

PREVALENCE AND CORRELATES OF CLASSICAL AND NON-CLASSICAL EATING
DISORDERS DURING COVID-19 LOCKDOWN

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Master of Science in Human Nutrition

by
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Abbreviations

- ADHD: Attention-Deficit Hyperactivity Disorder
- AN: Anorexia Nervosa
- APA: American Psychiatric Association
- ARFID: Avoidant/Restrictive Food Intake Disorder
- BED: Binge Eating Disorder
- BMI: Body Mass Index
- BN: Bulimia Nervosa
- CED: Classical Eating Disorders
- COVID-19: Coronavirus Disease
- DSM-5: Diagnostic and Statistical Manual of Mental Disorders, 5th edition
- ED/EDs: Eating Disorder / Eating Disorders
- IRB: Institutional Review Board
- LU: Lebanese University
- MEEDA: Middle East Eating Disorders Association
- MI: Ministry of Information
- MOPH: Ministry of Public Health
- NCED: Non-Classical Eating Disorders
- NDU: Notre Dame University
- NES: Night Eating Syndrome
- NHS: National Health Service
- NIH: National Institute of Health
- NIMH: National Institute of Mental Health

- OCD: Obsessive-Compulsive Disorder
- OCPD: Obsessive-Compulsive Personality Disorder
- OSFED: Other Specified Feeding or Eating Disorders
- PCR: Polymerase Chain Reaction
- PTSD: Post-Traumatic Stress Disorder
- SD: Standard Deviation
- SCOFF: Sick-Control-One Stone-Fat-Full questionnaire
- SPSS: Statistical Package for Social Sciences
- WHO: World Health Organization

1. Abstract

Introduction: Eating Disorders (EDs) are mental illnesses that affect all individuals worldwide, causing severe complications. EDs can be divided into classical (Anorexia Nervosa, Bulimia Nervosa, and Binge-Eating Disorder), and non-classical (Pica, Avoidant/Restrictive Food Intake Disorder, and Night Eating Syndrome). Several risk factors might lead to their development, in particular, stressful life events. The current COVID-19 pandemic is imposing psychological distress, mainly on individuals with existing mental health issues. To our knowledge, no studies have assessed the prevalence of classical and non-classical EDs and their correlates in Lebanon during the COVID-19 lockdown.

Objectives: Assess the prevalence and correlates of classical and non-classical EDs among students from different Lebanese universities during the COVID-19 lockdown.

Methods: This cross-sectional study included 458 students recruited in 2020 and 2021 from several Lebanese universities, and used a self-administered 6 section survey. The Statistical Package for Social Science (SPSS) version 23 for windows was used for data entry and analysis. $p < 0.05$ was considered to be statistically significant.

Results: Among 458 students the prevalence for Classical Eating Disorders was 5.2% and 6.8% Non-Classical Eating Disorders. Sick-Control-One Stone-Fat-Full (SCOFF) questionnaire was positive in 36.9% of participants. Significant associations were observed between Classical EDs and Body Mass Index (BMI), diet habits, anxiety, and changed eating habits during quarantine; between Non-Classical EDs and BMI, previous personal and familial diagnosis of ED or mental health disorder, and changed habits during quarantine. SCOFF was significantly associated with gender, BMI, previous diagnosis of ED or mental

health illness, having medicinal disturbances, dietary habits and changed habits due to quarantine. Logistic regression showed higher risk of developing Classical EDs when underweight or overweight, as well as gaining weight due to quarantine. Participants were at higher risk of Non-classical EDs development if overweight, partaking in non-medicinal drugs, and increased sleep due to quarantine. Lower risks were observed among underweight participants for SCOFF positivity, but increased risks were observed among females, as a result of increased food intake during quarantine, and weight changes during quarantine.

Conclusion: This study provides an insight to the current prevalence of classical and non-classical EDs amongst the university student population in Lebanon and their relevant risk factors during quarantine altered behavior times.

Key Words: Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder, Pica, Avoidant Restrictive Food Intake Disorder, Night Eating Syndrome, COVID-19 Pandemic, Prevalence, Lockdown

2. Introduction

a. Eating Disorders and Related Risk Factors

Eating Disorders (EDs) are mental illnesses that affect individuals of all races, age groups, and genders worldwide. These illnesses cause personal, familial, and social problems (Schaumberg K. et al., 2017). There are many misconceptions about causes of EDs mainly due to the stigma, preventing affected persons from seeking help and treatment (Ali K. et al., 2017). The risk factors of EDs are diverse and might lead to distortions in self-perception and eating habits (APA, 2013).

The most common and consistent risk factors for EDs are age and gender; where EDs occur more often in females, with adolescence representing a period of peak risk (APA, 2013; Keel P. K. et al., 2013). Other risk factors could be pressure and influence of culture, society, media, technology, life stressors and depressive emotions.

i. Cultural Factors

This reflects the impact cultural factors have on men and women, and its differences regarding the idealization of thinness, where females are more affected by this concept. As girls mature, they experience significant changes in their weight, shape, and percentage of body fat. On the other hand, males are pressured into the “muscular ideals” that may protect them from fear of gaining weight or attempts to reduce it. The idealization of thinness increased throughout the 20th century, and along with it, the incidences of Anorexia Nervosa (AN) and Bulimia Nervosa (BN) (Keel P. K. et al., 2013). As for ethnicity’s role, the thinness ideal also shows a difference between backgrounds, where cross-cultural research has shown that being of white and mixed races leads to more pressures into thinness; while being of black race results in less pressures, since being overweight in this latter ethnic group is more acceptable, due to

their traditional values that embrace a higher body weight, protecting the females from developing AN (Keel P. K. et al., 2013).

ii. Media and Technology

This thinness ideal is further influenced by media and technology and the exposure to the constant reminder to eat “healthy”, and the misperception of one’s ideal body shape. It was seen that long exposure to media and technology might manifest in adolescents in an unhealthy, unrealistic form that might cause them to develop EDs (Keel P. K. et al., 2013; Martínez-Gomez D. et al., 2015). The incidence of these disorders is on the rise since perceptions of body image is being greatly influenced by social networking and technology in general (Becker A. E. et al, 2011; Machado M. et al, 2007; Martínez-Gómez D. et al., 2015). The distorted image of how one’s body must look may occur while adolescents enter the puberty phase and all the physiological and psychological changes start to occur (Singh M. M. et. al, 2015).

Body image is defined as the perceptions, thoughts, and feelings a person has about his own body (Grogan S., 2008). Dissatisfaction occurs when views of the body are negative, as a result of discrepancy between a person’s actual body shape and what they consider as ideal, or what society imposes as “perfect” (Cash T. F. et al, 1995; Grogan S., 2008). In the USA and Australia, research suggests that girls show higher levels of body dissatisfaction, resulting into disturbed eating patterns, than boys do (Ata R. N. et al., 2007; Tiggemann M., 2005).

The exposure to mass media, the frequency of exposure, and the content of media showed that, in Spanish adolescents, there is a presence of body dissatisfaction, because of media (Calado M. et al., 2011). Several research have looked at how technology actually affects adolescents' views of their body shapes. One research explored the ideal

body image in women after showing them images of healthy weight models. This study showed that viewing these healthy figures has a positive impact on female ideals, as well as those who have EDs are less likely to pursue diet urges after exposure to these images (Owen R. et al., 2013).

On the other hand, another research looked at how the “Attractive Celebrity and Peer Images on Instagram” have an effect on how women view their bodies, and it was shown that exposure to images of thin, “attractive” celebrities and peers has a negative effect on women’s body image (Brown Z. et al., 2016).

Although males are not pressured into thinness, but rather muscular ideals, this still creates a body image discrepancy. Sylvia Z. et al. conducted a study on males who play video games by in 2014. This study showed that males who play video games using muscular avatars have a higher dissatisfaction with their body than those who play using normal looking avatars; which further proves the increase in reaching an ideal body figure among men, just like in women and the culture of thinness (Agliata D. et al., 2004; Bartlett C. P. et al., 2005; Cafri G. et al., 2002).

The widespread exposure of “perfect” bodies through media and technology leads to body image discrepancies and dissatisfaction in young teenagers. EDs and discrepancies in body image viewings lead to negative thoughts, which in turn might lead to emotional distress, such as stress, anxiety, and depression (Sassaroli S. et al., 2005).

iii. Stressful and Traumatic Events

Cultural factors and thin ideals are not the only factors that influence risk of developing EDs. Children exposed to traumatic events – such as sexual abuse – were seen at a greater risk of developing impaired behaviors, including EDs (Felitti V. J. et

al., 1998). Many studies have concluded that experiencing stressful life events – such as family problems, divorce status of parents, change of schools, change of home, increased academic pressure, sickness, death, personal accident, trauma ... – is also a risk factor for development of EDs, associated with increased risk of AN, BN, and Binge Eating Disorder (BED) (Hubert Lacey J. et al, 2006; Jacobi C. et al., 2004; Margo J. L., 1985; Scully J. A. et al., 2000).

In a cross-sectional study conducted in Lebanon, on 303 young adult students, that aimed to assess the development of EDs related to changes in eating behaviors during the wartime (six months after the July 2006 war), results showed that the Sick-Control-One Stone-Fat-Full (SCOFF) questionnaire was positive in 31.4% of the population with higher rates of EDs in females. This showed that eating behaviors during the war were associated with increased prevalence of EDs (Aoun A. et al., 2013).

Also, Post-Traumatic Stress Disorder (PTSD), described by distress and disability due to past traumatic events (Graf A. et al., 2011), is a risk factor for EDs, where higher PTSD prevalence was observed in ED patients (Brewerton T. D., 2008). Those patients are constantly anxious about re-experiencing the same traumatic experience, which is why most display sleep problems, nightmares, irritability, fearful expressions, and EDs (Carpenter G. et al., 2009). Cohort, cross-sectional and case control studies done on the link between PTSD and EDs have demonstrated that patients exposed to wars, stressful life events, and natural disasters, or have psychiatric disorders that lead to development of PTSD, were at higher risk of developing EDs, in particular BN and BED (Carmassi C. et al., 2014; Lauder T. D. et al., 2001; Loth K. et al., 2008; Pike K. M. et al., 2006; Smyth J. M. et al., 2008; Ulfvebrand S. et al., 2015).

iv. Negative Emotions

In addition, negative emotionality – such as negative self-evaluation, low self-esteem, dysphoria... – and perfectionism – striving to achieve flawlessness, fear of mistakes, belief that perfection leads to social acceptance, pressure to achieve unrealistic ideals... – are constructs that contribute to the development of EDs (Shafran R. et al., 2003; Stoeber J. et al., 2009). This was proven in several longitudinal and case-controlled retrospective studies done on adolescents, where negative emotionality, body dissatisfaction, depression, ineffectiveness, poor interoceptive awareness, negative self-evaluation, negative urgency, and perfectionism predicted risk of developing AN, BN, and BED (Fairburn C. G. et al., 1999; Fairburn C. G. et al., 1997; Leon G. R. et al., 1999; Pearson C. M. et al., 2012; Tyrka A. R. et al., 2002). On another note, having weight concerns, in general, might lead to development of EDs. In longitudinal studies on high-school girls and on college-women, it was seen that girls with higher weight concerns developed EDs (Jacobi C. et al., 2011; Killen J. D. et al., 1996).

b. Coronavirus Disease (COVID-19)

In 2019, a new widespread disease has caused panic throughout the world. China was the first country to be affected by the Coronavirus outbreak in 2019, and the World Health Organization (WHO) declared the outbreak as an international public health emergency, and a then pandemic in March 2020 (WHO, 2020). The consequences of this pandemic on public health were high (Fernández-Aranda F. et al., 2020), but it also had a major impact on mental health (Fernández-Aranda F. et al., 2020; Fiorillo A. et al., 2020; Torales J. et al., 2020).

The current situation of lockdown, imposed by this rapidly transmitted Coronavirus Disease (COVID-19), has been stressful on the world. Many people have

experienced psychological distress (Bo H. X. et al., 2020). Especially for patients with COVID-19, who are in isolation due to treatment, higher rates of anxiety, depression, insomnia, and posttraumatic stress symptoms have been identified (Xiang Y. T. et al., 2020). In the general population, the anxiety and stress were a result of the disruption of travel plans, social isolation, media information overload, and panic buying of goods (Li Z. et al., 2020). Isolation, quarantine, and social distancing, which are against human nature, created more anxiety, sadness, anger, and loneliness (Touyz S. et al., 2020).

Moreover, the most vulnerable people during the lockdown are those with existing mental health issues (Thakur V. et al., 2020), who are generally more self-judgmental. Imposed quarantine creates a psychological fear, explained as being trapped for an indefinite period of time (Thakur V. et al., 2020). These populations experience worsening of their mental health status (Wang C. et al., 2020). Hence, it is clear that the idea of being homebound has created a state of stress throughout the world.

In Lebanon, the first case of COVID-19 was announced on February 21, 2020 a 45-year-old woman coming from Qom, Iran. While the first case of death was announced on March 10 with a total number of 61 cases, and daily number of lab tests of 202 (MOPH, n.d.).

Number of daily tests done per day during winter 2020 was very low (between 200 and 1500 tests per day). Most cases of COVID-19 were asymptomatic or having flu like symptoms which caused a lot of people to ignore getting tested (MOPH, n.d.)

Lockdowns started with closure of universities and schools on February 29, 2020. Touristic places, restaurants, pubs, and nightclubs closed on March 6. General mobilization was announced on March 15, and the curfew between seven in the evening

and five in the morning commenced on March 26, 2020. On the 18th, all Lebanese borders – land entrances, seaports, and Rafic Hariri International Airport of Beirut – were closed. On March 21, 2020, cases rose to 206 total cases, with the first youngest case at the age of one-and-a-half-years-old (MI, n.d.; MOPH, n.d.)

On March 26, there was a sudden rise in in number of people quarantined – those who were in contact with a positive case – to 944 after being previously announced as three, hence a curfew from 7 pm to 5 am daily was imposed. On March 29, 2020, the death toll was 10 cases. By December 15, total number of cases was 148,877 cases and by December 23, 2020, the number of cases reached 163,255 with 1,468 deaths recorded. The number of new cases per day at the time was between 1,500 and 2,500 cases, with 19,127 Polymerase Chain Reaction (PCR) tests per day. PCR tests done for the past 14 days accumulated around 3.19% of the entire Lebanese population. After Christmas and New Year’s holidays, the highest number of new cases per day was recorded on January 15, 2021 (6154) (MOPH, n.d.).

By April 5, 2021, the total number of cases was 480,502 cases, as new cases per day dropped to around 100 cases and the total deaths had reached 6,443 deaths (20,974 PCR tests per day, covering 4.06% of population) (Bhatia G. et al., n.d.; MI, n.d.; MOPH, n.d.; Worldometers, n.d.).

c. COVID-19 and ED

Stress might be a risk factor for altered eating behaviors especially in adolescents and young adults.

As discussed previously, stressful life events and being exposed to traumatic experiences might lead to development of EDs, which means an altered eating behavior

(Felitti V. J. et al., 1998; Hubert Lacey J. et al, 2006; Jacobi C. et al., 2004; Margo J. L., 1985; Scully J. A. et al., 2000).

In a study conducted on 109 young adults, between 10 and 17 years of age, maladaptive emotional regulation was seen to affect emotional eating, and stress increased the desire to eat and increased hunger (Debeuf T. et al., 2018).

In a meta-analysis done by Hill D. C. et al. (2018), stress was shown to be associated with unhealthy eating behaviors in children. Studies done on adult populations described in the same meta-analysis, showed that stress might increase or decrease the amount of food consumed, which means it causes changes in people's eating behaviors (Hill D. C. et al., 2018). Changes in eating behaviors might lead to disordered eating and EDs.

The current pandemic contributes to worsening of mental health of patients with EDs (Weissman R. S. et al., 2020). People with EDs have complex relationships with food, which in no doubt will be aggravated in this time, as a result of food insecurity and panic buying (Touyz S. et al., 2020).

In addition, there is a rise in the concerns about health and fitness during the confinement. This might serve as a factor for development of EDs in individuals who are already vulnerable (Fernández-Aranda F. et al., 2020). In a cross-sectional study, part of a larger study (COLLATE project), the eating and exercise behaviors of patients with self-reported history of EDs and of the general population were assessed. Results in the ED group showed that there was an increase in restriction, purging, binge eating, and exercise behaviors as a result of the COVID-19 quarantine. Moreover, in the AN subgroup analysis, it was shown that these participants also had increased restricting

behaviors and exercise. In the general population, a slight increase in restriction of food, binge eating, and exercise was observed in some participants; whereas half of the participants reported that they exercised a lot less (Phillipou A. et al., 2020).

Moreover, the increase in time spent on social media imposes a toxic influence on users with the objectification of the thin ideal that might increase risk of ED development. In AN, for example, isolation and loneliness are already consequences of the disease, and these may be aggravated by being quarantined (Manasse S. M. et al., 2018).

In a pilot study done at the University Hospital of Bellvitge in Spain, ED patients reported worries about increased uncertainties: risk of COVID-19 infection of themselves or family and loved ones, negative impacts on work, negative impacts on treatment, and impairments in disorder symptomatology, additional anxiety symptoms, and how stress makes it difficult to control emotional eating (Fernández-Aranda F. et al., 2020).

d. Classical and Non-Classical EDs and their prevalence around the world

EDs are divided into Classical EDs (Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorder) and Non-Classical EDs (Pica, Avoidant Restrictive Food Intake Disorder, Night Eating Syndrome).

See appendix 1 for detailed diagnostic criteria for classical and non-classical EDs.

Classical EDs are the most commonly discussed types of eating disorders around the globe. They are resultants of body image discrepancies, body dissatisfaction, and reliance on emotional reasons, such as stress, anxiety, and depression for food consumption.

However, more recently, more cases of other types of eating disorders are emerging. It has become imperative to discuss these disorders, in more details, to be able to provide proper treatment to those who are affected by them. Such disorders are Pica, Avoidant Restrictive Food Intake Disorder (ARFID), and Night Eating Syndrome (NES).

I. Classical Eating Disorders

Anorexia Nervosa (AN), the eating disorder that is characterized by restriction of energy intake, leading to low body weight, with an intense fear of gaining weight or becoming fat, and discrepancy in the way one views their body weight and shape (APA, 2013), has a lifetime prevalence of 0.6% (NIMH, 2017).

Bulimia Nervosa (BN) is characterized by recurrent episodes of binge eating with recurrent inappropriate compensatory behaviors to prevent weight gain (ex: self-induced vomiting), that occurs at least once a week for 3 months, with the patient being influenced by their body shape or weight (APA, 2013). The prevalence for BN was 0.3% in 2016, and the lifetime prevalence is 1% (NIMH, 2017).

Binge Eating Disorder (BED) is characterized as recurrent episodes of binge eating, usually more rapidly than normal or until feeling uncomfortably full even when not feeling physically hungry and feeling guilty afterward. BED shows a marked distress regarding the binge and it is not correlated with inappropriate compensatory behavior (APA, 2013). The prevalence was 1.2% (2016), with a lifetime prevalence of 2.8% (NIMH, 2017).

All three EDs mentioned are more common in females than in males (APA, 2013; NIMH, 2017).

Not many studies examine the prevalence of these EDs in Lebanon. Nonetheless, in a study done on 104 participants that were diagnosed with EDs in 2013, the prevalence of AN was shown to be 39.4%, BN prevalence was 46.1% – being the most dominant –, and BED prevalence was 14.4% (Zeeni N. et al., 2017).

II. Non-Classical Eating Disorders

For Pica and ARFID the DSM-5 provides specific diagnostic criteria. While for NES, the disorder is only defined by the DSM-5, but its diagnostic criteria are not fully developed in that book.

i. Pica

i. Definition

Pica is an ED characterized by the continuous consumption of nonnutritive, nonfood substances (but not diet products) for over 1 month, not in the context of culturally normative practice or different mental or physical condition. This disorder can happen across any age-span.

Substances typically ingested vary between “paper, soap, cloth, hair, string, wool, chalk, talcum powder, paint, gum, metal, pebbles, charcoal or coal, ash, clay, starch, or ice.” It is important to note that the patient does not present any aversion to food (APA, 2013).

ii. Diagnostic Criteria

The diagnostic criteria are divided into 4 categories. Pica is diagnosed when there is a “persistent eating of nonnutritive, nonfood substances over a period of at least 1 month”, with the eating of nonnutritive, nonfood substances being inappropriate to the developmental level of the individual. In addition, the eating behavior should not be part of a culturally supported or socially normative practice. Moreover, “if the eating behavior occurs in the context of another mental

disorder (e.g., intellectual disability [intellectual developmental disorder], autism spectrum disorder, schizophrenia) or medical condition (including pregnancy), it is sufficiently severe to warrant additional clinical attention.” (APA, 2013).

iii. Prevalence

Overall prevalence of Pica for all age groups is not well reported. However, it is a disorder commonly seen during pregnancy and postpartum, and according to a world-wide meta-analysis conducted by Fawcett E. et al. (2016), the aggregate Pica prevalence for this population was estimated at 27.8%. In adults (20 – 44 years old), it is most commonly seen in patients with mental retardation – around 9% prevalence (McAlpine C. et al., 1986).

As for prevalence of Pica in school children, a study conducted on 7 – 13 year olds in Switzerland reported that a 5% prevalence can be seen in a sample of around 1,500 students; while a study on 804 German children reported a 12.3% prevalence Pica rate (Murray H. B. et al., 2018).

The general prevalence of this disorder is not well documented and more studies are needed.

ii. Avoidant/Restrictive Food Intake Disorder

i. Definition

Avoidant/Restrictive food intake disorder (ARFID) is described as the avoidance or restriction of food intake with failure to meet requirements for nutrition or insufficient energy intake by oral ingestion of food. Significant weight loss, nutritional deficiencies and their health impacts, dependence on enteral feeding or nutritional supplements are complications of the disorder (APA, 2013).

ii. Diagnostic Criteria

The diagnostic criteria are divided into 4 categories, with the first divided into 4 subcategories. ARFID is diagnosed as “an eating or feeding disturbance (e.g., apparent lack of interest in eating or food; avoidance based on the sensory characteristics of food; concern about aversive consequences of eating) as manifested by persistent failure to meet appropriate nutritional and/or energy needs associated with one (or more) of the following: (1) significant weight loss (or failure to achieve expected weight gain or faltering growth in children), (2) significant nutritional deficiency, (3) dependence on enteral feeding or oral nutritional supplements, and (4) marked interference with psychosocial functioning.” This disturbance is not better explained by lack of available food or by an associated culturally sanctioned practice. In addition, “the eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance in the way in which one’s body weight or shape is experienced.” Moreover, “the eating disturbance is not attributable to a concurrent medical condition or not better explained by another mental disorder. When the eating disturbance occurs in the context of another condition or disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder and warrants additional clinical attention.” (APA, 2013).

iii. Prevalence

ARFID is most commonly seen in infancy and childhood, although may persist to adulthood (APA, 2013). A study conducted in 2015 on 1,444 Swiss

school children (age 8 – 13 years) reported a prevalence rate of 3.2 % (Kurz S. et al., 2015).

But, in a study done on 404 patients (8 – 18 years) in an ED clinic in USA, almost 40% of the patients were reported to have ARFID (Duncombe L. K. et al., 2019).

The prevalence of this disorder is described mostly from studies in the younger population but is still not clearly reported; and more studies are required to determine its occurrence among all age-spans (Norris M. L. et al., 2016; Thomas J. J. et al., 2017).

iii. Night Eating Syndrome

i. Definition

Night Eating Syndrome (NES) is defined as recurrent episodes of night eating. This is manifested by eating after awakening from sleep or by excessive food consumption after the completion of the evening meal (dinner). Patients do recall their eating episodes and are aware of their occurrences (APA, 2013).

ii. Diagnostic Criteria

The diagnostic criteria are divided into 6 categories with the first divided into 2 subcategories, and the third divided into 5 subcategories. NES is diagnosed when “the daily pattern of eating demonstrates a significantly increased intake in the evening and/or nighttime, as manifested by one or both of the following: (1) at least 25% of food intake is consumed after the evening meal and (2) at least two episodes of nocturnal eating per week.” In addition, the patient presents “awareness and recall of evening and nocturnal eating episodes.” Plus, “the clinical picture is characterized by at least three of the following features: (1) lack of desire

to eat in the morning and/or breakfast is omitted on four or more mornings per week, (2) presence of a strong urge to eat between dinner and sleep onset and/or during the night, (3) sleep onset and/or sleep maintenance insomnia are present four or more nights per week, (4) presence of a belief that one must eat in order to initiate or return to sleep, and/or (5) mood is frequently depressed and/or mood worsens in the evening.” Moreover, “the disorder is associated with significant distress and/or impairment in functioning”, and “the disordered pattern of eating has been maintained for at least 3 months.” Finally, “the disorder is not secondary to substance abuse or dependence, medical disorder, medication, or another psychiatric disorder.” (Allison K. C. et al., 2010).

iii. Prevalence

NES is more commonly observed in young adults (Striegel-Moore R. H. et al., 2006). The prevalence of NES among the general population was estimated at 1.5% (Rand C. S. et al., 1997).

In a study done on 1,636 USA university students (18 – 26 years), 2.9% showed to have NES (Runfola C. D. et al., 2014). In another study conducted on 1,341 young adult women, the prevalence of NES was 1.6% (Striegel-Moore R. H. et al., 2005).

While in a study done on a psychiatric population (339 participants), 12.3% met the criteria for NES (Lundgren J. D. et al., 2006).

e. Gaps in the Literature (Rationale)

The current pandemic, a new and emerging worldwide crisis, increased the emotional burdens and stress on people. In Lebanon, this crisis and its resultant lockdown, add to the ongoing economic crisis and political turmoil happening in the country since October 17, 2019.

Since no studies, so far, have assessed the prevalence and correlates of EDs during the pandemic in Lebanon, it is important to study these parameters of classical and non-classical EDs among students from different Lebanese universities during the COVID-19 lockdown.

Moreover, to our knowledge, no studies have been done in Lebanon on the prevalence of Pica, ARFID, or NES.

f. Objectives/Aim of this study

This study assessed the prevalence and correlates of AN, BN, and BED, as well as Pica, ARFID, and NES among students from different Lebanese universities during the COVID-19 lockdown.

g. Research Question

What are the prevalence and correlates of Eating Disorders (AN, BN, BED, Pica, ARFID, and NES) among young adults from different universities in Lebanon during the COVID-19 lockdown?

h. Hypothesis

We assume to find a high prevalence of EDs among this vulnerable population, especially during these difficult times.

3. Methods

a. Study Design

This is a descriptive, cross sectional study carried out between December 2020 and April 2021 on university students from different Lebanese universities (private and public). The study's proposal was approved by the Notre Dame University (NDU) Institutional Review Board (IRB).

Considering a margin of error of 5%, a confidence interval of 95% and a population size of students in Lebanese universities equal to 210,720 students (Brite, 2018), the calculated minimum sample size is 384 using "Raosoft online sample size calculator". The sample size of the study considered was set at 450 students to exceed the minimum required number of study participants, as mentioned above. This gives a margin of error of 4.74% and a confidence level of 95% (Raosoft calculator).

b. Data Collection and Procedures

The survey was in English, and administered via online google platform, since the COVID-19 pandemic has imposed remote teaching.

In order to recruit a convenience sample of university students, different instructors from Notre Dame University-Louaize (NDU) (Main and North campuses) and Lebanese University (Bauchriye – Faculty of Information, Deir el Kamar and Furn al Chabbak – Faculty of Fine Arts and Architecture) were contacted. Their permission was obtained to allow the researchers entering their virtual classes and share the survey with their students. The chosen classes (approximately 35 classes) were mostly elective classes that have students from all majors and faculties enrolled to ensure a diversity in

the sample. A range of 20 to 70 students were enrolled in each class, but at the time of the survey administration, not all students were present.

A pilot study was performed on 15 persons to assess how long it would take to fill in the online questionnaire and if there were any unclear questions. The survey was hence adjusted according to the participants' feedback to make sure that it was simple and comprehensible.

Prior to inclusion, the study's aims were clearly explained to the students. Participants were asked to clearly read the description stated at the beginning of the survey before confirming participation in the study.

Since the survey contained many personal, mental health, and ED related questions, that may trigger emotional distress, a warning and a hotline for mental health support were provided in the introductory part of the survey (Embrace Lebanon's number – 1564 along with Middle East Eating Disorders Association, MEEDA's email and website – info@meeda.me and www.meeda.me). Then the students were asked to voluntarily participate and to complete the questionnaire anonymously.

Data collection was done in two rounds. The first started on December 15 and ended on December 23, 2020. The second round took place On March 18 and ended on fifth of April 2021. These dates coincide with the second (started on mid-November 2020 and ended before Christmas) and third (started in March 2021 and ended in mid-May 2021) lockdowns announced in Lebanon. People during that time were not allowed to leave their homes, unless for very serious matters, after getting the approval via the "IMPACT" site to request leaving their homes to certain places like hospitals and supermarkets. This is extremely important, because people who had mild and moderate

symptoms of COVID-19 were not allowed to go and do PCR tests at this time (Bhatia G. et al., 2021; MI, n.d.; Presidency of Counsel of Ministers, n.d.).

i. General Characteristics and Demographics

This section of the survey revolved around the demographics of the population.

The participants were requested to provide their age, gender, pregnancy and breastfeeding status, anthropometrics to their best estimate, marital status, house hold living situation, religion, nationality, major, and current work status. The crowding index, which was used to identify living situation, is defined as the total number of co-residents per household, excluding new-born infants, divided by the total number of rooms, excluding kitchens and bathrooms (Melki I.S, et al., 2004).

ii. Medical History

Furthermore, participants were asked questions regarding their physical and mental health statuses, as well as any family history that might provide insight at their potential medical cases in life. Questions from this section revolved around possibility of a diagnosed ED (for them or a family member), as well as chronic health problems or diseases, admissions to hospital, and any chronic medications they might be taking.

iii. Lifestyle Habits

Participants were asked about their regular lifestyle habits, including familial relationships, stress and anxiety, smoking, alcoholism, drug usage, and general dietary and workout habits.

iv. Impact of Stress on Behavior

The participants were asked to assess the changes in their regular lifestyle habits, which were defined as increase or decrease in food intake, changes in weight status, changes in workout habits, sleep disruptions, or any general stress, anxiety, agitation, or depression feelings as a result of the quarantine.

v. Questions about AN, BN, and BED and SCOFF

The diagnostic criteria for AN, BN, and BED were used to make the diagnosis.

Taken from the DSM-5 (APA, 2013), the diagnostic criteria for each ED were transformed into questions. This allowed the direct diagnosis of specific ED whenever the criteria were met.

For AN analysis, a participant must have answered all 3 questions (“are you afraid of becoming fat?”, “do you think you are fat even if others tell you the opposite?”, “do you know the bad effects and dangers of low body weight?”) as “yes”, and should have a BMI less than 17kg/m² to be classified as having AN, while their answer to the last question (“during the last 3 months, have you been engaged in recurrent episodes of binge eating or purging behaviors?”) specified the AN type – “yes” implied binge-eating/purging type and “no” implied a restricting type of that ED.

For BN analysis, a participant must have answered “yes” to all 4 questions (“do you eat in a small period of time an amount of food that is larger than what most individuals would eat during the same period of time and under similar circumstances?”, “do you feel that you cannot stop eating or control what or how much you are eating?”, “do you use inappropriate compensatory behaviors to prevent weight gain?”, “during the last 3 months, did binge/purge cycles occur at least, on average, once per week?”) to be classified as having BN as long as they were not classified as having AN.

For BED analysis, a participant must have answered the first 2 questions from the BN section as “yes”, while answering no to the use of inappropriate compensatory behaviors to prevent weight gain, and had 3 or more, out of 5, criteria associated with the binge-eating episodes from the list below (“eating much more rapidly than normal”, “eating until feeling uncomfortably full”, “eating large amounts of food when not

feeling physically hungry”, “eating alone because of feeling of embarrassment by how much one is eating”, “feeling disgusted with oneself, depressed, or very guilty afterwards”), with binge episodes occurring at least, on average, once per week for the past 3 months to be classified as having BED.

In this section, SCOFF questionnaire was also used for the screening of EDs. SCOFF consists of 5 simple questions (developed by John Morgan at Leeds Partnerships NHS Foundation Trust), in which the participants answer “yes” or “no” (Luck A. J. et al, 2002), and each yes question counts as 1 on the final score (scale of 0 – 5). Although it is not diagnostic, according to King’s College London, a score of 2 or more positive answers elevate suspicion of a participant having a case of ED. This questionnaire has a specificity of 90% and sensitivity of 85% for EDs and is validated in care settings to prompt early diagnosis of EDs (Luck A. J. et al, 2002).

vi. Questions about PICA, ARFID, and NES

The DSM-5 (APA, 2013) diagnostic criteria were used to make the diagnosis of PICA and ARFID.

The diagnostic criteria of NES are not well defined by the DSM-5 and it is still included in the Other Specified Feeding or Eating Disorders (OSFED). Hence, the proposed diagnostic criteria for NES developed by Allison K. et al. in 2010 were used (Allison K. et al., 2010).

For Pica analysis, a participant was classified as having said ED if they answered “yes” to consuming substances that are not food, and “no” to general food aversions in the past month, while not having eaten the substance because of religious, cultural, or social practices that are supported or considered as normative. In addition, a participant must have answered “yes” to having medically inexplicable deficiencies.

Regarding ARFID, participants who answered “yes” to avoiding certain foods, were redirected to explain why they had avoided it, helping in classifying this aversion. To be classified as ARFID, a participant must have avoided the food for one or more of the following reasons (shape, odor, taste, temperature, or previous negative experience), manifested by persistent failure to meet required nutritional/energy needs that lead to one or more of the following features (weight loss, nutritional deficiency or health related impact, dependence on enteral feeding or oral nutritional supplementation, or marked interference with psychological functioning). Food avoidance must not have been due to religious, cultural, or social practices that are normative in society, as well as not being for normal dieting or choosing healthier patterns of eating. To confirm diagnosis, a participant must have answered “yes” to at least one of the following, which portrays marked interference with psychological functioning: feeling too tired to function during the day; having a constant bad mood or mood swings; feeling stressed, anxious, or depressed. In addition, the participant must not be avoiding foods in attempt to lose weight, for dissatisfaction in how their body looks, or in the context of AN diagnosis.

To classify a participant as having NES, they must have answered that they consume more than 25% of their daily intake during the night-time (not due to lifestyle factors) or had more than 2 episodes a week of nocturnal feeding, but while being able to recall all their night-time consumptions. Next, they must have answered more than half the week or every day to at least 3 food- and sleep-related questions. Food related habits (recalling all what they consumed at night, feeling they can’t eat in the morning or skip breakfast, feeling a strong urge to eat or can’t stop eating between dinner and

sleep/when waking up from sleep, need of feeling full to be able to sleep/go back to sleep, getting more cravings during night time) should be occurring for more than 3 months; while sleep related questions (waking up during the night, having insomnia, trouble sleeping/falling asleep, worsened mood and depression during the evening/distress or agitation about sleep disruptions or tiredness during the day due to sleep irregularities) should be occurring in parallel to the latter food related habits. Also, the participant should have answered yes to feeling guilty over night-time food consumption and fear of gaining weight due to night-time consumptions.

c. Statistical Analysis

Descriptive statistics were reported as mean \pm SD for continuous variables and frequency (n) and % for categorical variables. The association between each ED and the independent variables was performed. For continuous variables, independent t-test was performed, whereas Chi-square was used for categorical variables. A multivariate analysis was carried out to control for different confounders; variables that showed a $p < 0.05$ in the bivariate analysis.

Due to the low prevalence of different EDs, the Classical EDs (AN, BN, and BED) were merged, as well as the Non-Classical EDs (ARFID, and NES) were merged.

The IBM-SPSS (Statistical Package for Social Sciences, version 23) data analysis software was used for data entry and analysis. A p-value of less than 0.05 was considered statistically significant.

4. Results

a. Descriptive Statistics

i. Socio-Demographic and General Characteristics of Participants

Our sample included of 458 university students with a mean age of 22.1 ± 4.3 years. The sample consisted of 58.3% females (n=267) and 41.7% males (n=191). Only 0.7% of women were pregnant and 1.1% were breastfeeding at the time of the study. The majority of the participants were single (91.7%), and Lebanese Christians (around 88%) (Table 1).

Furthermore, the crowding index revealed that more than the half of the sample (53.1%) was considered as living in a crowded environment with more than 1 person sleeping/room (Table 1).

The students were of different majors, mainly enrolled in business administration and economics (34.1%), followed by architecture, arts, and design (19.9%), whereas 1.7% of students were still freshmen. Moreover, 68% percent of the participants reported that they do not work (Table 1).

		N or mean	% or SD
DEMOGRAPHICS and GENERAL CHARACTERISTICS			
Age (years)		22.1	4.3
Gender	Male	191	41.7
	Female	267	58.3
Pregnancy	No	256	99.3
	Yes	2	0.7
Breastfeeding	No	264	98.9
	Yes	3	1.1
Marital status	Single	420	91.7
	Engaged	21	4.6
	Married	10	2.2
	Divorced	5	1.1
	Cohabiting	2	0.4
Crowding Index		1.2	0.5
Crowding Index Classification	No	215	46.9
	Yes	243	53.1

Body Mass Index Classification	Underweight	37	8.1	
	Normal	297	65.0	
	Overweight	82	17.9	
	Obese	41	9.0	
Religion	Christian	403	88.8	
	Muslim	25	5.5	
	Druze	17	3.7	
	Other	13	2.8	
Nationality	Lebanese	403	88.0	
	Arab	6	1.3	
	Non-Arab	14	3.1	
	Multiple Nationalities	35	7.6	
Major	Architecture, Arts & Design	91	19.9	
	Business Administration & Economics	156	34.1	
	Health Related Majors	50	10.9	
	Engineering	58	12.7	
	Sciences	21	4.6	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	12	2.6	
	Humanities	57	12.4	
	Others	13	2.8	
	Work Status	No	313	68.3
		Yes, part time	111	24.2
Yes, full time		34	7.4	

Table 1: Results for Sociodemographic Data and General Characteristics

ii. Medical History

Around 10% (n=44) of the participants had mental health and eating disorder diagnosis, among which 38.6% reported having EDs divided as follows: 47.1% (n=8) were unspecified, 35.3% (n=6) had AN, and 17.6% (n=3) had BED. These participants also reported having anxiety, and/or depression, trauma, PTSD, mood disorders, emotionality disorders, sleep disorders, and personality disorders (Table 2).

Family mental health was also assessed, and 8.7% of participants (n=40) reported having a direct family member with mental health disorder or ED. Of those, 32.5% (n=13) reported having a family member with ED reported as 61.5% unspecified, and 38.5% AN. Others reported having a close family member with stress, anxiety, and/or depression, trauma or PTSD, mood disorders, emotionality disorders, sleep disorders, or personality disorder (Table 2).

In addition, medical issues were reported by 12.4% of participants, with 27.6% reporting respiratory problems and 19% reporting endocrine problems, and about half (50.9%) of them were receiving treatments, with 32.1% of them having to take chronic medications (Table 2).

Furthermore, 5% of the participants reported to having medical conditions or used medications that may cause sleep disturbances, insomnia, increase in appetite, or excessive hunger (Table 2).

		N or Mean	% or SD
MEDICAL HISTORY			
Personal Mental Health &/or ED	No	414	90.4
Diagnosis History	Yes	44	9.6
Personal ED Diagnosis	Anorexia Nervosa	6	35.3
	Binge Eating Disorder	3	17.6
	Unspecified	8	47.1
	<i>Total</i>	<i>17</i>	<i>38.6</i>
Personal Anxiety, Depression	Anxiety	11	42.3
	Depression	10	38.5
	Depression, Anxiety	5	19.2
	<i>Total</i>	<i>26</i>	<i>59.09</i>
Personal Panic Disorder & PTSD	PTSD	1	33.3
	Panic Disorder	2	66.7
	<i>Total</i>	<i>3</i>	<i>6.8</i>
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	33.3
	Mood Disorder & Lability	1	16.7
	Mood & Emotionality	1	16.7
	Sleeping Disorder	1	16.7
	Self-harm	1	16.7
	<i>Total</i>	<i>6</i>	<i>13.6</i>
Personal Personality Disorder, OCD, ADHD, OCPD	Tourette's Syndrome	1	11.1
	OCD	3	44.4
	ADHD	2	22.2
	OCPD	1	11.1
	Unspecified	2	22.2
	<i>Total</i>	<i>9</i>	<i>20.4</i>
Familial Mental Health &/or ED	No	418	91.3
Diagnosis History	Yes	40	8.7
Familial EDs	Anorexia Nervosa	5	38.5
	Unspecified	8	61.5
	<i>Total</i>	<i>13</i>	<i>32.5</i>
Familial Anxiety, Depression	Anxiety	5	26.3
	Depression	11	57.9
	Depression, Anxiety	3	15.8
	<i>Total</i>	<i>19</i>	<i>47.5</i>
Familial PTSD & Addictions	PTSD	1	25.0

	Kleptomania	1	25.0
	Alcoholism & Binge Drinking	2	50.0
	<i>Total</i>	4	10
Familial Mood, Emotionality & Sleep Disorders	Bipolar Disorder	6	85.7
	Mood Disorder & Lability	1	14.3
	<i>Total</i>	7	17.5
Familial Personality Disorder, OCD, ADHD, & Schizophrenia	OCD	3	60.0
	Schizophrenia	1	20.0
	ADHD	1	20.0
	<i>Total</i>	5	12.5
Personal Medical Problems Diagnosis	No	401	87.6
	Yes	57	12.4
Personal Problems	Respiratory Problems	16	27.6
	Hematologic Problems	5	8.6
	Cardiovascular Problems	7	12.0
	Metabolic Problems	8	13.7
	Endocrine Problems	11	19.0
	Gastro-Intestinal Problems	3	5.2
	Kidney Problems	2	3.4
	Neurological Problems	1	1.7
	Several Medical Problems	3	5.1
	Deficiencies (Minerals/Vitamins)	2	3.4
Treatment Status	No	27	49.1
	Yes	28	50.9
Treatment	Non-Chronic Medications	9	32.1
	Chronic Medications	19	67.9
Medical Disturbance (as a result of medicine intake or medical health problems)	No	361	78.8
	Yes	24	5.2
	I Don't Know	73	15.9

Table 2: Results for Medical History

* ED: Eating Disorder

* PTSD: Post-Traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

* OCPD: Obsessive Compulsive Personality Disorder

iii. Lifestyle Habits

Several lifestyle factors were assessed during this study. Bad relationships with parents and feelings of neglect were reported by 14% of participants and 54.4% perceived the situation at home filled with stress and anxiety (Table 3).

Moreover, among the students, 40.6% were smokers, 71.6% were alcohol drinkers, and 6.6% reported using non-medicinal drugs. Regarding diets and meal habits, 39.3% of students were on a specific diet. As for the meals, many of the students consumed one meal per day (57.9%) and had 2 daily snacks (44.5%) (Table 3).

The biggest proportion of participants (44.1%) did not engage in any physical exercise and 11.1% reported working out more than 4 times per week (Table 3).

		N or Mean	% or SD
LIFESTYLE HABITS			
Bad Parental Relations	No	394	86.0
	Yes	64	14.0
Home Anxiety	No	194	42.4
	Yes	249	54.4
	No Answer	15	3.3
Smoking	No	270	59.0
	Yes	186	40.6
	No Answer	2	0.4
Alcohol	No	130	28.4
	Yes	328	71.6
Non-medicinal Drugs	No	424	92.6
	Yes	30	6.6
	No Answer	4	0.9
Specific Diet	No	276	60.3
	Yes	180	39.3
	No Answer	2	0.4
Meals Per Day	None	1	0.2
	One	265	57.9
	Two	120	26.2
	Three or More	72	15.7
Snacks Per Day	None	13	2.8
	One	193	42.1
	Two	204	44.5
	Three or More	48	10.5
Workout Status	No	202	44.1
	Yes, Mild Workout (1 - 2 times per week)	114	24.9
	Yes, Moderate Workout (3 - 4 times per week)	91	19.9
	Yes, High Workout (> 4 times per week)	51	11.1

Table 3: Results for Lifestyle Habits

iv. Impact of Quarantine on Behavior

Increased food intake was reported by 49.6% of participants during quarantine and lockdowns. Around 31% ate less fruits and vegetables, 46.9% ate more junk and fast foods, 32.3% drank more sodas and sugary drinks, 40.6% drank more coffee, 15.3% drank more alcohol, and 25.1% smoked more (Table 4).

Most of the students (72.7%) reported that they did not increase the amount of workout during quarantine and 41.7% reported that they slept more (Table 4).

Due to quarantine, a high proportion of the sample (76.4%) experienced more stress, anxiety, and agitation (Table 4).

		N or Mean	% or SD
IMPACT OF QUARANTINE ON BEHAVIOR			
Quarantine Effect on Eating Habits	No	134	29.3
	Yes, Increase Food Intake	227	49.6
	Yes, Decrease Food Intake	97	21.2
Eat Less Fruits & Vegetables	No	316	69
	Yes	142	31
Eat More Junk & Fast Foods	No	243	53.1
	Yes	215	46.9
Drink More Sodas & Sugary Drinks	No	310	67.7
	Yes	148	32.3
Drink More Coffee	No	272	59.4
	Yes	186	40.6
Drink More Alcohol	No	388	84.7
	Yes	70	15.3
Smoke More	No	343	74.9
	Yes	115	25.1
Weight Change	Lose Weight	112	24.5
	Gain Weight	162	35.4
	Remain Stable	184	40.2
Exercise More	No	333	72.7
	Yes	125	27.3
Sleep Disruption	No	140	30.6
	Yes, I Slept More	191	41.7
	Yes, I Slept Less	127	27.7
Anxiousness due to Quarantine	No	108	23.6
	Yes	350	76.4

Table 4: Results in Changes in Behavior due to Quarantine

v. Prevalence of Eating Disorders

For classical EDs, 0.7% of the participants had AN with 67% of them having the Binging/Purging type, while 0.4% had BN and 4.4% participants had BED. The total prevalence for all Classical EDs combined was 5.5% (Table 5).

For non-classical EDs, no students had Pica, 0.9% had ARFID, and 6.8% had NES. The total prevalence for all Non-Classical EDs combined was 7.7% (Table 5).

The total prevalence of Classical and Non-Classical EDs was 13.2%. Furthermore, the SCOFF questionnaire was positive in 36.9% of participants (Table 5).

		N or mean	% or SD
CLASSICAL EATING DISORDERS			
Anorexia Nervosa			
Prevalence	No	455	99.3
	Yes	3	0.7
	AN Binging/Purging type	2	67
	AN restrictive type	1	33
Bulimia Nervosa			
Prevalence	No	456	99.6
	Yes	2	0.4
Binge Eating Disorder			
Prevalence	No	438	95.6
	Yes	20	4.4
Classical Eating Disorders			
Prevalence	No	433	94.5
	Yes	25	5.5
NON-CLASSICAL EATING DISORDERS			
Pica			
Prevalence	No	458	100
Avoidant Restrictive Food Intake Disorder			
Prevalence	No	454	99.1
	Yes	4	0.9
Night Eating Syndrome			
Prevalence	No	427	93.2
	Yes	31	6.8
Non-Classical Eating Disorders			
Prevalence	No	423	92.3
	Yes	35	7.7
SCOFF			
SCOFF Score Classification	No	289	63.1
	Yes	169	36.9

Table 5: Prevalence of Classical and Non-Classical Eating Disorders

* AN: Anorexia Nervosa

* SCOFF: Sick-Control-One Stone-Fat-Full

b. Correlates of Eating Disorders

i. Classical Eating Disorders

Individuals with classical EDs were overweight compared to other BMI categories (45.8% versus underweight 12.5%, normal 37.5%, obese 4.2%; $p=0.03$). Also, individuals following a specific diet (66.7%) had a significantly higher risk of classical EDs ($p=0.015$). Furthermore, participants with classical EDs were enrolled in architecture and design related majors, as compared to other majors (37.5%; $p=0.02$).

Additionally, participants with a classical ED reported feelings of anxiety in their homes (79.2% versus 16.7%; $p=0.021$), while family history of mental health or ED diagnosis decreased the risk of a participant being diagnosed with classical ED (17.5% versus 82.5%; $p=0.003$). Classical ED participants did not have, or were not aware of, any medical conditions they had or any medicinal drugs they used that might cause medical disturbances, like insomnia, excessive hunger, decreased appetite... (3.3% and 15.1%; $p=0.001$), and did not engage in non-medicinal drugs (70.8% versus 25%; $p=0.001$) (Table 6).

Moreover, during quarantine, individuals with classical EDs, significantly increased their amounts of food intake (79.2% versus 4.2%; $p=0.006$), ate more junk and fast foods (79.2% versus 20.8%; $p=0.001$), and gained weight (75% versus weight loss 12.5%, and weight maintenance 12.5%; $p<0.001$) (Table 6).

Variable		No CED		CED		p-value
		N	% or mean \pm SD	N	% or mean \pm SD	
GENERAL CHARACTERISTICS						
Age (years)		434	22.1 \pm 4.3	24	22.5 \pm 3	0.623
Gender	Male	185	96.9	6	3.1	0.088
	Female	249	93.3	18	6.7	
Pregnancy	No	248	93.6	17	6.4	0.131
	Yes	1	50	1	50	
Breastfeeding	No	247	93.6	17	6.4	0.19
	Yes	2	66.7	1	33.3	
Marital Status	Single	398	94.8	22	5.2	0.439
	Engaged	20	95.2	1	4.8	
	Married	10	100	0	0	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	206	95.8	9	4.2	0.404
	Yes	228	93.8	15	6.2	
Body Mass Index Classification*	Underweight	34a	91.9	3b	8.1	0.003
	Normal	288	97	9	3	
	Overweight	71a	86.6	11b	13.4	
	Obese	40	97.6	1	2.4	
Religion	Christian	384	95.3	19	4.7	0.086

	Muslim	22	88	3	12	
	Druze	17	100	0	0	
	Other	11	84.6	2	15.4	
Nationality	Lebanese	382	94.8	21	5.2	0.73
	Arab	6	100	0	0	
	Non-Arab	13	92.9	1	7.1	
	Multiple Nationalities	33	94.3	2	5.7	
Major*	Architecture, Art, & Design	82a	90.1	9b	9.9	0.02
	Business Administration & Economics	150	96.2	6	3.8	
	Health Related majors	50	100	0	0	
	Engineering	57	98.3	1	1.7	
	Sciences	21	100	0	0	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	10	83.3	2	16.7	
	Humanities	51	89.5	6	10.5	
	Others	13	100	0	0	
Work Status	No	301	96.2	12	3.8	0.093
	Yes, part time	102	91.9	9	8.1	
	Yes, full time	31	91.2	3	8.8	
MEDICAL HISTORY						
Personal Mental Health &/or ED Diagnosis History	No	394	95.2	20	4.8	0.273
	Yes	40	90.9	4	9.1	
Personal ED Diagnosis	Anorexia Nervosa	6	100	0	0	0.441
	Binge Eating Disorder	2	66.7	1	33.3	
	Unspecified	7	87.5	1	12.5	
Personal Anxiety, Depression	Anxiety	11	100	0	0	0.169
	Depression	8	80	2	20	
	Depression & Anxiety	5	100	0	0	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	100	0	0	0.667
	Mood Disorder & Lability	1	100	0	0	
	Mood & Emotionality	1	100	0	0	
	Sleep Disorder	1	100	0	0	
Familial Mental Health &/or ED Diagnosis History*	No	401a	95.9	17b	4.1	0.003
	Yes	33a	82.5	7b	17.5	
Familial EDs	Anorexia Nervosa	5	100	0	0	0.487
	Unspecified	6	75	2	25	
Familial Anxiety & Depression	Anxiety	5	100	0	0	0.716
	Depression	9	81.8	2	18.2	
	Depression & Anxiety	2	66.7	1	33.3	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge Drinking	1	50	1	50	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	3	100	0	0	0.4
	Schizophrenia	0	0	1	100	
	ADHD	1	100	0	0	
Personal Medical Problems Diagnosis	No	379	94.5	22	5.5	0.754
	Yes	55	96.5	2	3.5	
Personal Problems	Respiratory Problems	15	93.7	1	6.3	0.623
	Hematologic Problems	4	80	1	20	
	Cardiovascular Problems	7	100	0	0	

	Metabolic Problems	8	100	0	0	
	Endocrine Problems	11	100	0	0	
	Gastro-Intestinal Problems	3	100	0	0	
	Several Problems	3	100	0	0	
	Kidney Problems	2	100	0	0	
	Neurological Problems	1	100	0	0	
	Deficiencies (minerals/vitamins)	2	100	0	0	
Treatment Status	No	26	96.3	1	3.7	1
	Yes	27	96.4	1	3.6	
Treatments	Non-chronic Medications	9	100	0	0	1
	Chronic Medications	18	94.7	1	5.3	
Medical Disturbances*	No	349a	96.7	12b	3.3	0.001
	Yes	23	95.8	1	4.2	
	I don't know	62a	84.9	11b	15.1	
LIFESTYLE HABITS						
Bad Parental Relations	No	376	95.4	17	4.6	0.126
	Yes	58	90.6	6	9.4	
Home Anxiety*	No	190a	97.9	4b	2.1	0.021
	Yes	230a	92.4	19b	7.6	
	No answer	14	93.3	1	6.7	
Smoking	No	259	95.9	11	4.1	0.283
	Yes	173	93	13	7	
	No answer	2	100	0	0	
Alcohol	No	125	96.2	5	3.8	0.399
	Yes	309	94.2	19	5.8	
Non-medicinal drugs*	No	407a	96	17b	4	0.001
	Yes	24a	80	6b	20	
	No answer	3	75	1	25	
Specific Diet*	No	268a	97.1	8b	2.9	0.015
	Yes	164a	91.1	16b	8.9	
	No answer	2	100	0	0	
Meals per day	None	1	100	0	0	0.075
	One	256	96.6	9	3.4	
	Two	113	94.2	7	5.8	
	Three or more	64	88.9	8	11.1	
Snacks per day	None	13	100	0	0	0.131
	One	183	94.8	10	5.2	
	Two	196	96.1	8	3.9	
	Three or more	42	87.5	6	12.5	
Workout status	No	189	93.6	13	6.4	0.545
	Yes, mild workout	107	93.9	7	6.1	
	Yes, moderate workout	88	96.7	3	3.3	
	Yes, high workout	50	98	1	2	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine effect on Eating Habits*	No	133a	99.3	1b	0.7	0.006
	Yes, increase food intake	208a	91.6	19b	8.4	
	Yes, decrease food intake	93	95.9	4	4.1	
Eat Less Fruits & Vegetables	No	303	95.9	13	4.1	0.107
	Yes	131	92.3	11	7.7	
Eat More Junk & Fast Foods*	No	238a	97.9	5b	2.1	0.001
	Yes	196a	91.2	19b	8.8	
Drink More Sodas & Sugary Drinks	No	269	95.5	14	4.5	0.314
	Yes	138	93.2	10	6.8	

Drink More Coffee	No	262	96.3	10	3.7	0.069
	Yes	172	92.5	14	7.5	
Drink More Alcohol	No	370	95.4	18	4.6	0.237
	Yes	64	91.4	6	8.6	
Smoke More	No	326	95	17	5	0.638
	Yes	108	93.9	7	6.1	
Weight Change*	Lose weight	109	97.3	3	2.7	<0.001
	Gain weight	144a	88.9	18b	11.1	
	Remain stable	181a	98.4	3b	1.6	
Exercise More	No	313	94	20	6	0.236
	Yes	121	96.8	4	3.2	
Sleep Disruptions	No	137	97.9	3	2.1	0.136
	Yes, slept more	179	93.7	12	6.3	
	Yes, slept less	118	92.9	9	7.1	
Anxiousness due to Quarantine	No	106	98.1	2	1.9	0.071
	Yes	328	93.7	22	6.3	

Table 6: Classical Eating Disorders Correlations

* p-value is considered significant at $p < 0.05$

* "a" and "b" subscripts denote a difference between sub categories of each variable

* CED: Classical Eating Disorders

* ED: Eating Disorders

* PTSD: Post-traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

ii. Non-Classical Eating Disorders

Participants with non-classical EDs had a normal weight or were overweight (45.7% and 34.3%, $p=0.008$). Females with non-classical EDs were breastfeeding (66.7% versus 33.3%; $p=0.024$). Moreover, prevalence of non-classical EDs was lower among participants with a previous diagnosis of ED or mental health disorder (18.2% versus 81.8%; $p=0.0012$), and among those having a family history of a previous diagnosis of ED or mental health disorder (17.5% versus 82.5%; $p=0.024$). Also, non-classical ED participants did not have, or were not aware of, any medical problems or intake of medicinal drugs that cause any disturbances (5.8% and 16.4%; $p=0.001$), and did not engage in non-medicinal drugs (26.7% versus 73.3%; $p=0.003$) (Table 7).

Furthermore, during quarantine, participants with Non-Classical EDs increased their food intake (80% versus 11.4%; $p=0.001$), ate more junk and fast food (68.6% versus 31.4%; $p=0.008$), drank more sodas and sugary drinks (51.4% versus 48.6%;

p=0.012), gained weight (60% versus weight loss 20% and weight maintenance 20%;
p=0.005), and slept more (68.6% versus no disruptions 5.7% and sleeping less 25.7%;
p=0.001) (Table 7).

Variable		No NCED		NCED		p-value
		N	% or mean \pm SD	N	% or mean \pm SD	
GENERAL CHARACTERISTICS						
Age (years)		423	22.1 \pm 4.4	35	22.4 \pm 2.8	0.69
Gender	Male	181	94.8	10	5.2	0.101
	Female	242	90.6	25	9.4	
Pregnancy	No	241	90.9	26	9.1	0.179
	Yes	1	50	1	50	
Breastfeeding*	No	241a	91.3	23b	8.7	0.024
	Yes	1a	33.3	2b	66.7	
Marital Status	Single	387	92.1	33	7.9	0.596
	Engaged	20	95.2	1	4.8	
	Married	10	100	0	0	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	196	91.2	19	8.8	0.365
	Yes	227	93.4	16	6.6	
Body Mass Index Classification*	Underweight	36	97.3	1	2.7	0.008
	Normal	281a	94.6	16b	5.4	
	Overweight	70a	85.4	12b	14.6	
	Obese	35	85.4	6	14.6	
Religion	Christian	375	93.1	28	6.9	0.11
	Muslim	22	88	3	12	
	Druze	16	94.1	1	5.9	
	Other	10	76.9	3	23.1	
Nationality	Lebanese	375	93.1	28	6.9	0.148
	Arab	6	100	0	0	
	Non-Arab	11	78.6	3	21.4	
	Multiple Nationalities	31	88.6	4	11.4	
Major	Architecture, Art, & Design	85	93.4	6	6.6	0.243
	Business Administration & Economics	144	92.4	12	7.6	
	Health Related majors	45	90	5	10	
	Engineering	56	96.6	2	3.4	
	Sciences	21	100	0	0	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	10	83.3	2	16.7	
	Humanities	49	86	8	14	
	Others	13	100	0	0	
Work Status	No	290	92.7	23	7.3	0.072
	Yes, part time	105	94.6	6	5.4	
	Yes, full time	28	82.4	6	17.6	
MEDICAL HISTORY						

Personal Mental Health &/or ED Diagnosis History*	No	387a	93.5	27b	6.5	0.012
	Yes	36a	81.8	8b	18.2	
Personal ED Diagnosis	Anorexia Nervosa	5	83.3	1	16.7	0.265
	Binge Eating Disorder	2	66.7	1	33.3	
	Unspecified	8	100	0	0	
Personal Anxiety, Depression	Anxiety	9	81.8	2	18.2	0.695
	Depression	8	80	2	20	
	Depression & Anxiety	3	60	2	40	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	100	0	0	0.467
	Mood Disorder & Lability	1	100	0	0	
	Mood & Emotionality	0	0	1	100	
	Sleep Disorder	1	100	0	0	
	Self-harm	0	0	1	100	
Personal Personality disorders, OCD, ADHD, OCPD	OCD	3	100	0	0	0.06
	ADHD	2	100	0	0	
	OCPD	1	100	0	0	
	Tourette's syndrome	0	0	1	100	
	Unspecified	0	0	2	100	
Familial Mental Health &/or ED Diagnosis History*	No	390a	93.3	28b	6.7	0.024
	Yes	33a	82.5	7b	17.5	
Familial EDs	Anorexia Nervosa	4	80	1	20	1
	Unspecified	7	87.5	1	12.5	
Familial Anxiety & Depression	Anxiety	5	100	0	0	0.305
	Depression	7	63.6	4	36.4	
	Depression & Anxiety	3	100	0	0	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge drinking	1	50	1	50	
Familial Mood, Emotionality, & Sleep Disorders	Bipolar Disorder	6	100	0	0	0.142
	Mood Disorder & Lability	0	0	1	100	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	3	100	0	0	0.4
	Schizophrenia	0	0	1	100	
	ADHD	1	100	0	0	
Personal Medical Problems Diagnosis	No	372	92.8	29	7.2	0.42
	Yes	51	89.5	6	10.5	
Personal Problems	Respiratory Problems	15	93.8	1	6.2	0.588
	Hematologic Problems	5	100	0	0	
	Cardiovascular Problems	7	100	0	0	
	Metabolic Problems	7	87.5	1	12.5	
	Endocrine Problems	8	72.7	3	27.3	
	Gastro-Intestinal Problems	3	100	0	0	
	Several Problems	2	66.7	1	33.3	
	Kidney Problems	2	100	0	0	
	Neurological Problems	1	100	0	0	
Deficiencies (minerals/vitamins)	2	100	0	0		
Treatment Status	No	24	88.9	3	11.1	1
	Yes	25	89.3	3	10.7	
Treatments	Non-chronic Medications	9	100	0	0	0.53
	Chronic Medications	16	84.2	3	15.8	
Medical Disturbances*	No	340a	94.2	21b	5.8	0.01
	Yes	22	91.7	2	8.3	

	I don't know	61a	83.6	12b	16.4	
LIFESTYLE HABITS						
Bad Parental Relations	No	367	93.1	27	6.9	0.127
	Yes	56	87.5	8	12.5	
Home Anxiety	No	184	94.8	10	5.2	0.104
	Yes	224	90	25	10	
	No answer	15	100	0	0	
Smoking	No	254	94.1	16	5.9	0.239
	Yes	167	89.9	19	10.1	
	No answer	2	100	0	0	
Alcohol	No	122	93.8	8	6.2	0.45
	Yes	301	91.8	27	8.2	
Non-medicinal drugs*	No	397a	93.6	27b	6.4	0.003
	Yes	22a	73.3	8b	26.7	
	No answer	4	100	0	0	
Specific Diet	No	260	94.2	16	5.8	0.209
	Yes	161	89.4	19	10.6	
	No answer	2	100	0	0	
Meals per day	None	1	100	0	0	0.526
	One	246	92.8	19	7.2	
	Two	112	93.3	8	6.7	
	Three or more	64	88.9	8	11.1	
Snacks	None	12	92.3	1	7.7	0.641
	One	181	93.8	12	6.2	
	Two	187	91.7	17	8.3	
	Three or more	43	89.6	5	10.4	
Workout status	No	184	91.1	18	8.9	0.636
	Yes, mild workout	107	93.9	7	6.1	
	Yes, moderate workout	86	94.5	5	5.5	
	Yes, high workout	46	90.2	5	9.8	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine Effect on Eating Habits*	No	130a	97	4b	3	0.001
	Yes, increase food intake	199a	87.7	28b	12.3	
	Yes, decrease food intake	94	96.9	3	3.1	
Eat Less Fruits & Vegetables	No	269	93.7	20	6.3	0.115
	Yes	127	89.4	15	10.6	
Eat More Junk & Fast Foods*	No	232a	95.5	11b	4.5	0.008
	Yes	191a	88.8	24b	11.2	
Drink More Sodas & Sugary Drinks*	No	293a	94.5	17b	5.5	0.012
	Yes	130a	87.8	18b	12.2	
Drink More Coffee	No	250	91.9	22	8.1	0.664
	Yes	173	93	13	7	
Drink More Alcohol	No	361	93	27	7	0.195
	Yes	62	88.6	8	11.4	
Smoke More	No	321	93.6	22	6.4	0.088
	Yes	102	88.7	13	11.3	
Weight Change*	Lose weight	105	93.8	7	6.2	0.005
	Gain weight	141a	87	21b	13	
	Remain stable	177a	96.2	7b	3.8	
Exercise More	No	307	92.2	26	7.8	0.827
	Yes	116	92.8	9	7.2	
Sleep Disruptions*	No	138a	98.6	2b	1.4	0.001
	Yes, slept more	167a	87.4	24b	12.6	

	Yes, slept less	118a	92.9	9a	7.1	
Anxiousness due to Quarantine	No	103	95.4	5	4.6	0.178
	Yes	320	91.4	30	8.6	

Table 7: Non-Classical Eating Disorders Correlations

* *p*-value is considered significant at $p < 0.05$

* “a” and “b” subscripts denote a difference between sub categories of each variable

* *NCED*: Non-Classical Eating Disorders

* *ED*: Eating Disorders

* *PTSD*: Post-traumatic Stress Disorder

* *OCD*: Obsessive Compulsive Disorder

* *ADHD*: Attention-Deficit Hyperactivity Disorder

* *OCPCD*: Obsessive Compulsive Personality Disorder

iii. SCOFF

SCOFF score was positive in females more than males (69.8% versus 30.2%; $p < 0.001$). Obese participants were significantly at higher risk of SCOFF positive (56.1% versus 43.9%; $p = 0.003$), while underweight participants were at lower risk (21.6% versus 78.4%; $p = 0.003$). Furthermore, the prevalence of positive SCOFF was higher amongst those majoring in economics related fields as compared to those majoring in architecture/design fields and health related majors (43.8% versus 14.8% and 5.9% respectively; $p = 0.03$), and among participants with a previous diagnosis of ED or mental health illness (61.4% versus 38.6%; $p < 0.001$). Having any medical disorders or taking any medications that may cause disturbances was significantly associated with higher risk of ED development (58.3% versus 41.7%; $p = 0.003$). Moreover, SCOFF score was positive in participants who felt they had bad relationships with their parents, compared to those who felt the opposite (18.3% versus 81.7%; $p = 0.039$), and among those who had higher levels of anxiety in the home, as compared to those who felt they did not have anxiety in their homes (65.7% versus 32%; $p = 0.001$). Additionally, engagement in non-medicinal drugs increased risk of SCOFF positivity (60% versus 40%; $p = 0.007$). Increased risk of EDs was associated with not following a specific diet (45.6% versus 54.4% $p = 0.003$). Also, positive SCOFF was higher among those who consumed a single meal per day (50.3% versus two meals 29.6% and three or more meals 20.1%; $p = 0.036$),

but lower in those who consumed three or more meals per day (52.8% versus 47.2%; p=0.036) (Table 8).

During quarantine, changes in eating habits increased the risk of positive SCOFF scores (increase 63.9% and decrease 21.9% versus no change 14.2%; p<0.001), similarly for increased intake of junk and fast food (56.8% versus 43.2%; p<0.001). Moreover, prevalence of positive SCOFF was observed to be higher among those with weight gain (56.8% versus 43.2%; p<0.001), among students with sleep disruptions (sleeping more 42.6% and sleeping less 34.9% versus no change 22.5%; p=0.005), and among participants who felt they were more anxious due to quarantine, compared to those who did not feel more anxious (85.8% versus 14.2%; p<0.001). Eating less fruits and vegetables (43.7% versus 56.3%; p=0.044), increasing intake of sodas and sugary drinks (43.9% versus 56.1%; p=0.031), maintaining a stable weight (17.4% versus 82.6%; p<0.001), and a stable sleep pattern decreased the risk of SCOFF positivity (27.1% versus 72.9%; p=0.005) (Table 8).

Variable		Negative SCOFF		Positive SCOFF		p-value
		N	% or mean ± SD	N	% or mean ± SD	
GENERAL CHARACTERISTICS						
Age		289	22.2 ± 4.6	169	21.9 ± 3.6	0.489
Gender*	Male	140a	73.3	51b	26.7	<0.001
	Female	149a	55.8	118b	44.2	
Pregnancy	No	148	55.8	117	44.2	1
	Yes	1	50	1	50	
Breastfeeding	No	147	55.7	117	44.3	1
	Yes	2	66.7	1	33.3	
Marital Status	Single	266	63.3	154	36.7	0.657
	Engaged	11	52.4	10	47.6	
	Married	6	60	4	40	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	145	67.4	70	32.6	0.07
	Yes	144	59.3	99	40.7	

Body Mass Index Classification*	Underweight	29a	78.4	8b	21.6	0.003
	Normal	197	66.3	100	33.7	
	Overweight	45	54.9	37	45.1	
	Obese	18a	43.9	23b	56.1	
Religion	Christian	254	63	149	37	0.919
	Muslim	15	60	10	40	
	Druze	12	70.6	5	29.4	
	Other	8	61.5	5	38.5	
Nationality	Lebanese	259	64.3	144	35.7	0.71
	Arab	3	50	3	50	
	Non-Arab	5	35.7	9	64.3	
	Multiple Nationalities	22	62.9	13	37.1	
Major*	Architecture, Art, & Design	66a	72.5	25b	27.5	0.03
	Business Administration & Economics	82a	52.6	74b	47.4	
	Health Related majors	40a	80	10b	20	
	Engineering	39	67.2	19	32.8	
	Sciences	16	76.2	5	23.8	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	8	66.7	4	33.3	
	Humanities	31	54.4	26	45.6	
	Others	7	53.8	6	46.2	
Work Status	No	198	63.3	115	36.7	0.095
	Yes, part time	75	67.6	36	32.4	
	Yes, full time	16	47.1	18	52.9	
MEDICAL HISTORY						
Personal Mental Health &/or ED Diagnosis History*	No	272a	65.7	142b	34.3	<0.001
	Yes	17a	38.6	27b	61.4	
Personal ED Diagnosis	Anorexia Nervosa	2	33.3	4	66.7	0.633
	Binge Eating Disorder	0	0	3	100	
	Unspecified	3	37.5	5	62.5	
Personal Anxiety, Depression	Anxiety	4	36.4	7	63.6	0.445
	Depression	5	50	5	50	
	Depression & Anxiety	3	60	2	40	
Personal Panic Disorder & PTSD	PTSD	1	100	0	0	1
	Panic Disorder	1	50	1	50	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	0	0	2	100	0.667
	Mood Disorder & Lability	0	0	1	100	
	Mood & Emotionality	0	0	1	100	
	Sleep Disorder	1	100	0	0	
	Self-harm	0	0	1	100	
Personal Personality disorders, OCD, ADHD, OCPD	OCD	2	66.7	1	33.3	0.302
	ADHD	2	100	0	0	
	OCPD	0	0	1	100	
	Tourette's syndrome	1	100	0	0	
	Unspecified	0	0	2	100	
Familial Mental Health &/or ED Diagnosis History	No	266	63.6	152	36.4	0.442
	Yes	23	57.5	17	42.5	
Familial ED	Anorexia Nervosa	4	80	1	20	0.565

	Unspecified	4	50	4	50	
Familial Anxiety, Depression	Anxiety	2	40	3	60	0.062
	Depression	8	72.7	3	27.3	
	Depression & Anxiety	0	0	3	100	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge drinking	1	50	1	50	
Familial Mood, Emotionality, & Sleep Disorders	Bipolar Disorder	4	66.7	2	33.3	1
	Mood Disorder & Lability	1	100	0	0	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	2	66.7	1	33.3	1
	Schizophrenia	0	0	1	100	
	ADHD	0	0	1	100	
Personal Medical Problems Diagnosis	No	257	64.1	144	35.9	0.244
	Yes	32	56.1	25	43.9	
Personal Problems	Respiratory Problems	11	68.8	5	31.2	0.499
	Hematologic Problems	4	80	1	20	
	Cardiovascular Problems	4	57.1	3	42.9	
	Metabolic Problems	4	50	4	50	
	Endocrine Problems	7	63.6	4	36.4	
	Gastro-Intestinal Problems	1	33.3	2	66.7	
	Several Problems	0	0	3	100	
	Kidney Problems	1	50	1	50	
	Neurological Problems	0	0	1	100	
Deficiencies (minerals/vitamins)	1	50	1	50		
Treatment Status	No	17	63	10	37	0.218
	Yes	13	46.4	15	53.6	
Treatments	Non-chronic Medications	5	55.6	4	44.4	0.689
	Chronic Medications	8	42.1	11	57.9	
Medical Disturbances*	No	242a	67	119b	33	0.003
	Yes	10a	41.7	14b	58.3	
	I don't know	37a	50.7	36b	49.3	
LIFESTYLE HABITS						
Bad Parental Relations*	No	256a	65	138b	35	0.039
	Yes	33a	51.6	31b	48.4	
Home Anxiety*	No	140a	72.2	54b	27.8	0.001
	Yes	138a	55.4	111b	44.6	
	No answer	11	73.3	4	26.7	
Smoking	No	180	66.7	90	33.3	0.069
	Yes	107	57.5	79	42.5	
	No answer	2	100	0	0	
Alcohol	No	83	63.8	47	36.2	0.835
	Yes	206	62.8	122	37.2	
Non-medicinal drugs*	No	273a	64.4	151b	35.6	0.007
	Yes	12a	40	18b	60	
	No answer	4	100	0	0	
Specific Diet*	No	189a	68.5	87b	31.5	0.003
	Yes	98a	54.4	82b	45.6	
	No answer	2	100	0	0	
Meals per day*	None	1	100	0	0	0.036
	One	180a	67.9	85b	32.1	

	Two	70	58.3	50	41.7	
	Three or more	38a	52.8	34b	47.2	
Snacks per day	None	6	46.2	7	53.8	0.437
	One	121	62.7	72	37.3	
	Two	134	65.7	70	34.3	
	Three or more	28	58.3	20	41.7	
Workout status	No	121	59.9	81	40.1	0.245
	Yes, mild workout	69	60.5	45	39.5	
	Yes, moderate workout	62	68.1	29	31.9	
	Yes, high workout	37	72.5	14	27.5	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine effect on Eating Habits*	No	110a	82.1	24b	17.9	<0.001
	Yes, increase food intake	119a	52.4	108b	47.6	
	Yes, decrease food intake	60a	61.9	37b	38.1	
Eat Less Fruits & Vegetables*	No	209a	66.1	107b	33.9	0.044
	Yes	80a	56.3	62b	43.7	
Eat More Junk & Fast Foods*	No	170a	70	73b	30	<0.001
	Yes	119a	55.3	96b	44.7	
Drink More Sodas & Sugary Drinks*	No	206a	66.5	104b	33.5	0.031
	Yes	83a	56.1	65b	43.9	
Drink More Coffee	No	173	63.6	99	36.4	0.788
	Yes	116	62.4	70	37.6	
Drink More Alcohol	No	249	64.2	139	35.8	0.262
	Yes	40	57.1	30	42.9	
Smoke More	No	225	65.6	118	34.4	0.056
	Yes	64	55.7	51	44.3	
Weight Change*	Lose weight	67	59.8	445	40.2	<0.001
	Gain weight	70a	43.2	92b	56.8	
	Remain stable	152a	82.6	32b	17.4	
Exercise More	No	204	61.3	129	38.7	0.183
	Yes	85	68	40	32	
Sleep Disruptions*	No	102a	72.9	38b	27.1	0.005
	Yes, slept more	119	62.3	72	37.7	
	Yes, slept less	68a	53.5	59b	46.5	
Anxiousness due to Quarantine*	No	84a	77.8	24b	22.2	<0.001
	Yes	205a	58.6	145b	41.4	

Table 8: SCOFF Correlations

* p-value is considered significant at $p < 0.05$

* "a" and "b" subscripts denote a difference between sub categories of each variable

* SCOFF: Sick-Control-One Stone-Fat-Full

* ED: Eating Disorders

* PTSD: Post-traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

* OCPD: Obsessive Compulsive Personality Disorder

c. Regression

Three logistic regressions were run to adjust for the effect of different confounders on Classical Eating Disorders, Non-Classical Eating Disorders, and SCOFF.

i. Classical Eating Disorders

A logistic regression was performed to ascertain the effects of BMI, family history of mental health and ED diagnosis, quarantine effect on eating habits, eating more junk and fast foods as a result of quarantine, weight changes due to quarantine, having any medicinal problems or taking any medicines that may cause medical disturbances (insomnia, excessive hunger...), major, home stress, following specific diets, or partaking in non-medicinal drugs on the likelihood that participants have a Classical ED.

It was observed that being underweight or overweight increases the risk of having a classical ED significantly by 8 times and 3.5 times respectively (underweight OR=8.674, p=0.044; overweight OR=3.477, p=0.041), as compared to being of normal BMI. Moreover, having a family member with a previous diagnosis of mental health or eating disorder significantly increases the risk of having a classical ED by 5 times (OR=5.35, p=0.022). Also, gaining weight due to quarantine increases 7 times the risk of having a classical ED (OR=7.018, p=0.042) (Table 9).

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal*				0.029
Body Mass Index Underweight*	8.674	1.062	70.825	0.044
Body Mass Index Overweight*	3.477	1.051	11.497	0.041
Body Mass Index Obese	0.229	0.01	6.275	0.357
Familial Mental Health & Eating Disorder Diagnosis*	5.344	1.276	22.379	0.022
Quarantine Effect on Eating Habits (no)				0.669
Quarantine Effect on Eating Habits (yes, increase food intake)	1.465	0.119	18.084	0.766
Quarantine Effect on Eating Habits (yes, decrease food intake)	3.061	0.233	40.273	0.395
Eating More Junk & Fast Foods during Quarantine	3.895	0.869	17.462	0.076
Quarantine, Weight Change (remain stable)				0.101
Quarantine, Weight Change (lose weight)	1.253	0.139	11.292	0.84
Quarantine, Weight Change (gain weight)*	7.018	1.071	45.99	0.042
Medical Disturbance (no)				0.118
Medical Disturbance (yes)	0.524	0.046	5.942	0.602
Medical Disturbance (I don't know)	3.193	0.934	10.915	0.064
Major (Health related majors)				0.602
Major (Architecture & Design)	1.06E+08	0	0.89	0.997
Major (Marketing & Business...)	2.38E+07	0		0.997
Major (Engineering)	2.17E+07	0.02	2.075	0.997

Major (Sciences)	1.047	0		1
Major (Audiovisual arts...)	9.25E+07	0.05	15.131	0.997
Major (Humanities)	6.17E+07	0.133	2.544	0.997
Major (Others)	0.064	0		1
Habits, Home Anxiety (no)				0.275
Habits, Home Anxiety (yes)	2.923	0.713	11.986	0.136
Habits, Home Anxiety (no answer)	5.371	0.328	87.985	0.239
Habits, Specific Diet (no)				0.199
Habits, Specific Diet (yes)	2.834	0.909	8.834	0.072
Habits, Specific Diet (no answer)	0	0		0.999
Habits, Non-Medicinal Drugs (no)				0.128
Habits, Non-Medicinal Drugs (yes)	3.531	0.728	17.121	0.117
Habits, Non-Medicinal Drugs (no answer)	17.308	0.255	1176.95	0.185
The logistic regression was statistically significant (p<0.05). The model explained 50.2% (Nagelkerke R ²) of the variance in Classical EDs and correctly classified 96.1% of cases.				

Table 9: Logistic regression results for Classical Eating Disorders

* OR: Odds Ratio

* CI: Confidence Interval

ii. Non-Classical Eating Disorders

A logistics regression was carried on to ascertain the effects of BMI, partaking in non-medicinal drugs, quarantine effect on eating habits, eating more junk and fast foods as a result of quarantine, weight changes due to quarantine, sleep changes due to quarantine, personal history of mental health and ED diagnosis, family history of mental health and ED diagnosis, or having any medicinal problems or taking any medicines that may cause medical disturbances on the likelihood that participants have a Non-Classical ED.

In this model, it was observed that being overweight increases the risk of having a non-classical ED by 2.6 times (OR=2.628, p=0.040). Also, partaking in non-medicinal drugs significantly increases the risk of having a non-classical ED by 4 times (OR=4.36, p=0.014). Similarly, individuals with non-classical EDs had significant increase in sleep due to quarantine with an OR=0.248 (p=0.004). In addition, if a participant was unaware of a medical condition or uptake of medicinal drugs that might cause any disturbances (insomnia, hunger...) it increased the risk of having a non-classical ED by 2.5 times (OR=2.513, p=0.042) (Table 10).

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal				0.187
Body Mass Index Underweight	0.849	0.1	7.231	0.881
Body Mass Index Overweight*	2.628	1.047	6.6	0.04
Body Mass Index Obese	2.067	0.579	7.377	0.263
Habits, Non-Medicinal Drugs (no)*				0.05
Habits, Non-Medicinal Drugs (yes)*	4.36	1.342	14.16	0.014
Habits, Non-Medicinal Drugs (no answer)	0	0		0.999
Quarantine Effect on Eating Habits (no)*				0.042
Quarantine Effect on Eating Habits (yes, increase food intake)	3.291	0.79	13.716	0.102
Quarantine Effect on Eating Habits (yes, decrease food intake)	0.348	0.062	1.947	0.23
Quarantine Changes, Eating More Junk & Fast Foods	1.129	0.452	2.816	0.795
Quarantine, Weight Change (remain stable)				0.208
Quarantine, Weight Change (lose weight)	3.538	0.864	14.49	0.079
Quarantine, Weight Change (gain weight)	1.634	0.552	4.839	0.376
Quarantine, Sleep Disruption (no)*				0.003
Quarantine, Sleep Disruption (yes, sleep more)*	9.248	1.999	42.795	0.004
Quarantine, Sleep Disruption (yes, sleep less)	3.124	0.604	16.148	0.174
Personal Mental Health &/or ED Diagnosis History	1.977	0.675	5.793	0.214
Familial Mental Health & ED Diagnosis	2.575	0.783	8.468	0.119
Medical disturbance (no)				0.1
Medical Disturbance (yes)	0.74	0.127	4.318	0.738
Medical Disturbance (I don't know)*	2.513	1.033	6.113	0.042
The logistic regression was statistically significant (p<0.05). The model explained 30% (Nagelkerke R ²) of the variance in Non-Classical EDs and correctly classified 92.3% of cases.				

Table 10: Logistic regression results for Non-Classical Eating Disorders

* OR: Odds Ratio

* CI: Confidence Interval

iii. SCOFF

In order to assess the effect of different confounders on the likelihood that participants have a positive SCOFF result a logistic regression was performed. Confounders consisted of BMI, gender, personal history of mental health and ED diagnosis, having any medicinal problems or taking any medicines that may cause medical disturbances, bad parental relationships, home stress, partaking in non-medicinal drugs, following specific diets, number of meals consumed per day, eating more fruits and vegetables as a result of quarantine, eating more junk and fast foods as a result of quarantine, drinking more sodas and sugary drinks as a results of quarantine, feeling more anxious due to quarantine, major, sleep changes due to quarantine, quarantine effect on eating habits, or weight changes due to quarantine.

It was observed that being of underweight significantly reduces the risk of SCOFF by 35% (OR=0.352, p=0.037), while being obese significantly increases risk of SCOFF by 3 times (OR=2.92, p=0.019) as compared to being of normal weight. Similarly, females have a higher risk of being diagnosed with an ED than males (OR=2.637, p=0.001). Also, majoring in business related fields increases 4 times the risk of a SCOFF positive result (OR=4.012, p=0.002). Increasing food intake during quarantine increases the risk of SCOFF positivity by 2 times, as well (OR=2.274, p=0.034). Moreover, both losing or gaining weight due to quarantine increases the risk of being diagnosed with an ED by 3.6 times (p=0.001, p<0.001, respectively) (Table 11).

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal*				0.017
Body Mass Index Underweight*	0.352	0.132	0.94	0.037
Body Mass Index Overweight	1.216	0.645	2.292	0.545
Body Mass Index Obese*	2.929	1.191	7.202	0.019
Gender*	2.637	1.458	4.769	0.001
Personal Mental Health &/or Eating Disorder Diagnosis History	1.84	0.836	4.051	0.13
Medical disturbance (no)				0.196
Medical Disturbance (yes)	1.394	0.491	3.957	0.533
Medical Disturbance (I don't know)	1.803	0.943	3.449	0.075
Bad Parental Relations	0.723	0.346	1.51	0.388
Habits, Home Anxiety (no)				0.148
Habits, Home Anxiety (yes)	1.696	0.998	2.881	0.051
Habits, Home Anxiety (no answer)	1.369	0.301	6.223	0.685
Habits, Non-Medicinal Drugs (no)				0.278
Habits, Non-Medicinal Drugs (yes)	2.3	0.829	6.378	0.11
Habits, Non-Medicinal Drugs (no answer)	0	0		0.999
Habits, Specific Diet (no)				0.451
Habits, Specific Diet (yes)	1.369	0.841	2.23	0.207
Habits, Specific Diet (no answer)	0	0		0.999
Habits, Meals per day (none)*				0.031
Habits, Meals per day (one)	5.52E+07	0		1
Habits, Meals per day (two)	7.92E+07	0		1
Habits, Meals per day (more than three)	1.51E+08	0		1
Quarantine Changes, Eat More Fruits & Vegetables	1.035	0.609	1.761	0.898
Quarantine Changes, Eat More Junk & Fast Foods	1.013	0.556	1.845	0.967
Quarantine Changes, Drink More Sodas & Sugary Drinks	0.949	0.536	1.681	0.858
Anxiousness due to Quarantine	1.607	0.86	3.002	0.137
Major (Health related majors)				0.066
Major (Architecture & Design)	1.843	0.71	4.781	0.209

Major (Marketing & Business...)*	4.012	1.667	9.659	0.002
Major (Engineering)	2.846	0.999	8.108	0.05
Major (Sciences)	1.48	0.352	6.231	0.593
Major (Audiovisual arts...)	1.501	0.254	8.865	0.654
Major (Humanities)	2.554	0.927	7.036	0.07
Major (Others)	2.57	0.512	12.907	0.252
Quarantine, Sleep Disruptions (no)				0.5
Quarantine, Sleep Disruptions (yes, sleep more)	1.044	0.577	1.889	0.887
Quarantine, Sleep Disruptions (yes, sleep less)	1.406	0.734	2.694	0.305
Quarantine Effect on Eating Habits (no)				0.104
Quarantine Effect on Eating Habits (yes, increase food intake)*	2.274	1.066	4.851	0.034
Quarantine Effect on Eating Habits (yes, decrease food intake)	1.399	0.635	3.08	0.404
Quarantine, Weight Change (remain stable)*				<0.001
Quarantine, Weight Change (lose weight)*	3.66	1.751	7.65	0.001
Quarantine, Weight Change (gain weight)*	3.607	1.863	6.984	<0.001
The logistic regression was statistically significant (p<0.05). The model explained 38.6% (Nagelkerke R ²) of the variance in SCOFF and correctly classified 75.5% of cases.				

Table 11: Logistic regression results for SCOFF

* OR: Odds Ratio

* CI: Confidence Interval

5. Discussion

The purpose of this study was to assess the prevalence of classical and non-classical EDs and its correlation with general characteristics of the population, medical history, lifestyle habits, and quarantine impact on lifestyle habits in university students throughout Lebanon.

The results of this study showed that the age of participants ranged between 18 and 27 years old, similarly to students participating in other studies (Flaudias V. et al., 2020). BMI normal for the majority, like seen in different studies done on the general population and university students (Haddad C. et al., 2020; Kwan Y. Q. et al, 2021). More than half of the students were females, and very few of them were pregnant or breastfeeding at the time of the study. Since the age group is young adult Lebanese students, it was logical to see the majority as single. Most were Christians, and more than half of the sample was considered to be living in a crowded environment, hinting at a lower to middle socio-economic status. We did not ask about the income since the country is facing an economic crisis, and answers may not reflect the reality. The characteristics of this sample were similar to a previous study done on university students in Lebanon, where the majority were female, single, with middle socio-economic status (Aoun A. et al, 2013).

Regarding the participants' medical history, a small proportion of students had previous Classical EDs (AN, BN, or BED) and mental illnesses, just like the population sample of a German study (Kohls E. et al., 2021). A similar small proportion reported having a family member with a history of Classical EDs, mainly AN. Medical problems in participants were mainly respiratory and endocrine, with half of them receiving a treatment for their illness, similarly to a study done on German students (Kohls E. et al., 2021).

Lifestyle habits may have an important impact on ED development. EDs can be affected by familial relations, and a small proportion of students felt that they had bad relationships with their parents, or felt neglected by their parents throughout their childhood. Also, more than half have reported to feel that home is a source of stress and anxiety, which might affect the child-parent relationship. The DSM-5 states that having feelings of neglect during childhood, increased stress in the household, anxiety diagnosis, or family history diagnosis of anxiety among first degree relatives increases the risk of having a classical or non-classical ED (APA, 2013).

Many participants were smokers, the majority were alcohol consumers, and very few were engaged in non-medicinal drugs. Following specific diets was common among participants, and the majority reported consuming only one meal per day with two daily snacks, without any physical activity engagement. These habits were similar to the habits of university students in other studies, where most of the participants were dieters and consumed alcohol, except for physical activity, which was more prevalent in previous studies, especially among female participants (Aoun A. et al., 2013; Doumit R. et al., 2017; Kohls E. et al., 2021; Yildiz M. B. et al., 2021).

Habit alterations due to an unexpected situation can worsen eating behaviors and lead to EDs. Thus, the COVID-19 quarantine may have a major impact on lifestyle-habits. In our study, around half of the participants increased their food intake, but ate less fruits and vegetables, more junk and fast foods, drank more sodas, sugary drinks, coffee, and for some alcohol, and a good proportion smoked more. Weight maintenance was achieved by a big proportion of the students, but the majority did not increase the amount of workout, and slept a lot more. And the vast majority felt more anxious and agitated during quarantine. Changes in behavior and increased feelings of anxiety are common effects, as a result of stress. Similar results were observed

amongst students who were exposed to stressful situations – such as wars and COVID-19 quarantine (Aoun A. et al., 2013; Flaudias et al., 2020; Haddad C. et al., 2020; Kim H. et al., 2021).

The results of our study revealed a minor increase in prevalence of classical EDs, mostly in BN and BED, like in a nationwide survey results in USA and studies in Germany (Kim H. et al., 2021; Kohls E. et al., 2021). Regarding non-classical EDs, Pica was not detected among these students, and this was not a major surprise considering that it is mostly prevalent among school children. The prevalence of ARFID was low in our sample, and NES prevalence was a bit increased, similarly to the results of a study done to assess prevalence of NES among private university students in Malaysia during Covid-19 (Kwan Y. Q. et al., 2021). And a high proportion of the students had a positive SCOFF, similarly to the results observed in previous studies, particularly the one carried out in 2013, studying the effect of war stressors on university students, after the 2006 war in Lebanon (Aoun A. et al., 2013).

Classical EDs were mainly correlated to underweight and overweight status, and following a specific diet. Being underweight is more commonly associated with AN, since people with AN diagnosis are known to starve themselves, and being underweight is a main criterion for AN diagnosis. Similarly, overweight status is more associated with BN and BED, since participants indulge in binge eating episodes (APA, 2013). Similar results were observed in French students, during the first confinement of the COVID-19 pandemic, where higher likelihood of BED was seen among those with underweight status (Flaudias V. et al., 2020). The major from which participants came also impacted their ED risk, where students enrolled in Architecture and Design related fields might have higher levels of anxiety due to the large scale projects that they need to constantly present in front of juries, while keeping up with their other courses, or finding

comfort in food and falling into patterns of restricting food intake to avoid overeating, especially during all-nighters, and then falling into bingeing episodes. Having a history of familial EDs, after adjusting for confounders, was seen to increase the risk of classical ED development, which is consistent with the literature, where having first degree relative with a previous ED diagnosis increased the risk of diagnosing EDs in children (DSM-5; APA, 2013). Anxiety in the household was found to be a major risk factor for classical EDs. Anxiety, in general, was seen in another study to increase the likelihood of ED vulnerability and increased the risk of binge eating (Doumit R. et al., 2017; Flaudias V. et al., 2020; Kohls E. et al., 2021). Quarantine effects on changing behavior, such as increased food intake, especially junk and fast foods, as well as gaining weight, was significantly correlated with increased prevalence of classical EDs, where similar studies have shown that changed eating behavior due to stress and agitation increased the risk of binge eating – a form of classical ED (Flaudias V. et al., 2020).

Similarly, non-classical EDs were mainly correlated with normal and overweight status, this was in discordance with a study done on an Asian population, where BMI had no effect, and showed no correlation with non-classical EDs (Kwan Y. et al., 2021). Another recent study, done in 2022, showed that obese participants had higher scores of NES, a non-classical ED (El Ayoubi L. et al., 2022). This discrepancy might be due to the fact that individuals with ARFID and NES are not particularly occupied with their weight and body shape, or because the sample of the first mentioned study was small and was not able to detect a correlation like the study at hand. Non-classical EDs were not correlated with a personal and familial history of previous EDs and mental health diagnosis, which is inconsistent with the literature, where having a direct first degree relative with previous ED or anxiety diagnosis increased the risk of the offspring having an ED diagnosis (APA, 2013). This discrepancy might be a result of miscommunication in the

family, where participants might not be aware of any ED history diagnosis of their parents or siblings. Engagement in non-medicinal drugs was correlated to non-classical EDs, after adjusting for confounders, and this could be due to usage of illicit drugs and stimulants that cause an increased appetite, sleep alterations, or even hallucinations, that lead to the participant consuming more food during evening time, not being able to sleep until they satisfy their hunger, or waking up not being able to consume any foods, which are all essential signs of NES. Change of behavior due to Covid-19 quarantine was correlated with these EDs, especially when participants ate more junk and fast food, drank more sodas and sugary drinks, gained weight, and slept more. These changes indicate a change in eating habits, with increased appetite, mainly at night, especially if participants were sleeping more during the day since they are home-bound, causing the possible increase in ED diagnosis. These results were similar to studies done to detect the effect of quarantine on eating behaviors in Kuwait and in Poland (AlMughamis N., et al, 2020; Sidor A., et al, 2020).

A positive SCOFF was correlated to female gender, because females are known to be at a higher risk of developing EDs, and to underweight and obese status, with similar results in other studies (APA, 2013; Aoun A. et al., 2013; Tavoracci M. P. et al., 2015). Majoring in medical sciences was negatively correlated to ED risk, as opposed to majoring in business related fields. This could be a result of the fact that students in these majors learn the risks of EDs and proper patterns to overcome them, hence having a higher protection against these disorders. Higher levels of anxiety at home increased the prevalence of a positive SCOFF, as seen in previous studies (Flaudias V. et al., 2020); having a positive relationship with parents decreased the risk of SCOFF, since this might mean the decrease of familial stressors and anxiety. Also, engagement in non-medicinal drugs was a risk factor that increased the risk of ED development, which might

be for the same reason as NES, where engagement in hunger stimulating drugs increases risk of overeating and bingeing. During quarantine, SCOFF positivity was correlated with any change in food intake, with increased junk food intake, with weight fluctuations, sleep disruptions, and increased levels of anxiety, agitation, and depression. In a study by Aoun A. et al (2013), a modification of eating behavior due to feelings of stress and the need to change eating behavior during wartime were associated with a positive SCOFF, which could have been due to the feeling of being trapped at home during summer vacation, disruption of travel plans, fear of being harmed for themselves or loved ones, panic buying of goods, just like effects of quarantine during a pandemic (Aoun A. et al., 2013). Similar results were also seen among French students as a result of quarantine in 2019 (Flaudias V. et al., 2020).

Results of this study should be considered in light of few limitations. This study is a descriptive study, with self-reporting questionnaire. Hence, results and observed correlations are a hypothesis that generates a possible causal relationship. Also, participants were asked to answer questions about past experiences that may have been subject to memory bias. In particular, the questions related to family and home aspects, that might have generated different answers if the parents were asked the same questions. Third, the participants were mostly Lebanese, Christians, and from only two different universities, which is not representative of Lebanese students. In addition, doing the survey online might have limited their ability to ask questions. Since students were selected from elective courses, mainly in NDU and from the nursing and health faculty, then a higher number of students, who are aware of health and risk factors of EDs, might have been self-conscious to alter their answers based on their knowledge.

In regards to the questionnaire, its length may have led some people to answer questions randomly. SCOFF, although sensitive and specific for ED screening, does not allow for

diagnosis and classification of EDs. And the diagnostic criteria used to develop the questionnaire might have been difficult for people who are not familiar with jargon words. Plus, the non-medicinal drugs question was not an open-ended one, where participants were not able to answer the type of drug they were using (although mostly illegal in Lebanon), and hence its effects on appetite, hunger, and sleep patterns could not be studied. Moreover, the data collection was done during quarantine, and a lot of students' answers might have been influenced by their feelings and states of mind at the time.

It is important to note that it was not possible to separate who was COVID positive or negative during that time, and analyze the difference between people in lockdown only due to rules and regulations, as compared to those in quarantine due to contracting the virus. Plus, since most cases were mild and asymptomatic and PCR tests were very rarely done at the time, participants might not have known if they were positive at the time of the study. It is important to note, in some limited areas, people were not abiding the lockdown restrictions, nor the safety measures and regulations imposed by the government, which hindered the safety plan set in order to try and control the spread of the virus (Fahmi M., 2020). This, as well, might have affected the results, where people not abiding quarantine were having a different lifestyle from what was questioned about.

Nonetheless, this study has many strengths. The originality of this study is very important. It is the first study to look at Classical EDs (AN, BN, BED) and Non-Classical EDs (Pica, ARFID, NES) in a young adult population of university students in Lebanon amidst the COVID-19 pandemic and lockdown periods. The population studied is known to be a high-risk population and it is important to study the effects of the lockdown on their ED prevalence. Although it was hard to reach participants during quarantine, the help of instructors, doctors, and professors in

both NDU and Lebanese University aided in recruiting a large sample of participants, which helps in strengthening the results.

Moreover, this study has combined the use of the DSM-5 (APA, 2013) as a diagnostic tool for the different eating disorders, and used the additional SCOFF screening tool to assess the prevalence and correlated of EDs in this population.

It would have been more interesting if the study was implemented in a larger, community-based population to obtain a more precise approach, or the prevalence of EDs and their risk factors in the population. Long term prospective studies, on a large cohort of students, would also be an optimal solution to attain better results in future studies.

6. Conclusion

In conclusion, the current study provides an insight to the current prevalence of classical and non-classical EDs amongst the university student population in Lebanon and their relevant their factors, especially during quarantine altered behavior times and stressful situations.

It is crucial to be made aware that the impact of quarantine and stress, and the resultant life habit alterations, may pose as possible risk factors for development of EDs, classical and non-classical. Future studies should look into the effects of how this on-going pandemic is affecting the increased risk of each ED on its own, in a large population sample, in order to be able to really know which factors affect which ED.

7. References

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8.1. Appendix 1 – Diagnostic Criteria

Anorexia Nervosa

Diagnostic Criteria

- A. Restriction of energy intake (*persistent*) relative to requirements, leading to a significantly low body weight in the context of age, sex, developmental trajectory, and physical health. Significantly low weight is defined as a weight that is less than minimally normal or, for children and adolescents, less than that minimally expected. *Individual's body weights frequently meet this criterion following significant weight loss, but among children and adolescents, there may alternatively be failure to make expected weight gain or to maintain a normal developmental trajectory (while growing in height) instead of weight loss.*
- B. Intense fear of gaining weight or of becoming fat, or persistent behavior that interferes with weight gain, even though at a significantly low weight. *This fear is usually not alleviated by weight loss, and concern about weight may increase even as weight falls. Some individuals may not recognize or acknowledge this fear, and it's up to physicians to detect it using several tests when there is no other explanation for the severe low weight.*
- C. Disturbance in the way in which one's body weight or shape is experienced, undue influence of body weight or shape on self-evaluation, or persistent lack of recognition of the seriousness of the current low body weight. *Some feel overweight, others realize they are thin, but concerned that some body parts are "too fat". They employ variety of techniques to evaluate body size or weight. Self-esteem is highly dependent on their perception of body shape and weight. Weight loss is viewed as an achievement and self-discipline, and gain is a failure of self-control.*

*Specify:

In partial remission – After full criteria for anorexia nervosa were previously met. Criterion A (low body weight) has not been met for a sustained period, but either Criterion B (intense fear of gaining weight or becoming fat or behavior that interferes with weight gain) or Criterion C (disturbances in self-perception of weight and shape) is still met.

In full remission – After full criteria for anorexia nervosa were previously met, none of the criteria have been met for a sustained period of time.

If current severity – The minimum level of severity is based, for adults, on current body mass index (BMI) or, for children and adolescents, on BMI percentile. The ranges below are derived from World Health Organization categories for thinness in adults; for children and adolescents, corresponding BMI percentiles should be used. The level of severity may be increased to reflect clinical symptoms, the degree of functional disability, and the need for supervision.

Mild: BMI > 17kg/m²

Moderate: BMI 16-16.99 kg/m²

Severe: BMI 15-15.99 kg/m²

Extreme: BMI < 15 kg/m²

Cut-offs are used for adults; for children and adolescents, BMI-for-age percentile is used.

Notes:

- Subtypes:
 - Individuals with binge-eating/purging type of anorexia nervosa who binge eat also purge through self-induced vomiting or misuse of laxatives, diuretics, or enemas.
 - Individuals with subtype of anorexia nervosa that do not binge but do regularly purge after consumption of small amounts of food.
 - Crossover between subtypes over course of disorder is not uncommon, and description should be used to describe current symptoms rather than longitudinal course.
- Commonly begins in adolescence or young adulthood, but late (above 40 years) and early (before puberty) onset are possible. It is more common in females.
- Onset is associated with stressful life event, and outcome course is variable.
- Many show periods of changed eating behavior prior to disorder.
- Recovery may be after a single episode, some show fluctuating patterns of weight gain then relapse, others need a chronic course over many years.
- Some may acknowledge being thin, but do not recognize serious medical implications of their malnourished state. Younger individuals may manifest atypical features (denying “fear of fat”).
- If individuals seek help on their own, it is because of distress over somatic and psychological sequelae of starvation.
- Nutritional compromise affects most major organ systems and produce disturbances:
 - Physiological: amenorrhea, vital sign abnormalities, loss of bone mineral density (not completely reversible), or abnormal laboratory findings (due to vomiting or laxative/diuretic... misuse).
 - Psychological: depressive signs and symptoms (depressed mood, social withdrawal, irritability, insomnia...), obsessive-compulsive features (related and unrelated to food, like preoccupied thoughts of food, collecting recipes, hoarding food).
- Individuals show concerns about eating in public, feelings of ineffectiveness, strong desire to control one’s environment, inflexible thinking, limited social spontaneity, and restrained emotional expression. Some might remain active in social and professional functioning, but others may demonstrate social isolation and failure to fulfill academics or career potential.
- Older individuals might have longer duration of illness and show more signs and symptoms of long-standing disorder.
- Those with bingeing/purging type have high rates of impulsivity and are likely to abuse alcohol and drugs.
- Some show excessive levels of physical activity. It may precede onset of disorder, and over the course of the disorder increased activity accelerates weight loss. In treatment, excessive activity may jeopardize weight recovery.
- Individuals may misuse drugs (manipulate dosage to achieve weight loss or avoid weight gain), and Diabetics may omit or reduce insulin (to minimize carbohydrate metabolism).
- There is an increased risk in those with anxiety disorder or obsessional traits in during childhood, in societies where thinness is valued (especially in post-industrialized, high-

income countries), and when having a first-degree biological relative with disorder, there is an increased risk.

- Suicide risk is elevated.
- Comorbidity: bipolar, depressive, anxiety disorder, OCD, alcohol use disorder, and substance use disorder.

Differential Diagnosis

- a. **Medical Conditions:** Serious weight loss may be due to medical disorders, but there is no manifestation of disturbance in the way body weight or shape is experienced or intense fear of weight gain, or persist in behaviors that interfere with appropriate weight gain. Acute weight loss may be followed by onset or recurrence of AN, masked by medical condition.
- b. **Major Depressive Disorder:** Severe weight loss may occur, and most do not have desire for excessive weight loss or intense fear of gaining weight.
- c. **Schizophrenia:** Individuals exhibit odd eating behaviors and may experience significant weight loss, but rarely show fear of gaining weight and body image disturbance.
- d. **Substance Use Disorder:** Individuals may experience low weight due to poor nutritional intake, but no fear of gaining weight or body image disturbances. Ingestion of substances that reduce appetite (cocaine, stimulants) with fear of weight gain might have anorexia nervosa.
- e. **Social Anxiety Disorder (social phobia), Obsessive-Compulsive Disorder, and Body Dysmorphic Disorder:** Individuals may feel humiliated or embarrassed to be seen eating in public (but must also exhibit fears unrelated to eating behavior – fear of speaking in public), exhibit obsessions and compulsions related to food (but also unrelated to food – fear of contamination), or preoccupied with imagined defect in bodily appearance (but also unrelated to body shape and size – preoccupation with nose being too big).
- f. **Bulimia Nervosa:** Exhibit recurrent episodes of binge eating, engage in inappropriate behavior to avoid weight gain, and overly concerned with body shape and weight, but maintain body weight at or above minimally normal level.
- g. **Avoidant/Restrictive Food Intake Disorder:** Exhibit weight loss or nutritional deficiency without fear of gaining weight or becoming fat, or have disturbances in way they experience body shape and weight.

(DSM-5, APA, 2013)

Bulimia Nervosa

Diagnostic Criteria

- A.** Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than what most individuals would eat in a similar period of time under similar circumstances.
Quantity of food ingested might be excessive for typical meal but normal during celebration or holiday meal (affect clinician's estimation).
Binge episode is not restricted to one setting (e.g., might begin in restaurant and continue at home), but continuous snacking of small amounts of food throughout the day are not considered binging.
 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating.)
Impairment in control associated with binge eating is not absolute (eat when phone is ringing, but stop when someone enters the room.)
Binging can be planned, especially when people have abandoned efforts to control eating. Type of food varies, characterized by abnormality in amount consumed than by craving for specific nutrient; but individuals tend to eat food they would avoid.
- B.** Recurrent inappropriate compensatory behaviors in order to prevent weight gain, such as *purge behaviors or purging, described as self-induced vomiting (immediate effects include relief from physical discomfort and reduction of fear in gaining weight);* misuse of laxatives, diuretics, or other medications; fasting; or excessive exercise.
Vomiting (using fingers or instruments to stimulate gag reflex) might become a goal – binge occurs in order to vomit or vomiting occurs after small amount consumption.
- C.** The binge eating and inappropriate compensatory behaviors both occur, on average, at least once a week for 3 months.
- D.** Self-evaluation is unduly influenced by body shape and weight.
Excessive emphasis on body shape or weight is placed during self-evaluation, and affects self-esteem.
- E.** The disturbance does not occur exclusively during episodes of anorexia nervosa.
Individuals resemble AN in fear of gaining weight, desire to lose weight, and level of dissatisfaction with bodies; but diagnosis not given when disturbance occurs during A.N. episodes.

*Specify:

In partial remission – After full criteria for bulimia nervosa were previously met, some, but not all, of the criteria have been met for a sustained period of time.

In full remission – After full criteria for bulimia nervosa were previously met, none of the criteria have been met for a sustained period of time.

If current severity – The minimum level of severity is based on the frequency of inappropriate compensatory behaviors. The level of severity may be increased to reflect other symptoms and the degree of functional disability.

Mild: An average of 1-3 episodes of inappropriate compensatory behaviors per week.

Moderate: An average of 4-7 episodes of inappropriate compensatory behaviors per week.

Severe: An average of 8-13 episodes of inappropriate compensatory behaviors per week.

Extreme: An average of 14 or more episodes of inappropriate compensatory behaviors per week.

Notes:

- Individuals are ashamed of eating problems and attempt to conceal symptoms, where bingeing occurs in secrecy or inconspicuously. Binge eating continues until individuals feels uncomfortably or painfully full.
- Individuals are typically within normal weight or overweight range (BMI > 18.5 and < 30 in adults); and they typically restrict total caloric consumption and preferentially select low-calorie foods – while avoiding foods perceived as fattening or binge-triggering. Frequently begins during or after episode of dieting to lose weight, or experiencing stressful life events.
- Typically begins in adolescence or young adulthood. Disturbed eating behavior persists for several years, chronically or intermittently, with periods of remission alternating with recurrences of binge eating.
- Antecedent of bingeing is negative affect, interpersonal stressors, dietary restraint, negative feelings (to body weight, shape, and food), and boredom.
- Individuals become adept at inducing vomiting and can do it at will. Rarely do they consume syrup of ipecac to induce behavior.
- Diabetics may omit or reduce insulin doses to reduce metabolism of food consumed during binges. Some may fast or exercise excessively to prevent weight gain (interfere with important activities, occurs at inappropriate times or settings, or despite injury/medical complications).
- Problems: menstrual irregularity or amenorrhea, fluid and electrolyte disturbances from purging, esophageal tears, gastric ruptures, cardiac arrhythmias, cardiac and skeletal myopathies, dependency on abuse of laxatives to stimulate bowel movements, and rectal prolapse.
- There is cross-over between Anorexia Nervosa and Bulimia Nervosa. Some individuals continue binge-eating but no longer engage in inappropriate compensatory behaviors, meeting criteria for Binge-Eating Disorder or Other Specified Eating Disorder (diagnosis made on current – past 3 months – clinical presentation).
- Increased risk when weight concerns, obesity, early pubertal maturation, low self-esteem, depressive symptoms, social anxiety disorder, and overanxious disorder in childhood are present; there's internalization of thin body ideals (increasing weight concerns); childhood sexual or physical abuse; there's familial and genetic precedents; and when there's psychiatric comorbidities.
- Higher in industrialized countries, among females and white populations.
- Elevated risk for mortality – all-cause and suicide.

- Individuals exhibit functional limitations, severe role impairment with social-life being adversely affected.

Differential Diagnosis

- a.** Anorexia Nervosa (Binge-eating/purging-type): Those whose binge-eating behaviors occur only during episodes of AN. BN described when all criteria are met for at least 3-months.
- b.** Binge-Eating Disorder: Engaging in binge but not in inappropriate compensatory behaviors.
- c.** Kleine-Levin Syndrome: Disrupted eating behavior due to neurological or medical conditions without characteristic psychological features (over-concern with body shape and weight).
- d.** Major Depressive Disorder (with atypical features): Over-eating common with atypical features, but without engaging in inappropriate compensatory behaviors or exhibition of excessive concern with body shape and weight characteristics.
- e.** Borderline Personality Disorder: binge-eating is included in impulsive behavior criterion, as part of definition of borderline personality disorder.

(DSM-5, APA, 2013)

Binge Eating Disorder

Diagnostic Criteria

- A.** Recurrent episodes of binge eating. An episode of binge eating is characterized by both of the following:
1. Eating, in a discrete period of time (e.g., within any 2-hour period), an amount of food that is definitely larger than what most people would eat in a similar period of time under similar circumstances (*an episode of binge eating*).
The episode of binge is not restricted to one setting: may start at a restaurant and end at home. Continual snacking of small amounts of food throughout the day is not considered a binge.
 2. A sense of lack of control over eating during the episode (e.g., a feeling that one cannot stop eating or control what or how much one is eating).
Impairment in control associated with binge eating is not absolute (eat when phone is ringing, but stop when someone enters the room.)
- B.** The binge-eating episodes are associated with three (or more) of the following:
1. Eating much more rapidly than normal.
 2. Eating until feeling uncomfortably full.
 3. Eating large amounts of food when not feeling physically hungry.
 4. Eating alone because of feeling embarrassed by how much one is eating.
 5. Feeling disgusted with oneself, depressed, or very guilty afterward.
- C.** Marked distress regarding binge eating is present.
- D.** The binge eating occurs, on average, at least once a week for 3 months.
- E.** The binge eating is not associated with the recurrent use of inappropriate compensatory behavior as in bulimia nervosa and does not occur exclusively during the course of bulimia nervosa or anorexia nervosa.

***Specify:**

In partial remission – After full criteria for binge-eating disorder were previously met, binge eating occurs at an average frequency of less than one episode per week for a sustained period of time.

In full remission – After full criteria for binge-eating disorder were previously met, none of the criteria have been met for a sustained period of time.

If current severity – The minimum level of severity is based on the frequency of episodes of binge eating. The level of severity may be increased to reflect other symptoms and the degree of functional disability.

Mild: 1-3 binge-eating episodes per week.

Moderate: 4-7 binge-eating episodes per week.

Severe: 8-13 binge-eating episodes per week.

Extreme: 14 or more binge-eating episodes per week.

Notes:

- Individuals are ashamed of their eating problems and attempt to conceal symptoms.

- Occurs in adults, but most prevalent among females from all races and ethnicities, most commonly among those seeking weight-loss treatment. Occur most commonly in adolescents or young adults.
- Occurs in normal-weight/overweight and obese individuals; and associated with overweight and obesity in treatment-seeking individuals, but is distinct from obesity. Those with binge eating disorder consume more calories in study settings and have greater functional impairment, lower quality of life, more subjective distress, and greater psychiatric comorbidity.
- Most common antecedent to bingeing is negative affect, interpersonal stressors, dietary restraint, negative feelings (related to body weight, body shape, and food), and boredom.
- Binge eating and loss-of-control eating without objectively excessive consumption occur in children and are associated with increased body fat, weight gain, and increased psychological symptoms.
- Dieting follows development of binge-eating.
- It runs in families, reflective additive genetic influences.
- Functional consequences: social role adjustment problems, impaired health-related quality of life and life satisfaction, increased medical morbidity and mortality, and increased risk for weight gain and obesity.
- Associated with psychiatric comorbidities comparable to AN and BN, like bipolar disorders, depressive disorders, anxiety disorders, and substance use disorders.

Differential Diagnosis

- a.** Bulimia Nervosa: Consists of binge-eating, but with recurrent inappropriate compensatory behavior. They show marked or sustained dietary restriction designed to influence body weight and shape.
- b.** Obesity: Individuals have low levels of overvaluation of body weight and shape, and lower rates of psychiatric comorbidities.
- c.** Bipolar and Depressive Disorders: Show increased appetite and weight gain, that may be associated with loss of control.
- d.** Borderline Personality Disorder: Shows impulsive behavior.

(DSM-5, APA, 2013)

Pica

Diagnostic Criteria

- A.** Persistent eating of nonnutritive, nonfood substances over at least 1-month period.
It should be severe enough to warrant clinical attention.
Substances ingested vary with age and availability – including: paper, soap, cloth, hair, strings, wool, soil, chalk, talcum powder, paint, gum, metal, pebbles, charcoal, coal, ash, clay, starch, or ice.
There is typically no aversion to food in general.
- B.** The eating of these substances is inappropriate to the developmental level of the individual.
- C.** The eating behavior is not part of a culturally supported or socially normative practice.
In some populations, eating earth or non-nutritive substances is believed spiritual, medicinal, of social value, culturally supported, or socially normative. This does not warrant diagnosis.
- D.** If this eating behavior occurs in context of another mental disorder (intellectual disability, autism spectrum disorder, schizophrenia, obsessive compulsive disorder, Kleine-Levin syndrome) or medical condition (pregnancy), it is sufficiently severe to warrant additional clinical attention.
Which means: if it is an associated feature of other mental disorders, and it occurs exclusively in its context, then a separate diagnosis of Pica should be made if the eating behavior is severe enough to warrant additional clinical attention.

*Specify:

In remission - after full criteria of Pica were previously met, the criteria have not been met for a sustained period of time.

Notes:

- Minimum age of 2 years is suggested for diagnosis to exclude developmentally normal mouthing of objects by infants that result in ingestion.
Onset can occur in childhood (most commonly reported), adolescence, or adulthood.
- It occurs in normally developing children; whereas in adults it occurs in context of intellectual disability or mental disorders. It can affect males and females.
- In some cases, Pica comes to medical attention following general medical complications and emergencies (mechanical bowel problems, intestinal obstructions, infections, poisoning...).
- In some instances deficiencies in vitamins and minerals have been reported, but no specific biological abnormalities are found.
It might be fatal, depending on substances ingested.
- It can be associated with trichotillomania or excoriation, with ingestion of the hair or skin.
Or associated with “Avoidant Restrictive Food Intake Disorder” in individuals with strong sensory component to presentations.
- In pregnancy, it manifests when specific cravings occur; and diagnosis is appropriate if cravings lead to ingestion of substances to the extent of posing medical risks.
- Non-food term is used since Pica does not apply to ingestion of diet products that have minimal nutritional content.

- Neglect, lack of supervision, and developmental delay can increase condition risk (environmental).
- Consequences: impaired physical functioning, and rarely impaired social functioning.

Differential Diagnosis

- a.** Anorexia Nervosa: In some presentations, ingestion of nonnutritive, nonfood substances serve as means of attempt to control appetite and weight control; hence AN is the primary diagnosis, not Pica.
- b.** Factitious Disorder: Some may intentionally ingest foreign objects as part of pattern of falsification of physical symptoms – an element of deception consistent with deliberate induction of injury or disease.
- c.** “Nonsuicidal self-injury” or “Nonsuicidal self-injury behaviors” in personality disorders: Some may swallow potentially harmful items (pins, needles, knives) in maladaptive behavior patterns.

(DSM-5, APA, 2013)

Avoidant Restrictive Food Intake Disorder

Diagnostic Criteria

- A.** An eating or feeding disturbance (apparent lack of interest in eating or food, avoidance based on sensory characteristics of food, concern about aversive consequences of eating) manifested by persistent failure to meet appropriate required nutritional and/or energy needs (through oral foods) associated with one or more of the following key features:
- 1.** Significant weight loss (or failure to achieve expected weight gain or faltering growth in children).
Determination is based on clinical judgment (since instead of losing weight, children and adolescents who have not completed growth may not maintain weight or height increases along their developmental trajectory).
 - 2.** Significant nutritional deficiency or health related impact.
Determination is based on clinical assessment (dietary intake, physical examination, laboratory testing), and related impact on health has similar severity to anorexia nervosa (hypothermia, anemia, bradycardia) and can be life-threatening.
 - 3.** Dependence on enteral feeding or oral nutritional supplements.
Supplementary feeding is required to sustain adequate intake (failure to thrive – requiring nasogastric tube feeding or neurodevelopmental disorders – dependent on nutritionally complete supplements) or individuals who rely on gastrostomy tube feeding or complete nutritional supplements in absence of underlying medical condition.
 - 4.** Marked interference with psychosocial functioning.
Inability to participate in normal social activities (eating with others), or sustain relationships are result of the disturbance.
- B.** The disturbance is not better explained by lack of available food or by an associated culturally sanctioned practice (religious fasting or normal dieting – solely related to religious or cultural practices); nor does it include developmentally normal behaviors (picky eating in toddlers, reduced intake in older adults).
- C.** The eating disturbance does not occur exclusively during the course of anorexia nervosa or bulimia nervosa, and there is no evidence of a disturbance or excessive concern in the way in which one’s body weight or shape is experienced.
- D.** The eating disturbance is not attributable to a concurrent medical condition or not better explained by another mental disorder (anxiety disorders, autism spectrum disorders, obsessive compulsive disorder, and attention deficit/hyperactivity disorder) *. When the eating disturbance occurs in the context of another condition or disorder, the severity of the eating disturbance exceeds that routinely associated with the condition or disorder and warrants additional clinical attention.

*Specify:

In remission - after full criteria for avoidant/restrictive food intake disorder were previously met, the criteria have not been met for a sustained period of time.

Notes:

- Commonly develops in infancy or early childhood (most common), and may persist into adulthood. There may be long delays between onset and clinical presentations (triggers: physical, social, emotional difficulties). It occurs equally in males (predominant in autism spectrum disorders) and females.

- Very young infants present as being too sleepy, distressed, or agitated to feed; and may not engage during feeding or communicate hunger in favor of other activities.
In older children and adolescents, avoidance or restriction (known as food avoidance emotional disorder) may be associated with generalized emotional difficulties that do not meet diagnostic criteria for anxiety, depression, and bipolar disorder.
- In younger crowds it is associated with growth delay where the resulting malnutrition negatively affects development and learning potentials.
In older adolescents and adults, it affects social functioning.
In all populations it may affect family functioning with heightened stress at meal times and in other feeding or eating contexts with friends and relatives.
- In some, food avoidance or restriction may be based on sensory characteristics of qualities of food – extreme sensitivity to appearance, color, smell, texture, temperature, or taste. Usually develops in first decade of life, but can persist into adulthood (associated with relatively normal functioning)
It may also represent a conditioned negative response associated with food intake – following or anticipating – aversive experiences (choking, traumatic investigation involving the gastrointestinal tract, repeated vomiting...). Can develop at any age.
It can occur in some physiological conditions (pregnancy), but usually not extreme and does not meet full criteria.
- Behaviors are described as: restrictive eating, selective eating, choosy eating, perseverant eating, chronic food refusal, food neophobia. It may manifest as refusal to eat particular brands of food or tolerate smell of food being eaten by others. *Individuals with heightened sensory sensitivities associated with autism may show similar behaviors.*
- Infants are irritable and difficult to console during feeding and appear apathetic or withdrawn. This may be exacerbated by the inadequate nutritional intake and contribute to further feeding difficulties.
Factors: infant temperament and developmental impairment that impair responsiveness to feeding.
The parent-child relationship may contribute to the feeding problem (improper presentation of food, interpreting behavior as aggression or rejection).
- Parental psychopathology (child abuse or neglect) is suggested with feeding and weight is improved in response to changing caregivers.
- Temperamental disorders*, familial anxiety (including mothers with eating disorders), and history of gastrointestinal conditions (gastro-esophageal reflux disease, vomiting...) and medical problems (genetic and physiological) are associated with avoidant and restrictive food eating behaviors.

Differential Diagnosis

- a. Anorexia Nervosa: Restricted energy intake leading to significant low body weight is a core feature of AN, but it also displays fear of gaining weight or becoming fat, behaviors that interfere with weight gain, and disturbances in relation to perception and experience of own body weight and shape. Differential diagnosis might be difficult when there is denial of fear of fatness with engagement in persistent behavior that prevent weight gain, or in those who do not recognize the severity of their low weight (non-fat phobic anorexia nervosa). ARFID may precede onset of AN.
- b. Other medical conditions (GID, allergies, intolerances...): restriction occurs especially in ongoing symptoms (vomiting, nausea, loss of appetite, pain, diarrhea...). Here,

disturbance is a result of physical symptoms consistent with medical conditions (complicating the feeding), although disturbance might persist after being triggered following resolution of medical condition. If ARFID is primary focus of intervention, diagnosis can be made, even in older, post-surgical, and chemotherapy individuals who have appetite loss.

- c. Specific Neurological/Neuromuscular, Structural, or Congenital Disorders and Conditions associated with feeding difficulties: difficulties related to problems with oral, esophageal, pharyngeal structure and function (hypotonia of musculature, tongue protrusions, unsafe swallowing).
- d. Reactive attachment disorder: Withdrawal degree that leads to disturbances in caregiver-child relationship that affects feeding and child intake.
- e. Autism Spectrum Disorder: Rigid eating behaviors and heightened sensory sensitivities that result in level of impaired eating, differential diagnosis is made when a specific treatment for avoidance of food is required and all other criteria are met.
- f. Specific Phobia, Social Anxiety Disorder (social phobia), and Anxiety Disorders: such as “situations that may lead to choking or vomiting” presented as primary triggers for fear or anxiety or avoidance. Or in cases where it presents as fear of being observed by others while eating. Differential diagnosis is made when this fear leads to food avoidance, making it the primary focus of interventions.
- g. Obsessive-Compulsive Disorder: avoidance or restriction is relation to preoccupation with food or ritualized eating behavior.
- h. Major Depressive Disorder: here, appetite might be affected to an extent of food restriction in relation to overall energy intake with weight loss. These abate with resolution of mood problems.
- i. Schizophrenia Spectrum Disorders: Schizophrenia, Delusional Disorder, or Psychotic Disorders exhibit odd eating behaviors and avoidance of specific foods cause of delusional beliefs contributing to concerns about negative consequences of ingesting certain foods.
- j. Factitious Disorder or Factitious Disorder Imposed on Another: to assume the sick role, some may intentionally describe diets that are more restrictive than they are able to consume, as well as complications of behavior such as need for enteral feedings or nutritional supplements, inability to tolerate normal range of foods, or inability to participate normally in age-appropriate situations. They are presented in a dramatic and engaging manner with inconsistent symptoms.

Or the care-giver describes symptoms consistent with ARFID and may induce physical symptoms (failure to gain weight). Here the caregiver receives the diagnosis and it should be made on the basis of careful, comprehensive assessment of the affected individual, the caregiver, and their interaction.

(DSM-5, APA, 2013)

Night Eating Syndrome

Diagnostic Criteria

- A.** The daily pattern of eating demonstrates a significantly increased intake in the evening and/or nighttime (*circadian delay in pattern of food intake*), as manifested by one or both of the following:
- 1.** At least 25% of food intake is consumed after the evening meal (*Evening Hyperphagia*).
 - 2.** At least two episodes of nocturnal eating per week *with ingestion of food (not related to culture-specific norms, or schedules or lifestyles)*.
- B.** Awareness and recall of evening and nocturnal eating episodes are present. *Affected individuals are aware of their behavior and can recall their ingestions the following day.*
- C.** The clinical picture is characterized by at least three of the following features:
- 1.** Lack of desire to eat in the morning and/or breakfast is omitted on four or more mornings per week (*Morning Anorexia*).
 - 2.** Presence of a strong urge to eat between dinner and sleep onset and/or during the night (*upon awakening from sleep*).
The urge is satisfied with food consumption. This is associated with cravings for specific foods, anxiety and agitation, distress about sleep disruption, and feeling compelled to eat or feel full to sleep.
 - 3.** Sleep onset and/or sleep maintenance insomnia are present four or more nights per week.
 - 4.** Presence of a belief that one must eat in order to initiate or return to sleep.
There is significant association between anxiety due to their insomnia and this belief (that good sleep is dependent on eating in late evening or during the night to sustain evening hyperphagia).
 - 5.** Mood is frequently depressed and/or mood worsens in the evening.
- D.** The disorder is associated with significant distress and/or impairment in functioning. *Manifested as shame and guilt over night eating behaviors, distress about weight gain or fear of weight gain due to evening and nocturnal eating, and daytime tiredness or sleepiness.*
- E.** The disordered pattern of eating has been maintained for at least 3 months.
- F.** The disorder is not secondary to substance abuse or dependence, medical disorder, medication (or its side effects), or another psychiatric disorder.

Notes:

- Characterized by morning anorexia, evening hyperphagia, and insomnia.
- In some cultures, (Mediterranean), they have the late evening meal where they consume late dinners depending on their schedules and lifestyles – if these do not meet other criteria for NES, then diagnosis cannot be made.
- Some individuals may have clouded consciousness and can't recall what exactly occurs during nocturnal ingestions and they report their behavior as automatic. But when prompted to recall, they are able and awareness and insight to episodes grows during course of treatment.

- Some may wake two to three times each night and eat, but have no trouble falling asleep. Others eat continually in evening to fall asleep and may not have awakenings once they do fall asleep.
- It is important to distinguish NED from BED and obesity.

Differential Diagnosis

- a.** Nocturnal Sleep-Related Eating Disorder (SRED): characterized by recurrent episodes of involuntary eating during main sleep period. It's classified as parasomnia, since eating is involuntary. They typically eat in a sleep walking state and consume nonfoods or bizarre items with partial or complete amnesia of the feeding episodes. They may have underlying sleep disorders (sleepwalking, restless leg syndrome, obstructive sleep apnea, insomnia).
- b.** Binge Eating Disorder: NES meets criteria for BED – sharing the common feature of hyperphagia, but they do not share a common etiology. If BED patients binge at night, there is little correlation between their nocturnal eating behaviors and nocturnal anxiety (unlike NES), and the size of evening and nocturnal ingestions is objectively large (>350 Cal – unlike NES).

(Proposed Diagnostic Criteria for NES, Allison K. et al., 2010)

8.2. Appendix 2 – Survey

Eating Disorders during COVID-19 Pandemic/Lockdown

https://docs.google.com/forms/d/e/1FAIpQLSf6NQkRJ2_17oHrUAZFaGidA1fitiJ1VAHIL1KnfgOuOdHxgw/viewform?usp=sf_link

Description: This survey is part of a study used to assess the prevalence of Eating Disorders during the COVID-19 pandemic in Lebanese universities. The survey is completely anonymous, no names or information that can be linked back to the participants will be asked for or recorded by the system. Your answers will be linked to a number provided by Google Forms that indicated the time you have filled out the survey. The only people that can access the results of the study's anonymous answers are the nutrition master's student performing the study and the advisor. Kindly note that there are a few personal questions regarding mental health and medical history. For mental health support, you can contact "Embrace Lebanon" (hotline: 1564) - an NGO that you can call if you are facing a crisis and don't know who to talk to, or if you are worried about someone you care for. For Eating Disorders support, you can contact "Middle East Eating Disorders Association - MEEDA" on info@meeda.me or via their website's contact form (www.meeda.me).

Do you agree to participate in this study?

- Yes
- No

General Information

1. Year of birth: _____
2. Gender:
 - Female
 - Male
3. a. Are you pregnant (for females)?
 - Yes
 - No
- b. Are you breastfeeding (for females)?
 - Yes
 - No
4. What is your marital status?
 - Single
 - Engaged
 - Married
 - Divorced
 - Others, specify _____
5. a. How many people are living in your household? _____
- b. How many rooms are in your household? _____ *for sleeping*
- c. Crowding Index: _____ (Calculated, any value in excess of 1.0 represents a measure of crowding)
6. a. What is your height in m? (Please give your best estimate): _____
- b. What is your weight in kg? (Please give your best estimate): _____
- c. What is your BMI? (kg/m²): _____ (Calculated)
7. a. What is your religion?
 - Christian
 - Muslim
 - Druze
 - Others, specify: _____
- b. What is your nationality?
 - Lebanese

- Syrian
 - Others, specify: _____
8. What is your major? _____
9. a. Do you currently work?
- Yes, Full-Time
 - Yes, Part-Time
 - No

Medical History

10. Have you been diagnosed with an Eating Disorder or any other mental health illness (currently or previously)?

- Yes
- No

If yes, please specify all the disorders/illnesses: _____

11. Has anyone in your close family (parents/siblings) been diagnosed with an Eating Disorder or any other mental health illness (currently or previously)?

- Yes
- No

If yes, please specify all the disorders/illnesses in your family: _____

12. Do you have any medical health problems (Diabetes, Heart problems, kidney problems, breathing problems...)?

- Yes
- No

If yes, please specify all problems: _____

13. Are you treated chronically for your medical problem?

- Yes
- No

If yes, please specify all medications: _____

14. Do any of these medical conditions or medications cause sleep disturbances, insomnia, increase in appetite, or excessive hunger?

- Yes
- No
- I don't know

Life Style Related Questions

15. Do you have any bad relations with your parents or feel like they neglect you (now or during childhood)?

- Yes
- No

16. How many meals do you consume per day?

- None
- One meal
- Two meals
- Three meals
- More than three meals

17. How many snacks do you consume per day?

- None
- One snack
- Two snacks
- Three snacks

- More than three snacks
- 18. Do you perceive the situation at home to be filled with stress or anxiety?
 - Yes
 - No
 - Occasionally
 - No Answer
- 19. Do you smoke?
 - Yes
 - No
 - Occasionally
 - No Answer
- 20. Do you drink alcohol?
 - Yes
 - No
 - Occasionally
 - No Answer
- 21. Do you use any drugs (not medicine)?
 - Yes
 - No
 - Occasionally
 - No Answer
- 22. Have you been following a specific diet (on your own or with a dietitian) recently?
 - Yes
 - No
 - Occasionally
 - No Answer
- 23. a. Do you work out?
 - Yes, Mild work-out (1 – 2 times per week)
 - Yes, Moderate work-out (3 – 4 times per week)
 - Yes, High work-out (> 4 times per week)
 - No

LS During Quarantine

- 24. Did the current Quarantine situation (as a result of COVID-19) affect your eating habits?
 - Yes, increase food intake
 - Yes, decrease food intake
 - No
 - a. Did you (check all that apply)
 - Eat less than usual fruits and vegetables
 - Eat more junk food or fast and fried foods
 - Drink more sodas and sugary drinks
 - Drink more coffee
 - Drink more alcohol
 - Smoke more (cigarettes or “narghile”)
 - None
- 25. Did this situation cause you to:
 - Gain weight
 - Lose weight
 - Remain stable
- 26. Did you exercise more during your stay at home?

- Yes
 - No
27. Did you have any sleep disruptions or changes in sleep habits as a result of the Quarantine?
- Yes, I slept more
 - Yes, I slept less
 - No
28. Are you feeling more stressed, anxious, agitated, or depressed because of the Quarantine?
- Yes
 - No

A. Classical Eating Disorders

A1. Anorexia Nervosa

Include BMI in analysis

1. Are you afraid of gaining weight or becoming fat?
 - Yes
 - No
2. Do you think you are fat even if others tell you the opposite?
 - Yes
 - No
3. Do you know the bad effects and dangers of low body weight?
 - Yes
 - No
4. During the last 3 months, have you been engaged in recurrent episodes of binge eating or purging behavior (i.e., self-induced vomiting or the misuse of laxatives, diuretics, or enemas)?
 - Yes (Binge-eating/purging type)
 - No (Restricting type)

A2. Bulimia Nervosa

1. Do you eat in a small period of time (2-hours) an amount of food that is larger than what most individuals would eat during the same period of time and under similar circumstances?
 - Yes
 - No
2. Do you feel that you cannot stop eating or control what or how much you are eating?
 - Yes
 - No
3. Do you use inappropriate compensatory behavior (i.e., laxatives, diuretics, vomiting etc..) to prevent weight gain?
 - Yes
 - No
4. During the last 3 months, did Binge/Purge cycles occur at least, on average, once per week?
 - Yes
 - No

A3. Binge Eating Disorder

Include 1 (yes) & 2 (yes) & 3 (no) from BN for analysis

1. Do you, check all that apply: (3 or more are associated with BED)
 - eat much more rapidly than normal
 - eat until feeling uncomfortably full
 - eat large amounts of food when not feeling physically hungry
 - eat alone because of feeling embarrassed by how much one is eating
 - feel disgusted with oneself, depressed, or very guilty afterwards
 - none of the above
2. During the last 3 months, did Binge episodes occur at least, on average, once per week:

- Yes
- No

A4. SCOFF

1. Do you ever make yourself sick (vomit) because you feel uncomfortably full?
 - Yes
 - No
2. Do you worry you have lost control over how much you eat?
 - Yes
 - No
3. Have you recently lost more than one stone (approximately 6 Kg) in a three-month period?
 - Yes
 - No
4. Do you believe yourself to be fat when others say you are too thin?
 - Yes
 - No
5. Would you say that food dominates your life?
 - Yes
 - No

B. Eating Disorders

B1. Pica

1. In the past month, have you consumed or tried to consume substances that aren't food? (ex: paper, ash, charcoal, soil, chalk, soap, wool, cloth, paint, pebbles, clay, ice, starch...)
 - Yes
 - No
2. In the past month, did you experience any aversion to food in general?
 - Yes
 - No
3. **If you did consume a non-food substance**, why did you consume it?
 - Religious reasons
 - Cultural reasons
 - Social practices
 - None
 - Other (please specify): _____
4. Have you recently had any vitamin or mineral deficiencies that were medically inexplicable?
 - Yes
 - No

B2. ARFID

1. Have you been avoiding certain foods?
 - Yes
 - No

If yes to question 1 please answer the following * / If no, skip to question 6

2. Have you been avoiding them due to:
 - Food's Shape
 - Food's Odor
 - Food's Taste
 - Food's Temperature
 - Previous negative experience with Food (ex: choking, poisoning, sickness...).
 - Others (please specify): _____
3. Have you been avoiding food in general due to:?

- Religious reasons
 - Cultural reasons
 - Social practices
 - None
 - Other (please specify): _____
4. Are you avoiding foods because you're afraid of gaining weight or in an attempt to lose weight or because you have a dissatisfaction with how your body looks?
 - Yes
 - No
 5. Has this food avoidance lead to:?
 - Weight Loss
 - Vitamin or mineral deficiencies
 - Health problems
 - Nothing *
 6. Have you been given a nutritious food or drink supplement (by a doctor) to ensure food intake at home?
 - Yes
 - No
 7. Have you ever been admitted to the hospital
 - a. to be given food or drink supplements?
 - Yes
 - No
 - b. had a nasal tube inserted for food intake?
 - Yes
 - No
 - c. had a food bag parentally given with IVs?
 - Yes
 - No
 8. Have you been avoiding meals with families and/or friends?
 - Yes
 - No
 9. Have you been having trouble spending time with family/friends?
 - Yes
 - No
 10. Have you been having trouble attending classes or extra-curricular activities?
 - Yes
 - No
 11. Do you feel like you have a bad mood?
 - Yes
 - No
 12. Have you been feeling excessively tired to function during the day?
 - Yes
 - No
 13. Do you feel like you are anxious or stressed?
 - Yes
 - No
 14. Do you feel depressed?
 - Yes
 - No

15. Do you feel like you have mood swings where at instances you are depressed, and at other instances you are extremely happy or have an improved mood?
- Yes
 - No
16. Do you feel like you are high (happy) and low (sad) at the same time?
- Yes
 - No

B3. Night Eating Syndrome

1. Do you find yourself consuming foods during the night time period more than during the day (not due to lifestyle factors, ex: coming home late, or due to after university/work activity)?
- Yes, less than 25 %
 - Yes, more than 25 %
 - No
2. Do you wake up from sleep during the night just to eat?
- Yes, but rarely
 - Yes, more than two times a week
 - No
- A. Food related questions (For food questions, occurring for 3 months at least)
3. When you wake up in the morning can you recall if and all what you consumed late at night?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
4. In the morning, do you feel like you can't eat at all when you wake up or skip breakfast?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
5. Do you feel a strong urge to eat or like you can't stop eating between your dinner and the time you go to sleep or if you wake up at night from sleep?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
6. Do you believe that you need to feel full to be able to sleep or go back to sleep?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
7. Do you get food cravings more during the night time?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
8. Do you feel guilty over what you consume at night?

- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
9. Are you afraid that you are going to gain weight because of what you consume at night?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
10. If you answered more than half the week for any above (food questions), have these habits been occurring for more than 3 months?
- Yes
 - No
 - I didn't answer more than half the week/everyday to any of the above*
- B. Sleep related questions (For sleep questions, cutoff: 4 or more nights per week)
11. Do you wake up during the night?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
12. Do you have insomnia?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
13. Do you have trouble sleeping or falling asleep?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
14. Does your mood worsen during the evening?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
15. Do you feel depressed at night?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday
16. Do you feel distressed or agitated about your sleep disruptions?
- Never
 - Few times a month
 - Less than half the week

- More than half the week
 - Everyday
17. Do you feel stressed or agitated because you are tired during the day due to your sleep irregularities?
- Never
 - Few times a month
 - Less than half the week
 - More than half the week
 - Everyday

8.3. Appendix 3 – Tables

Variable	Type	Scale
Year of birth (Age)	Continuous	
Gender	Categorical	Male/Female
Pregnancy & Breastfeeding	Categorical	Yes/No
Marital Status	Categorical	Single, Engaged, Married, Divorced, Other
People in household	Continuous	
Rooms in household	Continuous	
Height & Weight	Continuous	
Religion	Categorical	Christian, Muslim, Druze, Other
Nationality	Categorical	Lebanese, Arab, Non-Arab, Multiple
Major	Categorical	Specify major
Work Status	Categorical	Full-Time, Part-time, No work

Table a: demographics variables

Variable	Type	Scale
Mental Health Diagnosis History	Categorical	Yes/No
ED/Mental Disorder	Categorical	Specify disorder
Family history of Mental Health Diagnosis	Categorical	Yes/No
Family ED/Mental Disorder	Categorical	Specify disorder
Medical Health Diagnosis	Categorical	Yes/No
Health Problem	Categorical	Specify problem
Treatment Status	Categorical	Yes/No
Treatment	Categorical	Specify treatment
Medication disturbances	Categorical	Yes/No, I don't know

Table b: medical history variables

Variable	Type	Scale
Family relations	Categorical	Yes/No
Meals/Snacks	Categorical	None, 1, 2, 3, more than 3
Home Situation	Categorical	Yes, No, Occasionally, No Answer
Smoking Status	Categorical	Yes, No, Occasionally, No Answer
Alcohol Status	Categorical	Yes, No, Occasionally, No Answer
Non-medicinal drug status	Categorical	Yes, No, Occasionally, No Answer
Diet status	Categorical	Yes, No, Occasionally, No Answer
Workout status	Categorical	Mild, Moderate, High, No workout

Table c: lifestyle habits variables

Variable	Type	Scale
Eating habits	Categorical	Increase, decrease, no change
Weight status	Categorical	Gain, Lose, Stable
Exercise status	Categorical	Yes, No
Sleep status	Categorical	Slept more, Slept less, Stable
Emotional status	Categorical	Yes/No

Table d: impact of stress on behaviors variables

Variable	Type	Scale
Anorexia Nervosa		
Fear of weight gain/fatness	Categorical	Yes/No
Weight perception	Categorical	Yes/No
Knowledge of low weight consequences	Categorical	Yes/No

Purging or binge episodes status	Categorical	Yes/No
Bulimia Nervosa		
Food quantity consumption	Categorical	Yes/No
Quantity of food intake control	Categorical	Yes/No
Use of compensatory behaviors	Categorical	Yes/No
Binging/Purging frequency occurrence	Categorical	Yes/No
Binge Eating Disorder		
Eating Habits	Categorical	Specify habits
Binging status frequency	Categorical	Yes/No
SCOFF		
Cause voluntary sickness status	Categorical	Yes/No
Worry about food control	Categorical	Yes/No
Recent weight loss	Categorical	Yes/No
Misperception of weight status	Categorical	Yes/No
Food-life domination	Categorical	Yes/No

Table e: Anorexia Nervosa, Bulimia Nervosa, Binge Eating Disorders, and SCOFF variables

Variable	Type	Scale
Pica		
Consumption of non-food substances	Categorical	Yes/No
Food aversion	Categorical	Yes/No
Consumption reason	Categorical	Religious, Cultural, Social, None, Other
Deficiencies	Categorical	Yes/No
ARFID		
Food Avoidance	Categorical	Yes/No
Reason for avoidance	Categorical	Shape, Odor, Taste, Temperature, Negative experience, other
General food avoidance	Categorical	Religious, Cultural, Social, None, Other
Avoidance due to fear of weight gain	Categorical	Yes/No
Avoidance consequences	Categorical	Weight loss, deficiencies, health problems, nothing
Supplementation	Categorical	Yes/No
Hospital admission (supplementation, nasal tube insertion, IV food-bag)	Categorical	Yes/No
Avoidance of meal time with people	Categorical	Yes, No, Sometimes
Trouble spending time with people	Categorical	Yes, No, Sometimes
Bad mood	Categorical	Yes, No, Sometimes
Tiredness to function during the day	Categorical	Yes, No, Sometimes
Feeling anxious or stressed	Categorical	Yes, No, Sometimes
Feeling depressed	Categorical	Yes, No, Sometimes
Mood swings	Categorical	Yes, No, Sometimes
Feelings of high & low simultaneously	Categorical	Yes, No, Sometimes
NES		
Food consumption at night	Categorical	More than 25%, less than 25%, no
Wake up just to eat	Categorical	Rarely, more than 2 times a week, no
Recall night food consumption	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Skip breakfast and aversion to food in mornings	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Urge to eat between dinner and sleep	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Fullness feeling to sleep	Categorical	Never, few times a month, less than half the week, more than half the week, everyday

Night food cravings	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Guilt feelings over nighttime food consumption	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Fear of weight gain from nighttime food consumption	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Habit occurring for more than 3 months	Categorical	Yes, No, Didn't answer more than half the week/everyday
Wake up during nighttime	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Insomnia Status	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Trouble sleeping or falling asleep	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Mood worsening in nighttime	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Depression status at night	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Distress or agitation about sleep disruptions	Categorical	Never, few times a month, less than half the week, more than half the week, everyday
Stress and agitation during the day due to sleep irregularities	Categorical	Never, few times a month, less than half the week, more than half the week, everyday

Table f: Pica, ARFID, and NES variables

		N or mean	% or SD
DEMOGRAPHICS and GENERAL CHARACTERISTICS			
Age (years)		22.1	4.3
Gender	Male	191	41.7
	Female	267	58.3
Pregnancy	No	256	99.3
	Yes	2	0.7
Breastfeeding	No	264	98.9
	Yes	3	1.1
Marital status	Single	420	91.7
	Engaged	21	4.6
	Married	10	2.2
	Divorced	5	1.1
	Cohabiting	2	0.4
Crowding Index		1.2	0.5
Crowding Index	No	215	46.9
Classification	Yes	243	53.1
Body Mass Index	Underweight	37	8.1
Classification	Normal	297	65.0
	Overweight	82	17.9
	Obese	41	9.0
Religion	Christian	403	88.8
	Muslim	25	5.5
	Druze	17	3.7
	Other	13	2.8
Nationality	Lebanese	403	88.0
	Arab	6	1.3
	Non-Arab	14	3.1
	Multiple Nationalities	35	7.6
Major	Architecture, Arts & Design	91	19.9

	Business Administration & Economics	156	34.1
	Health Related Majors	50	10.9
	Engineering	58	12.7
	Sciences	21	4.6
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	12	2.6
	Humanities	57	12.4
	Others	13	2.8
Work Status	No	313	68.3
	Yes, part time	111	24.2
	Yes, full time	34	7.4

Table 1: Results for Sociodemographic Data and General Characteristics

		N or Mean	% or SD
MEDICAL HISTORY			
Personal Mental Health &/or ED	No	414	90.4
Diagnosis History	Yes	44	9.6
Personal ED Diagnosis	Anorexia Nervosa	6	35.3
	Binge Eating Disorder	3	17.6
	Unspecified	8	47.1
	<i>Total</i>	<i>17</i>	<i>38.6</i>
Personal Anxiety, Depression	Anxiety	11	42.3
	Depression	10	38.5
	Depression, Anxiety	5	19.2
	<i>Total</i>	<i>26</i>	<i>59.09</i>
Personal Panic Disorder & PTSD	PTSD	1	33.3
	Panic Disorder	2	66.7
	<i>Total</i>	<i>3</i>	<i>6.8</i>
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	33.3
	Mood Disorder & Lability	1	16.7
	Mood & Emotionality	1	16.7
	Sleeping Disorder	1	16.7
	Self-harm	1	16.7
	<i>Total</i>	<i>6</i>	<i>13.6</i>
Personal Personality Disorder, OCD, ADHD, OCPD	Tourette's Syndrome	1	11.1
	OCD	3	44.4
	ADHD	2	22.2
	OCPD	1	11.1
	Unspecified	2	22.2
	<i>Total</i>	<i>9</i>	<i>20.4</i>
Familial Mental Health &/or ED	No	418	91.3
Diagnosis History	Yes	40	8.7
Familial EDs	Anorexia Nervosa	5	38.5
	Unspecified	8	61.5
	<i>Total</i>	<i>13</i>	<i>32.5</i>
Familial Anxiety, Depression	Anxiety	5	26.3
	Depression	11	57.9
	Depression, Anxiety	3	15.8
	<i>Total</i>	<i>19</i>	<i>47.5</i>
Familial PTSD & Addictions	PTSD	1	25.0
	Kleptomania	1	25.0
	Alcoholism & Binge Drinking	2	50.0
	<i>Total</i>	<i>4</i>	<i>10</i>

Familial Mood, Emotionality & Sleep Disorders	Bipolar Disorder	6	85.7
	Mood Disorder & Lability	1	14.3
	<i>Total</i>	7	17.5
Familial Personality Disorder, OCD, ADHD, & Schizophrenia	OCD	3	60.0
	Schizophrenia	1	20.0
	ADHD	1	20.0
	<i>Total</i>	5	12.5
Personal Medical Problems Diagnosis	No	401	87.6
	Yes	57	12.4
Personal Problems	Respiratory Problems	16	27.6
	Hematologic Problems	5	8.6
	Cardiovascular Problems	7	12.0
	Metabolic Problems	8	13.7
	Endocrine Problems	11	19.0
	Gastro-Intestinal Problems	3	5.2
	Kidney Problems	2	3.4
	Neurological Problems	1	1.7
	Several Medical Problems	3	5.1
	Deficiencies (Minerals/Vitamins)	2	3.4
Treatment Status	No	27	49.1
	Yes	28	50.9
Treatment	Non-Chronic Medications	9	32.1
	Chronic Medications	19	67.9
Medical Disturbance (as a result of medicine intake or medical health problems)	No	361	78.8
	Yes	24	5.2
	I Don't Know	73	15.9

Table 2: Results for Medical History

* ED: Eating Disorder

* PTSD: Post-Traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

* OCPD: Obsessive Compulsive Personality Disorder

		N or Mean	% or SD
LIFESTYLE HABITS			
Bad Parental Relations	No	394	86.0
	Yes	64	14.0
Home Anxiety	No	194	42.4
	Yes	249	54.4
	No Answer	15	3.3
Smoking	No	270	59.0
	Yes	186	40.6
	No Answer	2	0.4
Alcohol	No	130	28.4
	Yes	328	71.6
Non-medicinal Drugs	No	424	92.6
	Yes	30	6.6
	No Answer	4	0.9
Specific Diet	No	276	60.3
	Yes	180	39.3
	No Answer	2	0.4
Meals Per Day	None	1	0.2
	One	265	57.9
	Two	120	26.2
	Three or More	72	15.7

Snacks Per Day	None	13	2.8
	One	193	42.1
	Two	204	44.5
	Three or More	48	10.5
Workout Status	No	202	44.1
	Yes, Mild Workout (1 - 2 times per week)	114	24.9
	Yes, Moderate Workout (3 - 4 times per week)	91	19.9
	Yes, High Workout (> 4 times per week)	51	11.1

Table 3: Results for Lifestyle Habits

		N or Mean	% or SD
IMPACT OF QUARANTINE ON BEHAVIOR			
Quarantine Effect on Eating Habits	No	134	29.3
	Yes, Increase Food Intake	227	49.6
	Yes, Decrease Food Intake	97	21.2
Eat Less Fruits & Vegetables	No	316	69
	Yes	142	31
Eat More Junk & Fast Foods	No	243	53.1
	Yes	215	46.9
Drink More Sodas & Sugary Drinks	No	310	67.7
	Yes	148	32.3
Drink More Coffee	No	272	59.4
	Yes	186	40.6
Drink More Alcohol	No	388	84.7
	Yes	70	15.3
Smoke More	No	343	74.9
	Yes	115	25.1
Weight Change	Lose Weight	112	24.5
	Gain Weight	162	35.4
	Remain Stable	184	40.2
Exercise More	No	333	72.7
	Yes	125	27.3
Sleep Disruption	No	140	30.6
	Yes, I Slept More	191	41.7
	Yes, I Slept Less	127	27.7
Anxiousness due to Quarantine	No	108	23.6
	Yes	350	76.4

Table 4: Results in Changes in Behavior due to Quarantine

		N or mean	% or SD
CLASSICAL EATING DISORDERS			
Anorexia Nervosa			
Prevalence	No	455	99.3
	Yes	3	0.7
	AN Binging/Purging type	2	67
	AN restrictive type	1	33
Bulimia Nervosa			

Prevalence	No	456	99.6
	Yes	2	0.4
Binge Eating Disorder			
Prevalence	No	438	95.6
	Yes	20	4.4
Classical Eating Disorders			
Prevalence	No	433	94.5
	Yes	25	5.5
NON-CLASSICAL EATING DISORDERS			
Pica			
Prevalence	No	458	100
	Yes		
Avoidant Restrictive Food Intake Disorder			
Prevalence	No	454	99.1
	Yes	4	0.9
Night Eating Syndrome			
Prevalence	No	427	93.2
	Yes	31	6.8
Non-Classical Eating Disorders			
Prevalence	No	423	92.3
	Yes	35	7.7
SCOFF			
SCOFF Score Classification	No	289	63.1
	Yes	169	36.9

Table 5: Prevalence of Classical and Non-Classical Eating Disorders

* AN: Anorexia Nervosa

* SCOFF: Sick-Control-One Stone-Fat-Full

Variable		No CED		CED		p-value
		N	% or mean \pm SD	N	% or mean \pm SD	
GENERAL CHARACTERISTICS						
Age (years)		434	22.1 \pm 4.3	24	22.5 \pm 3	0.623
Gender	Male	185	96.9	6	3.1	0.088
	Female	249	93.3	18	6.7	
Pregnancy	No	248	93.6	17	6.4	0.131
	Yes	1	50	1	50	
Breastfeeding	No	247	93.6	17	6.4	0.19
	Yes	2	66.7	1	33.3	
Marital Status	Single	398	94.8	22	5.2	0.439
	Engaged	20	95.2	1	4.8	
	Married	10	100	0	0	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	206	95.8	9	4.2	0.404
	Yes	228	93.8	15	6.2	
Body Mass Index Classification*	Underweight	34a	91.9	3b	8.1	0.003
	Normal	288	97	9	3	
	Overweight	71a	86.6	11b	13.4	
	Obese	40	97.6	1	2.4	
Religion	Christian	384	95.3	19	4.7	0.086
	Muslim	22	88	3	12	
	Druze	17	100	0	0	
	Other	11	84.6	2	15.4	

Nationality	Lebanese	382	94.8	21	5.2	0.73
	Arab	6	100	0	0	
	Non-Arab	13	92.9	1	7.1	
	Multiple Nationalities	33	94.3	2	5.7	
Major*	Architecture, Art, & Design	82a	90.1	9b	9.9	0.02
	Business Administration & Economics	150	96.2	6	3.8	
	Health Related majors	50	100	0	0	
	Engineering	57	98.3	1	1.7	
	Sciences	21	100	0	0	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	10	83.3	2	16.7	
	Humanities	51	89.5	6	10.5	
	Others	13	100	0	0	
Work Status	No	301	96.2	12	3.8	0.093
	Yes, part time	102	91.9	9	8.1	
	Yes, full time	31	91.2	3	8.8	
MEDICAL HISTORY						
Personal Mental Health &/or ED Diagnosis History	No	394	95.2	20	4.8	0.273
	Yes	40	90.9	4	9.1	
Personal ED Diagnosis	Anorexia Nervosa	6	100	0	0	0.441
	Binge Eating Disorder	2	66.7	1	33.3	
	Unspecified	7	87.5	1	12.5	
Personal Anxiety, Depression	Anxiety	11	100	0	0	0.169
	Depression	8	80	2	20	
	Depression & Anxiety	5	100	0	0	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	100	0	0	0.667
	Mood Disorder & Lability	1	100	0	0	
	Mood & Emotionality	1	100	0	0	
	Sleep Disorder	1	100	0	0	
Familial Mental Health &/or ED Diagnosis History*	No	401a	95.9	17b	4.1	0.003
	Yes	33a	82.5	7b	17.5	
Familial EDs	Anorexia Nervosa	5	100	0	0	0.487
	Unspecified	6	75	2	25	
Familial Anxiety & Depression	Anxiety	5	100	0	0	0.716
	Depression	9	81.8	2	18.2	
	Depression & Anxiety	2	66.7	1	33.3	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge Drinking	1	50	1	50	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	3	100	0	0	0.4
	Schizophrenia	0	0	1	100	
	ADHD	1	100	0	0	
Personal Medical Problems Diagnosis	No	379	94.5	22	5.5	0.754
	Yes	55	96.5	2	3.5	
Personal Problems	Respiratory Problems	15	93.7	1	6.3	0.623
	Hematologic Problems	4	80	1	20	
	Cardiovascular Problems	7	100	0	0	
	Metabolic Problems	8	100	0	0	
	Endocrine Problems	11	100	0	0	
	Gastro-Intestinal Problems	3	100	0	0	

	Several Problems	3	100	0	0	
	Kidney Problems	2	100	0	0	
	Neurological Problems	1	100	0	0	
	Deficiencies (minerals/vitamins)	2	100	0	0	
Treatment Status	No	26	96.3	1	3.7	1
	Yes	27	96.4	1	3.6	
Treatments	Non-chronic Medications	9	100	0	0	1
	Chronic Medications	18	94.7	1	5.3	
Medical Disturbances*	No	349a	96.7	12b	3.3	0.001
	Yes	23	95.8	1	4.2	
	I don't know	62a	84.9	11b	15.1	
LIFESTYLE HABITS						
Bad Parental Relations	No	376	95.4	17	4.6	0.126
	Yes	58	90.6	6	9.4	
Home Anxiety*	No	190a	97.9	4b	2.1	0.021
	Yes	230a	92.4	19b	7.6	
	No answer	14	93.3	1	6.7	
Smoking	No	259	95.9	11	4.1	0.283
	Yes	173	93	13	7	
	No answer	2	100	0	0	
Alcohol	No	125	96.2	5	3.8	0.399
	Yes	309	94.2	19	5.8	
Non-medicinal drugs*	No	407a	96	17b	4	0.001
	Yes	24a	80	6b	20	
	No answer	3	75	1	25	
Specific Diet*	No	268a	97.1	8b	2.9	0.015
	Yes	164a	91.1	16b	8.9	
	No answer	2	100	0	0	
Meals per day	None	1	100	0	0	0.075
	One	256	96.6	9	3.4	
	Two	113	94.2	7	5.8	
	Three or more	64	88.9	8	11.1	
Snacks per day	None	13	100	0	0	0.131
	One	183	94.8	10	5.2	
	Two	196	96.1	8	3.9	
	Three or more	42	87.5	6	12.5	
Workout status	No	189	93.6	13	6.4	0.545
	Yes, mild workout	107	93.9	7	6.1	
	Yes, moderate workout	88	96.7	3	3.3	
	Yes, high workout	50	98	1	2	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine effect on Eating Habits*	No	133a	99.3	1b	0.7	0.006
	Yes, increase food intake	208a	91.6	19b	8.4	
	Yes, decrease food intake	93	95.9	4	4.1	
Eat Less Fruits & Vegetables	No	303	95.9	13	4.1	0.107
	Yes	131	92.3	11	7.7	
Eat More Junk & Fast Foods*	No	238a	97.9	5b	2.1	0.001
	Yes	196a	91.2	19b	8.8	
Drink More Sodas & Sugary Drinks	No	269	95.5	14	4.5	0.314
	Yes	138	93.2	10	6.8	
Drink More Coffee	No	262	96.3	10	3.7	0.069
	Yes	172	92.5	14	7.5	
Drink More Alcohol	No	370	95.4	18	4.6	0.237

	Yes	64	91.4	6	8.6	
Smoke More	No	326	95	17	5	0.638
	Yes	108	93.9	7	6.1	
Weight Change*	Lose weight	109	97.3	3	2.7	<0.001
	Gain weight	144a	88.9	18b	11.1	
	Remain stable	181a	98.4	3b	1.6	
Exercise More	No	313	94	20	6	0.236
	Yes	121	96.8	4	3.2	
Sleep Disruptions	No	137	97.9	3	2.1	0.136
	Yes, slept more	179	93.7	12	6.3	
	Yes, slept less	118	92.9	9	7.1	
Anxiousness due to Quarantine	No	106	98.1	2	1.9	0.071
	Yes	328	93.7	22	6.3	

Table 6: Classical Eating Disorders Correlations

* p-value is considered significant at $p < 0.05$

* "a" and "b" subscripts denote a difference between sub categories of each variable

* CED: Classical Eating Disorders

* ED: Eating Disorders

* PTSD: Post-traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

Variable		No NCED		CED		p-value
		N	% or mean \pm SD	N	% or mean \pm SD	
GENERAL CHARACTERISTICS						
Age (years)		423	22.1 \pm 4.4	35	22.4 \pm 2.8	0.69
Gender	Male	181	94.8	10	5.2	0.101
	Female	242	90.6	25	9.4	
Pregnancy	No	241	90.9	26	9.1	0.179
	Yes	1	50	1	50	
Breastfeeding*	No	241a	91.3	23b	8.7	0.024
	Yes	1a	33.3	2b	66.7	
Marital Status	Single	387	92.1	33	7.9	0.596
	Engaged	20	95.2	1	4.8	
	Married	10	100	0	0	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	196	91.2	19	8.8	0.365
	Yes	227	93.4	16	6.6	
Body Mass Index Classification*	Underweight	36	97.3	1	2.7	0.008
	Normal	281a	94.6	16b	5.4	
	Overweight	70a	85.4	12b	14.6	
	Obese	35	85.4	6	14.6	
Religion	Christian	375	93.1	28	6.9	0.11
	Muslim	22	88	3	12	
	Druze	16	94.1	1	5.9	
	Other	10	76.9	3	23.1	
Nationality	Lebanese	375	93.1	28	6.9	0.148
	Arab	6	100	0	0	
	Non-Arab	11	78.6	3	21.4	
	Multiple Nationalities	31	88.6	4	11.4	
Major	Architecture, Art, & Design	85	93.4	6	6.6	0.243

	Business Administration & Economics	144	92.4	12	7.6	
	Health Related majors	45	90	5	10	
	Engineering	56	96.6	2	3.4	
	Sciences	21	100	0	0	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	10	83.3	2	16.7	
	Humanities	49	86	8	14	
	Others	13	100	0	0	
Work Status	No	290	92.7	23	7.3	0.072
	Yes, part time	105	94.6	6	5.4	
	Yes, full time	28	82.4	6	17.6	
MEDICAL HISTORY						
Personal Mental Health &/or ED Diagnosis History*	No	387a	93.5	27b	6.5	0.012
	Yes	36a	81.8	8b	18.2	
Personal ED Diagnosis	Anorexia Nervosa	5	83.3	1	16.7	0.265
	Binge Eating Disorder	2	66.7	1	33.3	
	Unspecified	8	100	0	0	
Personal Anxiety, Depression	Anxiety	9	81.8	2	18.2	0.695
	Depression	8	80	2	20	
	Depression & Anxiety	3	60	2	40	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	2	100	0	0	0.467
	Mood Disorder & Lability	1	100	0	0	
	Mood & Emotionality	0	0	1	100	
	Sleep Disorder	1	100	0	0	
	Self-harm	0	0	1	100	
Personal Personality disorders, OCD, ADHD, OCPD	OCD	3	100	0	0	0.06
	ADHD	2	100	0	0	
	OCPD	1	100	0	0	
	Tourette's syndrome	0	0	1	100	
	Unspecified	0	0	2	100	
Familial Mental Health &/or ED Diagnosis History*	No	390a	93.3	28b	6.7	0.024
	Yes	33a	82.5	7b	17.5	
Familial EDs	Anorexia Nervosa	4	80	1	20	1
	Unspecified	7	87.5	1	12.5	
Familial Anxiety & Depression	Anxiety	5	100	0	0	0.305
	Depression	7	63.6	4	36.4	
	Depression & Anxiety	3	100	0	0	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge drinking	1	50	1	50	
Familial Mood, Emotionality, & Sleep Disorders	Bipolar Disorder	6	100	0	0	0.142
	Mood Disorder & Lability	0	0	1	100	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	3	100	0	0	0.4
	Schizophrenia	0	0	1	100	
	ADHD	1	100	0	0	
Personal Medical Problems Diagnosis	No	372	92.8	29	7.2	0.42
	Yes	51	89.5	6	10.5	
Personal Problems	Respiratory Problems	15	93.8	1	6.2	0.588
	Hematologic Problems	5	100	0	0	

	Cardiovascular Problems	7	100	0	0	
	Metabolic Problems	7	87.5	1	12.5	
	Endocrine Problems	8	72.7	3	27.3	
	Gastro-Intestinal Problems	3	100	0	0	
	Several Problems	2	66.7	1	33.3	
	Kidney Problems	2	100	0	0	
	Neurological Problems	1	100	0	0	
	Deficiencies (minerals/vitamins)	2	100	0	0	
Treatment Status	No	24	88.9	3	11.1	1
	Yes	25	89.3	3	10.7	
Treatments	Non-chronic Medications	9	100	0	0	0.53
	Chronic Medications	16	84.2	3	15.8	
Medical Disturbances*	No	340a	94.2	21b	5.8	0.01
	Yes	22	91.7	2	8.3	
	I don't know	61a	83.6	12b	16.4	
LIFESTYLE HABITS						
Bad Parental Relations	No	367	93.1	27	6.9	0.127
	Yes	56	87.5	8	12.5	
Home Anxiety	No	184	94.8	10	5.2	0.104
	Yes	224	90	25	10	
	No answer	15	100	0	0	
Smoking	No	254	94.1	16	5.9	0.239
	Yes	167	89.9	19	10.1	
	No answer	2	100	0	0	
Alcohol	No	122	93.8	8	6.2	0.45
	Yes	301	91.8	27	8.2	
Non-medicinal drugs*	No	397a	93.6	27b	6.4	0.003
	Yes	22a	73.3	8b	26.7	
	No answer	4	100	0	0	
Specific Diet	No	260	94.2	16	5.8	0.209
	Yes	161	89.4	19	10.6	
	No answer	2	100	0	0	
Meals per day	None	1	100	0	0	0.526
	One	246	92.8	19	7.2	
	Two	112	93.3	8	6.7	
	Three or more	64	88.9	8	11.1	
Snacks	None	12	92.3	1	7.7	0.641
	One	181	93.8	12	6.2	
	Two	187	91.7	17	8.3	
	Three or more	43	89.6	5	10.4	
Workout status	No	184	91.1	18	8.9	0.636
	Yes, mild workout	107	93.9	7	6.1	
	Yes, moderate workout	86	94.5	5	5.5	
	Yes, high workout	46	90.2	5	9.8	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine Effect on Eating Habits*	No	130a	97	4b	3	0.001
	Yes, increase food intake	199a	87.7	28b	12.3	
	Yes, decrease food intake	94	96.9	3	3.1	
Eat Less Fruits & Vegetables	No	269	93.7	20	6.3	0.115
	Yes	127	89.4	15	10.6	
Eat More Junk & Fast Foods*	No	232a	95.5	11b	4.5	0.008
	Yes	191a	88.8	24b	11.2	
	No	293a	94.5	17b	5.5	0.012

Drink More Sodas & Sugary Drinks*	Yes	130a	87.8	18b	12.2	
Drink More Coffee	No	250	91.9	22	8.1	0.664
	Yes	173	93	13	7	
Drink More Alcohol	No	361	93	27	7	0.195
	Yes	62	88.6	8	11.4	
Smoke More	No	321	93.6	22	6.4	0.088
	Yes	102	88.7	13	11.3	
Weight Change*	Lose weight	105	93.8	7	6.2	0.005
	Gain weight	141a	87	21b	13	
	Remain stable	177a	96.2	7b	3.8	
Exercise More	No	307	92.2	26	7.8	0.827
	Yes	116	92.8	9	7.2	
Sleep Disruptions*	No	138a	98.6	2b	1.4	0.001
	Yes, slept more	167a	87.4	24b	12.6	
	Yes, slept less	118a	92.9	9a	7.1	
Anxiousness due to Quarantine	No	103	95.4	5	4.6	0.178
	Yes	320	91.4	30	8.6	

Table 7: Non-Classical Eating Disorders Correlations

* p-value is considered significant at $p < 0.05$

* "a" and "b" subscripts denote a difference between sub categories of each variable

* NCED: Non-Classical Eating Disorders

* ED: Eating Disorders

* PTSD: Post-traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

* OCPD: Obsessive Compulsive Personality Disorder

Variable		Negative SCOFF		Positive SCOFF		p-value
		N	% or mean \pm SD	N	% or mean \pm SD	
GENERAL CHARACTERISTICS						
Age		289	22.2 \pm 4.6	169	21.9 \pm 3.6	0.489
Gender*	Male	140a	73.3	51b	26.7	<0.001
	Female	149a	55.8	118b	44.2	
Pregnancy	No	148	55.8	117	44.2	1
	Yes	1	50	1	50	
Breastfeeding	No	147	55.7	117	44.3	1
	Yes	2	66.7	1	33.3	
Marital Status	Single	266	63.3	154	36.7	0.657
	Engaged	11	52.4	10	47.6	
	Married	6	60	4	40	
	Divorced	4	80	1	20	
	Cohabiting	2	100	0	0	
Crowding Index Classification	No	145	67.4	70	32.6	0.07
	Yes	144	59.3	99	40.7	
Body Mass Index Classification*	Underweight	29a	78.4	8b	21.6	0.003
	Normal	197	66.3	100	33.7	
	Overweight	45	54.9	37	45.1	
	Obese	18a	43.9	23b	56.1	
Religion	Christian	254	63	149	37	0.919
	Muslim	15	60	10	40	
	Druze	12	70.6	5	29.4	

	Other	8	61.5	5	38.5	
Nationality	Lebanese	259	64.3	144	35.7	0.71
	Arab	3	50	3	50	
	Non-Arab	5	35.7	9	64.3	
	Multiple Nationalities	22	62.9	13	37.1	
Major*	Architecture, Art, & Design	66a	72.5	25b	27.5	0.03
	Business Administration & Economics	82a	52.6	74b	47.4	
	Health Related majors	40a	80	10b	20	
	Engineering	39	67.2	19	32.8	
	Sciences	16	76.2	5	23.8	
	Audiovisual arts, Radio-TV, Filmmaking, Cinema, Photography, Musicology	8	66.7	4	33.3	
	Humanities	31	54.4	26	45.6	
	Others	7	53.8	6	46.2	
Work Status	No	198	63.3	115	36.7	0.095
	Yes, part time	75	67.6	36	32.4	
	Yes, full time	16	47.1	18	52.9	
MEDICAL HISTORY						
Personal Mental Health &/or ED Diagnosis History*	No	272a	65.7	142b	34.3	<0.001
	Yes	17a	38.6	27b	61.4	
Personal ED Diagnosis	Anorexia Nervosa	2	33.3	4	66.7	0.633
	Binge Eating Disorder	0	0	3	100	
	Unspecified	3	37.5	5	62.5	
Personal Anxiety, Depression	Anxiety	4	36.4	7	63.6	0.445
	Depression	5	50	5	50	
	Depression & Anxiety	3	60	2	40	
Personal Panic Disorder & PTSD	PTSD	1	100	0	0	1
	Panic Disorder	1	50	1	50	
Personal Mood, Emotionality, Sleep Disorders	Bipolar Disorder	0	0	2	100	0.667
	Mood Disorder & Lability	0	0	1	100	
	Mood & Emotionality	0	0	1	100	
	Sleep Disorder	1	100	0	0	
	Self-harm	0	0	1	100	
Personal Personality disorders, OCD, ADHD, OCPD	OCD	2	66.7	1	33.3	0.302
	ADHD	2	100	0	0	
	OCPD	0	0	1	100	
	Tourette's syndrome	1	100	0	0	
	Unspecified	0	0	2	100	
Familial Mental Health &/or ED Diagnosis History	No	266	63.6	152	36.4	0.442
	Yes	23	57.5	17	42.5	
Familial ED	Anorexia Nervosa	4	80	1	20	0.565
	Unspecified	4	50	4	50	
Familial Anxiety, Depression	Anxiety	2	40	3	60	0.062
	Depression	8	72.7	3	27.3	
	Depression & Anxiety	0	0	3	100	
Familial PTSD & Addictions	PTSD	1	100	0	0	1
	Kleptomania	1	100	0	0	
	Alcoholism & Binge drinking	1	50	1	50	

Familial Mood, Emotionality, & Sleep Disorders	Bipolar Disorder	4	66.7	2	33.3	1
	Mood Disorder & Lability	1	100	0	0	
Familial Personality Disorder, OCD, ADHD & Schizophrenia	OCD	2	66.7	1	33.3	1
	Schizophrenia	0	0	1	100	
	ADHD	0	0	1	100	
Personal Medical Problems Diagnosis	No	257	64.1	144	35.9	0.244
	Yes	32	56.1	25	43.9	
Personal Problems	Respiratory Problems	11	68.8	5	31.2	0.499
	Hematologic Problems	4	80	1	20	
	Cardiovascular Problems	4	57.1	3	42.9	
	Metabolic Problems	4	50	4	50	
	Endocrine Problems	7	63.6	4	36.4	
	Gastro-Intestinal Problems	1	33.3	2	66.7	
	Several Problems	0	0	3	100	
	Kidney Problems	1	50	1	50	
	Neurological Problems	0	0	1	100	
	Deficiencies (minerals/vitamins)	1	50	1	50	
Treatment Status	No	17	63	10	37	0.218
	Yes	13	46.4	15	53.6	
Treatments	Non-chronic Medications	5	55.6	4	44.4	0.689
	Chronic Medications	8	42.1	11	57.9	
Medical Disturbances*	No	242a	67	119b	33	0.003
	Yes	10a	41.7	14b	58.3	
	I don't know	37a	50.7	36b	49.3	
LIFESTYLE HABITS						
Bad Parental Relations*	No	256a	65	138b	35	0.039
	Yes	33a	51.6	31b	48.4	
Home Anxiety*	No	140a	72.2	54b	27.8	0.001
	Yes	138a	55.4	111b	44.6	
	No answer	11	73.3	4	26.7	
Smoking	No	180	66.7	90	33.3	0.069
	Yes	107	57.5	79	42.5	
	No answer	2	100	0	0	
Alcohol	No	83	63.8	47	36.2	0.835
	Yes	206	62.8	122	37.2	
Non-medicinal drugs*	No	273a	64.4	151b	35.6	0.007
	Yes	12a	40	18b	60	
	No answer	4	100	0	0	
Specific Diet*	No	189a	68.5	87b	31.5	0.003
	Yes	98a	54.4	82b	45.6	
	No answer	2	100	0	0	
Meals per day*	None	1	100	0	0	0.036
	One	180a	67.9	85b	32.1	
	Two	70	58.3	50	41.7	
	Three or more	38a	52.8	34b	47.2	
Snacks per day	None	6	46.2	7	53.8	0.437
	One	121	62.7	72	37.3	
	Two	134	65.7	70	34.3	
	Three or more	28	58.3	20	41.7	
Workout status	No	121	59.9	81	40.1	0.245

	Yes, mild workout	69	60.5	45	39.5	
	Yes, moderate workout	62	68.1	29	31.9	
	Yes, high workout	37	72.5	14	27.5	
IMPACT OF QUARANTINE ON BEHAVIOR						
Quarantine effect on Eating Habits*	No	110a	82.1	24b	17.9	<0.001
	Yes, increase food intake	119a	52.4	108b	47.6	
	Yes, decrease food intake	60a	61.9	37b	38.1	
Eat Less Fruits & Vegetables*	No	209a	66.1	107b	33.9	0.044
	Yes	80a	56.3	62b	43.7	
Eat More Junk & Fast Foods*	No	170a	70	73b	30	<0.001
	Yes	119a	55.3	96b	44.7	
Drink More Sodas & Sugary Drinks*	No	206a	66.5	104b	33.5	0.031
	Yes	83a	56.1	65b	43.9	
Drink More Coffee	No	173	63.6	99	36.4	0.788
	Yes	116	62.4	70	37.6	
Drink More Alcohol	No	249	64.2	139	35.8	0.262
	Yes	40	57.1	30	42.9	
Smoke More	No	225	65.6	118	34.4	0.056
	Yes	64	55.7	51	44.3	
Weight Change*	Lose weight	67	59.8	445	40.2	<0.001
	Gain weight	70a	43.2	92b	56.8	
	Remain stable	152a	82.6	32b	17.4	
Exercise More	No	204	61.3	129	38.7	0.183
	Yes	85	68	40	32	
Sleep Disruptions*	No	102a	72.9	38b	27.1	0.005
	Yes, slept more	119	62.3	72	37.7	
	Yes, slept less	68a	53.5	59b	46.5	
Anxiousness due to Quarantine*	No	84a	77.8	24b	22.2	<0.001
	Yes	205a	58.6	145b	41.4	

Table 8: SCOFF Correlations

* p-value is considered significant at $p < 0.05$

* "a" and "b" subscripts denote a difference between sub categories of each variable

* SCOFF: Sick-Control-One Stone-Fat-Full

* ED: Eating Disorders

* PTSD: Post-traumatic Stress Disorder

* OCD: Obsessive Compulsive Disorder

* ADHD: Attention-Deficit Hyperactivity Disorder

* OCPD: Obsessive Compulsive Personality Disorder

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal*				0.029
Body Mass Index Underweight*	8.674	1.062	70.825	0.044
Body Mass Index Overweight*	3.477	1.051	11.497	0.041
Body Mass Index Obese	0.229	0.01	6.275	0.357
Familial Mental Health & Eating Disorder Diagnosis*	5.344	1.276	22.379	0.022
Quarantine Effect on Eating Habits (no)				0.669
Quarantine Effect on Eating Habits (yes, increase food intake)	1.465	0.119	18.084	0.766
Quarantine Effect on Eating Habits (yes, decrease food intake)	3.061	0.233	40.273	0.395
Eating More Junk & Fast Foods during Quarantine	3.895	0.869	17.462	0.076
Quarantine, Weight Change (remain stable)				0.101
Quarantine, Weight Change (lose weight)	1.253	0.139	11.292	0.84
Quarantine, Weight Change (gain weight)*	7.018	1.071	45.99	0.042

Medical Disturbance (no)				0.118
Medical Disturbance (yes)	0.524	0.046	5.942	0.602
Medical Disturbance (I don't know)	3.193	0.934	10.915	0.064
Major (Health related majors)				0.602
Major (Architecture & Design)	1.06E+08	0	0.89	0.997
Major (Marketing & Business...)	2.38E+07	0		0.997
Major (Engineering)	2.17E+07	0.02	2.075	0.997
Major (Sciences)	1.047	0		1
Major (Audiovisual arts...)	9.25E+07	0.05	15.131	0.997
Major (Humanities)	6.17E+07	0.133	2.544	0.997
Major (Others)	0.064	0		1
Habits, Home Anxiety (no)				0.275
Habits, Home Anxiety (yes)	2.923	0.713	11.986	0.136
Habits, Home Anxiety (no answer)	5.371	0.328	87.985	0.239
Habits, Specific Diet (no)				0.199
Habits, Specific Diet (yes)	2.834	0.909	8.834	0.072
Habits, Specific Diet (no answer)	0	0		0.999
Habits, Non-Medicinal Drugs (no)				0.128
Habits, Non-Medicinal Drugs (yes)	3.531	0.728	17.121	0.117
Habits, Non-Medicinal Drugs (no answer)	17.308	0.255	1176.95	0.185
The logistic regression was statistically significant (p<0.05). The model explained 50.2% (Nagelkerke R ²) of the variance in Classical EDs and correctly classified 96.1% of cases.				

Table 9: Logistic regression results for Classical Eating Disorders

* OR: Odds Ratio

* CI: Confidence Interval

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal				0.187
Body Mass Index Underweight	0.849	0.1	7.231	0.881
Body Mass Index Overweight*	2.628	1.047	6.6	0.04
Body Mass Index Obese	2.067	0.579	7.377	0.263
Habits, Non-Medicinal Drugs (no)*				0.05
Habits, Non-Medicinal Drugs (yes)*	4.36	1.342	14.16	0.014
Habits, Non-Medicinal Drugs (no answer)	0	0		0.999
Quarantine Effect on Eating Habits (no)*				0.042
Quarantine Effect on Eating Habits (yes, increase food intake)	3.291	0.79	13.716	0.102
Quarantine Effect on Eating Habits (yes, decrease food intake)	0.348	0.062	1.947	0.23
Quarantine Changes, Eating More Junk & Fast Foods	1.129	0.452	2.816	0.795
Quarantine, Weight Change (remain stable)				0.208
Quarantine, Weight Change (lose weight)	3.538	0.864	14.49	0.079
Quarantine, Weight Change (gain weight)	1.634	0.552	4.839	0.376
Quarantine, Sleep Disruption (no)*				0.003
Quarantine, Sleep Disruption (yes, sleep more)*	9.248	1.999	42.795	0.004
Quarantine, Sleep Disruption (yes, sleep less)	3.124	0.604	16.148	0.174
Personal Mental Health &/or ED Diagnosis History	1.977	0.675	5.793	0.214
Familial Mental Health & ED Diagnosis	2.575	0.783	8.468	0.119
Medical disturbance (no)				0.1
Medical Disturbance (yes)	0.74	0.127	4.318	0.738
Medical Disturbance (I don't know)*	2.513	1.033	6.113	0.042
The logistic regression was statistically significant (p<0.05). The model explained 30% (Nagelkerke R ²) of the variance in Non-Classical EDs and correctly classified 92.3% of cases.				

Table 10: Logistic regression results for Non-Classical Eating Disorders

* OR: Odds Ratio

* CI: Confidence Interval

Variables	OR	95% C.I. for OR		p-value
		Lower	Upper	
Body Mass Index Normal*				0.017
Body Mass Index Underweight*	0.352	0.132	0.94	0.037
Body Mass Index Overweight	1.216	0.645	2.292	0.545
Body Mass Index Obese*	2.929	1.191	7.202	0.019
Gender*	2.637	1.458	4.769	0.001
Personal Mental Health &/or Eating Disorder Diagnosis History	1.84	0.836	4.051	0.13
Medical disturbance (no)				0.196
Medical Disturbance (yes)	1.394	0.491	3.957	0.533
Medical Disturbance (I don't know)	1.803	0.943	3.449	0.075
Bad Parental Relations	0.723	0.346	1.51	0.388
Habits, Home Anxiety (no)				0.148
Habits, Home Anxiety (yes)	1.696	0.998	2.881	0.051
Habits, Home Anxiety (no answer)	1.369	0.301	6.223	0.685
Habits, Non-Medicinal Drugs (no)				0.278
Habits, Non-Medicinal Drugs (yes)	2.3	0.829	6.378	0.11
Habits, Non-Medicinal Drugs (no answer)	0	0		0.999
Habits, Specific Diet (no)				0.451
Habits, Specific Diet (yes)	1.369	0.841	2.23	0.207
Habits, Specific Diet (no answer)	0	0		0.999
Habits, Meals per day (none)*				0.031
Habits, Meals per day (one)	5.52E+07	0		1
Habits, Meals per day (two)	7.92E+07	0		1
Habits, Meals per day (more than three)	1.51E+08	0		1
Quarantine Changes, Eat More Fruits & Vegetables	1.035	0.609	1.761	0.898
Quarantine Changes, Eat More Junk & Fast Foods	1.013	0.556	1.845	0.967
Quarantine Changes, Drink More Sodas & Sugary Drinks	0.949	0.536	1.681	0.858
Anxiousness due to Quarantine	1.607	0.86	3.002	0.137
Major (Health related majors)				0.066
Major (Architecture & Design)	1.843	0.71	4.781	0.209
Major (Marketing & Business...)*	4.012	1.667	9.659	0.002
Major (Engineering)	2.846	0.999	8.108	0.05
Major (Sciences)	1.48	0.352	6.231	0.593
Major (Audiovisual arts...)	1.501	0.254	8.865	0.654
Major (Humanities)	2.554	0.927	7.036	0.07
Major (Others)	2.57	0.512	12.907	0.252
Quarantine, Sleep Disruptions (no)				0.5
Quarantine, Sleep Disruptions (yes, sleep more)	1.044	0.577	1.889	0.887
Quarantine, Sleep Disruptions (yes, sleep less)	1.406	0.734	2.694	0.305
Quarantine Effect on Eating Habits (no)				0.104
Quarantine Effect on Eating Habits (yes, increase food intake)*	2.274	1.066	4.851	0.034
Quarantine Effect on Eating Habits (yes, decrease food intake)	1.399	0.635	3.08	0.404
Quarantine, Weight Change (remain stable)*				<0.001
Quarantine, Weight Change (lose weight)*	3.66	1.751	7.65	0.001
Quarantine, Weight Change (gain weight)*	3.607	1.863	6.984	<.001

The logistic regression was statistically significant (p<0.05). The model explained 38.6% (Nagelkerke R²) of the variance in SCOFF and correctly classified 75.5% of cases.

Table 11: Logistic regression results for SCOFF

* OR: Odds Ratio

* CI: Confidence Interval