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Depression and Associated Factors by Quarantine in COVID-19 Time: A Cross-Sectional Study in Quito-Ecuador

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Abstract

Background: Depression is one of the most frequent and prevalent mood disorders worldwide. Its global burden is considerable. WHO estimates that more than 264 million people have been diagnosed with this condition. The global burden represents nothing less than 1.72% of DALYs (Disability-Adjusted Life Years), and despite this, and the screening recommendations, a recent questionnaire involving 33653 patients that had medical interviews, revealed that less than 5% percent of adults are screened for MDD in the primary care setting. In our country, INEC (National Institute of Statistics and Censuses, English translation) data reveal that in 2015, 2088 people were attended for depressive mood disorders in health care establishments, from which 1339 were women and 749 were men. Regarding suicide, 1073 people took their lives in 2015, being men the most affected with 807 cases of suicide. This aspect becomes even more relevant due to the crisis caused by Quarantine Time. At present, there are no current data about depression in our country, the present cross-sectional study seeks the prevalence of depression during quarantine due to the SARS-CoV-2 pandemic, and its associated factors. In Ecuador, we do not count on up-to-date data about the most significant risk factors for MDD, and neither with the current prevalence in the setting of this event of great magnitude. Thus, with this cross-sectional study, we aim to estimate the prevalence of MDD and its associated factors at the time of the COVID-19 pandemic. **Method:** The minimum representative sample size was at least 384 people; this data was obtained with Epi Info 7 STATCALC. The questionnaires were designed in the PHQ-9 format, the validated and most widely used tool for Major Depression Disease, taking 14 or more for depression as the cut-off point; we use this cutoff because it is more appropriate for epidemiological studies, the reason why we reject the traditional cut-off of > 9 points. **Results:** The prevalence of depression in our study is 37.4%, also two

protective factors were found, those who have a stable job $p < 0.05$; OR 0.567 with IC (0.36 - 0.88), and the fact be male ($p < 0.05$); OR 0.836 (IC 0.730 - 0.957) as protective factors for depression. **Conclusion:** The findings of this study suggest that the prevalence of depression in our setting is higher than reported in the literature as well as it is greater when compared to other countries such as the United States or Brazil. A notable association that we found in this study as a protective factor against depression was having a stable job during this quarantine period and those who do not have it are more likely to be predisposed to depression.

Keywords

Depression, Anxiety, Quarantine, COVID-19, Stable Job, Unemployment, Ecuador

1. Introduction

Depression is one of the mood disorders defined as a heterogeneous condition that has a variety of presentations and a broad constellation of associated symptoms (Park & Zarate Jr., 2019). Generally, the cardinal symptoms consist of a persistent feeling of sadness and a loss of interest in the activities that previously elicited pleasure or reward; and in addition, inhibition, guilt, a disability that among other findings, are part of the diagnostic criteria for MDD (major depressive disorder), being, for now, the DSM-V and the ICD-10 the most used criteria. Historically, depressive syndromes had already been described since the times of some classic works, like Homer's Iliad where Ajax commits suicide after murdering cattle uncontrollably. Hippocrates in the year 400 B.C. already used terms such as "obsession" or "melancholia" referring to psychopathology. Later, Celsus in 30 A.D. uses the word "melancholia" giving it an etiology, black bile (Sadock et al., 2017).

As of now, worldwide, the WHO estimates that more than 264 million people have been diagnosed with this condition (Sadock et al., 2017). The global burden represents nothing less than 1.72% of DALYs (Disability-Adjusted Life Years) (IHME, 2022), and despite this, and the screening recommendations, a recent questionnaire involving 33653 patients that had medical interviews, revealed that less than 5% percent of adults are screened for MDD in the primary care setting (Maurer et al., 2018). In our country, INEC (Instituto Nacional de Estadísticas y Censos, "National Institute of Statistics and Censuses" English translation) data reveal that in 2015, 2088 people were attended for depressive mood disorders in health care establishments, from which 1339 were women and 749 were men. Regarding suicide, 1073 people took their lives in 2015, being men the most affected with 807 cases of suicide (INEC, 2017).

Currently, we have been required to lock down globally, suspend daily activities, and remain isolated from relatives and the discouraging information from

social media may be factors that contribute to MDD development. It has been established that there is increased concern in some demographic groups such as elderly people, people who suffer from chronic degenerative diseases, healthcare service providers (Andreeva et al., 2015), and people with a low economic status (WHO, 2020). It is known that people who are isolated and lonely have an increased risk to develop MDD. This is shown in a study done by KFF in which 47% of isolated people had more anxiety or stress because of the current pandemic in comparison with the 37% of people that were not completely locked down (Panchal et al., 2021). The current pandemic has been an unleashing factor for exacerbations of symptoms of psychiatric disorders such as MDD, anxiety disorders, psychosis, and even insomnia (Zhou et al., 2020). And, as expected, massive unemployment has been a key trigger in the progression of MDD, a fact that was established even before the pandemic (Harvard Health Publishing, 2022).

This same study shows that unemployment is a risk factor for MDD, anxiety, low self-esteem, and even higher rates of substance abuse. It has also been proposed that the suicide rates may increase due to the economic recession that the country may suffer after the pandemic (SAMHSA, 2018). Furthermore, other risk factors have been known for the development of MDD, for example, the death of a loved one, divorce, chronic diseases, anxiety, sleeping disorders, and marital disruption (Dobson & Dozois, 2008).

In Ecuador, we do not count on up-to-date data about the most significant risk factors for MDD, and neither with the current prevalence in the setting of this event of great magnitude. Thus, with this cross-sectional study, we aim to estimate the prevalence of MDD and its associated factors at the time of the COVID-19 pandemic.

2. Materials and Methods

The data collection was done through Google forms questionnaires, and it was distributed with the use of the "snowballing" strategy, arranging dichotomous variables from the PHQ-9 in which we used a cut-off value of 14 or more to confirm MDD.

The PHQ-9 is endorsed by The National Institute for Health and Clinical Excellence, also The Behavioral Risk Factor Surveillance Survey (BRFSS), the Medical Expenditure Panel Survey, the National Epidemiologic Survey on Alcohol and Related Conditions, or the Medicare Health Support program; all of them and more institutes of health use this questionnaire.

We decided to use this proven questionnaire because it is the most used Major Depression Disease measure, this being a diagnostic tool for MDD with very high sensitivity and specificity.

Previous studies generally use 10 or more points as the confirmation cut-off. Nevertheless, based on newly available evidence, a cut-off value of 10 points or more, overestimates the prevalence of MDD. Therefore, the 14-point cut-off is used to diminish this bias (Levis et al., 2020).

Our sample size was limited to the Metropolitan District of Quito, including the valleys, center, north, and south of Quito, and excluding any data from other geographical zones. The number of inhabitants of Quito's DM is about 2' 239.191, according to the 2010 population census, with which a sample size of 384 subjects was calculated using Stat-calc Epi Info 7: with a confidence interval of 95%, an expected frequency of 50% and a design effect of 1.0. The final size obtained after a week was 472 valid results from a total of 531 people, excluding 59 due to not being in the geographic area. Data were analyzed using IBM SPSS STATISTICS (version 25) predictive analysis software.

3. Results

The characteristics of the sample subjects are exposed in (Table 1), showing the frequencies of the sample. The remarkable findings of the sample are that the age range is between 19 - 26 years, they auto consider themselves "mixed race" and they have a college education.

Table 1. Frequencies and percentages of the sample obtained.

Sex	*Frequency*	*Percentage*
Male	176	36.7
Female	303	63.3
Total	479	100.0
Age	***Frequency***	***Percentage***
12 - 18	21	4.4
19 - 26	390	81.4
27 - 59	63	13.2
> than 60	5	1.0
Total	479	100.0
Ethnicity	***Frequency***	***Percentage***
Mestizo	457	95.4
White	15	3.1
Indigenous Native	1	0.2
Afro-Ecuadorian	3	0.6
Others	3	0.6
Total	479	100.0
Stable Work	***Frequency***	***Percentage***
Yes	125	26.1
No	354	73.9
Total	479	100.0
Level of Instruction	***Frequency***	***Percentage***
Primary	1	0.2
Secondary	55	11.5
Professional Degree	406	84.8
Post-Grade	17	3.5
Total	479	100.0

Of the total of 472 people, 179 have MDD based on the definitions mentioned before, which represents 37.4% of the sample (Table 2).

An important associated factor is employment. There is evidence that having a stable job is an associated protective factor for developing MDD ($p < 0.05$); OR 0.567 con CI (0.36 - 0.88) (Figure 1).

Another finding is that sex is a risk factor for developing depression, being the female sex more predisposed to develop MDD ($p < 0.05$) OR 1.6, IC (1.1 - 2.4). Age was also found to be a risk factor for developing MDD ($p < 0.001$), OR 4.48, CI (1.7 - 11.7) being those from 18 years and under the most affected. In contrast, some variables were not statistically significant, such as doing exercise or leisure activities $p = 0.51$, OR 0.67, CI (0.45 - 1.00), being married $p = 0.179$, OR 0.64, CI (0.33 - 1.2), healthcare providers $p = 0.129$, OR 0.5, CI (0.21 - 1.22) and a higher level of education $p = 0.231$, OR 0.71, CI (0.4 - 1.2).

4. Discussion

This study aims to specify the prevalence of MDD during the lockdown and social isolation due to the current COVID-19 pandemic. Due to the limited data about MDD in Ecuador, we have also looked for the associated factors that contribute to developing MDD. In summary, the data obtained from the digital questionnaires reveal that the prevalence of MDD is 34.7%, that having a stable job is a protective factor, and that age and sex are risk factors.

Table 2. Depression frequency.

Depression	*Frequency*	*Percentage*
Yes Depression	179	37.4
No Depression	300	62.6
Total	479	100.0

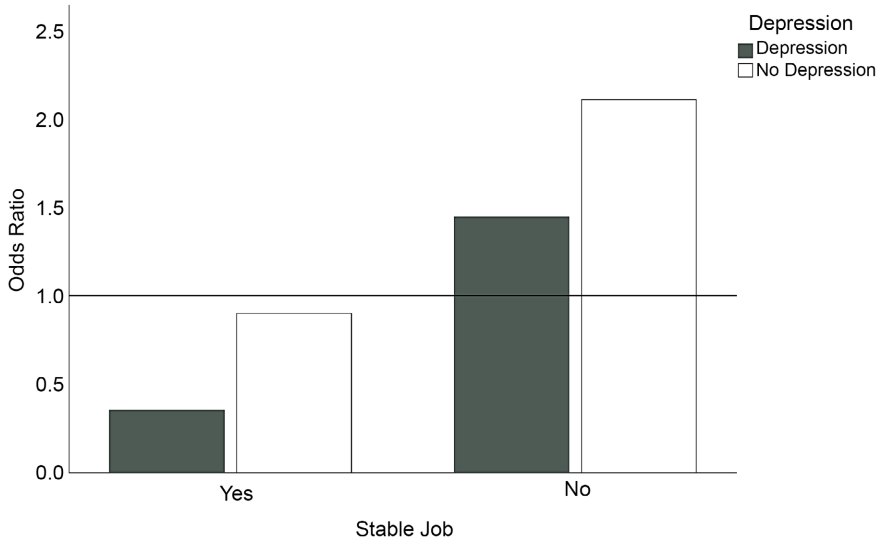

Figure 1. Depression and stable job.

Study comparison: According to the NIH (National Institutes of Health) the majority of MDD cases are between 18 - 25 years of age (13.1%); and from these, the female sex is the most affected (8.7%) (U.S. Department of Health and Human Services, n.d.). According to our study, most cases of MDD were females with 70.4% in comparison to the male sex, with 29.6% of the total of people with MDD.

In addition, stressful life events could be a predisposing factor in the long term (Murray et al., 2013; Shapero et al., 2014). One of them is unemployment and retirement, in the elderly (Albert, 2015; Sokratous et al., 2013). Various studies have confirmed that the prevalence of MDD is higher due to downsizing experiences in companies. Additionally, several longitudinal studies have demonstrated that these effects may persist over time, thereby contributing to a chronically stressful work environment (Willard et al., 2013; Moore et al., 2004).

Nevertheless, it is still in doubt, whether getting fired is a trigger for developing MDD, or if losing a job is the consequence of MDD symptoms. Few studies have found this relationship (Shapero et al., 2014; Hamilton et al., 1993).

In contrast to our findings, being married has been established as a protective factor for developing MDD, but we have not found that association. The same goes for healthcare providers, in which there is evidence that mood disorders were more prevalent in this population during the COVID-19 pandemic, but we have not found that association either (Sokratous et al., 2013; Noer, 2009; Moore et al., 2004; Hamilton et al., 1993; Aliabadi et al., 2013; Gallo et al., 2006; Choi & Marks, 2008; Pappa et al., 2020).

4. Conclusion

The findings of this study suggest that the prevalence of depression in our setting is higher than reported in the literature as well as it is greater when compared to other countries such as the United States. A notable association that we found in this study is a protective factor against depression was having a stable job during this quarantine period and those who do not have it are more likely to be predisposed to depression Classic associations that have already been described have also been found, such as sex and its predisposing role in women. The current situation could be an influential factor between the stable employment relationship and depression since those who do not have it are more likely to suffer from depression.

6. Limitations of This Study

Due to the raise of positive cases of COVID-19 in Ecuador, and lock-down measures implemented to diminish the spread, the data collection could not be done in person, so, we decided to distribute questionnaires online randomly making sure they matched the designated geographical area. This is a non-probabilistic method to obtain a sample called "Snowball sampling or chain-referral sampling"; therefore, its results should be treated as such.

In the same way, the historical lack of epidemiological data on the subject in Ecuador, and the results are higher than expected, but it all leads to a lack of significant epidemiological data in our region.

We also have the limitation that the type of study used in this study is at the bottom of the levels of evidence, circumstances given by the lack of an adequate context, but we trust that with this contribution it will be possible to be the basis for future research and likewise encourage better studies should be carried out with a much higher level of evidence.

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Ethics Approval

The study was carried out based on the Declaration of Helsinki and the Ethical Standards approved by the Ethics Committee of the Pontifical Catholic University of Ecuador (CS-S-020-2016) and in accordance with the Ethical Guidelines of the Ministry of Public Health of Ecuador.

All the data were obtained, and all the human beings involved in the study were informed about the subject, the purpose of the study and the confidentiality to maintain on their data, after the explanation authorization was received from the participant that they understood all the aspects of the study and how the information provided would be used.

Authors' Contribution

Conceptualization: V.R., L.L. and A.B.; methodology: V.R.; software: V.R.; validation: V.R., L.L. and A.B.; formal analysis: V.R.; investigation: V.R., L.L. and A.B.; resources: V.R.; data curation: V.R.; writing—original draft preparation: V.R., L.L. and A.B.; writing—review and editing: V.R., L.L. and A.B; visualization: V.R. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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