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## Dispositional Mindfulness and Eating Behaviours: Conceptual and Clinical Considerations

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### ABSTRACT

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*Dispositional mindfulness is "a non-judgmental state of purposeful awareness that brings attention to the present moment and allows for recognizing and considering internal and external experiences without the pressure to alter the moment or take action". Eating behaviors are classified as restrained, emotional, and external eating. External eating alludes to uncontrollable eating when food triggers such as favourite snacks or sweets are present. Emotional eating is when a person consumes an excessive amount of food in response to negative emotions or negative psychological moods. Restricted eating results in a person eating less food or feeling guilty after eating as a result of being overly concerned with their body weight or shape. In this review, a literature search was performed on PubMed with the keywords "Dispositional Mindfulness" and "eating". Six out of the sixteen papers met the selection criteria. The literature shows that high dispositional mindfulness levels are related to reduced emotional and uncontrolled external eating irrespective of the clinical variables put in place by each study. The negative psychological mood was associated with reduced dispositional mindfulness, which led to an increased emotional and external eating rate. Substance abuse is another factor that leads to low dispositional mindfulness levels. High levels of dispositional mindfulness are related to frequent exercise and high sleep quality. The review demonstrates that interventions that promote dispositional mindfulness can be utilized to treat persons who engage in negative eating behaviours.*

## 1. Introduction

Extreme changes in eating behaviour can result in eating disorders such as binge eating disorder, anorexia nervosa, and bulimia nervosa (Carlson & Birkett, 2017). The most common eating disorder symptoms include restricted eating, increased exercise, and eating large quantities of food in a short period. The American Psychiatric Association's (2013) *Diagnostic and Statistical Manual of Mental Disorders (DSM-5®)* includes a category for adverse changes in eating behaviours that impair psychosocial functioning and physical health. Anorexia is a disorder in which individuals consume insufficient food to the point of starvation, and it can result in hospitalisation for being underweight or even death. Bulimia nervosa, on the other hand, is characterized by a loss of control over the amount of food intake, especially snacks and desserts in the afternoon or evening. Binge eating disorder is connected with consuming large amounts of food in a short period and with a loss of control overeating behaviour (Carlson & Birkett, 2017).

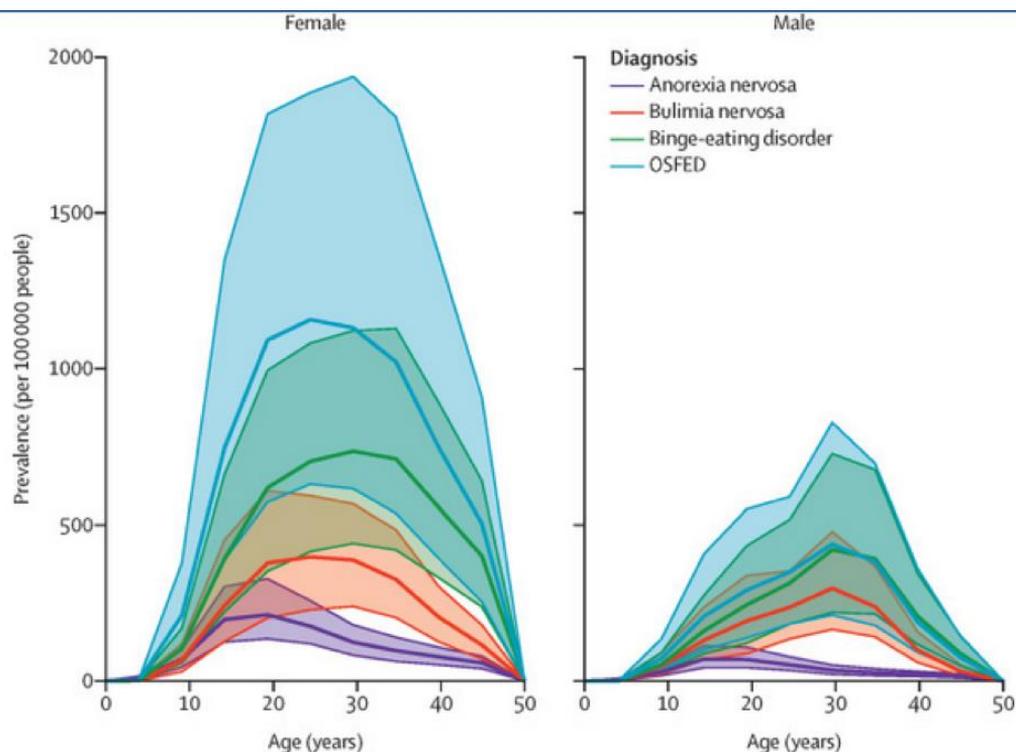
According to a systematic review by Galmiche, Déchelotte, Lambert, & Tavolacci (2019), the prevalence of eating disorders is higher among women (8.4%) than men (2.2%), and it has been on the rise worldwide. The incidence of eating disorders rose from 3.5% in the period of 2000 to 2006 to 7.8% between 2013 and 2018. The review comprised 94 studies from 2000 to 2018. Bulimia nervosa and anorexia nervosa were the only eating disorders identified in the Global Burden of Diseases, Injuries, and Risk Factors (GBD) 2019; however, binge eating is more widespread (Santomauro et al., 2021). Figure 1 below shows the prevalence of different eating disorders by age and sex, which supports the need for better intervention to improve the quality of life. Some interventions for eating disorders include pharmacological treatment, cognitive behavioural therapy, and alternative therapies (Carlson & Birkett, 2017). Other

therapies, such as mindfulness, have been utilised to help individuals manage their weight and associated eating patterns (Tapper, 2017).

According to Annameier et al. (2018), mindfulness denotes "a non-judgmental state of purposeful awareness that brings attention to the present moment and allows for the recognition and consideration of internal and external experiences without the pressure to alter the moment or take action." Mindfulness can be either developed through training or have dispositional traits and has been shown to improve individuals' physical health and psychological functioning through improved adaptive self-regulation such as enabling healthy eating, as demonstrated by the founder of the Centre for Mindfulness, Jon Kabat-Zinn. In theory, mindfulness should result in improved eating behaviours because individuals can pay attention to the present moment and identify and fail to react to internal and external hunger cues (Annameier et al., 2018).

Higher dispositional mindfulness is linked to less inception of emotions, for example, a hunger which may lead to emotional eating, and/or eating less in response to external cues like the composition of food instead of using body cues such as hunger (Ouwens, Schiffer, Visser, Raeijmaekers, & Nyklíček, 2015). Dispositional mindfulness makes individuals engage in healthy behaviour (Fanning, Osborn, Lagotte, & Mayberry, 2018). Some of the mental and physical advantages of high dispositional mindfulness include fewer cases of chronic pain, addictions, cancer treatment, lower cases of being overweight or obese, and low incidence of mental disorders such as depression and bipolar disorder (Guyot et al., 2018).

Individuals who tend to be alert and cognizant of things that happen in life are likely to have a more positive psychosocial profile and better life contentment than



**Figure 1.** A graph showing the prevalence of eating disorders: Anorexia nervosa, Bulimia nervosa, Binge-eating disorder, and other specified feeding and eating disorder (OSFED), from the global burden of disease 2019 by age and gender (Santomauro et al., 2021).

people who are less attentive and less aware of the things that happen around them. Lower levels of obesity and normal glucose levels are found in individuals with higher dispositional mindfulness (Guyot et al., 2018).

According to a study published in 2019 (Lucas-Thompson, Miller, Seiter, & Prince), dispositional mindfulness is connected with an enhanced response to stressful events. The study assessed dispositional mindfulness, cortisol and blood pressure levels, emotional reactivity, and stress in 150 teenagers. Dispositional mindfulness increased the cortisol reactivity, especially in stressful times. A systematic review by Tomlinson, Yousaf, Vittersø, & Jones (2018) also pursued to establish the linkage between dispositional mindfulness and an individual's psychological health. The review examined

93 papers published before June 2016, and it indicated that dispositional mindfulness is inversely proportional to psychopathological symptoms, for instance, anxiety and depressive symptoms. There was a favourable link between adaptive cognitive processes such as pain catastrophizing and greater emotional regulation and processing in comparison to individuals with low dispositional mindfulness. Other studies have found dispositional mindfulness to be positively related to high physical activity, quality sleep, and decreased alcohol cravings (Brisbon & Lachman, 2017; Schneider, Malinowski, Watson, & Lattimore, 2019; Szeto, Schoenmakers, van de Mheen, Snelleman, & Waters, 2019). This research will analyse the published literature about the relationship between dispositional mindfulness and eating disorders. The study will cover the various variables that influence

treatment outcomes in clinical settings. The literature on eating behaviours in individuals who display dispositional mindfulness will be reviewed to disentangle other variables that may be unaccounted for in clinical settings.

## 2. Materials and Methods

In this review, a literature search was conducted on PubMed® ('PubMed,' n.d.) using the keywords "Dispositional Mindfulness' and eating". There were no added filters, so the literature was from the journal's inception in 1996 through 2021. The published papers were evaluated for inclusion based on their abstracts. Duplicates, publications that included mindfulness training interventions, and papers that were not connected to eating behaviours or dispositional mindfulness were excluded.

Sixteen articles were identified during the literature search. The abstracts of the papers were scanned for selection and inclusion in this literature review. Only six of the sixteen papers met the selection criteria. One paper was omitted because it featured mindfulness training. Another paper was excluded due to duplication. The remaining seven studies were excluded because they did not demonstrate a direct relationship between dispositional mindfulness and various eating behaviours. Table 1 below summarizes the studies included in this review highlighting the scales used to measure dispositional mindfulness, eating behaviours, and clinical considerations in each study. The scales used to measure dispositional mindfulness and eating behaviours will be discussed in further depth.

## 3. Results and Discussion

**Table 1.** A table summarizing the studies included in this review indicating the scales used to measure dispositional mindfulness and eating behaviours and other clinical considerations in the studies.

Authors	Scale(s) used to quantify dispositional mindfulness	Scale(s) used to quantify eating behaviours.	Clinical Considerations
(Tak et al., 2015)	Five Facet Mindfulness Questionnaire – Short Form (FFMQ-SF)	Dutch Eating Behaviour Questionnaire (DEBQ)	Depressive Symptoms Symptoms of Anxiety Diabetes-specific distress Diabetes-Related Clinical Variables
(Pivarunas et al., 2015)	Mindful Attention and Awareness Scale (MAAS)	Eating Disorder Examination Questionnaire (EDE-Q) (Overeating Section) Eating in the absence of Hunger Questionnaire for children and Adolescents Relative Reinforcing Value (RRV) for Food Task	Depression

(Fisher, Mead, Lattimore, & Malinowski, 2017)	Five Facet Mindfulness Questionnaire (FFMQ)	Three-Factor Eating Questionnaire (TFEQ – R18V2)	Difficulties in emotional regulation Habitual negative self-thinking
(Murphy, Mermelstein, Edwards, & Gidycz, 2012)	Mindfulness Attention Awareness Scale	Eating Attitude Test (EAT-26)	Exercise frequency Sleep quality Physical health
(Elmquist, Shorey, Anderson, & Stuart, 2017)	Mindful Attention and Awareness Scale	Psychiatric Diagnostic Screening Questionnaire (PDSQ) Eating Disorder Subscale	Substance Use
(Lattimore, Fisher, & Malinowski, 2011)	Kentucky Inventory of Mindfulness Skills (KIMS)	Three-Factor Eating Questionnaire 9 (TFEQ – R21)	Adverse psychological mood

### 3.1 Eating Behaviour and Dispositional Mindfulness

Tak et al. (2015) conducted a study on 3681 adults with type 1 or type 2 diabetes from the Diabetes Management and Impact for Long-term Empowerment and Success – Netherlands. 88% (3228) of the participants responded to the online questionnaires. The study aimed to determine the relationship between dispositional mindfulness and eating behaviour among people with type 2 diabetes. 666 participants were randomly selected to participate in the mindfulness module; males comprised 47% of the participants, with a mean age of 55 years ( $SD = 14$ ). They filled in the questionnaire for eating behaviour and mindfulness. Dispositional mindfulness was gauged by the 24-item Five Facet Mindfulness Questionnaire- Short Form (FFMQ-SF). The FFMQ-SF measures the five facets of mindfulness, including describing, observing, acting with awareness, being non-judgmental and non-reactive. The 24 items were measured using a five-point Likert scale, with a range from one (“*never or very rarely true*”) to five (“*very often or always true*”).

Participants with higher scores were more mindful than those with fewer scores.

Four items of the 24-item FFMQ-SF sought to understand the participants’ ability to notice or attend to external sensory experiences like smells. Five items of the 24-item FFMQ-SF sought the rate at which participants acted on autopilot compared to taking care of personal activities in the current moment. The participants’ ability to describe emotions and feelings was evaluated using five items on the 24-item FFMQ-SF scale. The capability to have a non-evaluative attitude towards one’s feelings and thoughts was assessed using five items on the 24-item FFMQ-SF scale. Finally, the last five items of the 24-item FFMQ-SF scale were used to evaluate the participants’ ability to permit thoughts and emotions to pass through them without becoming overwhelmed.

The Dutch Eating Behaviour Questionnaire (DEBQ) was used to assess eating behaviour. It consists of 33 items, the responses to which are graded on a five-point Likert scale ranging from one (“*never*”) to five (“*very frequently*”). Ten items in the 33-item DEBQ sought to measure participants’ restrained eating

behaviour. Ten items in the 33-item DEBQ measured external eating behaviour. Finally, the emotional eating behaviour was measured by the last 13 items of the 33-item DEBQ. Higher scores indicate issues with particular eating behaviour.

The study discovered a negative correlation between dispositional mindfulness and emotional eating. Participants who demonstrated a higher level of mindfulness were less likely to engage in emotional eating. The “describing”, “acting with awareness”, and “being non-judgmental” facets of dispositional mindfulness resulted in lower levels of emotional eating. Higher levels of dispositional mindfulness were also related to lower levels of external eating. The “acting with awareness” facet of dispositional mindfulness accounted for the negative correlation with external eating. Restrained eating behaviour was positively correlated with being mindful. Among the facets of dispositional mindfulness, “observing” and “being non-reactive” accounted for the positive correlation between mindfulness and restrained eating. However, the study established an inverse association between restrained eating and the ‘being non-judgmental’ facet of mindfulness. The study by Tak et al. (2015) had three major limitations: (1) data were collected via self-reporting, in which participants reported their beliefs about themselves rather than facts; (2) participants reported low levels of emotional stress, obviating the need to explain the association between mindfulness and eating behaviour; and (3) the cross-sectional design may have had flawed causality, in that a third variable may drive external eating habits and dispositional mindfulness. As a result, future research should focus on gathering real-time data in a prospective study and on the effect of emotional distress on mindfulness in a longitudinal study.

Fisher et al. (2017) conducted another study in which they employed the Five Facet

Mindfulness questionnaire to examine the association between motivating reward eating and participants’ dispositional mindfulness. The authors conducted an online cross-sectional survey with 632 individuals (457 females, mean age 34 SD = 14.2) from the UK, USA and Australia. The study measures uncontrolled eating behaviour and emotional eating behaviour through the revised 18-item version of the Three-Factor Eating Questionnaire (TFEQ-R18V2). Fisher et al. (2017) employed the TFEQ-UE subscale to assess individuals’ proclivity to overeat or lose control of their eating when exposed to food stimuli or while hungry. The TFEQ-EE subscale was used to measure the participants’ tendency to overindulge in food in response to adverse moods. The scores of each item were graded with a four-point Likert scale (“*definitely true/ mostly true/ mostly false/ definitely false*”). After converting the total scores to a scale of 0 -100, participants who scored high scores had severe uncontrolled eating behaviour or emotional eating behaviour. The study found that participants with higher dispositional mindfulness had lower tendencies of engaging in emotional eating or uncontrolled eating behaviour. Participants with meditation experience, who were determined by how often they meditated, were also found to have higher dispositional mindfulness. Some of the challenges included using self-reporting strategies to measure mindfulness when most people are not aware of their internal states and a challenge to differentiate between experienced and non-experienced meditators. Therefore, future studies should focus on determining how much meditation is sufficient.

A cross-sectional study conducted by Lattimore et al. (2011) using the Three-Factor Eating Questionnaire, sought to find the association between trait disinhibition and mindfulness and impulsivity. The study aimed to establish a link between dispositional mindfulness and trait disinhibition. The study evaluated 196

female psychology undergraduates for the study with 21 years as their mean age and 5.5 years as the standard deviation. The study used the short form of the Kentucky Inventory of Mindfulness (KIMS) to measure the participants' level of dispositional mindfulness. KIMS accesses three facets of mindfulness which include "accept or allow without judgment" (KIMS-AJ), "observing" (KIMS-O), and "acting with awareness" (KIMS-AA). KIMS-AJ evaluates participants' ability to experience the present moment judging it without trying to change or avoid or escape it. KIMS-O evaluates participants' ability to attend to bodily stimuli, including emotions, cognitions, and bodily sensations. KIMS-AA was used to determine an individuals' attention. The scores were rated using a five-scale Likert scale. Participants with high scores were more regarded as being more mindful than those with lower scores. Lattimore et al. (2011) found that greater propensities of uncontrolled eating and emotional eating behaviour were associated with lower scores in KIMS-AJ and KIMS-AA. High KIMS-O was positively correlated with uncontrolled eating behaviour, which is the trait disinhibition trait under study. Therefore, the study found a causal behaviour between eating behaviour and the level of mindfulness. The study was limited as it only used female students to draw the correlations and conclusions. A potential future research field would be to include male students in the study as well.

Mindfulness Attention and Awareness Scale is a method of measurement used by three studies incorporated in this review to measure participants' dispositional mindfulness. The scale makes no reference to mindfulness or meditation-specific language; hence can be used in the general population. It is a self-reporting scale containing 15 items with questions, such as "*I find myself doing most of the things without paying attention.*" The responses used are measured using a Likert Scale which ranges from 1 ("*almost always*") to 6 ("*almost never*"). The score is

evaluated by adding all the items and dividing the score by the number of items. Higher scores are associated with a higher level of dispositional mindfulness. MAAS identifies how mindful they are in their everyday lives without using specialized meditation or mindfulness vocabulary (Murphy et al., 2012).

The first study that used MAAS was conducted by Pivarunas et al. (2015) on one hundred and fourteen 12-17-year-old female adolescents at risk of developing type 2 diabetes from a T2D prevention trial. The study investigated the relationship between dispositional mindfulness and binge eating and the associated eating behaviours or attitudes. The mean age was 14.5 years (SD=1.61). Participants with a positive family history of type 2 diabetes, pre-diabetes, gestational diabetes, or a body mass index greater than the 85th percentile for their age were at increased risk of acquiring type 2 diabetes. The Eating Disorder Examination Questionnaire (EDE-Q), specifically the component on overeating, the Eating in the Absence of Hunger (EAH) Questionnaire for Children and Adolescents, and the Relative Reinforcing Value (RRV) for Food Task were used to assess eating behaviour. EDE-Q was administered by a qualified professional to gauge participants' eating concerns, shape concerns, eating restraint, and weight concerns. The EAH questionnaire was used to determine the frequency of EAH during the preceding week in response to boredom or fatigue/boredom. The RRV of Food Tasks was used to evaluate the reinforcing value of the participants' favourite snacks.

High levels of mindfulness were associated with decreased binge eating tendencies. There was a negative link between mindfulness and eating concern, but no significant correlation between shape concern, weight concern, or restraint eating. In addition, mindfulness was found to be adversely connected with EAH regarding fatigue or boredom. In terms of external cues,

the study discovered no correlation between dispositional mindfulness and EAH. Mindfulness was also inversely correlated with the RRV of their favourite snack. Similar to other studies discussed before, the study by Pivaruna et al. (2015) was hampered by its reliance on self-reporting techniques, which may not capture the entirety of dispositional mindfulness. Additionally, because the study sampled only females, the findings could not be generalised to the entire population. Thus, future research should focus on determining the extent to which mindfulness influences eating habits in people with Type 2 diabetes.

Murphy et al. (2012) conducted the second study in this review, which employed MAAS to assess dispositional mindfulness in 441 women who attended two sessions per week for five academic quarters at a medium-sized midwestern university. The purpose of this study was to determine the association between dispositional mindfulness and healthy behaviours and physical activity. The healthy eating behaviours included eating, exercise, and sleep. The participants had an average age of 19.06 years with a standard deviation of 3.55 years. What was their sex composition? How were they selected? The eating behaviour was evaluated using Eating Attitude Test (EAT-26). EAT is commonly used to measure symptoms and concerns associated with different eating disorders and overall eating patterns and behaviour. The EAT consists of 26 items that are rated on a Likert scale with a range of 1 (“*always*”) to 6 (“*never*”). Higher scores are linked to healthier eating attitudes and behaviours. The study concluded that high dispositional mindfulness was correlated with healthy eating behaviours. Meditation can be used to improve participants’ level of dispositional mindfulness. The limitation of the study was the homogeneity of the study population as it only included women, which limits the generalizability of the study. The short follow-up period represented by the two sessions was very short to determine causality; therefore, there is a need for

studies that offer longer follow-up periods and are more inclusive of the general population to enhance inclusivity and the generalizability of the results.

The third included study that used MAAS to measure dispositional mindfulness was conducted by Elmquist et al. (2017) on 152 men with a mean age of 41.5 years (SD = 10.1). The participants were recruited from a 12-step residential treatment program, which took between 28 and 35 days. The study sought to study the association between dispositional mindfulness and eating disorders among men with substance abuse disorders. Eating behaviour was evaluated using the eating disorder scale of the Psychiatric Diagnostic Screening Questionnaire (PDSQ). PDSQ is a 10 item subscale that can be answered either as yes (1) or no (0) if the item applies to their lives. The study found that dispositional mindfulness is significantly and inversely correlated with ED symptoms. Some of the limitations highlighted by the authors included the study’s cross-sectional nature, which assumed a temporal association between the variables. Therefore, future studies should implement more measures of dispositional mindfulness and longer periods and include diverse populations to aid in the generalizability of the results.

### **3.2 Clinical Consideration: Adverse Psychological Mood**

Four of the six articles explored one aspect associated with adverse psychological mood. Several of these clinical considerations include depression symptoms, anxiety symptoms, emotional regulation difficulties, and habitual negative thinking. Adverse emotions and moods can contribute to mood disorders, which impact 300 million people globally and diminish a person’s self-awareness (Deligianni, Guo, & Yang, 2019).

Three papers were included in this review to examine depressive symptoms (Lattimore et

al., 2011; Pivarunas et al., 2015; Tak et al., 2015). Tak et al. (2015) applied the Patient Health Questionnaire (PHQ-9) to quantify depressive symptoms among participants the last two weeks before they filled the questionnaire. The PHQ-9, a nine-item questionnaire, has responses that are rated using a four-point Likert scale that ranges from 0 (“*not at all*”) to 3 (“*nearly every day*”). Higher PHQ-9 scores show more severe depressive symptoms. Diabetic-specific distress and anxiety symptoms were other clinical considerations that could have caused adverse mood or emotional distress. Anxiety experienced in the past two weeks was gauged using the Generalized Anxiety Disorder Assessment (GAD-7). It is a 7-item questionnaire with the major symptoms of generalized anxiety. The existence of anxiety symptoms indicated using a four-point Likert scale ranging from 0 (“*not at all*”) to 3 (“*nearly every day*”). Higher GAD-7 is associated with severe anxiety symptoms. The Problem Areas in Diabetes Scale (PAID-20) measured distress associated with diabetes, such as guilt for not meeting treatment outcomes. Responses were graded using a five-point Likert scale with a range of 0 (“*not a problem*”) to 4 (“*serious problem*”). The total scores are translated to a 0-100 scale; higher scores directly correlate to higher distress specific to diabetes. Depression, anxiety, and distress specific to diabetes were found to increase emotional distress in the participants. High emotional distress was associated with increased emotional and external eating.

Lattimore et al. (2011) assessed emotional distress using a scale that gauges anxiety and depression; Hospital Anxiety and Depression Scales (HADS). HADS is commonly used to screen outpatients and the general population for anxiety and depression. It consists of 7 items for measuring anxiety and seven items for measuring depression. A 4-point scale was associated with grading the severity of the symptoms, with 0 being used for absence of symptoms, while a score of

four showed the maximum severity of symptoms. Lattimore et al. (2011) established that depression and anxiety were inversely related to an individuals’ level of dispositional mindfulness, which was linked with uncontrolled and emotional eating. Pivarunas et al. (2015) used the Centre for Epidemiologic Studies Depression Scale (CES-D) to gauge the severity of depressive symptoms among the participants. The study found that depression is negatively correlated with mindfulness, which was inversely associated with adverse eating behaviours.

Fisher et al. (2017) also examined negative self-thinking and problems in emotional regulation as other clinical factors. A difficulty in emotional regulation was gauged using a 36-item Difficulties in Emotion Regulation Scale (DERS). DERS measures the ability of participants to understand and accept their emotions while maintaining goal-oriented behaviour. The responses are graded using a five-point Likert scale (“*Almost never*”/ “*Sometimes*”/ “*About half the time*”/ “*Most of the time*”/ “*Almost always*”). Higher scores are associated with greater difficulties in emotional regulation. Fisher et al. (2017) also incorporated habitual negative self-thinking, gauged using the meta-cognitive Habit Index of Negative Thinking (HINT). HINT is a 12-item scale that measures how often negative self-thoughts, regardless of whether they occur unwittingly or are initiated unintentionally. Additionally, it determines whether the thought is difficult to regulate and difficult to control. Emotional eating was connected with increased negative thoughts and difficulty in regulating emotions.

### 3.3 Clinical Consideration: Underlying Medical Condition

The study by Tak et al. (2015) evaluated participants who had type 1 diabetes, type 2 diabetes (requiring insulin), and participants with type 2 diabetes (requiring no insulin). The study found that individuals with type 1

diabetes were younger, more educated, and likely to be employed. There were no major differences between the emotional distress of type 1 and type 2 diabetes. Individuals with type 1 diabetes had a significantly lower score than those with type 2 diabetes and insulin. Having a higher BMI, higher level of education, being female, being young, and having distress specific to diabetes was linked to high emotional eating, restrained eating, and external eating behaviours.

Elmquist et al. (2017) examined substance abuse problems using the Alcohol Use Disorder Identification Test (AUDIT) and the Drug Use Identification Test (DUDIT), respectively. AUDIT, a 10-item questionnaire, is designed to examine alcohol use problems for the past 12 months. DUDIT, on the other hand, is a 14-item questionnaire that seeks to identify drug use and related problems. The drugs examined include cocaine, cannabis, stimulants, opiates, hallucinogens, sedatives, hypnotics, anxiolytics, and other substances such as steroids. The study found that alcohol-use disorder was positively correlated with eating disorders.

### **3.4 Clinical Consideration: General Healthy Behaviours**

A study by Murphy et al. examined three general aspects of healthy behaviour: exercise frequency, sleep quality, and physical health (2012). Exercise frequency was determined using the Leisure-Time Exercise Questionnaire (LTEQ). The LTEQ assessed how frequently participants engaged in 15 minutes or more of intense, moderate, or gentle activity throughout a normal week. The exercise frequency was calculated by multiplying the hard exercise frequency by nine, then by multiplying the moderate exercise frequency by four, and finally by multiplying the mild exercise frequency by three. Higher scores showed higher exercise frequency. The study found no significant association between the

frequency of exercise and the participants' level of dispositional mindfulness.

Murphy et al. (2012) employed a three-item questionnaire to assess sleep quality. Each item was assessed on a five-point Likert scale ranging from 1 ("*strongly disagree*") to 5 ("*strongly agree*"). The first item assessed participants' satisfaction with the amount of sleep they had each night. The second item inquired whether participants felt rested upon awakening, while the final portion inquired whether they felt exhausted during the day. Increased dispositional mindfulness has been associated with improved sleep quality. The Cohen-Hoberman Inventory of Physical Symptoms was used to assess the participants' physical health (CHIPS). The questionnaire was completed by the participants using a Likert scale ranging from 0 ("*Not at All*") to 4 ("*Extreme*"). The CHIPS ratings were then reversed to ensure that higher scores indicated improved perceived physical health and the absence of physical health symptomatology. Physical health was positively connected with higher degrees of dispositional mindfulness.

Increased levels of dispositional mindfulness were linked to less external and emotional eating. Mindfulness can reduce impulsivity and behaviour automaticity, like maladaptive eating behaviour that leads to emotional and external eating behaviours (Lavender, Jardin, & Anderson, 2009). Additionally, mindfulness shifts attention inward, allowing individuals to focus on internal signs such as the absence of hunger, which can help individuals avoid overeating (Tak et al., 2015). By focusing on negative thoughts and emotions and being judgemental, an individual may create difficulties that prevent from pursuing a goal successfully, resulting in uncontrolled and emotional eating. Enhanced dispositional mindfulness enables an individual to sustain cognitive concentration, thereby interrupting the recurrent cognitive cycle and averting negative eating behaviours (Fisher et al., 2017).

Pivarunas et al. (2015) also imply that binge eating is a way to avoid self-awareness, particularly when linked with emotional distress. As a result, individuals frequently engage in binge eating and emotional eating to regulate their moods. The ability to experience a negative psychological mood without changing the experience or judge would reduce the need to engage in external and emotional eating behaviours. Individuals who find food to be highly reinforcing and are impulsive in their pursuit of the reward associated with their favourite meal have a deficiency in the awareness aspect of mindfulness, which may result in greater external eating behaviour.

Substance abuse disorders are frequently related to low dispositional mindfulness, as they are accompanied by cravings for the addictive substance and may result in impulsive conduct to obtain the substance of interest (Tang, Tang, & Posner, 2016). Individuals who abuse alcohol have difficulty regulating their emotions and have greater stress reactivity, which may predispose them to emotional eating or external eating behaviour. Utilizing mindful practises, such as meditation, may strengthen control networks and so enable individuals to regulate their emotions (Tang, Tang, & Posner, 2016).

#### **4. Conclusion and Recommendations**

The purpose of this review was to elicit theoretical evidence demonstrating an association between dispositional mindfulness and eating behaviours while taking into account all clinical considerations. After taking into account all clinical factors, the six articles analysed found that dispositional mindfulness is associated with healthy eating behaviours. Certain elements of mindfulness exhibited no correlation, whereas others exhibited a negative correlation.

A clinical consideration such as negative psychological mood was associated with lower dispositional mindfulness, resulting in unhealthy eating behaviours such as emotional and external eating. Stress caused by underlying problems was also found to raise stress levels, which resulted in an increase in emotional eating, restrained eating, and external eating behaviours. Emotional regulation difficulties, in addition to persistent negative self-talk, are associated with an increase in emotional eating and a decrease in dispositional mindfulness. Alcoholism is linked to a lack of dispositional mindfulness. Healthy habits such as adequate sleep and frequent exercise are connected with an increase in dispositional awareness, which is associated with a decrease in emotional eating or external eating behaviour. Physical health and drug use have no significant association with an individual's mindfulness. Strowger, Kiken, and Ramcharran (2018), on the other hand, found a significant positive association between physical activity and mindfulness, whilst Selegim & Gherardi-Donato (2020) discovered a negative correlation between drug use and mindfulness.

The papers examined reproducible data, which indicates that all of the scales used to assess eating behaviours, dispositional mindfulness, and other linked disorders, such as sadness and anxiety, have been validated in previous studies. The lone exception was the questionnaire on sleep quality. Thus, elevated dispositional awareness is associated with a reduction in bad eating habits such as external eating, emotional eating, and restrained eating. One of the study's limitations is the paucity of research on the association between dispositional mindfulness and eating behaviours. Certain clinical variables, such as age, body mass index, ethnic origin, and gender, are not taken into account as primary clinical variables in these studies. A second constraint is the small sample size of the majority of articles. Thirdly, most publications acknowledged the

limitations of self-reported methodologies for studying mindfulness and eating behaviours, in which respondents provided their beliefs rather than facts. The fourth restriction was a lack of longitudinal studies; hence, there are doubts about the causal association between mindfulness and eating behaviours, as cross-sectional studies analyse only the temporal relationship between variables.

Additional research is required to examine a broader range of clinical variables. Diabetes and substance abuse problems are the only disorders discussed in the preceding review. More research should focus on the clinical variables of age, body mass index, ethnic origin, and gender to demonstrate a correlation between dispositional mindfulness and eating behaviours. Substantial primary research with a longitudinal design should be conducted to establish a more casual connection between mindfulness and eating behaviours. Regardless of the constraints, those with higher dispositional mindfulness demonstrated fewer negative eating. As a result, frequent meditation should be encouraged as a means of preventing the development of bad eating behaviours. Meditation has been shown to raise an individual's dispositional mindfulness level. Meditation and other mindfulness-based approaches that have been shown to improve dispositional mindfulness should be incorporated into an eating disorder treatment plan to expedite recovery and prevent remission following treatment.

### Abbreviations

<b>AUDIT</b>	<i>Alcohol Use Disorder Identification Test</i>	<b>DERS</b>	<i>Difficulties in Emotion Regulation Scale</i>
<b>BMI</b>	<i>Body Mass Index</i>	<b>DSM-5</b>	<i>Diagnostic and Statistical Manual of Mental Disorders</i>
<b>CES-D</b>	<i>Center for Epidemiologic Studies Depression Scale</i>	<b>DUDIT</b>	<i>Drug Use Identification Test</i>
<b>CHIPS</b>	<i>Cohen-Hoberman Inventory of Physical Symptoms</i>	<b>EAH</b>	<i>Eating in the Absence of Hunger</i>
<b>DEBQ</b>	<i>Dutch Eating Behaviour Questionnaire</i>	<b>EAT/ EAT-26</b>	<i>Eating Attitude Test</i>
		<b>ED</b>	<i>Eating Disorder</i>
		<b>EDE-Q</b>	<i>Eating Disorder Examination Questionnaire</i>
		<b>FFMQ</b>	<i>Five Facet Mindfulness Questionnaire</i>
		<b>FFMQ-SF</b>	<i>Five Facet Mindfulness Questionnaire – Short Form</i>
		<b>GAD-7</b>	<i>Generalized Anxiety Disorder Assessment</i>
		<b>GBP</b>	<i>Global Burden of Diseases</i>
		<b>HADS</b>	<i>Hospital Anxiety and Depression Scales</i>
		<b>HINT</b>	<i>Habit Index of Negative Thinking</i>
		<b>KIMS</b>	<i>Kentucky Inventory of Mindfulness Skills</i>
		<b>KIMS – AA</b>	<i>Kentucky Inventory of Mindfulness Skills – Acting with Awareness</i>
		<b>KIMS – AJ</b>	<i>Kentucky Inventory of Mindfulness Skills – Accept or Allow without Judgement</i>
		<b>KIMS – O</b>	<i>Kentucky Inventory of Mindfulness Skills – Observing</i>
		<b>LTEQ</b>	<i>Leisure-Time Exercise Questionnaire</i>
		<b>MAAS</b>	<i>Mindful Attention and Awareness Scale</i>
		<b>PAID-20</b>	<i>Problem Areas in Diabetes Scale</i>
		<b>PDSQ</b>	<i>Psychiatric Diagnostic Screening Questionnaire</i>
		<b>PHQ-9</b>	<i>Patient Health Questionnaire</i>
		<b>RRV</b>	<i>Relative Reinforcing Value</i>
		<b>TFEQ – R18V2</b>	<i>Three-Factor Eating Questionnaire</i>
		<b>TFEQ – UE</b>	<i>Three-Factor Eating Questionnaire – Emotional Eating</i>
		<b>TFEQ – UE</b>	<i>Three-Factor Eating Questionnaire – Uncontrolled Eating</i>

**TFEQ-R21** *Three-Factor Eating Questionnaire*

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