



# Considering Food Addiction Through a Cultural Lens

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## Abstract

**Purpose of Review** Research suggests that cultural factors influence eating behaviors; however, little is known about the relationship between food addiction and culture. This narrative review aimed to (i) review theoretically related work on the relationship between sociocultural demographic variables, food cravings, and eating disorders; (ii) review the available literature assessing cultural aspects of food addiction, specifically the rates of food addiction across the globe and notable differences in relevant sociodemographic variables: race, ethnicity, gender, and acculturation level; (iii) discuss the potential impact of culture on the current understanding of food addiction and future research directions emphasizing the inclusion of sociocultural variables.

**Recent Findings** Preliminary data suggest that food addiction symptoms occur cross-culturally and that there may be significant differences between sociodemographic groups. Issues related to adequate lexicalization of concepts central to food addiction (e.g., craving, addiction) and global variations in eating culture and presentation of similar constructs (e.g., binge-eating) contribute to questions raised and identify avenues for further research.

**Summary** Multidimensional cultural assessment is called for to characterize food addiction among diverse groups and improve our understanding of the etiology, maintenance, and sequelae of food addiction cross-culturally.

**Keywords** Food addiction · Culture · Obesity · Eating disorders · Cross-cultural comparison

## Introduction

Worldwide shifts in population health are linked to sociopolitical changes, such as rapid urbanization, changes to global economies and industrial food trade, and an increasingly Westernized approach to diet and food consumption [1, 2]. These changes are coupled with greater accessibility to and demand for highly processed and palatable foods, which in turn may be associated with food addiction or addictive-like eating [2–4]. Food addiction has been studied and conceptualized from varied perspectives, with the most widely researched theory applying a substance use disorder

framework. This theory posits that palatable foods (e.g., sugary, refined foods) possess an addictive quality that, in some people, can trigger addictive eating symptomatology, including strong cravings and overeating [5–7]. The concept of food addiction has gained considerable media attention and increasingly rigorous scientific consideration, with research endeavors focused on refining the objective definition and underlying mechanism associated with the clinical phenomena. Attempts to define and refine food addiction include efforts to accurately assess clinical symptom expression, especially among heterogeneous participant groups, and distinguish it from other like constructs, particularly binge-eating disorder (BED) [5, 8, 9].

Food choices, eating behaviors, and cultural identity are implicitly intertwined [10, 11]. Scholarly work offers insight into these relationships with evidence suggesting that cultural identification, practices, and level of acculturation may profoundly influence daily food choices, eating patterns, and the experience of cravings [11, 12, 13]. However, these relationships are not well understood, and the research in this area is very limited. Eating patterns, food preferences, and food cravings are also thought to be important components in the theoretical pathway of disordered eating, including symptoms of

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food addiction. For instance, food craving is an important and widely endorsed symptom of food addiction [3] and a significant positive predictor of food addiction symptoms [14], though some research suggests individual differences. For example, gender has been shown to moderate the relationship between food craving and eating disorder psychopathology [15]. Expanding on this work, there is also evidence to suggest that culture further influences the associations between gender, food preferences, and differences in cravings [16, 17]. Despite its potentially important role, cultural considerations are noticeably absent from much of the food addiction literature to date. Recently, investigators have raised issues regarding this cross-cultural gap, including psychometric invariance of the Yale Food Addiction Scale (YFAS) across gender and racial groups [18] and differences in food addiction rates based on self-reported acculturation level [19]. The YFAS, a standardized self-report measure of the food addiction construct, is the most widely used method of assessing food addiction [20]. Although the present article does not intend to appraise the controversiality regarding the validity of food addiction [8], we do conservatively suggest that a consideration of the role of culture in the presentation of food addiction may yield a fresh perspective and important direction for future research.

## Aims of the Present Study

In this narrative review, we will synthesize converging literature across the food addiction and culturally focused research with a three-fold aim: (i) review theoretically related work on the relationship between sociocultural demographic variables, eating disorders, and food cravings; (ii) review the available literature assessing cultural aspects of food addiction, specifically the rates of food addiction across the globe and notable differences in relevant sociodemographic variables: race, ethnicity, gender, and acculturation level; (iii) discuss the potential impact of culture on our current understanding of food addiction and future research directions emphasizing the inclusion of sociocultural variables.

## Method

A search of peer-reviewed publications was performed in January 2020 in PsycINFO and PubMed. The following search terms were utilized: (food addiction” OR “addictive eating” OR “compulsive eating” OR “(addictive behaviors” AND “food”) OR “food craving” AND “culture” OR “culturally” OR “acculturation” OR “public opinion” OR “global” OR “self-perceived”). Books were excluded from search results. Reference lists of the studies generated from the above search terms were also examined to identify additional studies

that fit the parameters of this narrative review. Papers were included if they were written in English and conducted an empirical study that reported food addiction and/or a sociodemographic variable as an outcome.

## Culture and Eating Disorders

Pike and colleagues [21••] cite culture as “significant to the cause and expression of eating disorders.” In recent years, eating disorders have been reported across wider demographics due to factors such as societal values promoting greater awareness and effects of urbanization and Western influence [21••, 22]. Subsequently, the need for culturally sensitive measures and treatments has been realized; this need extends to the study and conceptualization of food addiction as well. Across the spectrum of eating disorder diagnoses specified in the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)*, food addiction shares both mechanistic and phenotypic characteristics with BED [23, 24]. Although there is robust evidence suggesting that BED and food addiction are clinically distinct [7, 23, 25], the shared characteristics (e.g., cravings, loss of control eating) of these two entities, along with the dearth of research specifically examining cultural variables and food addiction, necessitated a brief review of the literature regarding cultural influence on BED.

In the USA, nationally representative samples have observed lower lifetime prevalence rates of BED among non-Hispanic black individuals compared to non-Hispanic white individuals [26]. In contrast, the prevalence of BED among Hispanic populations is similar to non-Hispanic white individuals [27, 28]. Despite nonsignificant differences, data suggest that acculturation may moderate effects of ethnicity on BED prevalence and correlates such that those with higher acculturation (i.e., more oriented towards Anglo culture) are more likely to endorse disordered eating [29–31]. Importantly, rates of binge eating (i.e., engaging in the behavior, but not considering the other phenomenology consistent with a specific eating disorder diagnosis, such as distress) are dramatically higher among samples of non-Hispanic black, Latinx, and Asian American individuals compared to non-Hispanic white individuals [32]. Other important sociodemographic characteristics also appear to impact the prevalence and correlates of BED. For example, BED occurs more commonly among women compared to men [26] and correlates of BED (e.g., family income, time residing in polluted neighborhoods, marital status, and depression) may differ by gender [33].

Such trends suggest that important differences in the presentation of disordered eating behavior across racial/ethnic groups may lead to differential diagnostic rates. Further, it has been suggested that criteria developed based on relatively homogenous subgroups within Western cultures fail to

appropriately capture how disorders express among other cultures [21•, 27]. While several studies have suggested that features associated with BED (e.g., body image disturbance, cognitive restraint, and body mass index [BMI]) differ between racial/ethnic groups [34–36], findings are inconsistent with some observing no differences in symptomatology and treatment outcomes associated with BED across racial/ethnic lines [15, 37].

Notably, cultural identification and acculturation level *were not examined or assessed* as moderating variables in the majority of these studies, which presents a potentially major and vastly overlooked limitation. Moreover, the socially constructed schema commonly used to identify race (e.g., White, Black) and ethnicity (e.g., Hispanic, non-Hispanic) disguises the significant heterogeneity within each of these general groups [38]. For instance, numerous subgroups have been identified within the Hispanic ethnicity with differences in psychological and medical risk found across such subgroups and positively associated with acculturation level [39, 40]. Growing evidence also suggests important differences in clinical correlates of psychiatric conditions across Black ethnic groups, including eating disorders [41]. Thus, while these studies present important findings with regard to race/ethnicity, these variables do not account for, nor are they placeholders for domains pertaining to the multidimensional nature of cultural identity such as country of nativity, language preference, choice of friends and media, prioritization of self versus others, and extent of ethnic and national identification [42, 43].

## Culture and Cravings

Cravings, characterized by the intense desire to consume pleasure-producing substances or engage in hedonic behaviors, are widely appreciated in the conceptualization of addiction. The YFAS, for instance, has two items specifically asking respondents to rate how frequently they experience “intense cravings” and “strong cravings” for certain “addictive” foods [44]. Food craving measures are positively associated with YFAS scores and positively predict food addiction symptoms [14]. Emerging evidence on food craving suggests that it may be culture-bound and thus, utilizing a sociocultural formulation would be best suited to describe the etiology and measure the construct [10, 17, 45]. Further, cross-cultural methodology assessing the words “craving” and “addiction” demonstrates that outside of North America, these concepts vary significantly and the words themselves do not adequately translate in a majority of languages or to different geographic regions [11, 12•]. In a study that assessed translation and back-translation of the word “craving” across 25 languages, only 64% provided a successful back-translation [12•]. The same study found that other similarly abstract words, such as

“hope,” were successfully back-translated more frequently (around 88% of the time). Qualitative follow-up with native speakers of 20 different languages suggested that the majority felt that available translations for the word “craving” were inadequate at capturing the English meaning of the word [12•].

In addition to this lexicalization issue, the presence and relative degree of cravings or the complete absence of cravings also appear to be influenced by culture and gender [17]. Chocolate, the most extensively studied example, is endorsed as the most widely craved food in the USA, with cravings reported by significantly more females (91%) than males (59%) [16]. Interestingly, this gender discrepancy is not found in other countries and the rates of chocolate or sweet cravings are completely absent or significantly lower and replaced by other cravings such as savory foods in Egypt [46] and rice and sushi in Japan [45]. These findings suggest that societal standards and traditional culinary practices strongly influence which foods may be craved or considered “addictive.”

## Food Addiction: Making the Cultural Link

In addition to the study of BED and food cravings, addictive-like eating is predominately examined with the use of self-report measures assessing food addiction. The reviewed literature highlights the importance of cultural considerations with regard to BED and food cravings; we contend that this may extend to the study of food addiction given noted overlap of these constructs. Food addiction is not a formal diagnosis in any classification system; however, the YFAS assesses food addiction based on proposed clinical diagnostic criteria, which correspond to the symptoms of substance use disorders within DSM-5 [24]. Such criteria allow for cross-cultural comparisons examining the symptom profile and rates of food addiction. However, a major limitation is that this and other self-report measures were initially developed and validated in Western countries, which may not be appropriate to use globally [21•]. This criticism echoes throughout eating disorder research and measurement [47]. For instance, the Food Craving Inventory (FCI) initially developed and validated in the South of the USA does not capture nuanced craving differences found elsewhere in the country, let alone global variations; thus, the authors of the measure recommend making adjustments relevant to the specific culture and geographic region [13]. Indeed, several other versions of the FCI now exist that consist of different foods, number of items, and number of factors that better accounts for the cultural variations related to the experience of food cravings but also hinders cross-cultural research with the measure [45, 48•, 49, 50]. Interest in food addiction has expanded worldwide, and the YFAS has been translated into many languages (please see Table 1 for a representative sample of translated versions

**Table 1** Representative sample of translated food addiction measures

Author	Sample	Translation of FA measure	FA rates
Aloi et al. [51]	University students ( $N = 574$ )	Italian version of the YFAS 2.0	3.4%
Brunault et al. [52]	Students ( $n = 164$ ) and family members ( $n = 166$ ) from departments of psychology and medicine	French version of the YFAS 2.0	8.2%
Buyuktuncer et al. [53]	Students or employees at a university ( $N = 1033$ )	Turkish version of the YFAS	11.8%
Chen et al. [54]	Female adolescents ( $N = 72$ )	Chinese version of the YFAS-C	9.2%
Fawzi et al. [55]	Medical students ( $N = 236$ )	Arabic version of the YFAS 2.0	11%
Granero et al. [56]	Eating disorder sample ( $n = 125$ ) Healthy control sample ( $n = 82$ )	Spanish version of the YFAS	72.8% eating disorder sample 2.4% healthy control sample
Khine et al. [57]	Undergraduate students ( $n = 731$ )	Japanese version of the YFAS 2.0	3.3%
Kim et al. [58]	Adolescent sample (ages 11–15; $n = 419$ )	Korean version of the YFAS for children	Unknown <sup>1</sup>
Meule et al. [59]	Sample 1: university students ( $n = 455$ ) Sample 2: bariatric candidates ( $n = 138$ )	German version of the YFAS 2.0	10% students 47% bariatric candidates
Magyar et al. [60]	Children and adolescents (ages 8–18; $N = 191$ )	Hungarian version of the YFAS-c	8.9%
Nunes-Neto et al. [61, 62]	Online community sample ( $N = 7639$ )	Brazilian version of the mYFAS 2.0	4.31%
Pedram et al. [63]	Adult community sample ( $N = 415$ )	English version of the YFAS in Newfoundland	5.4%
Torres et al. [64]	Sample 1: nonclinical sample ( $n = 278$ ) Sample 2: bariatric candidates ( $n = 190$ )	Portuguese version of the YFAS	2.5% nonclinical sample 25.8% bariatric candidates
Sevinçer et al. [65]	Bariatric patients ( $N = 171$ )	Turkish YFAS in bariatric surgery patients	57.8%

FA food addiction, YFAS Yale Food Addiction Scale, mYFAS Modified Yale Food Addiction Scale, YFAS-C Yale Food Addiction Scale for Children

<sup>1</sup> Full text not available in English

and rates of food addiction), thus contributing to a small but growing compilation of food addiction rates across cultures.

Despite numerous translations of the YFAS, the majority of studies examining the “prevalence” of food addiction have been conducted in the USA. For instance, a meta-analysis examining the rate of food addiction found that the majority of studies (15 out of 18 total) were conducted in the USA and more commonly with homogenous participant samples (e.g., White, female, primarily with overweight/obesity) [66]. Further, estimated rates presented in two recent meta-analyses (16.2% and 19.9%, respectively [66, 67]) combined clinical and nonclinical samples; however, evidence suggests that rates of food addiction vary much more widely across samples. In their review of the YFAS 2.0, Meule and Gearhardt observe that the prevalence of YFAS diagnoses range from 3 to 95% depending on the sample [68•]. This is notable in light of findings that constructs central to food addiction (e.g., food cravings) may substantially differ by sex and geographic region. Here we will review the current findings with respect to differences across sex/gender, racial and ethnic groups, and countries to highlight relevant findings on food addiction.

To understand group differences, an ideal preliminary step involves testing the validity of food addiction measures across heterogeneous groups. Measurement invariance testing is a form of validity that tests whether a measure appears to be assessing the same construct across groups. Measurement invariance of the most recent version of the YFAS ([44]; YFAS 2.0) and the modified version ([69]; mYFAS 2.0) was assessed in US samples across gender and race [18, 70•].

When using the most conservative threshold for equivalence, the data suggested some slight differences between men and women. Measurement equivalency studies also supported the validity of assessing food addiction across racial and ethnic subgroups within the USA [18, 70•]. To our knowledge, only one study has conducted a cross-cultural comparison examining differences in the prevalence of food addiction among those living in the USA and those in Australia: no differences in food addiction were observed [71]. Expanding cross-cultural examination and finding evidence of measurement invariance would increase confidence that reported differences in prevalence across groups are valid and not an artifact of the measure assessing different constructs.

In a meta-analysis by Pursey and colleagues [66], women were significantly more likely to meet YFAS-assessed food addiction criteria compared to men (12.2% vs 6.4%, respectively) and endorsed a greater number of food addiction symptoms [66], which is consistent with prior findings related to gender differences of eating disorders [72]. It is important to note, however, that prior work on food addiction has been conducted with primarily (i.e., > 70%) or exclusively female samples. Moreover, gender differences have been less consistent with culturally diverse samples, with some [51, 57, 63] but not all studies [19•, 52, 73, 74] finding differences in food addiction symptoms when comparing men and women.

Prior studies comparing differences in food addiction prevalence between Black and White individuals have been mixed [75, 76]. More consistent differences have been found when examining those identifying as Hispanic [19•, 69, 70•, 76]. Hispanic individuals reported greater food addiction



symptoms and were more likely to meet criteria for food addiction than other racial/ethnic groups (i.e., White, Black) [69], which was later replicated in nationally representative samples in the USA [70, 76] and other work comparing English and Spanish-speaking participants [19]. Within a sample of Spanish-speaking Latino/as, there were no differences in age, sex, or race between those with and without food addiction, yet the participants with food addiction reported significantly greater eating disorder psychopathology and poorer health-related quality of life [73]. Interestingly, some evidence suggests that such differences may, in part, be accounted for by level of acculturation. Lawson and colleagues (2019) found that acculturation to the USA was significantly related to food addiction symptoms in a sample of Hispanic bariatric surgery seeking participants [19]; however, in another study, food addiction was unrelated to number of years residing in the USA [73]. These discrepant findings raise important questions about how best to measure cultural identity/acculturation as these are multifaceted constructs.

There is also evidence of cross-cultural differences in prevalence rates in non-Western participant samples (e.g., Japan, India). In nonclinical samples (e.g., students or online recruited samples) several studies have found lower rates of food addiction than typically found in studies conducted in the USA, such as 2.5% in a Portuguese sample [64], 3.3% in an undergraduate sample of Japanese students [57], and 4.31% of an online recruited sample of participants in Brazil [61]. Additionally, a higher prevalence and severity of food addiction was reported in two prior studies collected in South Asian countries with nonclinical samples; 32.5% of participants from India met the clinical-threshold of food addiction [74], and participants who identified as South Asian (primarily from India and Pakistan) were significantly more likely to self-identify as having food addiction and endorse more food addiction symptoms and higher food craving scores compared to White participants and other ethnicities [77]. Notably, these relatively higher rates are similar to those reported among clinical samples. However, other studies with non-US samples have identified rates of food addiction comparable to prior meta-analytic rates, such as 11.8% of Turkish participants [53], 11% of Arabic medical students [55], and 10% of a German student sample [59]. Taken together, there is likely significant variability in rate of food addiction across cultures.

As we and others have discussed [64], cultural eating behaviors and attitudes towards food are pertinent when interpreting prior findings on food addiction. Torres and colleagues suggest that differences in perceptions of portion sizes might influence findings as some cultures might perceive larger portions as more acceptable than others [64]. Additionally, assessment of specific foods in food addiction measures might need to be tailored across cultural groups to align with preferred “addictive” foods. Consequently, some researchers have made modifications to food addiction measures to more

accurately assess specific foods relevant to the culture being assessed (e.g., Wagashi, which is a Japanese traditional confectionery, and instant noodles were included in a study conducted by Khine et al. [57]). These efforts to make modifications relevant to the culture represent an important first step. Psychometric validation of measures within cultures is also necessary, and more work is needed, yet, similar to prior work on the construct of food cravings, some have argued that certain aspects of food addiction might not adequately translate or might not be recognizable to a culture. For instance, in an exploratory factor analysis and confirmatory factor analytic study of the Turkish version of the YFAS, an alternative factor structure was identified and there was some evidence of low item total correlations for items related to the “repeated unsuccessful attempts to quit,” “tolerance of food,” and “withdrawal” criteria [53]. Items related to “repeated unsuccessful attempts to quit” also had low factor loadings in the French and Chinese translations [52, 54]. On the other hand, these same items appeared to be relatively good predictors among an Arabic-speaking sample [55]. In response to these data and the associated larger queries, two explanations appear plausible: (1) some items may have relatively lower sensitivity when discerning food addiction; (2) some constructs may be less familiar in different eating cultures and may not adequately translate. More work is needed to test these theories and to better refine the construct of food addiction in diverse cultures.

## Making the Cultural Link: Research Implications and Future Directions

The current evidence related to the cultural influences on food addiction should be understood as in its infancy. Parallel lines of research related to BED, food cravings, and preliminary data on food addiction suggest that cultural domains, especially race/ethnicity and level of acculturation, are relevant [19, 77]. However, due to the paucity of available evidence, it is difficult to draw conclusions regarding how these factors might influence the conceptualization and measurement of food addiction. Instead, the current state of the literature lends itself to several important considerations for future work.

First, research efforts within the USA would benefit from a focus on previously underrepresented groups. Some data suggest that some ethnic groups may be at increased risk for food addiction, including Hispanic individuals [19, 73]. Culturally sensitive evaluation, including attention paid to specific risk factors, such as level of acculturation, could greatly improve our cultural understanding of food addiction within vulnerable racial and ethnic minority groups in the USA. Inherently tied to ethnicity and race are other factors that disproportionately affect minority groups including food scarcity or food insecurity, which are in turn associated with risk for obesity and psychiatric conditions [78, 79] and thus important to consider

as moderators when examining the relationship with food addiction.

Second, mixed-methods approaches should be used to better understand and explore the validity of food addiction in non-Western regions. Such work should include both qualitative and quantitative analyses of the psychometric properties of existing self-report measures. Language and cultural discrepancies suggest that important domains may be missed in translation efforts for self-report measures initially created and validated in the USA in addition to potential variations in the phenomenological experience of food addiction. For example, English words “addiction” and “craving” do not precisely lexicalize. These constructs, now imbued into US colloquialisms and mainstream culture, may be understood differently in other eating cultures. In addition to considering craving, studies examining the relative association between currently identified food addiction symptoms and the latent construct of food addiction will be helpful in further elucidating the cross-cultural validity of food addiction. Studies investigating the symptom profiles, factor analysis, and factor item-total correlation in diverse cultures are well suited to this endeavor.

A third, and related point, suggests prudent consideration that food addiction may be a culturally reactive syndrome. Variation in eating disorder presentation and epidemiological distribution has been observed [47, 80], and it is plausible that such differences could also be relevant to food addiction. Qualitative approaches by experts on eating disorders that are also familiar with language, cultural norms, and customs will greatly increase our understanding of food addiction across cultures.

Finally, across studies, increased efforts to use representative samples to test the reliability and validity of self-report measures that have been translated to other languages would make important strides towards answering the present questions raised. Some of the publications presenting the translations of food addiction measures do not include descriptive information regarding rate of food addiction overall or across important demographic variables that previous research has suggested may be related to food addiction such as sex, BMI, and age [62]. Greater precision is also needed to understand what represents true differences and what represents confounding effects (e.g., use of clinical versus non-clinical samples). The distribution of findings also suggests the need for greater generalizability in food addiction research. Similarly, clinical correlates and medical and psychiatric co-morbidities may differ across cultures emphasizing the importance of culturally sensitive research design. Properly assessing and then adjusting for relevant sociocultural variables would increase confidence in these findings. More cross-cultural comparisons, conducted on a large epidemiological scale, are also needed to reduce biases that can arise in studies with more selective sampling.

The inability to include research that was published in any language other than English is a limitation of this narrative review. A synthesis of findings across all relevant publications is an important next step in developing the state of this science. Overall, preliminary data suggest that food addiction symptoms occur cross-culturally and that there may be significant differences between sociodemographic groups. However, considering the best available methods and approaches for characterizing food addiction among diverse groups is necessary to move the field forward and to improve our understanding of the etiology, maintenance, and sequelae of food addiction cross-culturally.

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## Compliance with Ethical Standards

**Conflict of Interest** The authors declare that they have no conflicts of interest.

**Human and Animal Rights and Informed Consent** This article does not contain any studies with human or animal subjects performed by any of the authors.

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