

# Socioeconomic Factors Related to Prevalence, Severity, and Contact Coverage of Depression in Primary Health Care

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## ABSTRACT

**Background:** We determine factors related to the prevalence, severity, and contact coverage of depression using the Patient Health Questionnaire-9.

**Methods:** This cross-sectional study included 1059 individuals who applied to primary health care in Ankara before the onset of pandemic restrictions. Contact coverage was evaluated to include mental health care users.

**Results:** The prevalence of depression was 22.9%. Individuals who were unemployed (OR: 3.832; 95% CI: 2.053-7.151), women (OR: 1.646; 95% CI: 1.158-2.340), those without social support (OR: 1.933; 95% CI: 1.219-3.065), those who did not receive formal education (OR: 2.631; 95% CI: 1.312-5.275), lower-income group (OR: 1.528; 95% CI: 1.071-2.180), and unmarried or divorced (OR: 2.644; 95% CI: 1.324-5.281) were found to be at risk of developing depression. Based on the linear regression model including patients diagnosed with depression, individuals who were unemployed (standardized  $\beta$ : 0.190), women (standardized  $\beta$ : 0.075), those without social support (standardized  $\beta$ : 0.096), and those who were unmarried or single (standardized  $\beta$ : 0.147) had the highest scale scores. Contact coverage for depression was 31.0%. Contact coverage was more likely in the upper-income group (OR: 2.239, 95% CI: 1.173-4.273).

**Conclusion:** Although depression is common among primary health care applicants, contact coverage is low. Developing screening programs for depression in primary health care may help improve community mental health. Socioeconomic factors that contribute to the emergence, severity, and contact coverage of depression indicate health inequalities. The development and severity of depression are mostly due to unemployment, which suggests the importance of employment-enhancing policies.

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## INTRODUCTION

Depression is an important public health issue due to its high morbidity and mortality. A total of 264 million people worldwide are reportedly affected by depression, and approximately 800 thousand people die each year due to suicide.<sup>1</sup> Years lived with disability (YLD), which is attributed to depressive disorders, increased by 14.3% between 2007 and 2017, and it has been placed third of all YLD causes.<sup>2</sup> Mental disorders are significantly affected by socioeconomic determinants in terms of their prevalence and access to treatment. Although there are many outputs in high-income countries, there is a significant gap in research and strategies on the social determinants of mental health in low- and middle-income countries (LMICs).<sup>3</sup> However, 73-79% of studies on LMIC revealed that there is a positive relationship between different poverty measures and common mental disorders.<sup>4</sup>

The causes of depression include complex interactions of biological, psychological, and social factors.<sup>1</sup> Women,

adolescents/young people, people with low education level, unmarried people, lower-income groups, and unemployed people have been identified as risk groups for the development of depression. On the other hand, the pattern of risk factors and the magnitude of their influence on depression vary according to the societies.<sup>5-7</sup> The COVID-19 pandemic in 2020 provides a basis for the increase in mental health problems not only through the cases but also through the effects of the imposed restrictions and the socioeconomic constraints associated with the economic contraction caused by the epidemic.<sup>8,9</sup> Country-specific results for determinants of depression determined in the pre-pandemic period can help identify measures to protect community mental health during and after the pandemic.

The prevalence of depression among primary health care (PHC) applicants is relatively high compared to population-based studies. According to a meta-analysis of 41 studies, the prevalence of depression among PHC applicants is 19.5%.<sup>10</sup> In

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a study conducted on PHC applicants in 14 countries, the prevalence of depression was found to be 10.9%.<sup>11</sup>

Health service coverage depends on the ability of a health service to interact with those who should benefit from it. The ratio between the number of people who have contacted the service and the size of the target population is defined as contact coverage. The target population includes people who should benefit from health services.<sup>12</sup> Another expression of contact coverage is “service utilization taken from program records divided by the total population in need of services taken from prevalence surveys of the disorder.”<sup>13</sup> Contact coverage is essential to follow health services for mental disorders; however, there are few coverage estimates.<sup>13</sup> In particular, it is argued that there is a lack of sufficient research regarding health service utilization for mental disorders from LMIC.<sup>14</sup> It is recommended that contact coverage estimates be included in routine monitoring.<sup>13</sup>

According to the World Mental Health Survey, contact coverage for serious cases is between 49.7% and 64.5% in developed countries and between 14.6% and 23.7% in less developed countries.<sup>15</sup> Contact coverage of depression refers to the proportion of patients admitted to health services because of depression to all patients who have depression. The range of contact coverage of depression determined in several studies ranging from a few percent to one-third shows the importance of the problem.<sup>16-18</sup>

More than half of the patients with depression cannot be diagnosed with PHC, and at least half of those diagnosed with depression cannot receive adequate treatment.<sup>19</sup> However, as with other chronic diseases, with the integration of preventive care and curative health care in PHC, diagnosis and treatment can also be provided for depression.<sup>20</sup> Intervention studies have shown that depression-related mortality can be reduced.<sup>21</sup> To reveal all the dimensions of the problem and develop suggestions for the solution, it is important to determine the causes of the low number of applications for contact coverage of depression and mental health services among PHC applicants.

The majority of studies on the epidemiology of depressive disorders in Turkey are local studies and cover only specific groups, such as women, post-partum women, adolescents, children, and students. Since most of these studies use self-report scales, these aimed at screening the prevalence of depressive symptoms and the results vary between 6.3% and 48%.<sup>22</sup>

Turkey experienced an economic crisis in 2018, and the unemployment rate has reached record levels, unseen since 2008.<sup>23</sup> The consequences of the economic crisis for disadvantaged social groups make the relationship between socioeconomic factors and community mental health more important in Turkey.

In PHC, a new model replaced the model implemented since 1962 in 2010 in the reform process known as the Health

Transformation Program. Although 10 years have passed since the reform, PHC has not been adequately examined in terms of community mental health. Determining factors related to the presence of depression, severity of depression, and contact coverage may provide insights for formulating measures and interventions to be taken in terms of health service delivery and health determinants.

The Patient Health Questionnaire-9 (PHQ-9) is a depression diagnostic scale developed for PHC users.<sup>24</sup> Persons who were diagnosed with depression according to the PHQ-9 scale and declared a history of applying to mental health services can be considered as within the definition of contact coverage of depression. The aim of this study is to determine the prevalence of depression, contact coverage of depression, socioeconomic factors related to prevalence, and severity and contact coverage of depression in those applying to PHC.

## METHODS

### Sampling

This was a cross-sectional study conducted in Sincan, one of the central districts of Ankara, among patients who applied to family health centers. The formula for cross-sectional studies was used to calculate the sample size. Taking the epidemiology of depression in PHC into account, the expected prevalence was accepted as 5%.<sup>25</sup> A 2% (5%±2%) margin of error was considered acceptable. The design effect was set as 2% because a convenience sampling method was adopted while conducting the research. Based on these parameters, the sample size was calculated to be 1093. The Open Epi program was used for the sample size calculation.

### Scale

The PHQ-9 was used to detect depression. Validity studies were conducted based on the structure validity SF-20 (Short Form General Health Survey), and the criterion validity was assessed by mental health professionals according to The Diagnostic and Statistical Manual of Mental Disorders/ Fourth Edition (DSM-IV).<sup>24</sup>

For the diagnosis of major depression determined by a psychiatric interview conducted according to DSM-IV, the sensitivity of a diagnosis with a score > 10 was 88% and the specificity was 88%. The scale score was obtained by scoring the answers to 9 questions. Depression severity was divided into different categories according to the scores obtained from the evaluation. The score ranges were as follows: 0-4 = none, 5-9 = mild, 10-14 = moderate, 15-19 = moderately severe, and 20-27 = severe depression. For the diagnosis of depression, if a single cut-off point is to be chosen, it is recommended to use a score of ≥10.<sup>24</sup> The Turkish validity and reliability of the scale were examined, and the Cronbach's alpha value was found to be 0.842.<sup>26</sup>

## Application

In total, 9 of 41 family health centers in Sincan were randomly selected and included in the study. Data collection was performed from March 8 to 12, 2020 via a face-to-face interview method in people aged >18 years from PHC applicants who agreed to participate in the study. Within the scope of this study, 1059 people were interviewed (96.8%).

Before starting the questionnaire, participants were informed about the study. Informed consent was verbally obtained from the participants. People who did not want to participate and those who decided to withdraw after starting to answer the questionnaire were excluded.

After the approval of the ethics commission dated March 3, the data collection process was started. The data collection period includes March 8-12, 2020. The first case of COVID-19 in Turkey was reported on March 11, 2020. The first mobility restrictions began on March 16 with the closure of public areas such as cinemas, concert halls, wedding halls, cafes, and gymnasiums. Education in primary schools, high schools, and universities was also suspended.<sup>27</sup> Therefore, the data collection phase was not affected by the mobility restrictions related to the pandemic. Since the questionnaire was comprised of retrospective questions, the situation in the pre-pandemic period conditions was determined.

The Gazi University Ethics Committee's approved this study (March 3, 2020, approval number 03).

## Data Analysis

Since the median household income was calculated as 4000 TL (Turkish Lira), the household income groups were classified as having an income "up to 4000 TL" and "4000 TL and above." The "out of workforce" category, which is included under job status categories, included housewives, students, retirees, and those with a working disability. Those who stated that they could get help from any of their family, friends, state institutions and organizations, and non-state organizations when needed were evaluated as having social support.

The factors associated with the presence of depression were first examined using bivariate analysis. A logistic regression model was created for the multivariate analysis of depression-related factors. The independent variables of the regression model were job status (employed, out of workforce, unemployed), presence of unemployed people in the household (no, yes), sex (men, women), age groups (18-25, 26-34, 35-44, 45-54, 55-64, over 65 years old), marital status (married, single, widow(er), divorced), presence of social support (yes, no), level of education (no formal education, primary school, secondary school, high school, university, and above), income group (4001 TL and above, up to 4000 TL), and social security (yes, no) (Table 1). The first categories specified here are reference variables.

To detect the factors related to the severity of depression, a linear regression model with a PHQ-9 score > 10 was created. The independent quantitative variables were age and level of education. The independent categorical variables were job status, marital status, social security, presence of unemployed people in the household, presence of social support, and income group. The definitions of independent categorical variables of the linear regression model are the same as those for logistic regression models. Job status and marital status were coded as dummy variables. Among these variables, employed people and married people were accepted as references for job status and marital status, respectively (Table 2).

The factors associated with the contact coverage of depression were first examined using bivariate analysis. A multivariate model was created for the variables for which significant results were obtained using bivariate analysis. A logistic regression model was created for the multivariate analysis of factors related to the contact coverage of depression. The independent variables of the regression model were level of education, income group, gender, and marital status (Table 3). The definition of the variables included in the logistic regression model of contact coverage is the same as the logistic regression model for the presence of depression.

The type 1 error level was set at 0.05. In the bivariate analysis, variables with a *P*-value less than .25 were included in the multivariate model. While creating regression models, "enter" was used as the "variable selection method." Statistical analyses were performed using Statistical Package for the Social Sciences (SPSS) version 22.0 (IBM SPSS Corp.; Armonk, NY, USA).

## RESULTS

According to the results of the PHQ-9 questionnaire, 36.9% of the participants were not depressed, 40.2% had mild depression, 16.7% had moderate depression, 5.5% has moderately severe depression, and 0.7% had severe depression. Thus, the prevalence of depression, including moderate and above categories, was 22.9%.

Factors associated with depression in the logistic regression model are presented in Table 1. The risk of depression was higher among the unemployed (OR: 3.832; 95% CI: 2.053-7.151), women (OR: 1.646; 95% CI: 1.158-2.340), those without social support (OR: 1.933; 95% CI: 1.219-3.065), divorced (OR: 2.644; 95% CI: 1.324-5.281), those without formal education (OR: 2.631; 95% CI: 1.312-5.275), and those with an income up to 4000 TL (OR: 1.528; 95% CI: 1.071-2.180).

The linear regression model of the factors related to the scale score in patients diagnosed with depression according to the PHQ-9 is presented in Table 2. In the multivariate model, the variable with the strongest effect was unemployment ( $\beta$ : standardized  $\beta$ : 0.190). The scale score was higher in women (standardized  $\beta$ : 0.075), unmarried

**Table 1.** Factors Associated with Depression in the Logistic Regression Model<sup>#</sup>

	PHQ-9 Score > 10 (%)	Bivariate Analysis (OR, 95% CI)	P	Multivariate Analysis (OR, 95% CI)	P
Job status					
Employed	18.2	1.00		1.00	
Out of workforce	21.9	1.258 (0.911-1.735)	.163	0.916 (0.591-1.418)	
Unemployed	57.1	5.991 (3.495-10.267)	<.001	3.832 (2.053-7.151)	<.001
Sex					
Men	18.9	1.00		1.00	
Women	25.9	1.501 (1.116-2.021)	.008	1.646 (1.158-2.340)	.005
Marital status					
Married	16.9	1.00		1.00	
Single	32.0	2.320 (1.649-3.264)	<.001	1.924 (1.132-3.270)	.016
Widow(er)	33.7	2.498 (1.579-3.952)	<.001	2.376 (1.331-4.244)	.003
Divorced	41.3	3.463 (1.863-6.440)	<.001	2.644 (1.324-5.281)	.006
Presence of social support					
Yes	21.1	1.00		1.00	
No	38.3	2.321 (1.526-3.531)	<.001	1.933 (1.219-3.065)	.005
Level of education					
No formal education	35.6	2.177 (1.291-3.671)	.004	2.631 (1.312-5.275)	.006
Primary school-secondary school	22.1	1.113 (0.762-1.628)	.579	1.354 (0.811-2.259)	.246
High school	22.6	1.150 (0.784-1.689)	.474	1.097 (0.712-1.691)	.675
University and above	20.3	1.00		1.00	
Income group					
Up to 4000 TL	27.0	1.865 (1.369-2.540)	<.001	1.528 (1.071-2.180)	.019
4001 TL and above	16.6	1.00		1.00	
Model					<.001

<sup>#</sup>Variables with no significant effect on the model were age groups, presence of unemployed people in the household, and social security.

**Table 2.** Linear Regression Model of Factors Related to Scale Scores in Patients Diagnosed with Depression According to PHQ-9

	$\beta$ (SE)	Standardized $\beta$	P
Unemployed (ref: employee)	3.376 (0.603)	0.190	<.001
Out of workforce (ref: employee)	0.067 (0.318)	0.008	.833
Woman (ref: men)	0.661 (0.282)	0.075	.019
Age	-0.019 (0.012)	-0.071	>.05
Single (ref: married)	1.561 (0.409)	0.147	<.001
Widow(er) (ref: married)	2.149 (0.492)	0.144	<.001
Divorced (ref: married)	2.180 (0.652)	0.101	.001
Level of education	-0.258 (0.173)	-0.056	.136
No social security (ref: available)	-0.128 (0.522)	-0.008	.807
Presence of unemployed people in the household (ref: none)	0.639 (0.341)	0.056	.061
Presence of social support (ref: available)	1.399 (0.436)	0.096	.001
Household income up to 4000 TL (ref: Over 4000 TL)	-0.502 (0.282)	-0.057	.075
Constant	6.792 (0.880)		<.001
Model			<.001

(standardized  $\beta$ : 0.147), widowed (standardized  $\beta$ : 0.144), divorced (standardized  $\beta$ : 0.101), and those without social support (standardized  $\beta$ : 0.096).

Contact coverage for depression was found to be 31%. In terms of coverage, there was no significant difference between groups of job status and those with and without

**Table 3.** Factors Associated with Contact Coverage of Depression in the Logistic Regression Model<sup>#</sup>

	Contact coverage (%)	Bivariate analysis (OR, 95% CI)	P	Multivariate analysis (OR, 95% CI)	P
Level of education					
No formal education	12.9	1.00		1.00	
Primary school-secondary school	26.0	2.368 (0.737-7.609)	.148	2.678 (0.790-9.082)	.114
High school	37.8	4.109 (1.300-12.981)	.016	4.561 (1.242-16.758)	.022
University and above	38.3	4.196 (1.300-13.546)	.016	3.723 (0.943-14.695)	.061
Income group					
Up to 4000 TL	25.3	1.00		1.00	
4001 TL and above	43.8	2.303 (1.287-4.124)	<.001	2.239 (1.173-4.273)	.014
Model					<.001

<sup>#</sup>Variables with no significant effect on the model were gender and marital status.

social security ( $P > .05$ ). The logistic regression model created for contact coverage of depression is presented in Table 3. Contact coverage increased as the level of education increased, and there was a significant difference between education levels in terms of contact coverage in the bivariate analysis ( $P < .05$ ). However, in the multivariate model, the level of education was not related to contact coverage ( $P > .05$ ). The likelihood of contact coverage was higher in the upper-income group in the multivariate model ( $P < .05$ ).

The changes in some mental health service use behaviors in those with PHQ-9 scores  $> 10$  are reported in Table 4. Of the participants diagnosed with depression according to the PHQ-9, 28.5% stated that although they wanted to apply, they did not in several instances. Fear of being stigmatized was the major reason for not applying (33.3%).

## DISCUSSION

Mental disorders generally have a low diagnostic rate, although these disorders are also common in those who apply to PHC. In addition, mental disorders are diagnosed in PHC and are treatable in most cases with the participation of primary care doctors.<sup>28</sup> Identifying the country-specific prevalence of depression, determinants of depression, and mental health service usage behaviors in PHC applicants may contribute to national initiatives for improving community mental health through PHC. To the best of our knowledge, this is the first study to provide determinants of the severity of depression and contact coverage in the PHC in Turkey based on the results of PHQ-9.

### Prevalence of Depression in PHC Applicants

The prevalence of depression was found to be 22.9%. According to a study conducted using the Beck Depression Inventory in patients consulting family physicians in a city in Turkey, the prevalence of depression was 20.8%.<sup>29</sup> Additionally, in a study that included PHC organizations in 10 different cities in Turkey and conducted using the Composite

International Diagnostic Interview, the prevalence of depression was 23.2%.<sup>30</sup> Based on a meta-analysis of 41 studies on PHC worldwide, the prevalence was 19.5%.<sup>10</sup> Our results are similar to those studies performed in the PHC.

However, considering the studies conducted using PHQ-9, the results appear to be in a wide range. In various local studies that analyzed PHC applicants diagnosed using PHQ-9, the prevalence of depression was 4.5% in Sri Lanka<sup>31</sup> and 19.1% in Brazil.<sup>32</sup> The broad spectrum of these results obtained using the same measurement tool indicates that the differences in the studies on depression prevalence can only be partially attributed to the difference in

**Table 4.** Change in Some Mental Health Service Use Behaviors in Patients Diagnosed with Depression According to PHQ-9

	n	%
Applying to a health institution to receive mental health services		
I did not apply	147	69.0
I applied to a state hospital	40	16.5
I applied to a university hospital	16	6.6
I applied to a private hospital	9	3.7
I applied to a private practice	7	2.9
I applied to a family health center	3	1.3
Presence of instances where application wasn't made, but was intended to be made		
Yes	173	28.5
No	242	71.5
Reasons for not applying despite the patient wanting to apply		
I did not know how to apply	18	26.1
I did not know where to apply	9	13.0
Financial insufficiencies	15	21.7
Fear of being stigmatized	23	33.3
Time constraints	3	4.3
Not wanting to take medication	1	1.4

measurement tools. Hence, in the epidemiology of depression studies, the effects of other factors, such as study design and cultural differences between populations, should not be overlooked.

Considering the results, the prevalence of depression has a wide range but is too high to ignore in PHC applicants. It has been stated that between one-third and half of the patients with depression are diagnosed in primary care.<sup>33,34</sup> Primary health care can play an important role in preventing patients with depression from missing opportunities for proper diagnosis and accessible treatment. The US Preventive Services Task Force recommends that screening tests for depression in PHC should be applied systematically.<sup>35</sup> The Patient Health Questionnaire-9 is recommended as an assessment tool in PHC because it is easy to use, and its effectiveness in diagnosis and treatment monitoring is demonstrated by validity/reliability studies.<sup>20</sup> The defined cut-off point for PHQ-9 does not mean that anyone with a score higher than 10 should receive a diagnosis and treatment of clinical depression. A higher cut-off point would result in fewer false positives; however, it is noteworthy that the current cut-off point was chosen so that the scale could be used as a screening tool.<sup>19</sup> In LMIC such as Turkey, developing screening tools based on PHQ-9 in PHC at the national level may help identify cases of depression.

#### Factors Related to the Presence of Depression

In the multivariate model, the effect of age was not significant. Similar to our study, a study conducted using the PHQ-9 in Brazil found no difference between age groups.<sup>32</sup> Conversely, some studies have reported an increased risk in the 60-69,<sup>36</sup> and >50,<sup>37</sup> with the 50-64 age group<sup>31</sup> having the highest risk. Differences in the effect of age on depression among societies may be related to changes in the psychological effects of aging, depending on sociocultural factors.

According to our study, women have a high risk of developing depression (OR: 1.646, 95% CI: 1.158-2.340). In some studies, women were found to be a risk group, ranging from Sri Lanka<sup>31</sup> with the lowest risk of depression (OR: 1.4, 95% CI: 1.1-1.7) to Mexico with the highest risk<sup>36</sup> (OR: 2.8, 95% CI: 2.0-3.7).<sup>6,32,38</sup> In a study evaluating 23 European countries, depression was found to be more common in women in all countries, but sex-related differences varied significantly between the countries. In this study, socioeconomic variables and family-related variables made the relationship between sex and depression more moderate.<sup>39</sup> In our study, in the multivariate model, the effect of sex did not decrease (OR: 1.646) compared to the bivariate model (OR: 1.501). This result demonstrates that socioeconomic variables in Turkey do not reduce the effect of sex on the emergence of depression. It is known that socioeconomic factors determine the distinction between sex and gender. We can say that socioeconomic

factors in Turkey also function as a factor that creates this discrimination against women during the emergence of depression.

All marital statuses other than “married” had a higher risk of developing depression. This risk was the highest in divorced individuals (OR: 2.644), followed by widows (OR: 2.376), and then singles (OR: 1.924). Various studies have found that marital statuses other than “married” have an increased risk ranging from 41% to 86%.<sup>6,38</sup> According to one of the explanations related to the protective effect of marriage, marriage provides greater emotional, financial, and social support that helps cope with depression.<sup>6</sup> In our study, there was a difference in the extent to which the risk increased in other marital statuses compared to the married category. It is noteworthy that such an increase was approximately 3 times higher in divorced patients. Since marital status is an important factor in the development of depression, a more insightful and clear result can be obtained by comparing all categories of marital status separately from the married category. On the other hand, compared to European Union countries, crude marriage rates are higher and crude divorce rates are lower in Turkey. However, the decrease in crude marriage rates and increase in crude divorce rates in the last decade is remarkable.<sup>40</sup> If this trend continues, more risk factors for depression may be identified in society over time.

The group with the lowest level of education had a higher risk compared to the group with the highest level of education (OR: 2.631). Other studies have reported similar results.<sup>6,38</sup> In a prospective study involving 14 countries, the risk was highest in the group with no formal education (OR: 3.8).<sup>41</sup> Conversely, some studies have reported that the level of education is not a risk factor.<sup>6,32</sup> However, it may be helpful to consider groups with the lowest level of education as risk groups.

The variable that had the highest impact was unemployment (OR: 3.832, 95% CI: 2.053-7.151). In a study involving 14 countries that aimed to detect risk factors for the persistence of depression in PHC, patients were followed for 1 year and unemployment was found to be a risk factor (OR: 1.6, 95% CI: 1.1-2.4).<sup>41</sup> In a study examining the Behavioral Risk Factor Surveillance System data in the United States<sup>42</sup> (OR: 3.2, 95% CI: 1.8-5.6), Croatia<sup>6</sup> (OR: 2.6, 95% CI: 1.5-4.4), and North Cyprus<sup>38</sup> (OR: 2.4, 95% CI: 1.8-3.3), unemployment was found to increase the risk of depression more than 2-fold. Studies revealed that unemployment is an important determinant of depression. Although the cause-and-effect relationship is potentially a 2-way relationship, it has been determined that the high unemployment rate in some countries may be among the factors of the high prevalence of depression.<sup>6</sup>

Turkey experienced an economic crisis in 2018, and the unemployment rate showed an upward trend.<sup>23</sup> According to the Turkish Statistical Institute (TSI), the unemployment

rate during 2019 was 13.7%. This rate was 11.0% in the previous year.<sup>43</sup> The idle workforce rate, which is also known as broadly defined unemployment, consisting of time-dependent underemployment, potential workforce, and unemployed, was 29.1% in January 2021. This ratio tends to increase from mid-2020.<sup>44</sup> The unemployment rate, which tended to increase in the pre-pandemic period, possibly due to the restrictions applied during the pandemic. Considering that unemployment is the most important risk factor in our model, depression may become an increasingly important public health issue in the post-pandemic period. After the pandemic, employment-enhancing policies will be required to protect community mental health.

People with an income below the median had a greater risk than those with a higher income (OR: 1.528). In a 1-year follow-up study conducted in the United States on general medicine patients, the lower-income group (OR: 2.0) had a higher risk of developing depression.<sup>5</sup> Similarly, a study conducted in North Cyprus reported that the risk was higher in lower-income groups (OR: 1.6).<sup>38</sup> A meta-analysis study including 51 prevalence studies found that the overall unadjusted OR for major depression for the lowest socioeconomic status group versus the highest was 1.81.<sup>45</sup> Most of the studies included in this meta-analysis considered education as a socioeconomic status variable, whereas few studies were based on occupation or social class.<sup>45</sup> Socioeconomic factors, including the income group, impact the development of depression. The World Bank has stated that the pandemic is expected to have a serious negative impact on Turkey and further weaken economic and social gains.<sup>46</sup> In the post-pandemic period, social support policies for disadvantaged socioeconomic groups can help prevent mental health problems that can be characterized as aftershocks of the pandemic.

According to our study, the risk was higher in patients without social support (OR: 1.933). A systematic review including 100 studies revealed that despite the differences in the definitions of social support, it is a protective factor against depression.<sup>47</sup> Social support may have components related to social conditions and family relations as well as components related to public support. Hence, establishing social support mechanisms using public resources can contribute to community mental health.

### Factors Related to the Severity of Depression

A linear regression model including those with a PHQ-9 score > 10 was created, considering that it was more appropriate to evaluate the severity of depression in people diagnosed with the disorder. It is noteworthy that unemployment was the variable with the highest effect on the result in the linear regression model (standardized  $\beta=0.190$ ), as in the logistic regression model. The PHQ-9 score was higher in females, those who did not have social support, and unmarried groups. The groups with higher scores in regression models created in various studies

were determined as lower-income groups,<sup>48</sup> unmarried people,<sup>48</sup> women,<sup>48,49</sup> unemployed people,<sup>49</sup> and low education groups.<sup>49</sup> The current results indicate that some socioeconomic factors, including unemployment, play a role not only in the development of depression but also in having a more severe form of the disease. On the other hand, fewer studies investigate factors related to the severity of depression compared to those investigating factors related to its occurrence. Results from future studies on the severity of depression can help physicians evaluate whether the patient is in a risk group(s) for developing severe depression.

### Contact Coverage of Depression

As a concept associated with health care, coverage has been defined at different levels or headings, including availability, accessibility, acceptability, contact, and effective coverage. Availability coverage is for people for whom services are available. Accessibility coverage refers to people being able to access services. Acceptability coverage relates to people's willingness to use services. Contact coverage refers to the number of people (as a percentage of the population) who can access the service. Effective coverage is for people who receive effective care.<sup>12,13</sup>

We found that contact coverage for depression was 31%. A study including PHC in 6 countries (Spain, Israel, Australia, Brazil, Russia, and the United States) revealed that contact coverage varied from 29% in Melbourne to 3% in St. Petersburg.<sup>16</sup> Population-based cross-sectional surveys including 4 countries (Ethiopia, India, Nepal, and Uganda) found that contact coverage of depression ranged between 8.1% in Nepal and 23.5% in India.<sup>17</sup> In an assessment based on data from the National Health and Nutrition Examination Survey, the contact coverage of depression was found to be 38.6% in the United States.<sup>50</sup> According to a systematic review including 49 countries, contact coverage is 32%.<sup>18</sup> The design differences of the studies may have played a role in the distribution of the results over a wide range. However, in almost all the studies, contact coverage of depression was low, and even at best, approximately 2 out of every 3 patients with depression did not have access to healthcare. The presence of low percentages of contact coverage in developed countries indicates the global nature of the problem. The fact that developed countries generally have a high level of universal health coverage and health service delivery indicates that the factors determining access to services for mental health problems have a complex structure.

In the multivariate model, contact coverage is more likely in the upper-income group (OR: 2.239, 95% CI: 1.173-4.273). A study conducted in the Netherlands determined that the higher-income group is related to higher contact coverage (OR of lower-income group is 0.48).<sup>51</sup> In the United States, there was no significant relationship between the income

group and the contact coverage for depression in the multivariate model; however, the most common reason for unmet need is a concern about costs.<sup>52</sup> A study including data from 49 countries revealed that accessing treatment for depression is higher for females, further education groups, and those living in urban areas.<sup>18</sup> Other variables found to be associated with high contact coverage for depression are being in an older age group, having insurance, being female, and having a higher educational level.<sup>51-53</sup> Socioeconomic factors determine not only the presence of depression but also the contact coverage. This result demonstrates the multiplier effect of health inequalities on community mental health.

The fear of being stigmatized was a major reason for not applying for mental health services despite wanting to do so (33.3%). In addition, “not knowing how to apply” (26.1%) and “not knowing where to apply” (13.0%) show that health literacy in mental health services should be improved. Coupled with the result demonstrating that the group with the lowest level of education has an increased risk of developing depression, the importance of improving health literacy becomes clearer. Furthermore, “financial deficiencies” (21.7%) indicate the existence of health disparities in terms of access to services. In a study including PHC in 6 countries that investigated patient-reported barriers to receiving treatment, concern about costs was the most common barrier (38%), followed by concerns about adverse effects of medication (28%). In the same study, differences between countries were also observed in terms of the distribution of reasons.<sup>16</sup> Compared to our study, although similar causes were generally seen, a difference between the frequencies of these reasons was observed. This indicates that barriers to treatment accessibility in patients with depression differ depending on the country’s conditions. Thus, identifying the most common barriers at the country level is important for developing specific interventions.

Patients diagnosed with depression according to PHQ-9 applied to state hospitals (16.5%) and university hospitals (6.6%) with the highest frequency and applied to family health centers (1.3%) with the lowest frequency. Primary health care appears to be less preferred. On the other hand, the reasons stated as obstacles to the application can also be considered clues as to how functional PHC, which is a health institution where people can apply easily, can be used in meeting the service deficit. Collaborative care is an evidence-based approach to improve the management of mental disorders and comorbid chronic diseases in PHC. Collaborative care encompasses a collaboration involving a PHC physician, a psychiatrist, and, in some cases, a case manager who is trained in this area.<sup>28</sup> In a systematic review of 79 randomized controlled studies, the collaborative care model increased treatment compliance, patients’ mental health-related quality of life, and service satisfaction.<sup>54</sup> It has been argued that economic and cultural barriers prevent collaborative care from becoming widespread.<sup>8</sup> However,

another study reported that integration cannot be very effective in increasing contact coverage unless it is supported by a new health workforce.<sup>55</sup>

In Turkey, PHC has undergone a reform through the Health Transformation Program. After the reform, the family medicine model has covered the entire country as of 2011. Our results suggest that the reform is not sufficiently comprehensive in terms of mental health. Family medicine models should be improved to develop collaborative care in terms of mental health services. Although it has been 10 years since the reform, PHC has not been adequately examined in terms of community mental health. The aspects of PHC that need to be improved can be determined through the application of new mental health research.

### Study Strengths and Limitations

One of the limitations of this study is the use of a self-report scale instead of a structured interview. However, the increase in sample size necessitates the use of scales.

Another limitation of this study is that it is a cross-sectional study. Socioeconomic factors can cause depression; however, depression can cause deterioration in socioeconomic factors. The relationship between socioeconomic factors and depression can therefore be said to be bidirectional.<sup>3</sup> On the other hand, cross-sectional studies are not the ideal type of study to determine cause and effect relationships. Cohort studies to be applied on this subject will be able to determine this relationship exactly.

The sample is one of the other limitations of this study. The health institutions within the scope of the study were selected from family health centers located in the Sincan district of Ankara province. This situation limits the generalizability of the results to all PHC.

In terms of coverage, this study only examined contact coverage. Another limitation is that no evaluation has been made in terms of other forms of coverage related to mental health services.

### CONCLUSIONS

The detection of depression using the PHQ-9 in approximately 1 out of every 5 people included in the study proves the prevalence of the issue in PHC applicants. Considering its frequency and the burden of disease, it is suggested that depression be included in screening in primary care.

Unemployment stands out as the most impactful variable in both the logistic model created for the presence of depression and the linear model created for the severity of depression. It is a concern for community mental health that the pandemic conditions, which began shortly after the collection of data for this study, created an environment that increased unemployment. It is noteworthy that,



compared to the bivariate model, there is no relief in the risk for women in terms of the occurrence of depression in the multivariate model, including other socioeconomic variables. This result indicates that socioeconomic factors that shape gender in Turkey failed to function in favor of women in the development of depression.

The fact that the lower-income group is a risk group for both the emergence of depression and contact coverage highlights the importance of improving health equity in terms of community mental health.

Since depression is more severe in unemployed people, women, unmarried people, and people without social support, physicians should consider including them in these groups taking into account the warning sign during patient follow-up.

The pattern of factors playing a role in the development of depression or developing a more severe form of the disease may differ between countries. Country-specific data may contribute to the determination of appropriate intervention methods while developing mental health policies at the national level.

The fear of being stigmatized and not knowing how to apply, which are among the reasons for not applying for health services, demonstrates that health literacy for mental health should be improved. The fact that the contact coverage was 31% supports the argument that the diagnosis and treatment of depression are inadequate. Collaborative care can be taken as a model to improve the mental health functions of the health system.

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