





# Assessment of Psychological Distress and Associated Factors among Hospitalized Patients During the COVID-19 Pandemic at Selected Hospitals in Southwest Ethiopia

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**Background:** The aim of this study was to assess the prevalence of psychological distress and associated factors among hospitalized patients during the COVID-19 pandemic at three selected hospitals in southwest Ethiopia.

**Methods:** An institution-based cross-sectional study design was conducted among hospitalized patients during the COVID-19 pandemic at Mizan-Tepi University Teaching Hospital, Tepi General Hospital, and Gebre Tsadik Shawo General Hospital, southwest Ethiopia from May 10 to August 10, 2020. Sample size was computed using a single-proportion formula, and systematic sampling was employed to recruit study participants. Data were collected using a structured interviewer-administered questionnaire. Psychological distress was assessed with the Kessler Psychological Distress Scale, which has been validated in Ethiopia. SPSS 21.0 was used for analysis. Descriptive statistics were calculated to characterize the study population. Predictors of psychological distress were identified by logistic regression analyses.

**Results:** Among the 337 study participants enrolled, about 41% were aged 25–34 years. The overall prevalence of psychological distress was 57.9% (95% CI 52.8%–63.5%). Being female (AOR 3.69, 95% CI 2.08–6.55), having high (AOR 5.45, 95% CI 2.35–12.66) and medium perceived life threat (AOR 3.37, 95% CI 1.75–6.48), poor (AOR 3.97, 95% CI 1.70–9.29) and moderate social support (AOR 3.17, 95% CI 1.36–7.41), and current khat use (AOR 4.16, 95% CI 1.67–10.35) were statistically associated with psychological distress during the COVID-19 pandemic at  $P$  value  $<0.05$ .

**Conclusion:** The prevalence of psychological distress was high among hospitalized patients during the COVID-19 pandemic. The study findings highlight the need to develop psychological support strategies to improve mental health and psychological resilience.

**Keywords:** psychological distress, SARS-CoV2, hospitalized patients, Southwestern Ethiopia

## Background

Coronaviruses are emerging respiratory viruses and known to cause illness ranging from the common cold to severe acute respiratory syndrome.<sup>1</sup> COVID-19 initially emerged in Wuhan, China at the end of 2019 and spread dramatically to other countries. As a result, the World Health Organization (WHO) was forced to declare COVID-19 a global health emergency of international concern.<sup>2</sup> Presently, this pandemic is becoming the most important issue and public health problem for health-care systems and governments throughout the world.<sup>3</sup>

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During the pandemic, fear, panic, and distress may increase, because of the emergence of several conditions related to this infectious disease.<sup>4,5</sup> COVID-19 is posing public mental health problems that require close attention.<sup>6</sup> It is associated with different degrees of negative and profound mental and psychological problems to both infected and uninfected people.<sup>7-9</sup> A lack of relevant information about disease outbreak in societies may also exacerbate the situation.<sup>4</sup> The adverse psychological impact of infectious disease outbreak includes acute stress disorder, insomnia, posttraumatic symptoms, and depression.<sup>10</sup> Psychological distress is defined as an unpleasant emotional experience caused by a variety of factors, which can manifest as tension, fear, anxiety, psychological instability, and even serious psychological disorders, such as depression. Psychological distress can also be caused by infectious diseases.<sup>11,12</sup>

Several studies have demonstrated an increase in mental health problems and psychological distress among healthy uninfected people caused by the increasing risk of COVID-19 infection, strict quarantine measures, mandatory home quarantine, and other events.<sup>13-15</sup> During the current COVID-19 pandemic, >50% of the general population have rated the psychological impact of the outbreak as moderate or severe.<sup>16</sup> Evidence-based data show that 35% of the Chinese population are psychologically distressed.<sup>17</sup> In addition, empirical evidence has revealed that 40% of the Saudi population are distressed due to the COVID-19 pandemic, of whom approximately 33% are mildly distressed and 7% severely distressed.<sup>15</sup> However, the majority of studies have focused on COVID-19 screening and treatment methods.<sup>18</sup> As hospitalized patients are susceptible to complex emotional reactions and psychological distress, the present study aimed to assess psychological distress and associated factors among hospitalized patients during the COVID-19 pandemic at three selected hospitals in southwest Ethiopia.

## Methods

### Study Design and Setting

This institution-based cross-sectional study was conducted among hospitalized patients during the COVID-19 pandemic at Mizan-Tepi University Teaching Hospital (MTUTH), Tepi General Hospital, and Gebre Tsadik Shawo General Hospital from May 10 to August 10, 2020. MTUTH is a teaching hospital located in Mizan-Aman town, Bench Sheko zone, Southern Nations,

Nationalities, and Peoples' Region (SNNPR), southwest Ethiopia. Gebre Tsadik Shawo General Hospital is located in Bonga town, Kefa zone, SNNPR. Tepi General Hospital is located in Tepi town, Sheka zone, SNNPR. These hospitals provide inpatient and outpatient health-care services for >3 million people. The hospitals contain different wards, including surgery, internal medicine, maternity, and pediatrics, to render medical care. During the data collection period, though there was a paucity of data regarding COVID-19 infection rates and deaths in southwest Ethiopia, three individuals tested positive for the virus responsible for COVID-19 infection according to information obtained from hospitals located in this area.

### Sample Size and Sampling Technique

Sample size was computed using a single-proportion formula with assumptions of a 5% margin of error (95% CI) and 50% prevalence of psychological distress among hospitalized patients. With the use of a correction formula and taking into account a 10% nonresponse rate, the estimated sample size was 337. Systematic sampling was employed to recruit study participants. All patients admitted to the internal medicine, surgery, and maternity wards of the hospitals during the data-collection period were included in the study. Patients aged  $\geq 18$  years were enrolled. Hospitalized patients that were not willing to participate in the study and those unable to respond due to severe physical and mental illness were excluded.

### Data Collection

Data were collected using a structured interviewer-administered questionnaire. The questionnaire addressed basic demographic variables and clinically related characteristics of the study participants. The outcome variable, psychological distress was assessed with the Kessler Psychological Distress Scale (K10) which has been validated in Ethiopia. It has also been validated for screening for common mental disorders in developing countries. This scale measures symptoms over the preceding 30 days by asking:

In the past 30 days, how often did you feel: nervous; so nervous that nothing could calm you down; hopeless; restless or fidgety; so restless that you could not sit still; depressed; that everything was an effort; so sad that nothing could cheer you up; worthless; tired for no good reason?

The K10 is a ten-item questionnaire developed on the basis of item response–theory models. It has five possible responses for each question, ranging from “none of the time” (score 1) to “all of the time” (score 5). All responses were collected to obtain a total score. A total score <20 was considered normal and  $\geq 20$  taken as the presence of psychological distress.<sup>19</sup>

Social support was measured with the three-item Oslo Social Support Scale, which has been used in several studies. This scale has sum scores of 3–14, classified as poor support (3–8), moderate support (8–10), and strong support (12–14).<sup>20</sup> The Perceived Life Threat Scale was used to measure perceived life events. Possible scores are 0–40: low perceived stress, moderate perceived stress, and high perceived stress (0–13, 14–26, and 27–40, respectively).<sup>21</sup> The use of a specific substance at least once within the last 3 months was assessed by using the options “yes” or “no”.<sup>22</sup>

Six nurses were recruited to assist the data collection process. To ensure the quality of the data, data collectors were trained and the English version of the data-collection questionnaire was translated into the local language (Amharic) and translated back to English. In addition, completeness of collected data was checked by the supervisors.

## Data Analysis

Final data were entered into EpiData 4.1, then exported to SPSS 21.0 for analysis. Frequencies, percentages, and means  $\pm$  SD were calculated to describe characteristics of the study population. Predictors of psychological distress were identified by logistic regression analyses. The association between psychological distress and each covariate was assessed firstly by bivariate logistic regression to identify candidate variables for the final model. Variables with  $P < 0.25$  progressed to multivariate logistic regression to identify independent factors of psychological distress. Finally, independent factors of psychological distress were declared at  $P < 0.05$  and strength of association was assessed using AORs with corresponding 95% CIs.

## Ethics

Ethical approval was obtained from the Ethics Committee of the College of Medicine and Health Sciences, Mizan-Tepi University. Permission was also granted by chief executive officers of the hospitals, and informed consent was obtained from all participants. The study adhered to the Declaration of Helsinki ethical principles for medical

research involving human subjects. Correspondingly, the scientific findings generated does not pose any harm to the study population. Similarly, data were kept anonymous and participants were informed about the confidentiality of the information obtained. The right of patients to withdraw from the study was also respected.

## Results

### Demographic Characteristics

Of the 337 study participants enrolled in the study, about 41% were aged 25–34 years. The mean age was  $32.83 \pm 12.29$  (range 18–80) years. More than half (54.9%) were males and 141 (41.5%) were Orthodox Christian. Over a quarter (27.6%) of the respondents were Bench by ethnicity, and about 131 (38.9%) had had no formal education. A majority (54.3%) were married, and 89 (26.4%) of the participants were government-employed (Table 1).

### Clinically Related Characteristics

As it can be observed from Table 2, 38 (11.3%), 71 (21.1%), and nearly two-thirds (65.3%) of respondents had a history of mental illness, trauma in childhood, and used any specific measures against COVID-19 pandemic, including social distancing and hand-washing, respectively.

### Psychosocial and Substance-Related Characteristics

In sum, 163 (48.7%) participants had poor social support and 102 (30.3%) had low perceived life threat. A majority (214, 63.5%) were alcohol users (Table 3).

### Prevalence of Psychological Distress

Based on assessment with the Kessler Psychological Distress Scale, the overall prevalence of psychological distress among participants was 57.9% (95% CI 52.8%–63.5%).

### Factors Associated with Psychological Distress

Univariate logistic regression analysis of education status, living in an urban setting, female sex, marital status, perceived life threat, history of mental illness, childhood trauma, current alcohol use, poor social support, current khat use, and current cigarette use yielded  $P < 0.25$ . As such, these variables fulfilled the minimum requirement for multivariate binary logistic regression analysis (Table 4).

**Table 1** Demographic characteristics of patients admitted to selected hospitals in southwest Ethiopia, 2020 (n=337)

	n	%
<b>Residence</b>		
Urban	186	55.2
Rural	151	44.8
<b>Sex</b>		
Male	185	54.9
Female	152	45.1
<b>Age, years</b>		
18–24	83	24.6
25–34	138	40.9
35–44	55	16.3
45–54	35	10.4
≥55	26	7.7
<b>Marital status</b>		
Single	132	39.2
Married	182	54.0
Other*	23	6.8
<b>Religion</b>		
Protestant	136	40.4
Orthodox	141	41.5
Muslim	60	17.8
<b>Education</b>		
None	131	38.9
Primary (1–8)	69	20.5
Secondary (9–12)	66	19.6
College and above	71	21.1
<b>Ethnicity</b>		
Kaffa	90	26.7
Amhara	77	22.8
Bench	93	27.6
Tigre	20	5.9
Oromo	27	8
Other**	7	2.1
<b>Occupation</b>		
Farmer	76	22.6
Merchant	50	14.8
Housewife	38	11.3
Government employee	89	26.4
Student	53	15.7
Daily worker	14	4.2
Nongovernmental organization	17	5.0

Notes: \*Separated, divorced, and widowed; \*\*Sheka, Wolayeta, and Mexhenger.

Among the variables analyzed on multivariate binary logistic regression, female sex, high and medium perceived life threat, poor and moderate social support, and current khat use were significantly associated with psychological distress during

**Table 2** Clinical characteristics of patients admitted to selected hospitals in southwest Ethiopia, 2020 (n=337)

	n	%
<b>History of mental illness</b>		
Yes	38	11.3
No	299	88.7
<b>Trauma in childhood</b>		
Yes	71	21.1
No	266	78.9
<b>Family history of mental illness</b>		
Yes	31	9.2
No	306	90.8
<b>Use of any specific preventive measure</b>		
Yes	220	65.3
No	117	34.7

**Table 3** Psychosocial and substance-related characteristics of respondents admitted to selected hospitals in southwest Ethiopia, 2020 (n=337)

Variables	n	%
<b>Perceived life threat</b>		
Low	102	30.3
Medium	164	48.7
High	71	21.1
<b>Social support</b>		
Poor	163	48.7
Intermediate	123	36.5
Strong	51	15.1
<b>Current alcohol use</b>		
No	123	36.5
Yes	214	63.5
<b>Current khat use</b>		
No	278	82.5
Yes	39	17.5
<b>Current cigarette use</b>		
No	314	93.2
Yes	23	6.8

COVID-19 ( $P<0.05$ ). Accordingly, the odds of psychological distress among female participants were 3.69-fold (95% CI 2.08–6.55) times higher than those of male participants admitted to the three hospitals during the COVID-19 pandemic. The odds of having high and medium perceived life threat during the COVID-19 pandemic among admitted respondents were five- and three fold higher to have psychological distress

**Table 4** Factors associated with psychological distress among patients admitted to selected hospitals in southwest Ethiopia, 2020 (n=337)

	Psychological distress		COR (95% CI)	AOR (95% CI)
	No	Yes		
<b>Sex</b>				
Male	106 (57.3)	79 (42.7)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
Female	36 (23.7)	116 (76.3)	4.32 (2.69–6.94)	3.69 (2.08–6.55)*
<b>Marital status</b>				
Single	49 (37.1)	83 (62.9)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
Married	91 (50.0)	91 (50.0)	0.59 (0.37–0.93)	0.70 (0.39–1.24)
Divorced/widowed	2 (8.7)	21 (91.3)	6.19 (1.39–27.58)	5.25 (0.96–28.7)
<b>Education</b>				
None	54 (41.2)	77 (58.8)	1.23 (0.69–2.12)	2.01 (0.90–4.47)
Primary	35 (50.7)	34 (49.3)	0.84 (0.43–1.63)	1.98 (0.83–4.59)
Secondary	20 (30.3)	46 (69.7)	1.99 (0.99–4.03)	2.22 (0.91–5.41)
Tertiary and above	33 (46.5)	38 (53.5)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Residence</b>				
Urban	89 (47.8)	97 (52.2)	1.69 (1.09–2.63)	1.14 (0.62–2.08)
Rural	53 (35.1)	98 (64.9)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Social support</b>				
Poor	43 (26.4)	120 (73.6)	9.07 (4.35–18.91)	3.97 (1.70–9.29)*
Moderate	60 (48.8)	63 (51.2)	3.41 (1.63–7.13)	3.17 (1.36–7.41)*
Strong	39 (76.5)	12 (23.5)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Perceived life treat</b>				
Low	72 (70.6)	30 (29.4)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
Medium	56 (34.1)	108 (65.9)	4.62 (2.71–7.89)	3.37 (1.75–6.48)*
High	14 (19.7)	57 (80.3)	9.77 (4.74–20.14)	5.45 (2.35–12.66)*
<b>History of mental illness</b>				
Yes	6 (15.8)	32 (84.2)	4.45 (1.80–10.95)	1.37 (0.45–4.11)
No	136 (45.5)	163 (54.5)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Childhood trauma</b>				
Yes	21 (29.6)	50 (70.4)	1.98 (1.13–3.49)	1.79 (0.87–3.69)
No	121 (45.5)	145 (54.5)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Current alcohol use</b>				
Yes	45 (36.6)	78 (63.4)	1.43 (0.91–2.26)	1.51 (0.83–2.76)
No	97 (45.3)	117 (54.7)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Current khat use</b>				
Yes	10 (16.9)	49 (83.1)	4.43 (2.15–9.09)	4.16 (1.67–10.35)*
No	132 (47.5)	146 (52.5)	1.00 <sup>+</sup>	1.00 <sup>+</sup>
<b>Current cigarette use</b>				
Yes	6 (26.1)	17 (73.9)	2.16 (0.83–5.63)	2.48 (0.72–8.49)
No	136 (43.3)	178 (56.7)	1.00 <sup>+</sup>	1.00 <sup>+</sup>

**Notes:** \*Statistically significant; <sup>+</sup>reference category.

compared to those with low perceived life treat, respectively (AOR 5.45, 95% CI 2.35–12.66; AOR 3.37, 95% CI 1.75–6.48; [Table 4](#)).

Admitted patients with poor and moderate social support were 3.97-fold (95% CI 1.70–9.29), and 3.17-fold (95% CI 1.36–7.41) as likely to have psychological



distress as those with strong social support. Similarly, those with khat use in the previous 3 months admitted to hospitals were four fold more likely to have psychological distress than those who had not used khat in the previous 3 months (AOR 4.16, 95% CI 1.67–10.35; Table 4).

## Discussion

The present study assessed psychological distress and associated factors among hospitalized patients during the COVID-19 pandemic at three selected hospitals in south-west Ethiopia. Admitted patients were affected by various chronic disorders that predisposed them to comorbid conditions, among which psychological distress was the most common. The WHO has urged preventive measures be undertaken to tackle the negative impact of the COVID-19 pandemic on individual mental health and well-being.<sup>23</sup>

According to the current study, a majority (57.9%, 95% CI 52.8%–63.5%) of hospitalized patients had psychological distress during the COVID-19 pandemic. The prevalence in the current study is comparable with a Chinese study, which found 54%,<sup>16</sup> and higher than studies from Italy and Saudi Arabia, which were 38% and 35%, respectively.<sup>24,25</sup> The higher prevalence in our study could be attributed to differences in study populations: the Italian and Saudi Arabian studies were conducted among the general population, but ours was conducted among hospitalized patients. The variation might also be related to differences in the health-care structures and -delivery systems. Also, the social isolation imposed during hospitalization can increase loneliness and limit social interaction, which predispose people to psychopathological problems. Studies have indicated that medical problems and poor self-evaluation of health are associated with increased psychological distress.<sup>16,26</sup>

Female sex was significantly associated with psychological distress on univariate and multivariate logistic regression: female patients were four times as likely to have psychological distress as male patients. This finding is in agreement with studies done in Italy<sup>27</sup> and China.<sup>16</sup> A possible rationale might be women being more vulnerable to sociocultural risk factors associated with mental impact. However, due to the cross-sectional nature of study, it is not possible to say that women definitely suffered more from distress in general or reacted more negatively to the pandemic. Furthermore, compared to males, females experience much more fluctuation in hormonal levels, which are associated with emotional symptoms,<sup>28</sup> and are more likely to report negative

emotions than men. It should also be noted that a higher rate of domestic violence against women was reported during this outbreak.<sup>29</sup>

Admitted patients with a history of khat use were four times as likely to have psychological distress as their counterparts. Not surprisingly, khat chewing and psychological distress were positively associated, as this has been observed in another Ethiopian study.<sup>30</sup> It is a well-known fact that psychoactive substances produce emotional, cognitive, and behavioral changes.<sup>31</sup> The active constituent of khat, cathinone, causes stress primarily by stimulating secretion of the stress hormone cortisol.<sup>32</sup>

It was found that strong social support was a protective factor against psychological distress compared to poor and moderate social support. Those with poor and moderate social support were four and three times as likely to have psychological distress, respectively, as those with strong social support. This finding is concordant with the study done in China<sup>33</sup> and England.<sup>9</sup> A longitudinal observational study conducted during the first 3 months of the COVID-19 pandemic in Germany found that maintaining social contacts was associated with fewer symptoms of psychological distress.<sup>34</sup> Furthermore, having the feeling of being loved and wanted and having a supportive environment can be instrumental in coping with different psychosocial challenges. Social support may also influence emotional regulation and emotional reactivity that is implicated in the development of psychological distress.

Similarly, perceived life threat was positively associated with psychological distress, in which individuals with moderate and high perceived life threat were four and five times more likely to be psychologically distressed than who felt low perceived life threat, respectively. This might be attributable to the fact that major stressful events may cause changes in brain biochemistry, which can be expressed through physiological, psychological, and behavioral manifestations.<sup>31</sup> In addition, it is likely that people within such an outbreak worry about contracting the virus responsible for the pandemic, stigma, and even dying from COVID-19.<sup>35</sup>

## Limitations

This was a cross-sectional study, and as such a causal relationship between the independent and dependent variables cannot be reported. The instrument employed to assess psychological distress in this study, the K10, assesses only broad, aspecific psychological distress, rather than specific types related to specific disorders. This study was conducted during the early stages of the COVID-19 pandemic, and may

have underestimated the prevalence of psychological distress. The absence of pre-COVID-19 pandemic assessment of enrolled patients means that we were not able to ascertain whether the distress had been elicited by hospitalization or the pandemic. The data were collected by face-to-face interviews to assess the prevalence of psychological distress among admitted patients, which is prone to social desirability bias.

## Conclusion

This study indicated that the prevalence of psychological distress was noticeably high among hospitalized patients during COVID-19. Female sex, high and medium perceived life threat, poor and moderate social support, and current khat use were found to be independent predictors of psychological distress among admitted patients. Our findings highlight the need to develop psychological support strategies to improve mental health and psychological resilience during the COVID-19 pandemic.

## Abbreviations

K10, Kessler Psychological Distress Scale; MTUTH, Mizan-Tepi University Teaching Hospital; SNNPR, Southern Nations, Nationalities, and Peoples' Region; WHO, World Health Organization.

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## Disclosure

The authors declare that they have no conflicts of interest.

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