COVID

MDPI

Review

The COVID-19 Pandemic Increased the Risk of Eating Disorders and Emotional Eating Symptoms: A Review of the Current Clinical Evidence

Maria Mentzelou [1], Sousana K. Papadopoulou [2], Constantina Jacovides [2], Antonios Dakanalis [3,4], Olga Alexatou [1], Theophanis Vorvolakos [5], Evmorfia Psara [1], Apostolia Ntovoli [6], Maria Chrysafi [1], Dimitrios A. Kazis [7], Rena I. Kosti [8] and Constantinos Giaginis [1,*]

1 Department of Food Science and Nutrition, School of the Environment, University of the Aegean, 81400 Lemnos, Greece; maria.mentzelou@hotmail.com (M.M.); fnsd23003@fns.aegean.gr (O.A.); fnsd21013@fns.aegean.gr (E.P.); m.chrisafi3@gmail.com (M.C.)
2 Department of Nutritional Sciences and Dietetics, International Hellenic University, 57400 Thessaloniki, Greece; souzpapa@gmail.com (S.K.P.); con.jacovides@gmail.com (C.J.)
3 Department of Mental Health, Fondazione IRCCS San Gerardo dei Tintori, 20900 Monza, Italy; antonios.dakanalis@unimib.it
4 School of Medicine and Surgery, University of Milano-Bicocca, 20900 Monza, Italy
5 Department of Psychiatry, School of Health Sciences, Democritus University of Thrace, 68100 Alexandroupolis, Greece; tvorvola@med.duth.gr
6 Department of Life and Health Sciences, Frederick University, 3306 Limassol, Cyprus; aero.na@frederick.ac.cy
7 Third Department of Neurology, Aristotle University of Thessaloniki, 54124 Thessaloniki, Greece; dimitrioskazis@auth.gr
8 Department of Nutrition and Dietetics, University of Thessaly, 42132 Trikala, Greece; renakosti@uth.gr
* Correspondence: cgiaginis@aegean.gr

Abstract: Background: There has been recent evidence to suggest that people who suffer from eating disorders (EDs) or other eating behavior disturbances, such as emotional eating (EE), are particularly vulnerable post-COVID-19. This narrative literature review aims to comprehensively analyze and scrutinize the existing clinical studies regarding the effects of the COVID-19 pandemic on people with EDs or EE. Moreover, due to the COVID-19 pandemic, it is very important to find out whether a person's emotional state may lead them to wrongly confront their emotional behavior with food consumption. Methods: A thorough search of several databases (PubMed, Scopus, Web of Science, Public Library of Science, Google Scholar, CINAHL Complete, PsycINFO, and Academic Search Complete) was performed to identify available clinical studies on the COVID-19 pandemic published between 2020 and 2024 using relevant keywords. Results: There is substantial evidence that the COVID-19 pandemic exerted negative effects on persons suffering from EDs, including those who are symptomatic, those who are in remission, and those with an EE behavior. Characteristically, people diagnosed with anorexia nervosa (AN), bulimia nervosa (BN), or binge eating disorder (BED) showed considerable symptomatic worsening after the first wave of the COVID-19 pandemic. Clinical studies investigating the effects of the COVID-19 pandemic on persons suffering from EE have also clearly demonstrated that their mood disturbances negatively affected their eating behaviors. These studies have also shown that vulnerable people were at greater risk of EE development and progression during the COVID-19 pandemic. Conclusion: The COVID-19 pandemic seems to have exerted a significant deleterious effect on people who have a history of suffering from EDs or EE. The COVID-19 pandemic has been related to the frequency of dysfunctional eating behaviors, thus decreasing therapeutic intervention efficiency in people with EDs as well as in those with disturbed eating behaviors such as EE. In this aspect, further clinical studies are strongly recommended to investigate the exact effects of the COVID-19 pandemic as well as to explore their potential long-term deleterious complications in the post-pandemic period. Public strategies and policies should be applied to provide special healthcare for this group of patients.

Citation: Mentzelou, M.; Papadopoulou, S.K.; Jacovides, C.; Dakanalis, A.; Alexatou, O.; Vorvolakos, T.; Psara, E.; Ntovoli, A.; Chrysafi, M.; Kazis, D.A.; et al. The COVID-19 Pandemic Increased the Risk of Eating Disorders and Emotional Eating Symptoms: A Review of the Current Clinical Evidence. *COVID* **2024**, *4*, 1704–1718. https://doi.org/10.3390/covid4110119

Academic Editor: Gaia Sampogna

Received: 27 May 2024
Revised: 22 June 2024
Accepted: 24 October 2024
Published: 28 October 2024

Keywords: eating disorders; emotional eating; COVID-19 pandemic; anorexia nervosa; bulimia nervosa; binge eating disorder; lockdown; quality of life

1. Introduction

The COVID-19 pandemic has gradually become a severe issue in our society. The deleterious medical complications, the increased incidence of morbidity, and the rapid international spread of COVID-19 have resulted in important public health concerns and political measures worldwide. Several detrimental public health and quality-of-life effects have been recognized during the COVID-19 pandemic. In addition, people's lifestyles changed during the pandemic, crucially affecting people's mental health. The change in lifestyle, particularly in dietary habits, during the pandemic period triggered the destabilization of the psychology of many individuals, which in turn could serve as a catalyst for the onset of eating disorders [1]. Diet quality, a lack of sleep or poor sleep quality, smoking, body mass index (BMI), and a lack of exercise greatly affected people's mental health [2–4]. Characteristically, COVID-19 pandemic conditions have negatively affected eating habits, levels of physical activity, and mental health, even in elite athletes [3,4]. It has also been noted that there were important negative consequences on people's mental health during the COVID-19 pandemic [5]. Thus, the prioritization of the assurance of mental health during the COVID-19 pandemic was urgently declared by the WHO [6]. Several longitudinal studies have shown that during the first wave of the pandemic, mental health (i.e., anxiety, depression, and general distress) was largely worse than prior to the COVID-19 pandemic [7]. The worry of infection and of the sudden death of relatives were the main reasons that caused negative emotional effects in many people, as indicated in studies performed during the COVID-19 period [8].

Alterations in eating behaviors, physical activity, and body weight have been observed both in the general population and in individuals suffering from an eating disorder (ED). EDs impair physical health, disrupt psychosocial functioning, and can even be fatal. EDs are currently classified by the international disorders' recommendations based on DSM-5 and ICD-11. The most well-known EDs are anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED) [9]. AN diagnosis is based on the following criteria: limited energy intake resulting in a considerable body weight decline, worry of increasing body weight, and possession of negative views about one's body weight or shape. On the other hand, BN is correlated with repetitive binge eating (e.g., eating large amounts of food during a short time period) and repetitive improper compensatory behaviors like vomiting, over-exercising, and frequent laxative use. The above behaviors happen at least once weekly for a period of 3 months. The criteria for BED involve binge eating with high levels of distress and no appropriate compensatory actions, taking place at least once time weekly for 3 months [10,11].

The international scientific literature has suggested that the pandemic may have exerted a negative effect on both the severity of symptoms and the rate of recurrence in patients diagnosed with ED [12–14]. Notably, during the COVID-19 pandemic and the mandatory confinement at home, diverse psychological stressors were revealed, which were severely triggered in individuals with AN, BN, or BED. The restriction of exercise, excessive use of social media, emotional distress, worry of infection, and reduced access to therapy and support were considered to be the major risk factors [7,13]. The mandatory stay-at-home orders considerably restrained the usual support networks in ED patients. The above reason may cause a reduction in motivation for recovery and worsening of ED symptoms [7,15]. However, it should be noted that the existing knowledge so far regarding the effect of EDs on public health and daily quality of life during the COVID-19 pandemic remains scarce.

Recently, another eating disturbance that is not directly recognized as a separate ED but rather as an eating behavior is emotional eating (EE). This eating disturbance is

characterized by the tendency to over-eat due to emotions. Repeated increases in body weight, attributed to individual behaviors, stress, and emotions, have been linked with EE. However, it should be noted that EE, unlike other eating disturbances, is not associated with a complete loss of control over the quantity and quality of food intake. It is known as over-eating, which can negatively impact overall health due to increased energy consumption and mental health disturbances. To date, there are still no conclusive results regarding the impact of EE behavior, especially during the COVID-19 pandemic [16–18].

The COVID-19 pandemic was a distressing event that brought about various types of stressors. These stressors included concerns about infection, fears for the health of family and friends, social distancing and loneliness, disruptions in daily routines and everyday life, and changes in financial circumstances [19,20]. Additionally, eating behaviors were significantly impacted by stress, with people often preferring palatable energy-dense foods that are less healthy [21]. Coping with these stressors could take various forms, such as increased alcohol consumption and over-eating. Given the instructed social distancing measures, the use of social media may have increased during the COVID-19 pandemic. Interestingly, it has been suggested that the use of social networks, particularly those focused on appearance, may be strongly linked to body dissatisfaction and low self-esteem [22,23].

Based on the above considerations, there is a noticeable gap in the literature regarding the critical evaluation of existing clinical studies exploring the potential impact of EDs and EM on human mental health and quality of life during the COVID-19 pandemic. Recent studies suggest that the pandemic may worsen individuals' emotional state, causing them to cope with their emotions through food consumption. Therefore, the aim of this literature review is to thoroughly analyze and examine the potential associations of the COVID-19 pandemic with EDs with a focus on EE.

2. Methods

This is a comprehensive narrative literature review of the available clinical studies regarding the potential effect of the COVID-19 pandemic on EDs and EE. Scientific databases, such as PubMed, Scopus, Web of Science, Public Library of Science, Google Scholar, CINAHL Complete, PsycINFO, and academic search complete, were thoroughly examined using relevant keywords, such as "COVID-19", "eating disorders", "anorexia nervosa", "bulimia nervosa", "binge eating disorder", "emotional eating", and "mental health" to gather available clinical studies. Inclusion criteria consisted of any longitudinal, retrospective, comparative, descriptive, preliminary, and case-report clinical surveys in humans written in the English language with no limitations on publication dates (last search date: 5 April 2024).

All authors worked as reviewers. To enhance the reliability and validity of our study, all reviewers assessed all the recovered published articles, discussed the findings among themselves, and monitored the screening and data extraction manual before starting the review process. (screening data: M.M., S.K., C.J., A.D., O.A., and C.G.; extracting data: T.V., E.P., A.P., M.C., D.A.K., and R.I.K.). The reviewers first assessed the titles, abstracts, and then the full texts of all published clinical studies found in our search. Any disagreements regarding study enrollment and data extraction were resolved through thorough discussions with all the authors/reviewers.

The recovered studies were thoroughly tested for relevant surveys cited in their full text. The search approaches were evaluated by an expert librarian [Constantinos Gryparis], who filtered the results and deleted duplicates. In vitro and in vivo animal models were excluded. Review articles, commentaries, editorials, letters to the editor, and abstracts in congress proceedings were not included. However, we read all these types of articles to find relevant information related to the topic of our review. The results were chosen based on relevance, and the most relevant ones were selected and reported in the flow chart diagram in Figure 1. Initially, 3215 articles were retrieved, from which 18 clinical human studies were discussed in the final analysis after applying the inclusion and exclusion criteria. All the enrolled studies have been published in the last few years (2020–2024).

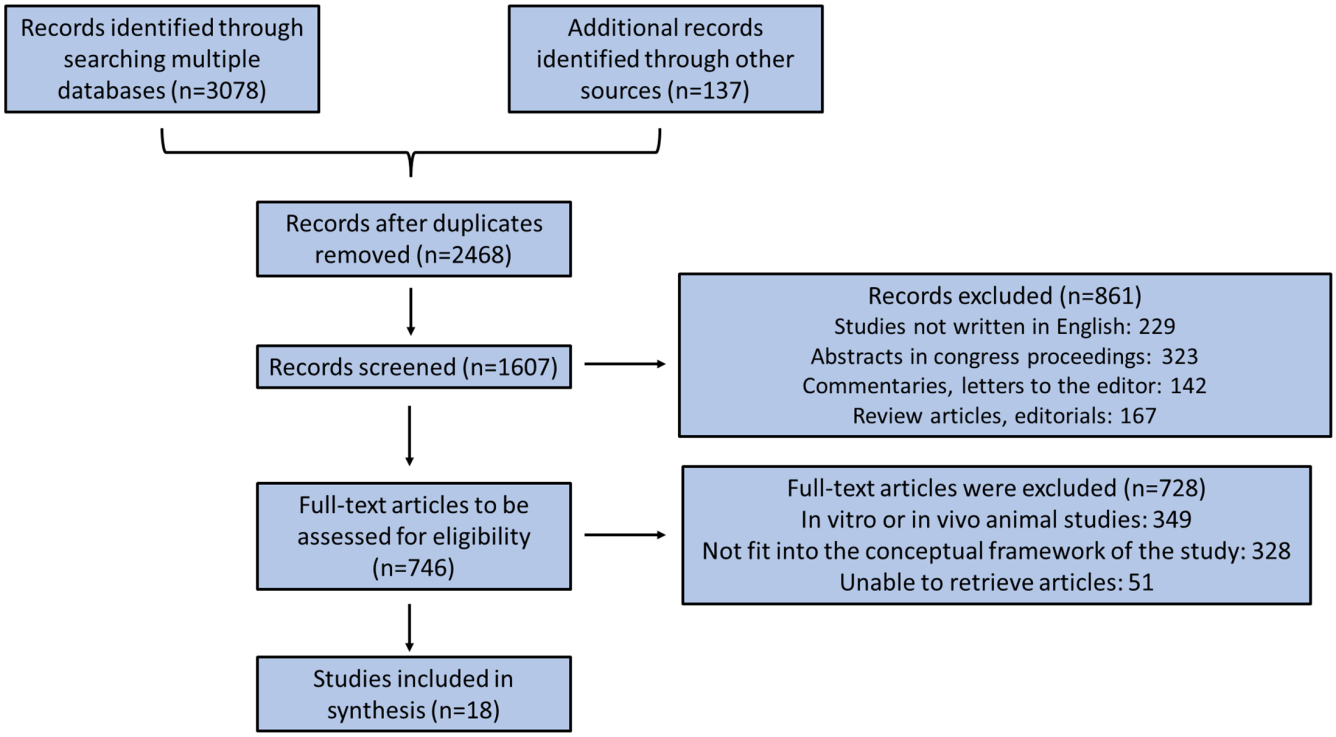

Figure 1. Flow chart diagram of the study enrolment.

3. Results

3.1. Eating Disorders (EDs) and COVID-19 Pandemic

There are several clinical surveys assessing EDs during the COVID-19 pandemic, which are summarized in Table 1. Among the currently available studies, a longitudinal survey retrieved data before and during lockdown for 74 individuals with AN or BN, who were compared with 97 healthy control individuals using certified questionnaires [24]. Not surprisingly, individuals with EDs were more susceptible to the deleterious impacts of the COVID-19 pandemic compared to healthy individuals, as evidenced by an increase in disturbed eating behaviors (objective binge eating and compensatory physical exercise). Additionally, elevated COVID-19-associated post-traumatic stress (PTS) symptomatology was more frequently observed in the ED group compared to the healthy group of enrolled individuals [24]. In contrast to individuals with exacerbated binge eating behaviors, individuals with AN were associated with enhanced compensatory physical activity. Moreover, individuals with both disorders experienced more frequent relapses during the pandemic outbreak if their condition had previously been in remission. Furthermore, individuals with BN and those without remission appeared to be more vulnerable. However, this survey had certain disadvantages: the sample size was quite small, baseline levels for the Impact of Event Scale—Revised (IES-R) were not defined, and all enrolled individuals were being treated [24].

Table 1. Clinical surveys exploring the association between eating disorders and COVID-19 pandemic.

Survey Type	Survey Population	Gender	Main Findings	References
Longitudinal (observational) study	74 patients with eating disorders and 97 healthy controls	Only female	COVID-19 epidemic significantly impacted on EDs	Castellini et al. [24]

Table 1. *Cont.*

Survey Type	Survey Population	Gender	Main Findings	References
Cross-sectional study	159 patients	Only female	ED-associated beliefs and attitudes could be utilized as disturbed coping mechanisms to recover control over the present conditions. E-mental health interventions seem to be effective for assisting AN individuals during these hard times	Schlegl et al. [25]
Cross-sectional study	1011 subjects (942 patients with EDs)	551 United States subjects, 93% female 510 Netherlands subjects, 99% female	People presenting EDs could be experiencing a deterioration of symptomatology severity and those presenting previous EDs could be susceptible for recurrence for the period of COVID-19 pandemic	Termorshuizen et al. [26]
Cross-sectional study	78,179 patients	73,352 female	Increase in hospitalizations for girls and for young women	Chauvet-Gelinier et al. [27]
Cross-sectional study	74 patients	95.9% female	25% of individuals presenting an ED appeared symptomatic worsening during lockdown	Baenas et al. [28]
Longitudinal study	982 subjects (340 previous ED patients but no current symptoms, 642 previous ED patients with remaining symptoms and current patients)	98% biological female	Enhanced ED symptom severity was related to increased anxiety, fear, and ED symptomatology enhancement	Birgegård et al. [29]
Cross-sectional study	55 former ED patients	Only female	49% indicated a worsening of their ED symptom severity, and 62% indicated a poor quality of life	Schlegl et al. [30]
Cross-sectional study	15 patients	Only female	Increase in negative affect and decrease in positive affect in social life in patients with binge eating disorder	Leenaerts et al. [31]
Cross-sectional study	129 patients	93.8% female 65.1% female	86.7% stated that their symptoms' severity increased due to COVID-19 pandemic	Dawn Branley-Bell et al. [32]
Cross-sectional study	295 healthy controls	65.1% female	Enhanced COVID-19 anxiety symptoms' severity and COVID-19 intolerance of uncertainty were related with more worse ED pathology, but not compulsive exercise	Scharmer et al. [33]
Cross-sectional study	365 patients	Day hospital (n = 27) 92.9% female Outpatient clinic (n = 338) 87.3% female	50% of the children and adolescents showed reactivation of ED symptomatology independently of therapy 25% of them showed self-harm and suicide risk	Graell et al. [34]

Schlegl et al. conducted a study using a self-reported questionnaire to evaluate the psychological effects of the pandemic on 159 individuals who previously had AN [25]. The study found that 70% of participants reported increased issues with eating, body image, physical activity, isolation, sadness, and restlessness during the COVID-19 pandemic. However, 25.8% of participants reported positive outcomes, such as a decrease in symptoms and a stronger desire for recovery. The study also noted a 37% decrease in in-person therapy sessions and a 46% decrease in general practitioner visits, with 26% using videoconferencing and 35% using telephone consultations [25]. Despite these findings, the study had limitations. It may not be applicable to individuals with AN who have not started treatment or are in the early stages of the disorder, and the data were self-reported, potentially leading to recall biases. Future research should focus on the long-term effects reported by participants [25].

Termorshuizen et al. evaluated the effect of the COVID-19 pandemic on individuals with self-reported EDs in the USA and the Netherlands [26]. Individuals with AN reported elevated concerns about their ability to stick to their meal schedules. Those with BN and BED showed an increase in binge-eating episodes and desires to binge. However, this survey had some limitations [26]. Specifically, the diagnoses were self-reported in interviews, the sampling methods used could introduce bias, and some questions were worded in a way that could be interpreted differently by respondents, while others were accidentally left out [26].

In another study, Chauvet-Gelinier et al. evaluated whether there was a relationship between the COVID-19 pandemic and the increased prevalence of hospitalization of individuals with AN in France [27]. The study found that the number of individuals admitted to the hospital with AN increased by about 9%. However, there was no significant difference in hospitalization rates for men with AN during the pandemic. In contrast, there was a significant increase of about 21.98% among women with AN [27]. These findings highlight the need for special attention to individuals with AN during the pandemic and suggest that further analysis should be conducted to explore the impact of the pandemic on psychiatric disturbances. There is also a strong demand to identify potential factors directly linking the COVID-19 pandemic to psychological distress in individuals with eating disorders or at risk of developing one [27].

In an online survey, researchers assessed psychological and psychopathological factors that could influence eating disorder symptoms and explored possible risk factors such as coping strategies, anxiety–depression symptoms, and personality traits using certified questionnaires [28]. However, the findings of the survey were contradictory. The authors noted that a significant percentage of individuals showed a higher risk of eating disorder symptom severity, but this result was based on only nineteen individuals (25.7%) [28]. The study also revealed a relationship between symptom severity and a decrease in self-directedness. A strength of the study was the use of telephone interviews instead of self-reported questionnaires, which could improve the study's reliability. However, the study had a moderate number of participants and lacked a comparison with a healthy control group [28].

Andreas Birgegård et al. assessed Swedish people who suffered from eating disorders (ED) during the COVID-19 pandemic period. They used a prospective study methodology, which included evaluations at baseline, at the initial stages of the pandemic, and after six months [29]. Participants with a history of ED and those with permanent symptoms or recent active disease were found to be more susceptible to anxiety, which may worsen during a pandemic. The study suggested that future research should critically analyze and apply efficient resources for patients, family members, and clinical personnel to cope with the impacts of COVID-19 during quarantine and after confinement measures end [29].

Schlegl et al. aimed to explore the mental health impacts of the COVID-19 pandemic on individuals with bulimia nervosa (BN) and potential changes in the healthcare system. They also assessed the effectiveness of activities and policies to address the challenges faced by individuals with BN [30]. A high proportion of individuals with BN experienced a worsening of their ED symptoms and quality of life during the pandemic [30]. Alarmingly, mental health symptom severity increased in over 80% of individuals studied. Binge eating increased in almost 50% of participants, self-induced vomiting in about 33%, and the use of laxatives and diuretics in approximately 10% of individuals [29]. The study's main strength was the use of individuals diagnosed with clinical BN and a focus on coping mechanisms. However, the study had low response rates, which was considered a limitation. Overall, the study provided evidence that exploring barriers and opportunities for more effective therapy could better support individuals with BN during crises like the COVID-19 pandemic [30].

Another survey was designed to investigate the potential effect of social distancing measures on individuals with BN. Eating behavior disturbances were found to be related to changes in the social context [31]. The study also reported that nearly half of the participants

experienced a neutral or highly negative affect level at least half of the time during the lockdown compared to before the COVID-19 pandemic. The survey had some strengths and limitations. Strengths included the reliable selection of the sample and the naturalistic data-collection methods. However, limitations included the poor quality of the statistical analysis, the small study population, and the lack of agreement between negative affect and positive affect compared to the original PANAS scale. This study highlights the need for future research to delve deeper into whether alterations in the social environment can have a negative impact and whether this may be related to individual behaviors. It also raises questions about why certain individuals may be more vulnerable to the negative effects of the COVID-19 pandemic [31].

Branley-Bell et al. collected relevant records from 80 individuals with EDs and 49 in recovery with the purpose of identifying the effects of the COVID-19 pandemic on individuals suffering from EDs [32]. A combined online study was conducted, where participants completed validated questionnaires related to the impact of the pandemic. Notably, the majority of participants (86.7%) showed an increased severity of ED symptoms during the pandemic. Only two individuals reported an improvement in symptoms. It was observed that individuals with EDs in remission had better mental well-being, lower perceived stress, higher social support, and a greater sense of control compared to those currently experiencing ED symptoms [32].

An interesting survey by Scharmer et al. explored possible associations between COVID-19 restrictions, anxiety severity, subjective intolerance of hesitation, and the probability of developing eating disorder (ED) pathology/compulsive exercise in 295 undergraduate women in the USA [33]. The participants were assessed using the "Eating Disorder Examination Questionnaire" (EDE-Q), the "Fear of Illness Evaluation" (FIVE), the "State-Trait Anxiety Inventory-Trait Subscale" (STAI-T), the "Compulsive Exercise Test" (CET), the "Intolerance of Uncertainty Scale-Short Form" (IUS), and the "Godin Leisure-Time Exercise Questionnaire" (GLETQ). This study thoroughly investigated the impacts of four different variables related to EDs and compulsive exercise: the severity of anxiety associated with COVID-19 ("anxiety as a state"), the intolerance to hesitation related to COVID-19 ("intolerance as a state"), the stable trait of anxiety levels, and the trait of intolerance to uncertainty [33]. The study provided evidence that both a state of anxiety and a state of intolerance of uncertainty were directly associated with EDs but not with compulsive exercise [33]. In contrast, compulsive exercise and EDs were affected by intolerance of uncertainty as a trait. Additionally, individuals with a decreased severity of pre-existing COVID-19-related anxiety (i.e., anxiety as a trait) were most negatively impacted by anxiety and uncertainty triggered by COVID-19 in relation to ED symptomatology and compulsive exercise. Therefore, the study suggested that stable behaviors of anxiety and hesitation were more related to deteriorating EDs and compulsive exercise compared to recent levels of similar subjective variables [33].

Interestingly, Graell et al. described the compliance of therapeutic strategies in an ED unit during the COVID-19 pandemic [34]. A significant proportion of the enrolled individuals (41.9%) reported a reactivation of ED symptomatology during the period of confinement measures, specifically eating limitations, increased exercise, uncertainties, worries about increased body weight, and heightened emotional symptomatology. This study provided substantial evidence that a stable and high-compliance inpatient program needs to be maintained during the COVID-19 pandemic [34].

3.2. Emotional Eating (EE) and COVID-19 Pandemic

During the COVID-19 pandemic, EE has been assessed in a few clinical studies so far. The available surveys are reported in Table 2. Eating behaviors like EE and the relevant risk factors for its development during the COVID-19 pandemic have been affected by mood disturbances [35]. More specifically, there are three mechanisms that may affect EE: (1) body weight gain and shape worries, negative effects on eating, exercise, and sleep patterns associated with the disruptions of daily habits, restrictions on outside activities,

a lack of social support, and adaptive coping strategies; (2) increased exposure to media information, which heightens individuals' worry and anxiety; and (3) health issues, stress, and harmful influences [36].

Table 2. Clinical surveys investigating the association of emotional eating with COVID-19 pandemic.

Survey Type	Survey Population	Gender	Main Findings	References
Population-Based Survey	24,968 subjects	56% female	Mental distress exhibited a great relationship with emotional eating	Bemanian et al. [37]
Cross-sectional study	1626 subjects	69.6% women	75.7% were emotional eaters at different levels	Madalı etal. [38]
Cross-sectional survey	1969 subjects	55.1% female	50% of the participating individuals showed an emotional eating score greater than 2.15 (on a 1–5 scale)	Hadar-Shoval et al. [39]
Cross-sectional survey	474 subjects	Only female	Higher negative emotional reactivity was significantly and directly associated with greater emotional eating, mediated by fear of COVID-19	Dominte et al. [40]
Longitudinal study	146 subjects	71.2% female	BMI and maladaptive eating styles (emotional, external, and restrained eating) did not change during COVID-19 confinement	Escrivá-Martínez et al. [41].
Cross-sectional survey	450 subjects	Only female	Increased emotional eating was increased helpless approach; submissive approach and Coronavirus anxiety increase while decreasing the self-confident approach	Güner et al. [42].
Cross-sectional study	638 subjects	Only female	Emotional eating was common among young Saudi women during the pandemic	Al-Musharaf et al. [43]

A study by Mitra Bemanian et al. was conducted during the COVID-19 pandemic and showed an increased incidence of emotionally induced eating in diverse age groups [37]. This survey included 24,968 adults from Norwich and indicated that 54% of the enrolled individuals experienced emotional eating during the pandemic. Notably, emotional eating was even more common in female participants. Risk factors for emotional eating included fear for one's individual economic status, health-related fears, and emotional distress [37].

A cross-sectional study by Berna Madalı et al. aimed to evaluate emotional eating behavior during the COVID-19 quarantine using the Emotional Eating Scale (EES) in Turkey [38]. This study revealed that 75.7% of the participants exhibited varying degrees of emotional eating. However, this survey had certain limitations. Data were collected through an online questionnaire, and self-reported data for body weight and height were used, increasing the risk of recall bias [38].

Another survey assessed the association of lifestyle changes with emotional eating during the COVID-19 era by examining the impact of sex and COVID-19-related stressors [39]. Participants completed online questionnaires during the first wave of the pandemic in Israel [39]. The association of lifestyle changes with emotional eating was influenced by the participants' sex and COVID-19-related stressors. The results of the survey showed that participants with a history of harmful lifestyle changes had increased emotional eating compared to those with beneficial changes. Both types of changes were associated with higher rates of emotional eating [39]. Additionally, the study found that COVID-19-related stressors and participants' sex acted as regulating factors in the relationship between lifestyle changes and emotional eating. However, the study had some limitations. The cross-sectional study design does not establish causation, and the data on emotional eating were self-reported, increasing the risk of recall bias [39].

Furthermore, another study explored whether negative emotional reactivity could be related to emotional eating (EE) both directly and indirectly due to fear of COVID-19

infection and its subsequent health complications. This study found that higher negative emotional reactivity was significantly correlated with increased rates of EE [40]. Additionally, the study suggested that the fear of COVID-19 infection could impact the relationship between negative emotional reactivity and EE [40]. However, the study had limitations, such as unreliable assessment tools due to language barriers, poor study methodology, and inadequate recruitment methods. Further research is needed to investigate the potential impact of positive emotional reactivity on EE while considering the moderating role of COVID-19-related stress and anxiety [40].

On the other hand, a study by Escrivá-Martínez et al. [41] compared binge eating, fat consumption, body weight gain, and maladaptive eating behaviors (emotional, external, and restrained eating) before and during strict COVID-19 isolation. The study did not find significant changes in emotional, external, and restrained eating behaviors before and during the COVID-19 restrictions. The limitations of the study included reliance on self-reported data and a small study population, but the longitudinal methodology was a major advantage [41].

Another study by Özlem Güner et al. aimed to evaluate anxiety levels in women who were believed to be highly affected by their roles in the COVID-19 pandemic in Turkey [42]. Both BMI and body weight changes were identified as significant predictors of EE. The study also found that the effects of COVID-19-related anxiety on EE were similar across overweight, obese, and normal-weight individuals. Additionally, EE decreased with age. Limitations of the study included the use of self-reported data, low generalizability due to the exclusively female participants, and the retrospective survey methodology [42].

Al-Musharaf et al. also investigated the impact of the COVID-19 pandemic on EE [43]. Participants completed an online questionnaire, including the Arabic version of the EE scale, the Perceived Stress Scale (PSS), the Generalized Anxiety Disorder-7 (GAD-7), the Patient Health Questionnaire-9 (PHQ-9), the Pittsburgh Sleep Quality Index (PSQI), and the Global Physical Activity Questionnaire (GPAQ) [39]. The study found that 52.8% of participants experienced modest to high levels of EE. Additionally, 42% showed symptoms of depression, 27.0% reported increased anxiety symptoms, and 12.5% had severe stress symptoms. Factors such as perceived stress, body weight gain, fat consumption, number of daily meals, sugar consumption, and frequent fast-food consumption were positively associated with EE rates. The study concluded that EE was common among young Saudi women during the COVID-19 pandemic and recommended healthy food choices, increased physical activity, improved sleep quality, and stress management strategies [43].

4. Discussion

The COVID-19 pandemic has had a detrimental impact on individuals suffering from eating disorders (EDs) and emotional eating (EE). This impact is mainly attributed to the anxiety or stress related to COVID-19 experienced by individuals with EDs and EE. Alarmingly, social restrictions have significantly influenced the prevalence of dysfunctional behaviors in individuals with EDs or EE, as well as the effectiveness of their therapeutic interventions during home isolation. Recent studies, such as those by Madalı et al. [38] and Dominte et al. [40], have also supported evidence that individuals' emotional states and eating behaviors deteriorated during the COVID-19 pandemic, potentially leading to a decrease in emotional eating behaviors. Certain prospective studies have shown that individuals with EDs were more susceptible to the impacts of restrictions compared to healthy individuals, as evidenced by an increase in pathological eating attitudes. Individuals with Bulimia Nervosa (BN) showed worsened binge eating behaviors, while individuals with Anorexia Nervosa (AN) showed an increase in compensatory physical exercise. Individuals with both EDs frequently experienced recurrence episodes during the pandemic, even if the ED had previously been in remission. Concerns related to eating, shape, body weight, lower levels of physical activity, isolation, sadness, and inner restlessness were all heightened during the COVID-19 pandemic. Individuals with EDs experienced a deterioration in their

preoccupation with body weight and shape due to difficulties in maintaining compensatory behaviors, such as compulsive physical exercise [44,45].

Additionally, individuals with AN experienced increased restrictions and serious fears related to food selection in accordance with their dietary program during the pandemic. Symptom severity of AN, comorbid depression, hospitalization rates, emergency department visits, and in-patient admission rates were all relatively elevated during this time [13,26,32,46]. Binge-eating episodes and desires to binge increased in individuals with BN or Binge Eating Disorder (BED). Those with a history of ED, permanent symptomatology, or recent active disease were particularly susceptible to increased anxiety during the pandemic. Nutritional counseling for EDs focuses on symptom reduction, such as meal planning and identifying triggers for binge eating, while psychotherapy centers on addressing underlying emotional issues [47]. Hospitalizations for individuals with AN increased during the COVID-19 pandemic, highlighting the need for special attention to this vulnerable group. There was also an association between symptom deterioration and low levels of self-directedness. Nearly half of individuals reported experiencing a neutral or high negative effect at least half of the time during lockdown compared to before the COVID-19 era. Anxiety and intolerance of uncertainty were positively associated with EDs. The limitations in daily events and activities due to specific restrictions in Europe during the pandemic also had a strong negative impact on individuals with EDs [46,48].

The COVID-19 pandemic has also resulted in a specific type of anxiety related to eating and food [49]. Severe anxiety has been linked to increased hunger, emotional overeating, and a decrease in the enjoyment of food consumption [49]. Current studies have demonstrated that stress, social isolation, and mood disturbances caused by the COVID-19 pandemic have led many individuals to turn to high-calorie foods as a way to cope emotionally. These factors may contribute to an increase in eating disorder (ED) concerns for individuals [45,46]. Consequently, this could lead to emotional eating (EE) as a coping mechanism [19,35,46].

Regarding the impact of the COVID-19 pandemic on emotional eating (EE), the currently available evidence remains scarce. Eating behaviors like EE and their risk factors were influenced by mood disorders during the COVID-19 years. Notably, the prevalence of EE during the pandemic was significantly increased, especially among female individuals. Considering potential biological determinants of EE, the female sex must be included. The female gender may partly explain the high percentage of EE. Studies have shown that women, compared to men, experience more EE by eating more and making palatable food choices—behavior that has been linked to mood swings caused by hormonal changes related to the menstrual cycle [38,50]. Fear for one's individual economic status, which was associated with health and psychological distress, was identified as a major risk factor for EE. Individuals who had previously made harmful lifestyle alterations showed a higher prevalence of EE compared to those who made beneficial alterations. Additionally, the fear of COVID-19 infection substantially affected the association of negative emotional reactivity with EE. Remarkably, the effects of COVID-19 anxiety on EE were similar in both overweight and obese individuals, as well as normal-weight individuals. Factors such as highly perceived stress, body weight gain, fat consumption, daily meal frequency, sugar intake, and everyday fast-food consumption were directly associated with EE rates. It was also assumed that the interaction between imposed restrictions, coping strategies, and the presence of risk factors (such as fear of contagion and feeling of increased isolation) and resilience factors (such as more family cohesion and less social pressure) significantly contributed to the symptom presentation of eating disorders (EDs) and may explain the different findings [51]. While the evidence is not conclusive due to the low number of existing studies and small sample sizes, they may serve as indicators of the negative effects of the COVID-19 pandemic on eating behaviors across all age groups, especially for individuals suffering from EDs or EE.

Collectively, the disruption of daily lifestyle habits, decreased access to the healthcare system, limited social support, and the resulting influence on eating patterns and physi-

cal activities had a deleterious impact on the lives and disease symptoms of individuals with ED and/or EE. This substantially influences both their mental health and eating behaviors [46,52,53]. Including COVID-19-associated questions in prospective surveys may provide important information for clinical practitioners concerning individuals with disordered eating-related behaviors in the post-COVID-19 period [5,54,55]. Moreover, there is an urgent demand to develop and evaluate technology-based mental health interventions and telehealth/mHealth therapies to address the psychosocial complications of COVID-19 restraints (e.g., stress, family discordance, mental health care access, etc.), reduce psychological distress, and improve eating behaviors [54,56,57]. Furthermore, clinical guidelines repeatedly emphasize the need for treatment to be conducted in a multidisciplinary setting [47]. This is a prerequisite for recognizing coping mechanisms concerning harmful emotional behaviors, nutritional counseling, and support, which can reduce the risk of EE and EDs. There is also a strong demand to perform further studies exploring the potential molecular mechanisms governing the interrelationships of EE and EDs with overweight/obesity, depressive symptoms, anxiety/stress, and nutritional patterns [58].

It should be emphasized that substantial changes in the accessibility and viability of health services were observed during the COVID-19 period, particularly affecting vulnerable groups such as cancer patients [59]. A recent clinical study evaluated the impact of radical practices and perceived changes on cancer patients' mental well-being. This study supported evidence for the strong necessity for comprehensive cancer care improvement, revealing that cancer patients were mentally affected by the COVID-19 pandemic and suggesting that these patients should be promptly identified and thoroughly supported [59]. A recent systematic review also explored the impact of the COVID-19 pandemic on Binge Eating Disorder (BED), including new onset and course. This systematic review included 12 studies with 4,326 enrolled individuals, all of which were observational—9 cross-sectional and 3 longitudinal [60]. The study highlighted that BED patients may be particularly vulnerable to events characterized by social distancing and excessive worry and should therefore be carefully monitored. However, further studies are needed to confirm this evidence, implement preventive strategies, and promote personalized treatments [60].

Several micronutrient and macronutrient supplementation, along with a healthy diet and lifestyle, have been shown to enhance immune system function, with beneficial effects both before and during COVID-19 infection [60]. Additional studies are highly recommended to draw safe conclusions and formulate dietary recommendations regarding supplements and their potential effects on preventing and co-treating COVID-19 [61]. Compliance with the Mediterranean Diet has been shown to improve or even co-treat the negative impacts of the COVID-19 pandemic on various aspects of people's daily lives, including quality of life, sleep quality, and reducing the likelihood of anxiety and depression [62]. The COVID-19 pandemic has been found to have persistent detrimental effects on daily quality of life and various mental health aspects of older adults in the post-COVID period [63]. Infection with COVID-19 was significantly and independently associated with a higher risk of depression, anxiety, stress, poor sleep quality, reduced physical activity levels, decreased compliance with the Mediterranean Diet, and lower health-related quality of life in older adults [64]. This recent evidence highlights the strong need to provide psychological and nutritional counseling and support to older adults diagnosed with COVID-19 infection or in the post-COVID period to improve disease symptoms and severity. Emphasizing the adoption of healthy dietary and lifestyle habits as preventive and supplementary therapeutic factors against COVID-19 infection and/or symptom severity is crucial [63,64]. Additionally, interventions on emotion regulation can serve as therapeutic targets to break the cycle between dysfunctional eating patterns, emotion dysregulation, and anxious–depressive symptoms [65].

The present study had the strength of including and critically summarizing all currently existing studies with a well-organized methodological design, which investigated the possible effects of the COVID-19 pandemic on eating disorders (EDs) and emotional eating

(EE). Keeping this strength in mind, the results of the present study should be interpreted with consideration of some limitations.

As far as this review is concerned, there are some major limitations. Firstly, it should be noted that the search string is not very sensitive, while the currently available studies are reasonably scarce as the COVID-19 pandemic has been attenuated in the last 1–2 years. Based on this fact, several studies are expected to be published in the next few months, providing a more adequate and strict illustration of the impact of the COVID-19 pandemic on the risk of developing EDs and EE symptoms. Moreover, among the available surveys, the major drawbacks were the inadequate evaluations of pre-COVID-19 ED symptomatology and the limited number of available research. Additionally, in several surveys, the ED diagnosis was self-reported, decreasing the reliability of individuals' responses and, subsequently, the study validity due to recall bias. Another concern is that the participating individuals were mainly enrolled online or via social media, leading to study samples that suffered from bias compared to those who were more familiar with the usage of technology. Furthermore, most of the surveys used cross-sectional methodology, which does not examine temporal relationships among the variables and cannot support causality effects. Additionally, there is low generalizability of the data because the participants were exclusively women or men in several studies. Moreover, it should be noted that the increase in the prevalence of depression appears to be associated with more EE. Psychological distress also seems to be associated with a higher probability of EE. Nevertheless, the most common limitations of the existing studies in this field are the low number of study participants and the lack of diversity. In accordance with our findings, a recent systematic review has concluded that the pandemic lockdowns were associated with a worsening of EDs [15]. This triggering environment may result in enhanced anxiety and depression symptoms and changes in nutritional habits and, ultimately, may lead to worsening ED symptoms [15].

5. Conclusions

In this paper, a comprehensive overview of the impacts of COVID-19 quarantine on individuals with eating disorders (EDs) and disordered eating (EE) is presented. Summarizing the existing data, most literature suggests that EDs worsened significantly during the pandemic. Individuals with EDs experienced increased concern about body weight and shape due to difficulties in maintaining compensatory activities, such as compulsive exercise. The severity of ED symptoms, comorbid depression, hospitalizations, emergency department visits, and in-patient admissions all increased during the pandemic. COVID-19 restrictions limited daily activities, affecting eating behaviors, physical activity, and sleep quality, potentially exacerbating ED behaviors. There is a significant gap in the literature regarding clinical studies on the impact of the pandemic on the prevalence of EDs and EE, with existing studies being limited. Further research is needed to inform clinical practice recommendations. Future studies should also investigate the long-term effects of COVID-19 restrictions in the post-pandemic period. Public strategies, policies, and interventions should be implemented to provide healthcare support and psychological counseling to improve symptoms exacerbated by the pandemic.

Author Contributions: Conceptualization, M.M., S.K.P., A.D., R.I.K. and C.G.; methodology, M.M., C.J., O.A., T.V. and A.N.; formal analysis, C.J., O.A., E.P., M.C. and D.A.K.; investigation, M.M., S.K.P., A.D., T.V., A.N. and C.G.; resources, M.M., C.J., O.A., E.P., M.C. and D.A.K.; data curation, M.M., S.K.P., A.D., T.V., A.N., M.C., R.I.K. and C.G.; writing—original draft preparation, M.M., S.K.P., C.J. and C.G.; writing—review and editing, A.D., T.V., D.A.K. and C.G.; visualization, S.K.P., A.D., T.V., R.I.K. and C.G.; supervision, C.G.; project administration, C.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The data from the present study are available from the corresponding author for private use only.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Taheri, M.; Saad, H.B.; Washif, J.A.; Reynoso-Sánchez, L.F.; Mirmoezzi, M.; Youzbashi, L.; Trabelsi, K.; Moshtagh, M.; Muñoz-Helú, H.; Mataruna-Dos-Santos, L.J.; et al. Comparative Study of the Long-Term Impact of the COVID-19 Pandemic on Mental Health and Nutritional Practices Among International Elite and Sub-Elite Athletes: A Sample of 1420 Participants from 14 Countries. *Sports Med. Open* **2023**, *9*, 104. [CrossRef] [PubMed]
2. Taheri, M.; Irandoust, K.; Reynoso-Sánchez, L.F.; Muñoz-Helú, H.; Cruz-Morales, K.N.; Torres-Ramírez, R.; Mirmoezzi, M.; Youzbashi, L.; Mirakhori, F.; Dergaa, I.; et al. Effects of home confinement on physical activity, nutrition, and sleep quality during the COVID-19 outbreak in amateur and elite athletes. *Front. Nutr.* **2023**, *10*, 1143340. [CrossRef] [PubMed]
3. Taheri, M.; Esmaeili, A.; Irandoust, K.; Mirmoezzi, M.; Souissi, A.; Laher, I.; Dergaa, I.; Zouhal, H. Mental health, eating habits and physical activity levels of elite Iranian athletes during the COVID-19 pandemic. *Sci. Sports* **2023**, *38*, 527–533. [CrossRef] [PubMed]
4. Yagmaee, F.; Taheri, M.; Irandoust, K.; Mirmoezzi, M. Lifestyle Behaviors Predict COVID-19 Severity: A Cross-Sectional Study. *Int. J. Sport Stud. Health* **2023**, *6*, e142413. [CrossRef]
5. Fernández-Aranda, F.; Casas, M.; Claes, L.; Bryan, D.C.; Favaro, A.; Granero, R.; Gudiol, C.; Jiménez-Murcia, S.; Karwautz, A.; Le Grange, D.; et al. COVID-19 and implications for eating disorders. *Eur. Eat. Disord. Rev.* **2020**, *28*, 239–245. [CrossRef]
6. De Hert, M.; Mazereel, V.; Detraux, J.; Van Assche, K. Prioritizing COVID-19 vaccination for people with severe mental illness. *World Psychiatry* **2021**, *20*, 54–55. [CrossRef]
7. Sideli, L.; Lo Coco, G.; Bonfanti, R.C.; Borsarini, B.; Fortunato, L.; Sechi, C.; Micali, N. Effects of COVID-19 lockdown on eating disorders and obesity: A systematic review and meta-analysis. *Eur. Eat. Disord. Rev.* **2021**, *29*, 826–841. [CrossRef]
8. Wang, Y.; Di, Y.; Ye, J.; Wei, W. Study on the public psychological states and its related factors during the outbreak of coronavirus disease 2019 (COVID-19) in some regions of China. *Psychol Health Med.* **2021**, *26*, 13–22. [CrossRef]
9. Zipfel, S.; Schmidt, U.; Giel, K.E. The hidden burden of eating disorders during the COVID-19 pandemic. *Lancet Psychiatry* **2022**, *9*, 9–11. [CrossRef] [PubMed]
10. Hunter, R.; Gibson, C. Narratives from within 'lockdown': A qualitative exploration of the impact of COVID-19 confinement on individuals with anorexia nervosa. *Appetite* **2021**, *166*, 105451. [CrossRef]
11. Yu, Z.; Muehleman, V. Eating Disorders and Metabolic Diseases. *Int. J. Environ. Res. Public Health* **2023**, *20*, 2446. [CrossRef] [PubMed]
12. Miniati, M.; Marzetti, F.; Palagini, L.; Marazziti, D.; Orrù, G.; Conversano, C.; Gemignani, A. Eating Disorders Spectrum During the COVID Pandemic: A Systematic Review. *Front. Psychol.* **2021**, *12*, 663376. [CrossRef]
13. Devoe, D.J.; Han, A.; Anderson, A.; Katzman, D.K.; Patten, S.B.; Soumbasis, A.; Flanagan, J.; Paslakis, G.; Vyver, E.; Marcoux, G.; et al. The impact of the COVID-19 pandemic on eating disorders: A systematic review. *Int. J. Eat. Disord.* **2023**, *56*, 5–25. [CrossRef]
14. Clark Bryan, D.; Macdonald, P.; Ambwani, S.; Cardi, V.; Rowlands, K.; Willmott, D.; Treasure, J. Exploring the ways in which COVID-19 and lockdown has affected the lives of adult patients with anorexia nervosa and their carers. *Eur. Eat. Disord. Rev.* **2020**, *28*, 826–835. [CrossRef]
15. Gao, Y.; Bagheri, N.; Furuya-Kanamori, L. Has the COVID-19 pandemic lockdown worsened eating disorders symptoms among patients with eating disorders? A systematic review. *J. Public Health* **2022**, *30*, 2743–2752. [CrossRef] [PubMed]
16. Gonidakis, F. Eating disorders in the era of the COVID-19 pandemic. *Psychiatriki* **2022**, *33*, 267–270. [CrossRef] [PubMed]
17. Güzel, Â.; Mutlu, N.L.; Molendijk, M. COVID-19-related changes in eating disorder pathology, emotional and binge eating and need for care: A systematic review with frequentist and Bayesian meta-analyses. *Eat. Weight Disord.* **2023**, *28*, 19. [CrossRef]
18. Sahlan, R.N.; Kinkel-Ram, S.S.; Uzoegwu, K.; Smith, A. Fear of COVID-19, insomnia, and eating disorder symptoms among Iranian college students. *J. Affect. Disord. Rep.* **2023**, *13*, 100601. [CrossRef]
19. Machado, P.P.P.; Pinto-Bastos, A.; Ramos, R.; Rodrigues, T.F.; Louro, E.; Gonçalves, S.; Brandão, I.; Vaz, A. Impact of COVID-19 lockdown measures on a cohort of eating disorders patients. *J. Eat. Disord.* **2020**, *8*, 57. [CrossRef]
20. Galea, S.; Merchant, R.M.; Lurie, N. The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention. *JAMA Intern. Med.* **2020**, *180*, 817–818. [CrossRef]
21. Sheng, R.; Yang, X.; Zhou, Y.; Liu, X.; Xu, W. COVID-19 and Eating Problems in Daily Life: The Mediating Roles of Stress, Negative Affect and Posttraumatic Stress Symptoms. *Psychol. Rep.* **2023**, *126*, 34–51. [CrossRef]
22. Holland, G.; Tiggemann, M. A systematic review of the impact of the use of social networking sites on body image and disordered eating outcomes. *Body Image* **2016**, *17*, 100–110. [CrossRef] [PubMed]
23. Cellini, N.; Canale, N.; Mioni, G.; Costa, S. Changes in sleep pattern, sense of time and digital media use during COVID-19 lockdown in Italy. *J. Sleep Res.* **2020**, *29*, e13074. [CrossRef]

24. Castellini, G.; Cassioli, E.; Rossi, E.; Innocenti, M.; Gironi, V.; Sanfilippo, G.; Felciai, F.; Monteleone, A.M.; Ricca, V. The impact of COVID-19 epidemic on eating disorders: A longitudinal observation of pre versus post psychopathological features in a sample of patients with eating disorders and a group of healthy controls. *Int. J. Eat. Disord.* **2020**, *53*, 1855–1862. [CrossRef] [PubMed]
25. Schlegl, S.; Maier, J.; Meule, A.; Voderholzer, U. Eating disorders in times of the COVID-19 pandemic-Results from an online survey of patients with anorexia nervosa. *Int. J. Eat. Disord.* **2020**, *53*, 1791–1800. [CrossRef]
26. Termorshuizen, J.D.; Watson, H.J.; Thornton, L.M.; Borg, S.; Flatt, R.E.; MacDermod, C.M.; Harper, L.E.; van Furth, E.F.; Peat, C.M.; Bulik, C.M. Early impact of COVID-19 on individuals with self-reported eating disorders: A survey of ~1,000 individuals in the United States and the Netherlands. *Int. J. Eat. Disord.* **2020**, *53*, 1780–1790. [CrossRef] [PubMed]
27. Chauvet-Gelinier, J.C.; Roussot, A.; Vergès, B.; Petit, J.M.; Jollant, F.; Quantin, C. Hospitalizations for Anorexia Nervosa during the COVID-19 Pandemic in France: A Nationwide Population-Based Study. *J. Clin. Med.* **2022**, *11*, 4787. [CrossRef]
28. Baenas, I.; Caravaca-Sanz, E.; Granero, R.; Sánchez, I.; Riesco, N.; Testa, G.; Vintró-Alcaraz, C.; Treasure, J.; Jiménez-Murcia, S.; Fernández-Aranda, F. COVID-19 and eating disorders during confinement: Analysis of factors associated with resilience and aggravation of symptoms. *Eur. Eat. Disord. Rev.* **2020**, *28*, 855–863. [CrossRef]
29. Birgegård, A.; Abbaspour, A.; Borg, S.; Clinton, D.; Mantilla, E.F.; Savva, A.; Termorshuizen, J.D.; Bulik, C.M. Longitudinal experiences and impact of the COVID-19 pandemic among people with past or current eating disorders in Sweden. *Eat. Disord.* **2022**, *30*, 602–661. [CrossRef]
30. Schlegl, S.; Meule, A.; Favreau, M.; Voderholzer, U. Bulimia nervosa in times of the COVID-19 pandemic-Results from an online survey of former inpatients. *Eur. Eat. Disord. Rev.* **2020**, *28*, 847–854. [CrossRef]
31. Leenaerts, N.; Vaessen, T.; Ceccarini, J.; Vrieze, E. How COVID-19 lockdown measures could impact patients with bulimia nervosa: Exploratory results from an ongoing experience sampling method study. *Eat. Behav.* **2021**, *41*, 101505. [CrossRef] [PubMed]
32. Branley-Bell, D.; Talbot, C.V. Exploring the impact of the COVID-19 pandemic and UK lockdown on individuals with experience of eating disorders. *J. Eat. Disord.* **2020**, *8*, 44. [CrossRef]
33. Scharmer, C.; Martinez, K.; Gorrell, S.; Reilly, E.E.; Donahue, J.M.; Anderson, D.A. Eating disorder pathology and compulsive exercise during the COVID-19 public health emergency: Examining risk associated with COVID-19 anxiety and intolerance of uncertainty. *Int. J. Eat. Disord.* **2020**, *53*, 2049–2054. [CrossRef]
34. Graell, M.; Morón-Nozaleda, M.G.; Camarneiro, R.; Villaseñor, Á.; Yáñez, S.; Muñoz, R.; Martínez-Núñez, B.; Miguélez-Fernández, C.; Muñoz, M.; Faya, M. Children and adolescents with eating disorders during COVID-19 confinement: Difficulties and future challenges. *Eur. Eat. Disord. Rev.* **2020**, *28*, 864–870. [CrossRef] [PubMed]
35. Burnatowska, E.; Surma, S.; Olszanecka-Glinianowicz, M. Relationship between Mental Health and Emotional Eating during the COVID-19 Pandemic: A Systematic Review. *Nutrients* **2022**, *14*, 3989. [CrossRef]
36. Cecchetto, C.; Aiello, M.; Gentili, C.; Ionta, S.; Osimo, S.A. Increased emotional eating during COVID-19 associated with lockdown, psychological and social distress. *Appetite* **2021**, *160*, 105122. [CrossRef] [PubMed]
37. Bemanian, M.; Mæland, S.; Blomhoff, R.; Rabben, Å.K.; Arnesen, E.K.; Skogen, J.C.; Fadnes, L.T. Emotional Eating in Relation to Worries and Psychological Distress Amid the COVID-19 Pandemic: A Population-Based Survey on Adults in Norway. *Int. J. Environ. Res. Public Health* **2020**, *18*, 130. [CrossRef]
38. Madalı, B.; Alkan, Ş.B.; Örs, E.D.; Ayrancı, M.; Taşkın, H.; Kara, H.H. Emotional eating behaviors during the COVID-19 pandemic: A cross-sectional study. *Clin. Nutr. ESPEN* **2021**, *46*, 264–270. [CrossRef]
39. Hadar-Shoval, D.; Alon-Tirosh, M.; Asraf, K.; Tannous-Haddad, L.; Tzischinsky, O. Lifestyle Changes, Emotional Eating, Gender, and Stress during COVID-19 Lockdown. *Nutrients* **2022**, *14*, 3868. [CrossRef]
40. Dominte, M.E.; Swami, V.; Enea, V. Fear of COVID-19 mediates the relationship between negative emotional reactivity and emotional eating. *Scand. J. Psychol.* **2022**, *63*, 462–467. [CrossRef]
41. Escrivá-Martínez, T.; Miragall, M.; Herrero, R.; Rodríguez-Arias, M.; Baños, R.M. Eating behaviors, eating styles and body mass index during COVID-19 confinement in a college sample: A predictive model. *J. Eat. Disord.* **2022**, *10*, 100. [CrossRef] [PubMed]
42. Güner, Ö.; Aydın, A. Determining the relationship between anxiety levels, stress coping styles, and emotional eating of women in the COVID-19 pandemic. *Arch. Psychiatr. Nurs.* **2022**, *41*, 241–247. [CrossRef]
43. Al-Musharaf, S. Prevalence and Predictors of Emotional Eating among Healthy Young Saudi Women during the COVID-19 Pandemic. *Nutrients* **2020**, *12*, 2923. [CrossRef]
44. McCombie, C.; Austin, A.; Dalton, B.; Lawrence, V.; Schmidt, U. "Now It's Just Old Habits and Misery"-Understanding the Impact of the COVID-19 Pandemic on People with Current or Life-Time Eating Disorders: A Qualitative Study. *Front. Psychiatry* **2020**, *11*, 589225. [CrossRef] [PubMed]
45. Tavolacci, M.P.; Ladner, J.; Dechelotte, P. COVID-19 Pandemic and Eating Disorders among University Students. *Nutrients* **2021**, *13*, 4294. [CrossRef] [PubMed]
46. Meier, K.; van Hoeken, D.; Hoek, H.W. Review of the unprecedented impact of the COVID-19 pandemic on the occurrence of eating disorders. *Curr. Opin. Psychiatry* **2022**, *35*, 353–361. [CrossRef]
47. Elran-Barak, R.; Grundman-Shem Tov, R.; Zubery, E.; Lewis, Y.D. Therapeutic alliance with psychotherapist versus dietician: A pilot study of eating disorder treatment in a multidisciplinary team during the COVID-19 pandemic. *Front. Psychiatry* **2023**, *14*, 1267676. [CrossRef]

48. Brown, S.; Opitz, M.C.; Peebles, A.I.; Sharpe, H.; Duffy, F.; Newman, E. A qualitative exploration of the impact of COVID-19 on individuals with eating disorders in the UK. *Appetite* **2021**, *156*, 104977. [CrossRef]
49. Tan, S.T.; Shahril, P.I.A. Moderate-to-severe food insecurity is positively correlated with the risk of eating disorders in the aftermath of the COVID-19 pandemic. *Ethics Med. Public Health* **2023**, *27*, 100874. [CrossRef]
50. Saccaro, L.F.; Rutigliano, G.; Landi, P.; Spera, M.; Kraslavski, A.; Zappa, M.A.; Mencacci, C. Emotional Regulation Underlies Gender Differences in Pathological Eating Behavior Styles of Bariatric Surgery Candidates. *Women* **2023**, *3*, 189–199. [CrossRef]
51. Bracké, K.; Steegers, C.; van der Harst, T.; Pons, R.; Legerstee, J.; Dierckx, B.; de Nijs, P.; Bax-van Berkel, M.; van Elburg, A.; Hekkelaan, M.; et al. The implications of the COVID-19 pandemic on eating disorder features and comorbid psychopathology among adolescents with anorexia nervosa and matched controls: A comparative cohort design study. *Eat. Weight Disord.* **2024**, *29*, 13. [CrossRef] [PubMed]
52. Seyedmirzaei, H.; Katebian, S.; Pourkand, D.; Cattarinussi, G.; Sambataro, F.; Brambilla, P.; Delvecchio, G. Effects of COVID-19 pandemic on depression in patients with schizophrenia: A mini-review of the current evidence. *J. Affect. Disord.* **2023**, *332*, 143–149. [CrossRef]
53. Haghshomar, M.; Shobeiri, P.; Brand, S.; Rossell, S.L.; Akhavan Malayeri, A.; Rezaei, N. Changes of symptoms of eating disorders (ED) and their related psychological health issues during the COVID-19 pandemic: A systematic review and meta-analysis. *J. Eat. Disord.* **2022**, *10*, 51. [CrossRef] [PubMed]
54. Colleluori, G.; Goria, I.; Zillanti, C.; Marucci, S.; Dalla Ragione, L. Eating disorders during COVID-19 pandemic: The experience of Italian healthcare providers. *Eat. Weight Disord.* **2021**, *26*, 2787–2793. [CrossRef]
55. Ramalho, S.M.; Trovisqueira, A.; de Lourdes, M.; Gonçalves, S.; Ribeiro, I.; Vaz, A.R.; Machado, P.P.P.; Conceição, E. The impact of COVID-19 lockdown on disordered eating behaviors: The mediation role of psychological distress. *Eat. Weight Disord.* **2022**, *27*, 179–188. [CrossRef] [PubMed]
56. Simone, M.; Emery, R.L.; Hazzard, V.M.; Eisenberg, M.E.; Larson, N.; Neumark-Sztainer, D. Disordered eating in a population-based sample of young adults during the COVID-19 outbreak. *Int. J. Eat. Disord.* **2021**, *54*, 1189–1201. [CrossRef]
57. Gorrell, S.; Reilly, E.E.; Brosof, L.; Le Grange, D. Use of Telehealth in the Management of Adolescent Eating Disorders: Patient Perspectives and Future Directions Suggested from the COVID-19 Pandemic. *Adolesc. Health Med. Ther.* **2022**, *13*, 45–53. [CrossRef]
58. Dakanalis, A.; Mentzelou, M.; Papadopoulou, S.K.; Papandreou, D.; Spanoudaki, M.; Vasios, G.K.; Pavlidou, E.; Mantzorou, M.; Giaginis, C. The Association of Emotional Eating with Overweight/Obesity, Depression, Anxiety/Stress, and Dietary Patterns: A Review of the Current Clinical Evidence. *Nutrients* **2023**, *15*, 1173. [CrossRef]
59. Tolia, M.; Symvoulakis, E.K.; Matalliotakis, E.; Kamekis, A.; Adamou, M.; Kountourakis, P.; Mauri, D.; Dakanalis, A.; Alexidis, P.; Varveris, A.; et al. COVID-19 Emotional and Mental Impact on Cancer Patients Receiving Radiotherapy: An Interpretation of Potential Explaining Descriptors. *Curr. Oncol.* **2023**, *30*, 586–597. [CrossRef]
60. Caldiroli, A.; La Tegola, D.; Manzo, F.; Scalia, A.; Affaticati, L.M.; Capuzzi, E.; Colmegna, F.; Argyrides, M.; Giaginis, C.; Mendolicchio, L.; et al. The Impact of the COVID-19 Pandemic on Binge Eating Disorder: A Systematic Review. *Nutrients* **2023**, *15*, 3777. [CrossRef]
61. Pavlidou, E.; Poulios, E.; Papadopoulou, S.K.; Fasoulas, A.; Dakanalis, A.; Giaginis, C. Clinical Evidence on the Potential Beneficial Effects of Diet and Dietary Supplements against COVID-19 Infection Risk and Symptoms' Severity. *Med. Sci.* **2024**, *12*, 11. [CrossRef] [PubMed]
62. Pavlidou, E.; Papadopoulou, S.K.; Mentzelou, M.; Dakanalis, A.; Vorvolakos, T.; Antasouras, G.; Spanoudaki, M.; Pandi, A.L.; Serdari, A.; Chrysafi, M.; et al. Association of Mediterranean Diet Adherence with Sociodemographic, Anthropometric, and Lifestyle Factors during the COVID-19 Pandemic: A Cross-Sectional Study in Greece. *Nutrient* **2023**, *15*, 4123. [CrossRef] [PubMed]
63. Pavlidou, E.; Papadopoulou, S.K.; Antasouras, G.; Vorvolakos, T.; Alexatou, O.; Tsourouflis, G.; Angelakou, E.-P.; Serdari, A.; Grammatikopoulou, M.G.; Psara, E.; et al. Association of COVID-19 Infection with Sociodemographic, Anthropometric and Lifestyle Factors: A Cross-Sectional Study in an Older Adults' Population Aged over 65 Years Old. *Diseases* **2023**, *11*, 165. [CrossRef] [PubMed]
64. Pavlidou, E.; Papadopoulou, S.K.; Antasouras, G.; Spanoudaki, M.; Mentzelou, M.; Dimoliani, S.; Tsourouflis, G.; Psara, E.; Vorvolakos, T.; Dakanalis, A.; et al. Evaluating the sociodemographic, anthropometric and lifestyle parameters, depression, quality of life, cognitive status, physical activity, and Mediterranean diet adherence of older adults in pre- and post-COVID-19 periods: A comparative cross-sectional study. *Psychol. Health* **2024**, *10*, 1–26. [CrossRef]
65. Belloli, A.; Saccaro, L.F.; Landi, P.; Spera, M.; Zappa, M.A.; Dell'Osso, B.; Rutigliano, G. Emotion dysregulation links pathological eating styles and psychopathological traits in bariatric surgery candidates. *Front. Psychiatry* **2024**, *15*, 1369720. [CrossRef]