ORIGINAL ARTICLE

Women's mental health: acute impact of COVID-19 pandemic on domestic violence

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Abstract

The coronavirus disease 2019 (COVID-19) pandemic created a situation of general distress. Although the focus has been initially more on the physical health during the pandemic, mental health concerns linked to the lockdown have quickly risen. This study aims to assess the effect of the COVID-19-related lockdown on Tunisian women's mental health and gender-based violence. An online survey was conducted, using the Depression Anxiety and Stress Scales (DASS-21) and the Facebook Bergen Addiction Scale (FBAS). We chose a female-exclusive social group on Facebook and used the snowball sampling method. A total of 751 participants originating from all the Tunisian regions completed the questionnaire. More than half of the participants (57.3%) reported extremely severe distress symptoms, as per the DASS-21. Those who had a history of mental illness and who were allegedly abused during lockdown were found to have more severe symptoms of depression, anxiety, and stress. Around 40% of women reported problematic social media use. Violence against women also reportedly increased significantly during the lockdown (from 4.4 to 14.8%; $p < 0.001$). Psychological abuse was the most frequent type of violence (96%). Women who had experienced abuse before the lockdown were at an increased risk of violence during lockdown ($p < 0.001$; OR = 19.34 [8.71–43.00]). To our knowledge, this is the first study that evaluates the acute impact of COVID-19 on mental health and violence against women in Tunisia, Africa, and the Arab world. It may be a sound basis for developing a more effective psychological intervention aimed at women in these regions.

Keywords Gender-based violence · Anxiety · Depression · Spouse abuse · Quarantine · Coronavirus

Introduction

The World Health Organization (WHO) declared COVID-19 a pandemic since March 2020 (Liu et al. 2020). Due to the

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importance of human-to-human transmission, social distancing and lockdown have been the control strategies adopted by most countries in the world (Adhikari et al. 2020). In Tunisia, immediately after horizontal transmission was confirmed, the government (Tunisian Republic Presidency 2020) officially announced a lockdown on March 22, 2020. This decision caused a significant change in the everyday life of Tunisians: travel or movement restriction, suspension of work and studies (Tunisian Republic Presidency 2020), prolonged and forced contact between family members, reduced means of entertainment, boredom, loss of contact with wider social circles, and economic difficulties (Marques et al. 2020). These factors might have led to the COVID-19 pandemic turning into a psychosocial crisis, in addition to it being a major physical health concern. Therefore, in addition to the COVID-19 pandemic being a major physical health concern, these factors may have led to it becoming a psychosocial crisis. Violence against women is a public health problem worldwide and a violation of human rights (Oram et al. 2017). During humanitarian crises such as wars, natural disasters, or epidemics,

violence expands mainly to the detriment of the most vulnerable groups. The COVID-19 pandemic and the lockdown can trigger the onset of anxiety disorders and may lead to symptom exacerbation in those with pre-existing disorders (Chatterjee et al. 2020). It is widely accepted that women are the most affected, given that they are known to have a more anxious temperament: This trait-like phenotype is characterized by increased behavioral and physiological reactivity to mildly stressful stimuli (Akiskal and Akiskal 2005). In addition, several genetic, sociocultural, hormonal, and developmental factors can influence an individual's response to stress, and the biological role of gender remains a vulnerability factor to psychosocial stress (Wang et al. 2007). The aim of this article is to study the effect of the lockdown on mental health of Tunisian women and the possible impact of lockdown on violence against women. To our knowledge, this study is the first to evaluate the impact of lockdown during the COVID-19 pandemic on women's mental health and violence in Tunisia, Africa, and the Arab world.

Methods

Settings and participants

Our research was conducted using an online survey, between April 25 and May 6, 2020, 1 month after the Tunisian government announced the lockdown. We chose a female social group on Facebook and used the snowball sampling method. We initially selected five participants. Each one of them was asked to choose five women to send the questionnaire to. The other participants were contacted using the same method until data saturation was reached. Women were recruited homogeneously throughout all Tunisian regions to ensure a representative sample of the Tunisian women. The survey was anonymous. All participants were Arabic-speaking and living on Tunisian territory.

Since the survey was anonymous, a message encouraging the request for help and breaking the silence in case of violence was sent to the respondents, to which a detailed reminder of the support structures had been attached. These contacts included the following: the toll-free numbers provided by the Ministry of Women, Family and Childhood, the contact information of associations specialized in providing care to victims of violence, the numbers of the police brigade specialized in violence against women, as well as the numbers of the emergency police and emergency medical assistance services. The toll-free numbers of the Tunisian psychological support unit (Zgueb et al. 2020) managed by volunteer psychiatrists and psychologists have also been made available for psychological first aid interventions.

Data collection

We used an anonymous online questionnaire to collect socio-demographic information (age, marital status, number of children, geographical area), mental health status (history of mental illness and eventual treatments taken), information on lockdown conditions (changes in working activities), and COVID-19 risk status (no personal risk, under quarantine, COVID+).

Psychometric assessment

The Depression Anxiety and Stress Scales (DASS-21) is a quantitative 21-item screening tool to assess symptoms of depression, anxiety, and stress. The validated Arabic version was used (Ali et al. 2017). This instrument comprises three subscales.

The depression subscale (DASS-21 D): with the following categories for the total score—normal (0–9), mild depression (10–12), moderate depression (13–20), severe depression (21–27), and extremely severe depression (28–42).

The anxiety subscale (DASS-21 A): with the following categories for the total score—normal (0–6), mild anxiety (7–9), moderate anxiety (10–14), severe anxiety (15–19), and extremely severe anxiety (20–42).

The stress subscale (DASS-21 S)—with the following categories for the total score: normal (0–10), mild stress (11–18), moderate stress (19–26), severe stress (27–34), and extremely severe stress (35–42) (Tran et al. 2013).

The Facebook Bergen Addiction Scale (FBAS) is a self-administered 6-item scale that evaluates addiction to Facebook. Each item corresponds to one of the six central components of addiction according to Griffith's model: salience, mood modification, tolerance, withdrawal symptoms, conflict, and relapse (Andreassen et al. 2012). Each item consists of a 5-point Likert scale ranging from "very rarely" to "very often." The validated Arabic version was used (Ghali et al. 2019).

The history of domestic violence and its types before and during the lockdown were assessed by yes or no questions.

Statistical analysis

Data was analyzed using the Statistical Package for the Social Sciences (IBM SPSS 22.0). For qualitative variables, we calculated simple frequencies and relative frequencies (percentages). For the quantitative variables, we calculated means and standard deviations, and we determined the extreme values (minimum and maximum). Percentage comparisons were made by the Chi-square test. Odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated. Standard univariate/bivariate comparisons of continuous measures (ANOVA) were used to compare means. Pearson's

correlation test (in case of normal distribution) and Spearman's correlation test (in case of non-normal distribution) were used to examine correlations between quantitative variables. A p value of less than 0.05 was considered significant in all analyses.

Ethics

Study participants were provided with the numbers of all social services and as well as those of therapists to contact if needed.

Our study was approved by the Ethics Committee of Razi Hospital, Manouba (RPA 6/2020). It was conducted in accordance with the guidelines of the 1995 Helsinki Declaration and its revisions (General Assembly of the World Medical Association 2014).

Results

General characteristics

We received 948 responses; 197 questionnaires were incomplete and thus excluded. Therefore, the number of included responses was 751. The age ranged from 18 to 69 years, and the mean age was 37 ($\pm$ 8.2) years. The majority of respondents (69%, $n = 518$) were married (Table 1). Only 38.7% ($n = 291$) continued to work during the lockdown (Table 3). Forty-nine women (6.5%) had a history of mental illness (Table 3), out of whom three quarters were on psychiatric treatment. Antidepressants were the most prescribed psychotropic class (72%).

Women's mental health

DASS scores

Anxiety, depression symptoms, and stress were found in about 85% of the women. More than half of participants had symptoms of extreme severity for the three axes of the DASS-21 scale. The DASS-21 subscales severity ratings are detailed in Table 2.

Associations between DASS 21 scores, Facebook addiction, and socio-demographic characteristics

We found a statistically significant negative correlation between the age of the respondents and depression ($p = 0.004$; Rho $= -0.11$), anxiety ($p = 0.009$; Rho $= -0.09$), and stress ($p = 0.002$; Rho $= -0.11$) subscores. We did not find any correlation between the number of children or the COVID-19 risk status and any of the DASS-21 subscores. The associations of other socio-demographic factors with DASS subscores are detailed in Table 3.

Table 1 Demographic characteristics of the study participants

Characteristics	Numbers ($n = 751$)	Ratio (%)
Age range		
18–25	64	8.5%
26–35	310	41.3%
36–45	294	39.2%
46–55	65	8.6%
56–65	18	2.4%
Marital status		
Single	189	25.2%
Married	518	69%
Divorced	40	5.3%
Widowed	4	0.5%
Number of children		
No children	262	34.9%
1 child	136	18.1%
2 children	276	36.8%
3 children	77	10.2%
Educational level		
Primary school	108	14.4%
Secondary school	143	19%
High school	197	26.3%
University level	303	40.3%
COVID-19 status		
No particular risk	713	95%
Under quarantine	32	4.2%
Positive to COVID-19	6	0.8%
Work outside of COVID-19 context		
Yes	620	17.4%
No	131	82.6%
Employment status		
Full-time employment	330	43.9%
Part-time employment	136	18.1%
Self-employed/freelance	80	10.7%
Student	74	9.9%
Unemployed/retired	131	17.4%

Facebook addiction

Scores of the Facebook Bergen Addiction Scale ranged from 6 to 30, and the mean score was 16.49 ($\pm$ 5.4). Forty percent ($n = 300$) of respondents might have Facebook addiction, as per the scale. A significant positive correlation was found between Facebook addiction score and DASS scores of depression ($p = 0.001$, $r = 0.43$), anxiety ($p = 0.001$, $r = 0.39$), and stress ($p = 0.001$, $r = 0.41$).

Table 2 DASS-21 subscales severity ratings

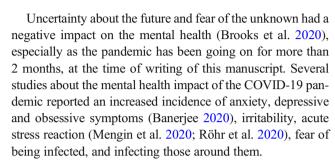| *n* (%)	Extremely severe	Severe	Moderate	Mild	Normal
Depression	430 (57.3%)	47 (6.3%)	95 (12.6%)	46 (6.1%)	133 (17.7%)
Anxiety	430 (57.3%)	43 (5.7%)	55 (7.3%)	67 (8.9%)	156 (20.8%)
Stress	399 (53.1%)	83 (11.1%)	92 (12.3%)	41 (5.5%)	136 (18.1%)

Violence against women

We found that violence against women increased during lockdown from 4.4 to 14.8% ($p < 0.001$) (Table 3). Psychological violence seemed to be the most frequent type. Indeed, virtually all those who were abused (96%) experienced psychological (emotional) violence, followed by economic (41%) and then physical violence (10%). Almost 90% ($n = 98$) of those who experienced violence during the lockdown did not seek assistance. None of the women who experienced emotional abuse reported it. Violence during lockdown was associated with higher scores of depression, anxiety, and stress (Table 3). It was also associated with higher Facebook addiction scores as shown in Table 4. Women who were already experiencing violence before the pandemic seemed to have a higher rate of violence (73%) during the lockdown (versus 12% among those who do not have a history of domestic violence) (Table 5).

Discussion

In this cross-sectional study about women's mental health during the COVID-19-related lockdown in Tunisia, we found that most participants reported a high level of distress symptoms (57.3% had extremely severe anxiety and depressive symptoms, and 53.1% had extremely severe stress symptoms). A problematic use of Facebook (and probably social media in general) was found in 40% of participants. In addition, violence against women was found to have increased significantly during the lockdown. Those who had a history of mental illness and who were abused during the lockdown were found to have more severe symptoms of depression, anxiety, and stress. Women who had been abused before the lockdown seemed to be at a higher risk of violence during the lockdown.

Our study took place in the early phase of COVID-19 spread in Tunisia. This timing may explain why more than half of the women interviewed suffered from severe distress symptoms, since information about the virus during that period was still very limited. Similarly, in China, more than 70% of the population was found to have high levels of psychological symptoms when evaluated during the Level I Emergency Response (Tian et al. 2020).

Uncertainty about the future and fear of the unknown had a negative impact on the mental health (Brooks et al. 2020), especially as the pandemic has been going on for more than 2 months, at the time of writing of this manuscript. Several studies about the mental health impact of the COVID-19 pandemic reported an increased incidence of anxiety, depressive and obsessive symptoms (Banerjee 2020), irritability, acute stress reaction (Mengin et al. 2020; Röhr et al. 2020), fear of being infected, and infecting those around them.

Response and responsiveness to stress appear to be different by gender. Because of several underlying biological mechanisms, women may be more vulnerable to depression and anxiety disorders (Verma et al. 2011) and might be particularly affected by stressful events (Wang et al. 2020). Indeed, starting at puberty, the prevalence of major depressive episodes is higher in female subjects, suggesting a hormonal and biological role in the susceptibility to anxiety and depression (Elhai et al. 2020). Most of the time, the woman is the main caregiver and is more responsible for household tasks and for the care of children (Wenham et al. 2020). This burden could have increased due to the temporary closure of schools during the lockdown. In fact, being a young parent, being a first-time parent, having many children, or having infants has been reported as being a potential source of exhaustion and may lead to parental burnout (Vigouroux and Scola 2018). However, our results did not find any link between the number of children and the severity of distress symptoms.

Gender-based violence can be psychological, physical, sexual, or economic. The intimate partner was responsible for 40% of the cases of femicide in the world (Stöckl et al. 2013). Studies suggest that an abused woman has a higher risk of developing depressive symptoms (Mapayi et al. 2013), attempting suicide, a higher risk of physical conditions such as physical trauma, sexually transmitted infections, unwanted pregnancy, and low birth weight (Devries et al. 2013). Activists have sounded the alarm about the increase in violence against women during this pandemic (Campbell 2020). The United Nations Population Fund (UNFPA) predicted a 31 million increase in cases of gender-based violence if lockdown extends by 6 months and 15 million additional cases with each 3-month extension (Bellizzi et al. 2020). As our results have shown, violence against women has increased significantly during the lockdown. In addition, we found that abused women had more depressive, anxious, and stressful symptoms than those who were not.

Table 3 Association between DASS-21 scores and socio-demographic characteristics

n (%)	History of mental illness			Violence before the lockdown			Violence during the lockdown			Work during lockdown		
	No 702 (93.5%)	Yes 49 (6.5%)	p	No 718 (95.6%)	Yes 33 (4.4%)	p	No 640 (85.2%)	Yes 111 (14.8%)	p	No 460 (61.3%)	Yes 291 (38.7%)	p
DASS depression score median (Q1–Q3)	14 (7.5–26)	28 (17–37)	<0.001	16 (8–26)	22 (15–37)	0.001	14 (6–24)	26 (18–32)	<0.001	18 (8–28)	12 (6–24)	0.03
DASS anxiety score median (Q1–Q3)	10 (4–18)	20 (13–28)	<0.001	10 (4–18)	18 (11–29)	0.002	10 (4–18)	18 (10–28)	<0.001	12 (4–20)	10 (4–18)	0.06
DASS stress score median (Q1–Q3)	18 (10–28)	28 (18–36)	<0.001	18 (10–28)	26 (14–34)	0.028	16 (8–26)	26 (18–34)	<0.001	18 (10–26)	18 (10–26)	0.50

Median (first quartile–third quartile)

Because of the lockdown, support structures for victims of violence were of limited access (Mazza et al. 2020). The focus has been on the physical impact of the pandemic, often to the detriment of mental health. Those who were abused during the lockdown may have felt abandoned, with limited possibilities of assistance. In many cases, they had to stay in quarantine with their aggressors. Home, which is supposed to be a "shelter" from the COVID-19 pandemic, might have been perceived by these women as a source of distress and insecurity.

Furthermore, we found that women who were already experiencing violence before the pandemic had a higher rate of violence during lockdown ($p = 0.001$, OR = 19.34, 95%CI = 8.71–42.97). Indeed, according to the WHO, past tolerance of violence is a perpetuating factor of gender-based violence (Gracia 2004). In our study, 78% of the cases of violence recorded during lockdown were de novo, i.e., women assaulted for the first time during the lockdown. In Tunisia, the Ministry of Women, Family and Childhood declared that during the lockdown, domestic violence increased seven-fold (Tunisian Republic Presidency 2020). An awareness campaign was carried out by the Ministry of Women, Family and Childhood and civil society. It included TV commercials, social media advertisements, videos, and informative texts. Representatives of civil society presented on the topic in the most influential television programs in Tunisia. Collaboration between the Ministry of Women, Family and Childhood and the Ministry of Defense was established, and the responsiveness of law enforcement and health care personnel to requests for help in the face of domestic violence has also increased. A detailed reminder of the support structures was attached to the survey of all the participants.

In our study, psychological violence appeared to be the most frequent type of violence (96%). Almost all the abused women experienced it, followed by economic (41%) and then physical violence (10%). The large majority of those who experienced violence during the lockdown did not report it. None of the women who experienced emotional abuse reported it. As it is the case in many countries especially developing ones, Tunisia has patriarchal and religious societal norms conducive to the normalization of gender-based violence (Zgueb et al. 2019). As a matter of fact, more than half of Tunisian women interviewed in 2016 said violence is ordinary and not worth reporting (UNFPA 2017).

As seen in our results, women who have higher rates of distress are more likely to have a problematic Facebook Use. We found that 40% of our sample meet the definition of a Facebook addiction. Addictive disorders are a frequent comorbidity of anxiety and depressive disorders (Wolitzky-Taylor and Schiffman 2019). In addition, during lockdown, Facebook use scores appear to be higher among those abused as shown in Table 5. To conclude, it seems that women abused during lockdown find refuge in a problematic use of

Table 4 Violence and Facebook addiction scores association

n (%)	Violence during COVID-19 lockdown		
	No 640 (85.2%)	Yes 111 (14.8%)	p
Facebook addiction score M($\pm$ SD)	16 $\pm$ 5.25	18.9 $\pm$ 5.57	< 0.001

M($\pm$ SD): Mean $\pm$ (standard deviation)

social media. Use which appears to be problematic under normal conditions may have been seen as a useful and protective tool from the COVID-19 during lockdown. No studies on the association between domestic violence during the COVID-19 pandemic and social media addiction were found; our article is the first to examine this association. A study conducted in China involving 908 participants of both sexes and ages overlapping with the participants in our sample found that behavioral addiction to telephone and internet use was noted in people suffering from depressive and anxiety symptoms due to COVID-19. However, the severity of problematic smartphone and internet use was not associated with exposure to information about the COVID-19 pandemic. The authors suggested that smartphone and internet use may be part of coping strategies implemented for the emotional distress secondary to this pandemic (Elhai et al. 2020).

The effects on mental health of emerging infectious diseases in the world over the last decade may give us an idea about the long-term impact of the current COVID-19 pandemic. This can be seen in the psychological distress and guilt that Zika virus disease has generated since 2013, and to this day in mothers of newborn babies with congenital malformations (Tucci et al. 2017). The same goes for the Ebola virus that emerged in 2010, and that generated post-traumatic stress disorder among the survivors in Sierra Leone (Paladino et al. 2017).

Since Tunisia's independence in 1956, the country's policy had been geared towards empowering women and protecting their rights. Nonetheless, and even though Tunisia is often praised for its remarkable achievements for women in terms of constitutional human rights (Megahed and Lack 2011),

gender-based violence persists and continues to be a major problem rooted in the Tunisian society, as in most Eastern and Western societies alike.

Strengths and limitations of the study To our knowledge, this is the first study that evaluates the acute impact of COVID-19 on mental health and violence among women in Tunisia, Africa, and the Arab world. It therefore provides considerable information in view of the cultural particularities of the region. This data could be used to establish appropriate intervention strategies. On the other hand, the possibility of selection bias should be considered as our sample method (snowball) could limit the generalizability of our results. In addition, we were limited to assessing participants who had access to the Internet and who some knowledge of computer use. Given the exceptional conditions of lockdown and social distancing, the snowball sampling strategy was the only one possible. Moreover, 80% of participants were between 26 and 45 years old, and 40% had a university education (percentage that is higher than official figures showing that 14.8% of Tunisian females above 25 had completed at least a short-cycle tertiary education in 2016) (The World Bank 2016). The characteristics of our sample in terms of age and education might hinder the generalizability of our findings to all women in Tunisia and in the region.

Conclusion

To our knowledge, this is the first study that evaluates the acute impact of COVID-19 on mental health and violence among women in Tunisia, Africa, and the Arab world. It therefore provides considerable information in view of the cultural particularities of the region. In fact, it may be a sound basis for developing a more effective psychological intervention aimed at women in these regions. Strengthening strategies to protect women during periods of crisis is urgent. However, a change in mentalities would take more time to set up. Violence against women necessitates a fundamental long-term struggle and practical intervention strategies. These changes must emanate from within societies themselves and not be imposed in order to effectively change mentalities. This starts with education within the family core and requires collaboration

Table 5 Association between violence before and during lockdown

	No violence during lockdown (n = 640)	Violence during lockdown (n = 111)
No history of domestic violence before the pandemic (n = 718)	631	87
History of domestic violence before the pandemic (n = 33)	9	24

(N = 751)

between civil society and government to promote real long-lasting changes.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Consent to participate Informed consent was obtained from all individual participants included in the study.

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