



Research Paper

Factors associated with anxiety in males and females in the Lebanese population during the COVID-19 lockdown

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1. Introduction

Ever since the COVID-19 pandemic began in Wuhan, China, in December 2019, it has silently spread throughout the globe, taking well over one and a half million lives in its path and leaving millions of others ill and fearing for their lives. World governments have been forced to respond to the threat, and at times, no matter the repercussions of the potential solutions (mental health as an example). The first case of COVID-19 disease in Lebanon was reported on February 21, 2020, when the Ministry of Public Health advised people to self-quarantine. Subsequently, the government declared a national medical emergency on March 16, 2020, issuing a mandatory lockdown for four weeks, with the closure of all non-essential businesses and establishments. Physical and mental health go hand in hand in determining the quality of life of individuals. Although it is a physical threat, it has ravaged the world and imposed a tremendous psychological burden on citizens worldwide, be it the death of a relative or staying home indefinitely during a countrywide lockdown. People are worried about both the possibility of catching the rapidly spreading fatal disease and the effects that indeterminately quarantining will have on their financial situation.

The current situation has forced people worldwide to change their lifestyle habits, including diet, sleep, sports, and hobbies. This change could have either been done willfully (e.g., coping mechanism) or not (e.g., fewer sports due to lockdowns). Regardless, it could be interesting to study the relationship these lifestyle changes have with the anxiety level during the pandemic. Anxiety disorders are one of the most prevalent consequences of stress, along with depression and post-traumatic stress disorder (Fink, 2016). A recent study during the COVID-19 pandemic revealed that 44% of its participants had anxiety (Sher, 2020). This anxiety is reinforced by the fact that we do not know much about this

novel virus, the rapidly growing number of positive cases (El-Hage et al., 2020), and the economic impact previously stated, among other factors. In a study in Spain, anxiety was low during the first period of the virus outbreak and rose with time, leading to stay-at-home orders (Ozamiz-Etxebarria et al., 2020). It is also crucial to note that anxiety does not affect everyone equally since risk factors differ from person to person, even within families.

Additionally, genes are heavily implicated in developing anxiety disorder as "common genetic variation accounts for a substantive proportion of the genetic architecture underlying anxiety" (Purves et al., 2020). The difference in response to the same situation between individuals, although not fully understood, remains essential to detect early signs of anxiety disorder and offer appropriate treatment early. Young individuals with chronic diseases were more likely to experience anxiety symptoms during the pandemic (Ozamiz-Etxebarria et al., 2020). The differences in the prevalence of anxiety between the two sexes were brought to light and found to be significant, with women being three times more likely to report anxiety symptoms than their male counterparts (Vasiliadis et al., 2020). In light of the unprecedented major stressful event, we found it vital to study the changes during the COVID-19 pandemic and how they were associated with anxiety, all while emphasizing the similarities and differences between men and women. Based on previous studies, we expect that women might display more anxiety than men. Also, we argue that indoor factors and public health measures should increase (e.g., sleep, hand-washing, mask-wearing), while outdoor factors should decrease (e.g., sports, hobbies), with factors modifications. These findings might provide mental health professionals with an updated and more accurate view of anxiety for better-targeted diagnosis and treatment strategy for both sexes.

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2. Materials and methods

2.1. Data collection

Between March 30, 2020, and April 7, 2020, we delivered a WhatsApp message containing information about the anonymous survey and a link to fill it on Google Forms to eligible participants that we know and asked them to do the same and so on, thus a snowball approach. The National Lebanese Suicide Prevention team also shared the study on Instagram. Other Facebook pages did the same to reach a wider audience. We also shared the study on the Lebanese community on Reddit. The first page included a consent form informing the reader about the study, reminding them of their freedom to partake (and leave the survey at any time for any reason) in the research, and assuring them of the anonymity of their answers (which would only be used for research purposes). Our inclusion criteria required participants to be at least 18 years of age, residents of Lebanon, and that they offer their consent. We recruited 1,117 responses, and after applying the criteria, 948 responses. Individuals did not receive anything in return for participating in our study. The university did not require IRB approval, but we did add a complete consent form.

2.2. Survey Instrument

Under each question, we added an explanation to ensure the participant understood what was being asked of them.

Firstly, we inquired about general information (age, sex – male or female, residency – urban or rural area). Then, since Lebanon is facing an economic crisis, primarily due to government corruption, we asked our participants if they trusted the government’s ability to handle the COVID-19 pandemic (“Do you trust the government’s ability to handle the COVID-19 pandemic? Yes/No). At one point, the government issued a medical health emergency requiring individuals to self-quarantine. However, this lockdown was not fully enforced, making self-quarantine optional to a large extent. Hence, we asked our participants whether they self-quarantined before or after the medical emergency issuance, if at all.

Moving on, we inquired about lifestyle adjustments and factors made because of the pandemic before and after the pandemic – weight (“How much do you weigh in kilograms?”), sleep duration (“How long do you sleep per night in minutes?”), sports duration (“How long do you exercise each week in minutes?”), diet (“Are you trying to eat healthily or not?”), whether or not they engaged in hobbies. We also asked which precautionary measures they were taking – washing hands regularly, wearing masks, and social distancing.

Finally, we included the Generalized Anxiety Disorder-7 scale to score anxiety levels. Cut-off scores for the GAD-7 were 6, 11, and 16, indicated mild, moderate, and severe anxiety, respectively. Cronbach’s α for the items in this test was .915, which shows an excellent internal consistency in the questionnaire.

2.3. Data analysis

We used SPSS 26 to analyze the results of the data we acquired. We performed an Independent Sample Test to study the difference between men’s and women’s anxiety. Then, we used a Paired Sample Test to check for differences in lifestyle habits before and after the pandemic in both men and women. Subsequently, we did a Logistic Regression Test and a Multivariate Regression Test to analyze age’s role in participants’ response patterns. Finally, a Multivariate Regression Test allowed us to study relations between different factors and GAD-7 scores while controlling for the different factors we had obtained.

3. Results

3.1. Population

Our population consisted of 948 participants. We studied multiple factors and lifestyle adjustments to further detail in the study (Table 1). We also noted the difference in the distribution in each category of anxiety severity (Fig. 1), showing that women outweigh men.

3.2. GAD-7

The Independent Sample Test showed a statistically significant difference in GAD-7 scores between males and females ($t = -5.149$, $df = 946$, $p < .001$), with the mean score for men was 6.3388 ± 6.12577 , while it was 8.4689 ± 5.85788 for women.

3.3. Factors changing after the lockdown

Using a Paired Sample Test (Table 2), compared to before the pandemic, men ate a healthier diet ($t = -2.341$, $p < .001$), slept longer ($t = -9.369$, $p < .001$), weighed more ($t = -2.739$, $p < .05$), reduced smoking (4.192 , $p < .001$), practiced fewer sports ($t = 3.926$, $p < .001$), and engaged in fewer hobbies ($t = 6.689$, $p < .001$). In contrast, women only increased their sleep duration ($t = -9.529$, $p < .001$), weighed more ($t = -7.660$, $p < .001$), and reduced smoking ($t = 5.588$, $p < .001$). Women did not significantly change their diet, sports duration, or hobbies.

3.4. Habits and lifestyle adjustments associated with age

The mean age for male participants is 28.55 ± 12.198 years, ranging from 18 to 86, while that for female participants was 28.02 ± 10.798 years, ranging from 18 to 63. Using a Logistic Regression Test (Table 3) and a Multivariate Regression Test (Table 4), with increasing age, both sexes had a healthier diet ($B = .043$, $p = .006$ for men; $B = .042$, $p < .001$ for women), weighed more ($B = .281$, $p < .001$ for men; $B = .351$, $p <$

Table 1
Population analysis based on sex.

Factors	Male			Female		
	Mean	N	SD	Mean	N	SD
Age	28.55	304	12.198	28.02	644	10.798
Self-quarantine	.74	304	.437	.77	644	.424
Diet before the COVID-19 lockdown	.73	304	.446	.74	644	.438
Diet after the COVID-19 lockdown	.79	304	.411	.73	644	.443
Weight before the lockdown	79.36	304	15.870	63.02	644	12.735
Weight after the lockdown	79.93	304	15.644	63.69	644	12.756
Sleep duration before the lockdown	419.95	304	72.535	440.53	644	87.776
Sleep duration after the lockdown	481.00	304	113.739	494.09	644	129.064
Smoking before the lockdown	.36	304	.479	.25	644	.436
Smoking after the lockdown	.29	304	.454	.19	644	.396
Hobbies before lockdown	.73	304	.443	.52	644	.500
Hobbies after the lockdown	.54	304	.499	.51	644	.500
Mask	.61	304	.489	.59	644	.492
GAD-7 Score	6.34	304	6.126	8.47	644	5.858

Age: in years; self-quarantine: self-quarantine after the medical emergency; diet: higher values indicate a healthier diet; weight (in kilograms); sleep duration (minutes/day); mask: mask-wearing; N: Number of participants; SD: Standard Deviation;

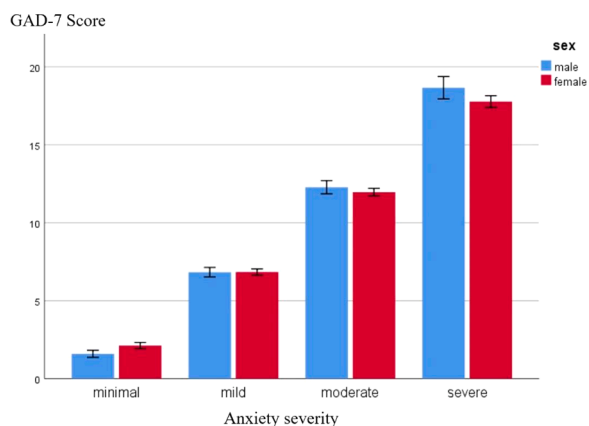


Fig. 1. Anxiety prevalence by sex according to different anxiety severity.

.001 for women), tended to wear masks ($B = .036, p = .002$ for men; $B = .028, p < .001$ for women) more and slept less ($B = -.2.113, p < .001$ for men; $B = -2.464, p < .001$ for women), smoked more ($B = .025, p = .012$ for men; $B = .029, p = .001$ for women), searched for COVID-19 related information more frequently ($B = .016, p = .008$ for men; $B = .024, p <$

.001 for women).

3.5. Habits and lifestyle adjustments associated with anxiety

Aided by the Multivariate Regression Test (Table 5), we noticed that both men’s and women’s GAD-7 scores were negatively related to their trust in the government’s ability to handle the pandemic ($B = -2.774, t = -4.136$, for men, $B = -1.766, t = 4.168$ for women, $p < .001$ for both) and their satisfaction with their support system ($B = -1.947, t = -5.614$ for men, $B = -1.751, t = -7.524$ for women, $p < .001$ for both). Their GAD-7 scores were also positively related to the frequency of searching for COVID-19 related information ($B = .911, t = 3.445, p = .001$ for men, $B = .911, t = 5.162, p < .001$ for women).

We found out that higher GAD-7 scores appeared in women living in urban areas ($B = -1.385, t = -3.313, p = .001$), with less sleep ($B = -.006, t = -3.560, p < .001$) and sports ($B = -.003, t = -2.357, p = .019$) duration, and mask wearing ($B = 1.181, t = 8.505, p = .006$). None of these previous factors was related to GAD-7 scores for men. R square was equal to .223 for men and .239 for women, while adjusted R square was .186 for men and .222 for women.

As for anxiety severity, the same findings were present with the addition of diet in women ($B = -.198, t = -2.174, p = .030$), indicating a healthier diet was negatively related to anxiety severity. R square was

Table 2

Paired Sample Test for different factors before and after the pandemic in men and women.

Factors	Male					Female				
	Mean before(+SD)	Mean after (+SD)	Mean difference (+SD)	t	p	Mean before(+SD)	Mean after (+SD)	Mean Difference (+SD)	t	p
Eating behavior	.73 (.446)	.79 (.411)	-.059 (.441)	-2.341	< .001***	.74 (.438)	.73 (.443)	.009 (.480)	.493	.622
Sleep duration	419.95 (72.535)	481 (113.739)	-61.049 (113.612)	-9.369	< .001***	440.53 (87.776)	494.09 (129.064)	-53.562 (142.637)	-9.529	< .001***
Weight (kg)	79.36 (15.870)	79.93 (15.644)	-.566 (4.146)	-2.739	< .05*	63.02 (12.735)	63.69 (12.756)	-.667 (2.209)	-7.660	< .001***
Smoking	.36 (.479)	.29 (.454)	.066 (.274)	4.192	< .001***	.25 (.436)	.19 (.396)	.061 (.275)	5.588	< .001***
Sports duration	176.91 (196.505)	132.60 (189.382)	44.316 (196.802)	3.926	< .001***	99.30 (143.018)	100.14 (177.656)	-.846 (190.662)	-.113	.910
Hobbies	.73 (.443)	.54 (.499)	.191 (.497)	6.689	< .001***	.52 (.500)	.51 (.500)	.014 (.573)	.619	.536

Before: before the lockdown; After: after the lockdown; Eating behavior: eating a healthy diet (higher scores for Eating behavior indicate healthier diets); SD: Standard Deviation; t: the size of the difference relative to the variation in the data; p: p-value (2-tailed).

Table 3

Logistic Regression between age and lifestyle adjustments, for males and females

Sex	Dependent variable	B	Std. Error	df	p	Exp(B)	95% CI	
							LB	UB
Male	Residency	.008	.009	1	.383	1.008	.990	1.027
	Trust in the government	.014	.010	1	.142	1.014	.995	1.033
	Diet	.043	.016	1	.006**	1.044	1.012	1.076
	Hand-washing	.005	.028	1	.865	1.005	.952	1.060
	Mask	.036	.011	1	.002**	1.036	1.013	1.060
	Smoking	.025	.010	1	.012*	1.025	1.006	1.046
	Self-quarantine	.017	.012	1	.150	1.017	.994	1.041
	Hobbies	-.008	.009	1	.406	.992	.974	1.011
Female	Residency	.001	.007	1	.842	1.001	.987	1.016
	Trust in the government	.013	.007	1	.083	1.013	.998	1.028
	Diet	.042	.010	1	< .001***	1.043	1.023	1.064
	Hand-washing	.021	.029	1	.468	1.021	.965	1.081
	Mask	.028	.008	1	< .001***	1.029	1.013	1.045
	Smoking	.029	.009	1	.001**	1.030	1.013	1.047
	Self-quarantine	-.015	.008	1	.067	.985	.969	1.001
	Hobbies	-.014	.007	1	.050	.986	.972	1.000

Residency: higher values indicate rural residency; trust in the government: trust in the government’s ability to handle the pandemic; diet: higher values indicate a healthier diet; search frequency: higher values indicate higher search frequency for COVID-19 related information; support system: satisfaction in support system; mask: mask-wearing; self-quarantine: self-quarantine after the medical emergency; Std. Error: standard error; t: the size of the difference relative to the variation in the data; df: degrees of freedom associated with the sources of variance; p: p value; 95% CI: 95% Confidence Interval; LB: lower bound; UB: upper bound.

Table 4
Multi-variate Regression between age and lifestyle adjustments, for males and females.

Sex	Dependent Variable	Parameter	B	Std. Error	t	p	95% Confidence Interval	
							LB	UB
Male	Weight	Intercept	71.901	2.235	32.177	< .001***	67.504	76.298
		Age	.281	.072	3.905	< .001***	.140	.423
	Sleep duration	Intercept	541.327	16.218	33.378	< .001***	509.412	573.242
		Age	-2.113	.523	-4.044	< .001***	-3.142	-1.085
	Sports duration	Intercept	164.262	27.655	5.940	< .001***	109.842	218.683
		Age	-1.109	.891	-1.245	.214	-2.863	.644
	Search frequency	Intercept	1.063	.181	5.888	< .001***	.708	1.419
		Age	.016	.006	2.668	.008**	.004	.027
	Support system	Intercept	2.888	.142	20.402	< .001***	2.610	3.167
		Age	.003	.005	.605	.546	-.006	.012
Female	Weight	Intercept	53.864	1.337	40.299	< .001***	51.240	56.489
		Age	.351	.045	7.879	< .001***	.263	.438
	Sleep duration	Intercept	563.131	13.858	40.636	< .001***	535.919	590.344
		Age	-2.464	.462	-5.339	< .001***	-3.371	-1.558
	Sports duration	Intercept	124.490	19.467	6.395	< .001***	86.264	162.717
		Age	-.869	.648	-1.340	.181	-2.142	.404
	Search frequency	Intercept	.866	.129	6.707	< .001***	.613	1.120
		Age	.024	.004	5.686	< .001***	.016	.033
	Support system	Intercept	2.875	.100	28.676	< .001***	2.679	3.072
		Age	.003	.003	.817	.414	-.004	.009

Sleep: sleep duration (minutes/day); sports: sports duration (minutes/week); search frequency: higher values indicate higher search frequency for COVID-19 related information; support system: satisfaction in support system; Std. Error: standard error; t: the size of the difference relative to the variation in the data; p: p value; 95% CI: 95% Confidence Interval; LB: lower bound; UB: upper bound.

Table 5
Multivariate Regression Test on lifestyle adjustments after the pandemic dependent on GAD-7 score.

Independent Factor	Male						Female					
	B	Std. Error	t	p	95% CI		B	Std. Error	t	p	95% CI	
					LB	UB					LB	UB
Intercept	12.016	3.089	3.889	<.001***	5.935	18.096	17.998	2.036	8.839	<.001***	13.999	21.996
Age	-.046	.029	-1.570	.117	-.103	.012	-.038	.021	-1.785	.075	-.080	.004
Residency	-.481	.654	-.735	.463	-1.769	.807	-1.385	.418	-3.313	.001**	-2.206	-.564
Government	-2.774	.671	-4.136	<.001***	-4.094	-1.454	-1.758	.422	-4.168	<.001***	-2.587	-.930
Quarantine	-.167	.752	-.223	.824	-1.647	1.313	-.451	.494	-.914	.361	-1.422	.519
Eating	.136	.842	.162	.871	-1.521	1.794	-.821	.490	-1.675	.094	-1.783	.142
Weight (kg)	-.008	.022	-.388	.699	-.051	.034	.023	.017	1.350	.178	-.010	.057
Sleep	4.587E-5	.003	.016	.988	-.006	.006	-.006	.002	-3.560	<.001***	-.009	-.003
Smoking	.806	.737	1.093	.275	-.646	2.257	1.024	.530	1.933	.054	-.016	2.064
Sports	.000	.002	-.132	.895	-.004	.003	-.003	.001	-2.357	.019*	-.005	.000
Hobbies	-.534	.654	-.816	.415	-1.820	.753	-.329	.420	-.782	.434	-1.155	.497
Search Freq.	.911	.265	3.445	.001**	.391	1.432	.911	.176	5.162	<.001***	.564	1.257
Support	-1.947	.347	-5.614	<.001***	-2.630	-1.264	-1.737	.231	-7.524	<.001***	-2.191	-1.284
Hand wash	1.968	1.808	1.088	.277	-1.592	5.527	-1.365	1.426	-.957	.339	-4.166	1.436
Mask	.764	.684	1.118	.265	-.581	2.110	1.181	.429	2.751	.006**	.338	2.024
Intercept	1.825	.545	3.347	.001**	.752	2.899	3.226	.379	8.505	<.001***	2.481	3.971
Age	-.008	.005	-1.488	.138	-.018	.002	-.006	.004	-1.579	.115	-.014	.002
Residency	-.136	.115	-1.178	.240	-.363	.091	-.249	.078	-3.193	.001**	-.402	-.096
Government	-.372	.118	-3.138	.002**	-.604	-.139	-.333	.079	-4.236	<.001***	-.487	-.179
Quarantine	.005	.133	.039	.969	-.256	.266	-.103	.092	-1.121	.263	-.284	.078
Eating	.002	.149	.015	.988	-.290	.295	-.198	.091	-2.174	.030**	-.378	-.019
Weight (kg)	.000	.004	-.081	.935	-.008	.007	.004	.003	1.238	.216	-.002	.010
Sleep	7.148E-5	.001	.138	.890	-.001	.001	-.001	.000	-3.477	.001**	-.002	.000
Smoking	.153	.130	1.178	.240	-.103	.409	.159	.099	1.616	.107	-.034	.353
Sports	-2.895E-5	.000	-.092	.927	-.001	.001	-.001	.000	-2.738	.006**	-.001	.000
Hobbies	-.117	.115	-1.016	.310	-.344	.110	-.054	.078	-.687	.492	-.208	.100
Search Freq.	.145	.047	3.106	.002**	.053	.237	.162	.033	4.937	<.001***	.098	.227
Support	-.339	.061	-5.541	<.001***	-.460	-.219	-.315	.043	-7.312	<.001***	-.399	-.230
Hand wash	.261	.319	.818	.414	-.367	.889	-.406	.266	-1.527	.127	-.928	.116
Mask	.080	.121	.659	.510	-.158	.317	.211	.080	2.637	.009**	.054	.368

Orange: GAD-7 score; Green: Anxiety severity; Factor: lifestyle modification being analyzed with GAD-7 scores; Residency: higher values indicate rural residency; eating behavior: higher values indicate a healthier diet; sleep: sleep duration (minutes/day); sports: sports duration (minutes/week); search frequency: higher values indicate higher search frequency for COVID-19 related information; support system: satisfaction in support system; mask: mask wearing; Std. Error: standard error; t: the size of the difference relative to the variation in the data; p: p value; 95% CI: 95% Confidence Interval; LB: lower bound; UB: upper bound.

equal to .197 for men and .238 for women, while adjusted R square was .158 for men and .221 for women.

4. Discussion

4.1. Sex

During our analysis, we found that anxiety was more prevalent in women than men overall. Similar findings were proposed by another article that concluded that some anxiety disorders become more prevalent in women than men during the years between puberty and menopause (Altemus et al., 2014), potentially indicating a hormonal involvement, e.g., progesterone which is linked to anxiety (Reynolds et al., 2018). Furthermore, during the pandemic, women were also more prone to anxiety and depression (Özdin and Özdin, 2020). It is important to note that we relied on the GAD-7 scale to evaluate anxiety but did not follow up with a mental health professional to diagnose the participants due to the travel restrictions that were in place. In our study, the difference in prevalence can not only be explained by hormonal factors though, but by their lifestyle (e.g., residency, diet, adjustments) and environmental causes (the COVID-19 pandemic in this case). These lifestyle modifications could be consciously made to overcome this stressful event. They might also be due to unwanted changes imposed by the pandemic. Because this study is observational, we can only speculate about the intent behind these changes.

4.2. Changes in lifestyle adjustments made after the pandemic and their association with anxiety

Compared to prior to the pandemic, both sexes slept longer, weighed more, and smoked less, while men also ate healthier, decreased their sports duration, and engaged in fewer hobbies.

4.2.1. Sleep duration

The increased sleep duration was significantly associated with lower GAD-7 scores and anxiety severity in women alone. This finding is supported by research that found a negative correlation between sleep and anxiety, although this was only applicable to women in our data. Women's sleep reactivity is considerably associated with environmental triggers – sleep reactivity being the degree to which external stimuli might disrupt one's sleep (sleep latency and duration) (Kalmbach et al., 2018). Hence, considering that our female participants slept longer, this sleep disruption could be affecting their mental health upon awakening, thus increasing anxiety.

4.2.2. Weight, diet, sports, and hobbies

None of these factors was associated with anxiety in men either. As for women, physical activity was linked to lower GAD-7 scores and anxiety severity, while the diet was only linked to the latter.

Concerning eating habits, low diet quality is associated with anxiety disorders (Gibson-Smith et al., 2018). It can also be true that people with anxiety use eating as a coping mechanism, which, combined with the previously stated fact, could lead to a vicious cycle (Macht, 2008).

Also, our results on exercise are in agreement with other studies indicating a negative relationship between physical activity and anxiety (Kandola and Stubbs, 2020, Battalio et al., 2020), although this was only applicable to women in our study.

It is possible that despite eating healthier, men gained weight due to decreasing their sports duration and hobbies, while women might have gained weight for not eating healthier, despite maintaining the same amount of sports duration. Although men decreased their sports duration, they still practiced sports more than women, which is a possible explanation for the lesser increase in weight in men than women, combined with a healthier diet.

4.2.3. Smoking

People with anxiety are more prone to smoking than people without anxiety (Garey et al., 2020, Yan et al., 2019), meaning they go hand in hand. This link could mean that the participants with anxiety in our study could be using smoking as a coping mechanism. However, both sexes have significantly decreased smoking, which might be due to the fear of being at an increased risk for complications should they contract the COVID-19. This fear may be due to the increased ACE2 receptors in smokers, the same receptor used by the SARS-CoV-2 virus to enter the mucosa and cause an active infection (van Zyl-Smit et al., 2020). Hence, it can also be true that smokers who chose not to quit or those who could not do so are anxious due to their vulnerability to the virus.

4.3. Age-related factors and lifestyle adjustments in men and women

It appears that age plays a role in responding to the pandemic. Unsurprisingly, weight increased with age in both sexes. It is to be noted that older age is a prominent risk factor for the SARS-CoV-2 virus (Chen et al., 2021). Therefore, it is reasonable that these older individuals would take more action to maintain a healthy lifestyle should they contract the virus (Rishi et al., 2020).

This decision could explain why they had healthier diets than their younger counterparts. They also wore masks significantly more than younger individuals, potentially for the same reason due to the mask's efficiency in stopping the virus' spread (Rader et al., 2021). Finally, older men and women slept less than younger ones, possibly resulting from jobs being primarily undertaken by older adults.

Older people also smoked more and searched for COVID-19 related information more frequently. They are also more likely to have a job, explaining why they might have to put themselves at risk more often than their younger counterparts. Therefore, the increase in potential exposure to the virus and smoking could have increased anxiety, thus increasing COVID-19 related information.

Also, since both sexes reduced smoking in general, younger participants might have stopped smoking, increasing the difference with their older peers. This theory could be because lifelong smokers might be less successful in quitting smoking than younger smokers. Due to this detail, the increased frequency of searches would be attributed to age and COVID-19 risk factors (not quitting smoking and higher weight). All in all, smoking might not be a coping mechanism for these older individuals since we found no link between doing so and anxiety (GAD-7 scores or severity); it is potentially only a risk factor.

4.4. Factors associated with GAD-7 and anxiety severity

On the one hand, increased GAD-7 scores and anxiety severity in both sexes seemed to be associated with a lack of trust in the government's ability to handle the pandemic, increased satisfaction in their support system, and decreased frequency in searches for COVID-19 related information.

On the other hand, higher GAD-7 scores and anxiety severity in women were also associated with living in an urban area and wearing masks.

4.4.1. Trust in the government

Lebanon's situation is relatively unique in this pandemic since it faces the deadly virus along with a collapsing economy. The national currency's worth has dropped dramatically due to governmental corruption, leading to a shortage in goods and others' sky-high prices. These conditions have led to civil unrest for over a year. Due to these factors, the pandemic has exacerbated anxiety that was already present beforehand. Knowing the government's inability to control the economic conditions, which has led to severe poverty, the Lebanese people seemed not to trust their government in handling the pandemic, which could worsen anxiety.

4.4.2. Satisfaction in one's support system

One's support system plays an essential role in dealing with mental health issues. With the lockdowns in place, people have resorted to online communications with others. A web-based support system was helpful for adolescents in dealing with depression (Anttila et al., 2020). Online support systems continue to help individuals in distress with heavily positive feedback (Touloumakos et al., 2016). A tight social connection seems to alleviate the symptoms of different mental health illnesses.

4.4.3. Frequency of searching for COVID-19 related information

Anxiety and this factor seemed to go hand in hand, which indicates that anxious individuals were looking up information on the disease significantly more than those who were not anxious. It might be because the COVID-19 pandemic is a primary source for them, considering anxiety has increased during the pandemic. In fact, people who spent too much time thinking about the pandemic appeared to be more anxious (Huang and Zhao, 2020). This finding might explain the process – anxious individuals who overthink about the COVID-19 pandemic are more likely to search for information related to it and then discover new information, reinforcing their reasons for being anxious.

4.4.4. Residency

Residing in an urban area is a risk factor for anxiety (Risal et al., 2016), even when there is no pandemic. During the virus spread, these residents have also been significantly more anxious than their rural counterparts (Huang et al., 2020), potentially due to the higher number of residents in cities than rural areas. This difference in a population could mean more potential spread, which could exacerbate one's anxiety about catching the virus.

4.4.5. Mask wearing

Although our results showed that wearing a mask was related to increased anxiety, a recent article found that precautionary measures were associated with lower anxiety (Wang et al., 2020). This difference could be due to the timing of the study, which was in the initial stage of the virus spread, during which people were being introduced to this new lifestyle modification. Individuals who wore masks early on could have been anxious not because of the mask per se but because it indicated a change in their lifestyle and a constant reminder of the novel and unknown threat.

5. Conclusion

Overall, anxiety was prevalent in women than in men. Since the pandemic, men and women slept longer, weighed more, and reduced smoking. Men also improved their diet and had fewer hobbies. Age seemed to have been involved in how an individual adjusted their lifestyle – older individuals had a healthier diet, weighed more, wore masks and searched for COVID-19 related information more frequently, smoked more, and slept less than their younger counterparts.

Factors associated with increased GAD-7 scores and anxiety severity for men were decreased trust in the government's ability to handle the pandemic, increased frequency of searching for COVID-19 related information, and decreased support systems satisfaction. Meanwhile, GAD-7 scores and anxiety severity for women were the same as those for men, along with living in an urban area, wearing a mask, sleep, and sports, with diet also related to anxiety severity.

These findings help provide a picture on how men and women are modifying their lifestyles due to the COVID-19 pandemic. The findings also shed light on which factors are related to anxiety and its severity. Although some risk factors might not be direct signs of anxiety, the sum of many along with a patient's history might help lead mental health professionals into a diagnosis. Finally, the relationship of certain lifestyle adjustments with anxiety could also aid in the research for the non-pharmaceutical treatment of anxiety.

5.1. Limitations

Since the national suicide prevention hotline shared a link to our study and the topic we posed, people who are already in mental distress are more likely to have participated, which could skew the results. We did not account for sexual behavior – the frequency of being intimate with a partner, which could have been increased in times of stress.

Also, some questions are subjective, e.g., one's satisfaction with their support system does not indicate the properties of that support system but only its perception. Additionally, the responses of the participants were self-reported and for questions regarding behavior before the pandemic, where recall bias could be present. This fact increases the chances of self-reporting bias, which could influence results, making it uncertain to draw definite conclusions. However, including the official Generalized Anxiety Disorder-7 scale would be of significant use to minimize bias. Furthermore, the participants might not represent the general population due to the snowball effect stemming from the recruitment procedure.

Moreover, our survey was online, which means it did not reach individuals with no Internet access who could be under more significant stress. Because of the lockdown, we could not ask a mental health professional to make an official diagnosis. Due to the nature of this study, it is not possible to draw causal relationships.

Declaration of Competing Interest

None.

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Authorship Statement

We certify that all persons who sufficiently contributed to this study and meet authorship criteria are listed as authors of our study. All authors state that the material has not been submitted to or published in any other publication.

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