

Psychometric Properties of the Yale Food Addiction Scale (YFAS 2.0) among Malaysian Samples

*Wan Shahrazad Wan Sulaiman, Nurul Asyiqin Rosli & Intan Raihan Darmadi

Centre for Research in Psychology and Human Well-Being, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia

*Corresponding author Email: shara@ukm.edu.my

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Abstract

Food addiction is an unhealthy behavioral pattern related to foods high in sugar, fat and salt. While previous studies in Malaysia have focused on food addiction in clinical settings, female students in the early adult category may also be at risk, particularly in relation to their weight and BMI. This study aimed to examine the characteristics and quality of the Malay version of the Yale Food Addiction Scale (YFAS) 2.0. Using a purposive sampling technique, 178 female students from Malaysian public universities were surveyed. Principal Component Analysis extracted five factors and retained all 35 YFAS 2.0 items, with factor loading values for each item being > 0.40 . Results showed significant correlations between items and item dimensions ranging from $r = .691$ to $r = .902$. Criterion validity revealed that the clinical distress dimension and BMI criteria had the highest correlation with a value of $r = .303$ ($p < 0.01$). Convergent validity between the Malay version YFAS 2.0 and EAT-26 instruments had a positive and significant relationship ($r = .267$, $p < 0.01$). The instrument also demonstrated excellent reliability with a Cronbach alpha value for all items is $\alpha = .972$. These findings indicate that the YFAS 2.0 is a reliable and valid tool for measuring food addiction in the Malaysian context. The study highlights the importance of this instrument in raising awareness and understanding of food addiction among the Malaysian population.

Keywords: Psychometric, Reliability, Validity, Exploratory Factor Analysis, Food Addiction

Introduction

Excessive food intake is often associated with weight, which is categorized based on an individual's Body Mass Index (BMI). BMI is calculated using weight and height of an individual. Maintaining a healthy weight is essential to prevent non-communicable diseases (NCDs) such as heart disease, high blood pressure, and diabetes. According to the Global Nutrition Report (GNR), 48% of individuals worldwide either overeat or undereat, contributing to weight-related issues such as overweight, obesity, or underweight.

In Malaysia, concerns about weight management are particularly pressing. The National Health and Morbidity Survey (2019) revealed that Malaysia has the highest percentage of overweight and obese individuals in Asia, with one in two adults falling into these categories. A study by Liyana (2023) further highlighted this issue, finding that 41% of the Malaysian population is overweight, surpassing China as the Asian country with the highest overweight rate. If this trend persists, projections indicate that by 2035, 41% of Malaysia's adult population will be obese.

One factor contributing to obesity is food addiction, a phenomenon closely associated with overeating and binge-eating behaviour. Food addiction is characterized by a dependence on foods high in sugar, fat, and salt, leading to clinically significant impairments in various areas of functioning. Although not formally recognized as a mental disorder, food addiction shares similarities with substance-related and addictive disorders section as outlined in the DSM-5 (American Psychiatric Association, 2013).

While extensive research has been conducted on food addiction instruments in countries like the USA, Germany, and Italy, fewer studies have focused on the Malay version of the Yale Food Addiction Scale (YFAS) 2.0 in Malaysia (Schulte, Potenza & Gearhardt, 2017). Past research has suggested exploring the effects of hyperpalatable foods (e.g., sweet foods and fast foods) to explain the rising obesity rates in Malaysia (Avena et al., 2012). In line with this recommendation, according to Avena et al. (2012), initiatives have been taken to screen obese patients using the Malay YFAS 2.0. However, the Malay YFAS 2.0 has not been widely used to screen for food addiction tendencies due to insufficient assessment of its construct validity and suitability (Jokela et al., 2013). A study by Nantha et al. (2020) focused on clinical samples, limiting its generalizability to the broader population. Furthermore, there is a lack of validity and reliability studies using the Malay version of the YFAS 2.0.

Literature Review

Research has demonstrated that the YFAS 2.0 possesses strong psychometric properties, including internal consistency, convergent validity, and discriminant validity (Schulte & Gearhardt, 2017). In addition, the YFAS 2.0 has been translated and validated in several languages, including English (i.e., the original version), Italian, German, French, Spanish, Arabic, Turkish, Japanese, Persian and Portuguese. This is consistent with the finding that the Taiwanese version of the YFAS 2.0 tested in a study was also comparable to all other language versions. Most previous studies have shown acceptable construct validity from the one-factor structural model of the YFAS 2.0.

For example, Ghanbari et al. (2022) found that all item-total correlations for the YFAS 2.0 exceeded 0.40, indicating strong validity. A study by Poprawa et al. (2020) in Poland also supported this result with the YFAS 2.0 item-total correlation values exceeding 0.50 except for item 28 with a value of ($r = 0.34$). This result is different from the findings of Nantha, Abd Patah and Pillai (2016) in Malaysia who obtained very low results for items 22, 24 and 25 (0.092, 0.065 and 0.116) respectively while other items had correlation coefficient values of more than 0.20. The significant item-total correlation value indicates the validity of the idea that all items are uniform in measuring food addiction.

Another study by Schulte and Gearhardt (2017) found that the YFAS 2.0 has better psychometric properties than the original YFAS because almost 6% more individuals met the 'diagnostic' threshold level on the YFAS 2.0 compared to the original YFAS. This is because, according to Schulte and Gearhardt (2017), the YFAS 2.0 assesses criteria that were previously categorized as abuse and withdrawal, while the original YFAS only assessed withdrawal criteria. As a result, the YFAS 2.0 is now starting to replace the original YFAS in food addiction studies and the adaptation of the original YFAS to language types and populations has also varied and developed like the YFAS 2.0. (Hauck et al., 2018). In addition, the YFAS 2.0 instrument that has been validated in previous studies is through convergent validity which is consistent with a study from Malaysia. According to Nantha et al. (2020), symptom scores in the Malay version of the YFAS 2.0 were associated with higher binge eating disorder scores ($r = 0.46$, $p < 0.001$). Similarly, a diagnosis of food addiction was significantly associated with increased binge eating disorder scores ($r = 0.25$, $p < 0.001$) (Nantha et al., 2020).

In addition, a study by Khine et al. (2019) stated that other variables related to the convergent validity of the J-YFAS 2.0 showed significant associations with food addiction in the J-YFAS 2.0 diagnosed. Meanwhile, for the study conducted in Poland, the YFAS 2.0 instrument, like the original, measured 11 symptoms of food addiction (Gearhardt, Corbin & Brownell, 2016). The tested model obtained a high-quality indicator. All factor loadings were statistically significant and high. Next, a study by Manzoni et al. (2020) conducted in Italy showed that convergent validity analysis was also performed. In line with previous validity studies, significant correlations were found between the I-YFAS 2.0 symptom and the measurement of eating disorders (Meule & Gearhardt, 2019). In addition, studies using other similar instruments measuring food addiction can be used. For example, a study by Sengor and Gezer (2019) conducted convergent validity between YFAS 2.0 and EAT-26 (Eating Attitude Test-26) and found a weak but significant positive correlation between YFAS 2.0 and EAT-26 ($r=0.165$, $p<0.001$). Additionally, a previous study by Manzoni et al. (2018) also obtained similar findings with a moderate but significant positive correlation between the Italian version of YFAS 2.0 and EAT-26 ($r=0.534$, $p<0.01$).

A previous study by Chen et al. (2022) showed a significant correlation in almost all dimensions of the YFAS 2.0 and BMI ($p<0.01$). Only two dimensions in this study did not correlate significantly with BMI, which consisted of the dimensions of 'too much time' and 'craving' with values of $r = 0.17$ and $r = 0.13$. The results of Chen's study also supported previous studies from Gearhardt, Corbin and Brownell (2016) and Manzoni et al. (2021) which also showed a significant but weak correlation between YFAS 2.0 dimensions and BMI with the lowest values of $r= 0.28$ and $r= 0.311$.

The Italian version of the YFAS 2.0 has been shown to be a robust instrument with good psychometric properties and robust reliability and a dimensional structure that is fully comparable to the original version (Aloi et al., 2017). Furthermore, a study conducted in Italy using the Italian version of the YFAS 2.0 instrument was conducted using a sample of university students and has proven to be a useful tool for studying food addiction. In line with this, a study by Chen et al. (2022) also showed that the YFAS 2.0 has good test-retest reliability.

In addition, the YFAS 2.0 has been administered to different populations to assess the prevalence of food addiction. For example, several studies have targeted clinical populations, such as individuals with obesity, eating disorders, and other addictive behaviors. The reported prevalence rates range from 24% to 77.8% (Chen et al., 2022). According to Chen et al. (2022), there are also studies targeting populations such as university students with prevalence rates of 3.3% to 11% and a prevalence rate of 6.4% among university students for this study is considered appropriate. In Asian countries, the Japanese version of the YFAS 2.0 was validated on a sample of 731 undergraduate students, with the majority being women (78.5%) and was found to have good internal consistency (Manzoni et al., 2020).

A study conducted by Manzoni and colleagues (2020) on two sample groups, namely patients with severe obesity and the Italian general population, showed good internal consistency as well as convergent and discriminant validity. In addition, a subsequent study examining the YFAS 2.0 instrument conducted by Schulte and Gearhardt (2017) in the USA showed an internal consistency of YFAS 2.0 with a value of 0.87, suggesting good internal consistency reliability.

Next, a study of YFAS 2.0 in Poland that examined the reliability of YFAS 2.0 using Cronbach's alpha coefficient was evaluated through several indicators: subscale time stability, item-total correlations, and internal consistency of each subscale. High results of this analysis were obtained (Poprawa et al., 2020). The internal consistency reliability of the Iranian Food Addiction Scale Version 2.0 (YFAS 2.0) was evaluated using Cronbach's alpha coefficient on the sample with a value of 0.93 (Ghanbari et al., 2022). Studies conducted on Taiwanese population-based studies of the YFAS 2.0 and mYFAS 2.0 instruments also reported good internal consistency (Cronbach's $\alpha = 0.90$ and 0.89) and good test-retest reliability (ICC = 0.71 and 0.69) (Chen et al., 2022).

Research Objectives

The objectives of this study are to:

1. assess the construct, convergent and concurrent validity of the Yale Food Addiction Scale (YFAS 2.0),
2. assess the reliability of the Yale Food Addiction Scale (YFAS 2.0).

Research Methods

Research Design

This study employed a cross-sectional, exploratory descriptive design using an online survey to collect data from respondents.

Respondents

The study population consisted of female students enrolled in the Malaysian public universities. There are several criteria for the respondents, and this is to reduce bias or any problems related to purposive sampling including female university students or women who are enrolled in undergraduate (including bachelor's degree) or postgraduate (including master's and doctoral) programmes in Malaysia when they complete the online survey. The inclusion criteria are: i) able to read and understand the online questionnaire written in Malay language; ii) aged 20 years and above with the ability to give consent for participation; and iii) not suffering from any mental disorder based on their self-report. A purposive sampling

technique was used, with 52 respondents selected for the pilot study and 178 for the actual study.

Research Instrument

i. The Yale Food Addiction Scale 2.0

In this study, food addiction is measured using the Yale Food Addiction Scale 2.0 Malay Version (YFAS 2.0). The YFAS 2.0 Malay version instrument used was taken from the study by Yogarabindranath et al. (2019), consisting of 35 items to measure food addiction symptoms in the past 12 months. The YFAS 2.0 items can be categorized into 11 symptom criteria (33 items) and 1 clinical impairment criterion (2 items). The Yale Food Addiction Scale 2.0 comprised of eight-point Likert scale ranging from “never” (0) to “every day” (7).

To obtain a total score for symptom calculation, all items need to be converted to a dichotomous scale with different threshold levels. Participants can be categorized into no addiction (1 or fewer symptoms or does not meet criteria for clinical impairment), mild addiction (2 or 3 symptoms and clinical impairment), moderate addiction (4 or 5 symptoms and clinical impairment) or severe addiction (6 or more symptoms and clinical impairment).

ii. The Eating Attitude Test-26 Malay Version

The Eating Attitude Test-26 (EAT-26) is a self-report questionnaire that involves psychopathological disorders and to assess the risk of eating disorders. This questionnaire is comprised of 26 items and three domains consisting of dieting and bulimia, food preoccupation, and oral control. Items are measured on a 6-point Likert scale with options from (1= never) to (6= always).

These items cover a variety of eating attitudes and behaviours, including concerns about weight and body shape, dieting behaviours, and thoughts related to food and nutrition. The EAT-26 was first adapted and validated into the Malay version of the EAT-26 in Malaysia, among university and college samples. Furthermore, EAT-26 has shown good internal reliability coefficients from previous studies with values ranging from .77 to .83 (Nasehah & Jamilah, 2019).

This test is designed to provide a quantitative measure of eating behaviour disorder and attitudes. Hence, higher scores on the EAT-26 indicate a higher likelihood of having an eating disorder or experiencing eating behaviour disorder. The cutoff point for clinically significant symptoms is often set at 20 points, but can vary depending on the population being assessed. In this study, the EAT-26 was used to assess the concurrent validity of the YFAS 2.0 in measuring food addiction.

Pilot Study

A total of 52 participants were recruited in advance according to the same criteria for study respondents. Reliability analysis showed that the scale has excellent reliability with a value of $\alpha=.967$. Therefore, the Cronbach's alpha result showed that this instrument is reliable in measuring food addiction.

Results

Demographic Profile

Descriptive analysis of the demographic profile of the respondents showed that samples comprised of 145 Malays (81.50%), 23 Chinese (12.90%), 10 Indians (5.60%) and 1 other race (.60%). The majority of respondents were aged between 21 and 24 years, which was 86.60%. The majority of the samples (84.30%) were undergraduate students. For the weight class category, 34 (19.10%) respondents were underweight, 100 (56.20%) respondents had an ideal weight, which was normal, 26 (14.60%) respondents were overweight and followed by 18 (10.10%) respondents who were obese.

Exploratory Factor Analysis (EFA)

Exploratory Factor Analysis (EFA) using the Principal Component Analysis (PCA) method was conducted to assess the construct validity of YFAS 2.0. During PCA, the Kaiser-Meyer-Olkin (KMO) test and the Barlett Test of Sphericity were conducted first to ensure adequate data fit. The KMO value showed a value of 0.938, exceeding the recommended value of 0.60, while the Barlett Test of Sphericity test was significant $p < .000$, proving that the study data supported the factors in the correlation matrix.

The results of the factor analysis can also be seen based on the eigen values and proportion of variance explained (PVE), which showed that 5 factors explained 70.88% of the variance in the Yale Food Addiction Scale 2.0. Factor 1 contributed to 52.44%, factor 2 (8.46%), factor 3 (3.66%), factor 4 (3.29%) while factor 5 accounted for 3.02%.

The varimax rotation method was performed because it can reduce the number of complex constructs and can increase the expected results. Table 1 shows the coefficient or factor loadings exceeding 0.40 for each item that tends to be concentrated on the factor. The factor loading value for each item was examined to determine its position in the five factors. All items contained in each factor were examined and the researchers decided to name factor 1 as "Knowledge" due to the continued eating behaviour despite knowing the consequences that would be faced (e.g. emotional, social and physical problems). Factor 2 was labeled as "Craving" which also means a strong desire to consume food while the third factor is labeled as "Withdrawal" as it included items regarding taking substances to relieve the effects of withdrawal. Next, the fourth factor is named as "Clinically Distress" and finally, the fifth factor is named "Substance Use" as this comprised items regarding taking substances in large quantities and for a long period of time than intended. Factor 1 contains 14 items consisting of items 9, 10, 11, 14, 19, 20, 21, 22, 24, 27, 28, 33, 34 and 35. Factor 2 consisted 9 items, namely items 4, 15, 23, 25, 26, 29, 30, 31 and 32. While factor 3 contained 4 items involving items 7, 8, 12 and 13. Factor 4 has 3 items consisting of items 16, 17 and 18. Finally, factor 5 consisted of 5 items, namely items 1, 2, 3, 5 and 6. The distribution of items according to the factor loadings is shown in Table 1.

Table 1

Factor loading values of YFAS 2.0 items

Items / Factor Loading	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Item 1					.677
Item 2					.748
Item 3					.697
Item 4		.402			
Item 5					.583
Item 6					.435
Item 7			.649		
Item 8			.569		
Item 9	.753				
Item 10	.734				
Item 11	.474				
Item 12			.712		
Item 13			.694		
Item 14	.463				
Item 15		.534			
Item 16				.662	
Item 17				.597	
Item 18				.539	
Item 19	.763				
Item 20	.867				
Item 21	.849				
Item 22	.490				
Item 23		.476			
Item 24	.512				
Item 25		.762			
Item 26		.612			
Item 27	.815				
Item 28	.534				
Item 29		.544			
Item 30		.634			
Item 31		.823			
Item 32		.815			
Item 33	.873				
Item 34	.846				
Item 35	.565				

Note: Factor 1 = Knowledge; Factor 2 = Craving; Factor 3 = Withdrawal; Factor 4 = Clinical Distress; Factor 5 = Substance Use

Convergent Validity

Pearson correlation analysis was conducted to examine the convergent validity between YFAS 2.0 and Eating Attitude Test (EAT-26) in measuring food addiction. The results of the study showed that there was a significant and positive relationship between the Yale Food Addiction Scale 2.0 and the Eating Attitude Test-26 with $r = .267$, $p < 0.01$. Therefore, this indicates that there was a significant correlation between the Food Addiction Scale 2.0 and the Eating Attitude Test Food-26 among female students at a public university, Malaysia in

measuring food addiction. The Malay version YFAS 2.0 therefore demonstrated good convergent validity with EAT-26.

Concurrent Validity

Concurrent validity was conducted by correlating the Malay version YFAS 2.0 with a related criterion which is BMI. Table 2 shows the correlation between the 5 new dimensions of food addiction with BMI. The dimensions consisted of Knowledge, Craving, Withdrawal, Clinical Distress and Substance Use. The results of concurrent validity showed that the correlation values between the dimensions of craving with BMI was $r = .303$, $p < .01$, a correlation of $r = .306$, $p < 0.01$ for clinical distress, and $r = .190$, $p < 0.05$ for substance use and BMI. However, the results found that the relationships between the dimensions of knowledge and withdrawal with BMI were not significant with $r = .129$, $p > .05$ and $r = .086$, $p > 0.05$ respectively. Therefore, the results of the study showed that 3 out of 5 dimensions have a significant correlation with BMI.

Table 2

Correlation between YFAS dimensions and BMI

Dimension	BMI
Knowledge	.129
Craving	.303**
Withdrawal	.086
Clinical distress	.306**
Substance use	.190*

** $p < .01$, * $p < .05$

Internal Consistency Reliability

Reliability analysis in Table 3 shows that items in the Knowledge dimension have the highest reliability compared to other dimensions with a value of $\alpha = .959$ while Substance Use dimension has the lowest reliability compared to other dimensions with $\alpha = .814$. Finally, the overall reliability of the items was also high with a value of $\alpha = .972$. Therefore, the Cronbach's alpha results showed that the Malay version of YFAS 2.0 is reliable and has internal consistency in measuring food addiction.

Table 3

Results of Cronbach Alpha Reliability

Dimension	Cronbach alpha
Knowledge	.959
Craving	.930
Withdrawal	.854
Clinical distress	.866
Substance use	.814
Total items	.972

Discussion

The results of the exploratory factor analysis showed that the 35 items of YFAS 2.0 were grouped into 5 new factors or dimensions and no items were removed because all items had factor loadings exceeding 0.40. The findings of this study differed from the findings of the

study conducted by Nantha et al. (2020) which used the second-order model of YFAS 2.0 and obtained a cumulative variance of 51.40%.

Principal component analysis (PCA) in the study by Nantha et al. (2020) showed that two factors were removed from the study with several items had to be removed, namely items 3, 18, 6, 8, 11, 15, 16, 18, 22 and 28 because of factor weights of less than 0.40 and to maintain the integrity of the overall scale. Factor 1 in their study consisted of items 1, 2, 4, 7, 12, 13, 14, 17, 23, 24, 25, 26, 29, 30, 31, 32 while factor 2 consisted of items 10, 20, 9, 21, 35, 19, 27, 33 and 34. These findings differed in terms of the number of factors and the concentration of items in the factor. However, this could be due to differences in the characteristics of the study samples, in which the current study used female students who are part of the general public while the study by Nantha et al. (2020) used patients from a clinic in Seremban, Malaysia as the samples.

Based on the results of factor analysis, 5 dimensions or factors can be identified in this study which consisted of: 1) knowledge, 2) craving, 3) withdrawal, 4) clinical distress and 5) substance use. Although different from the actual dimension which has 12 factors consisting of: 1) tolerance, 2) withdrawal, 3) substance use, 4) persistent craving, 5) a lot of time spent, 6) decrease in activities, 7) knowledge, 8) significant clinical distress, 9) social problems, 10) failure to complete tasks, 11) dangerous situations and 12) craving, it still has similarities and measure the construct of food addiction. Factor 1 was found to have the most items, namely 13 items, which described knowledge about food addiction. Knekta, Runyon and Sarah (2019) explained that in a multidimensional scale it is necessary for a dimension to have at least 3 items or more to make it a construct that can stand alone and be used in the study. If a factor consisted of less than 3 items, it is recommended to remove the item to ensure good reliability and validity of the instrument. However, their study also states that factor analysis alone is not sufficient in recognizing the validity of an instrument. It needs to be accompanied and combined with other types of validity for stronger findings.

In addition, the findings of this study are also meaningful because the focus of the study sample is in the context of the Malaysian food culture itself. This is because the respondents are female students in Malaysian public universities who are also in the category of early adult women who have a different food culture from other countries. According to Lawson et al. (2020), the psychometric validity for measurement in a cultural context is also necessary but a lot of aspects need to be looked at and similar with previous studies on craving, some argue that certain aspects of food addiction may not be fully translated or may not be culturally recognizable. For example, in an exploratory factor analysis and a Confirmatory Factor Analysis study of the Turkish version of the T-YFAS 2.0, alternative factor structures were identified and there was some evidence of low item-total correlations for items related to "persistent craving," "tolerance," and "withdrawal" criteria (Buyuktuncer et al., 2019). Items related to "persistent craving" also had low factor weights in the French and Chinese translations (Brunault et al., 2017). In contrast, the same items appeared to be relatively good predictors among Arabic-speaking samples (Fawzi, 2018). The words "craving" and "addiction" may show that outside of North America, these concepts vary considerably and the word itself does not translate well across most languages or into different geographic regions. In a study evaluating the translation and back-translation of the word "craving" across 25 languages, only 64% provided successful back-translations. The same study found

that similar abstract words, such as "hope", were successfully translated more often (around 88% of the time). A follow-up qualitative analysis with native speakers of 20 different languages suggested that the majority felt that the available translations for the word "craving" were inadequate to capture the English meaning (Hormes & Niemiec, 2017).

Based on these results, two opinions were proposed by Lawson et al. (2019): (1) some items may have relatively low sensitivity when processing food addiction; and (2) some constructs may be less well-known in different eating cultures and may not be translated fully. More research is needed to test these theories and to improve the construction of instruments in measuring food addiction across cultures. This is also supported by previous research, which according to Carr et al. (2017) there is also evidence that culture further influences the relationship between gender, food choices, and craving differences. Despite its potentially important role, cultural considerations in the study are clearly not as numerous as many previous studies on the measurement of food addiction to date.

The findings of this study showed that the Malay version of YFAS 2.0 has good convergent validity with EAT-26 based on the significant and positive correlation between the two instruments. The researchers found that there are consistent findings from previous studies showing a significant and positive relationship between YFAS 2.0 and EAT-26 ($r=0.165$, $p<0.001$) (Sengor & Gezer, 2019).

Concurrent validity was conducted by correlating the dimensions of the Malay version of YFAS 2 with BMI which showed significant and positive correlation for 3 out of 5 dimensions. A study by Chen et al. (2022) obtained a significant correlation in almost all dimensions of YFAS 2.0 and BMI ($p<0.01$). Only two dimensions in Chen et al.'s study did not correlate significantly with BMI which consisted of the dimensions of 'too much time' and 'craving'. The results of this study also supported previous studies from Gearhardt, Corbin and Brownell (2016) and Manzoni et al. (2021) which also showed a significant correlation between YFAS 2.0 dimensions and BMI with the lowest dimension values ($r=0.28$) and ($r=0.311$). A previous study by Manzoni et al. (2018) also obtained findings that were in line with this study, namely a highly significant positive correlation between YFAS 2.0 Italian version and EAT-26 ($r=0.534$, $p<0.01$). The researchers concluded that the Italian version of the EAT-26 instrument showed excellent convergent, discriminant and criterion validity with other scales that also measure food addiction symptoms.

The instrument also has an excellent reliability of $\alpha=.972$. This study found that the Malay version of YFAS 2.0 instrument can measure consistently and reliably in measuring food addiction. The findings of this study are in line with previous studies in the USA, which showed the internal consistency of the YFAS 2.0 with a value of 0.87 which suggested good internal consistency (Schulte & Gearhardt, 2017). Next, the YFAS 2.0 study in Poland that examined the reliability of the YFAS 2.0 using Cronbach's alpha coefficient was evaluated through several indicators: time stability, item-total correlation and subscale internal consistency. High results were also obtained (Poprawa et al., 2020). The internal consistency reliability of the Iranian Food Addiction Scale Version 2.0 (YFAS 2.0) was evaluated using the Cronbach's alpha coefficient on the sample with a value of 0.93 (Ghanbari et al., 2022). Studies conducted on Taiwanese population-based studies of the YFAS 2.0 and mYFAS 2.0 instruments also

reported good internal consistency (Cronbach's $\alpha = 0.90$ and 0.89) and good test-retest reliability (ICC = 0.71 and 0.69) (Chen et al., 2022).

Conclusion

This study has evaluated the psychometric properties of the Malay version of Yale Food Addiction Scale (YFAS 2.0) for its applicability in screening and assessing food addiction levels. The findings confirm that the instrument demonstrates strong validity and reliability, making it a valuable tool in identifying food addiction tendencies. A significant implication of this study lies in the recognition of cross-cultural variations in how food addiction is perceived, particularly regarding the terms "craving" and "addiction." These terms may carry nuanced meanings across different languages and cultural contexts, highlighting the challenge of direct translation and interpretation in diverse populations.

However, certain limitations must be acknowledged. The study employed purposive sampling, focusing exclusively on female students from public universities in Malaysia, thereby limiting the generalizability of the findings to broader demographics. Additionally, the potential influence of social desirability and response biases (Demetriou, Ozer, & Essau, 2015) cannot be overlooked, as participants may have provided responses they perceived as more socially acceptable rather than fully truthful. To enhance the robustness of future research, it is recommended that researchers adopt random sampling techniques to ensure a more representative and balanced dataset. Furthermore, integrating mixed-method approaches in data collection could mitigate biases and provide a more comprehensive understanding of food addiction across diverse populations.

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