Available online: https://journal.ipb.ac.id/index.php/jgizipangan
ISSN 1978-1059 EISSN 2407-0920
J. Gizi Pangan, November 2025, 20(3):197-208
DOI: https://doi.org/10.25182/jgp.2025.20.3.197-208

Scoping Review Article

Mindful Eating and Its Link with Dietary Intake and Obesity Risk among Adults and Older Adults: A Scoping Review

Hana Fauziyyah[1], NurZetty Sofia Zainuddin[2*], Divya Vanoh[2], Affizal Ahmad[3], Nani Draman[4], Aqilah Hadhirah Hazizi[1]

[1]Nutrition Programme, School of Health Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia
[2]Dietetics Programme, School of Health Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia
[3]Speech Pathology Programme, School of Health Sciences, Universiti Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia
[4]Department of Family Medicine, School of Medical Sciences Sains Malaysia, 16150 Kubang Kerian, Kelantan, Malaysia

Article History:
Received *07-08-2025*
Revised *08-11-2025*
Accepted *21-11-2025*
Published *30-11-2025*

Keywords:
adult, dietary intake, mindfulness, obesity, self-compassion

***Corresponding Author:**
tel: +60132540021
email: zettysofia@usm.my

ABSTRACT

The current review aimed to map the available evidence on the assessments of mindful eating and dietary intake, and the relationship between mindful eating level, food group intake, nutrient intake, and obesity risk. This scoping review is based on Preferred Reporting Items for the Systematic Review and Meta-Analyses Extension for the Scoping Review (PRISMA-ScR) and the Joanna Briggs Institute (JBI) 2020 framework. A literature search was conducted on Web of Science, PubMed, and ScienceDirect databases for studies published between 2014 to 2024, identifying eligible primary studies involving adult and elderly participants. Twenty-two studies were chosen for this review. Most studies assessed mindful eating using Mindful Eating Questionnaire (MEQ), Five-Facet Mindfulness Questionnaire, and Mindful Attention Awareness Scale (MAAS). Mindful eating practice was associated with lower snack consumption, and specific sub-scales showed a favorable correlation ($p<0.05$) with fruit and vegetable intake. Body Mass Index (BMI) reductions were observed in the intervention group (MD 0.51, $p<0.001$). This scoping review demonstrates the scientific basis of the mindful eating promote increased consumption of nutritious foods and nutrients, which is likely to lead to a reduction in obesity risk.

INTRODUCTION

A balanced dietary intake is essential for maintaining body fat. Excessive adiposity may lead to the development of metabolic disorders (Ansari *et al.* 2020). In 2019, four metabolic disorders linked to obesity: hyperlipidemia, hypertension, type 2 diabetes mellitus, and non-alcoholic fatty liver were responsible for five million deaths worldwide (Chew *et al.* 2023). To address these issues, optimal dietary interventions are needed to achieve effective and sustainable weight management (Koliaki *et al.* 2018). Moreover, the strategy to assess the diet complexity are required to appropriately understand overall dietary pattern (Ocké 2013). Dietary pattern offers a comprehensive method for analysing dietary intake by categorising individuals into specific subgroup based on their eating habits. This classification provides a holistic view of food and nutrient consumption, helping to assess the relationship between dietary choices and the risk to chronic illnesses such as obesity, cardiovascular disease, diabetes mellitus and cancer (Kawasaki *et al.* 2021; Zhao *et al.* 2021; Neuhouser 2019; Hu 2002). Health practitioners utilises two primary statistical approaches to examine: data-based analysis (actual food intake) and hypothesis-based analysis (food guides and nutritional recommendations) (Schwingshackl & Hoffmann 2015; Previdelli *et al.* 2016). According to Fabiani *et al.* (2019), the two prevalent dietary

patterns identified through a posteriori definitions are the 'healthy' patterns characterised by a high loading of vegetables, fruit, poultry, whole grains, and fish, and the 'meat/Western' pattern characterised by a high loading of red meat, animal fat, processed meat, eggs, and sweets.

Currently, research indicates that individuals respond to contextual cues includes portion size, food placement, labelling, or design without conscious thought or decision-making (Cohen & Babey 2012). Perceptions towards foods drive to dietary choices (Puspadewi & Briawan 2014). Mindful eating emerges as a practice that fosters conscious awareness during meals, enhancing emotional engagement and perceptions of food (Jirojkul *et al.* 2021). It also emphasizes an individual's sensory experience and awareness of the food (Nelson 2017). It encourages savouring the moment and the food itself, and can reduce binge and compulsive eating by increasing sensitivity to interoceptive cues while diminishing reactions to external triggers (Nelson 2017). Mindful eating may promote healthier dietary pattern, where study among young Malay adult in Malaysia found that intuitive eating throughout young adulthood is likely to be related to a decreased prevalence of obesity, dieting, poor weight-management behaviours, and binge eating (Muhammad *et al.* 2023). In addition, dietary components such as fiber support optimal intestinal tract function, promoting long-term satiety, and plays an important role in weight loss and preventing metabolic diseases (Ioniță-Mîndrican *et al.* 2022).

Despite the growing number of studies exploring mindful eating (Allirot *et al.* 2018; Choi *et al.* 2020; Demirbas *et al.* 2021), evidence regarding its relationship with dietary intake and obesity risk especially among adults remains limited. Existing studies vary widely in methodology, measurement tools, and population characteristics, resulting in inconsistent findings. For those research needs, the scoping review aims to map the literature the current evidence on mindful eating in relation to dietary intake and obesity risk among adults and older adults, as well as to identify research gaps and opportunities for future studies in this field.

METHODS

The review adhered to the Joanna Briggs Institute (JBI) methodology (JBI 2020), which involved identifying the review question, identifying search strategies, study selection, charting data and reporting the results.

Review question

The review question was determined prior to identifying relevant studies. Population, Concept, Context (PCC) framework was applied to develop a review question and search strategy (Kao *et al.* 2017). Three PCC elements developed were: Adult (populations), mindful eating (concept) and dietary intake or obesity risk (context). The proposed review question was ‘What are the available assessment tools and evidence on the association between mindful eating, dietary intake, and obesity risk among adults and older adults?’

Search strategy

This scoping review included research articles from 2014 to 2024 that focused on mindful eating, encompassing both observational studies and controlled experiments. The search approach was designed to find published primary studies. An initial limited search was conducted on of Web of Science (https://www.webofscience.com), PubMed (https://pubmed.ncbi.nlm.nih.gov), and ScienceDirect (http://sciencedirect.com), with assistance from a research librarian specializing academic and health science research. The search strategy employed for this review encompassed all permutation of key terms related to diet and mindful eating. The search terms included (Diet* OR “diet pattern” OR “eating pattern” OR “food pattern” OR “dietary habit” OR “nutrient pattern” OR “dietary groups” OR “dietary factors”) AND (Mindful* OR “mindful eating” OR mindfulness OR “mindful eating behavior” OR “mindfulness-based”) AND (“BMI” OR “waist circumference”) AND (Adult* OR elderly). Recognised synonyms and interchangeable terms for these keywords were included. No geographical or cultural limitations were applied. Additionally, reference lists of the full-text articles included in the review were screened to identify any further relevant studies.

Inclusion criteria

Studies chosen for his review paper investigated the mindful eating approach within community settings and multidisciplinary allied health interventions. The selected studies examined various aspects of dietary aspects,

including types of diets (e.g., Mediterranean, vegetarian/plant-based, etc.), specific food groups (e.g., rice, meat, beverages), nutritional intake, and anthropometric measurements indicative of obesity risk (e.g., BMI and waist circumference).

Exclusion criteria

Articles were excluded if studies did not involve human subjects, published in English, experimental treatments not provide control group, primarily targeted weight loss or weight gain programs, addressing mindfulness not related to eating behavior, and individuals with mental illness, stress, or disorders.

Study selection

The study selection process is illustrated using a PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram. A total of 2,111 articles were collated through three databases: Web of Science (1,034 articles), PubMed, and ScienceDirect. About 70 duplicates were removed, and 2,041 articles were screened based on their titles and abstracts. Of these, 1,977 articles were excluded for not aligning with the study's research questions. The remaining 64 articles qualified for full-text screening and 42 of these were excluded for not meeting the inclusion and exclusion criteria. Ultimately, 22 studies were included in review. Figure 1 provides the detailed visual of the study selection process. Limitations and research gaps were also identified for future research.

Data extraction

A data-charting form using Microsoft Excel was developed to extract all information from each source article. The form was revised as needed during the data extraction to extract relevant information. The following information was extracted: authorship, publication year, country of origin, study design, sample size, age, population, study aims, mindful eating tools, dietary intake tools, mindful eating level, anthropometric status, and key findings. The charting form was pilot tested by researchers. Data extraction was conducted independently by two reviewers (HF and AHH).

Summarising and reporting results

Data interpretation and presentation will include descriptive statistics (eg, frequency, percentage, means, and medians) and a

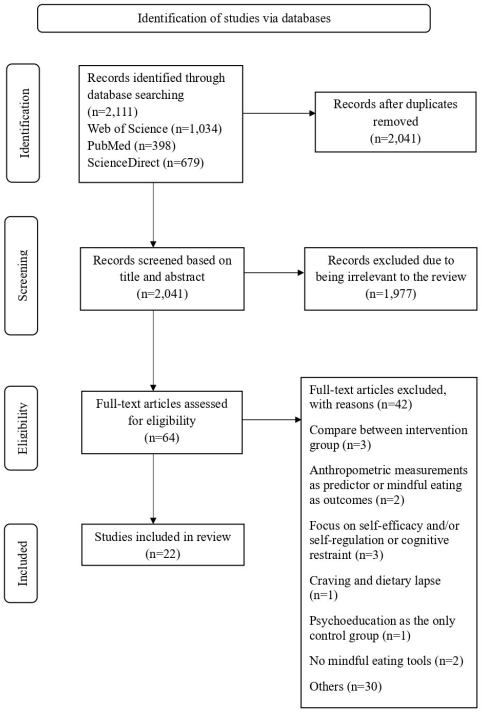

Figure 1. PRISMA flowchart of the selection process

summary of the study characteristics and key variables presented in the data extraction table. Furthermore, a narrative synthesis will be conducted to summarise the key findings in relation to the review objectives. The findings will be grouped according to identified patterns and relationships to develop overarching themes.

RESULTS AND DISCUSSION

Characteristic of included studies

The final review comprised a total of twenty-two articles (Figure 1). The studies were conducted in various countries, including Turkey (n=5); the United States of America (n=4); the United Kingdom (n=4); Brazil (n=2); Spain, Australia, Netherlands, Austria, Korea, Japan, and Mexico (n=1 each). The reviewed studies employed three main designs namely cross-sectional (n=12), experimental (n=9), and a repeated cross-sectional study (two-part questionnaire) (n=1). In total, 8,599 participants were reviewed, with sample size ranging from 40 to 1,674. Seven studies were conducted among population-based study, six among university students, three among academics, two among adult women, and one among obese adults only.

Other specific study groups included nurses (n=1), community-dwelling adults (n=1), and the Turkish population (n=1). Participants' ages ranged from 18 to 84 years old.

Mindful eating and dietary intake assessments

An extensive range of approaches in measuring mindful eating were reported in the interventions and observational studies. As shown in Table 1, the most frequently used tool to assess mindful eating was the Mindful Eating Questionnaire (MEQ) (n=9), followed by the Five-Facet Mindfulness Questionnaire (n=3) and the Mindful Attention Awareness Scale (MAAS) (n=2). Only one study was identified for each of the following instruments: the State Mindfulness Scale, the Expanded Mindful Eating Scale (EMES), the Multidimensional Assessment of Interoceptive Awareness, and the Cognitive and Affective Mindfulness Revised Scale (n=1 each). Most of the study used a single assessment tool, while three studies employed a combination of instruments to assess mindful eating. The Mindful Eating Questionnaire (MEQ) was the most frequently used tool, likely due to its comprehensive and interrelated coverage of key mindful eating domains (e.g., awareness, disinhibition, and emotional response) and its established validity and reliability across different region.

Twelve studies utilised validated dietary assessment tools such as Food Frequency Questionnaire, Mediterranean Diet Adherence Screener, Mini Dietary Assessment, Self-administered Diet History Questionnaire, Block food frequency questionnaire, dietary screener, and food scales to evaluate dietary intake in population and intervention studies. The FFQ, in particular, is one of the most frequently applied instruments designed to capture the frequency and portion size of food and beverage consumption over a one-year period, thus providing an estimate of habitual dietary intake. In combination, the FFQ and the Mediterranean Diet Adherence Screener (MEDAS) are commonly used to evaluate adherence to healthy diets or specific dietary patterns. Meanwhile dietary screeners and food scales offer simplified assessments or quantifications of food intake, respectively.

Mindful eating affect to dietary pattern

The relationship between mindfulness or mindful eating with dietary intake has been extensively studied, with particular in terms of snack (n=5) (Marchiori and Papies 2014; Seguias & Tapper 2018; Schnepper *et al.* 2019; Herren *et al.* 2021; Betancourt-Núñez *et al.* 2022) (Table 1). Mindfulness interventions may potentially ameliorate the effects of constant exposure to low-quality snack foods (Schnepper *et al.* 2019). Evidence suggests that individuals in mindfulness-based programs were less likely translate hunger into unhealthy snacking (Marchiori and Papies 2014). Another study reported that those in the mindful eating intervention group consumed a lower amount of snack compared to the control group (Seguias & Tapper 2018). Emotional eating, in contrast, were found greater adherence to a 'snacks and fast food' dietary pattern—characterized by sweet bread, industrialized bakery, flour tortillas, sweets, desserts, sugar and honey, and breakfast cereals (Betancourt-Núñez *et al.* 2022). Moreover, snack intake was not found to be associated with interoceptive awareness (Seguias & Tapper 2018), suggesting that bodily awareness alone may not be sufficient to alter snack-related behaviors. Research also investigated the effects of mindful eating on other food groups, such as fruit (n=3), vegetables (n=3), or sweets (n=2).

Fruits were consistently to be positively correlated with mindful eating practices, such as conscious nutrition, eating discipline, and interference (Dogan & Tengilimoglu-Metin 2023). Two of three studies (Dogan & Tengilimoglu-Metin 2023; Donofry *et al.* 2020) showed a significant association between fruits with mindfulness on eating, whereas one study found that fruit intake was not correlated with mindful eating or its sub-scores (Kawasaki *et al.* 2021). For vegetables, higher eating discipline, dispositional mindfulness, and EMES (Eating Mindfulness Evaluation Scale) scores was correlated positively with intake (Donofry *et al.* 2020; Kawasaki *et al.* 2021; Dogan & Tengilimoglu-Metin 2023). Meanwhile, emotional eating showed association with reduced 'fruit and vegetable' DP and 'healthy' DP (Herren *et al.* 2021; Betancourt-Núñez *et al.* 2022), and may be encouraged by emotional suppression (Herren *et al.* 2021). dos Santos Quaresma *et al.* (2021) found that emotional eating was negatively correlated with best dietary practice, including the intake of nuts, fruits, organic vegetables, and preference for the purchase of food by local suppliers.

Table 1. Characteristics of included studies assessing mindful eating and its relationship with dietary intake among adults and older adults

Author/Year, (Country)	Study design, Sample, and Characteristic	Intervention	Tools	Mindful eating score	Results
			Interventions studies		
Allirot *et al.* (2018) (Spain)	Experimental study (n=70) Adult women, age 20−60y.	Mindful eating induction video.	**Mindfulness:** SMS-Spanish version. **Eating behavior:** DEBQ (restrained, emotional, and external eating behavior). **Diet:** Finger foods (sweet, savory, HED, LED).	**Mean mindfulness** (mean, standard error): **Mindful condition:** 80.23, 2.12 **Control condition:** 74.86, 2.44	Total number of finger foods eaten and energy intake was lower in the mindful condition as compared in the control condition. SMS and external eating were moderators of the effect. No differences in liking of the four finger foods and energy from carbohydrates between groups.
Fisher *et al.* (2016) (UK)	Experimental study (n=40) University research panel and staff, age 21−46y.	Mindful attention induction.	**Mindfulness:** FFMQ. **Diet:** Number of items consumed.	**Mean FFMQ score: Mindful condition:** 128.00±17.73 **Control condition:** 125.55±17.25	Mindful-FCE group significantly ate lower cookies than those in the standard-FCE group ($p<0.001$).
Loucks *et al.* (2023) (USA)	Parallel-group phase 2 RCT (n=201) Population based study, mean age 60.0±12.2y.	MB-BP reduction program.	**Mindfulness:** FFMQ. **Eating behavior:** MAIA. Diet: DASH adherence scores via FFQ.	**Mean FFMQ score: MB-BP group:** 132.9±19.2 **Control group:** 133.4±20.8 **Mean MAIA score: MB-BP group:** 2.5±0.77 **Control group:** 2.6±0.82	Improvement in the DASH diet score in MB-BP group from baseline ($p<0.001$). MAIA mean score was partial mediation effects of MB-BP on the DASH diet score. FFMQ score demonstrated preliminary evidence of mediation.
Lyzwinski *et al.* (2019) (Australia)	Experimental study (n=72) Undergraduate students, age 18−24y.	Mindfulness app.	**Mindfulness:** Cognitive and affective mindfulness revised scale and MEQ.	**Mean mindfulness score:** 24.92±4.33 **Mean MEQ score:** 2.61±0.32	Influence on weight.
Marchiori & Papies (2014) (Netherlands)	Experimental study (n=110) Undergraduate student, mean age 20.9±2.3y.	Mindfulness exercise of body scan audio book.	**Mindfulness:** FFMQ. **Diet:** Food scale.	**Mean FFMQ score:** 115.76±13.63	The mindfulness intervention did not reduce the portion size effect, but hunger was less likely to translate into unhealthy snacking (cookies). No main effect in mindfulness intervention on calorie intake.
Mason *et al.* (2016) (USA)	Follow-up 18 month (n=194) Obese adult, mean age 47.0±12.7y.	Mindfulness training.	**Mindfulness:** MEQ. **Diet:** Block FFQ 2005 (online version).	**Mean MEQ (Mean, SE): Mindfulness group:** Baseline to 6 months (0.32, 0.04), baseline to 12 months (0.33, 0.04) **Control group:** Baseline to 6 months (0.23, 0.04), baseline to 12 months (0.22, 0.04)	Change in mindful eating from baseline to 6 months nearly significantly predicted change in eating of sweets. No significantly differ sweet intake in mindfulness intervention.
Salvo *et al.* (2022) (Brazil)	Experimental study (n=284) Adult women, mean age 40.4±10.7y.	MB-EAT-SP and MBHP programme.	**Mindfulness:** MES and MAAS. **Diet:** FFQ.	**Mean MES:**79.6±8.5 **Mean MAAS:** 3.8±0.9	The number meals per day decreased at treatment as usual group.

Continue from Table 1

Author/Year, (Country)	Study design, Sample, and Characteristic	Intervention	Tools	Mindful eating score	Results
Schnepper *et al.* (2019) (Austria)	Experimental study (n=46) Population based study, mean age intervention group 32.0±10.3y; Control group 38.9±15.2y.	Mindfulness –Prolonged Chewing (MbT/PCh) Eating.	**Eating behavior:** DEBQ (emotional and external eating behavior) and IES.	**Mean external:** 35.7±6.76 **Mean emotional:** 28.4±8.37 **Intuitive eating:** 3.06±0.53	MbT/PCh ameliorating the effects of constant exposure to low-quality snack foods on eating behavior.
Seguias & Tapper (2018) (UK)	Experimental study (n=58) Population based study, mean age 24.22±7.81y.	Mindful eating strategy to focus on the sensory properties of lunch audio clip.	**Mindful eating:** Interoceptive awareness. **Diet:** Question about whether they had eaten anything in the snack sessions.	**Low mean level of interoceptive awareness:** 0.69±0.19	No influence snack intake with the level of interoceptive awareness. No main effect number of calories consumed at lunch between experimental condition and control condition.
			Observational studies		
Betancourt-Núñez *et al.* (2022) (Mexico	Cross-sectional study (n=763) University workers, mean age 38±11y.	-	**Eating behavior:** EEQ-Spanish version. **Diet:** Semiquantitative-FFQ.	**Emotional eating (%):** **Abdominal obesity:** 36.8 **Non-abdominal obesity:** 22.3	Emotional or very emotional eater was negatively associated with the 'healthy' DP (OR: 0.54; 95% CI: 0.33, 0.90) and positively associated with the 'snacks and fast food' DP among subject with AO. No significant association between emotional eating and dietary pattern was found among subjects without AO.
Choi & Lee (2020) (Korea)	Cross-sectional study (n=205) Nurses, mean age 34.30±7.90y.	-	**Mindfulness:** MEQ –Korean version. **Diet:** MDA Index for Koreans.	**Mean mindful eating:** 2.75±0.28	Dietary intake pattern positively correlated with MEQ score and the disinhibition and emotional response ($p<0.05$).
Demirbas *et al.* (2021) (Turkey)	Cross-sectional study (n=446) Turkish population, mean age normal weight 30.31 12.1y; overweight 33.29 10.8y; Obese 38.46 13.4y.	-	**Mindfulness:** MEQ -Turkey version.	**Mean total score mindful eating:** 88.26±13.3	Influence on BMI.
Dogan & Tengilimoglu -Metin (2023) (Turkey)	Cross-sectional study (n=207) Population based study, age 20−50y.	-	**Mindfulness:** MEQ - Turkey version. **Diet:** MEDAS and HEI-2015.	**Mean total score mindful eating:** 95.1±16.5	MEQ mean score positively correlated with dairy product, greens and beans, while negatively correlated with energy, carbohydrate, fat ($p<0.05$). MEDAS mean score significant negative correlation with sodium and added-sugar intake ($p<0.05$). No correlation between MEQ mean scores and added sugar intake or sodium.
Donofry *et al.* 2020 (USA)	Cross-sectional study (n=406) Community -dwelling adults, age 30−54y.	-	**Mindfulness:** MAAS. **Diet:** Block FFQ and HEI-2015.	**Mean mindfulness:** 4.28±0.74	MAAS scores significantly positive associated with diet quality ($p=0.03$).

Continue from Table 1

Author/Year, (Country)	Study design, Sample, and Characteristic	Intervention	Tools	Mindful eating score	Results
Hinton *et al.* 2024 (UK)	Cross-sectional study (n=846) Population based study, age 18–84y.	-	**Mindfulness:** MEQ.	**Mean mindful eating:** 2.78±0.33	Influence on BMI.
Herren *et al*. (2021) (USA)	Cross-sectional study (n=1,674) Population based study, above 18 years.	-	**Eating behavior:** Eating in The Absence of Hunger (emotional eating). **Diet:** Dietary screener.	**Mean emotional eating:** 4.77±1.98	Emotional eating subsequent association with reduce 'fruit and vegetable' DP and higher BMI. 'Hedonic snack food' DP was not a significant mediator.
Kawasaki *et al.* (2020) (Japan)	Repeated cross-sectional study (two-part questionnaire), (n=215) Undergraduate student median (25th, 75th percentile) age 20 (19, 21) years.	-	**Mindfulness:** EMES. **Diet:** DHQ and Plant-based Dietary Indices-Japanese version (PDIs-J).	**Mindful eating, median/n (25, 75 percentiles/%):** 49 (45, 53)	Mindful eating was correlated with healthy and sustainable dietary patterns ($p<0.05$). No correlation mindful eating with fruit and pulse.
Kes & Cicek (2021) (Turkey)	Cross-sectional study (n=800) University student, age 18–25y.	-	**Mindfulness:** MEQ-Turkey version.	**Mean MEQ score by gender:** **Male:** 3.15±0.3 **Female:** 3.19±0.4	Influence on BMI.
Köse & Tayfur (2021) (Turkey)	Cross-sectional study (n=318) University student age 18–45y.	-	**Mindfulness:** MEQ-Turkey version.	**Mean mindful eating by BMI status:** **Underweight:** 100.29±14.07 **Normal:** 98.22±13.23 **Pre-obese and obese:** 96.06±15.96	Influence on BMI.
Mantzios *et al.* (2018) (UK)	Cross-sectional study (n=546) Undergraduate students, mean age 21.2±5.6y.	-	**Mindfulness:** FFMQ-SF and MES Eating behavior: SCS and TFEQ. **Diet:** Dietary fat and free sugar-short questionnaire.	**Mean mindfulness:** 72.28±12.63 **Mean mindful eating:** 75.75±12.68	Non-reactivity, distractibility, unstructured eating, negative aspects of self-compassion (i.e., isolation and over-identification) small significant negative associated with total fat and sugar consumption ($p<0.05$).
dos Santos Quaresma *et al.* (2021)	Cross-sectional study (n=724) Population based study, mean age women 32.6±11.3y; men 33.5±10.5y.	-	**Eating behavior:** TFEQ (emotional eating). **Diet:** DPMS and DGBP.	**Mean emotional eating score by dietary practice:** T1: 26.75±6.08 T2: 26.28±5.28 T3 24.23±3.76	Emotional eating was negatively correlated with best dietary practices score ($p<0.001$).

Continue from Table 1

Author/Year, (Country)	Study design, Sample, and Characteristic	Intervention	Tools	Mindful eating score	Results
Yıldırım & Kaya Cebioğlu (2021) (Turkey)	Cross-sectional study (n=188) Academicians working, mean age 33.95±11.97y.	-	**Mindfulness:** MEQ - Turkey version. **Diet:** MEDAS.	**Awareness of mindful eating (%):** Yes: 51.1 No: 48.9	Increasing of disinhibition, emotional eating, eating control, mindfulness and the interference was simultaneously increased dietary quality ($p<0.05$).

BMI: Body Mass Index; DEBQ: Dutch Eating Behavior Questionnaire; DHQ: Self-Administered Diet History Questionnaire; DP: Dietary Pattern; DPMS: Dietary Practices Measurement Scale; DGBP: Dietary Guidelines For The Brazilian Population; EEQ: Emotional Eating Questionnaire; EMES: Expanded Mindful Eating Scale; FCE: Food Cue Exposure; FFMQ: Five-Facet Mindfulness Questionnaire; FFQ: Food Frequency Questionnaire; HEI-^{2015}: Healthy Eating Index-2015; HED: High-Energy-Dense; IES: Intuitive Eating Scale; LED: Low-Energy-Dense; MAAS: Mindful Attention Awareness Scale; MAIA: Multidimensional Assessment of Interoceptive Awareness; MB-EAT-SP: Mindfulness-Based Eating Awareness Training Program of São Paulo; MB-BP: Mindfulness-Based Blood Pressure; MBHP: Mindfulness-Based Health Promotion; MEQ: Mindful Eating Questionnaire; MES: Mindful Eating Scale; MDA: Mini Dietary Assessment; MEDAS: Mediterranean Diet Adherence Screener; SCS: Self-Compassion Scale; SMS: State Mindfulness Scale; WC: Waist Circumference

Mindful eating has been proposed as a strategy to integrate cognitive with internal body signal. Preissner *et al.* (2022) explored the socio-cognitive aspects of mindful and found that greater internal awareness, notion of mindfulness, and behavioral control were associated with practicing mindful eating. Potential mechanisms include increased internal motivation and self-regulation, increased attention towards hunger and satiety cues, reduced food craving, reduced affective reactivity, and slowed eating and satiation (Tapper 2022). Among these mechanisms, control over food craving can encourage healthier dietary choices, preventing excess calorie consumption, and need-based eating (Sun & Kober 2020), which may improve overall diet quality.

While mindful eating emphasizes awareness and intentionality in food consumption, emotional eating reflects a tendency to eat in reaction to emotional states. In the mindful eating condition, individuals consumed less calories and increasing consumption of fiber, vitamin A, vitamin C, and folate (Allirot *et al.* 2018; Kawasaki *et al.* 2021), while emotional eating condition consumed less intake of fiber and numerous vitamins and minerals such as folate, potassium, magnesium, vitamin B1, and vitamin C, whereas more in lipids and sodium intake (Betancourt-Núñez *et al.* 2022). However, three studies reported no effect of mindfulness intervention and energy from carbohydrate (Allirot *et al.* 2018) and calorie intake (Marchiori & Papies 2014; Seguias & Tapper 2018), one study found no significant correlation between mindful eating and sodium, added sugar (Dogan & Tengilimoglu-Metin 2023), and one study reported no significant differences between emotional eating and nutrients was observed (Betancourt-Núñez *et al.* 2022). These findings suggest that emotional eating may be closely linked to degrees of mindful eating and its relationship to nutrient intake by encouraging healthier food choices.

Mindful eating and obesity risk

Table 2 summarises studies identifying the association between mindful eating and obesity indicators. An experimental study reported that participants in the mindful eating intervention group had a lower BMI than those in the control group (Schnepper *et al.* 2019), while two observational studies found a significant negative correlation between mindful eating and BMI (Mantzios *et al.* 2018; Hinton *et al.* 2024). In line with these findings, lower mindful eating, non-reactivity, and hunger and satiety cues was a higher BMI (Kawasaki *et al.* 2020). Moreover, emotional eating was positively correlated with BMI (dos Santos Quaresma *et al.* 2021; Hinton *et al.* 2024), with significantly mediated the relationship between emotional suppression and BMI (Herren *et al.* 2021). Emotions are closely related to obesity. Demirbas *et al.* (2021) reported that obese individuals exhibited higher scores for eating disinhibition, and lower in eating control, eating discipline, and interference. Consistently, Köse & Tayfur (2021) and Kes & Çicek (2021) found that eating control was significantly and negatively correlated with BMI. Mindful eating

Table 2. Summary of studies examining the relationship between mindful eating and obesity risk

Author/Year (Country)	Study design	Result
Demirbas (*et al.* 2021) (Turkey)	Cross-sectional study	Mindful eating, particular eating control, discipline, interference score was lower in obese compare to normal weight.
Fisher (*et al.* 2016) (UK)	Experimental study	No sig. BMI difference between mindful condition and control condition.
Hinton (*et al.* 2024) (UK)	Cross-sectional study	MEQ total score negatively associated with BMI ($p<0.001$). Disinhibited, emotional, and distracted eating positively associated with BMI (all $p\leq0.01$).
Kawasaki *et al.* (2020) (Japan)	Repeated cross-sectional study (two-part questionnaire)	Lower level of mindful eating, nonreactivity, hunger/satiety cues were associated with higher BMI ($p\leq0.045$).
Kes & Cicek (2021) (Turkey)	Cross-sectional study	MEQ score for emotional eating and eating control were negatively correlated with BMI ($p<0.01$).
Köse & Tayfur (2021) (Turkey)	Cross-sectional study	Lower eating control was associated with higher BMI ($p<0.01$).
Lyzwinski (*et al.* 2019) (Australia)	Experimental study	No significant weight change.
Mantzios (*et al.* 2018) (UK)	Cross-sectional study	Mindful eating small negatively relationship with BMI ($p<0.001$).
Salvo (*et al.* 2022) (Brazil)	Experimental study	No significant weight different except post-intervention (ITT).
dos Santos Quaresma (*et al.* 2021) (Brazil)	Cross-sectional study	Emotional eating was positively correlated with BMI ($p<0.001$).
Schnepper (*et al.* 2019) (Austria)	Experimental study	BMI was significant decrease in the intervention group [MD 0.51, $p<0.001$, 95% CI [0.194, 0.821] than in the waitlist control group.
Yıldırım & Kaya Cebioğlu (2021) (Turkey)	Cross-sectional study	No significant difference between MEQ score and BMI.

BMI: Body Mass Index; ITT: Intention-to-Teat Snalysis; MD: Mean Difference; CI: Confidence Interval; MEQ: Mindful Eating Questionnaire

practices may be better suited to addressing maladaptive eating and control overeating (Bennett & Latner 2022; Tapper 2022).

However, three empirical research discovered no significant differences in body weight or BMI between mindful eating interventions and control groups (Fisher *et al.* 2016; Lyzwinski *et al.* 2019; Salvo *et al.* 2022), and one cross-sectional study revealed no significant difference between the mindful eating levels and BMI (Yıldırım & Kaya Cebioğlu 2021). A review of mindful and intuitive eating interventions among overweight and obese participants highlighted an important consideration: these interventions emphasise tuning into physiological cues of hunger and satiety to regulate eating behavior (Grider *et al.* 2021). Appetite hormone regulation plays a crucial role in driving emotional eating (Fan *et al.* 2025). Moreover, disturbances in these hormones among individuals with obesity may challenge the practical application of mindful eating. The lack of significant associations across studies underscores that emotions and emotion-related factors, including underlying health conditions, may mediate its effects on body weight and BMI reduction.

Strength and limitations

A major strength of this review is the comprehensive search strategy across several databases to capture a wide range of relevant studies. Consequently, the review offers overview of the existing literature. The review followed the latest Joanna Briggs Institute (JBI, 2020) methodology, which provides clear guidance for rigorous and reproducible evidence synthesis. However, this review has some limitations, as no statistical analysis was performed to draw firm conclusions from this review. The variations and inconsistencies in measurement tools (e.g., MEQ, FFMQ, MAAS) validation may contribute to the heterogeneity and inconclusive findings across studies.

CONCLUSION

This review provides a comprehensive overview of mindful eating research over the past decade, focusing on its role in predicting dietary

intake outcomes and obesity risk parameters among adults and older adults without stress or mental health disorders. The Mindful Eating Questionnaire (MEQ) is recognized as a valid and reliable instrument for assessing mindful eating behaviors in various population. Mindful eating is a behavioral strategy that counter emotional eating and has the potential to improve nutritious dietary intake and decrease the risk of obesity. The findings of this scoping review indicate that the association between mindful eating and BMI remains unclear, with several studies reporting no significant relationship. These inconsistent results suggest that mindful eating alone may not directly influence body weight outcomes. Since adults have varied lifestyles and preferences, the practice of mindful eating may be interconnected with other behavioral or psychosocial factors that contribute to maintaining a healthy diet. Mindful eating is important as part of dietary guideline aimed at effective weight management. The authors recommend that future studies employ longitudinal designs to establish causal relationships with anthropometric and body composition, as well as to assess emotion-related factors.

ACKNOWLEDGMENT

The authors extend their gratitude to Mr. Herman Harianto Che Harun, Librarian at Hamdan Tahir Library, Universiti Sains Malaysia, Health Campus and Ms. Siti Azhani Binti Amran, Research Assistant, Universiti Sains Malaysia for guiding the researchers on how to search articles via electronic databases and support the preparation of this review paper. An appreciation also goes to the Universiti Sains Malaysia for the financial assistance through Short-term Grant Scheme (R501-LR-RND002-0006315777-0000) and Universiti Sains Malaysia Fellowship scheme for providing financial support to postgraduate student Ms. Hana Fauziyyah.

DECLARATION OF CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

Allirot X, Miragall M, Perdices I, Baños RM, Urdaneta E, Cebolla A. 2018. Effects of a brief mindful eating induction on food choices and energy intake: External eating and mindfulness state as moderators. Mindfulness 9(3):750–760. https://doi.org/10.1007/s12671-017-0812-0

Ansari S, Haboubi H, Haboubi N. 2020. Adult obesity complications: Challenges and clinical impact. Ther Adv Endocrinol Metab 11. https://doi.org/10.1177/2042018820934955

Bennett BL, Latner JD. 2022. Mindful eating, intuitive eating, and the loss of control over eating. Eat Behav 47:101680. https://doi.org/10.1016/J.EATBEH.2022.101680

Betancourt-Núñez A, Torres-Castillo N, Martínez-López E, De Loera-Rodríguez CO, Durán-Barajas E, Márquez-Sandoval F, Bernal-Orozco MF, Garaulet M, Vizmanos B. 2022. Emotional eating and dietary patterns: Reflecting food choices in people with and without abdominal obesity. Nutr 14(7):1371. https://doi.org/10.3390/nu14071371

Chew NWS, Ng CH, Tan DJH, Kong G, Lin C, Chin YH, Lim WH, Huang DQ, Quek J, Fu CE *et al.* 2023. The global burden of metabolic disease: Data from 2000 to 2019. Cell Metab 35(3):414–428. https://doi.org/10.1016/j.cmet.2023.02.003

Choi SH, Lee H. 2020. Associations of mindful eating with dietary intake pattern, occupational stress, and mental well-being among clinical nurses. Perspect Psychiatr Care 56(2):355–362. https://doi.org/10.1111/ppc.12441

Cohen DA, Babey SH. 2012. Contextual influences on eating behaviors: Heuristic processing and dietary choices. Obes Rev 13(9):766–779. https://doi.org/10.1111/J.1467-789X.2012.01001.X

Demirbas N, Kutlu R, Kurnaz A. 2021. The relationship between mindful eating and body mass index and body compositions in adults. Ann Nutr Metab 77(5):262–270. https://doi.org/10.1159/000518675

Dogan BG, Tengilimoglu-Metin MM. 2023. Does mindful eating affect the diet quality of adults? Nutrition 110:112010. https://doi.org/10.1016/j.nut.2023.112010

Donofry SD, Erickson KI, Levine MD, Gianaros PJ, Muldoon MF, Manuck SB. 2020. Relationship between dispositional mindfulness, psychological health, and

diet quality among healthy midlife adults. Nutr 12(11):3414. https://doi.org/10.3390/nu12113414

dos Santos Quaresma MV, Marques CG, Magalhães ACO, dos Santos RVT. 2021. Emotional eating, binge eating, physical inactivity, and vespertine chronotype are negative predictors of dietary practices during COVID-19 social isolation: A cross-sectional study. Nutr 90: 111223. https://doi.org/10.1016/j.nut.2021.111223

Fabiani R, Naldini G, Chiavarini M. 2019. Dietary patterns and metabolic syndrome in adult subjects: A systematic review and meta-analysis. Nutr 11(9):2056. https://doi.org/10.3390/nu11092056

Fan R, Kong J, Xie Y. 2025. Potential regulatory role of appetite-regulating hormones and exercise associated with emotional eating: A narrative review. Lifespan Development and Mental Health 1(1):10001. https://doi.org/10.70322/ldmh.2025.10001

Fisher N, Lattimore P, Malinowski P. 2016. Attention with a mindful attitude attenuates subjective appetitive reactions and food intake following food-cue exposure. Appetite 99:10–16. https://doi.org/10.1016/j.appet.2015.12.009

Grider HS, Douglas SM, Raynor HA. 2021. The influence of mindful eating and/or intuitive eating approaches on dietary intake: A systematic review. J Acad Nutr Diet 121(4):709–727. https://doi.org/https://doi.org/10.1016/j.jand.2020.10.019

Herren OM, Agurs-Collins T, Dwyer LA, Perna FM, Ferrer R. 2021. Emotion suppression, coping strategies, dietary patterns, and BMI. Eat Behav 41:101500. https://doi.org/10.1016/j.eatbeh.2021.101500

Hinton EC, Beesley V, Leary SD, Ferriday D. 2024. Associations between body mass index and episodic memory for recent eating, mindful eating, and cognitive distraction: A cross-sectional study. Obes Sci Pract 10(1):e728. https://doi.org/10.1002/osp4.728

Hu FB. 2002. Dietary pattern analysis: a new direction in nutritional epidemiology. Curr Opin Lipidol 13(1):3–9. https://doi.org/10.1097/00041433-200202000-00002

[JBI]. Aromataris E, Munn Z (eds.) 2020. JBI Reviewer's manual. https://reviewersmanual.joannabriggs.org [Accessed 29th November 2025].

Jirojkul S, Pongsakornrungsilp S, Pianroj N, Chaiyakot P, Mia S, Masst T, Techato K. 2021. The effect of mindset on tourist behaviour and mindful consumption in a community enterprise in Krabi, Thailand. TEM Journal 10(3):1082. https://doi.org/10.18421/TEM103-11

Kawasaki Y, Akamatsu R, Fujiwara Y, Omori M, Sugawara M, Yamazaki Y, Matsumoto S, Iwakabe S, Kobayashi T. 2021. Is mindful eating sustainable and healthy? A focus on nutritional intake, food consumption, and plant-based dietary patterns among lean and normal-weight female university students in Japan. Eat Weight Disord-St 26(7):2183–2199. https://doi.org/10.1007/s40519-020-01093-1

Kao SS, Peters MDJ, Ooi E. 2017. Pediatric tonsillectomy quality of life assessment instruments: a scoping review protocol. JBI Database System Rev Implement Rep 15(5):1222–1227. https://doi.org/10.11124/JBISRIR-2016-003131

Kes D, Çicek SC. 2021. Mindful eating, obesity, and risk of type 2 diabetes in university students: A cross-sectional study. Nurs Forum (Auckl) 56(3):483–489. https://doi.org/10.1111/nuf.12561

Koliaki C, Spinos T, Spinou M, Brinia ME, Mitsopoulou D, Katsilambros N. 2018. Defining the optimal dietary approach for safe, effective and sustainable weight loss in overweight and obese adults. Healthcare 6(3):73. https://doi.org/10.3390/HEALTHCARE6030073

Köse G, Tayfur M. 2021. BMI, physical activity, sleep quality, eating attitudes, emotions: Which one is affected by mindful eating? Prog Nutr 23. https://doi.org/10.23751/pn.v23i1.9194

Loucks EB, Kronish IM, Saadeh FB, Scarpaci MM, Proulx JA, Gutman R, Britton WB, Schuman-Olivier Z. 2023. Adapted mindfulness training for interoception and adherence to the DASH diet: A phase 2 randomized clinical trial. JAMA Netw Open 6(11):e2339243–e2339243. https://doi.org/10.1001/JAMANETWORKOPEN.2023.39243

Lyzwinski LN, Caffery L, Bambling M, Edirippulige S. 2019. The mindfulness app trial for weight, weight-related behaviors, and stress in university

students: Randomized controlled trial. JMIR Mhealth Uhealth 7(4):e12210. https://doi.org/10.2196/12210

Mantzios M, Egan H, Hussain M, Keyte R, Bahia H. 2018. Mindfulness, self-compassion, and mindful eating in relation to fat and sugar consumption: an exploratory investigation. Eat Weight Disord-St 23(6):833–840. https://doi.org/10.1007/s40519-018-0548-4

Marchiori D, Papies EK. 2014. A brief mindfulness intervention reduces unhealthy eating when hungry, but not the portion size effect. Appetite 75:40–45. https://doi.org/10.1016/j.appet.2013.12.009

Mason Ashley E, Epel ES, Kristeller J, Moran PJ, Dallman M, Lustig RH, Acree M, Bacchetti P, Laraia BA, Hecht FM, Daubenmier J. 2016. Effects of a mindfulness-based intervention on mindful eating, sweets consumption, and fasting glucose levels in obese adults: Data from the SHINE randomized controlled trial. J Behav Med 39(2):201–213. https://doi.org/10.1007/s10865-015-9692-8

Morin I, Bégin C, Maltais-Giguère J, Bédard A, Tchernof A, Lemieux S. 2018. Impact of experimentally induced cognitive dietary restraint on eating behavior traits, appetite sensations, and markers of stress during energy restriction in overweight/obese women. J Obes 2018(1). https://doi.org/10.1155/2018/4259389

Nelson JB. 2017. Mindful eating: The art of presence while you eat. Diabetes Spectrum 30(3):171. https://doi.org/10.2337/DS17-0015

Neuhouser ML. 2019. The importance of healthy dietary patterns in chronic disease prevention. Nutr Res 70:3–6. https://doi.org/10.1016/j.nutres.2018.06.002

Ocké MC. 2013. Evaluation of methodologies for assessing the overall diet: Dietary quality scores and dietary pattern analysis. Proc Nutr Soc 72(2):191–199. https://doi.org/10.1017/S0029665113000013

Preissner CE, Oenema A, de Vries H. 2022. Examining socio-cognitive factors and beliefs about mindful eating in healthy adults with differing practice experience: A cross-sectional study. BMC Psychol 10(1):268. https://doi.org/10.1186/S40359-022-00977-4/TABLES/3

Puspadewi RH, Briawan D. 2014. Perceptions of healthy food, reasons for food selection and healthy eating habits in students. J Gizi Pangan 9(3):211–218. https://doi.org/10.25182/jgp.2014.9.3.%25p

Previdelli ÁN, De Andrade SC, Fisberg RM, Marchioni DM. 2016. Using two different approaches to assess dietary patterns: Hypothesis-driven and data-driven analysis. Nutr 8(10):593. https://doi.org/10.3390/NU8100593

Salvo V, Curado DF, Sanudo A, Kristeller J, Schveitzer MC, Favarato ML, Isidoro W, Demarzo M. 2022. Comparative effectiveness of mindfulness and mindful eating programmes among low-income overweight women in primary health care: A randomised controlled pragmatic study with psychological, biochemical, and anthropometric outcomes. Appetite 177:106131. https://doi.org/10.1016/j.appet.2022.106131

Schnepper R, Richard A, Wilhelm FH, Blechert J. 2019. A combined mindfulness–prolonged chewing intervention reduces body weight, food craving, and emotional eating. J Consult Clin Psychol 87(1):106. https://doi.org/10.1037/ccp0000361

Schwingshackl L, Hoffmann G. 2015. Diet quality as assessed by the healthy eating index, the alternate healthy eating index, the dietary approaches to stop hypertension score, and health outcomes: A systematic review and meta-analysis of cohort studies. J Acad Nutr Diet 115(5):780–800. https://doi.org/10.1016/J.JAND.2014.12.009

Seguias L, Tapper K. 2018. The effect of mindful eating on subsequent intake of a high calorie snack. Appetite 121:93–100. https://doi.org/10.1016/j.appet.2017.10.041

Tapper K. 2022. Mindful eating: What we know so far. Nutr Bull 47(2): 168–185. https://doi.org/10.1111/NBU.12559

Yildirim H, Kaya Çebioğlu I. 2021. The relationship between Mediterranean diet adherence and mindful eating among individuals with high education level. Acıbadem Univ Sağlık Bilim Derg 12(4):737–742. https://doi.org/10.31067/ACUSAGLIK.925761

Zhao J, Li Z, Gao Q, Zhao H, Chen S, Huang L, Wang W, Wang T. 2021. A review of statistical methods for dietary pattern analysis. Nutr J 20(1):37 https://doi.org/10.1186/S12937-021-00692-7