

Prevalence of Depressive Symptoms and Related Factors in Türkiye: Results of the 2016 and 2019 Turkish Health Survey



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ABSTRACT

Objective: We investigated the prevalence and distribution of depressive symptoms in individuals aged 15 and older, as well as the relationship between depressive symptoms and sociodemographic characteristics, chronic diseases, health status and health behaviors.

Method: The analysis of data collected from the Türkiye Health Surveys conducted by Turkish Statistical Institute (TURKSAT) in 2016 and 2019 involved using the Chi-Square independence test. Effect sizes were evaluated using Phi or Cramer's V coefficients. Patient Health Questionnaire-8 (PHQ-8) module was used to scan the depressive symptoms.

Results: The adult population's point of prevalence of depressive symptoms was $4.7\% \pm 0.24$ in males and $8\% \pm 0.19$ in females, with a population total of $6.3\% \pm 0.21$. The yearly prevalence of depressive symptoms was $6.1\% \pm 0.45$ in males, $13.2\% \pm 0.53$ in females and a population total of $10\% \pm 0.49$. Age, gender, income, education, social support, health status, disability, and chronic illnesses were found to be significant predictors of the incidence of depressive symptoms ($p < 0.05$). The results indicated that the rate of people with depression getting help from psychologists, psychotherapists, and psychiatrists was low.

Conclusion: Age, gender, income, education, marital status, self-rated health status, social support, number of chronic illnesses, and disability were the most important risk factors for depressive episodes. In addition to such self-reported research completed before the pandemic and Kahramanmaraş earthquakes in Türkiye, further studies based on structured diagnostic interviews are required.

Keywords: Behavioral Symptom Health Status, Chronic Diseases, Depressive Symptoms, PHQ-8, Prevalence, Socioeconomic Factors, Türkiye Health Survey

INTRODUCTION

Depression is a widespread disorder in all countries and is one of the leading causes of disability. Depression is a psychological disorder in which individuals do not feel well psychologically, can last for a very long time and affects daily life. It is a psychological disease in which the symptoms are marked by lack of motivation, feeling of worthlessness, pessimism, unhappiness, feeling of guilt, sleep disorders, loss of appetite and sexual desire, social isolation and concentration disorder. It is an important public health problem as it causes loss of

work, ability and disability at the individual level and social and economic problems at the social level.

Research in middle and high-income countries has emphasized many risk factors for the occurrence of depression. In addition to genetic predisposition, studies have been conducted on various risk factors such as socioeconomic and demographic factors including gender, age, income and education level, social support, body mass index, health-related behaviors such as smoking and alcohol use, chronic diseases and negative life experiences (Binbay et al. 2014, Kaya 2007). It is believed

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that a single risk factor is not sufficient for the emergence of depression, but the interaction of genetic structure and negative environmental factors exceeding a certain threshold and the timing of such interaction is important. While it is stated that biological predisposition is more dominant in severe depressive symptoms, it is suggested that the role of environmental factors become significant in mild symptoms (Ünal et al. 2002).

Epidemiologic studies on depression in Türkiye have mostly been limited to special population groups to date. The number of studies representing the whole population is limited due to high costs. Although the beginning of research on psychiatric epidemiology in Türkiye dates back to the 1960s, the first comprehensive study representing the whole population was conducted after 1995 (Erol et al. 1998).

According to a recent study by the Ministry of Health, the prevalence of depressive disorder was found to be 9.0%, 5.0% for somatization disorder and 2.0% for panic disorder. Depressive disorder is twice as common in women compared to men. For both men and women, the age group of 75 years and older has the highest rate of mental health problems (Ministry of Health 2013).

In this study, the prevalence of depressive symptoms in the population aged 15 years and older in Türkiye was analyzed in relation with socioeconomic characteristics, health-related behaviors and chronic diseases by analyzing the micro data of the Türkiye Health Survey conducted cross-sectionally by TURKSTAT in 2016 and 2019.

METHOD

Data

The European Health Interview Survey (EHIS) has been conducted in 27 European Union countries and in the United Kingdom, Norway, Iceland and Türkiye since 2008 (Eurostat 2022). This survey is conducted periodically by the Turkish Statistical Institute (TURKSTAT) under the name of Türkiye Health Survey (THS). There are four modules in this survey, namely health status, health service use, health determinants, and socioeconomic background. The Türkiye Health Survey provides an overview of the health status of the population and enables the identification of demographic, socioeconomic and behavioral factors affecting health as well as basic health problems (TURKSTAT 2019). Such information on the health status of general population may provide critical information for both health projections and related public health policies. In addition to reflecting the country as a whole, Türkiye Health Survey enables international benchmarks and sheds light on national health-related needs (TURKSTAT 2016, 2019).

Türkiye Health Survey includes the Patient Health Questionnaire Depression Module (PHQ-8), an instrument developed according to the Diagnostic and Statistical Manual of Mental Disorders (DSM) IV to assess the prevalence and levels of depression in general population. This module is used in population-based surveys and large clinical trials to measure the diagnosis and severity of depression (EUROSTAT 2022). The PHQ-8 is a widely used module whose validity and reliability have been established in both the international literature (Kroenke et al. 2009) and in Türkiye (Güleç et al. 2012, Kaymaz et al. 2021).

Türkiye Health Survey is a cross-sectional survey conducted with a multi-stage sampling design in provinces, districts and towns covering 12 regions. These surveys, the last of which was conducted in 2019, cover households in all settlements in Türkiye. The population characterized as institutionalized (military, dormitories, prisons, hospitals, nursing homes, etc.) were not included in the surveys. Detailed information on sample selection, methodology, socio-economic variables, and the definition and classification of chronic diseases can be found in the relevant sources of TURKSTAT (Türkiye Health Survey Data Portal 2016 and Türkiye Health Survey Micro Data Set 2019) (TURKSTAT 2016, 2019).

In 2016, the survey was conducted with a total of 17,242 people aged 15 and above, with 7,668 males (44.5%) and 9,574 females (55.5%); in 2019, it was conducted with a total of 17,084 people, with 7,784 males (45.6%) and 9,300 females (54.4%). In these cross-sectional surveys conducted in both years, the total number of people aged 15 and over who participated in the surveys was 34,326. Participants aged 15-24, 25-34, 35-44, 45-54, 55-64, 65-74 and 75 years and above constituted the 16%, 18%, 20%, 17%, 14%, 9% and 5% of the total survey population respectively. 21% of the participants have never been married, 69% are married, 3.2% are widowed and 7% are divorced. In terms of educational attainment, 55.2% of the respondents are primary school and below, 16% are secondary school and equivalent, 15% are high school and equivalent, and 13.6% are university and above (TURKSTAT, 2016, 2019).

Variables and Measurement

Data were analyzed using SPSS v.25.0 (Statistical Package for Social Sciences Version 25.0) package software. A total of 22 variables, including socioeconomic, demographic, behavioral, health status, chronic diseases, psychologist/psychotherapy/psychiatry referral, were identified as factors considered to be associated with the symptom severity and prevalence of depression. The prevalence of depression symptoms was analyzed with the Chi-Square test of independence. For effect sizes, Phi coefficients were calculated for 2x2 tables and Cramer's V coefficients for tables with larger nominal variables (Field 2013, Pallant 2020). In

some cells where the observed frequency is below 25 or less than 5 and the cell percentage is above 20%, Exact tests or Monte Carlo simulation methods can be used instead of the Pearson Chi-square test (Field 2013, George and Mallery 2019, Mehta and Patel 1996). The Chi-square approach may be weak if the contingency tables have both medium-sized and very small expected frequencies. The Likelihood Ratio Chi-Square test can be used instead (Cressie and Read 1989). In the Likelihood Ratio Chi-Square test, the test statistic value produced is higher than that of the Pearson Chi-Square test. Although the Pearson Chi-square test and the Likelihood Ratio Chi-square test produce different test statistics, they generally provide the same results. When the expected frequencies are large, the two statistics have the same chi-square distribution and the test values that they produce are similar (Agresti 2019). Such cases were not observed in our study. However, in such cases, the results of the Likelihood Ratio Chi-Square test can be presented instead of the Pearson Chi-Square test. No separate notation is used for this value and the probability value is given in the table as “ p_a : Chi-square test of independence”. Effect sizes are given as p_1 and p_2 and necessary explanations are provided below the tables.

In the PHQ-8 self-assessment scale consisting of eight Likert-type items in the Türkiye Health Survey, participants were asked how often they had experienced depressive symptoms in the last two weeks. The minimum score for this module is 0 and the maximum is 24. In international scales, a score of 5-9 is defined as mild depressive symptoms, 10-14 as moderate depressive symptoms and 15 and above as severe depressive symptoms. In addition, a total score of 10 or more is defined as a positive diagnosis of depression requiring above-threshold treatment in those scales (PHQ-8 $\geq$ 10). In this study, depression scores were calculated according to the above criteria and those with a PHQ-8 score of 5-9 were defined as having mild depressive symptoms and those with a PHQ-8 score of 10 and above (PHQ-8 $\geq$ 10) were defined as having major depressive symptoms requiring treatment. In the diagnosis of major depression, PHQ-8 $\geq$ 10 and above measurements have been found to have 88% specificity and 88% sensitivity in international studies (Kroenke et al. 2009). The ninth question in DSM-IV involves thoughts of suicide or self-harm. The Patient Health Questionnaire (PHQ-9) module is not preferred because thoughts of self-harm is rare in general population screenings and has little effect on scoring (Kroenke et al. 2009).

According to the weight and height measurements in the questionnaires and body-mass index (BMI) classification, normal weight, overweight and obese were provided as categories, and poor, moderate and strong social support categories were created by calculating the Oslo Social Support Scale (OSSS-3) in the THS (TURKSTAT 2016, 2019).

RESULTS

Sociodemographic Factors and Prevalence of Depressive Symptoms

The Türkiye Health Survey (THS) was conducted cross-sectionally in 2016 and 2019 with a total of 34,326 people aged 15 years and older. In 2016 and 2019, 72.4% (n=12,249) and 72.7% (n=12,241) of the people studied had no point-level depressive symptoms, respectively. In 2016 and 2019, 21.4% (n=3,623) and 20.8% (n=3,562) of the participants had mild depressive symptoms below the cut-off point (PHQ-8: 5-9); 3.6% (n=603) and 3.3% (n=563) had moderate depressive symptoms (PHQ-8: 10-14); and 2.7% (n=452) and 3.1% (n=538) had severe depressive symptoms. According to the results of the survey, the prevalence of major depressive symptoms above the cut-off point (PHQ-8 $\geq$ 10) in Türkiye was 6.3% in 2016 and 6.4% in 2019. According to the results of both years, the weighted mean prevalence of probable major depression (PHQ-8 $\geq$ 10) was 6.34%.

According to the Chi-Square test of independence and Phi and Cramers' V coefficients, although there is a significant relationship between sociodemographic factors and depressive symptom levels, Phi and Cramers' V coefficients indicate that the correlation is not strong. In 2019, the prevalence of mild depressive symptoms decreased by 6% compared to 2016, while there was no significant change in the prevalence of major depressive symptoms.

The prevalence of depressive symptoms was 4.3% and 4.7% for men and 7.8% and 8.0% for women in 2016 and 2019, respectively. Moreover, according to the responses to the single question “Have you experienced depression in the last 12 months?” in the questionnaires, 13.2% of women and 6.1% of men, which is 10% of the study population, reported having experienced depression in the past year.

The distribution of the prevalence of depressive symptoms according to age groups, income and education level in 2016 and 2019 data is given in Table 1.

In summary, major depressive symptoms (PHQ-8 $\geq$ 10) are more prevalent among women, the elderly, widowed and divorced people, and those with the lowest income and education levels. When both cross-sectional studies are compared, it is observed that there is no general difference since there is a short time period of three years, but it was observed that the prevalence of depressive symptoms increased by 3% in 2019 compared to 2016 in the lowest income group, divorced and widowed people.

Behavioral Risk Factors and Prevalence of Depressive Symptoms

According to the algorithmic calculation of the Oslo Social Support Scale (OSSS-3), 19% of all participants reported

Table 1. Socio-demographic Factors and Depressive Symptom Levels

Variables			2016				Total	PHQ-8		2019				Total	PHQ-8	
			NS	MS	MoS	SS		(≥10)	NS	MS	MoS	SS	(≥10)			
Gender	Male	n	5996	1200	178	142	7516	320	6178	1245	193	168	7784	361		
		%	79.8	16	2.4	1.9	100	4.3	79.4	16	2.5	2.2	100	4.7		
	Female	n	6253	2423	425	310	9411	735	6243	2317	370	370	9300	74		
		%	66.4	25.7	4.5	3.3	100	7.8	67.1	24.9	4	4	100	8		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)			$p_a < 0.01$ (0.149; $p_2 < 0.05$)				$p_a < 0.01$ (0.073; $p_1 < 0.05$)		$p_a < 0.01$ (0.137; $p_2 < 0.05$)				$p_a < 0.01$ (0.067; $p_1 < 0.05$)			
Age groups	15-24	n	2044	443	67	36	2590	103	2169	444	69	48	2730	117		
		%	78.9	17.1	2.6	1.4	100	4	79.5	16.3	2.5	1.8	100	4.3		
	25-34	n	2279	570	89	68	3006	157	2377	564	66	63	3070	129		
		%	75.8	19	3	2.3	100	5.3	77.4	18.4	2.1	2.1	100	4.2		
	35-44	n	2557	684	124	79	3444	203	2516	687	106	86	3395	192		
		%	74.2	19.9	3.6	2.3	100	5.9	74.1	20.2	3.1	2.5	100	5.6		
	45-54	n	2151	669	102	85	3007	187	2075	638	110	95	2918	205		
		%	71.5	22.2	3.4	2.8	100	6.2	71.1	21.9	3.8	3.3	100	7.1		
	55-64	n	1684	548	80	56	2368	136	1794	542	86	91	2513	177		
		%	71.1	23.1	3.4	2.4	100	5.8	71.4	21.6	3.4	3.6	100	7		
	65-74	n	1022	401	70	52	1545	122	1036	404	73	77	1590	150		
		%	66.1	26	4.5	3.4	100	7.9	65.2	25.4	4.6	4.8	100	9.4		
	75 years and above	n	512	308	71	76	967	147	454	283	53	78	868	131		
		%	52.9	31.9	7.3	7.9	100	15.2	52.3	32.6	6.1	9	100	15.1		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)			$p_a < 0.01$ (0.086; $p_2 < 0.05$)				$p_a < 0.01$ (0.100; $p_2 < 0.05$)		$p_a < 0.01$ (0.186; $p_2 < 0.05$)				$p_a < 0.01$ (0.104; $p_2 < 0.05$)			
Marital status	Never married	n	2528	571	93	70	3262	163	2839	601	92	78	3610	170		
		%	77.5	17.5	2.9	2.1	100	5	78.6	16.6	2.5	2.2	100	4.7		
	Married	n	8735	2513	393	269	11910	662	8623	2418	356	329	11726	685		
		%	73.3	21.1	3.3	2.3	100	5.6	73.5	20.6	3	2.8	100	5.8		
	Widowed	n	326	134	34	38	532	72	357	158	29	30	574	59		
		%	61.3	25.2	6.4	7.1	100	13.5	62.2	27.5	5.1	5.2	100	10.3		
	Divorced	n	660	405	83	75	1223	158	602	385	86	101	1174	187		
		%	54	33.1	6.8	6.1	100	12.9	51.3	32.8	7.3	8.6	100	15.9		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)			$p_a < 0.01$ (0.084; $p_2 < 0.05$)				$p_a < 0.01$ (0.097; $p_2 < 0.05$)		$p_a < 0.01$ (0.092; $p_2 < 0.05$)				$p_a < 0.01$ (0.112; $p_2 < 0.05$)			
Income level	1. 20%	n	2192	1050	187	178	3607	365	344	164	40	41	589	81		
		%	60.8	29.1	5.2	4.9	100	10.1	58.4	27.8	6.8	7	100	13.8		
	2. 20%	n	3254	1044	173	132	4603	305	358	105	10	17	490	27		
		%	70.7	22.7	3.8	2.9	100	6.7	73.1	21.4	2	3.5	100	5.5		
	3. 20%	n	2339	596	98	65	3098	163	301	72	11	7	391	18		
		%	75.5	19.2	3.2	2.1	100	5.3	77	18.4	2.8	1.8	100	4.6		
	4. 20%	n	2280	497	73	41	2891	114	301	78	17	5	401	22		
		%	78.9	17.2	2.5	1.4	100	3.9	75.1	19.5	4.2	1.2	100	5.4		
	5. 20% +	n	2184	436	72	36	2728	108	285	41	3	3	332	6		
		%	80.1	16	2.6	1.3	100	3.9	85.8	12.3	0.9	0.9	100	1.8		
	Total	n	12249	3623	603	452	16927	1055	1589	460	81	73	2203	154		
		%	72.4	21.4	3.6	2.7	100	6.3	72.1	20.9	3.7	3.3	100	7		
Test Results (Effect Size)			$p_a < 0.01$ (0.093; $p_2 < 0.05$)				$p_a < 0.01$ (0.094; $p_2 < 0.05$)		$p_a < 0.01$ (0.133; $p_2 < 0.05$)				$p_a < 0.01$ (0.167; $p_2 < 0.05$)			
Educational attainment	Primary and below	n	5664	2220	374	313	8571	687	5103	1999	340	364	7806	704		
		%	66.1	25.9	4.4	3.7	100	8.1	65.4	25.6	4.4	4.7	100	9.1		
	Primary education	n	2031	516	81	58	2686	139	2250	560	82	73	2965	155		
		%	75.6	19.2	3	2.2	100	5.2	75.9	18.9	2.8	2.5	100	5.3		
	High school	n	2454	508	88	56	3106	144	2577	524	90	55	3246	145		
		%	79	16.4	2.8	1.8	100	4.6	79.4	16.1	2.8	1.7	100	4.5		
	University and above	n	2100	379	60	25	2564	85	2491	479	51	46	3067	97		
		%	81.9	14.78	2.34	0.98	100	3.32	81.2	15.6	1.7	1.5	100	3.2		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)			$p_a < 0.01$ (0.087; $p_2 < 0.05$)				$p_a < 0.01$ (0.078; $p_2 < 0.05$)		$p_a < 0.01$ (0.093; $p_2 < 0.05$)				$p_a < 0.01$ (0.099; $p_2 < 0.05$)			

NS: No symptoms (PHQ-8<5), MS: Mild symptoms (PHQ-8=5-9), MoS: Moderate symptoms (PHQ-8=10-14), SS: Severe symptoms (PHQ-8≥15), Above threshold depressive symptoms (PHQ-8≥10), PHQ-8: Patient Health Questionnaire-8, n: number, p_1 : Chi-square test of independence, p_1 : Phi coefficient, p_2 : Cramer's V coefficient.

The income status of the participants was categorised. The 1st 20% shows that the person is in the first 20% with the lowest income, and the 5th 20% shows that the person is in the highest income group. It should be understood that as the levels increase, the income level increases.

Table 2. Behavioral Factors and Depressive Symptom Levels

Variables		2016				Total	PHQ-8		2019				Total	PHQ-8	
		NS	MS	MoS	SS		(≥10)	NS	MS	MoS	SS	(≥10)			
Social support	Poor	n	1844	850	195	181	3070	376	2140	912	178	211	3441	389	
		%	60.1	27.7	6.4	5.9	100	12.3	62.2	26.5	5.2	6.1	100	11.3	
	Moderate	n	7447	2129	312	214	10102	526	7793	2144	302	254	10493	556	
		%	73.7	21.1	3.1	2.1	100	5.2	74.3	20.4	2.9	2.4	100	5.3	
	Strong	n	2958	644	96	57	3755	153	2488	506	83	73	3150	156	
		%	78.8	17.2	2.6	1.5	100	4.1	79	16.1	2.6	2.3	100	4.9	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results (Effect Size)		$p_a < 0.01$ (0.110; $p_2 < 0.05$)				$p_a < 0.01$ (0.119; $p_2 < 0.05$)		$p_a < 0.01$ (0.098; $p_2 < 0.05$)				$p_a < 0.01$ (0.100; $p_2 < 0.05$)			
Body Mass Index (BMI)	Normal weight	n	5311	1406	228	192	7137	420	5357	1393	208	210	7168	418	
		%	74.4	19.7	3.2	2.7	100	5.9	74.7	19.4	2.9	2.9	100	5.8	
	Pre-obese	n	4403	1290	216	127	6036	343	4531	1213	187	174	6105	361	
		%	72.9	21.4	3.6	2.1	100	5.7	74.2	19.9	3.1	2.9	100	6	
	Obese	n	2535	927	159	133	3754	292	2533	956	168	154	3811	322	
		%	67.5	24.7	4.2	3.5	100	7.7	66.5	25.1	4.4	4	100	8.4	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results (Effect Size)		$p_a < 0.01$ (0.047; $p_2 < 0.05$)				$p_a < 0.01$ (0.034; $p_2 < 0.05$)		$p_a < 0.01$ (0.054; $p_2 < 0.05$)				$p_a < 0.01$ (0.044; $p_2 < 0.05$)			
Smoking habits	Everyday	n	3079	936	185	143	4343	328	3343	971	168	164	4646	332	
		%	70.9	21.6	4.3	3.3	100	7.6	72	20.9	3.6	3.5	100	7.1	
	Sometimes	n	492	174	33	19	718	52	395	138	34	18	585	52	
		%	68.5	24.2	4.6	2.6	100	7.2	67.5	23.6	5.8	3.1	100	8.9	
	Never	n	6836	2060	294	231	9421	525	6797	1924	268	267	9256	535	
		%	72.6	21.9	3.1	2.5	100	5.6	73.4	20.8	2.9	2.9	100	5.8	
	Quitted	n	1842	453	91	59	2445	150	1886	529	93	89	2597	182	
		%	75.3	18.5	3.7	2.4	100	6.1	72.6	20.4	3.6	3.4	100	7	
Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
	%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.028; $p_2 < 0.05$)				$p_a < 0.01$ (0.035; $p_2 < 0.05$)		$p_a < 0.01$ (0.023; $p_2 < 0.05$)				$p_a < 0.01$ (0.032; $p_2 < 0.05$)			
Alcohol consumption	Yes	n	3174	792	147	99	4212	246	3380	834	150	135	4499	285	
		%	75.4	18.8	3.5	2.4	100	5.9	75.1	18.5	3.3	3	100	6.3	
	No	n	9075	2831	456	353	12715	809	9041	2728	413	403	12585	816	
		%	71.4	22.3	3.6	2.8	100	6.4	71.8	21.7	3.3	3.2	100	6.5	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results (Effect Size)		$p_a < 0.01$ (0.040; $p_2 < 0.05$)				$p_a > 0.05$ (0.009; $p_1 > 0.05$)		$p_a < 0.01$ (0.035; $p_2 < 0.05$)				$p_a > 0.05$ (0.003; $p_1 > 0.05$)			

NS: No symptoms (PHQ-8<5), MS: Mild symptoms (PHQ-8=5-9), MoS: Moderate symptoms (PHQ-8=10-14), SS: Severe symptoms (PHQ-8≥15), Above threshold depressive symptoms (PHQ-8≥10), PHQ-8: Patient Health Questionnaire-8, n: number, p_a : Chi-square test of independence, p_1 : Phi coefficient, p_2 : Cramer's V coefficient

receiving poor social support, 61% moderate social support and 21% strong social support, while 35% of the 2,156 participants with major depressive symptoms reported receiving poor, 50% moderate and 15% strong social support. Of all participants, 42% were normal weight, 36% were overweight and 22% were obese. The distribution of depressive symptom levels among the groups based on social support, obesity, smoking and alcohol consumption is given in Table 2. The prevalence of depressive symptoms is two times higher in those with poor social support than in those with moderate social support and about three times higher than

in those with strong social support. When the distribution of depression symptom levels according to body mass index groups was analyzed, no significant difference was found between normal weight, overweight and obese participants. The prevalence of depression was found to be very similar between the group smoking and consuming alcohol and the group who does not. Significant differences were found in the Chi-square tests and effect coefficients of the distribution of depressive symptoms according to behavioral risk factors ($p < 0.05$); the effect coefficients indicate that the correlation is not strong (Table 2).

Table 3. Health Status, Limitation in Daily Activities and Depressive Symptom Levels

Variables		2016				Total	PHQ-8		2019				Total	PHQ-8	
		NS	MS	MoS	SS		(≥10)	NS	MS	MoS	SS	(≥10)			
Health status	Very good	n	1261	183	12	12	1468	24	1151	83	8	5	1247	13	
		%	85.9	12.5	0.8	0.8	100	1.6	92.3	6.7	0.6	0.4	100	1	
	Good	n	7067	1249	139	64	8519	203	7257	1264	144	76	8741	220	
		%	83	14.7	1.6	0.8	100	2.4	83	14.5	1.6	0.9	100	2.5	
	Moderate	n	3082	1417	236	143	4878	379	3317	1483	230	184	5214	414	
		%	63.2	29	4.8	2.9	100	7.7	63.6	28.4	4.4	3.5	100	7.9	
	Bad	n	787	708	195	158	1848	353	661	653	149	192	1655	341	
		%	42.6	38.3	10.6	8.5	100	19.1	39.9	39.5	9	12	100	20.6	
	Very bad	n	52	66	21	75	214	96	35	79	32	81	227	113	
		%	24.3	30.8	9.8	35	100	44.8	15.4	34.8	14.1	36	100	49.8	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results		$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$	
(Effect Size)		(0.234; $p_2 < 0.05$)				(0.283; $p_2 < 0.05$)				(0.242; $p_2 < 0.05$)				(0.302; $p_2 < 0.05$)	
Health problems 6+ months	Yes	n	5089	2447	477	394	8407	871	6574	2790	494	502	10360	996	
		%	60.5	29.1	5.7	4.7	100	10.4	63.5	26.9	4.8	4.8	100	9.6	
	No	n	7160	1176	126	58	8520	184	5847	772	69	36	6724	105	
		%	84	13.8	1.5	0.7	100	2.2	87	11.5	1	0.5	100	1.5	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results		$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$	
(Effect Size)		(0.272; $p_2 < 0.05$)				(-0.170; $p_1 < 0.05$)				(0.264; $p_2 < 0.05$)				(-0.160; $p_1 < 0.05$)	
health problems more than 6 months	Severely limited	n	623	651	188	215	1677	404	591	550	154	249	1544	403	
		%	37.1	38.8	11.2	12.8	100	24	38.3	35.6	10	16	100	26.1	
	Limited but not severely	n	3446	1491	228	127	5292	355	2458	1304	202	168	4132	370	
		%	65.1	28.2	4.3	2.4	100	6.7	59.5	31.6	4.9	4.1	100	9	
	Not limited	n	8180	1481	187	110	9958	297	9372	1708	207	121	11408	328	
		%	82.1	14.9	1.9	1.1	100	3	82.2	15	1.8	1.1	100	2.9	
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101	
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4	
Test Results		$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$				$p_a < 0.01$	
(Effect Size)		(0.250; $p_2 < 0.05$)				(0.254; $p_2 < 0.05$)				(0.264; $p_2 < 0.05$)				(0.273; $p_2 < 0.05$)	

NS: No symptoms (PHQ-8 <5), MS: Mild symptoms (PHQ-8 =5-9), MoS: Moderate symptoms (PHQ-8=10-14), SS: Severe symptoms (PHQ-8 ≥15), Above threshold depressive symptoms (PHQ-8 ≥10 , PHQ-8: Patient Health Questionnaire-8, n: number, p_1 : Chi-square test of independence, p_2 : Phi coefficient, p_3 : Cramer's V coefficient

Health Status, Limitation in Daily Activities and Prevalence of Depressive Symptoms

In Türkiye Health Survey, there is a module that expresses three different health conditions: general health status, chronic morbidity and limitations in daily activities due to health problems. This module is called Minimum European Health Module (MEHM). Additionally, the variable of restriction in daily activities due to any health problem is known as Global Activity Limitation Indicator (GALI) (Aydın 2019, Eurostat 2022). This three-question minimum health module has been frequently used in research related to depression and

has been reported to be important in predicting depression (Ambresin et al. 2014). Significant differences ($p < 0.01$) were found between health status, illness and disability factors and depressive symptom levels and the relationship was found to be moderate-strong (Table 3).

In summary, the variables of health status, illness/health status in the last six months and limitations in daily activities are found to be very strong predictors of depressive symptoms. The results suggest that there may be a reciprocal relationship between health/illness problems and depression in about 70% of women with probable major depression. The rate is 30% in men with major depression.

Table 4. Prevalence of Depressive Symptoms in EU Countries and Türkiye (PHQ-8 $\geq$ 10) (Arias-de la Torre et al. 2021, Hapke U et al. 2019)

	Female %	Male %	Total %
Türkiye	8.0	4.7	6.3
Germany	10.8	7.6	9.2
Austria	5.3	3.4	4.3
UK	8.6	6.1	7.4
Bulgaria	8.0	6.0	6.5
Czechia	3.4	2.0	2.7
Denmark	9.5	5.3	9.5
Estonia	8.0	5.0	6.6
Finland	6.4	5.7	6.0
France	9.0	5.2	7.2
South Cyprus	5.2	3.0	4.1
Croatia	3.4	3.4	3.4
Iceland	14	6.7	10.3
Ireland	8.8	6.6	7.8
Italy	5.6	3.5	4.6
Sweden	11.2	6.5	8.8
Latvia	5.8	3.3	4.7
Lithuania	4.1	2.3	3.3
Luxembourg	11.7	8.2	10
Hungary	9.6	7.1	8.5
Malta	4.4	2.2	3.3
Norway	6.4	4.0	5.2
Poland	5.5	4.0	4.8
Portugal	12.9	4.7	9.1
Romania	5.1	4.7	4.9
Slovakia	3.4	2.3	2.9
Slovenia	7.3	4.0	5.6
Greece	3.8	2.5	3.2
EU mean	7.9	5.2	6.6

Reference: Hapke U, Cohrdes C, Nübel J 2019; Arias-de la Torre et al, 2021.

Prevalence of Depression in the EU and Türkiye

Table 4 shows the results of the PHQ-8 module of the European Health Interview Survey (EHIS) conducted in 27 EU countries between 2013 and 2015 and the results of the same survey (THS) conducted in Türkiye in 2019. The average prevalence of depression in EU countries is 6.6% with significant differences. In terms of gender, there are significant differences between men and women in all countries except Croatia and Finland.

Chronic Illnesses and Prevalence of Depressive Symptoms

Table 5 demonstrates the comparison of depressive symptom levels at the score level according to having chronic diseases

[lower back problems (lower back pain, herniated disc and other lower back defects), neck problems (neck pain, herniated disc, other neck defects), hypertension, diabetes, arthrosis, allergies, coronary heart disease] in the last 12 months. It was found that depressive symptom levels varied depending on having at least one chronic disease ($p<0.01$). It is found that the prevalence of mild and severe depressive symptoms is high in participants with chronic illnesses.

It can be concluded that depressive symptoms increase as chronic illnesses increase. When people with both chronic diseases and depression symptoms are analyzed, it is found that the ratio of women is distributed between 67-79% on the disease-basis. In summary, the likelihood of depression symptoms accompanying chronic diseases was found to be 2.5-3 times higher in women than in men.

Table 5. Chronic Illnesses and Depressive Symptom Levels

Variables		2016					Total	PHQ-8		2019					PHQ-8	
		NS	MS	MoS	SS	(≥10)		NS	MS	MoS	SS	Total	(≥10)			
Low back pain	Yes	n	2977	1598	326	242	5143	568	3130	1670	328	323	5451	651		
		%	57.9	31.1	6.3	4.7	100	11	57.4	30.6	6	5.9	100	11.9		
	No	n	9272	2025	277	210	11784	487	9291	1892	235	215	11633	450		
		%	78.7	17.2	2.4	1.8	100	4.2	79.9	16.3	2	1.8	100	3.8		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.219; $p_2 < 0.05$)					$p_a < 0.01$ (-0.131; $p_1 < 0.05$)		$p_a < 0.01$ (0.242; $p_2 < 0.05$)					$p_a < 0.01$ (-0.153; $p_1 < 0.05$)		
Neck pain	Yes	n	1816	1190	268	208	3482	476	2000	1315	265	254	3834	519		
		%	52.2	34.2	7.7	6	100	13.7	52.2	34.3	6.9	6.6	100	13.5		
	No	n	10433	2433	335	244	13445	579	10421	2247	298	284	13250	582		
		%	77.6	18.1	2.5	1.8	100	4.3	78.6	17	2.2	2.1	100	4.3		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.240; $p_2 < 0.05$)					$p_a < 0.01$ (-0.157; $p_1 < 0.05$)		$p_a < 0.01$ (0.254; $p_2 < 0.05$)					$p_a < 0.01$ (-0.155; $p_1 < 0.05$)		
Hypertension	Yes	n	1849	1050	202	167	3268	369	1802	957	187	221	3167	408		
		%	56.6	32.1	6.2	5.1	100	11.3	56.9	30.2	5.9	7	100	12.9		
	No	n	10400	2573	401	285	13659	686	10619	2605	376	317	13917	693		
		%	76.1	18.8	2.9	2.1	100	5	76.3	18.7	2.7	2.3	100	5		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.176; $p_2 < 0.05$)					$p_a < 0.01$ (-0.102; $p_1 < 0.05$)		$p_a < 0.01$ (0.181; $p_2 < 0.05$)					$p_a < 0.01$ (-0.125; $p_1 < 0.05$)		
Diabetes	Yes	n	1049	612	117	97	1875	214	1082	615	118	146	1961	264		
		%	55.9	32.6	6.2	5.2	100	11.4	55.2	31.4	6	7.4	100	13.4		
	No	n	11200	3011	486	355	15052	841	11339	2947	445	392	15123	837		
		%	74.4	20	3.2	2.4	100	5.6	75	19.5	2.9	2.6	100	5.5		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.132; $p_2 < 0.05$)					$p_a < 0.01$ (-0.076; $p_1 < 0.05$)		$p_a < 0.01$ (0.151; $p_2 < 0.05$)					$p_a < 0.01$ (-0.103; $p_1 < 0.05$)		
Arthrosis	Yes	n	786	572	141	108	1607	249	1099	720	157	171	2147	328		
		%	48.9	35.6	8.8	6.7	100	15.5	51.2	33.5	7.3	8	100	15.3		
	No	n	11463	3051	462	344	15320	806	11322	2842	406	367	14937	773		
		%	74.8	19.9	3	2.2	100	5.2	75.8	19	2.7	2.5	100	5.2		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.180; $p_2 < 0.05$)					$p_a < 0.01$ (-0.124; $p_1 < 0.05$)		$p_a < 0.01$ (0.195; $p_2 < 0.05$)					$p_a < 0.01$ (-0.136; $p_1 < 0.05$)		
Allergy	Yes	n	1102	638	142	100	1982	242	1304	650	137	150	2241	287		
		%	55.6	32.2	7.2	5	100	12.2	58.2	29	6.1	6.7	100	12.8		
	No	n	11147	2985	461	352	14945	813	11117	2912	426	388	14843	814		
		%	74.6	20	3.1	2.4	100	5.5	74.9	19.6	2.9	2.6	100	5.5		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.141; $p_2 < 0.05$)					$p_a < 0.01$ (-0.090; $p_1 < 0.05$)		$p_a < 0.01$ (0.137; $p_2 < 0.05$)					$p_a < 0.01$ (-0.101; $p_1 < 0.05$)		
Coronary heart disease	Yes	n	615	456	111	106	1288	217	607	456	116	159	1338	275		
		%	47.7	35.4	8.6	8.2	100	16.8	45.4	34.1	8.7	12	100	20.6		
	No	n	11634	3167	492	346	15639	838	11814	3106	447	379	15746	826		
		%	74.4	20.3	3.1	2.2	100	5.3	75	19.7	2.8	2.4	100	5.2		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Results (Effect Size)		$p_a < 0.01$ (0.173; $p_2 < 0.05$)					$p_a < 0.01$ (-0.126; $p_1 < 0.05$)		$p_a < 0.01$ (0.210; $p_2 < 0.05$)					$p_a < 0.01$ (-0.167; $p_1 < 0.05$)		

NS: No symptoms (PHQ-8<5), MS: Mild symptoms (PHQ-8=5-9), MoS: Moderate symptoms (PHQ-8=10-14), SS: Severe symptoms (PHQ-8≥15), Above threshold depressive symptoms (PHQ-8≥10), PHQ-8: Patient Health Questionnaire-8, n: number, p_a : Chi-square test of independence, p_i : Phi coefficient, p_2 : Cramer's V coefficient

Table 6. Receiving Mental Health Support and Depressive Symptom Levels

Variables			2016				Total	PHQ-8		2019				Total	PHQ-8	
			NS	MS	MoS	SS		(≥10)	NS	MS	MoS	SS	(≥10)			
Psychologist	Yes	n	156	137	47	49	389	96	177	150	42	72	441	114		
		%	40.1	35.2	12.1	12.6	100	24.7	40.1	34	9.5	16	100	25.8		
	No	n	12093	3486	556	403	16538	959	12244	3412	521	466	16643	987		
		%	73.1	21.1	3.4	2.4	100	5.8	73.6	20.5	3.1	2.8	100	5.9		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Statistics			$p_a < 0.01$				$p_a < 0.01$		$p_a < 0.01$				$p_a < 0.01$			
Effect Size			$(0.138; p_2 < 0.05)$				$(-0.117; p_1 < 0.05)$		$(0.154; p_2 < 0.05)$				$(-0.129; p_1 < 0.05)$			
Psychotherapist	Yes	n	50	47	17	19	133	36	67	41	12	27	147	39		
		%	37.6	35.3	12.8	14.3	100	27.1	45.6	27.9	8.2	18	100	26.6		
	No	n	12199	3576	586	433	16794	1019	12354	3521	551	511	16937	1062		
		%	72.6	21.3	3.5	2.6	100	6.1	72.9	20.8	3.3	3	100	6.3		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Statistics			$p_a < 0.01$				$p_a < 0.01$		$p_a < 0.01$				$p_a < 0.01$			
Effect Size			$(0.089; p_2 < 0.05)$				$(-0.077; p_1 < 0.05)$		$(0.090; p_2 < 0.05)$				$(-0.076; p_1 < 0.05)$			
Psychiatrist	Yes	n	249	224	69	74	616	143	367	276	80	110	833	190		
		%	40.4	36.4	11.2	12	100	23.2	44.1	33.1	9.6	13	100	22.8		
	No	n	12000	3399	534	378	16311	912	12054	3286	483	428	16251	911		
		%	73.6	20.8	3.3	2.3	100	5.6	74.2	20.2	3	2.6	100	5.6		
	Total	n	12249	3623	603	452	16927	1055	12421	3562	563	538	17084	1101		
		%	72.4	21.4	3.6	2.7	100	6.3	72.7	20.8	3.3	3.1	100	6.4		
Test Statistics			$p_a < 0.01$				$p_a < 0.01$		$p_a < 0.01$				$p_a < 0.01$			
Effect Size			$(0.167; p_2 < 0.05)$				$(-0.137; p_1 < 0.05)$		$(0.179; p_2 < 0.05)$				$(-0.151; p_1 < 0.05)$			

NS: No symptoms (PHQ-8 < 5), MS: Mild symptoms (PHQ-8 = 5-9), MoS: Moderate symptoms (PHQ-8 = 10-14), SS: Severe symptoms (PHQ-8 ≥ 15), Above threshold depressive symptoms (PHQ-8 ≥ 10), PHQ-8: Patient Health Questionnaire-8, n: number, p_a : Chi-square test of independence, p_i : Phi coefficient, p_2 : Cramer's V coefficient

Receiving Mental Health Support and Prevalence of Depressive Symptoms

Table 6 shows the findings related to the point distribution of depressive symptoms and the number of visits to a psychologist, psychotherapy and psychiatry in the last 12 months. Severe depressive symptoms were observed at higher rates in those receiving mental health support ($p < 0.01$).

Regarding psychiatrist visits in last one year, 4% of all participants in 2016 and 4.9% in 2019 reported having visited a psychiatrist. In 2016 and 2019, 2% and 3% of those with no depressive symptoms, 6.1% and 7.8% of those with mild symptoms, and 13.5% and 17.2% of those above threshold depressive symptoms (with a cut-off point of 10 points or above) visited a psychiatrist, respectively. Compared to 2016, the rate of visits to psychologists and psychotherapists increased by 4% in 2019.

DISCUSSION

The results revealed that the prevalence of mild depressive symptoms not requiring treatment at the point level in people aged 15 years and over was 21.1%, and the prevalence of depressive symptoms requiring treatment at the cut-off point of 10 or more was $4.7 \pm 0.24\%$ in males and $8 \pm 0.19\%$ in females, totaling $6.3 \pm 0.21\%$. The annual prevalence

of depression was $6.1 \pm 0.45\%$ in men and $13.2 \pm 0.53\%$ in women, totaling $10 \pm 0.49\%$.

The prevalence of depressive symptoms increases with age, and is nearly three times higher in people 75 years and older (11.9% in men and 18% in women) compared to the general distribution (6.3%). In other studies conducted locally with elderly people, it was found that the prevalence of depressive symptoms in people 75 years and over was 13.6% (Kavakçı et al. 2011) and 16% (Kulaksızoğlu et al. 2005). Moreover, the prevalence of depression is 2.5 times higher in widowed and divorced people compared to the general distribution. There was a moderate difference between educational attainment and prevalence of depression, although not as much as age and chronic diseases. As the level of education increases, the prevalence of depression decreases.

Another important factor is the prevalence of depression by income level. The rates were found to be 13.8% in the lowest income group, 5.5% in the lower-middle group, 4.6% in the middle-middle group, 5.2% in the upper-middle group and 1.8% in the highest income group. As the results suggest, excluding the lowest and highest income levels, the risk of developing depression is about the same (5%) for respondents in the middle groups. Since the lowest income group is also below the relative poverty line, poverty level significantly increases the risk of depression. The difference between those in the bottom group of 20% and the top group of 80% may

be due to the lower financial living conditions of the bottom group. It is suggested that the relatively low income level compared to the society in general impairs mental health by causing uncertainty, social stress and trauma in meeting basic needs (Yılmaz et al. 2021). However, our analysis did not find a significant income difference between the lowest income and the upper lower-middle income groups. It is estimated that with a slight increase in the income level of households in the lowest income group and approaching their level to the lower-middle income group, the prevalence of depression (13.8%) can be reduced by 50% to 5-6%.

When the perception of social support is evaluated according to obesity, smoking and alcohol consumption, the prevalence of depressive symptoms is two times higher in those with poor social support compared to those with moderate social support and about three times higher than those with strong social support. The results of studies investigating the relationship between different social support modules and special population groups and depression in Türkiye indicate that as perceivable social support increases, depression levels decrease (Aksüllü and Doğan 2004, Elmacı 2006, Yavuzer et al. 2018).

Regarding to the relationship between depression and BMI, there was no significant difference between normal weight, overweight and obese participants. A study conducted in Türkiye found a very weak but significant positive correlation between BMI and depression (Çakmur and Güneş 2018, Pahalı et al. 2018). A minimal difference was found among smokers, non-smokers and occasional smokers. In studies conducted with special population groups in Türkiye, depression and smoking have been reported to be related. A significant number of people with depression do smoke. Similarly, the risk of depression appears to be higher in smokers than it is in non-smokers. (Ertekin et al. 2017, Velioglu and Sönmez 2018). In this study however, the prevalence of depressive symptoms in smokers and non-smokers was found to be similar. Similar results also apply to alcohol consumption and depression.

In European Union countries, depressive symptoms are found to be less prevalent in Eastern European countries like Czechia, Slovakia, and Lithuania, and more prevalent in countries like Iceland, Denmark, Germany, and Luxembourg. It is unexpected that the lowest prevalence was found in Eastern European countries. Türkiye is at the same level with 6.3% as Bulgaria, Estonia and Finland (6.6%). While the prevalence of depressive symptoms in young people aged 15-25 is 11% in Germany, Ireland, Luxembourg and Sweden, it is 4.3% in Türkiye. However, the prevalence of depressive symptoms in people aged 65 and over in Türkiye is 15%, whereas it is about 6% in Germany, Norway and Switzerland for people of the same age. In Türkiye, Italy, Portugal and Romania, the prevalence of depressive symptoms in people aged 75 years and older is the same at 15% (Hapke et al. 2019). Another difference between Türkiye and EU countries

is the prevalence of mild symptoms. While the prevalence of major depressive symptoms is lower in Türkiye than it is in Germany and the United Kingdom, the prevalence of mild depressive symptoms was found to be 21% in Türkiye, 14% in Germany and 11.3% in the United Kingdom (De la Torre et al. 2021, Hapke et al. 2019, Shin et al. 2017). Therefore, the higher rate of mild symptoms in Türkiye should not be overlooked. However, living in a risky geography as Türkiye is more difficult compared to countries such as Germany and the UK. Consequently, a higher prevalence of mild depressive symptoms is an expected result. In summary, depressive symptoms are quite common in both EU countries and Türkiye, yet there are significant differences between countries. On the other hand, the prevalence of depression is highest in economically developed and prosperous EU countries as shown in Table 3 (Arias-de la Torre et al. 2021).

Of all the variables analyzed in this study, perception of health status was found to be the strongest risk factor in the prediction of depression. Health status based on self-report seems to be a very important factor that provides information about the perception of physical, emotional and mental health. Self-reported perception of health status has previously been found to be the most important factor in predicting depression, which is not a surprising result (Ambresin et al. 2014). However, when examining the relationship between poor health perception and depressive symptoms, high correlation and multicollinearity problem should not be ignored.

The Global Activity Limitation Indicator is a single-item tool developed to monitor disability, particularly functional disability. When the response of being severely limited in functioning is evaluated as a proxy variable of disability, it is revealed that 37% (806 people) of the total 2,156 people with depressive symptoms in 2016 and 2019 were individuals with disabilities. In the findings on the relationship between chronic diseases and depression, both hormonal differences as a biological factor and traditional female gender roles are mentioned in the explanations for why women have 2.5 to 3 times higher prevalence of depressive symptoms compared to men (Kaya, 2007; Etiler, 2016). Additionally, women may be more prone to depression due to biological and psychological factors such as pregnancy, childbirth, and menstruation.

In summary, the prevalence of depressive symptoms is between 1-3% in those rating their health status as 'very good' and 'good', 24%-49.3% in those with 'poor' and 'very poor' health status, 10% in those who have a prolonged/expected prolonged illness/health problem and 1% among those who do not, 8% in people whose daily activities are restricted due to health problems and who can be considered as disabled, 24% in people whose daily activities are restricted due to health problems and 3% in people who are not restricted, as shown by the Phi and Cramer's V coefficients, indicates

that health status and depression have a moderate to strong relationship with each other.

Depression is one of the most common complications of chronic diseases and chronic diseases constitute another important aspect of the etiology of depression in public health research. Chronic diseases are stronger predictors of depression than other socio-demographic and behavioral factors. When the seven most common chronic diseases and depressive symptoms are summarized briefly, the risk of developing depression is 3-3.5 times higher in those with lower back problems, neck problems, arthrosis and coronary heart disease, and 2.5 times higher for those with hypertension, diabetes and allergies.

In other studies conducted with patients with lower back pain at the local level, depression was reported to be common and it was stated that the presence of depression may be a cause of pain. There are studies indicating that the level of depression in people with lower back pain admitted to the hospital is between 40-70% (Ay AND Evcik 2008, Dünder et al. 2009). Chronic neck pain is the second most common condition after lower back pain in the entire Turkish population. In other studies evaluating the relationship between neck pain, anxiety and depressive symptoms, results found were contradictory (Soysal et al. 2013). Numerous studies have shown that depression and hypertension, two important public health problems, are closely related to each other and depression is reported as a factor increasing the risk of hypertension (Fidancı et al. 2015, Grimsrud et al. 2009, Kayır and Öztekin 2022, Unsal et al. 2014). Various studies noted that the prevalence rate of depressive disorders in diabetics is 8.5-14% and the lifetime rate is 11-33%, and anxiety symptoms are also seen in 40% of patients. Other studies on the relationship between diabetes and depression in Türkiye have found contradictory results (Atasoy et al. 2013, Bahar et al. 2006, Gülseren et al. 2001, Kayır and Öztekin 2019, Sayın et al. 2018). Depression is reported to be common among people with arthrosis and the frequency of depressive symptoms varies between 5-42% depending on the criteria used (Şengül and Akkaya 2013, Uçar et al. 2014). Allergic diseases are considered to be common and cause significant social problems. Symptoms such as fatigue, decreased sleep and appetite, which are also observed in depression, along with the physical symptoms are reported to occur. It is also stated that the medications used may worsen the psychological state of patients (Özmen and Özdemir 2006, Uyar et al. 2017). There are many studies demonstrating that depression and coronary heart disease trigger each other. In other studies evaluating coronary heart disease patients, it was observed that 17-27% of patients had major depression and 3 times higher risk of depression (Altunbaş et al. 2012, Arslan et al. 2011, Erşan et al. 2013).

The results of this study reveal that health status, being prevented from daily activities due to health problems and

illnesses and chronic diseases are effective risk factors. Based on a point-level mean rate of depressive symptoms of 6.34% in Türkiye; being in the lowest income group, being 75 years or older, being divorced or widowed, having a poor perception of social support and being a woman in combination with all these factors are the most important risk factors that increase the mean rate of depression by 3-4 times. The relationship between health status, chronic diseases, and depression may be linked to the psychological stress that increases depending on the severity of chronic illnesses and how much they affect individuals' lives.

It is noteworthy that 84.6% of people with depressive symptoms had not consulted a psychiatrist for treatment of depression. It is also known that very few people with depression seek help in other countries (Kılıç 2020). The rate of inability to access mental health treatment due to financial difficulties is not more than 2.5% in Türkiye (TSA 2016, 2019). Therefore, not consulting a physician stems from the inability to recognize the disease as well as stigmatization, work and social environment rather than economic reasons (Kılıç 2020). Stigmatization concerns hinder diagnosis, treatment and rehabilitation. The public attitude towards depression is quite negative and tends to perceive the depressed patient as dangerous. These results also suggest that improving health literacy among the general public in depression treatment and psychiatry is needed in Türkiye. To combat stigmatization, it is important to educate the public that depression is an illness through activities that promote mental health literacy (Taşkın et al. 2009).

These results, which represent the entire population of the country, may provide important epidemiologic information about depression in Türkiye. Results of this study can be used as a resource for monitoring depressive symptoms and taking necessary measures. However, it should be noted that these studies are cross-sectional and self-report based when evaluating the results. The PHQ-8 was developed as a tool to help clinicians identify and diagnose the prevalence of depression and may not completely correspond to a physician's diagnosis. The latest one of this research was conducted in 2019 and two months later, the pandemic started in our country. Moreover, the earthquakes, the disaster of the century happened on February 6, 2023. These events also caused great traumas by destroying social psychology. In order to obtain more reliable data, there is a need for new studies based on structured diagnostic interviews in which specialist physicians can make a diagnosis, taking into account the intensive traumas that our country has experienced. Furthermore, it is recommended for new studies to take into account factors such as sociodemographic, health status and chronic diseases that significantly affect the risk of developing depression and to adopt a holistic approach in the diagnosis, treatment and prevention of depression.

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