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Association of the time spent on social media news with depression and suicidal ideation among a sample of Lebanese adults during the COVID-19 pandemic and the Lebanese economic crisis

Yara El Frenn[1] · Souheil Hallit[1,2,3] · Sahar Obeid[4] · Michel Soufia[1]

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Abstract

The main objectives were to associate between social media news consumption during these unstable times and depression, as well as suicidal ideation among a sample of Lebanese adults, in addition to associate between fear of Covid-19, depression and suicidal ideation. Secondary objectives aimed to check the mediating effect of depression in the association between time spent on social media to get the news and the presence of suicidal ideation. This is a cross-sectional study executed between April and May 2021. It involved 402 Lebanese citizens aged 18 years and above, selected randomly from all Lebanese districts. Having cancer (Beta = 0.20) or lung disease (Beta = 0.27), more fear of COVID-19 (Beta = 0.16), a higher time spent on social media for news (Beta = 0.13) and a higher household crowding index (Beta = 0.29) were significantly associated with more depression, whereas having a pet in the house (Beta = -0.13) and working in the medical field (Beta = -0.17) were significantly associated with less depression. Higher depression (aOR = 1.19) was significantly associated with higher odds of having suicidal ideation, whereas more fear of COVID-19 (aOR = 0.84) and older age (aOR = 0.96) were significantly associated with less odds of having suicidal ideation. Depression did not mediate the association between time spent on social media to get the news and suicidal ideation. This study showed that more time spent on social media reading the news is associated with higher depression but not suicidal ideation. Fear of Covid-19 is associated with more depression, but less suicidal ideation. Further studies are needed to identify the causality between social media news consumption, depression and suicidal ideation. Moreover, awareness campaigns should be organized to teach people how to consume social media news in a responsible way, without letting it affect their emotions directly, which may cause psychological disorders.

Keywords Social media news · Depression · Suicidal ideation · Lebanon · Fear of COVID-19

Introduction

Depression is a mental health illness that can alter the quality of life and whose symptoms can vary from lack of motivation in previously rewarding and pleasurable activities to suicidal ideation (Liu et al., 2020). Persons with depression have a reduction in the function of the frontal and the temporal lobes and a small decrease in oxyhemoglobin level compared to non-depressed persons (Husain et al., 2020). According to the World Health Organization (WHO, n.d.a, b), depression is a global disorder that affects more than 300 million people (Liu et al., 2020). However, before the COVID-19 pandemic, it affected 10.8% of the population (Lim et al., 2018). Recent findings showed that 59.7% of Lebanese people have depression (Obeid et al., 2020a, b) and other mental health issues such as anxiety (Obeid et al., 2020a, b) and alexithymia (Obeid et al., 2019).

Souheil Hallit, Sahar Obeid and Michel Soufia are last coauthors.

✉ Souheil Hallit
souheilhallit@hotmail.com

✉ Michel Soufia
michel_soufia@hotmail.com

1 School of Medicine and Medical Sciences, Holy Spirit University of Kaslik, P.O. Box 446, Jounieh, Lebanon

2 Psychology Department, College of Humanities, Effat University, Jeddah 21478, Saudi Arabia

3 Research Department, Psychiatric Hospital of the Cross, Jal Eddib, Lebanon

4 Social and Education Sciences Department, School of Arts and Sciences, Lebanese American University, Jbeil, Lebanon

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Suicide, defined as a planned death from self-directed harmful actions, is also a public health issue leading to 1.4% of total deaths worldwide. It was considered the 18th leading cause of death in 2016 (World Health Organization, 2020). In Lebanon, suicidal ideation among adults amounts to 28.9% in 2018 (Zakhour et al., 2021), with the same percentage found in adolescents in 2019 (Chahine et al., 2020).

Social media is an interactive technology based on websites and applications that enable users to connect with others virtually by creating and sharing news, ideas, thoughts, and photos (Naslund et al., 2020). Therefore, social media has been incorporated into people's daily routine; it updates them with the latest news happening all over the world (Barreto & Whitehair, 2017). Over the past decades, it had a fundamental role in raising awareness and knowledge about public health (Kadam & Atre, 2020). In Lebanon, a study revealed that adults' use of social media has been associated with greater depression, anxiety and insomnia (Barbar et al., 2020; Malaeb et al., 2021), in addition to a greater level of alexithymia (Youssef et al., 2021) and loneliness (Youssef et al., 2020). In the USA, adults' use of social media was linked to a higher risk of depression (Lin et al., 2016). Increased time spent on social media leads to internet addiction and associated co-morbidities such as anxiety, depression and alcohol abuse. Results from a previous study stated that homozygous short alleles (SS) of the serotonin transporter gene promoter region was linked with depression and was more expressed in those spending a lot of time on the internet (Ho et al., 2014). Moreover, a minor association between social media use and suicidal ideation was found (Nesi et al., 2021). In another terms, social media can impact suicidal behaviors in susceptible individuals (Luxton et al., 2012).

Coronavirus disease 2019 is an infectious disease caused by SARS-CoV-2 and was initially identified in Wuhan city (Liu & Liu, 2020). On March 11, 2020, Covid-19 was declared as a pandemic by the WHO (Bouaziz et al., 2020). Unfortunately, until July 2021 and according to the WHO, the number of infected individuals worldwide has reached more than 182 million, and approximately, 4 million deaths were recorded (WHO coronavirus (COVID-19) dashboard, n.d.). Therefore, it caused many devastating consequences: job loss, financial problems, death of a relative or friend, quarantine, etc. (Shader, 2020). In addition, during the pandemic, the prevalence of depression, and anxiety in adolescents and adults has increased worldwide. Moreover, death from overdose revealed higher numbers (Lee et al., 2022; Ren et al., 2021; Wang et al., 2021a, b; Wang et al., 2021; Xiong et al., 2020). The actions done by the governments to moderate COVID-19 spread in their communities showed to be beneficial in improving physical and mental health, as well as reducing suicidal rates (Lee et al., 2021; McIntyre et al., 2021). While mood disorders are considered a risk factor for COVID-19 hospitalization and death, a systematic review could not prove an increase in the rates of depression in the post-COVID-19 syndrome compared with the general population (Ceban et al., 2021; Renaud-Charest et al., 2021). Females and people having chronic illnesses are more prone to have fear of COVID-19 (Bakioğlu et al., 2020), which is associated with more anxiety, stress, and depression (Bakioğlu et al., 2020). A study in the USA showed that high depressive symptoms were found in people fearing Covid-19 and that more than 25% had moderate to severe anxiety symptoms (Fitzpatrick et al., 2020). Furthermore, the Covid-19 crisis increased suicidal rates during the pandemic (Sher, 2020). Six months into the pandemic, 24% of Lebanese healthcare workers had anxiety, and 23% had depression (Msheik El Khoury et al., 2021). Having more fear of Covid-19 is associated with higher suicidal ideation and depression (Mamun et al., 2021). A study conducted in China showed that psychiatric patients are more willing to pay for the COVID-19 vaccine compared to healthy patients, thus further studies should be conducted to clearly understand this association (Hao et al., 2021).

Nowadays, people are using social media for constant updates on COVID-19 (Majeed et al., 2020). Studies conducted in the USA and Germany showed that excess social media exposure to Covid-19 news is positively associated with depressive symptoms (Olagoke et al., 2020) (Bendau et al., 2021). In contrast, a Chinese study showed that precise health information concerning the measures and precautions of the virus on social media were linked with less psychological problems (Wang et al., 2020). The association between social media use and depression is still not clear yet; while some studies showed a positive association, a large meta-analysis did not (Ferguson et al., 2021). However, no previous studies correlated the social media consumption related to COVID-19 and suicidal ideation risk.

Depression and suicide are strongly affected by sociodemographic factors, such as low income (Hawton et al., 2012; Kingston, 2013) and gender: women are predisposed to depression nearly two times more than men (Yu, 2018), while higher intentions to end life and serious suicidal attempts were found especially in men (Freeman et al., 2017). Healthcare workers experience suicidal ideation (Dutheil et al., 2019), burnout and emotional disorders, particularly female workers, who present a higher prevalence of depression than men (Bhugra et al., 2019; Pacheco et al., 2019). Although, in Vietnam healthcare workers were fully equipped with the knowledge to prevent COVID-19, they were marginalized and had an increase in the apparent risk of this disease specially among staff who worked in the emergency department or the intensive care unit (Le et al., 2021; Nguyen et al., 2021; Pham et al., 2021). This apparent risk includes daily task threats like higher level of radiation exposure and exhaustion due to an unorganized

work schedule that were shown to impact all the radiology department in a Lebanese study, radiographers and radiologic technologists (Itani et al., 2021). This psychological distress was particularly higher in the hospital's nonmedical staff in Singapore (Tan et al., 2020). The high stress level felt by the medical team can be alleviated by adequate measures such as encouragements and good communication with family and hospital administration (Ho et al., 2021). While a study found that physical and mental health symptoms are strongly linked amid healthcare workers during an outbreak, another one showed that COVID-19 case load did not have an effect on the prevalence of psychological distress among healthcare workers (Chew et al., 2020; Chew, Lee, et al., 2020; Chew, Ngiam, et al., 2020; Chew, Ngiam, et al., 2020). Furthermore, stress, depression, anxiety and PTSD were more present in the medical team particularly in those who knew someone who was diagnosed or died from COVID-19 (Tan et al., 2021). Undereducated people, as well as chronic disease patients such as cancer, lupus, rheumatoid arthritis, diabetes and chronic obstructive pulmonary disease are more prone to have depression. As well, patients with malignancies are more disposed to commit suicide. (Bortolato et al., 2017; Chazelle et al., 2011; Hawton et al., 2012; Tee et al., 2020; Vu et al., 2018; Zhang et al., 2011; Zhu et al., 2018). Moreover, marital status (single, divorced and widowed) has been proven to cause depression (Lee et al., 2020). However, owning a pet had shown lower levels in the prevalence of depression compared to not having one (Rhoades et al., 2015).

The COVID-19 pandemic is having a massive effect on mental health (Torales et al., 2020). Its evolution in Lebanon was linked to higher levels of stress, depression, anxiety, and lower obsessive–compulsive traits (El Othman et al., 2021). In December 2020, reports showed an increase of calls to Lebanon's suicide hotlines (Embrace suicide prevention hotline faces surge in calls | news, lebanon news | THE DAILY STAR., 2020). Over and above that, Lebanon is currently battered by compounded crises (economic, political and financial) and is still dealing with the repercussions of the Beirut Port explosion (Abouzeid et al., 2020). In the light of the results that this study will show, additional data could be articulated regarding the influence of social media on mental illness, thus, setting the ground for a more complete literature for risk factors for developing a mental illness. Therefore, we hypothesize that spending more time on social media reading the news (political, economic, COVID-19, etc.) are associated with higher depression and suicidal ideation among Lebanese individuals. The main objectives were to associate between social media news consumption during these unstable times and depression, as well as suicidal ideation among a sample of Lebanese adults, in addition to associate between fear of Covid-19, depression and suicidal ideation. Secondary objectives aimed to check the mediating effect of depression in the association between time spent on social media to get the news and the presence of suicidal ideation.

Methods

Study Design and Participants

This cross-sectional study, executed between April and May 2021, involved 402 Lebanese citizens aged 18 years and above. To collect the data, a Google form was created and distributed randomly via the snowball technique on social media in a way that covers all Lebanese districts (Beirut, Mount Lebanon, North, South and Beqaa). Prior to filling the form, participants were informed about the study objectives, the general instructions, and their anonymous participation. No credits were received for participation. Resident Lebanese people aged 18 years and above were the population included in the study, while only people who refused to participate were excluded.

Minimal Sample Size Calculation

To calculate the minimal sample size required for our study, we used the G-power system with alpha error of 5%, power of 80% and a total of 10 factors to be entered in the multivariable model; 395 participants were required to complete this study.

Questionnaire

The questionnaire was developed in Arabic, the native and official language of Lebanon, and required 15–20 min to complete. It was divided into many parts:

Sociodemographic Characteristics

This part included questions about participants' age, gender, marital status, number of kids, educational level, household crowding index (HCI) and chronic diseases (cancer, diabetes, cardiovascular or lung disease). The HCI, reflecting the socioeconomic status (SES) of the family, was calculated by dividing the number of individuals living in the house by the number of rooms in the house; higher HCI reflected a lower SES. One question about social media news consumption was asked: "How much time per day do you spend reading the news on social media?".

Lebanese Depression Scale (LDS-19)

It is a validated 19-question scale in Lebanon that is used to screen for symptoms and signs of depression among Lebanese population (Obeid et al., 2021). Higher scores reflect higher depression. In this study, the Cronbach's alpha was 0.885.

The Columbia-Suicide Severity Rating Scale (C-SSRS)

This scale, validated in Lebanon among adolescents (Chahine et al., 2020) and adults (Zakhour et al., 2021), is used to evaluate suicidal ideation and behaviors over the past month. Five questions about suicidal ideation were asked: "wish to be dead", "suicidal ideation", "suicidal ideation with method", "suicidal intent", and "suicidal intent with a specific plan". A positive answer to any of these questions is a sign of existence of suicidal ideation. In this study, the Cronbach's alpha was 0.766.

Fear of COVID-19 Scale

It is a scale used to designate the fear of COVID-19 by using a five-point Likert type scale (from 1 = Strongly disagree to 5 = Strongly agree). By adding respective items, the overall score can be calculated (from 7 to 35). Greater scores point towards higher levels of fear of Covid-19 (Ahorsu et al., 2020). In this study, the Cronbach's alpha was 0.860.

Statistical Analysis

Data analysis was accomplished via the Statistical Package for the Social Sciences (SPSS) software version 25. No missing data was found since all questions were required. Weighting was done according to gender and education. The depression score had a normal distribution since the skewness and kurtosis values varied between -1 and + 1 (Hair et al., 2017). These conditions consolidate the assumptions of normality in samples larger than 300 (Mishra et al., 2019). Accordingly, the Student t-test was used to check for an association between the depression score and dichotomous variables, while the ANOVA test was used to compare between three or more means. Pearson correlation test was used to correlate two continuous variables. A hierarchical linear regression was conducted taking the depression score as the dependent variable as follows: in the first model, sociodemographic characteristics were entered as independent variables; in the second one, the presence of a pet in the house and chronic diseases were added; in the third model, fear of COVID-19 and the time spent on social media for news were added.

Concerning the suicidal ideation score, it was not normally distributed (skewness and kurtosis outside the -1 and + 1 interval); therefore, it was dichotomized according to the median (= 0). The Chi-square test was used to compare categorical variables, whereas the Student t test was used to compare two means. A hierarchical logistic regression was conducted taking the presence/absence of suicidal ideation as the dependent variable as follows: in the first model, sociodemographic characteristics were entered as independent variables; in the second one, the presence of a pet in the house and chronic diseases were added; in the third model, fear of COVID-19 and the time spent on social media for news were added; finally, the depression score was added to the final model. All factors that showed an effect size or correlation > $\left|0.24\right|$ in the bivariate analysis were entered as independent variables in the mediation analysis, linear and logistic regressions to have parsimonious models (Vandekerckhove et al., 2014). The variable time spent on social media to get news was forced in both models since it was our main independent variable.

The PROCESS SPSS Macro version 3.4, model four was used in the mediation analysis to calculate three pathways. Pathway A determined the regression coefficient for the effect of time spent on social media for news on depression; Pathway B examined the association between depression and the presence of suicidal ideation, and Pathway C' estimated the total and direct effect of time spent on social media for news on the presence of suicidal ideation. A mediation was deemed significant if the bootstrapped 95% confidence intervals of the indirect pathway AB did not pass by zero. Significance was set at a $p < 0.05$.

Results

Sociodemographic and Other Characteristics of the Participants

The mean age of the total sample ($N = 402$) was 27.85 ± 10.93 years, with 68.9% females. Moreover, 18.2% had suicidal ideation; the mean depression score was 11.13 ± 10.73 and that of the time spent on social media for news 2.25 ± 2.65 h. Other characteristics of the participants are summarized in Table 1.

Bivariate Analysis of Factors Associated with Depression

Higher mean depression score was seen in females compared to males, in those who do not have a pet in the house and those

Table 1 Sociodemographic and other characteristics of the participants ($N=402$)

Variable	N (%)
Gender	
Male	125 (31.1%)
Female	277 (68.9%)
Marital status	
Single	322 (80.1%)
Married	80 (19.9%)
Education	
Complementary or less	17 (4.2%)
Secondary	25 (6.2%)
University	360 (89.6%)
Suicidal ideation (yes)	73 (18.2%)
	Mean ± SD
Age (in years)	27.85 ± 10.93
Number of children	0.44 ± 1.04
Household crowding index	0.96 ± 0.69
Depression (LDS score)	11.13 ± 10.73
Fear of COVID-19	16.86 ± 5.38
Time spent on social media for news (in hours)	2.25 ± 2.65

who do not work in the medical field vs those who do, and in those who had diabetes, cardiovascular disease, cancer and lung disease compared to those who did not. Moreover, more fear of COVID-19 and higher household crowding index were significantly associated with more depression (Tables 2 and 3).

Multivariable Analysis of Factors Associated with Depression

In the final model, having cancer (Beta = 0.20) or lung disease (Beta = 0.26), more fear of COVID-19 (Beta = 0.16), a higher time spent on social media for news (Beta = 0.13) and a higher household crowding index (Beta = 0.28) were significantly associated with more depression, whereas having a pet in the house (Beta = -0.13) and working in the medical field (Beta = -0.17) were significantly associated with less depression (Table 4, model 3).

Bivariate Analysis of Factors Associated with Suicidal Ideation

A higher percentage of single participants compared to married, not having a pet in the house, having diabetes, cancer or lung disease had significantly more suicidal ideation. Moreover, higher mean depression and household crowding index scores were significantly found in those with suicidal ideation (Table 5).

Table 2 Bivariate analysis of categorical factors associated with depression (LDS score)

Variable	LDS score	*p*	Effect size
Gender		**< 0.001**	0.577
Male	8.26 ± 12.95		
Female	14.98 ± 10.14		
Marital status		0.057	0.180
Single	13.38 ± 12.91		
Married	11.57 ± 5.94		
Education level		0.081	0.226
Secondary or less	13.38 ± 11.64		
University	10.84 ± 10.75		
Pet in the house		**< 0.001**	0.717
No	15.86 ± 11.50		
Yes	8.18 ± 9.85		
Working in the medical field		**< 0.001**	0.833
No	14.87 ± 11.05		
Yes	5.94 ± 10.36		
Hypertension		0.086	0.293
No	12.58 ± 11.44		
Yes	15.99 ± 11.80		
Diabetes		**< 0.001**	
No	12.55 ± 11.25		1.20
Yes	27.35 ± 13.19		
Cardiovascular disease		**0.001**	0.652
No	12.40 ± 11.45		
Yes	19.48 ± 10.22		
Cancer		**< 0.001**	1.71
No	12.55 ± 11.24		
Yes	31.42 ± 10.80		
Lung disease		**< 0.001**	1.08
No	11.45 ± 10.34		
Yes	24.57 ± 13.73		

Numbers in bold indicate significant associations

Table 3 Bivariate analysis of continuous variables associated with depression (LDS score)

Variable	Correlation coefficient	*p*
Fear of COVID score	0.235	**< 0.001**
Time spent on social media for news	0.179	**< 0.001**
Age	0.023	0.646
Household crowding index	0.389	**< 0.001**
Number of children	-0.035	0.484

Numbers in bold indicate significant associations

Table 4 Multivariable analysis: Linear regressions (using the ENTER model) taking the depression score as the dependent variable

Variable	Unstandardized Beta	Standardized Beta	*p*	95% CI
Model 1: Sociodemographic variables as independent variables				
Gender (females vs males*)	3.79	0.15	**0.002**	1.40–6.18
Working in the medical field (yes vs no*)	-4.27	-0.15	**0.003**	-7.06- -1.48
Household crowding index	5.98	0.31	**< 0.001**	4.19–7.77
Model 2: sociodemographic characteristics, pet in the house and chronic diseases as independent variables				
Gender (females vs males*)	0.83	0.03	0.480	-1.47–3.13
Working in the medical field (yes vs no*)	-5.72	-0.21	**< 0.001**	-8.44- -3.00
Household crowding index	5.55	0.29	**< 0.001**	3.89–7.21
Pet in the house (yes vs no*)	-3.41	-0.14	**0.002**	-5.54- -1.27
Diabetes (yes vs no*)	-2.13	-0.03	0.740	-14.74–10.48
Cardiovascular disease (yes vs no*)	0.73	0.02	0.737	-3.55–5.02
Cancer (yes vs no*)	17.75	0.21	**0.024**	2.34–33.17
Lung disease (yes vs no*)	9.91	0.27	**< 0.001**	6.61–13.20
Model 3: variables in model 2, fear of COVID-19 and time spent on social media for news as independent variables				
Gender (females vs males*)	0.42	0.02	0.716	-1.84–2.67
Working in the medical field (yes vs no*)	-4.83	-0.17	**< 0.001**	-7.51- -2.16
Household crowding index	5.39	0.28	**< 0.001**	3.76–7.02
Pet in the house (yes vs no*)	-3.08	-0.13	**0.004**	-5.20- -0.96
Diabetes (yes vs no*)	-1.31	-0.02	0.834	-13.60–10.99
Cardiovascular disease (yes vs no*)	0.30	0.01	0.891	-3.99–4.59
Cancer (yes vs no*)	17.35	0.20	**0.027**	1.96–32.73
Lung disease (yes vs no*)	9.65	0.26	**< 0.001**	6.43–12.86
Fear of COVID-19 score	0.34	0.16	**< 0.001**	0.15–0.53
Time spent on social media for news	0.63	0.13	**0.002**	0.24–1.02

*Reference group; Numbers in bold indicate significant p-values; CI = Confidence Interval

Multivariable Analysis of Factors Associated with Suicidal Ideation

Higher depression (aOR = 1.17) was significantly associated with higher odds of having suicidal ideation, whereas more fear of COVID-19 (aOR = 0.86), more time spent on social media for news (aOR = 0.76) and older age (aOR = 0.96) were significantly associated with lower odds of having suicidal ideation (Table 6).

Mediation Analysis

The results of the mediation analysis showed that depression did not mediate the association between time spent on social media for news and the presence of suicidal ideation (indirect effect: Beta = 0.01; Boot SE = 0.02; BCi [-0.03; 0.05]).

Discussion

The results of this study showed that being a cancer or a lung disease patient, being afraid of Covid-19, having higher time spent on social media reading news or living in a crowded house are linked with more depression. However, owning a pet or being a worker in the medical field are associated with low depression, while having higher depression is related with more suicidal ideation; fear of Covid-19 and older age are associated with a less suicidal score.

In our study, spending more time on social media reading news was associated with higher depression and less suicidal ideation. In line with other studies, responses showed that consumption of news on social media in general, and news related to Covid-19 in particular, leads to depression (Bendau et al., 2021; Olagoke et al., 2020; Aboukacem et al.,

Table 5 Bivariate analysis of factors associated with the presence/absence of suicidal ideation

Variable	Absence of suicidal ideation	Presence of suicidal ideation	*p*	Effect size
Gender			0.306	0.051
Male	108 (86.4%)	17 (13.6%)		
Female	228 (82.3%)	49 (17.7%)		
Marital status			**0.001**	0.159
Single	237 (80.1%)	59 (19.9%)		
Married	99 (93.4%)	7 (6.6%)		
Education level			0.642	0.023
Secondary or less	273 (84.0%)	52 (16.0%)		
University	63 (81.8%)	14 (18.2%)		
Pet in the house			**0.039**	0.103
No	199 (80.6%)	48 (19.4%)		
Yes	137 (88.4%)	18 (11.6%)		
Working in the medical field			0.241	0.058
No	258 (82.4%)	55 (17.6%)		
Yes	78 (87.6%)	11 (12.4%)		
Hypertension			0.370	0.045
No	307 (84.1%)	58 (15.9%)		
Yes	29 (78.4%)	8 (21.6%)		
Diabetes			**< 0.001**	0.251
No	334 (85.0%)	59 (15.0%)		
Yes	2 (22.2%)	7 (77.8%)		
Cardiovascular disease			0.118	0.082
No	315 (84.2%)	59 (15.8%)		
Yes	21 (72.4%)	8 (27.6%)		
Cancer			**< 0.001**	0.300
No	335 (85.0%)	59 (15.0%)		
Yes	0 (0%)	7 (100.0%)		
Lung disease			**< 0.001**	0.296
No	313 (87.4%)	45 (12.6%)		
Yes	23 (52.3%)	21 (47.7%)		
Age	31.11 ± 13.75	27.87 ± 13.67	0.080	0.236
Number of children	0.67 ± 1.22	0.41 ± 1.21	0.105	0.214
Depression score	9.95 ± 8.25	27.86 ± 13.87	**< 0.001**	1.569
Fear of COVID score	18.11 ± 5.23	16.85 ± 5.46	0.077	0.235
Time spent on social media for news	1.98 ± 2.42	2.39 ± 2.12	0.201	0.180
Household crowding index	0.83 ± 0.52	1.29 ± 0.79	**< 0.001**	0.687

Numbers in bold indicate significant p-values

2018). This depression is ascribed to the negative emotional impact on individuals consuming stressful, harmful or fake news because of prolonged hours of social media exposure (Nguyen & Chung, 2019) (Bendau et al., 2021; Olagoke et al., 2020). While some studies found that 56% of adults showed anxiousness as a result of distressing political news in their daily lives (APA public opinion poll – annual meeting 2018, 2018), others demonstrated that the difference between youth worrying about political news and youth depression was not significant (Caporino et al., 2020). Suicide is still considered a taboo in our region (Mahfoud et al., 2011). To the best of our knowledge, no previous study investigated the relation between the consumption of social media news and suicidal ideation. Thus, we hypothesize that suicidal ideation in our study may be underreported or there are other factors that might be more associated with suicidal ideation. Further studies must be done to confirm our hypothesis.

As mentioned in previous studies (Mamun et al., 2021), our study showed that having more fear of Covid-19 is related to a higher risk of depression. This virus is life-threatening and has an impact on the individual's mental

Table 6 Multivariable analysis: Logistic regressions (using the ENTER model) taking the presence/absence of suicidal ideation as the dependent variable

Variable	*p*	aOR	95% CI
Model 1: Sociodemographic variables as independent variables			
Age	0.254	0.99	0.97–1.10
Household crowding index	**< 0.001**	3.60	2.20–5.87
Model 2: sociodemographic characteristics and chronic diseases as independent variables			
Age	**0.013**	0.96	0.94–0.99
Household crowding index	**< 0.001**	4.97	2.84–8.70
Diabetes (yes vs no*)	**0.004**	16.20	2.49–105.16
Lung disease (yes vs no*)	**< 0.001**	7.97	3.60–17.67
Model 3: variables in model 2, fear of COVID-19 and time spent on social media for news as independent variables			
Age	**0.011**	0.96	0.94–0.99
Household crowding index	**< 0.001**	5.98	3.25–11.02
Diabetes (yes vs no*)	**0.023**	10.67	1.38–82.30
Lung disease (yes vs no*)	**< 0.001**	9.30	4.09–21.12
Fear of COVID-19 score	**0.029**	0.94	0.88–0.99
Time spent on social media for news	0.510	0.95	0.80–1.11
Model 4: variables in model 3 and depression as independent variables			
Age	**0.016**	0.96	0.94–0.99
Household crowding index	0.050	2.33	0.99–5.42
Diabetes (yes vs no*)	0.086	7.70	0.75–78.99
Lung disease (yes vs no*)	0.295	1.75	0.62–4.95
Fear of COVID-19 score	**< 0.001**	0.86	0.79–0.93
Time spent on social media for news	**0.032**	0.76	0.60–0.98
Depression	**< 0.001**	1.17	1.12–1.22

*Reference group; aOR = Adjusted odds ratio; CI = Confidence Interval; numbers in bold indicate significant p-values

health (Hossain et al., 2020). Plus, new experiences tend to be more frightful, and Covid-19 is the first pandemic Lebanon has experienced in many years (Ropeik, 2004). In addition to scientific articles, having any sort of fear can lead to depression (Bowman, 2001). Owing to quarantine and social distancing, people have become more susceptible to develop anxiety and depressive symptoms (Rossi et al., 2020).

Concerning suicidal ideation, our study showed, unlike other studies (Mamun et al., 2021), that the fear of Covid-19 was associated with less suicidal ideation. Usually, fear can affect an individual's logical thinking which leads to illogical behaviors such as committing suicide (Chang et al., 2020; Goyal et al., 2020; Mamun & Griffiths, 2020). This low percentage of suicidal ideation may be a result of the multiple mental health awareness campaigns carried out by NGOs and academic centers through online webinars during this pandemic (Khoury & Karam, 2020).

In contradiction with previous studies (Bhugra et al., 2019; Dutheil et al., 2019; Pacheco et al., 2019), working in the medical field is shown to be associated with less depression than other fields according to our study results. We hypothesize that despite poor working conditions in the medical field, depression among healthcare workers decreased because they are more educated on mental illnesses and thus, seek therapy at an early stage. Not to mention that the population of this study mostly consists of young people who are less prone to develop depression at an early age (World health organization, 2017). Further studies are needed to support our results.

Having a pet at home is associated with lower depression compared to not having one. In accordance with a previous study, a pet lowers depression symptoms because it provides company, and the feeling of love and security (Rhoades et al., 2015).

In line with other studies, having cancer or lung disease is related to more depression according to our study (Bortolato et al., 2017). These chronic diseases are life-threatening, especially cancer (Campbell-Enns & Woodgate, 2015). Long-term medications leading to persistent complications, dependence on other people, and such are causing depression (Ahn et al., 2010; Gürhan et al., 2019; Zhang et al., 2018). Furthermore, exacerbation of symptoms and psychosocial factors such as physical inactivity, lack of social support and low self-esteem can lead to depression in patients having lung disease (Connolly & Yohannes, 2016).

In line with a previous study (Lorant et al., 2003), higher HCI showed to be associated with more depression according to our study. The theory of stress can explain the presence of depression in individuals with lower socio-economic status: these individuals are more exposed to stress, have poor self-esteem and bad coping mechanisms, thus increasing the impact of stress on depression (Lorant et al., 2003). Also, our results showed that older age was associated with lower suicidal ideation, whereas a previous study conducted in Spain, Ghana and India revealed that older age has 1.5 times more risk of suicidal ideation (Cabello et al., 2020). We hypothesize that several stages precede suicide which is why the percentage of suicidal ideation in this study is lower than expected. Further studies should be conducted to validate this hypothesis.

Our study showed that higher depression is linked with higher suicidal ideation. This result is similar to previous studies (Azeem et al., 2019; Ribeiro et al., 2018). People having mental health problems are more susceptible to suicidal behaviors such as suicidal ideation and attempts (Chesney et al., 2014). Moreover, depression is known to be the major risk factor for suicide (Cavanagh et al., 2003; Li et al., 2011) and most of those who ended their lives had depressive symptoms (Robins et al., 1959). But further

studies are needed to identify the exact correlation between depression and suicidal ideation.

On another hand, this study showed that depression did not mediate the association between time spent on social media for news and the presence of suicidal ideation. A possible explanation would be that other psychopathologies might mediate the relation between social media news and suicidal ideation, which were not explored in this project. In any case, additional studies are needed in order to investigate the mechanism by which social media news might influence suicidal ideation.

Clinical Implications

Social media is a vessel of information, its news is updated every second with new data and on the latest topics, for that it became people's main source of news. However, negative updates in politics, economy and Covid-19 are associated with mental health issues such as depression and suicidal ideation. Therefore, we should promote and focus on communicating up-to-date strategies to stop the spread of COVID-19 instead of insisting on telling the impact of this pandemic (Tran et al., 2020). Also, personal effort such as setting a time limit to different social media platforms, turning off news notification and trying to use coping mechanism when reading sad or harmful news, may help.

Moreover, considering the effect of depression and chronic illnesses on exacerbating each other, healthcare workers should pay closer attention to the patients with these conditions in order to achieve maximum primary care quality and to improve the prognosis of these individuals, thus we recommend a daily follow-up by healthcare workers (such as nurses and physicians) on the mental status of the patients with the greatest risk factors (patients living in a crowded house, not owning a pet, fearing COVID-19, etc.). Not to mention that healthcare workers should consider the susceptibility of these patients for suicidal ideation in order to prevent it. Furthermore, the use of internet cognitive behavior therapy has a dual benefit: treat psychological disorders and stop the spread of the virus during the outbreaks (Zhang & Ho, 2017).

Limitations

Our study has some limitations; since it is a cross-sectional study, we are unable to prove causality. Also, the data was collected through the snowball technique which may lead to a sampling bias such as the low number of married participants, the large number of individuals with the education level university and age distribution. Another statistical bias might be present in relation with some subgroups having a few number of individuals from the sample size. This study is prone to an information bias because it was a self-administered questionnaire; variables were not assessed through a clinical interview by a healthcare professional. Moreover, confusion bias may exist because of the presence of other factors coexisting and associated with depression and suicidal ideation that were not taken into consideration in this study. Also, our result showed a significant association between depression and time spent on social media for news but the multivariate effect size for this association is small, therefore our results should be interpreted with caution.

Conclusion

Social media news consumption is associated with higher depressive symptoms, but not suicidal ideation. Further studies are necessary to detect possible links between social media news consumption and psychological illnesses. Fear of COVID-19 is associated with more depression, but less suicidal ideation. Upcoming longitudinal studies should try to demonstrate if people read news on social media because they are depressed and have suicidal ideation, or whether they become more depressed and have suicidal ideation with higher consumption of social media news.

Abbreviations WHO: World Health Organization; HCI: Household Crowding Index; SES: Socioeconomic Status; LDS: Lebanese Depression Scale; C-SSRS: Columbia-Suicide Severity Rating Scale

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Author Contributions YEF was responsible for the data collection and entry. MS, SH and YEF designed the study; YEF drafted the manuscript; SH carried out the analysis and interpreted the results; SO reviewed and edited the paper; all authors reviewed the final manuscript and gave their consent.

Data Availability All data generated or analyzed during this study are not publicly available due to restrictions from the ethics committee. The dataset supporting the conclusions is available upon request to the corresponding author (SH).

Declarations

Ethics Approval and Consent to Participate The Psychiatric Hospital of the Cross Ethics and Research Committee approved this study protocol. The objectives of the study were explained in detail to each participant in the introductory paragraph of the link. Submitting the form online was considered equivalent to obtaining a written informed consent from each participant.

Consent for Publication Not applicable.

Competing Interests The authors have nothing to disclose.

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