

**BINGE EATING, BODY IMAGE  
DISSATISFACTION AND ANXIETY AMONG  
FEMALE ADOLESCENTS IN MALAYSIA**

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by

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## **LIST OF ABBREVIATIONS**

BAI	Beck Anxiety Inventory
BED	Binge Eating Disorder
BES	Binge Eating Scale
BID	Body Image Dissatisfaction
BMI	Body Mass Index
CDRS	Contour Drawing Rating Scale
EDE-Q	Eating Disorder Examination Questionnaire

## **LIST OF APPENDICES**

Appendix A Beck Anxiety Inventory (BAI)

Appendix B The Binge Eating Scale (BES)

Appendix C The Contour Drawing Rating Scale (CDRS)

Appendix D Disordered Eating Examination- Questionnaire (EDE-Q)

# **MAKAN BERLEBIHAN, KETIDAKPUASAAN IMEJ BADAN DAN KEBIMBANGAN DALAM KALANGAN REMAJA WANITA DI MALAYSIA**

## **ABSTRAK**

Makan berlebihan melibatkan pengambilan makanan yang sangat banyak dalam tempoh masa yang singkat disertai dengan perasaan kehilangan kawalan. Sejak usia yang muda, manusia membentuk persepsi tentang imej badan dan menginternalisasikan penilaian negatif terhadap tubuh seseorang yang mengakibatkan perasaan tidak puas hati terhadap imej badan. Kejadian ini paling kerap berlaku semasa remaja dan dalam kalangan perempuan. Ketidakpuasaan imej badan dicadangkan sebagai permulaan tingkah laku makan yang tidak teratur termasuk makan berlebihan. Kajian-kajian lepas telah menunjukkan bahawa gejala kebimbangan adalah tinggi di kalangan individu yang makan berlebihan kerana mereka makan berlebihan untuk mengurangkan "mood buruk" atau kesan negatif. Walau bagaimanapun, proses makan berlebihan selalu dikaitkan dengan pengurangan kebimbangan, terutamanya di kalangan individu yang mengalami gangguan makan gelojoh (binge eating disorder). Oleh itu, kebimbangan boleh menjadi risiko untuk makan berlebihan, Selain itu, kesan selepas makan berlebihan boleh menimbulkan kebimbangan yang melampau dan kemudiannya sekali lagi mengakibatkan tingkah laku makan berlebihan untuk mengurangkan kebimbangan. Oleh itu, individu yang makan berlebihan nampaknya berada dalam sebuah lingkaran kebimbangan. Kajian ini membandingkan prevalens makan berlebihan antara remaja perempuan berumur 16 tahun dari dua jenis sekolah awam di Malaysia, sekolah kebangsaan dan sekolah jenis kebangsaan (aliran Cina). Selain itu, kajian ini mengenal pasti peranan kebimbangan dalam hubungan antara ketidakpuasaan imej badan dan makan berlebihan. Seramai 396 peserta menyelesaikan

laporan sendiri menilai kepuasan badan (ketidakpuasan), gejala makan berlebihan, ketidakimbangan dan makan tidak teratur. Mereka juga melaporkan ketinggian dan berat masing-masing. Tidak terdapat perbedaan yang signifikan dalam skor makan berlebihan antara pelajar dari kedua-dua jenis sekolah. Telah diperhatikan bahawa ketidakimbangan tidak menyederhanakan hubungan antara ketidakpuasan imej badan dan makan berlebihan. Selain itu, ketidakimbangan merupakan pengantara (mediator) yang signifikan dalam hubungan antara ketidakpuasan imej badan dan makan berlebihan dalam kalangan pelajar sekolah kebangsaan tetapi tidak dalam kalangan pelajar sekolah Cina. Intervensi dan mekanisme yang lebih holistik harus dipertimbangkan dalam saringan sekolah untuk mendidik pelajar tentang isu makan berlebihan dan mengurangkan tahap ketidakimbangan yang berkaitan dengan atau akan membawa kepada makan berlebihan.

# **BINGE EATING, BODY IMAGE DISSATISFACTION AND ANXIETY AMONG FEMALE ADOLESCENTS IN MALAYSIA**

## **ABSTRACT**

Binge eating involves consuming an overwhelmingly large proportion of food in a short duration of time accompanied by a sense of subjective loss of control. Since a young age, humans form perceptions about their bodies and internalise negative evaluation of one's body which leads to body image dissatisfaction (BID) that occurs most frequently during adolescence and is more common among females. BID is suggested to be the onset of disordered eating behaviours including binge eating. Studies have shown that anxiety symptoms are high among individuals with binge eating overall as they binge eat to reduce "bad moods" or negative affect. However, research also demonstrates that the process of binge eating is associated with a reduction in anxiety, particularly among individuals with binge eating disorder. Anxiety may thus serve as a risk for binge eating. Meanwhile, the after effects of binge eating may further create more anxiety which then again compel the anxiety-reducing behaviour of binge eating. Thus, individuals who binge eat seem to be in a vicious downward spiral of anxiety. This study compared the prevalence of binge eating between 16-year-old girls from two types of public schools in Malaysia, national schools, and Chinese-medium schools. Additionally, this study identified the role of anxiety in the relationship between BID and binge eating. A total of 396 participants completed self-reports assessing body satisfaction (dissatisfaction), binge eating symptoms, anxiety and disordered eating. They also reported heights and weights. There was no significant difference in binge eating scores between students from the two types of schools. It was observed that anxiety did not moderate the relationship

between BID and binge eating. However, anxiety was observed to be a **significant** mediator of the relationship between BID and binge eating among national school students but **not** among Chinese-school students. Interventions and holistic coping mechanisms should be included in school screening to educate students on binge eating and reduce anxiety levels associated with or leading to binge eating.



# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

Since young, humans begin to form thoughts about their body figures. Some kids worry about their weight as early as five years old (Abramovitz & Birch, 2000). Many would absorb messages about their bodies from an early age that could result in either a positive or negative body image. If one feels positively about their body image, one will adopt a more appreciative acceptance of their bodies (Tylka & Wood-Barcalow, 2015). On the other hand, a person who has negative body image will usually have a negative subjective evaluation of his or her physical body (Stice & Shaw, 2002) which leads to body image dissatisfaction (BID). Previous studies have suggested that more than 80% of individuals feel distressed about their bodies as compared to those who are positive about their body images (Khor et al., 2009; Soo et al., 2008). The probability of experiencing BID increases across childhood and into adolescence. Although BID occurs in males and females, as well as all stages of life, BID begins developing when an individual enters adolescence (Rohde et al., 2015) and is more prevalent in females.

The important predictors of BID are an individual's body mass index (BMI) and body weight (Gardner et al., 2012). Social cues from peers, family, the media, and society as a whole have a big impact on men and women alike, and these cues may be crucial in forming body image standards for attractiveness and beauty (Mellor et al., 2009; Uchôa et al., 2019; Xu et al., 2010). Moreover, an individual would internalise body shapes and sizes that are unattainable as “ideals” and “sexual” after being

exposed to these body images that are always portrayed in Western popular culture since they are young (Chrisler, 2010).

BID is often associated with high levels of stress, impaired physical and psychosocial quality of life (Griffiths et al., 2017). BID also predicts low self-esteem level and negative feelings among teenagers (Paxton et al., 2006). BID might lead to unhealthy behaviours including regular smoking (Kaufman & Augustson, 2008) and unsafe sexual behaviours (Schooler, 2013).

Indeed, BID has been demonstrated to predict eating pathology. Disordered eating is an array of unhealthy eating habits such as not eating regular meals, dieting and then uncontrollable bingeing (Fitzsimmons-Craft et al., 2016) and ways to lose weight, that will negatively impact psychological health and the normal functioning of the body (Mazubir et al., 2020). Many studies on disordered eating, body image dissatisfaction, and attractiveness have been conducted in western countries. (Boschi et al., 2003; Croll et al., 2002; Jones & Rodin, 2002; Tomori & Rus-Makovec, 2000). However, Asian women are observed to be just as susceptible to disordered eating behaviours. When compared to students from college in the United States, Korean and Chinese college women are suggested to have greater BID (Chen et al., 2021; Jung et al., 2009; Jung & Forbes, 2006).

If disordered eating is not treated in time, it could lead to eating disorders (Chong et al., 2017). Anorexia nervosa, binge eating disorder (BED), and bulimia nervosa are the three most prevalent eating disorders. Among them, the rampant form of eating disorders is BED (Marzilli et al., 2018). Recurrent binge eating episodes, which occurs when a person eats more than what average individuals would usually

eat during a specific time while feeling out of control is a key behaviour to BED (American Psychiatric Association, 2013). International research has reported that in general, 13% of male adolescents and 26% of female adolescents had at least one binge eating episode in the past 12 months (Marzilli et al., 2018). Studies have also suggested that clinically significant binge eating disorder were reported by more women than men (Rosenbaum and White, 2015).

There are several adverse outcomes that are associated with binge eating including the early onset of obesity, constant weight change, BID and mental disorders (Satghare et al., 2019). Anxiety is one aspect of negative affect that might be especially strongly linked to binge eating (Rosenbaum & White, 2015). However, when an individual binge eats to reduce anxiety, anxiety might then act as a potential trigger for binge eating (Rosenbaum & White, 2015). Individuals with BED seem to be in a vicious downward spiral of anxiety.

In Malaysia, mental health is an issue that is slowly gaining attention, but still insufficient. Mental health problems are still heavily stigmatized in this country (Hanafiah & Van Bortel, 2015), and yet mental health problems are on the rise. In 2017, a survey on adolescents' mental health in Malaysia reported that 17.7% female and 18.9% male youth between the ages 13 to 17 were depressed. In the same age group, 42.3% females and 37.1% males were reportedly anxious (NHMS, 2017).

Adolescence poses a high risk for onset of many psychiatric disorders including eating disorders (Volpe et al., 2016), depression and substances use disorder (Rao et al., 2000). Pubertal changes frequently start to clash with ideals of the body promoted by the media (Ata et al., 2011). Additionally, this is the period when worries

about one's body image that could later lead to eating disorders first surface (Berger et al., 2009).

Most adolescents spend a significant amount of time at school; thus, it is vital to examine the effect of study environment on adolescents who are also students. Most students in Malaysia are enrolled in public schools, funded by the government. Parents have the choice of sending their children to Malay-medium national schools (SK) or vernacular schools or as known as non-Malay-medium national-type schools (SJK). Parents also have the choice of sending their children to private or international schools, but unlike public schools, school fees are borne by parents or the families.

One of the major differences between a national and a non-Malay-medium national-type school is the medium of instruction. In national schools, the primary language of instruction is Malay, while students in national-type schools receive instruction in their mother tongues. The two types of a non-Malay-medium national-type school are Chinese-medium national school (SJKC) where the medium of instruction is Chinese-Mandarin and Tamil-medium national school (SJKT) whereby the teaching of Tamil is compulsory.

Chinese-medium schools are perceived to be more disciplined and more competitive (Ang, 2017) as compared to a national school. In addition to the language factor, students from a Chinese school are also shaped by the Chinese teaching system. Chinese schools' assessment culture and learning environment are deemed to be of high level of discipline (Tan et al., 2013). Tan and colleagues (2013) further elaborated that Chinese schools are said to have produced better students, especially in mathematics and the sciences due to their competitive learning environment. A

competitive school environment may induce not only competition in terms of academic but also pressure on achieving an outstanding (i.e., thin) body. Individuals who do well academically may also feel compelled to be “successful” in the weight domain (Yanover and Thompson, 2008). Young women who scored high on competitiveness also showed more symptoms of disordered eating (Striegel-Moore et al., 1990). Since BID and binge eating behaviours are more prevalent among females (Grabe et al., 2008; Marzilli et al., 2018) and usually begin during adolescence (Rohde et al., 2015), the study is conducted in all-girls secondary schools from both national schools and Chinese-medium schools.

Therefore, the current study aims to identify the prevalence of binge eating among secondary school students, between all-girls national schools and all-girls Chinese-medium schools. It is important to explore the link between BID and binge eating as well as the role of anxiety in the relationship between these two variables, especially among adolescents, in Malaysia. Binge eating is significantly related to several detrimental outcomes such as early onset of obesity, BID, recurring weight changes and psychiatric illnesses (Satghare et al., 2019). A deeper comprehension of the relationship between body image and the onset of disordered eating behaviours would better facilitate the development of primary prevention strategies.

## **1.2 Problem Statement**

In Malaysia, 87% of students among 2,050 adolescents aged between 11 to 15 years old expressed distress about their figures (Khor et al., 2009). Another study reported that a total of 87.3% out of 189 secondary school females, aged 15 to 17 years were reported to be unhappy with their own body figures and among them 35.4% binge

eat (Soo et al., 2008). This phenomenon indicated that BID most frequently develops during adolescence and is more common among females.

Additionally, it was suggested that 14% of 356 adolescents between the ages of 13 and 16 engaged in binge eating behaviour. 15.2% of the female participants and 12.5% of the male participants were found to have displayed binge eating behaviour. Overall, 14% of the total participants displayed a moderate to severe binge eating behaviour (Gan et al., 2018). 35.4% of participants in a cross-sectional study (189 secondary school girls, ages 15 to 17) reported binge eating behaviour (Soo et al., 2008).

As compared to Western countries, research on BID and binge eating behaviour among Malaysians is quite limited. These issues only started to gain academic attention in Malaysia since the late 2000s. There are only a handful of studies in Malaysia that investigate the relationship between the three variables (binge eating, BID and anxiety). Although much research had been conducted in the Western context investigating the association between BID, binge eating and anxiety, it is still unclear why some individuals binge eat when they are anxious as a coping mechanism while some individuals perceive binge eating as an approach to voice out pleasant feelings like elation or happiness. There is a need to understand the relationship between BID, binge eating and anxiety so that preventive measures can be taken, especially among adolescents in schools, to find a better way to express their emotions.

Anxiety has been identified by researchers as a negative emotion that may be especially strongly linked to binge eating (Rosenbaum & White, 2015). However, the high levels of anxiety symptoms, followed by binge eating episodes to reduce anxiety suggest that anxiety may increase the likelihood of binge eating (Rosenbaum & White,

2015). Furthermore, some researchers revealed some individuals binge eat as a way when they are anxious to cope with it (Brosf & Levinson, 2017).

Previous research has accumulated much evidence that binge eating behaviour often began during adolescence and is more common among females, and current statistics for Malaysian adolescents are still insufficient. Moreover, more studies on body image and binge eating behaviours should be carried out in Malaysia as this phenomenon indicates a worrying trend.

Gan and colleagues (2018) conducted a study to investigate the factors leading to binge eating among Malaysian adolescents. They observed a lower prevalence of binge eating among Malaysian adolescents (14%) compared to Brazilian counterparts (16.1%) (Borges et al., 2002) but higher than American adolescents (4%) (Skinner et al., 2012). In Selangor, it is reported that 4.1% adolescents reported binge eating behaviour (Sandanasamy et al., 2015). However, another a local study conducted in secondary schools found that 35.4% adolescents have binge eating behaviour, which is around six times of the previous study conducted in Selangor (Soo et al., 2008). The inconsistency in prevalence rates calls for more thorough research for future studies.

There is a lack in studies in Malaysia on the prevalence of binge eating among female the adolescents in the country. Currently, there are limited studies in Malaysia that investigated the difference in prevalence of binge eating between girls from national schools and Chinese-medium schools. Students from Chinese-medium schools are regarded as more competitive, which causes heightened anxiety levels and might lead to disordered eating behaviour including binge eating. An anxiety-provoking environment may induce not only competition in terms of academic but also

pressure on achieving the “ideal” body that might lead to BID and binge eating as a coping mechanism. Furthermore, different schools provide a different study environment as well as different learning experiences for the students. Therefore, there is a need to conduct a study to examine the relationship between BID, binge eating and anxiety and at the same time, study the difference in prevalence of binge eating among students from different schools and learning environments.

### **1.3 Research Questions**

1. What is the prevalence of binge eating among secondary school students (16 years of age) between all-girls national schools and all-girls Chinese-medium schools?
2. How does anxiety influence the relationship between body image dissatisfaction and binge eating?
  - 2a. Is anxiety a moderator between body image dissatisfaction and binge eating?
  - 2b. Is anxiety a mediator between body image dissatisfaction and binge eating?

### **1.4 Research Objectives**

This study aims to identify the prevalence of binge eating among adolescents in Malaysia as well as determining how anxiety influences the relationship between BID and binge eating.

Specifically, the objectives of the study are:



1. To compare prevalence of binge eating among secondary school students (16 years of age) between all-girls national schools and all-girls Chinese-medium schools.

2. To determine how and if anxiety influences the relationship between BID and binge eating.

2a. To identify if anxiety is a moderator between body image dissatisfaction and binge eating.

2b. To identify if anxiety is a mediator between body image dissatisfaction and binge eating.

3. To determine how and if anxiety influences the relationship between BID and disordered eating.

2a. To identify if anxiety is a moderator between body image dissatisfaction and disordered eating.

2b. To identify if anxiety is a mediator between body image dissatisfaction and disordered eating.

## **1.5 Significance of Study**

The number of adolescents in Malaysia who are discontent with their bodies are worrying. Some of them also reported to have experienced binge eating episodes. However, there is an inconsistency in prevalence rates of binge eating behaviours

among adolescents in Malaysia. Therefore, this study investigated the prevalence of binge eating among students from all-girls secondary schools. The study was conducted in national schools and Chinese-medium schools to identify if there was a difference in prevalence level between both types of schools.

The strong associations between binge eating, BID and anxiety should be further investigated to understand how they are related to one another, specifically. The present study addresses the challenges in data collection within Malaysia, including the lack of reporting on the importance of anxiety in predicting the correlation between BID and binge eating. By conducting the study in Chinese-medium schools and national schools, which are two distinct categories of schools in Malaysia, the current study presents a unique opportunity to identify if and how a competitive and anxiety-provoking environment influences the relationship between BID and binge eating behaviours.

Finally, this study also adds value towards existing literature as it would be the first study in Malaysia to investigate if anxiety moderates or mediates the association between BID and binge eating, especially among female adolescents. By understanding the relationship between these three variables, better intervention programs can be designed and conducted to address these problems that often persist into adulthood.

## **1.6 Research Scope**

The scope of the current study is to investigate the correlation between anxiety, binge eating, and body image dissatisfaction. among female 16 years old secondary school students in Malaysia. Study participants will be recruited from all-girls national and Chinese-medium schools in Penang, Malaysia. Research assessments will be conducted online on the Google Forms platform.

## **1.7 Conceptual Definitions on Study Variables**

The study variables are conceptualized below:

### **1.7.1 Adolescents**

The World Health Organisation (WHO) defines adolescents as those who are between the ages of 10 and 19. Adolescence is a period of dramatic, concurrent changes in an individual's social, physical, sexual and psychological development that denotes the transition from childhood to adulthood (World Health Organisation, n.d.).

### **1.7.2 Binge Eating**

Binge eating is characterized by individuals who feels that they are out of control when eating and consuming more than normal individuals would in a given period of time (American Psychiatric Association, 2013). Previous research revealed that between 10% to 40% of kids and adults have experienced binge eating episodes (Bertoli et al., 2016; Salas-Wright et al., 2019). Recurrent episodes of binge eating is

one of the major behavior that leads to binge eating disorder (American Psychiatric Association, 2013).

### **1.7.3 Body Image**

Body image is defined by how a person pictures themselves in their minds or how their bodies look when they see themselves in the mirror. It encompasses an individual's perceptions of their own appearance, encompassing past memories, assumptions, and generalization in addition to emotions about their physical attributes such as their capacity to control their body when they move, their bodily sensations as well as their physical experiences (National Eating Disorders Association, 2018).

### **1.7.4 Anxiety**

Anxiety is characterized by feelings of tension, concerned thoughts, and bodily changes such as elevated blood pressure (American Psychiatric Association, 2022)

### **1.7.5 School Environment**

Generally, students spend around six hours a day in school. On days where students have extra co-curricular activities, they might spend more than eight hours, which is one third of their time in a day, in school. It is important to note that the learning environment shapes a person, shaping preferences, passions, beliefs as well as actions. There are two mainstream schools in Malaysia- national schools and vernacular schools. The syllabus and examinations taken are the same. The only difference is that it is compulsory for students from vernacular schools to learn their

mother tongues. For example, in Chinese-medium schools, it is mandatory for students to learn mandarin and in Tamil-medium schools, students are required to learn Tamil.

#### **1.7.5(a) National Secondary Schools**

National secondary schools, or Sekolah Menengah Kebangsaan (SMK), are public secondary schools, where Bahasa Malaysia is the primary language of instruction. In national secondary schools, subjects are being taught in Bahasa Malaysia and English. National secondary schools are attended by students from different races including Malay, Chinese and India.

#### **1.7.5(b) Chinese- Medium Schools**

The national-type secondary schools, or Sekolah Menengah Jenis Kebangsaan (SMJK), are a subset of the public secondary schools. Students at Chinese- Medium Schools are mostly make up of Chinese as the language is their mother tongue. However, lately, more parents of other races have been enrolling their children to Chinese-medium schools, better known as vernacular schools.

### **1.8 Operational Definitions on Study Variables**

The four main study variables are body image dissatisfaction, binge eating, anxiety and school setting.

#### **1.8.1 Adolescents**

In this study, adolescents are operationalized as 16-year-old secondary school (Form 4) students.

### **1.8.2 Binge Eating**

The term "binge eating" refers to eating excessive amounts of food in a short period of time when one is unable to control oneself. To assess binge eating, two scales will be administered – Binge Eating Scale and Disordered Eating Examination-Questionnaire. Binge Eating Scale is a questionnaire to understand the participant's behavioural manifestations and after a binge episode. As for Disordered Eating Examination-Questionnaire, an individual's self-control, bulimia, concerns about eating, body image issues, and weight issues will be examined.

### **1.8.3 Body Image Dissatisfaction (BID)**

The definition of BID is the negative concerns about an individual's weight and shape. To measure BID, the Contour Drawing Rating Scale will be used to determine one's impression of their body size as well as their body size satisfaction levels in general. The difference between the desired and current sizes will be used to identify if the participants are content with how their bodies look in general. A positive discrepancy score implies that participants would want a bigger body size whereas a discrepancy score of 'zero' implies that participants' desire to have a larger body size. Participants who have a discrepancy score of "zero" want to maintain their current body size, while those who have a negative score want to lose weight.

### **1.8.4 Anxiety**

Anxiety is an emotion that is often characterized by feelings of tension and worry as well as increase in blood pressure. The Beck Anxiety Inventory (BAI) will be administered in the study. The BAI contains 21-items that measure self-report

symptoms of anxiety. The four-point Likert scale is used to assess an individual's physical and cognitive anxiety for the past seven days. The total score was calculated by summing up responses of the 21 items. A score between 0 to 21 indicated low anxiety level, between 22 to 35 indicated moderate anxiety level and a score of 36 and above. The maximum possible score on the BAI was 63.

#### **1.8.5 School setting**

A school is a place where students get educated. In this study, the school setting is operationalized by two-types of schools, which are national schools (SMK) and Chinese-medium schools (SMJK).

## **CHAPTER 2**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter focuses on defining the variables of the study which are BID, binge eating, anxiety and adolescence. The chapter starts by explaining the definition of binge eating as well as binge eating disorder. The chapter then explains the relationship between binge eating and its relationship with disordered eating and eating disorders before providing an alternate view that binge eating might be a coping mechanism. The chapter then dive into the effects of binge eating and an overview of existing research on binge eating behaviours in Malaysia. The relationship between binge eating and BID is explored. The chapter explains the definition of body image and at what age it first starts before defining BID, its triggers, and consequences. The lack of BID research in Asia is addressed. The chapter then proceeds to discussing the association between binge eating and anxiety. Next, the chapter discusses adolescence. The theoretical framework, conceptual framework and research hypotheses of the current study are presented at the end of this chapter.

#### **2.2 Binge Eating**

According to American Psychiatric Association in 2013, binge eating occurs when individuals eat more than they usually would in a specific amount of time while feeling out of control. Between 10% to 40% of children and adults suffer from binge eating (Bertoli et al., 2016; Salas-Wright et al., 2019). Binge eating is an important predictor of obesity and elevates the risk of several biological (malnutrition or metabolic



syndrome) and psychological (depression) illnesses. Binge eating is primarily caused or reinforced by reduced executive function, increased food cravings, poor decision making as well as impulsive personality traits (Yu et al., 2022). Recurrent binge eating episodes is one of the key behaviours leading to binge eating disorder (BED) (American Psychiatric Association, 2013).

### **2.3 Binge Eating Disorder (BED)**

As recognized in Diagnostic and Statistical Manual of Disorders, Fifth Edition (DSM-5), a diagnosis of BED can only be made in response to recurrent episodes of abnormally high food intake without compensatory behaviours, coupled with a subjective experience of extreme distress and feeling out of control. BED was initially listed as an Eating Disorders Not Otherwise Specified (EDNOS) subtype in the appendix of the Diagnostic and Statistical Manual of Disorders, Fourth Edition, Text Revision (DSM-IV-TR). The previous DSM-4 set the criteria of BED to experiencing binge eating episodes twice a week for six months to at least once a week for three months. The most common type of eating disorders is BED (Marzilli et al., 2018). According to earlier studies, 2% of women worldwide are thought to engage in binge eating consistently (Omar & Che Bakar, 2008). Among all racial and ethnic groups in the United States, binge eating is thought to be the most prevalent eating disorder (Hudson et al., 2007; Taylor et al., 2007). Furthermore, Field and colleagues in 2012 reported a BED prevalence of 2.5% among 8594 female adolescent girls, which peaked between the ages of 19 and 22 and tended to rise during development.

## **2.4 Binge Eating and its relationship with disordered eating**

Disordered eating is an array of unhealthy eating habits such as not taking meals regularly, strict control over diet and eating more than usual compulsively (Fitzsimmons-Craft et al., 2016) and behaviours to lose weight which could lead to negative impact on mental as well as physical health (Mazubir et al., 2020). Disordered eating is a serious public health concern that requires attention as it leads to dangerous consequences to both physical and mental health. An individual who has disordered eating behaviors might experience an increase in weight, become obese, and has poor eating habits, in addition to psychological issues such as tiredness, anxiety, and depression (Chong et al., 2017).

The National Eating Disorder Association (NEDA) stated in 2008 that disordered eating is harmful to an adolescent's cognitive growth, behaviour, and academic performance, lacks particular nutrients, and is at a higher risk of illnesses. Individuals who suffer from disordered eating usually pay a lot of attention to food and their weight (Aparicio-Martinez et al., 2019), and this might lead to unhealthy or maladaptive eating behaviors, such as restricting or bingeing and/or purging (Reba-Harrelson et al., 2009). Of those with eating disorders, 16% overindulge in food, 20% purged by vomiting, and 61% restraint their food intake (Harris et al., 2018).

### **2.4.1 Factors leading to disordered eating**

Disordered eating might be caused by several factors including behavioural, psychological, the society, cultural, and demographics background such as family, personality traits, socioeconomic status, and gender (Thatcher & Rhea, 2003). An

individual's developmental biology including age, BMI and puberty are few risk factors that might lead to irregular eating habits (McCabe & Vincent, 2003). There is an increasing age trend among adolescents showing unhealthy eating habits. Students in Toronto, Hamilton, and Ottawa who are female and in school from 12 to 18 years old displayed irregular eating habits and this behaviour increase progressively throughout adolescents (Jones & Rodin, 2002).

Additionally, having weight issues such as being overweight or obese are predictors of disordered eating behaviours (Monir et al., 2010; Neumark-Sztainer et al., 2002). This group of individuals might feel compelled to lose weight, and adolescents who are overweight might engage in irregular eating behaviours when they tried to reduce weight (Golden et al., 2016). Normal-weight adolescents were observed to have disordered eating habits. Similar result was also reported in an earlier study which observed that 61% university students with healthy body weights want to lose more weight and hoped to be slimmer (Khawaja & Afifi-Soweid, 2004).

As for the psychological aspect, when someone feels unsatisfied with their appearance, some might engage in body change behaviours which include strategies in losing weight (Mellor et al., 2010) by going on an extreme diet and purging, as well as excessive exercise. Additionally, when a person is fearful of being negatively evaluated by others, he or she might adopt strategies to change their appearance, such as engaging in abnormal eating behaviors and exercising excessively (Coles et al., 2006). To achieve an ideal body shape, some individuals might try out fad diets and indulge in behaviours that is dangerous for their health (Tiggemann, 2001). However, those who start dieting might not be overweight, they might be normal weight, and some are in fact, even underweight (Emmons, 1994).

Furthermore, self-esteem is negatively impacted by having a negative body image, which is suggested to be an important risk factor leading to disordered eating behaviours (Soo et al., 2008). Being unhappy with one's physical appearance has been found to be one of the most powerful and easily replicable risk factors for disordered eating patterns (Stice et al., 2017), which lead to eating disorders (Chong et al., 2017; Khor et al., 2009), especially among adolescents (Soo et al., 2008). Moreover, when one has emotional problems, they are at a higher risk of displaying disordered eating habits (Gan et al., 2011). Another study revealed that having difficulties in regulating emotions lead to eating uncontrollably, which will trigger disordered eating behaviours (Prefit & Szentagotai-Tatar, 2018).

The three main sources of sociocultural factors that lead to disordered eating are family, peers and media (Soo et al., 2008). Individuals who are of a similar age group usually share a common worry about body weight, restriction on certain foods, and desire for weight loss. Female aged 11 to 17 years old are influenced by their peers and desire to be thin and body image criticism was suggested to be correlated with BID and disordered eating attitude (Vincent & McCabe, 2000). When comparing one's body weight with the image of thin women in media, some are concerned about being thin and are dissatisfied with their current body weight, although they have normal and healthy weights (Pon et al., 2004). Wanting to be thinner, some might resort to skipping meals frequently or eating abnormally including weight cycling (yo-yo dieting) (Monir et al., 2010).

#### **2.4.2 Binge Eating leading to eating disorders**

If the symptoms of disordered eating are not treated in time, it could very likely trigger the onset of eating disorders (Chong et al., 2017), which involve distressing feelings or excessive concern about one's body shape or weight, along with serious eating behaviour disturbances like extreme and unhealthy food restriction or severe overeating (Chong et al., 2017). Anorexia nervosa, binge eating disorder, and bulimia nervosa are the three most prevalent eating disorders. An individual with bulimia nervosa experiences binges, or uncontrollably large meals, followed by purging activities such as self-induced vomiting, overuse of laxatives, or other methods to get rid of the food. When someone has anorexia nervosa, they may consume very little food or engage in intense exercise to burn it off, which can cause their body weight to drop dangerously. A person with binge eating disorder may find it upsetting to binge frequently, but they do not self-induce vomiting after eating (Barlow et al., 2016).

Obsession with food, weight, and shape are a few of the fundamental psychological issues connected to eating disorders. Patients with eating disorders have distorted perspectives on these problems and are excessively indulgent when it comes to controlling their food intake, body weight, and shape because they are so preoccupied with these psychological issues. (Omar & Che Bakar, 2008). Eating disorders may be a manifest of a psychosomatic illness, whereby emotional conflicts are expressed through physical symptoms. Stress, stressful events in life, and conflicts are the root causes of these emotional or psychological issues. Individuals who struggle with eating disorders frequently lack confidence and believe they are not 'good enough' to be in charge of their lives. (Omar & Che Bakar, 2008).

The strong cultural pressure to be thin directly leads to a lifestyle of dieting or restricted eating. Young Chinese women in urban areas have an eating disorder prevalence that is comparable to that seen in Western regions. Furthermore, over the past 40 years, eating disorders have become more common in China. (Chen et al., 2021). Dieting may not necessarily lead to eating disorders, but studies have suggested dieting increased the chances of developing an eating disorder (Polivy & Herman, 1993, 2002). After a period of starvation or prolonged dieting, the stress and anxiety caused by food restriction led to compulsive eating or binge-eating (Cottone et al., 2009).

Emotions, including love, happiness, feelings of power or rage and success are frequently communicated via food. Emotion and food are closely related because food frequently brings us comfort and satisfaction. Important occasions are usually celebrated and presented with elaborate and abundant food intake. Children have always been conditioned to associate love with food since an early age (Omar & Che Bakar, 2008). They cry to express their wants and food- such as milk and cereal brings comfort to them. As time goes on, they start to associate food with love, and when they stop eating, they start to feel less loved.

Children use food as a tool to be in control and as a means of manipulation of their parents. Some refuse to eat as a way of expressing their rage, displeasure, or protest towards their parents (Omar & Che Bakar, 2008). In general, food is often a coping mechanism for negative emotions like sorrow, boredom, anxiety, rage, guilt, frustration, and loneliness (Kuikka et al., 2001). There are hidden messages that underlie the emotional and psychological problems brought on by stress, traumatic life events, and interpersonal difficulties in eating disorders (Bulik, 2002; Iwasaki et al., 2000) Eating

disorders have been classified as psychosomatic diseases, in which emotional problems manifest as physical symptoms (Leary et al., 1995).

### **2.4.3 Binge eating as a coping mechanism**

Some individuals prefer to use food as a coping mechanism for their negative emotions. For individuals who do not have a healthy relationship with food, food might serve as a means of controlling and releasing unfavourable emotions. This would then lead to eating patterns that are disturbed, such as overeating. Overeating causes obesity and severely limiting food intake to reduce the gained weight might eventually lead to binge eating (Omar & Che Bakar, 2008).

Research has suggested that some individuals resort to binge eating as a coping mechanism when negative mood states arise. For example, female bulimics described how bingeing and purging are ways for them to run away from and let go of unpleasant feelings that are inside of them, such as guilt, shame, rage, depression, anxiety, and a sense of rejection, in a semi-structured interview (Jeppson et al., 2003). Moreover, binge eating has an instant regulatory effect on some individuals who are filled with negative emotions (Jeppson et al., 2003).

Some individuals resort to using binge eating as a coping mechanism or a cover up for the issues they are facing (Polivy & Herman, 1999). Masking theory proposes that some individuals binge eat to cover up other issues, not to lessen or get rid of a bad mood (Herman & Polivy, 1988). Masking theory states that an individual is able to deflect the distress by attributing it to the binge eating session, as opposed to confronting the emotional target head-on (Blackburn et al., 2006). According to Masking theory,

BE behaviour results from people's desire to blame BE for unfavourable events in their lives, which helps them escape the problem itself (Xi et al., 2023).

On the other hand, the escape theory claimed that binge eating is an attempt to "escape" from uncomfortable self-awareness and to focus instead on the physical environment or other stimuli, such as food (Heatherton and Baumeister, 1991). The need to avoid self-awareness led to binge eating behaviour. An intense sensitivity to the challenging (perceived) demands of others, having high standards and expectations are factors that led to binge eating. When these individuals do not live up to the high expectations, they experience unpleasant patterns of high self-awareness, which include negative self-perceptions and anxiety about how others see them. Emotional discomfort, frequently in the form of anxiety and despair, coexists with these adverse self-perceptions. To get out of this uncomfortable state, binge eaters tend to utilise the cognitive response of focusing only on the current stimuli environment and avoid having important thoughts. The reduce in focus reduces typical inhibitions around eating and encourages a complete acceptance of illogical thoughts and beliefs. Therefore, binge eating is frequently the consequences of an intentional attempt to avoid being self-aware (Heatherton and Baumeister, 1991).

However, there was also research that noted that positive emotions may also trigger binge eating as a means of expressing joyous emotions such as enthusiasm or pleasure (Heatherton & Baumeister, 1991). In fact, several studies conducted more than 40 years ago reported that binge eating reduced negative affect and brought pleasure to some. There is evidence to support the notion that binges are associated with a shift in negative affect. The process of binge eating was associated with both a dissociative experience and an altered state of consciousness as it results in a "blurred" memory and