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ORIGINAL RESEARCH

Antidepressant Use Patterns During the COVID-19 Pandemic: A Cross-Sectional Online Survey in Turkey

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Abstract

Objective and Aim

The COVID-19 pandemic has been associated with increased psychological distress worldwide. Understanding antidepressant utilization during this period is important for understanding burden of depression on public health and rational prescribing and public health planning.

To characterize antidepressant use habits during the COVID-19 pandemic in Turkey and identify sociodemographic correlates, including self-medication behaviors and adverse effects.

Material and Methods

Cross-sectional, observational online survey among adults (≥18 years) via Google Forms. The questionnaire captured socio-demographics, chronic diseases, and antidepressant-use characteristics. A total of 420 respondents completed the survey. Analyses were performed in IBM SPSS v23 using chi-square–based tests and non-parametric comparisons; statistical significance was set at $p<0.05$. Ethics approval: Çukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee (Meeting No: 110; 2 April 2021).

Results

Mean age 37.97±10.55 years (18–70); 66.7% women; 26.9% had ≥1 chronic disease. Lifetime antidepressant use was 67.2%; 78.6% used psychiatrist-prescribed medications; 37.1% reported adverse effects. Antidepressant use differed by education and employment (higher among middle-school graduates and those not employed; $p<0.05$); it was more frequent among men; no association was observed with age.

Conclusions

Antidepressant utilization appeared to rise during the COVID-19 period and was linked to socioeconomic stressors such as unemployment. The substantial proportion reporting adverse effects underscores the need for rational use and pharmacovigilance. These findings can inform targeted mental-health support during and after public-health crises.

Keywords: COVID-19, Antidepressive Agents, Drug Utilization, Self-Medication, Cross-Sectional Studies.

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1. Introduction

Major depressive disorder (MDD) is a highly prevalent, often recurrent mental disorder that substantially impairs functioning (1) The biological underpinnings of MDD are multifactorial: genetic predisposition (2), dysregulation of monoaminergic systems, alterations in the hypothalamic–pituitary–adrenal (HPA) axis stress response (3), structural and functional changes in the hippocampus–amygdala–prefrontal cortex circuit (4), and neuroplasticity processes related to brain-derived neurotrophic factor (BDNF) all contribute to its pathophysiology (5). For diagnostic framing and standardized assessment of clinical severity and symptom dimensions, DSM-5-TR criteria are used (6)

1.1. Antidepressants and the pharmacological framework

Antidepressants encompass several classes, including selective serotonin reuptake inhibitors (SSRIs), serotonin–norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs), and atypical agents (7), (8). In clinical practice, drug selection is individualized based on efficacy, safety, comorbidities, drug–drug interactions, and patient preferences (8). Although SSRIs are commonly first-line, adverse effects such as sexual dysfunction, gastrointestinal complaints, insomnia, and—rarely—serotonin syndrome may occur (9), (10). Accordingly, adverse-effect monitoring, patient education, and pharmacovigilance reporting are integral to treatment (10-12).

1.2. Mental-health effects of the COVID-19 pandemic

Beyond its biological threat, the COVID-19 pandemic generated substantial psychological burden through quarantine, social isolation, economic uncertainty, and bereavement (13). From the first year onward, many countries reported increases in depressive symptoms and psychological distress (14-16). Mental-health outcomes following COVID-19 infection itself (anxiety, depression, trauma-related symptoms) have also been elevated (17,18). Findings in psychoneuroimmunology further support the role of stress—via immune pathways—in shaping neuropsychiatric outcomes (19,20).

1.3. Antidepressant utilization during the pandemic: international evidence

During the pandemic, multiple settings documented increased use of antidepressants, anxiolytics, and hypnotics (21). National pharmacy/dispensing and administrative datasets, for example in Australia (2015–2021), showed shifts in trends (22); in Canada, pandemic-related changes in antidepressant and benzodiazepine dispensing were reported (23). In Tuscany, interrupted time-series analyses characterized patterns across pandemic waves (24); similar directions were observed in Scandinavia (25). In the United States, dispensing increases among adolescents and young adults drew particular attention(26) Collectively, these findings suggest that pandemic conditions may have influenced both initiation of therapy and continuation of ongoing treatments (21-26)

1.4. The situation in Turkey

In Turkey, studies from the early pandemic indicated increased anxiety and depressive symptoms, with sociodemographic determinants—such as gender—playing important roles (27-29). Among health-care workers, burnout and psychological burden emerged as distinct issues (30). With respect to medicines, wastewater-based studies provided signals of increased antidepressant consumption during the pandemic (31), and faculty-based pharmaceutical assessments reported further changes (32). Public-health measures and outbreak control policies formed the broader epidemiological context (33). However, beyond macro indicators, micro-level evidence remains limited on individual-reported use (prescriber type, self-medication, adverse effects, discontinuation/continuation behaviors) specifically within the pandemic context.

1.5. Need for rational use of medicines and pharmacovigilance

Under extraordinary conditions such as a pandemic, principles of rational use of medicines (appropriate indication, dose and duration, regular monitoring, avoidance of unnecessary polypharmacy) become even more critical (34,35). Recognizing and managing adverse effects are central to improving adherence and outcomes (10,12). Strengthening pharmacovigilance culture and routine reporting has been recommended in Turkey (11). In this light, characterizing patient experiences and adverse-effect profiles with real-world data can inform policy and educational interventions.

1.6. Rationale and Original Contribution

While robust international data exist on antidepressant trends during the pandemic based on dispensing/pharmacy sources (22-26), in Turkey there are few studies that jointly examine—at the individual level—utilization patterns, prescriber specialty, adverse-effect experiences, and self-medication behaviors in the pandemic setting. This study addresses that gap by describing, in an online cross-sectional Turkish sample, the prevalence and determinants of antidepressant use, the frequency of adverse effects, and pandemic-period changes in use. The findings are expected to support strategies aimed at strengthening rational prescribing and pharmacovigilance (11,34,35).

1.7. Aims and Research Questions/Hypotheses

General aim: To characterize antidepressant utilization patterns among adults in Turkey during the COVID-19 pandemic and examine their associations with sociodemographic determinants.

Specific Aims:

1. Describe lifetime antidepressant use and changes in use during the pandemic.

2. Determine the frequency of prescriber types (psychiatrist vs. primary-care/other) and self-medication.

3. Quantify the self-reported adverse-effect frequency and types accompanying use (10,12).

4. Assess associations between antidepressant use and age, sex, education, employment status, and chronic disease.

Hypotheses (examples):

• H1: Antidepressant use increased during the pandemic (21-25).

• H2: The likelihood of use is associated with employment status and education level (higher among the unemployed and in specific education groups) (14,36,37).

• H3: The self-reported adverse-effect rate is meaningful and may influence treatment continuation (10,12).

1.8. Conceptual framework and alignment with study design

This study integrates a pharmacoepidemiologic perspective (distribution and determinants of medicine use at the population level) with individual-level data (38). The online cross-sectional survey design facilitates feasibility and reach, while limiting causal inference. Analyses were therefore planned to remain at the level of description and association. Sample-size adequacy was appraised a priori using an online tool (39). Findings will be discussed in light of rational-use principles and the psychopharmacology literature (8,11, 34,35,40-45).

2. Materials and Methods

2.1 Study design and setting

We conducted a cross-sectional, observational study using an online questionnaire administered in Turkey during the COVID-19 pandemic period. The

survey was hosted on Google Forms and distributed via social media and messaging platforms to reach community-dwelling adults. Reporting follows STROBE guidance for cross-sectional studies.

2.2 Participants and eligibility

Eligible participants were adults aged ≥18 years residing in Turkey who could read Turkish and provided electronic informed consent prior to participation. Participation was voluntary and uncompensated.

2.3 Recruitment and data collection

The survey link was shared through non-probability channels (e.g., personal/professional networks, social media groups). Data were collected anonymously; no direct identifiers were requested. The final analytic sample comprised n = 420 respondents.

2.4 Questionnaire structure and measures

The questionnaire comprised the following domains:

- Sociodemographic characteristics: age (years), sex, education level, and employment status.
- Health status: presence of ≥1 chronic disease (self-reported).

• Antidepressant use characteristics:

- Lifetime use: ever vs. never.
- Current use and pandemic-period changes (e.g., initiation or continuation).
- Prescriber type: psychiatrist vs. other (e.g., primary care/other specialty).
- Self-medication: using antidepressants without a physician's prescription (yes/no).
- Adverse effects: any vs. none (with examples reflecting common SSRI/SNRI/TCA events).

2.5 Outcomes

Primary descriptive outcomes were the prevalence of lifetime antidepressant use, the proportion prescribed by psychiatrists, the frequency of self-medication, and the frequency of self-reported adverse effects. Secondary outcomes summarized pandemic-period changes in use and explored associations between antidepressant use (ever vs. never) and sociodemographic factors.

2.6 Sample size considerations

A minimum sample size was appraised a priori using an online calculator (Raosoft) to ensure adequate precision for key proportions in a cross-sectional design (39) Given the descriptive/associational aims and convenience recruitment, the final sample size was also determined pragmatically by feasibility.

2.7 Data management and quality assurance

Responses were exported to spreadsheet format and checked for internal inconsistencies (e.g., mutually exclusive answers). Analyses were conducted on available data; denominators are reported per analysis where applicable.

2.8 Statistical analysis

Analyses were performed using IBM SPSS Statistics v23.

- Descriptive statistics summarized sample characteristics and outcome frequencies (means ± SD for approximately continuous variables; counts and percentages for categorical variables).
- Group comparisons for categorical variables used chi-square tests (with Yates' continuity correction or Fisher's exact test when assumptions were not met). For non-normally distributed continuous variables, Kruskal–Wallis tests were used.
- Where informative, effect sizes (e.g., Cramér's V for chi-square) and 95% confidence intervals are reported.

- Statistical significance was set at two-sided $\alpha = 0.05$.

2.9 Ethical considerations

The study was approved by the Çukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee (Meeting No: 110; 2 April 2021). All participants provided electronic informed consent prior to beginning the survey. Data were collected anonymously and analyzed in aggregate.

Table 1. Social-demographic status

Characteristic	Value
Age, years (mean ± SD)	37.97 ± 10.55
Female, %	66.7
University graduates, %	53.1
Not employed, %	26.4
≥1 chronic disease, %	26.9

3. Results

3.1. At-a-glance (key messages)

- Two in three adults reported lifetime antidepressant use (67.2%).
- Four in five users received prescriptions from a psychiatrist (78.6%).
- Over one-third of users reported ≥1 adverse effect (37.1%).
- Use was higher in men, higher among middle-school graduates, and higher in the not-employed ($p < 0.05$ for each); no association with age.

3.2. Sample profile

We analyzed n = 420 respondents; mean age 37.97 ± 10.55 years (range 18–70); 66.7% were women; 53.1% were university graduates; 26.4% were not employed; 26.9% reported ≥1 chronic disease. Upon reviewing the patients' chronic illnesses, chronic respiratory diseases (allergic asthma and chronic obstructive pulmonary disease, COPD) were found to be the most common.

Table 2. Antidepressant use patterns

Outcome	Value %
Lifetime antidepressant use	67.2
Psychiatrist-prescribed among users	78.6
Reported adverse effects among users	37.1

3.3. Antidepressant utilization: prevalence and pattern

Lifetime use was common (67.2%), indicating wide exposure in the community during the pandemic period. Among users, psychiatrists prescribed 78.6% of medications, suggesting that most treatment was specialist-led. In the analysis of prescribing patterns, 17.8% of participants reported that their antidepressant medications had been prescribed by non-psychiatrist physicians. The prevalence of self-medication with antidepressants was relatively low (3.6%); however, 9.7% of respondents indicated that they had previously used antidepressants without medical supervision. Examination of the underlying reasons revealed that the most frequently cited factor was the availability of antidepressants without prescription (37.5%). Moreover, 28.5% of participants stated that they had recommended antidepressants to people around them, while the high cost of physician consultation fees was also identified as another significant contributing factor. Adverse effects were reported by 37.1% of users, highlighting a substantial need for monitoring and patient education. It was determined that 25.3% of the participants did not report the adverse effects they experienced, which represents a relatively high proportion. From a pharmacovigilance perspective, the reporting of such adverse effects is of critical importance.

Table 3. Sociodemographic correlates of lifetime antidepressant use (direction & significance)

Factor	Association with use	Significance
Sex (men vs women)	↑ in men	$p < 0.05$
Education	↑ in middle-school	$p < 0.05$
Employment	↑ in not-employed	$p < 0.05$
Age	— (no association)	ns

3.4. Pandemic-period changes (self-report)

Participants described pandemic-related shifts in their antidepressant use (e.g., initiating therapy, continuing at stable doses, or adjusting treatment). The qualitative direction indicated increases in use/continuation, consistent with international dispensing trends observed during COVID-19. It was determined that 21.8% of the participants did not use their antidepressant medications as prescribed by their physicians, and 12% reported altering the dosage without medical advice. The rate of reading the patient information leaflet of antidepressants was found to be 74.9%. Moreover, when participants perceived that they did not benefit from the medication, a high proportion stated that they consulted a physician. While approximately 70% of participants reported being informed by their physicians about how to use the medication, the proportion who reported being informed about potential side effects was considerably lower (43.1%).

A total of 10% of the participants reported that they had resorted to alternative methods for the purpose of achieving an antidepressant effect. The most frequently preferred alternative approaches were herbal teas (n=7) and yoga (n=7), followed by psychotherapy (n=5) and meditation (n=4). The most commonly consumed herbal teas included lemon balm, St. John's wort, passionflower, and chamomile. Other alternative methods reported by participants, in descending order of frequency (data not shown), were physical exercise, positive affirmations, the use of probiotics for psychological support, pet care, breathing therapy, herbal remedies, vitamin supplementation, healthy nutrition, sun exposure, life coaching, additional use of passionflower, magnesium supplementation, bioenergy, hobbies, music, cupping therapy, and alcohol consumption.

3.5. Correlates of use (who used more?)

Use was not uniform across subgroups:

- Sex: Higher in men than women ($p < 0.05$).
- Education: Higher in middle-school graduates compared with other education levels ($p < 0.05$).
- Employment: Higher in the not-employed vs employed ($p < 0.05$).
- Age: No association with age (ns).

3.6. Adverse effects (signal for pharmacovigilance)

That 37.1% of users reported ≥1 adverse effect represents a meaningful safety signal for routine follow-up, counseling (e.g., managing SSRI-related sexual or GI effects), and formal pharmacovigilance reporting.

3.7. Sensitivity/robustness notes

Results were consistent across planned comparisons (chi-square with Yates/Fisher as needed; Kruskal–Wallis for non-normal continuous variables). Two-sided $\alpha = 0.05$. Denominators are reported per analysis.

Discussion

The COVID-19 pandemic has exerted profound and wide-ranging effects on mental health across societies, influencing not only

the prevalence of psychiatric conditions but also treatment-seeking behaviors and medication use patterns. Antidepressant medications, which are among the most important therapeutic tools in the management of depression and anxiety disorders, may also be considered as indirect indicators of the prevalence of mental health problems and of the accessibility and adequacy of psychiatric care during crisis periods. Assessing the use of antidepressants in specific populations following the COVID-19 outbreak provides valuable insight into the extent to which mental health has been affected and how treatment-seeking behaviors have evolved during this period (26). Therefore, studies investigating antidepressant use are of considerable importance.

In a meta-analysis conducted by Naushad et al. prior to the COVID-19 pandemic, which examined the psychological impact of disasters on healthcare workers, the prevalence of depression was reported as 35%, anxiety 34%, somatic complaints 25%, and post-traumatic stress disorder 14% (46). In addition, sleep disturbances, burnout, and increased alcohol consumption were also identified as common psychological responses following disasters. Similarly, a study conducted by Başer et al. during the first wave of the pandemic in Turkey assessed attitudes and behaviors toward COVID-19 and found that 78.7% of participants had mild anxiety, 12.7% moderate, and 8.6% severe anxiety levels, with decreased health center visits reported particularly among individuals under 35 and over 65 years of age. Moreover, this study indicated that Turkish individuals generally exhibited high awareness of COVID-19 (47)

The pandemic also brought about significant economic challenges in addition to health-related concerns. It has been reported that populations with limited economic resources were more vulnerable to COVID-19 stressors and that exposure to these stressors was associated with higher levels of depressive symptoms (14), (28). In our study, the prevalence of antidepressant use was higher among participants who reported being unemployed compared to those who were employed, which is consistent with findings in the literature.

To understand the changes in antidepressant use during the pandemic, it is essential to consider pre-pandemic data. Evidence suggests that, with the exception of Denmark and Hungary, the use of antidepressants had been steadily increasing in high-income countries over the past decade (21). During the pandemic, the marked rise in the prevalence of depression was reflected in a significant increase in antidepressant use. This trend can be explained by the combined psychological burden of economic concerns, social isolation, health-related fears, and general uncertainty. For instance, a Canadian study reported a higher use of antidepressants between February 2020 and March 2021 compared to the preceding 13 months (23). Likewise, a large-scale study conducted in the United States between January 2016 and December 2022 revealed a 66.3% increase in antidepressant use among adolescents and young adults, with an accelerated rate of increase (63.5%) during the pandemic period (26). Interestingly, while antidepressant use decreased among men, an increase was observed among women, particularly in younger age groups, alongside a rise in depression and self-harm rates.

In Turkey, studies also indicate an increase in antidepressant consumption during the COVID-19 period (31). Before the pandemic, antidepressant use was found to be directly proportional to the prevalence of psychiatric disorders. However, since 2020, coinciding with the initial uncertainties of the pandemic, antidepressant use increased significantly and continued to rise in 2021, with a more moderate increase during 2022, when restrictions were lifted. Regarding drug classes, the increase was primarily observed in selective serotonin reuptake inhibitors (SSRIs) and serotonin–norepinephrine reuptake inhibitors (SNRIs), while no significant increase was reported for tricyclic antidepressants (TCAs) or other groups. Escitalopram was reported as the most commonly prescribed antidepressant

in this context (32). In a wastewater-based epidemiology study conducted by Yavuz-Güzel et al. in 11 cities in Turkey, the consumption of several antidepressants was assessed before and after the pandemic. They reported that citalopram (SSRI), venlafaxine (SNRI), opipramol, amitriptyline, clomipramine, and mirtazapine were most frequently detected, with venlafaxine having the highest consumption rate, followed by amitriptyline, clomipramine, citalopram, moclobemide, and mirtazapine, while opipramol and imipramine were found at lower levels (31). In our study, SSRIs were the most frequently used antidepressant class during the pandemic, with escitalopram being the most common agent. SNRIs ranked second, while TCAs and trazodone were also reported, albeit less frequently.

Regarding medication adherence, our findings showed that 21.8% of participants did not use antidepressants as prescribed, and 12% modified the dosage without consulting a physician. Although self-medication was relatively low (3.6%), 9.7% reported previous unsupervised use of antidepressants, primarily due to their availability without prescription (37.5%) and the high cost of medical consultations. In addition, 25.3% of participants did not report adverse drug reactions, a proportion considered relatively high, despite the importance of adverse event reporting in terms of pharmacovigilance. While 70% of participants stated that they were informed by their physicians about how to use antidepressants, only 43.1% reported being adequately informed regarding potential side effects, suggesting a need to improve communication and patient education.

Another important finding of our study was that 10% of participants reported turning to alternative methods in search of antidepressant effects (Table 4.14). The most frequently used alternatives were herbal teas (n=7)—including lemon balm, St. John's wort, passionflower, and chamomile—and yoga (n=7), followed by psychotherapy (n=5) and meditation (n=4). Other less frequently reported strategies included physical exercise, positive affirmations, probiotic supplements for psychological well-being, pet care, breathing therapy, herbal remedies, vitamin supplementation, healthy nutrition, sun exposure, life coaching, additional use of passionflower, magnesium supplementation, bioenergy practices, hobbies, and alcohol consumption. The diversity of these methods highlights that patients may seek non-pharmacological approaches when they perceive limited benefit from antidepressant treatment or experience adverse effects. Importantly, evidence suggests that certain approaches such as exercise, cognitive behavioral therapy (CBT), diet modification, and music therapy can provide clinically meaningful support in managing depression and anxiety (48,49).

Our findings, together with national and international studies, suggest that the COVID-19 pandemic not only increased the prevalence of depressive and anxiety symptoms but also significantly influenced patterns of antidepressant prescription, treatment adherence, side-effect reporting, and the use of alternative therapies. While a considerable proportion of antidepressants were appropriately prescribed by psychiatrists (78.6%), a notable proportion (17.8%) were prescribed by non-psychiatrist physicians, and a smaller but relevant fraction of participants initiated use based on recommendations from people around them (2.9%). These findings underline the necessity of strengthening mental health literacy, improving patient education about treatment adherence and adverse effects, reducing barriers such as high consultation costs, and promoting evidence-based alternatives such as psychotherapy. Furthermore, they emphasize the importance of robust pharmacovigilance systems to ensure timely reporting and management of adverse events (12,14,18,23,24,26,28,31,46,50-58).

Conclusions

In light of these findings, it is essential to strengthen mental health literacy, patient education on treatment adherence and side-

effect management, and pharmacovigilance practices. Moreover, ensuring affordable and accessible psychiatric care, expanding community-based support programs, and utilizing digital health solutions such as telemedicine could mitigate barriers encountered during crises. Future studies should include diverse populations, particularly in developing countries, and focus on the long-term impact of pandemics on antidepressant use and the prevalence of depression and anxiety disorders.

Limitations

Convenience sampling via the internet and reliance on self-report introduce selection and information biases; generalizability may be limited. The cross-sectional design precludes causal inference, and diagnoses/medications were not verified against medical records.

Ethics Approval and Consent to Participate

Çukurova University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee; Meeting No: 110; 2 April 2021. Informed consent was obtained electronically.

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Conflict of Interest: The author declares no conflicts of interest.

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