

Rise of Undiagnosed Major Depressive Disorder Post COVID-19 Pandemic in Europe

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Background

- Approximately 5% of adults have depression worldwide¹ with an estimated prevalence of 16.2%, equating to approximately 16 million adults².
- As reported by the World Health Organization (WHO), the global prevalence of depression increased by 25% during the first year of the COVID-19 pandemic³.
- The WHO ranks depression as the number one cause of disease burden among developed countries⁴.
- Despite the growing awareness of mental health burden, depression remains underdiagnosed and undertreated⁵; approximately two-thirds of patients with symptoms of clinical depression remain undiagnosed and untreated⁶.
- General population prevalence estimates of depression, among those who are unscreened and undiagnosed, is necessary for delivering essential mental health services to a growing number of adults suffering from clinical levels of depression.

Objectives

To compare rates of diagnosed depression and undiagnosed depression among adults in the EU4 (France, Germany, Spain, and Italy) and the United Kingdom (UK), from pre-COVID-19 to post COVID-19 years using a representative general population survey.

Methods

Data Source

A cross-sectional analysis was conducted using data from the 2011 (N=57,512), 2018 (N=62,000), and 2021 (N=62,028) EU4+UK National Health and Wellness Survey (NHWS). The NHWS is an online patient-reported outcomes survey administered to adults (age ≥ 18 years) and is designed to be representative of the general population within each country, relative to age and sex.⁷

Sample

We utilized the full NHWS sample in each year to generate prevalence estimates for diagnosed and undiagnosed depression. We constructed a subsample to analyze the depression-related outcomes among adults who endorsed symptoms form Major Depressive Syndrome (MDS) using the Patient Health Questionnaire-9 (PHQ-9)⁸.

We excluded participants who self-reported a physician diagnosis for bipolar disorder, or screened positive for bipolar disorder using the Mood Disorder Questionnaire⁹.

Outcomes

We calculated the proportion of adults who screened positive for MDS on the PHQ-9, as well as the prevalence of diagnosed depression undiagnosed depression in the general adult population pre-COVID-19 (i.e., 2011 & 2018) and post-COVID-19 (i.e., 2021).

Operational Definitions for Key Outcomes

Outcome	Operational Definition
Diagnosed depression	Screened positive for MDS, experience depression in the past 12 months, and self-reported receiving a physician diagnosis for depression
Undiagnosed depression	Screened positive for MDS, did not self-reported experiencing depression in the past 12 months, and did not self-report a physician diagnosis for depression

^aAt least 5 of the 9 depressive symptom criteria on the PHQ-9 were present at least "more than half the days" in the past 2 weeks, and 1 of the symptoms endorsed was depressed mood or anhedonia

Other Variables

- Depression severity was assessed using conventional cut points applied to the PHQ-9 summary score:⁸
 - Moderate Depression = 10-14
 - Moderately-Severe Depression = 15-19
 - Severe Depression = 20-27

- Current Treatment for Depression:** self-reported current use of a prescription medication to treat depression, among those who met criteria for diagnosed depression.
- Sociodemographic Characteristics:** gender, age, marital status, education, and annual household income, employment status.
- General Health:** Charlson Comorbidity Index (CCI) score¹⁰, number of days exercised in the past month, smoking status, and alcohol use.

Analytic Approach

We generated descriptive statistics (counts and percentages; means) to show the prevalence of outcomes and the distribution of sociodemographic and health characteristics stratified by year, relative to depression diagnosis status.

Chi-square tests were used to compare significant differences between years on prevalence outcomes; any p<0.05 was considered to be statistically significant.

Results

The Prevalence of Diagnosed and Undiagnosed Depression (Table 1; Figure 1)

- The prevalence of diagnosed depression stayed roughly the same pre-COVID-19 (2011 = 3.1%; 2018 = 3.7%) and post-COVID-19 (2021 = 3.5%).
- Pre-COVID-19, the prevalence of undiagnosed depression increased just over one percentage point between 2011 and 2018 (3.5% to 4.2%).
- Post-COVID-19 (2021), the prevalence of undiagnosed depression multiplied by 1.5 from 2018 and 1.8 from 2011 (6.2% vs 4.2% vs 3.5%, respectively).

Table 1.

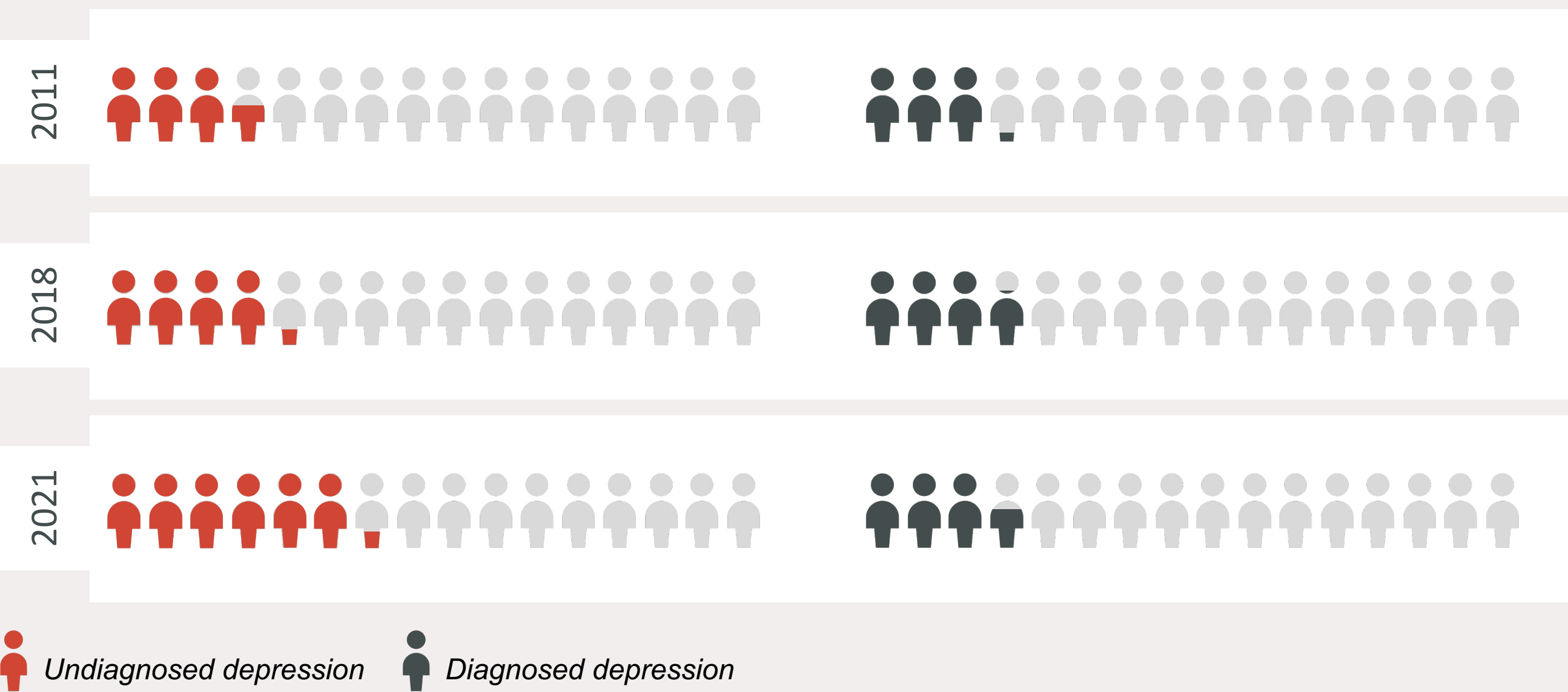
The prevalence of diagnosed and undiagnosed depression among the general adult population, pre- and post-COVID-19

	Prevalence					
	(a) 2011 (Pre-pandemic)		(b) 2018 (Pre-pandemic)		(c) 2021 (Post-pandemic)	
	N=57,512		N=62,000		N=62,028	
	%	n	%	n	%	n
Diagnosed depression	3.1 ^{b,c}	1,799	3.7 ^a	2,285	3.5	2,175
Undiagnosed depression	3.5 ^{b,c}	1,997	4.2 ^{a,c}	2,601	6.2 ^{a,b}	3,824

Note: superscripts represent the results of pairwise comparisons. Letters correspond with the columns in which the prevalence significantly differed (p<0.05)

Figure 1.

The prevalence of diagnosed and undiagnosed depression among the general adult population, pre- and post-COVID-19 (%)



Sociodemographic Characteristics (Table 2)

- Pre-COVID-19 (2011 & 2018), both the proportions of adults with diagnosed and undiagnosed depression were higher among females, however, post COVID-19 (2021) the proportion of undiagnosed depression was higher among males.
 - Between 2018 and 2021 the proportion of males with undiagnosed depression increased by 14.5 percentage points and the proportion of females with undiagnosed depression decreased by 14.5 percentage points.
- Adults with undiagnosed depression were younger, on average, than those with diagnosed depression.
- Adults with undiagnosed depression tended to be married and employed.
- Adults with diagnosed depression had higher comorbidity burden (CCI) than those with undiagnosed depression.

Table 2.

Sociodemographic and health characteristics for the overall 2011, 2019, and 2022 NHWS and relative to depression diagnosis status

		EU 2011			EU 2018			EU 2021		
		Total	MDS & Diagnosed Depression	Undiagnosed MDS	Total	MDS & Diagnosed Depression	Undiagnosed MDS	Total	MDS & Diagnosed Depression	Undiagnosed MDS
Gender	Male	28,511	667	898	29,163	814	1,040	31,782	783	2088
	Female	29,001	1132	1099	32,837	1,471	1,561	30,246	1,392	1,746
Age (years; mean)		46.47	44.74	41.82	48.96	44.83	39.36	49.53	45.05	38.04
Marital Status	Married or living with partner	36,475	903	1138	37,485	1,018	1,414	37,044	987	2,198
	Single, never married	63.4%	50.2%	57.0%	60.5%	44.6%	54.4%	59.7%	45.4%	57.3%
	Divorced, separated, widowed, or declined to answer	13,205	488	604	16,161	858	946	15,966	828	1,169
		23.0%	27.1%	30.2%	26.1%	37.5%	36.4%	25.7%	38.1%	30.5%
Employment	Employed	7,832	408	255	8,354	409	241	9,018	360	467
	Unemployed	13.6%	22.7%	12.8%	13.5%	17.9%	9.3%	14.5%	16.6%	12.2%
Charlson Comorbidity Index (CCI; mean)		32,846	745	1148	33,869	1,037	1,674	34,529	1,058	2,616
		57.1%	41.4%	57.0%	54.6%	45.4%	64.4%	55.7%	48.6%	68.2%
		24,666	1054	849	28,131	1,248	927	27,499	1,117	1,218
		42.9%	58.6%	42.5%	45.4%	54.6%	35.6%	44.3%	51.4%	31.8%
		0.37	0.81	0.50	0.41	0.74	0.35	0.47	0.76	0.40

Prescription Medication Use among Adults with Diagnosed Depression (Table 3)

- Roughly three in five adults who were diagnosed with depression were using a prescription medication to treat their depression, irrespective of the COVID-19 pandemic

Table 3.

Prescription medication use among adults with diagnosed depression

	Prevalence					
	(a) 2011 (Pre-pandemic)		(b) 2018 (Pre-pandemic)		(c) 2021 (Post-pandemic)	
	N=1,799		N=2,285		N=2,175	
	%	n	%	n	%	n
Currently using a prescription medication to treat depression	65.1 ^c	1,172	63.6	1,454	61.8 ^a	1,345
Not currently using a prescription medication to treat depression	34.9 ^a	627	36.4	831	38.2 ^a	830

Note: superscripts represent the results of pairwise comparisons. Letters correspond with the columns in which the prevalence significantly differed (p<0.05)

Depression Severity Among Adults with Undiagnosed Depression (Table 4)

- Pre-COVID-19, the proportion of adults with undiagnosed depression who had severe depression increased by one percentage point between 2011 and 2018 (17% vs 18%)
- Post-COVID-19 (2021), the proportion of adults with undiagnosed depression who were experiencing severe depression was 1.4 times that of the proportion of adults with undiagnosed severe depression in 2018 (24.8% vs 18%)

Table 4.

	Prevalence					
	(a) 2011 (Pre-pandemic)		(b) 2018 (Pre-pandemic)		(c) 2021 (Post-pandemic)	
	N=1,997		N=2,601		N=3,834	
	%	n	%	n	%	n
Moderate	36.0 ^{b,c}	720	32.4 ^{a,c}	847	29.9 ^{a,b}	1,147
Moderately Severe	46.9	937	49.5 ^c	1,287	45.3 ^b	1,735
Severe	17.0 ^a	340	18.0 ^a	467	24.8 ^{a,b}	952

Note: superscripts represent the results of pairwise comparisons. Letters correspond with the columns in which the prevalence significantly differed (p<0.05)

Conclusions

While the prevalence of diagnosed MDS and treatment remained consistent from pre-COVID-19 to post COVID-19, the prevalence of undiagnosed MDS multiplied by 1.5 between the year just prior to COVID-19 to post COVID-19. These results reveal the underlying problem with MDS – many individuals are undiagnosed and untreated even as they experience severe depression. More than ever before, now in this post COVID-19 environment, access to mental health support and therapists are needed.

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