwe et al., 2023). This measure of mental health is used for robustness checks.

Non-need variables include household equivalised income, education, labour, marital status, migration and social support. Following Andres and Stoyanova (2026), we apply interval regression to estimate continuous income values using the reported income quintiles in EHIS,

country-specific household income distributions from the 2019 cross-sectional European Union Statistics on Income and Living Conditions (EU-SILC) microdata (Eurostat, 2019), and a set of individual and household characteristics (age, sex, education, labour status, region, urban/rural residence, and family composition). Imputation is performed separately for each country using the full EHIS 2019 sample (individuals aged 15+) to preserve country-specific income distributions. Education is classified according to ISCED levels: primary (levels 0-1), secondary (levels 2-4), and higher (level 5 and above). Labour status is categorized as employed, unemployed, retired, or other. Marital status comprises four categories: married or cohabiting, single, widowed, and divorced. Social support is measured using the Oslo Social Support Scale (OSSS-3), a validated three-item instrument assessing perceived social support. The total score ranges from 3 to 14 and was categorized into poor (3-8), moderate (9-11), and strong (12-14) social support. Table S1 in the Supplementary material reports the definitions of the covariates included in the analyses.

2.4 Country level indicators

To account for cross-country supply-side differences, we include two mental health system indicators –public mental health expenditure and psychiatrist density– which are expected to be associated with access to care and hence to unmet needs. All data refer to 2019 or the nearest available year. Mental health expenditure is defined as public spending on mental health expressed as a percentage of total public health expenditure (Arango et al., 2025 for all countries, except for Iceland (WHO, 2024), Serbia (WHO, 2018) and Norway (OECD, 2026)). The density of mental health personnel is measured as the number of psychiatrists per 100,000 population (Eurostat, 2025).

We further control for cross-country differences in macroeconomic conditions, including GDP per capita, the Gini index, the unemployment rate, and the consumer price index for health care

(Eurostat, 2025; OECD, 2026). The Gini index measures inequality in the distribution of income on a 0-1 scale, where 0 indicates perfect equality and 1 indicates maximum concentration of income in a single group or individual.[5]

We assume that a higher share of public expenditures on mental health is expected to reduce unmet need by widening coverage of mental health services. Similarly, access to care is likely to be better in countries with higher densities of psychiatrists. We hypothesised that higher GDP per capita would be associated with lower unmet need and higher utilisation, while greater income inequality, as captured by the Gini index, would be linked to increased unmet need. More broadly, countries with higher unemployment rates may experience greater demand for mental health care and, consequently, higher unmet need if this demand not match by adequate supply. Finally, higher care prices may increase unmet need and reduce utilisation by limiting affordability.

2.5 Estimating determinants of unmet mental health care needs

We use a two-level mixed-effects logistic regression model, containing both fixed effects and random effects, to assess unmet mental health needs due to financial reasons while accounting for the hierarchical structure of the data.

We model the probability of individual *i* living in country *j* having an unmet need for mental health care, y_{ij}, as a function of individual- and country-level covariates, using a two-level logistic regression model with a random-intercept to allow the average level of unmet need to vary across countries. That is:

$$\mathrm{E}(y_{ij}|y_{ij}^{*} > 0, X_{ij}, Z_j, u_j) = Pr(\alpha + X_{ij}\beta + Z_j\gamma + u_j + \varepsilon_{ij}|y_{ij}^{*} > 0) \quad (1)$$

[5] Table S2 of the Supplementary material provides detailed information on country-level characteristics and data sources.

for j=1...J countries, with country j consisting of i=1…n_j observations. Here X_{ij} is a vector of individual-level covariates, Z_j is a vector of country-level covariates, β and γ are the fixed effects coefficients; and u_j is a country-specific random effect with $u_j \sim N(0, \sigma_u^2)$. The model error term, ε_{ij}, is distributed as a logistic with mean 0 and variance ($\pi^2/3$), being independent of u_j.[6] In order to assess the degree of clustering at the country level (level 2) the intraclass correlation coefficient (ICC) was calculated.

We examine the robustness of the findings by running an alternative empirical strategy. Unmet mental health care needs are modelled jointly with current major depressive disorder adjusting a bivariate logistic regression model. This approach estimates both binary outcomes together allowing for a correlation between the error terms of the two equations, which recognises that there may be unobservable characteristics of individuals that influence both whether they have unmet needs due to affordability issues and have self-assessed psychological problems.

2.6 Measuring inequality in unmet mental health needs and utilisation

We measure income-related inequalities in unmet needs and utilisation of mental health care by employing the concentration index (CI) approach (Wagstaff et al., 1989; Wagstaff and Van Doorslaer, 2000). The CI is twice the area between the line of equality and the concentration curve, which plots the cumulative proportion of the outcome variable against the cumulative distribution of the population ranked by equivalised household income.

The CI is calculated according to the following formula:

[6] Statistical inference is based on standard errors adjusted for 27 clusters.

$$CI = \frac{2}{\bar{y}} cov(y_i, R_i) \quad (2)$$

where $cov(.,.)$ represents the covariance between unmet mental care needs (y_i) and the relative ranking of individuals by income (R_i). The term $\bar{y}$ represents the average level of unmet needs. The index ranges between -1 and 1. Negative values of the index imply that unmet mental health needs are disproportionately concentrated among lower-income groups, whereas positive values suggest a greater concentration among higher-income groups. A non-significant estimate of the CI implies no meaningful income-related gradient.

Given the bounded nature of the unmet need variable, between 0 and 1, and to allow cross-country comparison of inequality, the above CI may be affected by the mean dependency problem, i.e., the ranges of the CI vary with the mean of the unmet need variable, making a cross-country comparison of this variable with substantial differences in means problematic (Wagstaff, 2005). Hence, we employ the Erreygers-corrected concentration index (Erreygers, 2009), denoted by CCI, which meets the mirror property and is invariant to both scale and translation (Erreygers and van Ourti, 2011). The CCI has been previously used in studies examining inequalities in unmet needs and care utilisation (González-Touya et al., 2021; Carnazza et al., 2023; Urbanos and Agúndez, 2025) and is expressed as:

$$CCI = \frac{4\bar{y}}{b_n - a_n} CI \quad (3)$$

where a_n and b_n represent the minimum and maximum values of the unmet mental health needs variable. The CCI ranges from -1 to 1, and the interpretation is similar to that of the CI.

A key advantage of the CI is that it can be decomposed into need- and non-need determinants (Wagstaff et al., 2003). We first estimate the following linear model:

$$y_i = \alpha + \sum_k \beta_k x_{ki} + \sum_p \delta_p z_{pi} + u_i \quad (5)$$

which assumes that y_i is a linear and additively separate function of need (x_k) and non-need (z_p) factors, β_k and δ_p are their respective coefficients, and u is the error term. Therefore, the CI may be expressed as a weighted sum of the partial CI for the explanatory factors of inequality, being the weight the elasticity of y with respect to x_k and z_p. Similarly, as shown by van de Poel et al. (2012), the CCI can be rewritten as:

$$CCI = \frac{4}{b_n - a_n}\left(\sum_k \beta_k \bar{x}_k \, CI_x + \sum_p \delta_p \bar{z}_p \, CI_z + GCI_u\right) \quad (6)$$

where $\bar{x}_k$ and $\bar{z}_p$ are the mean of x_k and z_p, respectively, and CI_x and CI_z are their concentration indices with respect to income. GCI_u is the generalized concentration index of the error term, which represents the socioeconomic inequality associated with unobserved factors.

Equation (6) shows that the CCI can be decomposed into a weighted sum of the CIs of the determinants of unmet mental health needs with respect to income. The weights reflect the sensitivity of unmet needs to variations in each variable. Accordingly, each factor's contribution to the overall CCI is determined by two elements: (i) the estimated effect on unmet needs evaluated at the mean (i.e., semi-elasticity), and (ii) the degree of income-related inequality in that determinant, captured by its own CI.

2.7 Quantifying inequity in mental health care utilisation

The inequality analyses described above illustrate how unmet mental health needs are distributed across socioeconomic groups and can likely be applied to examine inequalities in the use of mental care. However, from a policy perspective, a different approach may be more informative, namely, one that assesses whether, and to what extent, differences in mental health care utilisation are driven by factors unrelated to need, such as income, education or labour status. This is the focus of inequity analysis. The corrected horizontal inequity index in mental health care utilisation (CHI) is defined as the difference between the CCI and the contribution corresponding to the need variables:

$$CHI = CCI - \frac{4}{b_n - a_n} \sum_k \beta_k \bar{x}_k \, CI_x. \tag{7}$$

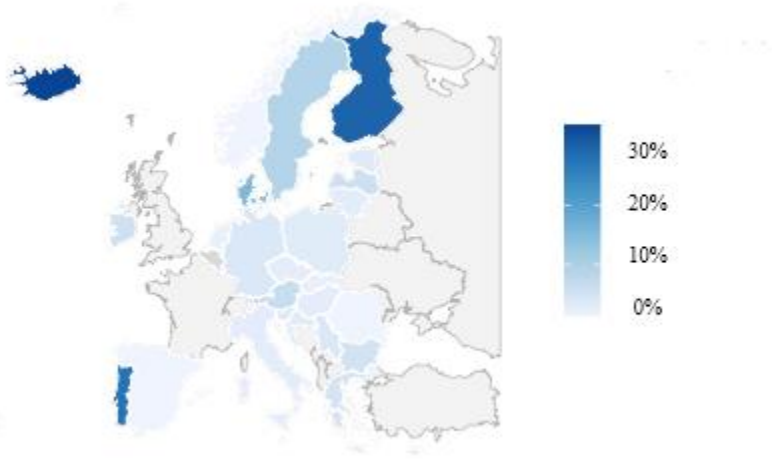
The CHI ranges from -1 to 1, with 0 indicating no inequity. A negative CHI indicates pro-poor inequity, i.e., mental health care utilisation is more concentrated among poorer individuals after adjusting for need. Conversely, a positive CHI implies that utilisation is more concentrated among richer individuals, suggesting an inequity that favours the poor.

To ensure robustness, we estimate bias-corrected bootstrapped confidence intervals for the indices using 1,000 replications. This approach provides a more reliable basis for statistical inference by accounting for potential bias and skewness in the index estimates. All statistical analysis were conducted using Stata/SE version 17. All calculations were performed applying the appropriate sample weights.

3. Results

The prevalence of self-reported unmet mental health care needs due to financial reasons during the previous 12 months in the pooled EHIS sample is estimated at 3.4% (see Figure 1[7]). However, this figure hides sharp disparities across European countries, ranging from low prevalence rates in Spain (1.2%), Romania (1.2%) or Norway (1.2%) to very high rates in Portugal (27.8%), Finland (29.8%) or Iceland (33.7%).

Fig. 1 Prevalence of unmet needs for mental health care due to affordability in Europe



[a] Results are weighted using survey sampling weights.

Table 1 shows the mean values of the explanatory variables by mental health care needs status. As can be seen, individuals reporting unmet mental health care needs are more often women, younger, and living alone, either because they are single or divorced. They also present poorer health conditions, including higher levels of depression, poorer SAH, more long-term illness, and greater comorbidity. At the same time, they have lower income and educational levels, are more likely to be unemployed or outside the labour market, and also report higher levels of social

[7] The exact figures behind figure 1 are shown in Table S3 of the Supplementary material.

support. At the macro level, they tend to live in countries with higher income per capita and a greater density of mental health professionals, but with lower income inequality and unemployment.

3.1. Determinants of Unmet Mental Health Care Needs

Table 2 presents the estimates from the two-level mixed-effects logistic regression model. The estimated country-level variance component is 0.524, with an ICC of 0.137, indicating that roughly 14% of the total variance in unmet mental health needs is attributable to clustering at the country level. This supports the use of a multi-level modelling approach.

After controlling for a broad set of covariates, we observe that women have higher odds of reporting unmet needs, while older individuals are less likely than younger ones to do so. Being depressed, in poorer SAH and suffering from chronic conditions are also associated with higher odds of unmet mental health needs. Compared with married individuals, those who are single, widowed, or divorced are more likely to report unmet needs. The pooled European sample also reveals a clear income gradient: richer individuals have lower odds of reporting financial barriers to accessing care. By contrast, secondary education is associated with lower odds of unmet need relative to primary education or less, while higher education is not significantly associated with unmet needs. Unemployed and economically inactive individuals are more likely than employed individuals to report unmet needs for financial reasons. Similar pattern is observed among immigrants. Somewhat unexpectedly, individuals reporting moderate or strong social support are also more likely to declare unmet needs. Finally, neither country-level health system characteristics nor macroeconomic conditions appear to be significantly associated with unmet mental health care needs.

As a sensitivity analysis, Table S4 in the Supplementary material shows the estimates from the bivariate probit model for unmet mental health care needs due to financial reasons and major depressive disorder using the same set of explanatory variables.[8] Interestingly, the results are qualitatively similar to those obtained using the two-level mixed effects logit model. The first equation reveals that women, individuals reporting poorer SAH, greater comorbidity, and those who are single or divorced are more likely to report unmet needs, whereas older individuals are less likely to declare unmet needs. Similarly, being unemployed, economically inactive, or reporting sufficient social support is associated with a higher probability of reporting unmet needs. In contrast, no significant association is observed between unmet needs and either income or education.

The second equation shows that major depressive disorders are more prevalent among women, individuals with poorer health, and those in less favourable marital and labour status situations, while the likelihood decreases with age and education attainment.

An additional insight from this model is the estimate of parameter ρ, the correlation coefficient between the two error terms. The estimate is 0.385 and significantly different from zero, indicating that unobservable factors positively associated with unmet mental health needs are also positively associated with adverse mental health outcomes.

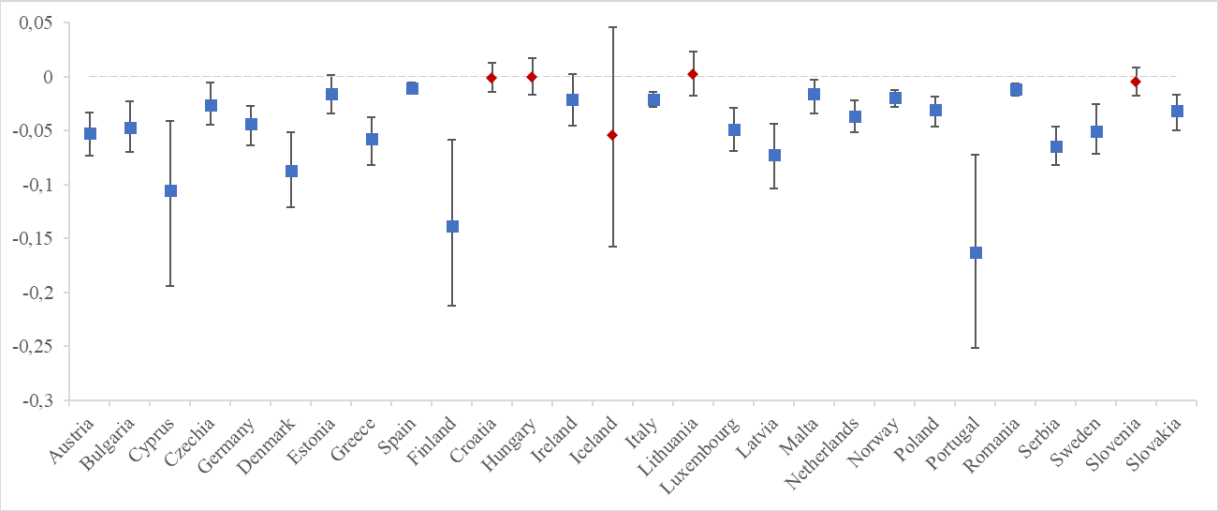
3.2 Inequalities in unmet mental health care needs

To assess cross-country differences in unmet needs for mental health care due to affordability constraints, we estimate country-specific CCIs, presented in Figure 2[9]. The full set of estimates is reported in Table S5 in the Supplementary material. Overall, unmet needs are disproportionately

[8] The prevalence of major depression disorder is our pooled sample of European countries is around 10.2%.
[9] The full set of estimates is reported in Table S5 of the Supplementary material.

concentrated among individuals with lower socioeconomic status in most countries in our sample, as indicated by negative CCIs values (i.e., pro-poor inequality). Exception to this pattern include Croatia, Hungary, Iceland, Lithuania and Slovenia, where no significant disparities are observed. The highest levels of pro-poor inequalities are found in Portugal, Finland and Cyprus, with CCI ranging from -0.11 to -0.16.

Fig. 2 Income-related inequality in unmet mental health care needs across European countries



[a] The Figure shows the Erreygers-corrected concentration indices (CCIs) across countries with 95% bias-corrected bootstrap confidence intervals.
[b] Non-statistically significant estimates are indicated by dark red diamonds.

Table 3 presents the CCIs of unmet mental health care needs by broad geographic region, providing a clearer view of how contextual factors may shape inequalities across Europe. We define five regions, aligned with standard European geographic classifications and broadly consistent with the type of health care system (Beverage, Bismarck, or mixed), as well as prevailing levels of stigma and attitudes towards mental health, willingness to seek professional care, and mental health literacy (ten Have et al., 2010; Evans-Lacko et al., 2012; WHO, 2022; Arango et al., 2025): South (Beverage, family-centred), Centre (Bismark), North-West (Beverage,

community-based mental health systems), East and Baltic (mixed systems in transition). Consistent with country-level results, we find evidence of pro-poor inequalities in unmet mental health care needs across all regions, expect for the North-West, where the index is negative but not statistically significant. The highest levels of inequalities are observed in the Centre (CCI=-0.043), followed by the South (CCI=-0.027) and Baltic (CCI=-0.024).

Table 3 Income-related inequality in unmet mental health care needs across European regions

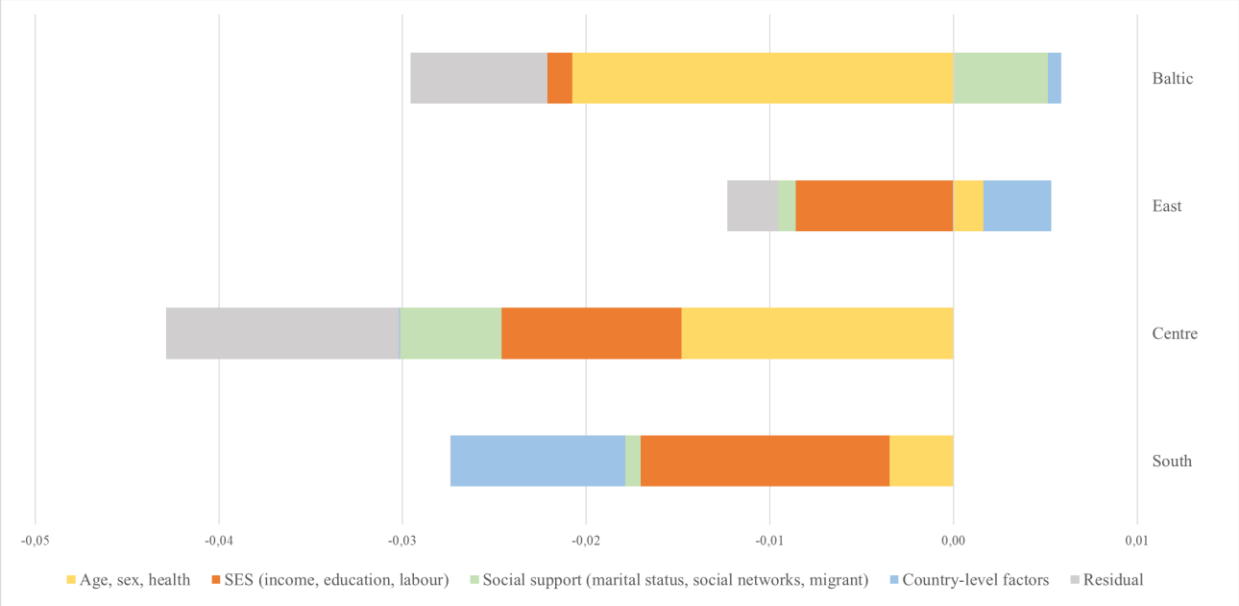
	South (N=35,651)	Centre (N=21,476)	North-West (N=18,123)	East (N=34,070)	Baltic (N=5,649)
CCI	-0.027***	-0.043***	-0.001	-0.007**	-0.024***
	(-0.032, -0.023)	(-0.057, -0.030)	(-0.015. 0.013)	(-0.012, -0.002)	(-0.036, -0.011)

[a] ***p<0.001; **p<0.01; * p<0.05.
[b] Results are weighted using survey sampling weights.
[c] Bias-corrected bootstrapped 95% confidence intervals (1,000 replications) are reported in parentheses. Statistical significance is based on bootstrap p-values derived from the normal approximation.
[d] CCI: Erreygers-corrected concentration index.
[e] South: Cyprus, Greece, Italy, Malta, Portugal, Spain; Centre: Austria, Germany, Luxemburg, Netherlands; North-West: Denmark, Finland, Ireland, Iceland, Norway, Sweden; East: Bulgaria, Czechia, Croatia, Hungary, Poland, Romania, Serbia, Slovenia, Slovakia; Baltic: Estonia, Latvia, Lithuania.

A deeper understanding of the drivers of inequality in unmet mental health care needs is provided by the decomposition analysis, which quantifies the contribution of individual-[10] and country-level characteristics to the observed inequality (see Figure 3). The decomposition is conducted separately for each of the significant CCIs reported in Table 3. A detailed breakdown of each factor's contribution into its semi-elasticity and CI is presented in Tables S6 to S9 in the Supplementary material.

Fig. 3 Decomposition of CCIs of unmet mental health care needs across European regions

[10] Individual characteristics are grouped into three dimensions: (i) demographic and health variables –age, sex, self-assessed health, the presence of a long-term health condition, the number of chronic diseases, and having depression; (ii) SES, captured by education, labour status and equivalised net monthly household income; and, (iii) social support accounting for marital and migrant status, as well as social networks.



[a] Results are weighted using survey sampling weights.
[b] Health includes self-assessed health status, the presence of a long-term health condition, the number of chronic diseases, and having depression. Socioeconomic Status (SES) includes education, labour status and equivalised net monthly household income, adjusted for purchasing power standards (PPS). Social support includes marital status, social networks and migrant status. Country-level factors include public mental health care expenditures, number of psychiatrists (per 100,000 inhabitants), GDP per capita, Gini coefficient, HCPI for health, and Unemployment rate.
[c] CCI: Erreygers-corrected concentration index.
[e] Variables depicted in the left-hand side of 0 contribute to pro-poor inequality in unmet needs; variables depicted on the right-hand side of 0 contribute to pro-rich inequality. Reading: SES, for example, contribute to inequality by-0.014 (out of a total inequality index of -0.027) in the South.

We find that individual-level characteristics account for the largest share of inequality in unmet mental health care needs across all regions. In particular, demographic and health-related characteristics are the main contributors to inequality in the Centre and Baltic regions, while socioeconomic factors play the leading role in the South and East. Poor health is consistently associated with a higher probability of unmet needs (e.g., the semi-elasticity for poor SAH ranges from 0.003 to 0.010 across regions) and is disproportionately concentrated among lower-income individuals (CI ranging from -0.008 to -0192), thereby contributing to pro-poor inequality.

Household income also plays a substantial role: the semi-elasticity of unmet needs with respect to income ranges from -0.012 to -0.159, and given the positive concentration of income (CI ranging from 0.032 to 0.151), it reinforces the observed pro-poor inequality in unmet mental health care

needs. Higher education is associated with higher unmet needs in the Centre (semi-elasticity of 0.07), but with lower unmet needs in the other regions. At the same time, higher education is disproportionately concentrated among better-off individuals across all regions (CI between 0.212 and 0.277). Consequently, higher education acts as a mitigating factor for inequality in the Centre, while contributing to greater inequality in the remaining regions. Social support generally amplifies inequality across regions, with the exception of the Baltic region, where it exerts an equalising effect.

Country-level factors play heterogeneous roles across regions. They contribute to increasing pro-poor inequality in the South (accounting for approximately 34.6% of total inequality) and in the Centre, while they mitigate inequality in the East and Baltic regions.

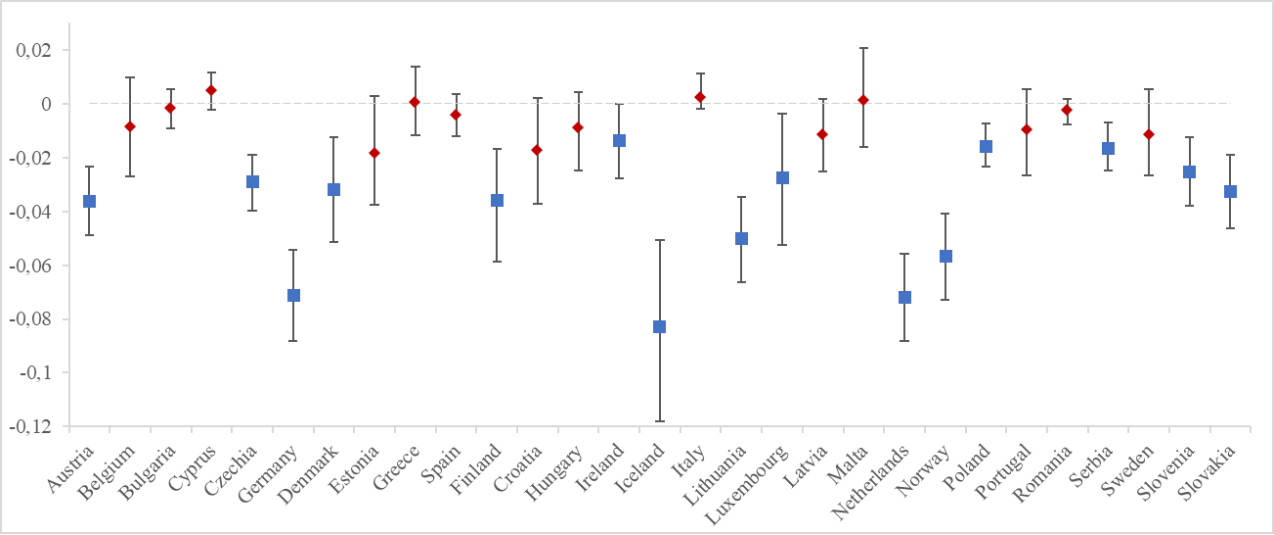
3.3 Inequality and inequity in mental health care utilisation

Inequalities in unmet mental health care needs are closely related to inequalities in mental health care use. While mental health care use reflects actual service utilisation, unmet need captures the gap between individuals perceived mental health needs and the care they receive. Socially disadvantaged groups may experience higher levels of unmet need because they face greater barriers to accessing or adequately using continuous mental health services, including financial, geographic, cultural, or stigma-related barriers. One possible explanation is that poorer individuals may be less aware of the severity of their mental health problems or may seek care at later stages of illness. As a result, even when they report higher levels of service use, the care received may still be insufficient to meet their greater mental health needs.

Using a binary indicator of mental care utilisation over the past twelve months, we also evidence disparities across countries. Overall, we observe pro-poor inequality in mental health care

utilisation in 15 of the countries included in the analysis (see Figure 4[11]). Although the magnitude varies across settings, the inequality is particularly pronounced in Iceland, Netherlands, Germany and Norway. In contrast, the CCI is positive in a small number of countries, including Cyprus, Italy and Malta, although these estimates are not statistically significant.

Fig. 4 Income-related inequality in mental health care utilisation across European countries



[a] Erreygers-corrected concentration indices (CCIs) are presented with 95% bias-corrected bootstrap confidence intervals.
[b] Non-statistically significant estimates are indicated by dark red diamonds.

Across regions, mental health care utilisation tends to be concentrated among lower-income individuals, as reflected in the CCI estimates reported in Table 4. This pro-poor concentration is not uniform, however, and is largest in Central and North-Western Europe. By contrast, although inequalities in Southern Europe remain significantly pro-poor, their magnitude is comparatively smaller. After adjusting for need, mental health care utilisation continues to exhibit pro-poor horizontal inequity, as indicated by negative CHI values across all regions. This suggests that lower socioeconomic groups utilise mental health professionals more than would be expected

[11] The full set of estimates is reported in Table S10 of the Supplementary material.

based on their underlying need. The inequities remain largest in Central and North-Western Europe.

Table 4 Income-related inequality and inequity in mental health care utilisation across European regions

	South (N=100,512)	Centre (N=59,085)	North-West (N=39,396)	East (N=90,196)	Baltic (N=15,813)
CCI	-0.005** (-0.009, -0.001)	-0.063*** (-0.076, -0.051)	-0.045*** (-0.052. -0.036)	-0.007*** (-0.011, -0.004)	-0.025*** (-0.034, -0.015)
CHI	-0.003 (-0.007, 0.000)	-0.052*** (-0.065, -0.041)	-0.035*** (-0.043, -0.028)	-0.002*** (-0.010, -0.033)	-0.017** (-0.026, -0.007)

[a] ***p<0.001; **p<0.01; * p<0.05.
[b] Results are weighted using survey sampling weights.
[c] Bias-corrected bootstrapped 95% confidence intervals (1,000 replications) are reported in parentheses. Statistical significance is based on bootstrap p-values derived from the normal approximation.
[d] CCI: Erreygers-corrected concentration index.
[e] South: Cyprus, Greece, Italy, Malta, Portugal, Spain; Centre: Austria, Belgium, Germany, Luxemburg, Netherlands; North-West: Denmark, Finland, Ireland, Iceland, Norway, Sweden; East: Bulgaria, Czechia, Croatia, Hungary, Poland, Romania, Serbia, Slovenia, Slovakia; Baltic: Estonia, Latvia, Lithuania.

4. Discussion

This study provides new comparative European evidence on the socioeconomic inequalities in unmet mental health care needs and utilisation, showing how affordability-related barriers and realised access vary across countries and broader regions. In doing so, it bridges single-country research on unmet mental health needs (Hoebel et al., 2017; Sakellariou and Rotaru, 2017; Moran et al., 2021; Maslyankov and Hernández, 2024; Urbanos-Garrido and Agúndez, 2025) with cross-country evidence on unmet healthcare needs more broadly (Carnazza et al.,2023; Moran et al., 2025).

Our first objective was to identify the determinants of unmet mental health care needs, distinguishing between individual-level characteristics and country-specific institutional factors. The results showed that women had higher odds of reporting unmet mental health needs due to

affordability of care, possibly reflecting greater awareness of their need despite higher levels of mental health care utilisation (Moran et al., 2021; Olsson et al. 2021; Vargas Lopes and Llena-Nozal, 2025). Similarly, older individuals were less likely to report unmet needs. One possible explanation is that younger individuals may be more able to adequately assess their mental health needs, a higher willingness to pay for mental health care, or higher expectations regarding what mental health services should provide (Maslyankov and Hernández, 2024). These findings underline the importance of interpreting perceived unmet need not only as a measure of foregone care, but also as an indicator shaped by awareness, expectations, and the ability to recognise mental health problems.

Consistent with previous country-level evidence, depression, poor SAH, and multimorbidity were associated with a higher risk of being unable to afford mental health care (Sakellariou and Rotarou, 2017; Moran et al., 2021; Maslyankov and Hernández, 2024)[12]. This may reflect the fact that individuals in poorer health have more frequent contact with health professionals and greater use of health care services, which may increase awareness of unmet needs or shape expectations regarding care. At the same time, it suggests that those with the greatest health burden may also face the greatest difficulty in financing adequate mental health care, pointing to a potential mismatch between need, access, and financial protection.

We also observed a clear socioeconomic gradient, with low-income individuals and those unemployed or inactive being more likely to report unmet needs due to financial reasons (Hoebel et al., 2017; Rotarou and Sakellarious, 2019; Moran et al., 2021). This finding reinforces the role of affordability as a key barrier to mental health care access and suggests that existing coverage arrangements may not be sufficient to protect disadvantaged groups from out-of-pocket costs. For

[12] This finding is aligned with existing evidence on the unaffordability of medical care, dental care, and prescribed medicines in Europe (e.g., Chaupain-Guillot and Guillot 2015; Fjaer et al., 2017; Moran et al., 2025).

low-income individuals, this may also reflect broader opportunity cost of seeking care, including reduced capacity to take time off work, greater job insecurity, or higher risk of income loss (Fjaer et al., 2017). After controlling for a wide set of covariates, however, education was not significantly associated with unmet mental care needs (Olsson et al., 2021), suggesting that income and labour status may capture the financial dimension of access more directly than educational attainment.

As in previous evidence, single, widowed and divorced individuals were more likely to report unmet mental health care needs due to financial barriers in the pooled European sample (Moran et al., 2021). In contrast, our findings diverge from earlier results regarding social support: both moderate and strong social support, which may capture help-seeking capacity or access to additional resources, were positively associated with affordability-related unmet needs (Fiorillo, 2020). One possible interpretation is that social support may increase recognition of mental health problems and encourage individuals to seek care, thereby making affordability barriers more visible. Alternatively, social support may partly reflect greater exposure to informal advice or encouragement to access services, without necessarily translating into the financial capacity to obtain care, and hence perceiving current treatment as suboptimal.

The analyses also revealed pro-poor inequality in both unmet mental health needs due to financial barriers and mental health care utilisation across many European countries and geographical regions. Our findings are aligned with earlier evidence from Germany (Hoebel et al., 2017), Luxemburg (Moran et al., 2021), Spain (Urbanos-Garrido and Agúndez, 2025), Canada (Bartram, 2019; Bartram and Stewart, 2019) and Australia (Bartram and Stewart, 2019), where affordability-related unmet mental health care needs have also been shown to be disproportionately concentrated among socioeconomically disadvantaged groups. The absence of significant

inequalities in Croatia, Hungary, Lithuania, and Slovenia should be interpreted with caution, as the prevalence of unmet needs in these countries is below 3%. Although this pattern may reflect weaker affordability barriers, such low prevalence may also reduce the statistical power to detect significant socioeconomic gradients.

With regard to equity in mental health care utilisation, we observe significant pro-poor inequity in more than half of the European countries. This contrasts with previous evidence from Spain, where utilisation of psychiatric professional care was found to favour the better-off women, even after adjusting for need (Urbanos-Garrido and Agúndez, 2025). It also differs from the broader literature on specialist care in Europe, which generally documents pro-rich inequities in specialist service use, while GP care tends to be more equally distributed or concentrated among lower socioeconomic groups (van Doorslaer et al., 2004, 2006; Bago d'Uva et al., 2009; Devaux and de Looper, 2012; Devaux, 2015; Fjær et al., 2017). At the same time, our findings are more aligned with evidence suggesting that specialised care is relatively equally distributed (van Ourti, 2004; Masseria and Giannoni, 2010; Abasolo et al., 2017; San Sebastián et al., 2017).

Our results may therefore suggest that mental health care follows a different pattern from specialised care more broadly, potentially reflecting the higher burden of mental ill-health among disadvantaged groups and their greater reliance on public or community-based provision. In some countries, both mental health care use and unmet mental health care needs due to cost are disproportionately concentrated among poorer individuals, while in others utilisation appears relatively evenly distributed across income groups. The persistence of unmet mental health care needs among disadvantaged populations suggests that higher levels of service utilisation do not necessarily translate into equitable access to adequate or effective care. One possible interpretation is that poorer individuals in most of the European countries analysed experience greater mental

health needs, but also receive lower-quality, insufficient or less appropriate care, and/or continue to face financial, structural, or social barriers that prevent their needs from being fully met.

The analysis by broad geographical regions confirmed the existence of pro-poor inequalities in unmet mental health care needs due to affordability across all regions. These inequalities were largest in Central Europe, followed by the Southern and Baltic regions, suggesting that financial barriers to mental health care are not confined to a specific health system or welfare regime. Rather, affordability-related unmet needs appear to be a widespread source of socioeconomic inequality across Europe, although their magnitude varies substantially across regional contexts.

The decomposition analysis provides further insight into the factors underlying these inequalities. Demographic and health-related characteristics were the main contributors to inequality in Central Europe and the Baltic region, whereas socioeconomic factors played a more important role in Southern and Eastern Europe. Adverse health and equalised income emerged as the main individual-level drivers of pro-poor inequality. Country-level variables also contributed differently across settings, reinforcing inequalities in Southern and Central Europe while narrowing them in Eastern Europe and the Baltic region. This suggests that the broader context in which mental health care is delivered may shape the extent to which individual socioeconomic disadvantage translates into unmet need, and thus should be accounted for in the analyses. It also emphasises the importance of regionally tailored policy responses that go beyond affordability alone to account for differences in need, service provision, and the resources available to meet mental health care demand.

Several limitations of our study should be acknowledged. First, the analysis focuses exclusively on unmet needs for mental health care due to financial constraints. As a result, the findings likely underestimate the true extent of inequalities, since other relevant factors, such as supply-side

barriers (e.g., long waiting times or limited service availability) and individual-level factors (e.g., attitudes or health literacy), are not considered. Moreover, access to mental health services provided within primary care settings is not accounted for, which may further contribute to downward bias in the estimates. Second, EHIS measures of care utilisation and unmet needs are self-reported, which makes them subject to common survey-data limitations, such as recall and response bias. Third, the ranking variable is based on an imputation technique and may therefore be subject to estimation error. Nevertheless, the use of a continuous income measure offers greater precision than categorical alternatives, which likely outweighs the potential drawbacks. Furthermore, imputing income in the presence of substantial item non-response is not unusual (Costa-Font and Gil, 2008; Andridge and Little, 2011). Fourth, the contribution of the residuals to inequalities remains relevant in some regions (see Figure 3), suggesting that relevant covariates may be omitted from the models. However, the choice of variables is constrained by data availability within the survey. Finally, the cross-sectional design of the study provides only a snapshot of inequalities in utilisation and unmet needs for mental health care across Europe. Longitudinal data would enable a more comprehensive assessment of how policy changes influence the evolution of these inequalities over time and would strengthen causal interpretation.

Despite these limitations, the study provides a robust assessment of unmet mental health care needs and highlights significant socioeconomic inequalities across Europe. These findings offer valuable evidence to inform policy responses in the context of rising mental health needs and increasing pressures on care systems.

5. Conclusions

Overall, our findings provide evidence of socioeconomic inequalities in unmet mental health care needs due to unaffordability, as well as inequity in utilisations of mental health care across Europe. However, the magnitude and statistical significance of these inequalities and inequities vary substantially across countries and broader geographical regions, suggesting that contextual settings play an important role. A key finding is the coexistence of pro-poor inequalities in both mental health care use and unmet needs due to financial constraints. This pattern may reflect insufficient financial protection within the health care system, where disadvantaged populations access care more often because of greater underlying need but still cannot fully afford the care required.

Our results also highlight the relevance of contextual factors in explaining regional differences in unmet needs for mental health care. In particular, health system characteristics and macro-level conditions appear to amplify inequalities in Southern Europe, attenuate them in mixed systems in transition, and exert no significant effect in Bismarckian systems. This suggests that socioeconomic inequalities in unmet mental health care needs are shaped not only by individual characteristics, but also by the broader institutional and macroeconomic context in which care is provided. Accordingly, policy responses aimed at reducing unmet needs should account for cross-country differences in health system organisation, financial protection, and the availability of mental health services.

By using a continuous income variable, this study refines previous analysis on inequalities relying on categorical ranking variables based on information on income or occupation (Urbanos-Garrido and Agúndez, 2025).

Finally, we agree with Urbanos-Garrido and Agúndez (2025) that future research would benefit from richer data identifying both the type of mental health professional consulted and the specific reasons why perceived needs remain unmet. This distinction is essential for informing policy, as affordability barriers require different interventions from shortages in service availability, difficulties in navigating care, acceptability constraints, or concerns about the quality and adequacy of treatment.

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