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The Efficacy of Cognitive Behavioral Therapy in the Treatment of Adults with Obesity

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Abstract

Obesity is a complex condition increasing in prevalence and consequence throughout the United States and the world. Obesity is affected not only physiologically but by one's psychological aspects of life. Obesity contributes to countless chronic health conditions and thus greatly impacts a person's wellness. A literature review was conducted to identify the following if in obese adults the benefit of cognitive behavioral therapy for weight loss and/or maintenance. A total of 10 articles met inclusion criteria from searches from databases that included ProQuest, Medline, CINAHL, Cochrane, and PsycINFO as well as bibliography review. Level of evidence includes two articles that are level seven evidence, three level five evidence, one level three, three level two and one level one evidence article. According to this body of research, the benefit of cognitive behavioral therapy alone for weight loss is inconclusive; however, when combined with motivational interviewing was associated with improved weight loss maintenance, and reduced attrition. With this growing, complex and multifactorial problem, it is essential that nurse practitioners have the best evidence-based interventions to offer their patients that will give them the highest rate of success at not only losing weight initially but maintaining their lost weight thus improving comorbidities.

Key Words: cognitive behavioral therapy, CBT, adults, behavior therapy, and NOT binge.

The Efficacy of Cognitive Behavioral Therapy in the Treatment of Adults with Obesity

Obesity is a complex and multifactorial condition, affected by psychological distress, societal stigma, life events and interpersonal relationships; all of which influences the development and treatment of this condition (Sasdelli et al., 2018). There are countless kinds of treatment options available to the consumer from diets, exercise, pills, surgery and psychological modification of behavior. Often times people who have sought treatment for obesity are able to initially lose weight but lack the behavioral modification to maintain their weight and subsequently regain much of the weight they have lost (Cooper et al., 2010). This review seeks to examine the literature surrounding the efficacy of cognitive behavioral therapy (CBT) as an approach to behavioral modification in the treatment of adults with obesity. Recommendations for clinical practice and research are included.

Background

The cosmetic interest of obesity is not the only challenge one faces with obesity. Obesity is a medical problem that increases your risk of countless other health complications as well (Mayo Clinic, 2020). The health complications and risk of acquiring chronic conditions such as, cardiovascular disease, type two diabetes and hypertension also escalates with obesity effect the health and wellness of our patients in primary care (Jacob et al., 2018). In addition, the prevalence of obesity in the United States is growing at an alarming rate. According to Hales, Carroll, Fryar and Ogden (2017) the percentage has increased from 30.5% in the years 1999-2000 to 39.6% in 2015-2016, almost a 10% increase in just 15 years.

Current Recommendations for Obesity Management

The most current evidence-based guidelines from the United States are the Obesity Expert Panel, 2013 Managing overweight and obesity in adults (U.S. Department of Health and

Human Services [USDHHS], 2013). These published guidelines for managing overweight and obesity in adults include the following recommendations: (a) decrease calories maintaining a calorie deficit of 500-700kcal/day, (b) increase physical activity to a minimum of 150 minutes per week, and (c) recommend behavioral therapy by structured program that includes guidance on behavioral strategies and approaches to accomplish prescribed dietary intake and physical activity goals (USDHHS, 2013).

It is well known that diet and exercise play a role in weight management and overall health. Jacob et al. (2018) states that epidemiological data suggest behavioral and environmental factors may have a greater impact on the development of obesity as opposed to metabolic defects or genetic mutations. Given the notable association between psychological factors and obesity along with the USDHHS (2013) federal guidelines it would be prudent to explore the efficacy of cognitive behavioral therapy in the management of obesity.

Clinical Question

Many medical based weight loss programs include options such as calorie restriction, dietary changes, exercise, activity, weight loss medications, surgeries as well as behavior changes (Mayo Clinic, 2020). The clinical question was developed in the PIO format to guide this systematic review of literature. The clinical question was developed in the PICO format to guide this systematic review of literature. *In obese adults (P), is the addition of cognitive behavioral therapy (I) compared to diet and activity alone (C) a beneficial method for weight loss and/or maintenance (O)?* The purpose of answering this question, is to determine if nurse practitioner and other primary care providers should incorporate the use of CBT into their treatment plans for obesity alone or along with other methods of weight loss and maintenance.

Definitions

Knowledge of terminology is necessary to understand the treatment options of obesity and the population covered in the systematic literature review.

Adults

For the purpose of this systematic literature review, adults are defined as persons who are greater than 18 years of age. These individuals may be male or female as well as decline to identify a gender. All genders are considered from all age ranges that are greater than 18 years of age.

Obesity

Obesity is diagnosed when one's body mass index (BMI) is 30 or greater (Mayo Clinic, 2020). One can determine their BMI by dividing their weight in pounds by height in inches squared and multiply that number by 702 (Mayo Clinic, 2020). It is important to understand that BMI does not calculate body fat (Mayo Clinic, 2020). Some persons may have a BMI in the obese range but have a greater amount of muscle mass not accounted for by BMI.

CBT

According to the American Psychological Association (APA, 2017, July) CBT is based on core principles including, faulty or unhelpful ways of thinking, learned patterns, or behaviors can cause psychological problems, such as obesity. People can learn better ways of coping with problems and health concerns by becoming more effective in their thinking and behaviors (APA, 2017, July). CBT involves a variety of strategies in an effort to alter thinking patterns (APA, 2017, July). All CBT will not look the same and will use a variety of strategies on an individual bases in order to collaborate with the person to change their thinking and develop effective ways of coping (APA, 2017, July).

Motivational interviewing

Motivational interviewing is a goal-oriented method where the practitioner collaborates with the client and assists the client on drawing out their personal motives and goals, allowing the person to find their own answers (Cunningham, 2016).

Behavioral Therapy

Similar to cognitive behavioral therapy, behavioral therapy uses methods to change eating habits and activity level by being flexible to match the individuals needs and progress (Cooper et al., 2010).

Attrition

Attrition is the ability to maintain improvement in the weight loss intervention. The person is able to sustain weight loss interventions in order to progress toward their goal (Sawamoto et al., 2017).

Clinical Significance for Advanced Practice

Nurse practitioners often work in primary care where many health problems and risk factors for disease are managed, this includes obesity and the health care problems that arise from excess weight. By treating a patient's obesity and helping individuals to lose weight, cumulative health benefits may be achieved including a reduction of risk for cardiovascular disease, risk of stroke, type two diabetes, as well as the psychological benefit of improvement in their cosmetic appearance. Nurse practitioners and other primary care providers need to have the skill and knowledge to collaborate with their patients on treatment recommendations that work and will give patient the outcome they are seeking.

Methods

An extensive literature search was completed between the dates of 10/18/19 and 11/11/19. Databases searched include ProQuest, Medline, CINAHL, Cochrane, and PsycINFO.

See appendix, Table 1 for database specific date ranges, general subjects covered, and search restrictions. Search terms used included “cognitive behavioral therapy,” “weight loss,” “adults,” “success” and NOT “binge.” Search limits applied, included results from years 2010 -2019, full text available, and English language. All titles were reviewed for searches with less than 12 hits. Titles were eliminated if the indication pertained to binge eating or not related to effects of cognitive behavior therapy on obesity. Bibliographic review was also for identification of additional relevant articles. All unique hits after scanning and eliminating titles as well as bibliographic review are indicated in bold, in Table 2 of the attached appendix. A total of 31 hits are included with specific rational for inclusion or exclusion in Table 3.

Inclusion and Exclusion Criteria

The 10 studies that met inclusion criteria were based on addressing CBT effects on weight loss for adults and are indicated in Table 4. They discussed CBT compared to other interventions or compared to no cognitive behavior therapy for patients who are overweight, obese or morbidly obese. Articles whose main focus was CBT and binge eating disorder, anorexia or major depressive disorder was excluded. Articles that addressed CBT and children were also excluded. Articles that are not in English were excluded. Articles that did not address obesity or cognitive behavior therapy at all were also excluded.

Summary of Literature

Synthesis of Research

The key findings from this review of literature include how effective CBT is at weight loss, how effective CBT is when combined with other factors, CBT and its relation to attrition and the effects on weight loss when CBT is combined with motivational interviewing.

CBT and Successful Weight Loss.

A variety of conclusions were found within the literature ranging from CBT having no improved effects on weight loss to CBT having successful outcomes especially when combined with other factors and interventions. A randomized control trial by Cooper et al., (2010) found that CBT was no better than general behavioral therapy at preventing weight regain after initial weight loss. However, in the same study CBT was successful in achieving acceptance of body shape (Cooper et al., 2010). This indicates some success with CBT but does not identify if CBT aids in weight loss.

In a systematic review by Aguilera (2014) it is stated, when considering bariatric surgery, it is not the cure all intervention and many patients experience weight regain after the initial weight loss. The reasons for this range from motivation, confidence and difficulty coping with cravings, all of which are cognitive and behavioral reasons (Aguilera, 2014). In the same study, CBT was used after a person regained weight post bariatric surgery. After this treatment, each participant was able to report at least one specific behavioral change that contributed to their subsequent weight loss (Aguilera, 2014). This indicates the benefit of CBT in weight loss post weight regain after initial loss.

A third article discussed the positive impact behavioral interventions play in the role of treatment obesity and is most effective at reducing weight when individuals across the lifespan begin the interventions at younger age (Wilfley et al., 2018). This study highlights the importance of early intervention with CBT.

CBT when combined with Other Modalities

An overall theme noted in the literature is that the greatest impact on obesity treatment is when CBT is combined with other factors and interventions. Support systems, individually tailored CBT, collaboration with the individual, in person therapy and a combination approach to

therapy are all factors that enhance the successful outcome of CBT (Annesi et al., 2016; Cooper et al., 2010; Grave, et al., 2014; Sasdelli et al., 2018).

Many studies identify support systems as a key component with CBT in success. Wilfley et al. (2018) state that behavior weight loss was more successful if participants had at least one support partner who was successful in losing weight themselves. Aguilera (2014) also state that peer support is one of the most valuable components of group CBT. Supportive individuals can play a key role in weight loss success or failure as they can contribute or hinder one's success (Wilfley et al., 2018). One study found that there was a positive correlation with weight loss however the weight loss was small (Jacobs et al., 2018). One could argue that the commitment to CBT may not be worth the effort it takes for such little result. However, when looking only at emotional rating CBT was found to be superior at providing cognitive restraint (Jacobs et al., 2018). Therefore, looking at the individuals needs would be beneficial.

Individually tailored CBT improves outcomes according to Sasdelli et al., (2017). There are programs that include generic cognitive procedures for tackling weight loss obstacles and basic cognitive restricting techniques, they focus on the need to change the eating habits rather than producing a real cognitive change (Grave, et al., 2014). CBT should take into account the individuals eating behavior, effects of emotion on eating patterns, physical activity, overall energy expenditure and social life (Melchionda et al., 2003). Programs should include individualized cognitive strategies to help patients develop a weight control mindset which is characterized by healthy dietary restraint and low levels of disinhibition (Grave et al., 2014).

Collaboration with the individual to develop a personalized plan is also a positive factor in the treatment of obesity and weight loss. Obesity is a complex condition that consists of complex behavior problems (Wilfley et al., 2018). An integration of tailored interventions to

meet the individuals needs should be made (Wilfley et al., 2018). As previously mentioned, nurse practitioners are on the forefront of treating obesity and its related effects. When obesity is treated within the primary care setting it allows for taking a team approach to this complicated and chronic problem (Wilfley et al., 2018).

In person therapy along with behavioral nutritional changes is associated with an improvement of psychological factors as well as body weight according to Annesi et al. (2016). The administration of in person CBT was associated with significant more benefit than other forms of CBT such as over the phone or other self-help formats when it comes to weight loss (Annesi et al., 2016).

Finally, an integration of a variety of strategies should be applied to assist in weight loss management (Cuningham, 2016). For example, calorie restriction will likely lead to a rapid weight loss, but it will not lead to behavioral changes (Melchionda et al., 2003). When paired with CBT there may be a positive effect in increasing the motivation for weight loss and maintenance (Melchionda et al., 2003).

Attrition

Initial weight loss is obviously important in the treatment of obesity however attrition is equally important in maintaining the health benefits of the lost weight. Many of the studies found discussed attrition and the contributing factors. A study by Cooper et al. (2010) found that at 12 and 24 months after CBT there was a strong correlation of attrition with a large amount of weight loss during the initial intervention period as well as a low disinhibition score at the end of the weight loss period (Cooper et al., 2010).

The study by Sasdelli et al (2017) found that when CBT was used, attrition rates were 24%, 41% and 65% at 6, 12, and 24 months. Sasdelli et al (2017) also found that when there was

high body image dissatisfaction, attrition was favored if CBT was a temporary step between initiation of interventions and surgery. The lack of attrition was associated with the need for support, motivation and the consciousness of the importance of physical activity (Sasdelli et al., 2017).

Sawamoto et al., (2017) noted that it should not over emphasize at the beginning that more weight loss will lead to success as this can lead to an all or none thinking. Therefore, CBT may lead to an increase in attrition compared to no CBT. Again, short term weight lost strategies are initially satisfactory however in the year following treatment it was found that people regain 30-35% of the weight lost (Grave, Calugi, & Marchesini, 2014). Cooper et al. (2010) also found that most people who seek treatment for obesity are successful in losing weight bur few are able to maintain the changes to their behavior in order to prevent weight regain.

Factors that decrease attrition include cognitive factors such as expectations, appearance-based motivation for weight loss and unsatisfactory progress (Grave et al., 2014). Motivation has been found to be the most significant driver responsible for reduced attrition (Sasdelli et al., 2017). It is possible that this could indicate that CBT may decrease attrition however there were no studies that find this direct correlation. Other reasons for increased attrition include initial weight loss expectations to be unrealistic (Grave et al., 2014). In general, Sasdelli et al. (2017) found that females and younger age individuals had significant higher attrition. Ultimately adherence is extremely complex and is driven by many factors as stated above (Sasdelli et al., 2017).

Motivational Interviewing

Several of the studies touched on the benefits of adding motivational interviewing to CBT. Patient motivation is correlated not only with attrition, but it is a key component of success

in weight loss programs (Cuningham, 2016). Readiness to change is the balance of two opposing forces one being the motivation or desire to change and the other being resistance or the struggle one finds against change (Cuningham, 2016).

By using motivational interviewing individuals can identify their personal reasons and goals for weight loss and by doing so generate their own treatment plan (Wilfley et al., 2018). In a study of 14 individuals post motivational interviewing participants set a specific and realistic goal then completed 8 weeks of CBT (Aguilera, 2014). They found that on a scale of '1' being completely off track with their weight maintenance post bariatric surgery to '10' completely on track the participant average went from 2-7 (Aguilera, 2014). Motivational interviewing has the most robust outcomes on weight when used in combination with CBT in weight loss programs (Wilfley et al., 2018).

Quality of Literature

The summary of literature will include varying levels of evidence from the 10 studies included in this review. The evidence ranges from the highest level, level I evidence from systemic review or meta-analysis of all relevant randomized control trials to the lowest, level VII evidence from the opinion of authorities and/or reports of expert committees (Melnyk & Fineout-Overholt, 2015).When searching for the best evidence to answer a clinical question ideally researchers are looking for level one evidence from systematic reviews or meta-analysis from all relevant RCT (Melnyk & Fineout-Overholt, 2015). Many times, this is unattainable because the research is unavailable giving the indication that more research is needed. In this research there were 10 relevant studies found. They ranged from one meta-analysis with level 1 ranking, three randomized control trials with level two ranking, one level three ranking well designed control trial without randomization, three systematic reviews with level five ranking, to two articles of

expert opinion with level seven ranking. Additionally, this serves as proof that more research is needed in understanding if CBT is a beneficial method for weight loss.

Gaps in Literature

There are many gaps in this literature and questions that have not been answered. The literature identifies the need for personalized CBT. As nurse practitioners we value the idea of treating the person as a complex induvial. With that being said it is difficult, if not impossible to standardize CBT with the need of personalization (Sasdelli et al., 2017).

Although CBT may improve the treatment of weight loss and obesity outcomes it is impossible to compare the outcomes to pharmaceuticals or bariatric surgery trials (Melchionda et al., 2003). These trials are typically motivated by economic benefit in the form of direct participant payment as well as access to drugs, labs, test and other free or low-cost treatment (Melchionda et al., 2003).

Obesity disproportionately affects minority populations at a higher rate of incidence (Wilfley et al., 2018). None of the studies address the outcomes when race, ethnicity, beliefs or values are considered. This review of literature included adults 18 years and older. This includes a large variety of ages and developmental stages. Age should be considered in obesity treatment (Wilfley et al., 2018). Again, none of the studies found addressed specific age groups and ages ranged.

Further research is needed identify if there is a standardized method of CBT that can be used. In addition, incorporating race, ethnicity, beliefs, or values into the method of standardized CBT would allow for individualization along with standardization. It is obvious that it is tricky to mold standardization with individualization and thus more research is needed in order to achieve

this. There is a fine line between a consistent standardized method of CBT while allowing for treating the individual in their uniqueness.

Discussion

When determining the answer to the clinical question; I*n obese adults is cognitive behavioral therapy a beneficial method for weight loss?* there are several factors to consider and according to the research there are still many unknowns.

The evidence does not identify if CBT is the best treatment for obesity. Cooper et al. (2010) found that CBT is no better than behavior therapy however it was successful in achieving acceptance of body. However, research does show that the reason for weight regain after weight loss is related to behavioral reasons. This may lead one to believe that altering behaviors through CBT should be an adequate treatment. However, the evidence available does not prove this yet. There is no evidence found in the included articles that CBT is harmful to a patient. CBT does change behaviors, but it is not proven that it contributes to weight loss or weight loss maintenance (Aguilera, 2014). Because CBT can improve one's acceptance of body image and help them maintain a healthy lifestyle by improving attrition it can be concluded that CBT is beneficial for an obese patient.

What is also known, CBT may benefit obese adults when used in conjunction with other interventions such as calorie restriction and physical exercise. Melchionda et al., (2003) suggest that use of calorie restriction is useful for the initial loss of weight but when CBT is added the person has a likely added effect of attrition. It has been found that combining several treatment strategies to be the most beneficial, but as Cuningham (2016) states, the best combination is unknown. Another important factor that plays a role in a person's success as discussed by Wilfley et al. (2018), is the importance of individualized care. Wilfley et all (2018) was not the

only article that touched on individualized care. Melchionda et al., (2003) discussed the importance of individualizing treatment plans. It is frequently described in primary care that treatment should be based on an individualized plan and this is another identification of this. Support system is additionally important to consider in addition to other treatment modalities. CBT was found to be more successful with an adequate support system (Wilfley et al., 2018). It can be concluded that CBT should be used on an individualized basis. When the provider is educated on the use of CBT, they can adequately offer this treatment to the appropriate patient in combination with other evidence-based weight loss methods such as calorie restriction, increased physical activity, weight loss surgery or even medication.

Cuningham, (2016) suggests that motivation is a key indicator in successful weight loss and maintenance, indicating that by motivational interviewing, a person can determine their own motivations and goals. The provider is then able to individualize treatment plans for CBT as well as other evidence-based interventions to fit the person leading to the greatest opportunity for success.

Following the initial weight loss is key, but research shows that many individuals regain lost weight after using different strategies to lose the initial weight. Due to regained weight following weight loss, identifying the factors that influence attrition is just as important as identifying the influences of initial weight loss.

There was no evidence found in the literature that identified CBT as a harmful treatment for obesity and weight loss. Ultimately the evidence shows that by changing behavior with CBT as an addition to other treatment modalities the persons behaviors can be modified. Individuals will not only lose the initial weight but there is a higher likelihood of them maintaining the weight loss in years to follow.

Implications for Future

Recommendations for Practice

As primary care nurse practitioners (NPs) in family practice we are on the front lines of treatment and maintenance of weight loss. According to the American Association of Nurse Practitioners (AANP, 2019) there are more than 270,000 nurse practitioners licensed in the U.S. and 72.6% of all NPs deliver primary care. We need to find a way to help Americans lose weight and keep it off. Because eating is a behavior, we need to identify a way to alter the behavior of our patients that does not result in weight gain.

It is recommended that NPs and all providers continue to follow the guidelines by the U.S. Department of Health and Human Services (2013) which include a 500-750 kcal/day deficit, 150 minutes or greater of physical activity per day as well as participate in behavior modification. This can be done with the addition of CBT, motivational interviewing followed by CBT, and the use of CBT along with dietary modification, physical activity, pharmaceuticals and/or bariatric surgery. It is important as providers to individualize care as there is no one best method for weight loss and maintenance. By improving the weight of patients, we not only improve body image and mental health but there are countless comorbid conditions that are impacted by weight loss thus improving the overall health of the individual.

Future Research

This literature review revealed several opportunities for future research. The most apparent include the following. First, what is the best combination of weight loss interventions that include CBT. Second, how does standardized CBT affect weight loss. Third, research is needed that would individualize CBT by race, age, gender, values, beliefs and other factors. Fourth looking at how CBT influences weight loss compared to other weight loss strategies.

Finally, would be research identifying the best ways to reduce attrition and promote weight maintenance.

Conclusion

Obesity is a complex condition affecting many Americans providing NPs with the challenge on identifying the best way to lose weight and maintain weight lost for individuals. The behaviors individuals possess influences how, when, why and how much a person eats. By incorporating CBT into the treatment plans after motivational interviewing on an individualized basis combined with other treatment modalities the patient will have a higher likelihood of successful initial weight loss as well as maintenance.

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Appendix

Table 1

Database Search Description

Database (or Search Engine)	Restrictions Added to Search	Dates Included in Database	General Subjects Covered by Database
1. ProQuest	Full Text; Peer Reviewed; Publication in the past 3 years; English Language;	2016-2019	Scholarly journals, eBooks, news content, reports, working papers for multi-disciplinary research.
2. Medline	Peer Reviewed; Publication in the past 3 years; Human subjects	2016-2019	Biomedical research.
3. CINAHL	Full text; Peer Reviewed; Evidence-based practice; Human subjects	2010-2019	Nursing and allied health professionals including speech language pathology, nutrition, general health and medicine.
4. Cochrane	Full text; Apply equivalent subjects	2016-2019	Systematic reviews and meta analyses for medical research.
5. PsycINFO	Peer Reviewed; English language; adulthood (18yrs and older); Male, female, adults	2016-2019	Abstract literature in the field of psychology.

Table 2

Data Abstraction Process

Date of Search	**Key Words**	**ProQuest**	**Hits in Medline**	**Hits in CINAHL**	**Hits in Cochrane**	**Hits in PsycINFO**
10.18.19	"Cognitive Behavioral Therapy"	28,412	8,836	230	12	3,682
	"Weight Loss"	113,960	14,452	276	1	1,233
	"Cognitive Behavioral Therapy" AND "Weight Loss"	5,441	***5**	***10**	0	***12**
11.11.19	"Cognitive Behavioral Therapy" AND "Weight Loss" AND "Adults"	4737				
	"Cognitive Behavioral Therapy" AND "Weight Loss" AND "Adults" AND "Success"	1254				
	"Cognitive Behavioral Therapy" AND "Weight Loss"- Main subject AND "Adults" AND "Success" NOT "binge"	**1***				
11.11.19	Bibliography Review					**3***

***BOLD** = articles reviewed for match with systematic review inclusion criteria

Table 3

Characteristics of Literature Included and Excluded

Reference	**Included or Excluded and Document**	**Rationale**
Aguilera, M. (2014). Post-surgery support and the long-term success of bariatric surgery. *Practice Nursing, 25*(9), 455-459.	Include	Review looking at support for patients after bariatric surgeries and the effects of weight loss maintenance
Allen, K. D., Oddone, E. Z., Coffman C. J., Jefferys, A. S., Bosworth, H. B., Chatterjee, R., McDuffie, J., Strauss, J. L., Yancy, W. S., Datta, S. K., Corsino, L. & Dolor, R.J. (2017). Patient, provider, and combined interventions for managing osteoarthritis in primary care. *Annals of Internal Medicine, 166*(6), 401-411. http://doi.org.ezproxy.mnsu.edu/10.7326/m16-1245	Exclude	Examines patient-based, Provider-based, and patient-provider interventions improve osteoarthritis outcomes
Annesi, J. J. (2016). Mediation of the relationship of behavioural treatment type and changes in psychological predictors of healthy eating by body satisfaction changes in women with obesity. *Obesity Research & Clinical Practice, 11*, 97-107. http://doi.org/10.1016/j.orcp.2016.03.011	Exclude	Looks at satisfaction of body weight with the use of cognitive behavioral therapy
Annesi, J. J., Mareno, N., & McEwen, K. (2016). Psychosocial predictors of emotional eating and their weight-loss treatment-induced changes in women with obesity. *Eat Weight Disorder, 21.* 289-295. http://doi.org.10.1007/s40519-015-0209-9	Include	Phone CBT vs In person CBT effects on increase exercise, improve eating behaviors, reduce weight over 6 months.
Bazzaz, M. M., Fadardi, J. S., & Parkinson. J. (2016). Efficacy of the attention control program on reducing attentional bias in obese and overweight dieters. *Appetite, 108,* 1-11. https://doi.org/10.1016/j.appet.2016.08.114	Exclude	Attention control programs on reducing bias in obese dieters.
Calugi, S., Marchesini, G., Ghoch, M. E.., Gavasso, I., & Grave, R. D. (2017). The influence of weight-loss expectations on weight loss and of weight-loss satisfaction on weight maintenance in severe obesity. *Journal of the Academy of Nutrition and Dietetics, 117*(1), 32-38. http://doi.org/10.1016/j.jand.2016.09.001	Exclude	Looks at expectations of weight loss not the ability of cognitive behavioral therapy on weight loss.
Cooper, Z., Doll, H. A., Hawker, D. M., Byrne, S., Bonner, G., Eeley, E., Fairburn, C. G. (2010). Testing a new cognitive behavioural treatment for obesity: A randomized controlled trial with three-year follow-up. *Behaviour Research and Therapy, 48,* 706-713. http://doi.org/10.1016/j.brat.2010.03.008	Include	RCT of a new CBT treatment for obesity

Reference	Included or Excluded and Document	Rationale
Cunningham. E. (2016). What strategies do registered dietitian nutritionists use to assess a patient's/client's weight loss readiness? *Journal of the Academy of Nutrition and Dietetics,* 2036. http://doi.org/10.1016/j.jand.2016.09.035	Include	Looks at motivational interviewing (a type of CBT) to assess weight loss readiness.
Dolder, C. R., & Nealy, K. L. (2012). The efficacy and safety of newer anticonvulsants in patients with dementia. *Drugs and Aging, 29*(8), 627-637. http://doi.org/ 10.2165/11632480-000000000-00000	Exclude	Efficacy and safety of anticonvulsants in dementia patients
Dora, A. U., Laszlo, H., & Dora, P. F. (2018). Az alacsony intenzitasu, bizonyitottan hatekony kognitiv viselkedesterapia crohn-betegsegben. *Evfolyam, 9,* 363-369. http://doi.org/1556/650.2018.30969	Excluded	Not English language
Figura, A., Rose, M., Ordemann, J., Klapp, B.F., & Ahnis, A. (2017). Improvement in self-reported eating-related psychopathology and physical health related quality of life after laparoscopic sleeve gastrectomy: A pre-post analysis and comparison with conservatively treated patients with obesity. *Eating Behaviors, 24,* 17-25. http://doi.org/10.1016/j.eatbeh.2016.11.006	Exclude	Psychopathology and physical health quality of life post laparoscopic sleeve gastrectomy.
Grave, R. D., Calugi, S., & Marchesini, G. (2014). The influence of cognitive factors in the treatment of obesity: Lessons from the QUOVADIS study. *Behavior Research and Therapy, 63,*157-161. http://doi.org/10.1016/j.brat.201410.004	Include	The influences of cognitive factors in the treatment of obesity
Grenon,R., Schwartze, D., Hammond, N., Ivanova, I., Mcquaid, N., & Proulx, G. (2017). Group psychotherapy for eating disorders: A meta-analysis. *International Journal of Eating Disorder, 50,*997-1013. http://doi-org/10.1002/eat.22744	Excluded	Group CBT and psychotherapy effects on binge eating and/or purging
Guaiana, G., Gupta, S., Chiodo, D., Davies, S. J. C., Haederle, K., & Koesters, M. (2013). Agomelatine versus other antidepressive agents for major depression. *Cochrane Database of Systematic Reviews, 12,* Article CD008851. http://doi.org/10.1002/14651858.CD008851.pub2	Exclude	determine efficacy of agomelatine in alleviating major depressive disorder and review acceptability of agomelatine.
Hepertz, S., Hagenah, U., Vocks, S., von Wietersheim, J., Cuntz, U., & A. (2011). Clinical Practice Guideline: The diagnosis and treatment of eating disorders. *Deutsches Arzteblatt International, 108*(40), 678-685. http://doi.org/10.3238/arztebl.2011.0678	Excluded	Looks at eating disorders, anorexia nervosa and bulimia nervosa
Jackson, J. B., Pietrabissa, G., Rossi, A., Manzoni, G. M., & Castelnuovo, G. (2018). Brief strategic therapy and cognitive behavioral therapy for women with binge eating disorder and comorbid obesity: A randomized clinical trial one-year follow up. *Journal of Consulting*	Exclude	In women with binge eating and obesity what is the effectiveness of brief strategic therapy compared with cognitive behavioral therapy

Reference	Included or Excluded and Document	Rationale
and Clinical Psychology, 86(8), 688-701. http://doi.org/10.1037/ccp0000313		
Jacob, A., Moullec, G., Lavoie, K. L., Laurin, C., Cowan, T., Tisshaw, C., Kazazian, C., Raddatz, C., & Bacon, S. L. (2018). Impact of cognitive-behavioral interventions on weight loss and psychological outcomes: A meta-analysis. *Health Psychology, 37*(5), 417-432. http://doi.org/10.1037./hea0000576	Include	Examines the effects of CBT on weight loss and psychological outcomes on obese adults
Jelalian, E. J., Jandasek, B., Wolff, J. C., Seaboyer, L. M., Jones, R. N., & Spirito, A. (2019). Cognitive-behaviroral therapy plus health lifestyle enhancement for depressed, overweight/obese adolescents: Results of a pilot trial. *Journal of Clinical Child & Adolescent psychology, 48*(S1), S24-S33. https://doi.org/10.1080/15374416.2016.1163705	Exclude	CBT plus health lifestyle for obese adolescents.
Lydcker, J. A., Gueorguieva, R., Masheb, R., White, M. A., & Grilo, C. M. (2019). Examining race as a predictor and moderator of treatment outcomes for binge-eating disorder: Analysis of aggregated randomized controlled trials. *Journal of Consulting and Clinical Psychology, 87*(6), 530-540. http:/doi.org/10.1037/ccp0000404	Exclude	Race as a predictor for treatment outcomes in binge eating disorder
Maria, R. (2017). A fogyokurak buktatoi- Psziches tenyezok. *Evfolyam, 13,* 499-507. http://doi.org/10.1556/650.2017.30685	Excluded	Not English language
Mason, T. B., Crosby, R. D., Kolotkin, R. L., Grilo, C. M., Mitchell, J. E., Wonderlich, S. A., Crow, S. J., & Peterson, C. B. (2017). Correlates of weight-related quality of life among individuals with binge eating disorder before and after cognitive behavioral therapy. *Eating Behaviors, 27,* 1-6. http://doi.org.10.1016/j.eatbeh.2017.08.001	Exclude	Weight related quality of life for those with binge eating disorder pre and post CBT.
Melchionda, N., Besteghi, L., Di Domizio, S., Pasqui, F., Nuccitelli, C., Migliorini, …… Marchesini, G. (2003). Cognitive behavioural therapy for obesity: One-year follow-up in a clinical setting. *Eating Weight Disorders, 8*(3), 188-193. http://doi.org/10.1007/BF03325012	Include	Patients treated with CBT one year follow up
Novak, I., & Honan, I. (2019). Effectiveness of paediatric occupational therapy for children with disabilities: A systematic review. *Australian Occupational Therapy Journal, 66,* 258-273. http://doi.org/10.7326/M16-1245	Exclude	Pediatric population and occupational therapy for children with disabilities
Pacanowski, C. R., Mason, T. B., Crosby, R. D., Mitchell, J. E., Crow, S. J. Wonderlich, S. A., & Peterson, C. B. (2018). Weight changes over the course of binge eating disorder treatment: relationships to binge	Exclude	Weight loss over the course of CBT for binge eating disorder.

Reference	Included or Excluded and Document	Rationale
episodes and psychological factors. *Obesity, 26*(5), 838-844. http://doi.org/10.1002/oby.22149.		
Palmeira, L., Gouveia, J. P., & Cunha, M. (2017). Exploring the efficacy of an acceptance, mindfulness & compassionate-based group intervention for women struggling with their weight. *Appetite,* 112(1), 107-116. https://doi.org.10.1016/j.appet.2017.010.027	Exclude	This study looks at the weight self-stigma and unhealthy eating patterns of obese women using CBT vs "treatment as usual".
Peat, C. M., Berkman, N. D., Lohr, K. N., Brownley, K. A., Bann, C. M., Cullen, K., Quattlebaum, M. J., & Bulik, C. M. (2017). Comparative effectiveness of treatments for binge-eating disorder: Systematic review and network meta-analysis. *European Eating Disorders Review, 25,* 317-328. http://doi.org/10.1002/erv.25.	Exclude	Effectiveness of psychological and pharmacological treatments for binge eating disorders.
Podina, I. R., Faur, A. L., Fodor, L. A., & Boian, R. (2018). Usability and user experience testing of the cognitive-behavioral stigma smartphone app for weight management. *Journal of Evidence-Based Psychotherapies,* 18(1), 45-55. https://doi.org/10.24193/jebp.2018.1.4	Exclude	This looks at the usability of a CBT phone app and user preference of the phone app.
Sasdelli, A. S., Petroni, M. L., Paoli, A. D., Collini, G., Calugi, S., Grave, R. D., & Marchesini, G. (2018). Expected benefits and motivation to weight loss in relation to treatment outcomes in group-based cognitive behavior therapy of obesity. *Eating and Weight Disorders, 23,* 205-214. https://doi.org.10.1007/s40519-017-0475-9	Include	Expected benefits and motivation for weight loss in relation to the outcomes for group-based CBT
Sawamoto, R., Nozaki, T., Nishihara, T., Furukawa, T., Hata, T., & Komakim G. (2017). Predictors of successful long-term weight loss maintenance': A two-year follow-up. *BioPsychoSoicial Medicine, 11*(14), 1-10. http://doi.org /10.1186.s13030-017-0099-3	Include	Identify factors associated with successful weight loss maintenance by overweight women who completed group CBT for weight loss.
Vocks, S., Tuschen-Caffier, B., Pietrowsky R., Kersting, A., & Herpertz, S., (2010). Meta-analysis of the effectiveness of psychological and pharmacological treatments for binge eating disorder. *International Journal of Eating Disorders, 43*(3), 205-207. http://doi.org/10.1002/eat.20696	Exclude	Psychological and pharmacological treatments for binge eating disorder.
Wilfley, D. E., Hayes, J. F., Balantekin, K. N., Van Buren, D. J., & Epstein, L. H. (2018). Behavioral interventions for obesity in children and adults: Evidence base, novel approaches, and translation into practice. *American Psychologist, 73*(8), 981-993. http://doi.org/10.1037/amp0000293	Include	Behavioral interventions for obesity in children and adults

Table 4

Literature Review Table of All Studies Included

Citation	**Study Purpose**	**Pop (N)/ Sample Size (n) /Setting(s)**	**Design/ Level of Evidence** (Melnyk & Fineout-Overholt, 2015)	**Variables/ Instruments**	**Findings**	**Implications**
Aguilera, M. (2014). Post-surgery support and the long-term success of bariatric surgery. *Practice Nursing, 25*(9), 455-459.	To determine if there is a significant positive relationship between support and greater excess weight loss post bariatric surgery.	N/A	Systematic Review Level: V	Support Group Attendance Dietary Counselling CBT and Motivational support Family Support Dietary education support Support for depressive symptoms	All of these support types are positively associated with greater weight loss and some resolution of post-surgery problems such as lifestyle changes and depression.	CBT section had small number of participants with small amount of weight loss compared to other interventions
Annesi, J.J., Mareno, N., & McEwen, K. (2016). Psychosocial predictors of emotional eating and their weight-loss treatment-induced changes in women with obesity. *Eat Weight Disorder, 21.* 289-295. http://doi.org/10.1007/s40519-015-0209-9	To assess whether psychosocial predictors of controlled eating and weight loss also predicts emotional eating and how differing weight loss treatment methods affect those variables.	Self-help; n= 50 Personal Contact; n=53	Randomized Control Trial Level: II	Self Help Personal Contact	The administration of CBT through personal contact might be more beneficial than self-help formats.	In person CBT supports improvement of psychosocial factors and body weight compared to phone support.
Cooper, Z., Doll, H.A., Hawker, D.M., Byrne, S., Bonner, G., Eeley, E., Fairburn, C.G. (2010). Testing a new cognitive behavioural treatment for obesity: A randomized	To examine the immediate and longer-term effects of a new cognitive behavioral	Obese Women n=150 CBT: N=49 BT: N=50	Randomized Control Trial Level: II	CBT (Cognitive Behaviour Therapy) BT (Behaviour Therapy) GSH (Guided self-help)	Great majority of participants lost weight then regained it with CBT.	CBT is no better than BT and GSH when it comes to maintaining weight loss.

Citation	Study Purpose	Pop (N)/ Sample Size (n) /Setting(s)	Design/ Level of Evidence (Melnyk & Fineout-Overholt, 2015)	Variables/ Instruments	Findings	Implications
controlled trial with three-year follow-up. *Behaviour Research and Therapy, 48,* 706-713. http://.doi.org/10.1016/j.brat.2010.03.008	treatment that was explicitly designed to minimize post-treatment weight gain.	GSH: N= 51				It is remarkably difficult to maintain a new lower weight following weight loss.
Cunningham. E. (2016). What strategies do registered dietitian nutritionists use to assess a patient's/client's weight loss readiness? *Journal of the Academy of Nutrition and Dietetics,* 2036. http://doi.org/10.1016/j.jand.2016.09.035	To provide information on the Academy's position regarding weight management. They recommend a combination of behavior-change strategies, assessing readiness, and motivational interviewing.	N/A	Expert Opinion Level: VII	CBT MI (motivational interviewing) Assessment of readiness		Assess readiness, Use CBT Use MI
Grave, R.D., Calugi, S., & Marchesini, G. (2014). The influence of cognitive factors in the treatment of obesity: Lessons from the QUOVADIS study. *Behavior Research and Therapy, 63,*157-161. http://doi.org/10.1016/j.brat.2014.10.004	To summarize and synthesize the data on cognitive factors associated with program attrition, weight loss and weight maintenance derived from the "Quality of life in Obesity: evaluation and Disease Surveillance" QUOVADIS.	n:1944	Systematic Review Level: V	Cognitive factors on attrition Cognitive factors on weight loss Cognitive factors on weight loss maintenance	1. lifestyle modification programs should include specific procedures and strategies designed to address the key cognitive factors associated with weight loss, maintenance and attrition. 2. particular attention should be paid to patient's weight loss expectations. Higher expectations seem to correlate with attrition. 3. Future lifestyle modification programs should consider some cognitive strategies and procedures to help patients develop a weight control mindset. Healthy dietary	A one size fits all approach is largely impossible and treatment should be tailored to the individual whose thoughts and feelings (Cognitive factors) should be taken into consideration.

Citation	**Study Purpose**	**Pop (N)/ Sample Size (n) /Setting(s)**	**Design/ Level of Evidence** (Melnyk & Fineout-Overholt, 2015)	**Variables/ Instruments**	**Findings**	**Implications**
					restraint and low levels of disinhibition. 4.Continuous care approach is not suitable for all patients and indeed not all patients need continuous care to achieve and maintain good results	
Jacob, A., Moullec, G., Lavoie, K.L., Laurin, C., Cowan, T., Tisshaw, C., Kazazian, C., Raddatz, C., & Bacon, S.L. (2018). Impact of cognitive-behavioral interventions on weight loss and psychological outcomes: A meta-analysis. *Health Psychology, 37*(5), 417-432. http://doi.org/10.1037./hea0000576	To examine the effects of CBT weight loss interventions on weight loss, psychological outcomes and depressive/anxiety symptoms in adults with overweight or obesity.	12 studies n:6805 participants	Meta-Analysis Level: I	CBTWL (cognitive behavioral therapy weight loss) Other interventions	CBTWL is effective for increasing cognitive restraint and reducing emotional eating. CBTWL is not superior to other interventions for decreasing depressive symptoms.	Future studies are needed to understand how psychological factors impact weight loss and management.
Melchionda, N., Besteghi, L., Di Domizio, S., Pasqui, F., Nuccitelli, C., Migliorini, S., BaraldiL., Natale, S., Manini, R., Bellini, M., Belsito, C., Forlani, G., Marchesini, G. (2003). Cognitive behavioural therapy for obesity: One-year follow-up in a clinical setting. *Eating Weight Disorders, 8*(3), 188-193. http://doi.org/10.1007/BF03325012	To describe and discuss the long-term responses of a series of consecutive patients treated with CBT at university-based obesity center.	n: 1068 subjects seeking treatment for obesity. 868 females 200 males	Well-designed controlled trial without randomization Level: III	LEARN program MOB program (morbid obesity) BINGE program (binge eating)	Percentage of weight loss was 6% during the weekly course Weekly follow up gradually decreased over the 1 year	Study demonstrates the difficulty of achieving compliance to chronic management of obesity. Strategies are needed to improve adherence to a follow up protocol.
Sasdelli, A. S., Petroni, M. L., Paoli, A. D., Collini, G., Calugi, S., Grave, R. D., & Marchesini, G. (2018). Expected benefits and motivation to weight loss in relation to treatment outcomes in group-based cognitive behavior therapy of obesity. *Eating and Weight Disorders,*	To determine cognitive drivers, expected to play a role in target reach and or attrition in obesity programs.	n: 793 68% women 32% male	Descriptive studies Level: V		Attrition rate was 24 % at 6 months 41% at 12 months 65% at 24 months	More precise definition of needs and expectations might help tailor treatment to individual patients. Attrition rates remain difficult to predict.

Citation	**Study Purpose**	**Pop (N)/ Sample Size (n) /Setting(s)**	**Design/ Level of Evidence** (Melnyk & Fineout-Overholt, 2015)	**Variables/ Instruments**	**Findings**	**Implications**
23, 205-214. https://doi.org.10.1007/s40519-017-0475-9						
Sawamoto, R., Nozaki, T., Nishihara, T., Furukawa, T., Hata, T., & Komakim G. (2017). Predictors of successful long-term weight loss maintenance: A two-year follow-up. *BioPsychoSoicial Medicine, 11*(14), 1-10. http://doi.org./10.1186.s13030-017-0099-3	Identify factors associated with successful long-term weight loss maintenance after the completion of CBT for weight loss.	n: 86 women	Randomized controlled study Level: II	CBT with program to increase adherence to exercise CBT without program to increase adherence to exercise	Larger weight reduction during the weight loss intervention phase and lower levels of disinhibition and food addiction at the end of weight loss intervention predicted successful weight loss maintenance	Early intervention should be done when signs are seen of disinhibition or good addiction and more intensive or prolonged intervention and frequent follow u should be considered for these patients after the weight loss phase.
Wilfley, D. E., Hayes, J. F., Balantekin, K. N., Van Buren, D. J., & Epstein, L. H. (2018). Behavioral interventions for obesity in children and adults: Evidence base, novel approaches, and translation into practice. *American Psychologist, 73*(8), 981-993. http://doi.org/10.1037/amp0000293	The introduction traditional behavioral weight loss strategies designed to change energy balance behaviors and the context within which these interventions have typically be delivered.	N/A	Opinion from experts Level VII	N/A	Behavioral interventions play a role in the treatment of obesity and are effective in reducing weight and disease for individuals across the life span, particularly when employed at younger ages for prevention of adult obesity.	New research in the psychological and cognitive science is being developed to enhance current treatment interventions.