Comorbidities and Overlap of Major Depression and Eating disorders: A Systematic Literature Review

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Abstract. Eating disorders (EDs) are found to have high rates of comorbidity accompanied by other mental illnesses in particular with Major Depressive Disorder (MDD). The main objective of the present study was, to conduct a systematic review on the risk of depression in patients suffering from eating disorders (anorexia nervosa, bulimia nervosa). The study was conducted using online databases: such as PUBMED, PsycInfo, ScienceDirect and Google Scholar. Data are collected from studies conducted from 2000 to 2018. Of the selected studies, 6 were case-control studies, 6 were cross-sectional studies, 2 systematic reviews, and only one case study. Out of the 15 selected studies, the majority of them indicated that there is no correlation between eating disorders and depression. This systematic review demonstrates that there is no authenticated scale to evaluate the specific relationship between an eating disorder and different types of depression. There is however a scale that evaluates the relationship between depressive and eating behavior, the Emotional Eating Scale (EES). Based on the results obtained from the majority of the selected studies, it is evident that there is no connection between eating disorders and depression. Usually, symptoms pertaining to depression and eating disorders are comorbid. Hence considering the same view, depressive symptoms are frequently evaluated in regards to an eating disorder. Therefore, additional efforts are needed to extend interventions that are simpler and applicable in diminishing both major depression and eating disorder in order to increase the efficiency of therapy.

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1. Introduction & Background:

Eating disorders (EDs) are found to have high rates of comorbidity accompanied by other mental illness in particular with Major Depressive Disorder (MDD). Many studies have pointed out that the most common comorbid diagnosis in patients with EDs is MDD. It has also been observed that in the majority of the cases, EDs begin with a desire to lose weight, control one's eating habits, and also, best of intentions. However those good intentions go badly wrong with some people resulting in other disorders or binge eating, anorexia nervosa, bulimia (Mischoulon, et al., 2011; Kaye, et al., 2008). But it is not clear why some people are at risk for eating disorders. Nevertheless, it has been explained by several studies that commonly, depression is a key factor (Fragkos & Frangos, 2013).

]. The American Psychiatric Association (APA) has reported that lifetime incidence rates of MDD in persons with EDs range from 50% to 75%; and MDD comorbid with eating disorders has been associated with worse effect [Löwe et al., 2001; Berkman 2007). According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) the major subtypes of EDs are bulimia and anorexia (Sorrell, 2013).

Bulimia nervosa is defined as by following several types of compensatory behavior the episodes of compulsive eating occurs; while anorexia nervosa is characterized by the person who is in denial and holds onto a false opinion of their body measures and they also refuse to maintain the normal weight required for them. By the shape and weight perception, the self-assessment is significantly influenced in both disorders (Berkman, 2007; Harris & Barraclough, 1997). When it comes to disease severity in anorexia nervosa, rates of mortality are usually used as indicators. In order to provide adequate statistical analysis with regards to bulimia nervosa, the population studies on mortality are not quite efficient. The latest data suggest that about 25 to 35% of individuals with bulimia attempt suicide more frequently when compared to anorexia nervosa and the suicide rates have been increased over time (Crow, et al., 2009; Keel, 2003; Guillaume, et al., 2011). With respect to EDs risk factors, it has been identified that suicidal behavior plays a great role. Among other factors, it has also been illustrated in several studies

that the occurrence of EDs in teenagers can lead to being a risk factor for suicide which is comparable to other psychiatric disorders such as to conduct disorder and depression. Lifetime comorbidity is high among EDs and major depressive disorders. It is estimated to be around 50% for Bulimia Nervosa and 40% for Anorexia Nervosa (Hudson, et al., 2012). By increasing our understanding of intercession effects on depressive symptoms and a comorbid eating disorder which is essential as it has major clinical inferences.

Regarding pathophysiology of eating disorders (anorexia nervosa), common abnormalities like reduced levels of gonadal hormones, thyroxine (T4), and triiodothyronine (T3) and increased cortisol secretion were observed. Bone mass deterioration is also evident and other organ systems are also affected. Persuaded vomiting leads to an intensification of dehydration, metabolic alkalosis and severe low sodium/potassium level. Cardiac muscle, chamber size, and output decline; mitral valve prolapse is frequently identified, prolonged QT intervals also notice with the risks imposed by electrolyte disturbances, which may prompt to tachyarrhythmias and even sudden death (Systematic Reviews, 2020). The main objective of the present study was, to conduct a systematic review on the risk of depression in patients suffering from eating disorders (anorexia nervosa, bulimia nervosa).

2. Methods:

The present study was conducted through the search in periodicals held in online databases: Medical Literature Analysis and Retrieval System Online such as PUBMED, PsychInfo, ScienceDirect, and Google Scholar. The searches included combinations of words (MeSH terms) describing depression and eating concerns, such as “eating disorders”, “anorexia nervosa”, “bulimia nervosa”, “depressive” and “suicide”. Data are collected from studies conducted from 2000 to 2018. Inclusion criteria of this study were as follows:

(A) The study population includes adolescents plus adults, both genders.
(B) Studies explained the anorexia and /or bulimia nervosa and ED (Both randomized and non-randomized studies included)
(C) In the last 16 years, studies published on the outcome evaluating the correlation between ED and depression.
(D) Articles included were published in English and peer reviewed.

For this study, selected articles were appraised in a critical manner to analyze the strength and legitimacy of the research conducted, against the flaws and limitations, to lessen any potential bias based on the following questions: (1) what is the research question and are the objectives of the study under review are clearly stated (2) Is the research under the selected study authentic, original and significant? Does the study have new findings? (3) Does the research question consider the following: The group or population of patients, the intervention or therapy and the outcome. (4) For the research question, was the relevant type of study used by the authors? (5) Did the study design minimize the risk of bias in its methodology, reporting, and patient selection? Did the study use best practice design (6) Was the study designed in line with the original protocol? Is the attention and focus of the study in line with the stated objectives? Were any changes or modifications made pertaining to inclusion or exclusion criteria? (7) Has the study's hypothesis been tested? (8) Is the analysis of the data accurate? What level of uncertainty surrounds any results? (9) Are the conclusions deduced on the basis of the data and authentic analysis? Are the conclusions of the study drawn by the authors based on the data collected? Have the authors reviewed and discussed work from others that not only supports but also opposes their findings? Have the authors identified any limitations to their study? (10) Does the study under review add to the understanding of the problem beforehand? What are the strengths and restraints of the study under review? Are the results and findings beneficial when it comes to clinical practice? Also consider the risks pertaining to a treatment or diagnostic practice offsets the potential benefits (Attia & Walsh, 2018).

3. Results and Discussion:

Post in-depth evaluation of 259 abstracts, 40 studies were selected, out of which only 15 studies were able to investigate the association between ED and depression. The rejected studies investigated the association between an eating disorder or depression and other variables, but not between eating disorder and depression, therefore after comparative analysis and quality assessment tools were applied to all types of included studies, we finally selected 15 studies which are clearly focused on such problem and omit all those which had unclear outcome, high risk of bias, no internal validity (Figure 1).

Of the 15 selected studies, 6 were case-control studies, 6 were cross-sectional studies, 2 systematic reviews, and only one case study. Based on the 15 selected studies, the majority of them depicted a strong relationship between eating disorders and depression. Only one report included this study showed no relation between and depression, eating disorders, whereas, only one report showed heterogeneity in anorexia nervosa (Table *1*). The majority of the reports included in this study not only examines the limitations but also highlight any future improvements and thus, making them less biased while holding more variables. This systematic review demonstrates that there is no authenticated scale to evaluate the specific relationship between an eating disorder and different type of depression. Emotional Eating Scale (EES) is used to evaluate the association between an eating disorder and depressive behavior (Needleman, 2002).

4. Limitations in this systematic review

The online search included only English written articles, we did not include articles written in other languages. We considered articles that were available on PUBMED, PsychInfo, ScienceDirect, and Google Scholar. Studies published in the last 10 years on outcome measuring the association between depression and ED.

4. Conclusion:

Studies included in this article have shown a relationship between depression and eating disorders. Finding from the majority of the studies showed there was an association between Eating disorders and depression. It has also been suggested that usually, eating disorder and depressive symptoms are deemed to be comorbid, and hence, eating disorder intrusion has often evaluated as depressive symptoms. The preclusion and early intervention of major depression symptoms are rather unclear and insufficient. Therefore, additional efforts are needed to extend interventions that are simpler and applicable in diminishing both major depression and eating disorder in order to increase the efficiency of therapy.

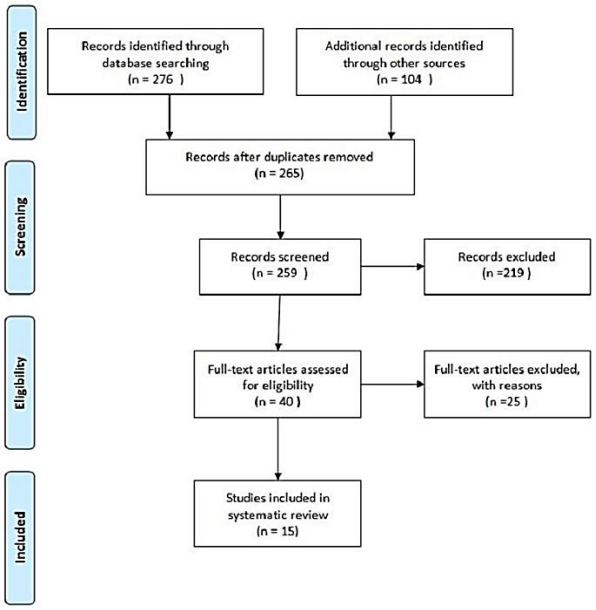

Figure 1. Summary of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram.

Table 1: Features of the studies that related eating disorder and depression.

Author	Years	Samples Size	Study design	Results
Borges et al.	2002	217	Case-control	Eating disorders was related with depression (moderate), as well as with psychiatric disorders
Barry et al.	2003	162	Case-control	No relation was found among eating disorders and depression although persons with bulimia (eating disorders) have higher BDI scores than other individuals with eating disorders.
Fassino et al.	2004	196	Case-control	There was important relationship between depression and BED
Doll et al.	2005	1439	Cross-sectional study	Persons with eating disorders (history) were more prone to report depression than those devoid of it.
Masheb et al.	2006	220	Case-control	Emotional overeating was extensively related with depression, binge frequency, and eating disorder features however was not associated to gender or BMI.
Santos et al.	2007	241	Cross-sectional study	The notable levels of disordered eating symptoms and high level of comorbidity and depressive symptoms among male and female high school students.
Jordan et al.	2008	288	Cross-sectional study	Proof of nonspecific comorbidity, anorexia nervosa-specific and eating disorder-specific demonstrates the heterogeneity in anorexia nervosa.
Grilo et al.	2009	401		The presence of current psychiatric comorbidity is related with greater distress and eating disorder psychopathology, among treatment-seeking patients with eating disorders
Araujo et al.	2010	6893	Review	In these studies, majority of the analysis showed a relationship among binge eating disorder and depression however it is cautiously designed studies are necessary to minimize the limitations found.
Darcy et al.	2012	96	Case-control	On Global score, Weight and Shape Concern the adolescent males with anorexia nervosa-type presentation scored importantly lower than matched female. They also secured lower on a number of individual items
Gianine et al.	2013	326	Case-control	In obese adults with eating disorders, emotion regulation might play a major role in the maintenance of emotional over eating pathology and eating.
Pearl et al.	2014	255	Cross-sectional study	With eating disorders, the weight bias internalization is related with poorer overall physical and mental health, and depressive symptoms might play a part in accounting for this association in treatment-seeking overweight patients.
Kleiman et al.	2015	26	Case study	In weight regulation and metabolic function, the intestinal microbiota plays a critical role and the microbe-gut-brain axis to psychopathology is of interest in AN (anorexia nervosa) has been studied.
Brownley et al.	2016	1581	Systematic Review and Meta-analysis	Topiramate and lisdexamfetamine reduced weight in adults with binge-eating disorder and topiramate reduced binge eating and associated psychopathology cognitive behavioral therapy, lisdexamfetamine, SGAs.
Kim et al.	2018	7,267	Cross-sectional study	Korean female nurse showed a higher occurrence of both depressive and binge eating disorder symptoms, and the relationship among the two factors was confirmed in the study.

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