

Effect of mindfulness based occupational therapy activities on binge eating behavior among college students

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ABSTRACT

Counseling service is new to Eritrean education system and its implementation has not been easy. Despite counseling services being part of education policy and the curriculum, the use of counseling service is in its initial stages in many schools in Eritrea. This study assessed counseling approaches used in solving students' disciplinary problems in secondary schools.

Keywords: *Mindfulness, Binge eating, Occupational Therapy, College students*

Binge eating disorder (BED) is a severe, life-threatening, and treatable eating disorder characterized by recurrent episodes of eating large quantities of food (often very quickly and to the point of discomfort); a feeling of a loss of control during the binge; experiencing shame, distress or guilt afterwards; and not regularly using unhealthy compensatory measures (e.g., purging) to counter the binge eating. Many people with Binge Eating Disorder are overweight or obese.

A 2015 research publication indicated a 50% genetic risk for BED and that nearly 50% of BED patients have co-morbid mood and anxiety disorders. The same study also identified 1 in 10 BED patients have a co-morbid substance abuse disorder with the most prevalent being alcohol use. (Ulfvebrand et al.) According to a national survey by Swanson et al. (2011), BED is the most common eating disorder in the United States affecting 3.5% of adult women and 2% of adult men and up to 1.6% of adolescents. In 2007 it was determined that 3.5% of women and 2.0% of men in the United States will suffer from BED. This is more prevalent than Anorexia Nervosa and Bulimia Nervosa combined. (Hudson et al.,)

It is most common in women in early adulthood but it is more common in men at midlife. It appears that BED affects blacks and whites equally and is associated with significant physical and psychiatric conditions. Compared with normal weight or obese control groups, people with BED have higher levels of anxiety and both current and lifetime major

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Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

depression. Although most people with obesity do not have BED, up to two-thirds of people with BED are obese and can have the medical difficulties associated with this condition.

Therefore, elevating BED to the status as a formal eating disorder should have a huge impact because of its high prevalence in the general population as well as the different gender and racial demographics it encompasses.

In a study published by Eating and Weight Disorders, researchers surveyed 2,073 students on their eating habits at college. Their results revealed that 29 percent of the group had engaged in recent bingeing. Of these students, 73.8 percent were women. Other risk factors included higher body mass index, tobacco use, and exercising for weight loss. Another report by the Multi-Service Eating Disorders Association estimates that up to 40 percent of female college students have an eating disorder.

Adolescents with BED and obesity displayed significantly poorer inhibitory control compared to normal-weight adolescents. This effect persisted after controlling for the level of secondary education. However, initial differences between adolescents with obesity and normal-weight controls regarding inhibitory control and sustained attention vanished after controlling for education. The three groups did not differ regarding cognitive flexibility and decision-making. Moreover, adolescents with BED and obesity did not perform worse than adolescents with obesity on any of the neuropsychological tests.

Mindfulness is an umbrella term that covers a huge range of traditions and practices centered on body and breathe awareness. **Kabat-Zinn** defines mindfulness as **“paying attention in a particular way: on purpose, in the present moment, as if your life depended on it and non-judgmentally.”** Mindfulness is more about the way we pay attention to our experience than it is about engaging in a specific practice or exercise. Meditation is the formal practice of mindfulness. Meditation practices span a wide range, including mantra meditations or chanting, active or movement meditations (e.g., some forms of yoga and tai chi practices), and relaxation. Some forms of meditation involve awareness of sensations, which encompasses mindful eating.

Mindfulness can be defined as **“a mental state achieved by focusing one’s awareness on the present moment, while calmly acknowledging and accepting one’s feelings, thoughts, and bodily sensations, used as a therapeutic technique.”** Using Mindfulness to treat binge eating disorder essentially, mindfulness involves awareness of what we are experiencing moment-by-moment, including what we are thinking, how we are feeling, and the environment we are involved.

Mindfulness does not end there. It is also the practice of accepting those thoughts and emotions that we may be experiencing, not passing judgment on the present moments that may be occurring.

The practice of mindful eating can help a person create greater awareness of thoughts, emotions, feeling, and behaviors. While eating disorders effectively numb emotions, practicing mindfulness can help a person reflect on what they are feeling or experiencing prior to a binge. This can lead to a reflection of asking, “Am I really hungry, or is there something else I need in this moment?”, and “What am I feeling?” Reflecting on such

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

questions can help an individual work through urges to binge and identify what they really need to adequately nourish themselves. Many binge eaters may use food as a way to cope with increased stress and anxiety. Mindfulness-based practices can be therapeutic in learning how to effectively deal with outside stressors that may be triggering binge eating, helping an individual process their emotions rather than hide behind them.

Therapeutic techniques involving mindfulness can help a person come to terms with their feelings and bodies as they learn to accept themselves in the present moment. This can happen over time as a person practices the experience and acceptance of present emotions without casting judgment.

Aim

To determine the effect of mindfulness based occupational therapy activities on Binge eating behavior among college students.

Objectives

1. To evaluate the Binge eating behavior among college students. (BES).
2. To evaluate the effect of mindfulness based occupational therapy activities among college students.

Hypothesis

Alternative Hypothesis: The alternative hypothesis states that there will be significant effect of mindfulness based Occupational therapy activities in reducing the binge eating behavior among college students.

Null Hypothesis: The null hypothesis states that there will be no significant effect of mindfulness based occupational therapy activities in reducing the binge eating behavior among college students.

REVIEW OF LITERATURE

1) O.Kim, M.S.Kim et.al., (2018)

The purpose of the study is to investigate the prevalence of BED and the correlation between BED and severity of self reported depressive symptoms among female nurses in South Korea. Participants were 7267 female nurses of which 502 had symptoms of BED. Using the propensity score matching (PSM) technique, 502 nurses with BED and 502 without BED were included in the analysis. Multivariable ordinal logistic regression analysis revealed that age (40 years old and older), alcohol consumption, self rated health, sleep problems and stress were associated with self reported depression symptoms. Korean female nurse showed a higher prevalence of both binge eating disorder and depressive symptoms and the association between the two factors was proven in the study.

2) Cordova ME, Schiavon CC. et.al.,(2017)

To examine the relationship between obese patient with and without binge eating disorder and the neuropsychological profiles of their executive function. Data from 33 obese individuals ($BMI \geq 30 \text{ kg/m}^2$) were divided into 2 groups, where one group was found to be positive for signs of BED according to the binge eating scale. Two neuropsychological test of executive function were carried out: the Go/Non go task and the Iowa Gambling Task (IGT). Both group present similar nutritional characteristics; there were no difference. Obese

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

individuals frequently presents deficits in selective attention, inhibitory control, decision making and planning that can be directly related to binge eating and which is linked to BED.

3) Kittel R, Schmidt R, Hilbert A (2017)

The purpose of the study is to find out the executive functions in the adolescents with binge eating disorder and obesity. Adolescent with BED and obesity (n=22), individually matched adolescents with obesity (n=22) and normal weight (n=22) completed neuropsychological test targeting inhibition (Color – Word Interference Test), sustained attention (D2 Concentration Endurance Test), cognitive flexibility (Comprehensive Trail Making Test), and decision making (Iowa Gambling Task). However, initial difference between adolescents with obesity and normal weight control regarding inhibitory control and sustained attention vanished after controlling for education. The three groups did not differ regarding cognitive flexibility and decision making. Overall, our results indicate that adolescent BED is associated with only a few alterations in general EF, specifically inhibitory control, and underline BED and educational level as confounding factors in neuropsychological research on obesity.

4) Grilo CM (2017)

This study shows psychological and behavioral treatments for binge eating disorder. CBT and interpersonal psychotherapy are the most strongly supported interventions for BED but they do not produce weight loss; behavioral weight loss therapy, a more widely available “generalist “ interventions, achieve good outcome for BED plus produces modest weight loss over the short term. Relatively little is known about reliable predictors: 1) the presence of over valuation of body shape and weight 2) the occurrence of rapid response to treatment.

5) Linardon J, Wade TD et.al.,(2017)

The meta-analysis examined the efficacy of cognitive behavioral therapy (CBT) for eating disorder. Randomized controlled trails of CBT were searched. Seventy-nine trails were included. CBT is efficacious for eating disorder. Although CBT was equally efficacious to certain psychological treatments, the fact that CBT outperformed all active psychological comparisons and interpersonal psychotherapy specifically offered some support for the specificity of psychological treatment for eating disorder. Conclusions from the study are hampered by the fact that many trails were of poor quality.

6) Grilo CM, Reas DL, Mitchell JE (2016)

This article provides an overview of randomized control treatments for combined psychological and pharmacological treatment of BED. Our review here found that combining certain medications with cognitive behavioral therapy (CBT) or behavioral weight loss (BWL) interventions produces superior outcome to pharmacotherapy only but does not substantially improve outcomes achieved with cognitive behavior therapy or behavioral weight loss.

7) Bernadette Pivarunas, B.S., et al., (2015)

The purpose of this study was to examine the relationship of dispositional mindfulness to binge eating and associated eating attitudes and behaviors among adolescent girls at risk for type 2 diabetes (T2D). Participants were 114 overweight or obese adolescents (12-17 years) enrolled in a study of girls with family history of T2D and mild depressive symptoms. Adolescent self-reports of mindfulness, eating in the absence of hunger and depressive symptoms were collected. Body composition was assessed using dual-energy x-ray absorptiometry. Participants completed the reliable and well-validated 15-item Mindful

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

Attention and Awareness Scale to measure dispositional mindfulness. Result shows the girls who reported recent binge eating (in past month) had lower mindfulness scores than those who did not report binge eating. Hence mindfulness based interventions has potential to alter adolescents eating attitudes and behaviors that promote excessive gain and T2D.

8) Botha E, Gwin T, Purpora C.(2015)

The objective of this review is to identify the effectiveness of mindfulness based program in reducing stress experienced by nurses in adult hospitalized patient care setting. The researchers reported that nurses who experienced higher degree of job stress were 80% more likely to have suffered a major depressive episode, stress. Mindfulness based program have proven to be a promising intervention in reducing stress experienced by nurses. The MBSR program is an educationally based program that focuses on training in the contemplative practice of mindfulness. It is an 8 week program, weekly 2 and half hours and one day long retreat for 6 hours. Researchers have demonstrated that mindfulness intervention can effectively reduce stress, anxiety and depression in both clinical and non clinical population.

9) Klein AS, Skinner JB, Hawley KM (2013)

The current study examined two condensed adaptations of dialectical behavior therapy (DBT) for binge eating. Women with full or sub threshold variance of either BED or BN were randomly assigned to individually supported self monitoring using adapted DBT diary cards or group based DBT, each 15 sessions over 16 week. Both treatment evidenced large and significant improvements in binge eating, bulimic symptoms and interoceptive awareness. This preliminary investigation suggests that with both abbreviated DBT based treatment, substantial improvement in core binge eating symptom is possible.

10) Safer DL, Robinson AH, Jo B (2010)

The present study compared the outcome from randomized control trail of DBT to an active comparison group therapy (ACGT) men and women (n=101) meeting DSM –IV BED research criteria were randomly assigned to 20 group sessions of DBT –BED (n=50) or ACGT (n=51). DBT – BED had significantly lower dropout rate (4%) than ACGT (33.3%).The result shows that both DBT – BED and ACGT reduced binge eating, DBT – BED showed significantly fewer dropouts and greater initial efficacy than ACGT.

11) Gorin AA, Le Grange D, Stone AA (2003)

This study examines the effectiveness of spouse involvement in cognitive behavior therapy for binge eating disorder. 94 overweight women with binge eating disorder were randomly assigned either 1) standard group CBT 2) group cognitive behavior therapy with spouse involvement 3) weight list control group. Eating and general psychopathology assessments were completed at base line after treatment and at 6 months follow up. Although both cognitive behavior therapy groups fared significantly better than the weight list control group on measures of binge eating, weight, eating psychopathology and general psychopathology, cognitive behavior therapy with spouse involvement did not result in any additional benefit over and above standard cognitive behavior therapy.

14) Agras WS, Telch CF et.al.,(1997)

The study shows the effectiveness of one year follow up of cognitive behavior therapy for obese individuals with binge eating disorder. The results on a one year post treatment follow up of 93 obese women diagnosed as having binge eating disorder and treated with group cognitive behavior therapy followed by weight loss treatment. The group as whole

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

maintained both reductions in binge eating and abstinence rates fairly well. However, they regained the weight lost during treatment. 26% of those abstinent after 4 cognitive behavior therapy met criteria for binge eating disorder at follow up and had gained weight, whereas the remaining 74 % had lost weight.

METHODOLOGY

The purpose of this study is to determine the effect of mindfulness based occupational therapy activities on Binge eating behavior among the college students.

Research Design

The present study was done between two group pre test and post test of quasi-experimental design.

Control group = Pre test → post test

Experimental group =
Mindfulness based

Pre test → post test
Occupational Therapy Activities

Population

The study involved College Students.

Sample Size

30 subjects

1. 15 subjects in control group
2. 15 subjects in experimental group

Sampling Technique

Convenient Sampling technique was adopted.

Study Place

The study was conducted in RAMANS Hisafe Women's Hostel, Komarapalyam, Vattamalai.

Duration of the Study

Total duration of the study is 6 months.

Selection Criteria

Inclusion Criteria

1. Age group limits 19-23 years.
2. Female
3. College students
4. Persons who scored moderate to severe scoring in the scale.

Exclusion Criteria

1. Males
2. Persons undergoing medications
3. Above 23 years
4. Persons with Anorexia Nervosa and Bulimia Nervosa are excluded.

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

Independent Variable

Mindfulness based occupational therapy activities.

Dependent Variable

Binge eating behavior.

Material Required

Binge eating scale (BES)

Description of the Instrument

The binge eating scale (BES) was developed and standardized by Gormally et al (1982). The binge eating scale is a 16 items self-report questionnaire designed to capture the behavioral (8 items), cognitive and emotional (8 items), features of objective binge eating in overweight and obese adult.

Scoring Key

For each item, respondents are asked to select one of three or four response option, coded 0-2 (or) 3 respectively. Individuals scores are summed and range from 0-46, with higher scores indicating more severe binge eating problem. Marcus et al.(1988) created clinical cutoff scores for the BES representing

1. Minimal (<17 total score)
2. Moderate(18-26) and
3. Severe (>27) binge eating problem

Procedure

Initially binge eating scale was administered to the population. According to the score in the scale, 30 subjects are selected based on scores of moderate to severe. In which 15 of the subjects are placed as experimental and 15 as a control group and activities are scheduled and administered to the experimental group, they underwent intervention for 12 sessions, twice in a week which last about 60 minutes in each session. Activities of mindfulness can be given. After the intervention period, the post-test is conducted in both control and experimental group by using Binge eating scale, data is analyzed and statistically proved.

Therapy Sessions

Activities are based on creating awareness about good food habits, calorie intake, bad food habits, proper diet maintenance and the overeating impact on health. It is associated with executive functioning and enhanced task performance.

1. Reducing negative symptoms
2. Improving self esteem and self awareness
3. Acceptance
4. Positive attitude towards eating.

SESSION 1:

1. General introduction
2. Group discussion about concept of cooking and eating

SESSION 2:

1. Making calorie charts
2. Scheduling the calorie intake.

SESSION 3:

1. Giving awareness about the consequences of abnormal eating patterns.
2. Sharing their own ideas about body image and self awareness.

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

SESSION 4:

1. Making good basket(foods to be taken)
2. Making bad basket(foods not to be taken)

SESSION 5:

1. Paper cutting
2. Journal presentation (Narrating news about health)

SESSION 6:

1. Drawing a good body image.
2. Arts and Crafts work

SESSION 7:

1. Finger painting

SESSION 8:

1. Montage

SESSION 9:

1. Collage making

SESSION 10:

1. Ginger garlic bread decoration
2. Diary card completion(for praising and problem solving)

SESSION 11:

1. Cooking session(making the simple salads)

SESSION 12:

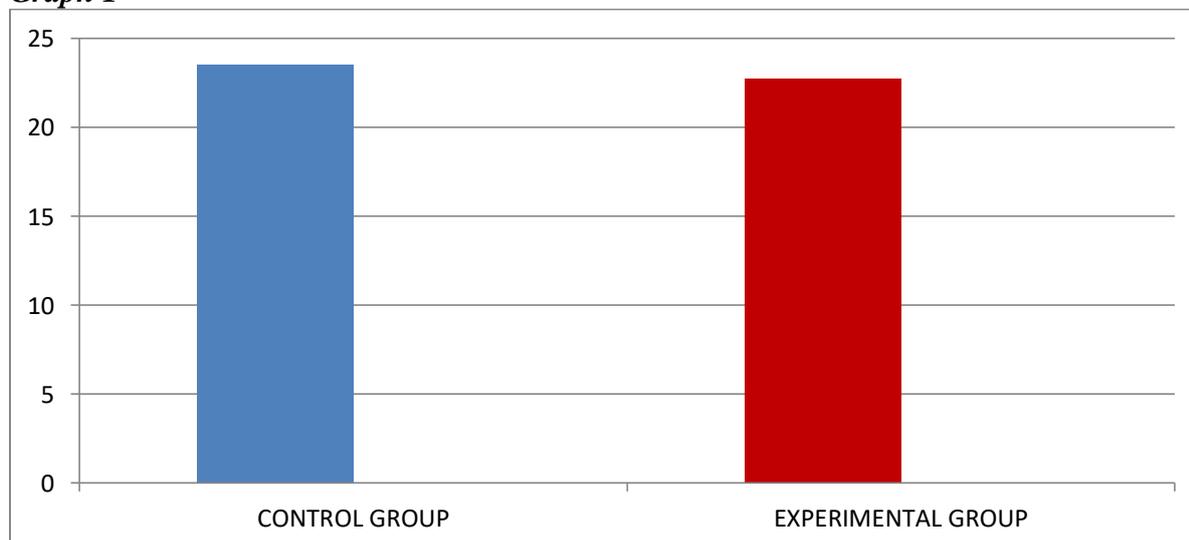
1. Windup session
2. Discussion
3. Feedback

DATA ANALYSIS AND INTERPRETATION

Table 1 Comparison of Pre Test Values of Control and Experimental Group

GROUP	TEST	MEAN	SD	'p' value	't' value
Control Group	Pre-test	23.533	3.461	0.5868	0.5498
Experimental Group	Pre-test	22.734	4.449		

Graph 1



Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

Table I and Graph I shows comparison of pre test values of control group and experimental group score mean values are 23.53 and 22.73 respectively. The calculated unpaired 't' test value is 0.5499 and 'p' value is 0.5868 which is >0.05 shows it is not statistically significant and there is no significant difference between group.

Table 2 Comparison of Post Test Values of Control and Experimental Group

GROUP	TEST	MEAN	SD	'p' value	't' value
Control Group	Post-test	23.4	3.247	0.0037	3.166
Experimental Group	Post-test	19.133	4.086		

Graph 2

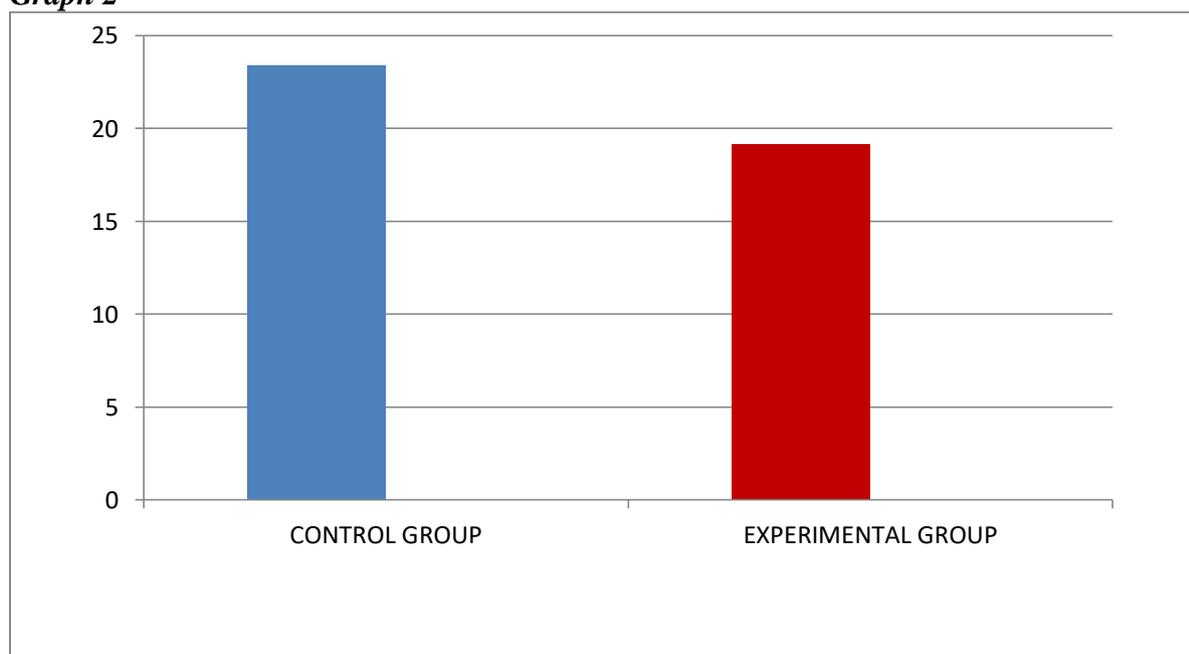


Table 2 : Graph 2 shows comparison of post test values of control and experimental group score mean values are 23.4 and 19.133 respectively, the unpaired 't' test value is 3.166 and 'p' value is 0.0037 which is lesser than 0.05 shows it is statistically significant and the experimental group has significant improvement.

Table 3 Comparison Of Pre And Post Test Values Of Control Group

GROUP	TEST	MEAN	SD	'p' value	't' value
CONTROL GROUP	Pre-test	23.533	3.461	0.4985	0.6948
	Post-test	23.4	3.247		

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

Graph 3

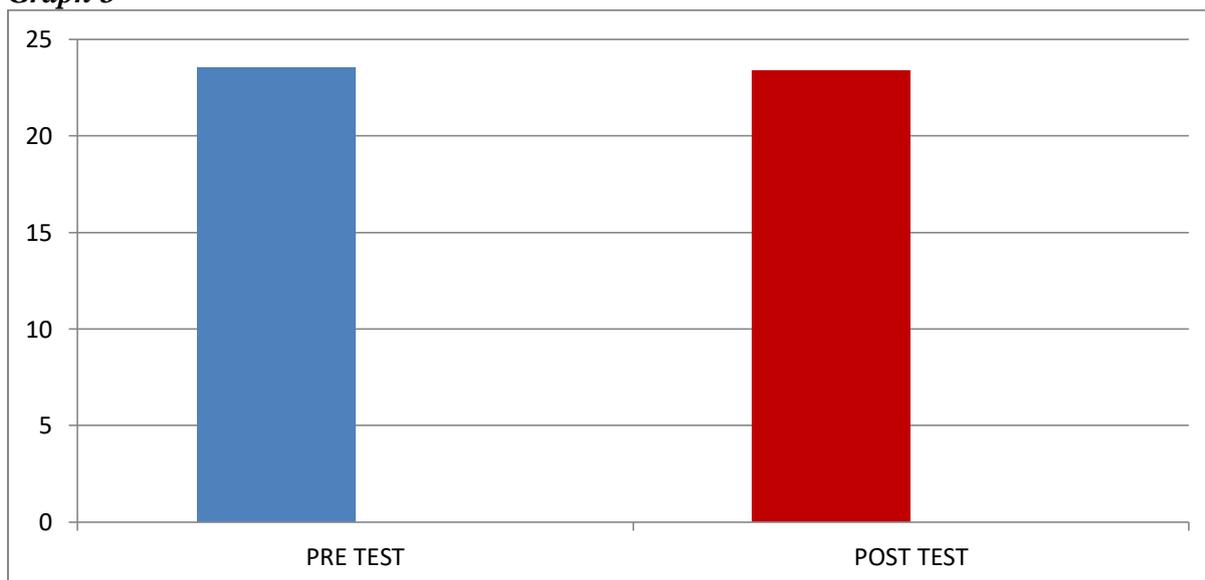
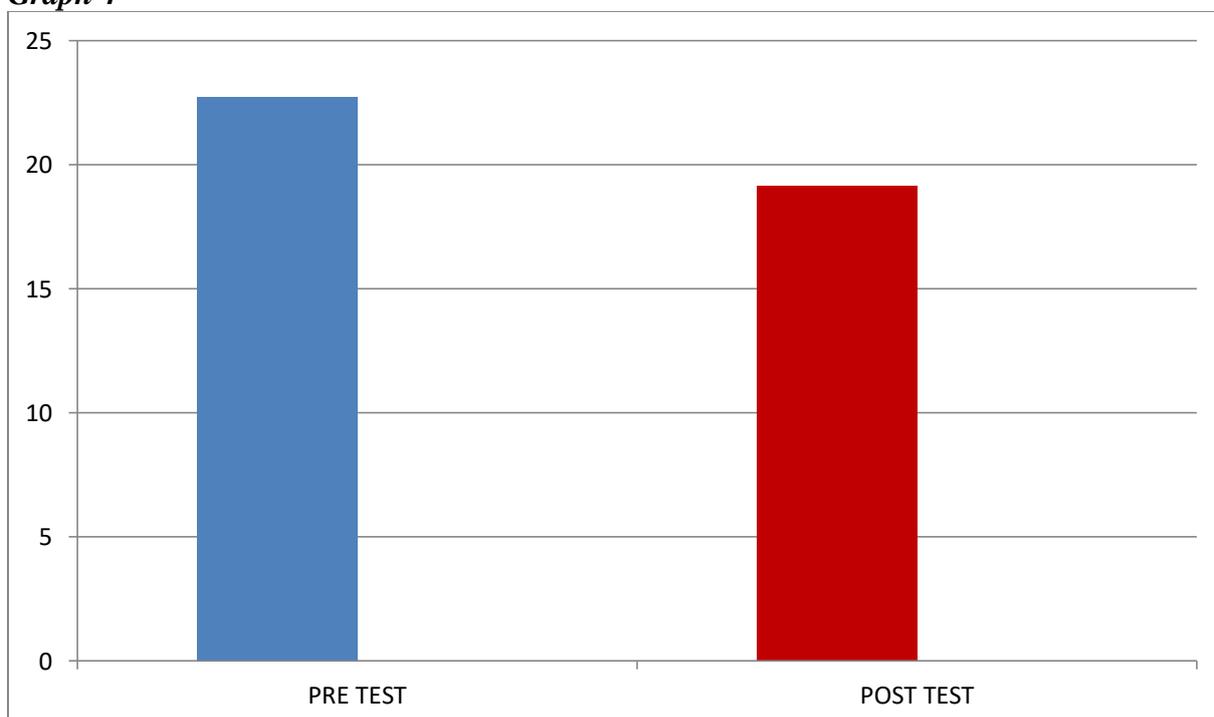


Table 3 : Graph 3 shows comparison of control group pre and post test score mean values are 23.533 and 23.4 respectively, the paired ‘t’ test value is 0.6948 and ‘p’ value is 0.4985 which is greater than 0.05 shows it is not statistically significant and there is no significant between pre and post test values of control group.

Table 4 Comparison Of Pre And Post Test Values Of Experimental Group

GROUP	TEST	MEAN	SD	‘p’ value	‘t’ value
EXPERIMENTAL GROUP	pre-test	22.734	4.448	<0.0001	12.435
	Post-test	19.133	4.086		

Graph 4



Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

Table 4: Graph 4 shows comparison of experimental group pre and post test score mean values are 22.734 and 19.133 respectively, the paired 't' test value is 12.435 and 'p' value is <0.0001 which is less than 0.05 shows it is statistically significant and the experimental group has significant improvement.

DISCUSSION

This study was centered on exploring the effect of mindfulness based occupational therapy activities program among college students to reduce binge eating behavior. This study was conducted in hostel setting focusing on college students for duration of 1½ months. The subjects were selected using convenient sampling method. In this experimental study, 30 subjects were involved, out of which 15 subjects were grouped under experimental and 15 subjects under control group. The researcher obtained verbal consent from the clients for the treatment and to use their data for assessment and to measure the outcome of the intervention.

The age group of the participants selected for the study ranged from 19 years and above. The patient in the experimental group and control group were screened using Binge Eating Scale (BES).

To identify the subject's binge eating behavior by the administration of Binge Eating Scale (BES). The client with (<17 total score) indicates minimal, (18-26) indicates moderate and (>27) indicates severe binge eating problem.

The duration of the intervention was 60 minutes per session for 12 sessions. The treatment followed according to the protocol. The groups were subjected to post-test using Binge Eating Scale (BES) to evaluate the outcome following the intervention. This intervention also supported by Botha E, Gwin T, Purpora C.,(2015). They conducted intervention for 8 week program, weekly 2 and half hours and one day long retreat for 6 hours.⁽¹²⁾

In **Table 1** the unpaired 't' test was done between control and experimental group and it signifies that there is no significant difference between the pre-test scores of control and experimental group. The 'p' value of experimental and control group during the pre-test on Binge Eating Scale is 0.5868 and 't' value is 0.5498 and mean values are 23.533 and 22.733 respectively. This indicates the experimental group and control group were homogenous and can be compared for the study.

In **Table 2** the unpaired 't' test was done between control group and experimental group and it shows there is a significant difference in the scores of experimental group than the control group following the intervention. The post-test scores of binge eating of experimental group on Binge Eating Scale (BES) shows significant improvement in reducing binge eating behavior. The mean values are 23.4 and 19.133 respectively and the evaluated 't' value is 3.166 and 'p' value is 0.0037 which is >0.05. This study was also proved by Botha E, Gwin T, Purpora C.(2015). The objective of this review is to identify the effectiveness of mindfulness based program in reducing stress experienced by nurses in adult hospitalized patient care setting. The MBSR program is an educationally based program that focuses on training in the contemplative practice of mindfulness. It is an 8 week program, weekly 2 and half hours and one day long retreat for 6 hours. Researchers have demonstrated that mindfulness intervention can effectively reduce stress, anxiety and depression in both clinical and non clinical population.⁽¹²⁾

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

A better improvement in eating behavior was shown by most individuals during the activities of collaging, montage, healthy discussions about the normal and abnormal eating habits etc., Most of the individuals exhibits normal eating behavior and reducing the abnormal eating pattern during the last days of intervention. The peer support plays important role in resuming the activities at hostel during the intervention period.

In **Table 3**, the paired 't' test was done in control group, the result signifies that the control group had no significant difference in the pre-test and post-test scores. The mean values are 23.533 and 23.4 respectively, 't' value is 0.6948 and 'p' value is 0.4985. This indicating that there is no change in binge eating level of college students in the control group.

In **Table 4**, the paired 't' test was done in experimental group, it shows a significant difference was indicated in the pre-test and post-test scores of experiment. The 'p' value is <0.0001 and 't' value is 12.435 and the mean values are 22.734 and 19.133 for Binge Eating Scale indicating the mindfulness based OT training is effective for college students in decreasing the binge eating behavior. The study was proved by Bernadette Pivarunas, B.S., et al., (2015) , the purpose of this study was to examine the relationship of dispositional mindfulness to binge eating and associated eating attitudes and behaviors among adolescent girls at risk for type 2 diabetes (T2D). Participants were 114 overweight or obese adolescents (12-17 years) enrolled in a study of girls with family history of T2D and mild depressive symptoms. Participants completed the reliable and well-validated 15-item Mindful Attention and Awareness Scale to measure dispositional mindfulness. Result shows the girls who reported recent binge eating (in past month) had lower mindfulness scores than those who did not report binge eating. Hence mindfulness based interventions has potential to alter adolescents eating attitudes and behaviors that promote excessive gain and T2D. ⁽¹¹⁾

The result study shows that experimental group improved better than control group, While both experimental and control group showed significant improvement. It is stated in the study, Botha E, et al (2015). The effectiveness of Mindfulness based program in reducing stress experienced by nurse. (2015) ⁽¹²⁾

The study proves that the alternative hypothesis has better benefits in reducing binge eating behavior. Hence, In this behavior it states that the alternative hypothesis is accepted and rejects the null hypothesis.

CONCLUSION

From this results of the study, the researcher concludes that

1. Mindfulness based Occupational Therapy activities is an effective method of treatment for reducing the binge eating behavior among college students.

LIMITATIONS AND RECOMMENDATIONS

Limitations

1. Study was done in a confined age group.
2. Gender comparison was not done.
3. Small sample size included in this study affect the generalization of treatment.
4. The intervention was done for a shorter duration.

Recommendations

1. The study can be done with larger sample size.
2. The study can be done with Anorexia nervosa and Bulimia nervosa.

Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

3. Follow up can be recommended.
4. Study can be done with extended age limit.
5. The study can be repeated with comparison between genders.
6. The study can be repeated with comparison on other treatment techniques.

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Effect of Mindfulness Based Occupational Therapy Activities on Binge Eating Behavior among College Students

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Conflict of Interest

The author declared no conflict of interests.

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