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Depressive symptoms among immigrants and ethnic minorities: a population based study in 23 European countries

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Abstract
Purpose European studies about ethnic inequalities in depressive symptoms are scarce, show inconclusive results and are complicated by the discussion of what constitute (im)migrant and ethnic minority groups. Moreover, comparisons across countries are hampered by a lack of comparable measures of depressive symptoms. This study aims to assess the prevalence and determinants of depressive symptoms among immigrants, ethnic minorities and natives in 23 European countries.
Methods Multilevel analyses are performed using data from the third wave of the European Social Survey (ESS-3). This dataset comprises information about 36,970 respondents, aged 21 years or older, of whom 13.3% immigrants and 6.2% ethnic minorities. Depressive symptoms were assessed with an 8-item version of the Center for Epidemiologic Studies-Depression scale. Main determinants are immigrant status, socio-economic conditions and the experience of ethnic discrimination in the host country.
Results The results show that immigrants and ethnic minorities do experience more depressive symptoms than natives in an essential part of the countries. Moreover, socio-economic conditions and the experience of ethnic discrimination are important risk factors. Immigrant status seems irrelevant, once the other risk factors are accounted for. Finally, immigrant and ethnic minority groups do not consist of the same individuals and therefore have different prevalence rates of depressive symptoms.
Conclusions The prevalence rates of depressive symptoms are higher for immigrant and ethnic minority groups in a substantial part of the European countries. A clear definition is indispensable for developing policies that address the right-targeted population.

Keywords Depressive symptoms · Immigrants · Ethnic minorities · Europe · Ethnic discrimination

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Introduction

The composition of today's European population has been characterized by three immigration waves in the 20th century: around the time of the first and the second world war, and during the last decennium [1]. Approximately 56 million immigrants have now settled in Europe, and the numbers are still likely to increase [2]. While the economic consequences of migration have been frequently studied, the (mental) health consequences for immigrants have not received much attention yet.

In the USA, there exists a long tradition of research on the mental health consequences of migration [3]. Since the early 1980s epidemiological research [e.g., 4–7] challenges, the long standing tenets in psychiatry and psychology that first generation immigrants are necessarily disadvantaged [8]. Evidence is found of an (im)migrant paradox, in regard to mental health: immigrants to the USA have lower risk for mood and anxiety disorders when compared with the USA-born population of the same national origin [3–5, 9, 10] and the native population [e.g., 11]. While some authors argue that this paradox can be explained by the healthy migrant effect—where the persons who migrate are the healthiest [12]—others suggest that environmental factors in the host country, such as socio-economic conditions and the experience of ethnic discrimination are responsible [3, 5, 13–15].

Compared to the USA, epidemiological studies on the mental health status of immigrants in Europe are still very rare and patchy [1, 16]. Immigrants are often excluded from epidemiological studies, due to methodological difficulties such as language problems and a lack of cross-culturally validated instruments [1, 17]. Most European studies are carried out in the United Kingdom [18] and focused mainly on psychotic disorders [13, 19] (for an overview, see Cantor-Graee and Selten [20]). Somewhat surprisingly, very few have concentrated on depression [8], despite its more widespread manifestation [21]. Research on common mental disorders among immigrants is mostly clinical [16], uses small sample sizes and/or non-random sampling methods and yields contradictory and inconclusive results [22]. One of the reasons is the vagueness about the definition of an (im)migrant and an ethnic minority group [23]. Most authors use country of birth or self-assessment to define the groups under study and use the terms interchangeably.

A recent meta-analyze by Swinnen and Selten [24] concluded that no evidence could be found for an elevated risk of mood disorders among immigrants and ethnic minorities. However, there were no sufficient studies to conduct an additional meta-analysis for depression. Since the overview of Carta et al. [16] only a few more population-based studies on psychological distress among immigrants have been performed, such as in Belgium [8, 25], Germany [26, 27], The Netherlands [28], Norway [29, 30] and Sweden [31–34] with some addressing depression [8, 25–28, 34]. Several of these report higher levels of depression among immigrants [8, 25, 27, 28, 34], while others did not find any significant differences [26].

Between-country variation in the mental health outcomes of immigrants and ethnic minorities is expected as a result of substantial country differences in, e.g., economic conditions, socio-political context and migration histories. Yet, cross national comparisons in Europe are hampered by a lack of comparable data. Until today, the report of the European Commission [35], based on the European Study of the Epidemiology of Mental Disorders (ESEMeD) findings, is the only European cross-national comparison of psychological distress among immigrants. This study was carried out in six European countries and concluded that those not born in the country of residence had higher risks of psychological distress, except for Belgium. However, with respect to the research of depression among immigrants this study has three important limitations. Firstly, immigrants cannot be seen as a homogenous group [16], but the study does not consider the country or region of origin of the immigrants. Furthermore, second generations of immigrants are categorized as 'born in the country', and as such masking possible substantial differences with the native population. Thirdly, the ESEMeD project consists of a convenience sample of four Western European countries (Belgium, Germany, France and The Netherlands) and two Southern European countries (Spain and Italy) and does not cover the European population as a whole.

The aim of this article is to assess the prevalence and determinants of depressive symptoms among immigrants, ethnic minorities and natives, using highly comparable data from 23 European countries and to fill the gap of knowledge on this subject. Firstly, we assess whether immigrant and ethnic minority groups report more depressive symptoms than natives. Secondly, we examine whether certain much-discussed risk factors for depression can account for possible disparities between these groups. Studies examined the impact of the immigrant status, to reveal differences between first and second generations of immigrants. Acculturation, migration stress and the healthy migrant effect are put forward as explanations of these disparities. Acculturation refers to the adaption of immigrants to a new cultural context [36]. In the past, it was assumed that acculturation inevitably involves social and psychological problems [36], and that it would dissipate most of the immigrants' disadvantages in the course of time [3]. Nowadays, studies report mixed results with regard to acculturation and mental health [37]. The migration stress theory underlines the psychosocial effects of the migration process itself [22, 38, 39]. As the migration process is a period of increased stress, it would appear, according to the stress diathesis model, that emotional distress and psychiatric disorders may result from migration, leading to higher levels of depressive symptoms among first generation immigrants. On the other hand we would find first generation immigrants to be advantaged as compared to second generation immigrants, if a healthy migrant effect is occurring. This effect is explained by selective migration of healthy individuals [6].

Furthermore we test the hypothesis that elevated levels of depressive symptoms might result from precarious socio-economic conditions and the experience of ethnic discrimination in the country of residence. The impact of socio-economic conditions on depressive symptoms has been frequently demonstrated both among the general population [40, 41] and immigrant and ethnic minority groups [8, 25, 34, 38]. In this study, three different measures of socio-economic conditions are assessed: economic strain, labour market position, and years of education. We include several measures, since evidence has shown that the association with health follows both a common and independent path. Also, some indicators might be more salient for certain subgroups [42]. And, more recently, an increasing amount of studies assess the impact of ethnic discrimination on (mental) health [43–47]. This can be an important additional risk factor, since ethnic discrimination is still widespread in Europe, even 10 years after the

adoption of the Racial Equality Directive (2000/43/EC), the most important piece of EU legislation combating ethnic discrimination. This is demonstrated by the results of the special Eurobarometer on discrimination. Close to one respondent in five considers ethnic discrimination to be very widespread in his or her country (19%) and a further 45% believe it is fairly widespread. Only 2% of the interviewees believe it does not exist [48]. In this study we investigate if ethnic discrimination has an independent effect on depressive symptoms after controlling for other important risk factors such as socio-economic conditions.

Finally, by comparing the results for immigrant and ethnic minority groups, we highlight the importance of a clear definition of the population under study. Immigrants are usually defined by their country of birth and their parental country of birth, since this information is written down in censuses and death certificates [49]. Ethnicity has been operationalised in different ways, including predefined categories and self definition. Because of the shortcomings of predefined categories, self definition is gaining favor [50]. Specifically, the former do not grasp a 'sense of belonging' and 'changeability', the core aspects of ethnicity [51]. In the present study, we follow this trend and use self definition to identify ethnic minorities. Country of birth of the respondents and their parents are used for the definition of immigrants. We expect to find different results depending on the definition employed, since immigrant status is a crude but objective indicator, while ethnicity is a matter of self-perception with fluid and imprecise boundaries [52]. Also, it is still not known how long before a group of immigrants will begin to constitute a socially or culturally distinct or ethnic group [23].

Methods

Sample

Our analyses are based on the third round of the European Social Survey (ESS-3, 2006–2007). The ESS is a biennial survey designed to chart and explain Europe's changing institutions and attitudes, beliefs and behavior patterns. In the third round, a module on personal and social well-being has been introduced. Respondents were selected using a strict probability sample of the resident national population aged 15 or older living in a private household. Data were collected via face-to-face interviews of around an hour in duration. Translations for the questionnaires are provided for all first languages spoken by 5% or more of the population [53].

Analyses are performed on 23 of the 25 countries: Western Europe (Belgium, Germany, France, Netherlands, Austria and Switzerland), Northern Europe (Denmark, Estonia, Finland, Ireland, Norway, Sweden and United Kingdom), Southern Europe (Cyprus, Portugal, Slovenia and Spain) and Eastern Europe (Bulgaria, Hungary, Poland, Russia, Slovakia and Ukraine) ([54], grouping aimed at discussing results). Latvia and Romania are excluded, because of missing design weights. We restricted our results to the European population, aged 21 years or older ($N = 36{,}970$). 6.2% of the respondents defined themselves as belonging to an ethnic minority group and 13.3% is categorized as immigrant. High response rates are resulting from many efforts made by all countries and vary from 46% in France to 73.2% in Slovakia [55].

Depressive symptoms

Depressive symptoms are assessed with the 8-item version of the Center for Epidemiologic Studies Depression Scale (CES-D) [56]. In her original version, the CES-D consists of 20 self-report items to identify populations at risk of developing depression [57]. The CES-D 8 reports the frequency and severity of certain feelings and behaviors in the past week. Respondents are asked how often they felt depressed, felt that everything was an effort, slept restlessly, were happy, felt lonely, enjoyed life, felt sad and could not get going. Answers range from none or almost none of the time (0) to all or almost all of the time (3). The enumerated scores on the items result in a scale ranging from 0 to 24. We do not use cut-offs, but consider depression as a continuous phenomenon with higher scores marking a higher frequency and severity of depressive complaints. When four or fewer items are missing, tolerated item non-response is corrected by mean substitution, as in Van de Velde et al. [57]. This results in an overall response rate for depression of 99.5%. The overall population mean for depression is 6.01 ($SD = 4.20$). Reliability of the CES-D 8 in our total sample was accurate as indicated by a Chronbach's α of at least 0.83 for immigrants, ethnic minorities and natives. There is some between-country variation. For immigrants, the lowest Chronbach's α is found in Portugal (0.73) and the highest in the Russian Federation (0.87), while for ethnic minorities this is the case in Slovenia (0.73) and Norway (0.90), respectively. We assume cultural validity based on studies on the CES-D 20 [e.g., 58–61], which showed measurement equivalence in different immigrant and ethnic groups. However, research on the cross-cultural validity of the CES-D 8 is lacking, except for one study showing validity across European countries and gender [57].

Risk and protective factors

Respondents were categorized both according to their ethnic minority and immigrant status. Belonging to an

ethnic minority (0 = no; 1 = yes) is based on the following self report item: "Do you belong to a minority ethnic group in (country)?". When the respondents or one of their parents are born in another than the present country of residence, they are considered an immigrant (0 = no; 1 = yes). Immigrant status is assessed by means of the country of birth of the respondents and their parents. The respondent is considered (1) a 'native', when born and also both parents born in the present country, (2) 'first generation', when foreign-born, (3) 'second generation', when born in the country, but both parents are foreign-born and (4) 'second generation, one parent', when born in the present country, but one of the parents is not. At last, native expats (respondents who are foreign-born, but whose both parents are natives ($N = 346$) are excluded from the first generation and are considered as natives. The majority of this group moved to the present country 11 to 20 years (14.0%) or more than 20 years (79.8%) ago. Because the two native groups (i.e., 'non-immigrants' and 'non-ethnic minorities'), used as a reference category in Tables 3, 4, are not mutually exclusive, the native group in Tables 1, 2 is depicted as individuals who are neither immigrants, nor members of an ethnic minority.

Since the composition of immigrants and ethnic minorities differs strongly between countries [16] the region of origin is assessed in six categories: 'native', four categories representing the large macro geographical regions within Europe, as composed by the United Nations [54]: 'Western Europe', 'Northern Europe', 'Southern Europe', 'Eastern Europe' and a rest group from outside Europe. For first generation immigrants, the country of birth of the respondent is used and for second generation immigrants with one parent born abroad, the country of origin of the migrated parent. We opt to categorize the second generation immigrants by the country of birth of the father, since only 58 of them (8.63%) have their parents coming from a different region of origin. Additional analyses (results not shown) have confirmed that results are not affected when using the maternal country of birth.

Besides immigrant status, socio-economic conditions and ethnic discrimination are important factors that might explain the relation between ethnicity and depression [8, 10, 12, 38, 47, 62, 63]. Socio-economic conditions are assessed with three variables: economic strain, labour market position, and years of education. Economic strain indicates how difficult it was to make ends meet and gives us an idea about the financial situation of the respondent. In a study on the European Community Household Panel, it was showed that household income and current life-style deprivation accounted for 84% of the between-country variation in economic strain [64]. Economic strain is assessed by the following question: "Which of the descriptions on this card comes closest to how you feel about your household's income nowadays?". Answers are 'living comfortably on present income', 'coping on present income', 'finding it difficult on present income' and 'finding it very difficult on present income'. To describe the labour market position of the last 7 days in five categories: 'student', 'unemployed', 'sick/handicap', 'pension' and 'other' are compared with respondents who are employed.

To identify ethnic discrimination, another important risk factor, the answers on the questions "Would you describe yourself as being a member of a group that is discriminated against in this country?" and "On what grounds is your group discriminated against?" are combined. Ethnic discrimination (0 = no; 1 = yes) is registered if the respondent answers positive on the first question and reports discrimination based on skin color, race, ethnicity or nationality on the second.

The analyses are adjusted for the following control variables, which have shown relevant for depression in the general population [41, 57, 65–67]. We consider gender (0 = male; 1 = female) the presence of a partner (0 = no; 1 = yes) and age (in four categories: 21–35, 36–49, 50–64, 65 or older). Partner indicates whether the respondent is married or in a civil partnership. Respondents younger than 21 years are omitted because youth depression among immigrant and ethnic minority groups requires specific attention [see e.g., 68]. As in other studies [69, 70] we distinguish between middle-aged and elderly.

Analysis procedure

The ANOVA-procedure in SPSS 17 is used to assess differences in the prevalence of depression between natives and immigrants and ethnic minorities, respectively (Table 1). Simple descriptive statistics are used for an overview of the subgroups' characteristics. To identify significant differences across those groups, χ^2-tests and one-way ANOVA were applied. Next, the MIXED model procedure in SPSS 17 is used to establish the risk factors profiles for depressive symptoms among immigrants and ethnic minorities (Tables 3, 4). This procedure (also known as multilevel) allows accounting for the autocorrelation between the respondents of the same country. Both fixed effects, which should be interpreted as regression coefficients, and random slopes are calculated and reported. The random slopes model accounts for the between-country differences of the association with depression. The −2 Restricted Loglikelyhood (−2LL) gives an indication of the overall goodness of the model fit, with lower scores indicating a better model. Missing data show low rates (0.0–1.3%) for all risk and protective factors and are deleted list wise. In order to ensure the generalizability of the sample, the design weight is used to correct for slightly different probabilities of selection [53].

Table 1 Mean depression scores of the total European population, immigrants, ethnic minorities and natives (non-immigrants, non-ethnic minorities), aged 21 or older, χ^2-test. ESS-3, 2006–2007 (weighted data)

	Total		Immigrants		Ethnic minorities		Natives	
	N	Mean	*N*	Mean	*N*	Mean	*N*	Mean
Western Europe								
Austria	1,880	5.26	259	5.52	50	5.64	1,602	5.20
Belgium	1,590	5.43	237	5.96	32	7.53[b]	1,347	5.33
France	1,755	5.33	341	5.94[a]	62	6.69[b]	1,398	5.17
Germany	2,550	6.03	357	6.23	110	6.07	2,163	5.99
Netherlands	1,732	6.03	239	6.01[a]	100	7.33[b]	2,163	5.99
Switzerland	1,615	4.62	541	5.00[a]	104	5.13	1,055	4.40
Total	11,122	5.34	1,974	5.69[a]	458	6.27[b]	9,054	5.26
Northern Europe								
Denmark	1,344	4.71	134	5.25	30	6.70[b]	1,203	4.66
Estonia	1,222	6.91	494	7.36[a]	365	7.33[b]	689	6.59
Finland	1,710	4.95	28	6.11	13	4.00	1,671	4.94
Ireland	1,393	4.67	185	4.83	46	4.79	1,188	4.65
Norway	1,549	4.19	133	5.07[a]	33	5.12	1,403	4.11
Sweden	1,721	4.92	316	5.58[a]	41	7.56[b]	1,401	4.77
United Kingdom	2,040	5.58	274	5.50	111	6.31	1,740	5.58
Total	10,979	5.11	1,564	5.98[a]	639	6.77[b]	9,295	4.96
Southern Europe								
Cyprus	873	5.12	46	5.12	17	4.40	816	5.14
Portugal	1,865	7.38	130	6.87	87	7.72	1,671	7.39
Slovenia	1,180	5.87	194	5.74	36	6.17	967	5.90
Spain	1,613	5.72	140	6.63[a]	60	6.44	1,437	5.63
Total	5,531	6.21	510	6.22	200	6.78	4,891	6.20
Eastern Europe								
Bulgaria	1,146	7.84	41	7.83	179	8.48	928	7.71
Hungary	1,371	8.42	78	8.31	76	8.75	1,218	8.41
Poland	1,446	6.85	64	7.44	14	8.04	1,372	6.82
Russian Federation	1,893	7.87	225	7.93	373	7.57	1,373	7.96
Slovakia	1,377	7.44	88	6.68	116	8.32	1,186	7.42
Ukraine	1,641	8.51	310	8.96	70	7.68	1,290	8.48
Total	8,874	7.83	806	8.18	828	8.00	7,367	7.80
Total	36,506	6.01	4,854	6.25[a]	2,125	7.14[b]	30,607	5.93

Source: European Social Survey, 3rd round, own calculations

[a] Difference between immigrants and natives is significant ($p > 0.05$)

[b] Difference between ethnic minorities and natives is significant ($p > 0.05$)

Results

Prevalence

Overall, immigrants and ethnic minorities in Europe are reporting significant more depressive symptoms than natives (Table 1). More depressive symptoms are found for immigrants in 16 countries, with seven countries showing significant results. For ethnic minorities this is true for 19 and 6 countries respectively. In four European countries (France, The Netherlands, Estonia and Sweden) both immigrant and ethnic minority groups report substantial more depressive symptoms than natives. In addition, higher depressive symptoms are reported by immigrants in Switzerland, Norway and Spain, and by ethnic minorities in Belgium and Denmark.

Importantly, differences are predominantly found in Western and Northern Europe, while these are absent in

Table 2 Characteristics of the European population by belonging to an immigrant, ethnic minority or native (non-immigrant, non-ethnic minority) group, aged 21 or older, ESS-3, 2006–2007 (weighted *N*, weighted %, weighted mean)

	Immigrants ($N = 4,852$)	Ethnic minorities ($N = 2,125$)	Natives ($N = 30,607$)
Gender [*N* (%)]			
Male	2,232 (46.0)	995 (46.8)	14,137 (46.2)
Partner [*N* (%)]			
Yes	2,978 (61.4)[a]	1,345 (63.3)	19,200 (62.7)
Age [*N* (%)]			
21–35 years	2,894 (59.6)[a]	1,317 (62.0)[b]	7,178 (23.5)
36–49 years			8,485 (27.7)
50–64 years	1,197 (24.7)	473 (22.3)	8,342 (27.3)
65 or older	761 (15.7)	334 (15.7)	6,603 (21.6)
Immigrant status [*N* (%)]			
Native	0 (0.0)	1,047 (49.3)[b]	30,607 (100.0)
First generation	2,554 (52.7)	813 (38.2)	
Second generation, one parent	1,661 (34.2)	87 (4.1)	
Second generation	637 (13.1)	178 (8.4)	
Region of origin [*N* (%)]			
Native	0 (0.0)	1,047 (49.3)[b]	30,607 (100.0)
Western Europe	720 (14.8)	17 (0.8)	
Northern Europe	514 (10.6)	41 (1.9)	
Southern Europe	685 (14.1)	97 (4.5)	
Eastern Europe	1,459 (30.1)	433 (20.4)	
Outside Europe	1,473 (30.4)	491 (23.1)	
Economic strain [*N* (%)]			
Finding it very difficult	402 (8.3)[a]	375 (17.6)[b]	2,029 (6.6)
Finding it difficult	1,026 (21.2)	649 (30.5)	5,488 (17.9)
Coping	2,117 (43.6)	834 (39.3)	13,926 (45.5)
Living comfortably	1,306 (26.9)	267 (12.6)	9,165 (29.9)
Labour market position [*N* (%)]			
Employed	2,816 (58.0)[a]	1,108 (52.2)[b]	16,905 (55.2)
Student	189 (3.9)	68 (3.2)	900 (2.9)
Unemployed	284 (5.9)	206 (9.7)	1,179 (3.9)
Sick/handicap	116 (2.4)	55 (2.6)	753 (2.5)
Pension	854 (17.6)	417 (19.6)	7,312 (23.9)
Other	594 (12.2)	271 (12.7)	3,559 (11.6)
Years of education (Mean, SD)	12.91 (4.21)[a]	11.62 (4.25)[b]	12.28 (4.12)
Ethnic discrimination [*N* (%)]			
Yes	445 (9.2)[a]	473 (22.3)[b]	191 (0.6)

Source: European Social Survey, 3rd round, own calculations

[a] Difference between immigrants and natives is significant ($p > 0.05$)

[b] Difference between ethnic minorities and natives is significant ($p > 0.05$)

Eastern Europe, mainly because of the very high levels of depressive symptoms reported by the native population. These seem to be linked with the economic prosperity of the European regions. It is indeed a consistent finding that the economic prosperity of a country is associated with population health [71]. As in Lindert et al. [72], a large correlation is found between the economic development of the host country, as expressed by the gross domestic product (GDP), and the mean depression scores for both immigrants (−0.64) and ethnic minorities (−0.87) as for the total population (−0.90) (calculations not shown).

Immigrant status, socio-economic conditions and ethnic discrimination

The profiles on the risk and protective factors show substantial differences across groups. For the European sample as a whole, both immigrants and ethnic minorities are younger, experience more economic strain and ethnic discrimination than natives. All groups have a same share of men and singles, expect for more immigrants who report to be single (38.6% compared to 37.3% for natives). The profiles on the labour market position are not as straightforward.

Table 3 Risk factors for depression among immigrants and ethnic minorities in Europe: fixed effects (weighted data)

	Model 1			Model 2			Model 3			Model 4		
	B	95% CI	*p*	B	95% CI	*p*	B	95% CI	*p*	B	95% CI	*p*
Intercept	6.21	[5.65, 6.76]	***	6.20	[5.65, 6.76]	***	6.19	[5.64, 6.74]	***	6.59	[5.97, 7.22]	***
Immigrant status (0 = native)												
First generation	0.68	[0.43, 0.92]	***	0.17	[−0.16, 0.50]		0.14	[−0.19, 0.47]		0.06	[−0.25, 0.38]	
Second generation, one parent	0.07	[−0.12, 0.26]		−0.34	[−0.65, −0.03]	*	−0.33	[−0.63, −0.02]	*	−0.24	[−0.53, 0.05]	
Second generation	0.31	[−0.00, 0.62]	*	−0.19	[−0.60, 0.23]		−0.23	[−0.65, 0.19]		−0.15	[−0.55, 0.25]	
Ethnic minority (0 = no)	0.62	[0.25, 0.96]	**	0.55	[0.19, 0.90]	**	0.33	[0.01, 0.66]	*	−0.01	[−0.31, 0.30]	
Gender (0 = man)	0.78	[0.62, 0.94]	***	0.78	[0.62, 0.94]	***	0.79	[0.63, 0.95]	***	0.66	[0.52, 0.80]	***
Partner (0 = no)	−1.36	[−1.54, −1.17]	***	−1.36	[−1.54, −1.18]	***	−1.36	[−1.54, −1.18]	***	−1.07	[−1.22, −0.91]	***
Age (0 = 36–49 years)												
21–35 years	−0.77	[−1.02, −0.52]	***	−0.77	[−1.02, −0.52]	***	−0.78	[−1.03, −0.53]	***	−0.52	[−0.71, −0.33]	***
50–64 years	0.45	[0.26, 0.65]	***	0.46	[0.26, 0.65]	***	0.46	[0.27, 0.66]	***	0.20	[0.05, 0.34]	**
65 or older	1.08	[0.67, 1.48]	***	1.09	[0.68, 1.49]	***	1.10	[0.70, 1.51]	***	0.63	[0.34, 0.91]	***
Region of origin (0 = native and Western Europe)												
Northern Europe				0.19	[−0.25, 0.64]		0.20	[−0.24, 0.64]		0.13	[0.29, 0.55]	
Southern Europe				0.69	[0.29, 1.09]	***	0.70	[0.30, 1.10]	***	0.45	[0.07, 0.84]	*
Eastern Europe				0.55	[0.19, 0.92]	**	0.55	[0.18, 0.91]	**	0.55	[0.20, 0.90]	**
Outside Europe				0.69	[0.25, 1.14]	**	0.61	[0.17, 1.05]	**	0.49	[0.09, 0.88]	*
Economic strain (0 = coping)												
Finding it very difficult										3.08	[2.59, 3.58]	***
Finding it difficult										1.25	[1.06, 1.43]	***
Living comfortably										−0.80	[−0.90, −0.71]	***
Labour market position (0 = employed)												
Student										−0.18	[−0.46, 0.10]	
Unemployed										0.67	[0.33, 1.02]	***
Sick/handicap										3.35	[2.98, 3.71]	***
Pension										0.29	[0.03, 0.55]	***
Other										0.18	[0.01, 0.35]	*
Years of education										−0.07	[−0.10, −0.04]	*
Ethnic discrimination (0 = no)							1.17	[0.77, 1.57]	***	0.67	[0.29, 1.04]	**
−2LL	204668.13			204647.88			204587.81			200919.73		

Source: European Social Survey, 3rd round, own calculations

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4 Risk factors for depression among immigrants and ethnic minorities in Europe: country level effects (random slopes) (weighted data)

	Model 1			Model 2			Model 3			Model 4		
	P.E.	S.E.	*p*	P.E.	S.E.	*p*	P.E.	S.E.	*p*	P.E.	S.E.	*p*
Parameter variance												
Between countries	1.60	0.50	***	1.58	0.50	***	1.56	0.49	***	1.88	0.63	**
Within countries	14.67	0.11	***	14.66	0.11	***	14.64	0.11	***	13.20	0.10	***
Variance components												
Ethnic minority	0.37	0.19	*	0.36	0.19	*	0.26	0.15		0.21	0.14	
First generation	0.11	0.09		0.02	0.08		0.01	0.08		0.00	0.08	
Gender	0.10	0.04	*	0.10	0.04	*	0.10	0.04	*	0.07	0.03	*
Partner	0.13	0.05	**	0.13	0.05	*	0.13	0.05	*	0.08	0.04	*
21–35 years	0.26	0.10	**	0.25	0.10	**	0.25	0.10	**	0.12	0.06	*
50–64 years	0.13	0.06	*	0.13	0.06	*	0.13	0.06	*	0.04	0.03	
65 years or older	0.80	0.26	**	0.79	0.26	**	0.79	0.26	**	0.28	0.12	
Outside Europe				0.28	0.18		0.26	0.18		0.15	0.14	
Ethnic discrimination							0.24	0.20		0.18	0.18	
Finding it very difficult										1.01	0.39	**
Finding it difficult										0.11	0.05	*
Student										0.05	0.14	
Unemployed										0.37	0.19	
Sick/handicapped										0.28	0.22	
Pension										0.23	0.10	*
Other										0.04	0.04	
Years of education										0.00	0.00	**

Source: European Social Survey, 3rd round, own calculations

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, Wald Z test

While immigrants have more years of education and are more often employed than natives, this is not the case for ethnic minorities. In both immigrant and ethnic minority groups, a higher proportion of unemployed (5.9 and 9.8% compared to 3.9%), and a lower percentage of pensioners is found (17.6 and 19.6% compared to 23.9%). Between the other categories, small differences exist.

In Tables 3 and 4 the results of the multi-level analyses—to examine the association with the different risk factors—are shown. Model 1 and model 2 confirm the higher depression scores for immigrants of the first and second generation and for ethnic minorities, controlling for gender, the presence of a partner and age. Moreover, first generation immigrant report more depressive symptoms, followed by second generation immigrants with both parents foreign born. The mental health status of second generation immigrants with one parent foreign born is comparable to that of the native population. These findings counter the healthy migrant hypothesis, and suggest the presence of a migration stress effect or a problem of acculturation. In line with international social and psychiatric epidemiological research, the risk for depression is elevated for women and singles. Also older people seem to be at a higher risk.

Additionally, region of origin (model 2), ethnic discrimination (model 3) and socio-economic conditions (model 4) are accounted for (see Table 3). First, it is obvious that most of the mental health differences associated with immigrant status are related to the region of origin: elevated levels of depressive symptoms are mainly found among immigrants from Southern and Eastern European countries, and among immigrants from outside Europe. In effect, taking country of origin into account, immigrants with one parent foreign-born actually report lower levels of depressive symptoms than the native population.

Second, the risk of depressive symptoms is increased for immigrants from Southern and Eastern Europe and from outside Europe, even after adjusting for socio-economic conditions and the experience of ethnic discrimination. Furthermore, we find lowest levels of depressive symptoms among Western European immigrants, followed by Northern European, Southern European, non-European, and finally Eastern European immigrants. This ranking is similar to the overall differences in the mean level of depressive symptoms among the population of these European regions. Interestingly, additional analyses (not

reported) showed that immigrants from Northern Africa ($N = 199$) are at the highest risk for depressive symptoms.

Third, ethnic discrimination coincides compellingly with depressive symptoms, even when socio-economic conditions are controlled for. Up to 40% (0.40 = 0.55–0.33/0.55) of the elevated level of depressive symptoms among ethnic minorities is related to the experience of ethnic discrimination. As model 4 (Table 3) shows, the remaining difference in mental health between ethnic minorities and the rest of the population is related to problems of financial strain, labour market position and years of education. Those experiencing financial constraints, the unemployed, the sick and disabled, the retired, students and the lower educated all report more symptoms of depression. Only for students, the risk for depressive symptoms is reduced. The remaining effect of immigrant status and of belonging to an ethnic minority on the frequency and severity of depressive symptoms can be completely accounted for by the cited risk factors. The −2LL parameters show the improvement of the model fit, when adding the different determinants at each step.

Immigrant versus ethnic minority groups

In Table 2, it is illustrated that immigrant and ethnic minority groups do not completely overlap. 49.3% of the self defined members of an ethnic minority are considered a native, based on their country of birth and the parental country of birth. Also, almost none of the immigrants from Western and Northern Europe and only a small proportion from Southern Europe would define themselves as a member of an ethnic minority. In addition, ethnic minorities experience more ethnic discrimination (22.3% compared to 9.2% for immigrants) and are more frequently found in a precarious socio-economic situation, as indicated by higher levels of economic strain, more unemployment and fewer years of education. The fact that immigrants and ethnic minorities do not constitute of the same persons was further illustrated in Table 1, which showed that the higher depressive symptoms reported by immigrants are not in every country experienced by ethnic minorities and vice versa. When comparing results of other studies, attention on the definition of immigrants and ethnic minorities will need to be drawn.

Discussion

In Europe, little is known about inequalities in depression among immigrant and ethnic groups and research is complicated by a lack of consensus on the criteria used to describe these groups [16, 23]. In this study, the prevalence rates and determinants of depression among immigrants, ethnic minorities and natives are assessed in 23 European countries, using data from the third wave of the European Social Survey. This unique dataset contains information on both immigrant status and self-ascribed ethnicity.

Firstly, the higher prevalence rates of depression for immigrant are confirmed by recent studies for Belgium [8, 25], the Netherlands [28] and Sweden [34]. In Germany, our results are consistent with Glaesmer et al. [26] who also found no elevated risk for depression among immigrants, but are in contrast with the study of Wittig et al. [27], that showed higher depression scores for Vietnamese and Polish immigrants. The higher prevalence rates for depression among ethnic minorities in UK are also reported by Weich et al. [19] for some subgroups (middle-aged Pakistani men, older Indian and Pakistani women), while for others (Bangladeshi women) no differences with the native population are found. In the other countries, population-based studies to replicate our findings are yet to be performed. Another important observation is the high levels of depression for all individuals in Eastern European countries. This ‘European East–West health divide’ was also observed for both mortality and self perceived health [71, 73].

Secondly, we assessed the association of well-known risk and protective factors recognized in international social and psychiatric epidemiology. Our results are consistent with the well-established fact that both women and singles are at higher risk for depression [41, 57, 65–67, 74]. The increased risks for individuals aged 50 years or older is also reported by Stordal et al. [70]. Next, our findings are in line with other studies showing the notable impact of socio-economic conditions on depressive symptoms, both among the general population [40, 41] and immigrant and ethnic minority groups [8, 25, 34, 38].

In addition to socio-economic conditions, ethnic discrimination has been suggested as an additional risk factor, but its link with mental health has not been studied thoroughly in Europe. Our results are in line with a British study on mental disorders, which showed the deleterious effect of ethnic discrimination [45]. Interestingly, according to a special Eurobarometer, ethnic discrimination occurred most often in Sweden (85%), The Netherlands (83%), France (80%), Denmark (79%) and Belgium (78%) [48], all of these countries show significant more depressive symptoms for ethnic minorities. And in Sweden, the Netherlands and France also immigrants reported more depressive symptoms. Without overstating, this corroborates the call to investigate the role of ethnic discrimination in more detail.

Concerning immigrant status, our results counter the healthy migrant hypothesis and do not support a straightforward acculturation or migration stress effect, since no significant differences between the generations are found, after controlling for the region of origin. However, region

of origin might partially capture the migration stress and acculturation effect, since one can expect that both the stress of the migration process and the process of acculturation might be experienced differently by immigrants who come from a culturally more distinct region. Also, we have reasons to believe that the level of depression among immigrants is a reflection of the mental health status of the region of origin.

Additionally, immigrant and ethnic minority groups do not comprise of the same individuals. Ethnic minority groups are experiencing more ethnic discrimination and are more often found in a precarious socio-economic situation. In other studies, it was also demonstrated that identification with the host society's native population was linked to a better socio-economic situation [75, 76], and fewer experiences of ethnic discrimination [75, 77]. Hence, these groups show different prevalence rates of depressive symptoms. It is shown that besides the four European countries (France, the Netherlands, Estonia and Sweden) where both immigrant and ethnic minority groups report substantial more depressive symptoms than natives, higher prevalence rates for immigrants are found in Switzerland, Norway and Spain, while for ethnic minorities this is the case in the Belgium and Denmark. We therefore recommend on the necessity to make an analytical distinction between these groups, when addressing this subject.

Some limitations are worth noting. Although Van de Velde et al. [57] provide evidence for the cross-cultural validity of the CES-D 8 in 25 European countries—based on data of the ESS-3—this has not been demonstrated yet for non-European groups and groups that do not speak one of the country's main languages. The latter were not included in their study, since translations of the ESS-3 questionnaire was restricted to all languages spoken as a first language by 5% or more of their resident population [55]. It is possible that the notions of disease and symptoms have different meanings for immigrant and ethnic minority groups [1, 78]. However, the aforementioned study and the observation that 69.6% of the immigrants in our study come from within Europe, suggests that the CES-D 8 will show cross-cultural validity among all immigrant and ethnic minority groups in Europe.

Another limitation is related to the use of cross-sectional data, which does not allow causal interpretations for some associations. It is also possible, for example that a worsened mental health will lead to a greater perception of ethnic discrimination [45]. Nonetheless, two longitudinal studies show that, even after controlling for prior health, discrimination precedes the elevated distress-levels [79, 80]. Also, there is concern about the shared response biases that can occur when both the measures of stress and health status are based on self-reports. However, the available evidence [e.g., 79, 81] suggests that these concerns may not be contended [82].

With respect to socio-economic conditions, selection processes cannot be ruled out completely [83]. But also here, a longitudinal study shows that worsening socio-economic conditions are associated with increasing depressive symptoms [41].

Furthermore, differences between various ethnic minority groups are expected, but information on which ethnic minority group the respondent belongs to is lacking. However, migration histories are very different throughout the European countries [16] and as such, incorporating these would make the picture too complex. Also, future research should benefit from a further distinction in the group of non-European immigrants.

In addition, this study has some drawbacks that might lead to an underestimation of the prevalence and determinants of depressive symptoms among immigrant and ethnic minority groups. First of all, the impact of stress is seriously underestimated when only one outcome of the stress process is considered (e.g., depressive symptoms) [84]. Moreover, different problems that are characteristic of comparative research, such as selective non-response, different modes of data collection, translation and conduct cannot be ruled out entirely and will lead to slightly biased estimates, when they are related to depressive symptoms or one of the independents [85]. It is very likely that the less acculturated immigrants and ethnic minorities did not take part in the study, as suggested by the lower response rates reported for certain immigrant groups in the Netherlands [86]. Also, in some countries the absence of statistical significant differences in depressive symptoms might be due to a lack of statistical power as a consequence of the small amount of immigrants and ethnic minorities taking part in the survey, leading again to an underestimation.

Migration is not likely to stop in the near future, as a result of free movement from new EU member states and a tendency to recruit immigrants to fill the gaps in the labour market that are predicted to rise in the coming decennia [2]. The higher prevalence rates observed in numerous countries thus ask for adequate policies to address the special needs of these groups. Yet, only in four of the former EU-15 countries (England, Italy, the Netherlands and Sweden), national policies aimed at improving immigrant health have been established [87] and in almost no European country mental health care is designed to meet the special needs of immigrants and ethnic minorities [88]. Also, the underrepresentation in service use [89] will need to be addressed. Our findings call for more population-based studies on depression among immigrant and ethnic minority groups in Europe, and a clear definition and description of the population under study.

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