UNIVERSIDADE FEDERAL DE ALAGOAS
FACULDADE DE NUTRIÇÃO

PREVALÊNCIA DE ADIÇÃO POR ALIMENTOS NA AMÉRICA LATINA: UMA REVISÃO SISTEMÁTICA COM META-ANÁLISE

LUDMILA DE MELO BARROS

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Trabalho de Conclusão de Curso apresentado à Faculdade de Nutrição da Universidade Federal de Alagoas como requisito parcial à obtenção do grau de Bacharel em Nutrição.

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Universidade Federal de Alagoas
Faculdade de Nutrição
Curso de Graduação em Nutrição

FOLHA DE APROVAÇÃO

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Prof º João Araújo Barros Neto

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RESUMO

BARROS, L. M. **Prevalência de adição por alimentos na América Latina: uma revisão sistemática com meta-análise.** 65 f. Trabalho de Conclusão de Curso – Curso de Graduação em Nutrição, Faculdade de Nutrição, Universidade Federal de Alagoas, Maceió, 2023.

Na América Latina, o excesso de peso corporal coexiste com a desnutrição crônica e importantes deficiências de micronutrientes, atribuindo a dupla carga de má nutrição (DCMN) no continente. O consumo de alimentos ultraprocessados excede 20% da ingestão energética diária, comprovando a ocidentalização das preferências alimentares na região. A grande quantidade de calorias, açúcar e gordura desses alimentos desencadeia alterações em vias dopaminérgicas de recompensa do sistema mesolímbico, modulando um comportamento descontrolado, similar ao vício em drogas como cocaína e heroína, que caracteriza a adição por alimentos (AA). Essa explicação para o consumo excessivo de ultraprocessados mostra se responsabilizar tanto pela incidência de doenças crônicas quanto pela desnutrição decorrente de carências nutricionais em países com DCMN. A escala psicométrica *Yale Food Adiction Scale* (YFAS), desenvolvida para instrumentalizar a AA, tem identificado grupos de indivíduos que são acometidos pelo distúrbio em países de origem latina, incluindo aqueles com DCMN, que expressam menor controle sobre a ingestão alimentar. A inexistência de um enfoque exclusivo da AA no público latino negligencia particularidades culturais, assim como o impacto sobre o DCMN. O presente estudo tem como objetivo estimar a prevalência de AA na América Latina. A revisão sistemática com meta-análise identificou uma prevalência de AA correspondente a 38% (IC 95%: 16%–63%; $I^2 = 98,67\%$; 8 estudos) na amostra clínica e 15% (IC 95%: 10%–21%; $I^2 = 98,51\%$; 15 estudos) para amostra não clínica, valores similares ao encontrado em demais partes do globo. Os resultados são representativos de 6 países, com maior poder aquisitivo. Reitera-se a necessidade de mais estudos em diversos grupos populacionais diante do incipiente entendimento da AA na região.

Palavras-chave: Adição por Alimentos; Yale Food Addiction Scale; América Latina

ABSTRACT

BARROS, L. M. **Prevalence of food addiction in Latin America: a systematic review with meta-analysis.** 65 f. Trabalho de Conclusão de Curso – Curso de Graduação em Nutrição, Faculdade de Nutrição, Universidade Federal de Alagoas, Maceió, 2023.

In Latin America, excess body weight coexists with chronic malnutrition and important micronutrient deficiencies, attributing the double burden of malnutrition (DCMN) in the continent. Consumption of ultra-processed foods exceeds 20% of daily energy intake, proving the westernization of food preferences in the region. The large amount of calories, sugar and fat in these foods triggers changes in the dopaminergic reward pathways of the mesolimbic system, modulating uncontrolled behavior, similar to addiction to drugs such as cocaine and heroin, which characterize food addiction (AA). This explanation for the excessive consumption of ultra-processed foods is responsible for both the incidence of chronic diseases and malnutrition resulting from nutritional deficiencies in countries with DCMN. The Yale Food Addiction Scale (YFAS) psychometric scale, developed to instrument AA, has identified groups of individuals who are affected by the disorder in countries of Latin origin, including those with DCMN, who express less control over food intake. The lack of an exclusive approach to AA in the Latin public neglects the cultural particularities, as well as the impact on the DCMN. The present study aims to estimate the prevalence of AA in Latin America. The systematic review with meta-analysis identified a prevalence of AA corresponding to 38% (95% CI: 16%–63%; $I^2 = 98.67\%$; 8 studies) in the clinical sample and 15% (95% CI: 10% – 21 %; $I^2 = 98.51\%$; 15 studies) for a non-clinical sample, values similar to those found in other parts of the globe. The results are representative of 6 countries, with greater purchasing power. The need for further studies in various population groups is reiterated in view of the incipient understanding of AA in the region.

Keywords: Food Addition; Yale Food Addiction Scale; Latin America

SUMÁRIO

APRESENTAÇÃO

1. APRESENTAÇÃO

A adição por alimentos (AA) denota um comportamento de dependência, motivador de um consumo desregulado de alimentos com grande quantidade de calorias, açúcar e gordura,[1] persistente mesmo diante de consequências negativas.[2] A designação enquanto vício é proveniente da semelhança com os sintomas da dependência em drogas, incluindo a necessidade descontrolada de mais alimentos para a satisfação dos desejos, tentativas frustradas de reduzir esse consumo e sintomas de abstinência.[3]

Com base na adequação a maior parte dos critérios diagnósticos por uso de substâncias, propostos pelo Manual de Diagnóstico e Estatístico das Perturbações Mentais (DSM) 4ª Edição, a escala psicométrica *Yale Food Adiction Scale* (YFAS) foi desenvolvida para instrumentalizar a AA.[4] Uma versão mais recente se adequou às modificações propostas pela 5ª edição do DSM.[5] A amplitude de casos de AA identificados em todo o mundo, utilizando essa ferramenta,[6,7] atribui legitimidade sobre a relevância clínica do problema.[8]

Compreender a epidemiologia desse fenômeno no continente latino-americano fornece subsídios para políticas públicas vigentes e busca por novas perspectivas no combate a um padrão alimentar não saudável, responsável por dicotômicas formas de morbidade.[3,9-11]

O presente trabalho contempla: (a) um capítulo de revisão de literatura que discorre sobre vício, AA, seus aspectos fisiopatológicos e YFAS; (b) um artigo científico publicado no *International Journal of Eating Disorders* intitulado *Prevalence of food addiction determined by the Yale Food Addiction Scale in Latin America: A systematic review with meta-analysis.*

REVISÃO DA LITERATURA

2.   REVISÃO DA LITERATURA

2.1 VÍCIO

O termo vício remete ao transtorno neuropsiquiátrico caracterizado pelo padrão patológico de comportamentos associados ao uso de substâncias,[12] tais quais álcool, tabaco, cocaína, cafeína, cannabis e opioides.[13] O abuso dessas drogas desencadeia alterações neurológicas que comprometem o controle inibitório, em especial no córtex pré-frontal, resultando na ativação generalizada da região durante o consumo, em contraste com a hipoatividade diante de desafios emocionais e cognitivos representativos da abstinência prolongada.[14] O aumento da concentração de dopamina em circuitos límbicos do cérebro também se mostra crucial para efeitos de reforço do vício,[15] culminando no padrão de ativação de receptores D1 e inibição de D2.[16]

Os critérios que delimitam o seu diagnóstico são determinados pelo Manual de Diagnóstico e Estatístico das Perturbações Mentais 5ª Edição (DSM-V).[13] Os aspectos contemplados referem-se à capacidade de controle prejudicada com desejo persistente e destacado diante da exposição a estímulos direcionados a drogas, frequentes recaídas, necessidade de aumento da dose habitual para atingir o efeito almejado e motivação conduzida pela busca de alívio dos sintomas de abstinência. Além da negligência em situações de perigo a fim de priorizar o uso constante, as implicações decorrentes também se estendem ao prejuízo social, já que atividades de lazer e compromissos de trabalho são frequentemente abandonados. A classificação quanto o espectro de gravidade, a partir do número de critérios relativos aos sintomas manifestados, abrange as categorias leve, moderado e grave.

A décima revisão da Classificação Internacional de Doenças e Problemas de Saúde Relacionados (CID-10) contempla esse distúrbio na categoria 'Síndrome de Dependência'.[17] O código correspondente combina a adição (transtorno por uso de substâncias) com os aspectos clínicos decorrentes dela (transtornos induzidos por substâncias), como intoxicação, abstinência e outras doenças mentais.[13]

A caracterização do vício evoluiu a o longo do tempo, já sido descrito como falha moral, perturbação de personalidade e dependência química, sendo este último um conceito que se confunde com a capacidade individual de tolerância aos efeitos tóxicos da droga. A definição atual refere-se ao comprometimento do controle cognitivo.[12] O DSM-V também estendeu o conceito a comportamentos que apresentam sistemas de recompensa semelhantes aos desencadeados por substâncias aditivas, a exemplo de distúrbios por jogos.[13] Apesar da designação vício ser utilizada clinicamente, representativa da severidade do problema, esta é

substituída pelo termo transtorno neste manual, a fim de contemplar diferentes espectros de manifestação da doença.[12]

2.2 ADIÇÃO POR ALIMENTOS (AA)

Quando proposta em 1956, a AA foi descrita como uma adaptação a ingestão de milho, trigo, café, leite, ovos e batatas. Mesmo em indivíduos que apresentavam sensibilidade alimentar, a resposta produzida desencadeava o consumo excessivo com padrão semelhante ao vício em drogas.[18] A literatura atual, por sua vez, tem atribuído ao fenômeno o consumo descontrolado de alimentos hiperpalatáveis, com elevadas quantidades de energia, açúcar e gordura,[1] típico de ultraprocessados, também com alto índice glicêmico.[3]

A consolidação enquanto distúrbio neuropsiquiátrico ganhou respaldo ao longo dos últimos anos a partir de estudos de neuroimagem em obesos.[19] Ressonâncias magnéticas apontam uma diminuição na liberação de dopamina e disponibilidade de receptores dopaminérgicos D2 estriais, similar ao encontrado em usuários de substâncias aditivas, favorecendo estímulos calóricos progressivamente recompensadores.[20,21] Reduções de volume nas substâncias cinzenta e branca em regiões cerebrais envolvidas na função executiva e controle inibitório foram evidenciadas em indivíduos com índice de massa corporal mais elevados.[22] A menor disponibilidade de receptores agonistas de alta afinidade μ-opióide, evidenciada nesse mesmo estado nutricional, também pode ser compensada por excessos na ingestão alimentar. Tais implicações fomentam a validação do AA como um construto.[19]

A obesidade e AA não se sobrepõem por completo,[23] de modo que o excesso de peso ou gordura corporal não pode ser usado como métrica dessa forma de vício.[24] Todavia, ambas condições clínicas apresentam vulnerabilidade compartilhada por polimorfismos genéticos, como o alelo TaqI A1 do receptor D2 de dopamina.[25] Além disso, a transferência de adição entre diferentes substâncias já foi relatada, exemplificada pela preferência aumentada por doce em alcóolatras com abstinência.[26] De forma semelhante, a limitação anatômica imposta pela cirurgia bariátrica, que impossibilita excessos alimentares, pode levar indivíduos no pós-operatório a desenvolver vício por novas formas de substâncias.[27,28]

Ressalta-se que indivíduos atendidos pelos parâmetros da AA não estão exclusivamente acima do peso.[29] Crianças e adolescentes com DCMN, identificados com esse distúrbio, apresentaram maior ingestão diária energética por peso corporal, quando comparados a grupos eutróficos, com sobrepeso e obesidade.[10] O prejuízo no controle da ingestão alimentar pode explicar a maior suscetibilidade ao ganho de peso em jovens com retardo no crescimento.[30,31]

Apesar da AA não ser reconhecida pelo DSM-V como um transtorno por uso de substâncias, o manual não descarta a existência de outras formas de distúrbio.[13] Além do padrão patológico de comportamentos que caracteriza a doença se adequar, em maior proporção de critérios, ao construto AA,[3] a perspectiva de tratamento de indivíduos obesos a partir desse diagnóstico é repercutida e plausível.[32] A substituição pelo termo transtorno por uso de alimentos já foi mencionada, remetendo a comportamentos potencialmente desadaptativos associados a perda subjetiva de controle sobre a ingestão alimentar, condizente com o utilizado pelo DSM-V.[33]

A discussão em torno da nomenclatura também já cogitou a denominação adição alimentar, que configuraria uma forma de vício comportamental.[34] Contudo, os alimentos associados a esse problema compartilham propriedades específicas derivadas de sua composição nutricional densamente energética, que justifica o comportamento hedônico decorrente de alterações metabólicas,[3] tornando assim a referência a alimentos mais apropriada.[24]

Semelhanças entre a AA e o transtorno do comer compulsivo (TCC), doença comportamental conceituada pelo DSM-V,[13] são encontradas.[35] A elevada frequência de episódios do consumo excessivo de alimentos hiperpalatáveis e hipercalóricos, mesmo na ausência de fome, constitui fator de confusão entre ambas.[36] A distinção é consolidada pelo fato do TCC ser caracterizado por crises com período limitado de tempo, não especificar alimentos[13] e apresentar ligação com aspectos culturais, além de necessariamente resultar no posterior quadro de humor deprimido e sensação de culpa. A AA, por sua vez, consolida-se como uma desordem neurológica induzida pelos tipos de alimentos consumidos.[36] Os dois distúrbios podem ainda se manifestar de modo concomitante.[7]

2.2.1 Aspectos fisiopatológicos

Sob a perspectiva evolutiva, os seres humanos se beneficiaram de sistemas neurais que impulsionam a procura por recompensas naturais.[37] Estimulada pela privação e menor capacidade de recaptação da dopamina mesocorticolímbica,[38] essa característica propiciou a perpetuação da espécie e explica, no contexto atual, comportamentos disfuncionais de impulsividade e adição.[38,39]

Estudos em camundongos têm destacado o comprometimento do autocontrole diante da exposição excessiva e intermitente a sacarose, com semelhanças a modelos animais de vício em substâncias, exemplificadas por aumentos de dopamina extracelular no núcleo accubens (NAc) e maior expressão de receptores dopaminérgicos.[40,41] Esse estado, que requer doses

maiores para estimular o organismo saciado,[42] também ocorre diante da ingestão de óleo de milho.[43] A situação de abstinência acontece na ausência da ingestão desses alimentos, implicando na diminuição desse mesmo neurotransmissor, em contraste com maior liberação de acetilcolina no NAc, tal qual o que ocorre diante do consumo de opioides.[44]

O excesso de glicose predispôs aumento nos receptores dopamina D1 e μ-opióide-1, assim como diminuição da ligação aos receptores de dopamina D2 na porção estriada dorsal.[45] Esses mesmos receptores D2, regulados negativamente na exposição crônica a frutose a fim de possibilitar sinalização de recompensa,[46] também reduziram diante da ingestão voluntária de alimentos hiperpalatáveis como chocolate, *bacon* e salsicha.[47] O consumo de batata fritas em ratos, com uma proporção específica de 35% de gordura e 45% de carboidrato, resultou num aumento da procura pelo próprio alimento e ativação cerebral mesolímbica.[48]

Apesar das divergências entre os tipos de alimentos estudados, o padrão responsável pela AA descrito na literatura é caracterizado por hiperpalatabilidade e alta densidade energética, destacando-se carboidratos puros de altos índices glicêmicos ou misturas de alimentos, como ultraprocessados.[3] De modo isolado, o açúcar refinado apresentou potencial viciante superior a cocaína.[49] Já uma dieta *junk food* levou ao aumento mais rápido da expressão e função de receptores de glutamato tipo AMPA, principal fonte de excitação no NAc, responsável por mediar respostas motivacionais na busca por alimentos.[50]

2.3 YALE FOOD ADDICTION SCALE (YFAS)

O YFAS constitui um questionário autorrelatado com 25 itens, que operacionaliza os indicadores de AA. Essa versão primária teve como base os critérios sintomáticos do diagnóstico de dependência de substâncias do DSM 4ª edição.[4] Com propriedades psicométricas consistentes, assim como validade convergente e discriminante,[51] a escala identifica essa forma de adição a partir de 3 critérios confirmados, enquanto que a contagem de sintomas subsequentes aponta a gravidade do distúrbio.[4] Seu desenvolvimento legitima a AA como condição clínica, possibilitando um corpo de pesquisa mais sistemático em torno de seu conceito enquanto desordem neurológica.[52,53]

Traduções para variadas línguas[35,54] e adaptações para o público infantil foram desenvolvidas.[55] A YFAS modificada (mYFAS) foi utilizada em uma coorte epidemiológica e é considerada uma avaliação mais breve da AA,[56] apresentando maior utilidade em triagens[57] e amostras maiores de indivíduos.[58] O advento do DSM-V implicou na atualização desse construto para a versão 2.0, também descrita para mYFAS,[51] adequando-se aos novos parâmetros diagnósticos propostos, incluindo a designação transtorno por uso de substâncias.[5]

Elevados escores de AA aferidos pela YFAS se associam a uma maior ativação do córtex cingulado anterior, córtex orbitofrontal medial e amígdala em decorrência do recebimento antecipado de alimentos, regiões responsáveis pelo desejo e reatividade no comportamento viciante em drogas.[59] Tais respostas de ativação neural são mais destacadas diante do consumo de ultraprocessados,[60] alimentos que se mostram associados ao diagnóstico de AA.[61,62]

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ARTIGO CIENTÍFICO

3. ARTIGO CIENTÍFICO

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Prevalence of food addiction determined by the Yale Food Addiction Scale in Latin America: A systematic review with meta-analysis

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Abstract

Objective: Food addiction (FA) has been extensively investigated worldwide; however, the prevalence of FA in the Latin American population has yet to be established and past work has largely neglected the specificities of this region, that includes the most significant economic disparities in the world. Thus, the objective of this study was to assess the prevalence of FA measured by the Yale Food Addiction Scale in Latin America.

Method: The search was performed on MEDLINE, ScienceDirect, LILACS, IBECS, SciELO, PsycArticles, CENTRAL, and the gray literature. FA prevalence data were collected, and random effects meta-analyses were performed to calculate the overall weighted prevalence, the prevalence by country, and by clinical and non-clinical samples.

Results: A total of 10,082 occurrences were identified through database searches, and 23 studies were included (Mexico = 9; Brazil = 7; Chile = 4; Argentina = 1; Peru = 1; Uruguay = 1). The prevalence of FA found in clinical samples was 38% (95% CI: 16%–63%; I^2 = 98.67%; 8 studies), while in non-clinical samples, it was 15% (95% CI: 10%–21%; I^2 = 98.51%; 15 studies).

Discussion: The average prevalence of FA in the Latin American countries included here was in accordance with that reported in other regions worldwide. It is noteworthy that the studies were conducted only in six countries, which are among those with the highest income in the region and do not represent the situation in native populations or those with lower purchasing power. This gap in the data also reflects the effects of economic disparities on the availability of empirical data in the region.

Public Significance: The prevalence of food addiction in Latin America was similar to that reported in other regions. It was higher among individuals with overweight, whether or not undergoing bariatric surgery, than in non-clinical samples. These findings contribute to aggregate information about this condition that has drawn the attention of clinicians and researchers.

Resumen

Objetivo: La adicción a la comida (FA, por sus siglas en inglés) ha sido ampliamente investigada en todo el mundo; sin embargo, la prevalencia de la FA en la población

latinoamericana aún no se ha establecido y el trabajo previo ha descuidado en gran medida las especificidades de esta región, que incluye las disparidades económicas más significativas del mundo. Por lo tanto, el objetivo de este estudio fue evaluar la prevalencia de FA medida por la Escala de Adicción a la Comida de Yale en América Latina.

Método: La búsqueda se realizó en MEDLINE, ScienceDirect, LILACS, IBECS, SciELO, PsycArticles, CENTRAL y la literatura gris. Se recopilaron datos de prevalencia de FA y se realizaron metanálisis de efectos aleatorios para calcular la prevalencia ponderada general, la prevalencia por país y por muestras clínicas y no clínicas.

Resultado: Se identificaron 10 082 casos mediante búsquedas en bases de datos y se incluyeron 23 estudios (México = 9; Brasil = 7; Chile = 4; Argentina = 1; Perú = 1; Uruguay = 1). La prevalencia de FA encontrada en muestras clínicas fue del 38% (IC95%:16%; 63%; I^2 = 98,67%; 8 estudios), mientras que en muestras no clínicas, fue del 15% (IC del 95%: 10%; 21%; I^2 = 98,51%; 15 estudios).

Discusión: La prevalencia promedio de FA en los países latinoamericanos incluidos aquí estuvo de acuerdo con la reportada en otras regiones del mundo. Cabe destacar que los estudios se realizaron solamente en seis países, que se encuentran entre los de mayores ingresos de la región y no representan la situación de las poblaciones nativas o de menor poder adquisitivo. Esta brecha en los datos también refleja los efectos de las disparidades económicas en la disponibilidad de datos empíricos en la región.

1 | INTRODUCTION

Almost 25% of the Latin American adult population reports a high weight status, exceeding the average world prevalence of 13% (Organización Panamericana de La Salud, 2021). One in 10 individuals in this age group also has type 2 diabetes mellitus. At the same time, hypertension affects about 40% of people over 35 years of age (Lopez-Jaramillo et al., 2021), perhaps linked to the fact that Latin American countries are going through an epidemiological and nutritional transition (Hernández-Ruiz et al., 2022; Organización de Las Naciones Unidas para La Alimentación y La Agricultura, 2017). Latin America is also the region with the most significant economic disparities in the world, and it has specific inequities that affect health outcomes (Ortiz & Cummins, 2011; Tumas et al., 2019). High body weight coexists with chronic malnutrition and significant micronutrient deficiencies, leading to high rates of the double burden of malnutrition (coexistence of undernutrition along with overweight, obesity or diet-related noncommunicable diseases) in the continent (Corvalán et al., 2017; World Health Organization, 2017), which is also accompanied by marked food insecurity (Smith et al., 2017).

The exponential growth in consumption of ultra-processed foods (UPF) (Pan American Health Organization, 2015) has been such that it is now reported that these foods exceed 20% of daily energy intake in Latin America (Cediel et al., 2018; Louzada et al., 2018; Marrón-Ponce et al., 2018), pointing to the westernization of food habits in the region (Matos et al., 2021), and seen as contributing to adverse health outcomes (Lopez-Jaramillo et al., 2021; Louzada et al., 2015; Louzada et al., 2018; Organización Panamericana de La Salud, 2021). The combination of the industrialization and urbanization process in Latin American countries, with increased availability and consumption of UPF and the still present food insecurity in the region, may contribute to the emergence of eating disorders in the population (Parnarouskis et al., 2022; Pike et al., 2014). Food addiction (FA) is a more recent area of interest within the field of eating disorders FA is characterized by the excessive consumption of energy-dense, hyperpalatable, and processed foods with characteristics and repercussions similar to substance use disorders (Gearhardt et al., 2011). Current literature suggests that the nutritional composition of UPF, characterized by high amounts of energy, sugar, and fat, turns these products into the main drivers of FA (Lennerz & Lennerz, 2018). UPF may lead to excessive consumption (Kessler, & Ahima, 2009), triggered by changes in dopaminergic reward pathways in the mesolimbic system (Poti et al., 2017; Volkow et al., 2013), which modulates a behavior similar to drug addiction (Lustig, 2020). Food intake stops being motivated only by homeostatic regulation and acquires the purpose of avoiding abstinence (Lennerz & Lennerz, 2018).

Since the development of the Yale Food Addiction Scale (YFAS) psychometric scale to measure FA, several studies have been conducted on this theme worldwide (Davis, 2017; Praxedes et al., 2022;

Pursey et al., 2014). The scale has been translated and validated into Brazilian Portuguese (Nunes-Neto et al., 2018) and Spanish (Granero et al., 2014; Granero et al., 2018), including with semantic adaptations for the Chilean (Marín, 2014) and Mexican populations (Valdés-Moreno et al., 2016), and some studies using this scale have thus reported on the prevalence of FA in Latin American countries (Falcón et al., 2021; Filgueiras et al., 2019; Lopez-Lopez et al., 2021; Obregón et al., 2015). However, to date, prevalence of FA in Latin American populations has not been systematically investigated, which is an important gap given the specificities of this group. Sociocultural factors may contribute to differences in prevalence as compared with other places worldwide (de Moraes et al., 2021; Lawson et al., 2020), such as the United States and Europe, which are greatly more studied (Burrows et al., 2018; Pursey et al., 2014). Thus, obtaining specific data in this region is important. Latin American countries present a marked cultural diversity and, in general, suffer from political and economic instability which limits the population's access to health services, particularly the population that is geographically or economically disadvantaged (Ruano et al., 2021). In addition, the introduction of commodity production into the local economy promoted the consumption of UPF, even in rural communities (Ablard, 2021). Moreover, industrialization, already widespread in Latin American countries, may have catalyzed the development of eating disorders (Pan American Health Organization, 2015; Pike et al., 2014), that despite being distinguished from FA, share similar clinical manifestations (Davis, 2017). It is also important to emphasize that children who experience undernutrition are more likely to experience adverse effects from energy-dense diets as they grow older, attributing greater complexity to FA in the face of the double burden of malnutrition prevalent in the Latin American continent (de Moraes et al., 2021).

The most recently published systematic review with a meta-analysis addressing the prevalence of FA did not separate the data by geographic regions of the globe (Praxedes et al., 2022). Furthermore, the article by Praxedes et al. (2022) only conducted searches in the English language, did not include specific Latino databases. Hence, to the extent of our knowledge, there is no systematic investigation dealing with the prevalence of FA in Latin America, specifically. Given the pitfalls of generalizing these data to Latin American groups, the current systematic review aims to assess the prevalence of FA as measured by YFAS in the Latin American continent.

2 | METHODS

This systematic review with meta-analysis is an extension of a recent review aiming to assess the prevalence of FA in different contexts but it did not discuss prevalence in specific geographic regions of the globe and it did not conduct searches in Latin American databases or languages (Praxedes et al., 2022). It is reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Page et al., 2021). The protocol used in this study was previously published in the PROSPERO database (https://www.crd.york.ac.uk/prospero/) under registration ID CRD42020193902.

2.1 | Eligibility criteria

The study included cross-sectional studies, cohorts, and clinical trials carried out in Latin American countries when these evaluated the prevalence of FA using any version of the YFAS as an instrument, namely YFAS, YFAS 2.0, dYFAS-C 2.0, mYFAS, mYFAS 2.0, YFAS-C, and mYFAS-C. No restrictions were placed on the nature of the samples, and gender, age group, and concomitant clinical conditions were eligible. Duplicates of included studies were discarded.

2.2 | Search strategy

The search was performed on MEDLINE, ScienceDirect, Latin American and Caribbean Health Sciences Literature (LILACS), Bibliographical Index Español en Ciencias de la Salud (IBECS), Scientific Electronic Library Online (Scielo), PsycArticles, and Cochrane Central Register of Controlled Trials (CENTRAL). In addition, the OpenGrey and Greylit. org, gray literature databases, were also searched. The reference lists of articles included in the full-text reading were also analyzed to select reports not retrieved by the search strategy.

The following keywords related to the studied outcome (FA) were used: "Food addiction," "Eating Addiction," "Yale Food Addiction Scale," and "YFAS" in English, Portuguese, and Spanish, according to the database being searched, separated by the Boolean operator "OR." Adaptations were considered for each electronic database. A date restriction (2008–2022), from the year of validation of the first version of YFAS to the year of completion of the research, with no language limitations. A final search was performed previous to the final analysis to identify other studies that could have been included in this review. The last database search was performed on December 11, 2022.

2.3 | Identification and selection of studies

Mendeley v1.19.5® software (Elsevier, The Netherlands) was used to help manage the references. Two authors (LMB and MLM) with access to authors and journal titles independently assessed the titles and abstracts of retrieved articles. Disagreements were resolved in consultation with a senior researcher (NBB). This schematization was repeated in the risk of bias assessment. Full-text versions of potentially eligible articles were retrieved for further evaluation.

2.4 | Data extraction

The following data were extracted from each report: prevalence of FA diagnosis, type of study, the country in which it was carried out, the YFAS version used, as well as age group, sex, economic class, and ethnicity, in addition to the characterization of the included

sample as to be clinical or non-clinical. Studies classified as clinical samples included those conducted with individuals seen or monitored in clinics, hospitals, support groups, and other health institutions.

2.5 | Risk of bias assessment

The assessment of the risk of bias in the included studies was performed by two authors (LMB and MLM) independently using the checklist for prevalence studies by the Joanna Briggs Institute's Critical Appraisal, according to Migliavaca et al. (2020). In case of disagreements between the evaluators, another researcher (NBB) was consulted. The domains evaluated by the tool are sample representativeness, sampling method, sample size, description of subjects and setting, identified sample coverage, use of valid diagnostic methods, standardization of measurements for all participants, appropriate statistical analysis, and response rate. For each study assessed, a score was calculated from the number of "yes" they received for each item evaluated. Based on the number of "yes" received, studies were classified as high (up to 49%), moderate (50%–69%), and low (70% or more) risk of bias (Moola et al., 2020; Munn et al., 2015). Inter-rater reliability was measured by the Kappa coefficient based on the final classification of the included studies.

2.6 | Certainty of evidence

The method proposed by the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) was used to assess the quality of evidence (Grade Working Group, 2017). Evidence quality was classified into three categories (high, moderate, and low) based on study type, methodological limitations, inconsistent results, indirect evidence, imprecision, and publication bias. In the present analysis, this method was adapted for cross-sectional studies. For observational studies, the quality of evidence starts as low and, based on the other criteria, can raise the level of evidence. The quality of evidence determined by the GRADE system allows the analysis of aggregate results considering the design and results of the included studies and the pooled effect estimate obtained by the meta-analysis.

2.7 | Data analysis

The "metaprop" command was used on the Stata v.12 software (StataCorp, College Station, TX) to perform the meta-analysis (Nyaga et al., 2014). A DerSimonian and Laird random effects model was used with the Freeman–Tukey double arcsine transformation to stabilize the variances. Heterogeneity was measured using the I^2 statistic. I^2 statistics is a measure of the inconsistency of the data. Since heterogeneity in any meta-analysis is expected to exist, regardless of whether the test can detect it, the I^2 statistic represents the percentage of the variability in the effects found that is due to between-study heterogeneity. The

higher the value of I^2, the higher the variability in the effect size is due to between-study heterogeneity and not chance (Deeks et al., 2022). Since meta-analysis assumes models with normally distributed data, transformation of proportions extracted from the included studies is necessary. Double arcsine transformations yield variances from the proportion that depends only on the sample size, typically considered as fixed factors, allowing the use of such "stabilized" variances in standard meta-analytic methods (Lin & Xu, 2020).

The primary outcome sought in the studies was the prevalence of FA through the YFAS versions. The prevalence data found were used to calculate the weighted prevalence of FA. The weighted prevalence of FA was calculated for all studies by sample-type subgroups (clinical and non-clinical) and by countries. According to the previous larger meta-analysis results, clinical samples are expected to show a higher prevalence than non-clinical ones (Praxedes et al., 2022). In their metaregression analysis, Praxedes et al. (2022) identified significant differences in the weighted prevalence of FA in clinical and non-clinical samples (31% in clinical samples vs. 14% in non-clinical samples). The highest prevalence of FA identified by Penzenstadler et al. (2019) among studies with clinical samples was 100%, contrasting to 25.7% for non-clinical populations, corroborating the influence of such a context on the prevalence of FA.

3 | RESULTS

3.1 | Search results

A total of 10,082 occurrences were identified through searching the databases. After removing duplicate references and subsequent evaluation with the inclusion criteria, 25 full-text manuscripts were selected for evaluation. After full reading, 2 full-text manuscripts were excluded for not reporting the prevalence of FA, resulting in 23 full-text studies referring to 23 studies included in this review. Figure 1 contains the flowchart that illustrates the search and selection of studies.

3.2 | Characteristics of the studies included in the analysis

Mexico and Brazil stand out as the countries with most studies in non-clinical samples ($n = 6$ and 5, respectively), followed by Chile ($n = 2$), Argentina ($n = 1$), and Peru ($n = 1$). Fifteen studies were performed on non-clinical and eight clinical samples. Most studies ($n = 15$) had their sample composed mostly of female individuals, and only one study included a sample composed exclusively of women (Oliveira et al., 2020). From the 23 included studies, 19 studies mentioned the age range of their samples, of which 15 were composed of adult samples, and the remaining 4 were composed by either children, or adults and elderly altogether. Four studies did not report the age range of their samples. Ethnic aspects were commonly neglected, identified in only two studies (da Silva Júnior et al., 2022; Nunes-Neto et al., 2018), in which the population was primarily white (Caucasian).

FIGURE 1 Flowchart of studies included in the review.
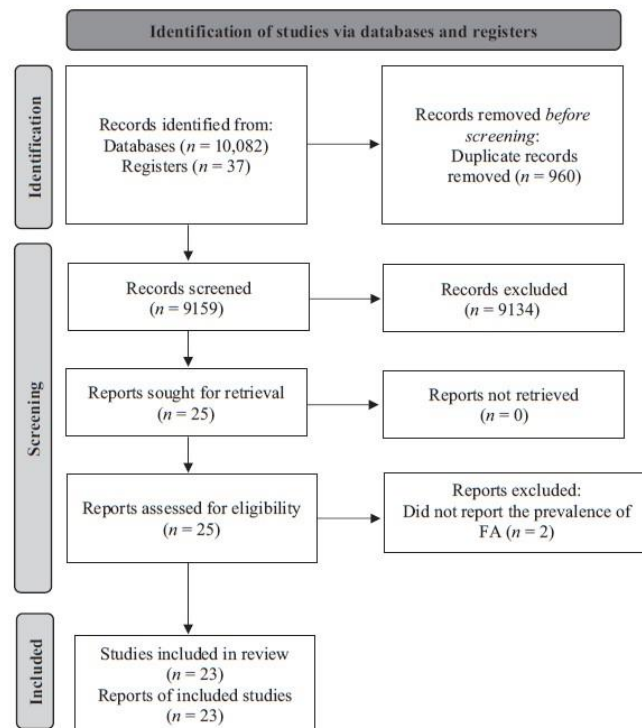
The traditional version of the YFAS was the most used to identify FA ($n = 11$). The other characteristics of the included studies are shown in Table 1.

3.3 | Risk of bias

The risk of bias assessment classified five studies as moderate and 18 at high risk of bias. The most frequent biases were related to adequate response rate, sampling, and detailed description of the study subjects and the setting (mainly sociodemographic and economic characterization). The results of the risk of bias assessment of each included study are described in Table S1. The inter-rater reliability by the Kappa coefficient was 0.70.

3.4 | Results of meta-analysis

Twenty-three studies were included in the meta-analyses. The prevalence of FA across studies ranged from 4% to 95%. The study set of clinical samples included 1263 participants, of which 507 were positive for FA, while the dataset of non-clinical samples included 16,095

participants, 1900 of which were positive for FA. In Figure 2, the prevalence of FA was stratified by sample type (clinical and non-clinical sample), finding a prevalence of 38% (95% CI: 16%–63%, $I^2 = 98.67\%$; 8 studies) for clinical samples, while for non-clinical samples it was 15% (95% CI: 10%–21%, $I^2 = 98.51\%$; 15 studies).

When analyzing the data by clinical status stratified by country (Figure 3), it was observed that only in Brazil, Mexico, and Chile had studies been located among both sample types. The weighted prevalence in studies with non-clinical samples was very close in Brazil, Chile, and Mexico (14%, 15%, and 13%, respectively).

3.5 | Certainty of evidence

Table 2 provides the assessment of the certainty of the evidence of the included studies. Considering the limitations of the studies included and the inconsistencies in the results, the quality of the evidence was judged to be very low. This classification was based on study limitations (quality assessment) and inconsistent results (heterogeneity). Only these criteria were used due to the inadequacy of the analysis of the traditional criteria "indirect evidence," "inaccuracy," and "publication bias," given the nature of the studies included in the meta-analysis.

TABLE 1 Characterization of the articles included

Author (year)	N	Country	Age group	Female, n (%)	Race/ethnicity	Socioeconomic status	Clinical sample	YFAS version	Food addiction prevalence, n (%)
Bentacor et al. (2019)	153	Uruguay	Adults and elderly (81.0% of the sample ≥60 years)	56 (37.0)	NR	NR	Yes (Patients cared for by a cardiovascular health program)	YFAS	9 (5.9)
Cardoso et al. (2020)	150	Brazil	Adolescents and adults (19–46 years) Mean age: 22.76 ± 3.79 years	53 (35.3)	NR	NR	No (College students)	mYFAS 2.0	13 (8.6)
Carlos et al. (2022)	71	Brazil	Adolescents and adults (18–59 years) Mean age: 40 ± 11.5 years	88 (87.3)	NR	NR	Yes (Candidates for bariatric surgery)	YFAS	23 (32.4)
Cura-Esquivel et al. (2022)	291	Mexico	Children and adolescents (6–17 years) Median age: 15 years	128 (44.0)	NR	NR	Yes (Overweight and obesity children treated in a hospital)	YFAS-C	42 (14.4)
da Silva Júnior et al. (2022)	5368	Brazil	Adolescents and adults (18–59 years) Mean age: 24.1 ± 6.3 years	3990 (74.3)	2766 (51.5%) self-reported white (Caucasian)	1626 (30.3%) and 1111 (20.7%) individuals in economic classes B2 and C1, respectively	No (College students)	mYFAS 2.0	1024 (19.1)
de Moraes et al. (2021)	73	Brazil	Children and adolescents (7–16 years)	36 (49.3)	NR	NR	No (Students from public schools)	YFAS-C	14 (19.1)
Falcón et al. (2021)	427	Mexico	Adolescents and adults (18–45 years) Mean age: 34 ± 0.77 years	334 (78.2)	NR	NR	Yes (Patients treated at a nutrition clinic)	YFAS	168 (39.3)
Fernández et al. (2022)	499	Argentina	Adolescents and adults (18–29 years) Mean age: 24.9 ± 3.51 years	402 (80.6)	NR	NR	No (Online research)	YFAS 2.0	100 (20)
Filgueiras et al. (2019)	139	Brazil	Children and adolescents (9–11 years) Mean age: 9.6 ± 0.66 years	75 (53.95)	NR	54 (38.84%) participants had parents with 5 to 9 years of schooling. 88 (63.30%) live in inadequate households and 83 (59.71%) have a household density greater than two people per bedroom	No (Overweight and obese public school students)	YFAS-C	33 (24.0)
Fuentes et al. (2017)	112	Chile	NR	61 (54.4)	NR	NR	Yes (Candidates for bariatric surgery)	YFAS	56 (50.0)

TABLE 1 (Continued)

Author (year)	N	Country	Age group	Female, n (%)	Race/ethnicity	Socioeconomic status	Clinical sample	YFAS version	Food addiction prevalence, n (%)
Gabler et al. (2015)	65	Chile	NR	37 (56.9)	NR	NR	Yes (Candidates for bariatric surgery)	YFAS	28 (43.0)
Lopez-Aguilar et al. (2018)	130	Mexico	Adults (20–40 years)	80 (61.5)	NR	NR	No (Volunteers recruited in urban and suburban areas)	YFAS	22 (16.9)
Lopez-Lopez et al. (2021)	394	Peru	Adolescents and adults (>18 years) 57.61% of the sample is aged between 25 and 34 years	191 (48.4)	NR	NR	No (Online research)	YFAS	135 (34.2)
Munguía et al. (2022)	160	Mexico	Adults (19–21 years) Mean age: 20.1 ± 1.7 years	121 (75.6)	NR	NR	No (College students)	YFAS 2.0	13 (8.1)
Nunes-Neto et al. (2018)	7639	Brazil	Adolescents and adults (19–21 years) Mean age: 27.2 ± 7.9 years	5446 (71.3)	3459 (45.3%) self-reported white (Caucasian)	2806 (36.7%) of the sample has a gross monthly income of less than 310.00 USD	No (Online research)	mYFAS 2.0	330 (4.3)
Obregón et al. (2015)	292	Chile	Adolescents and adults (18–39 years) Mean age: 21.4 ± 2.4 years	187 (64.0)	NR	NR	No (College students)	YFAS	32 (11.0)
Obregón et al. (2021)	221	Chile	Adolescents and adults (18–35 years)	165 (74.0)	NR	NR	No (Participants recruited from university communities, recreation centers, and online outreach)	YFAS	49 (22.0)
Oliveira et al. (2020)	190	Brazil	Adolescents and adults (17–48 years) Mean age: 26 ± 6.22 years	190 (100.0)	NR	NR	Yes (Participants diagnosed with binge eating among members of a social network support group)	mYFAS 2.0	181 (95.3)
Rivera-Mateos and Ramos-Lopez (2022)	326	Mexico	Adolescents and adults (18–25 years)	219 (67.2)	NR	NR	No (college students)	mYFAS 2.0	42 (12.9)
Santaolaya et al. (2019)	349	Mexico	Adolescents (10–16 years) Mean age: 13.28 ± 1.48 years	154 (41.1)	NR	NR	No (Students from primary and secondary schools in private nature in metropolitan area)	YFAS-C	42 (12.0)

(Continues)

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TABLE 1 (Continued)

Author (year)	N	Country	Age group	Female, n (%)	Race/ethnicity	Socioeconomic status	Clinical sample	YFAS version	Food addiction prevalence, n (%)
Santos-Flores et al. (2021)	436	Mexico	Children and adults Mean age (children): 9.8 ± 1.49 years Mean age (adults): 33.95 ± 4.86 years	329 (75.4)	NR	NR	No (Students from public schools and their mothers)	YFAS e YFAS-C	48 (11.0)
Stephano et al. (2015)	49	Mexico	NR	14 (28.0)	NR	NR	Yes (Patients with obesity who are part of a multidisciplinary health program)	YFAS	14 (28.0)
Valtier et al. (2020)	245	Mexico	Adolescents (15–17 years) Mean age: 15.83 ± 0.7 years	130 (53.1)	NR	NR	No (Students from public schools)	YFAS-C	46 (18.8)

Abbreviation: NR, not reported.

4 | DISCUSSION

4.1 | Summary of the results

The present systematic review included 23 studies that evaluated the prevalence of FA in Latin American countries using any version of the YFAS. The studies identified had been conducted in only 6 Latin American countries (Argentina, Brazil, Chile, Mexico, Peru, and Uruguay) and involved clinical and non-clinical samples. The meta-analysis identified a mean prevalence of FA of 15% in non-clinical samples and 38% in clinical samples. The highest and lowest weighted prevalence of FA is found among studies in clinical and non-clinical samples in Brazil (95% and 4%, respectively). Of the 23 included studies, 18 had a high risk of bias. Furthermore, in general, the samples included in the studies were poorly characterized regarding their ethnicity and socioeconomic situation.

4.2 | Comparison with the literature and interpretation of data

Studies reporting the prevalence of FA are significantly more frequent in English-speaking countries, especially in the United States (Penzenstadler et al., 2019), where 15% of participants in a nationally representative sample met criteria for the (Schulte & Gearhardt, 2018), a value similar to the 15% found in the non-clinical samples of the present study. Furthermore, Ivezaj et al. (2018) identified a prevalence of FA of 17.9% among 149 Spanish-speaking Latino individuals residing in the United States, slightly higher than the prevalence of the US national sample (15%) and also higher than the rates found in the present meta-analysis (15%). This may indicate that individuals of Latin American origin living outside their countries may be more likely to experience worsening health conditions, despite improvements in socioeconomic conditions, for reasons such as cultural transmutation and weakening of family ties (Lara et al., 2005). In general, it can be said that the prevalence of FA reported in studies with non-clinical samples from Latin American countries is very similar to the prevalence found in different countries such as Italy (15.5%), Poland (14, 1%), Russia (16%), and Turkey (15.3%) (Borisenkov et al., 2021; Cebioğlu et al., 2022; Rostanzo & Aloisi, 2022; Zielińska et al., 2021). However, it is noteworthy that countries in Western Europe and North America seem to present a lower prevalence, as is the case of Portugal (2.5%) and Canada (9.3%) (Minhas et al., 2021; Torres et al., 2017).

As expected, a higher prevalence of FA was found in samples in a clinical context. In most of the studies identified in this review, clinical populations included individuals with obesity, and this population shows a reported prevalence of FA ranging between 20% and 40% (Meule & Gearhardt, 2019; Pérez et al., 2018), as identified in the present meta-analysis (38%). Fuentes et al. (2017) and Gabler et al. (2015) point to a higher prevalence of FA in Chilean patients who are candidates for bariatric surgery (50% and 43%, respectively) compared with results reported for similar samples in Portugal (25.8%), Germany
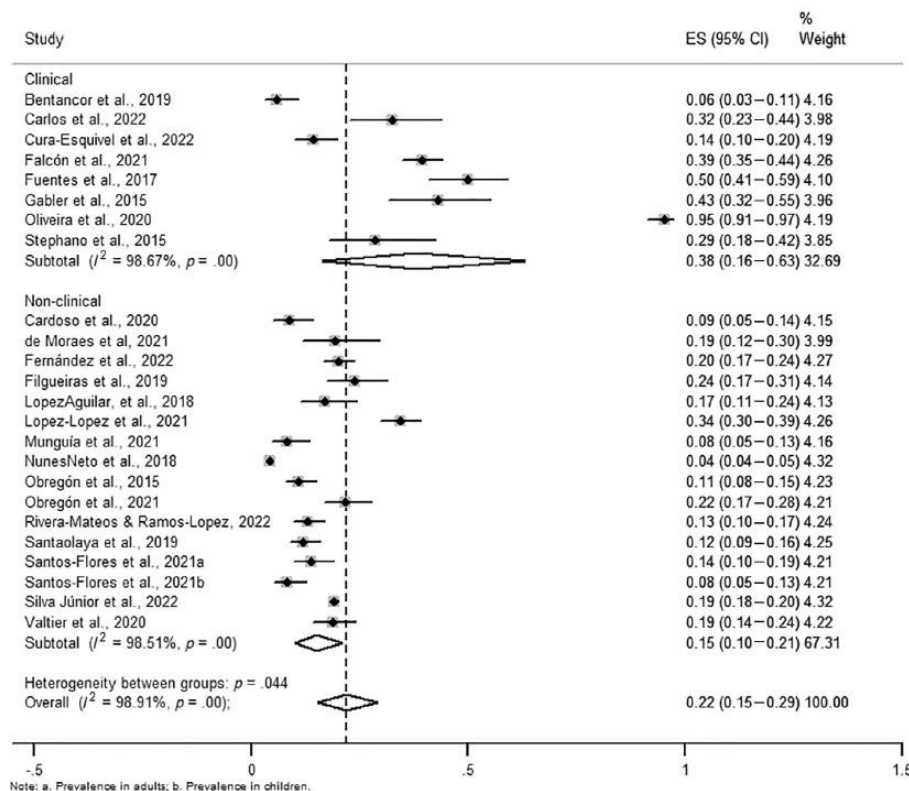
FIGURE 2 Forest plot for the prevalence of food addiction in clinical and non-clinical samples in Latin American.

(39.2%), France (39%), Israel (40%), and Australia (12.7%) (Ben-Porat et al., 2022; Dickhut et al., 2021; Som et al., 2022; Stanley et al., 2022; Torres et al., 2017). It should be noted that a positive diagnosis of FA in this population is associated with less weight loss after dietary intervention (Pérez et al., 2018).

Lastly, due to the overlap of FA with binge eating disorder, it was expected that groups with this diagnosis would also report high rates of FA (Davis, 2017; Meule & Gearhardt, 2019). Indeed, studies have reported rats of up to 95.3% in Brazilian individuals, members of a social network support group for binge eating Oliveira et al. (2020), the only Latin sample identified with this disorder.

There was an evident geographic scarcity of studies that evaluated FA in Latin America since the included studies were carried conducted in only 6 (Argentina, Brazil, Chile, Mexico, Peru, and Uruguay) of the 20 countries that make up the region. It is noteworthy that the studies were conducted in the countries categorized by the World Bank as Upper-Middle Income and High-Income economies. Thus, countries such as Bolivia, El Salvador, Haiti, Honduras, and Nicaragua, categorized as Lower-Middle Income economies, were absent (The World

Bank, 2021). It is known that Latin America shows significant inequalities in income distribution, which can lead to gaps in empirical data among countries in the region (Van, 2014). The non-inclusion of Lower-Middle Income countries makes it impossible to characterize FA in the native populations of Latin America. The possible relationships between race, ethnicity, and FA are often disregarded in the literature (Lawson et al., 2020), being present in only two studies included in this review. The few reports are from Brazilian studies and are characterized by predominantly white (Caucasian) samples (da Silva Júnior et al., 2022; Nunes-Neto et al., 2018). In Brazil, self-reported racial identify is often based on physical traits (i.e., skin color and shapes of lips and nose) and it is closely related to the individuals' socioeconomic status, to the point that black and brown individuals (mixed race), who ascend socially, usually are identified and are socially recognized as being white (Fry, 2005; Hasenbalg, 2005). Hence, even in the case of Brazil, where the research on FA is more abundant, it is likely that social and racial minorities were underrepresented. If further research is conducted with more representative samples and includes other racial and social strata of the population, the estimates found in our study may change.
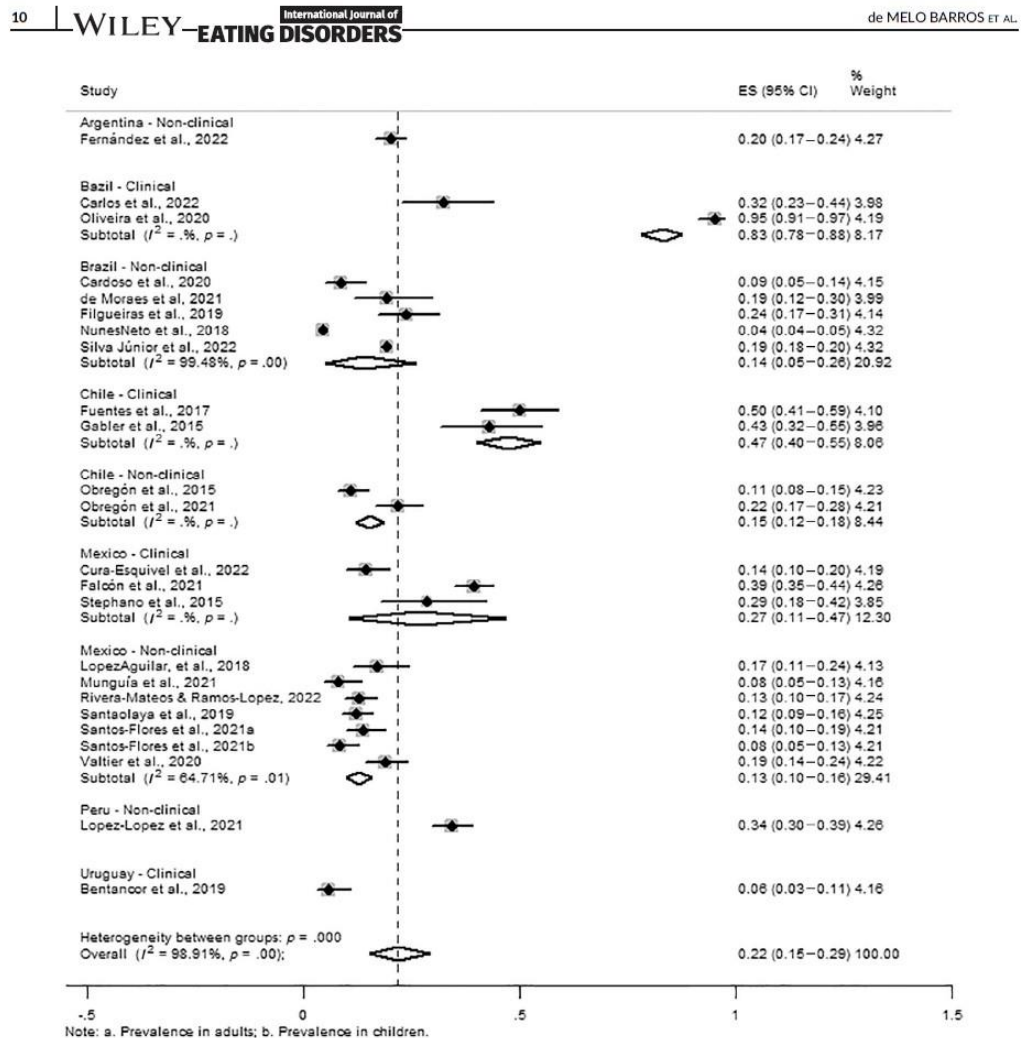
FIGURE 3 Forest plot for the prevalence of food addiction in clinical and non-clinical samples by Latin American countries.

Despite the growing interest of the scientific community in FA, a consensus regarding the validity of this construct has yet to be arrived at among researchers and clinicians. Substance use disorders require an agent or chemical compound capable of inducing the disorder in individuals who, after repeated ingestions, suffer neurobiological changes through central mechanisms, resulting in loss of emotional and behavioral control (Hebebrand & Gearhardt, 2021). In this case, the premise of a single agent with an addictive capacity is weakened when observing the diet of populations, given that the diet is characterized by a wide variety of substances and compounds instead of consuming a single compound or chemical agent (Hebebrand & Gearhardt, 2021). Controversies regarding the overlap between FA and

other eating disorders have also been debated (Meule & Gearhardt, 2019; Tran et al., 2020). However, some investigations report that about half of individuals who meet the diagnostic criteria for FA by YFAS do not present other eating disorders (Gearhardt et al., 2011).

4.3 | Limitations

This study has limitations that must be considered when interpreting its results. First, the search did not use specific descriptors related to Latin America. However, the search strategy used was broad and also

TABLE 2 Evidence quality assessment

Question: What is the prevalence of AA through YFAS in Latin America?									
Quality assessment							Results		
Number of studies (Number of participants)	Study design	Risk of bias	Inconsistency	Indirect evidence	Imprecision	Other considerations	Weighted prevalence	Quality	Importance
Prevalence in Latin America									
23 (17,684)	Observational	Severe	Very severe	N/A	N/A	None	22% (95% CI: 15–29)	⊕◯◯◯ Very low	High

Abbreviation: N/A, no applicable.

carried out in Latin American databases, so it is believed that all studies that used any of the versions of the YFAS were identified, suggesting that all studies that evaluated FA in Latin American countries were included in this review.

Another limitation is that the studies included were conducted in a limited number of Latin American countries. This region comprises 20 countries in North, Central, and South America, and studies from only six countries were included (Argentina, Brazil, Chile, Mexico, Peru, and Uruguay). In this way, the present research results do not illustrate the Latin American scenario, especially regarding the most economically deprived countries that need more funds and human resources. Empirical data and research serve to inform programs, policies, and actions that lead to local socioeconomic development, and may provide paths for alleviating negative health outcomes. Hence, the absence of scientific research in such poor and deprived countries fosters the perpetuation of such disparities (Moloney, 2009; Ruiz et al., 2018). The absence of studies in countries with sound economic development and reduced health inequalities, such Cuba, also illustrates the general lack of focus on this topic in Latin America (Cardona et al., 2013). This implies the need for caution when extrapolating our results to other Latin American countries not covered by this review.

Also, the high heterogeneity found in the meta-analyses results reduces the reliability of our findings. Finally, it should be noted that the YFAS is a tool based on self-reported measures, which implies the subjectivity of the responses and, consequently, it may compromise the results. However, YFAS versions are the primary tools for assessing FA and are validated in different contexts and languages.

5 | CONCLUSION

The average prevalence of FA in the Latin portion of the American continent was consistent with that reported in other regions worldwide. In addition, clinical samples, consisting mainly of individuals with obesity, whether or not undergoing bariatric surgery, identified a higher proportion of Latinos with FA compared with studies with non-clinical samples. It is also noteworthy that included studies were conducted only in six countries, which may not represent native Latino populations with lower purchasing power. The results of the present meta-analysis point to the emergence of important work in Latin America focused on FA although this literature is still nascent

and reiterate the need for more studies in different population groups, and moving beyond prevalence to elucidate possible associated factors. The present study is the first to evaluate FA restricted to Latin American countries and it contributes to understanding this condition in the region.

AUTHOR CONTRIBUTIONS

Ludmila de Melo Barros: Data curation; formal analysis; writing – original draft. **André Eduardo da Silva Júnior:** Conceptualization; data curation; formal analysis; writing – original draft. **Dafiny Rodrigues Silva Praxedes:** Data curation; formal analysis; writing – original draft. **Maíra Barbosa Lobo Monteiro:** Data curation; writing – original draft. **Mateus de Lima Macena:** Formal analysis; writing – original draft. **Nassib Bezerra Bueno:** Conceptualization; formal analysis; writing – review and editing.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

ANEXOS

ANEXOS

ANEXO A – International Journal of Eating Disorders (IJED) Author Guidelines updated March 2022

1. SUBMISSION AND PEER REVIEW PROCESS

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The Open Materials Badge recognizes researchers who share their research instruments and materials in a publicly-accessible format, providing sufficient information for researchers to reproduce procedures and analyses of published research studies. In the field of Eating Disorder research, a qualifying public, open-access database of research instruments and materials is the COS https://www.cos.io.

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The Preregistered Badge recognizes researchers who preregister their research plans (research design and data analysis plan) prior to engaging in research and who closely follow the preregistered design and data analysis plan in reporting their research findings. The criteria for earning this badge thus include a date-stamped registration of a study plan in such venues as the Open Science Framework (https://osf.io) or Clinical Trials (https://clinicaltrials.gov) and a close correspondence between the preregistered and the implemented data collection and analysis plans.

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  - All co-author details, including affiliation and email address.
  - Up to ten keywords.
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The Abstract provides a succinct summary of the article content. The recommended format and word limit vary by article type.

Structured abstracts have a recommended maximum of 250 words and should be organized into: Objective: state the primary purpose of the article, or major question addressed in the study. Method: indicate the sources of data, give brief overview of methodology, or, if it is a review article, how the literature was searched and articles were selected for discussion. For research-based articles, briefly note study design, how participants were selected, and major study measures. If your data are based on a preregistered study, provide the preregistration number or link. Results: summarize the key findings. Discussion: indicate main clinical, theoretical, or research applications/implications.

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The main text file should be in MS Word and include the following content and recommended formatting: Main body, formatted as Introduction, Method, Results, and Discussion, asrecommended by the International Committee of Medical Journal Editors (ICMJE) (J. Pharmacol. Pharmacother. 2010, 1, 42–58). Exceptions to these formatting recommendations include Commentaries, Forum articles, and Perspective articles.

A Public Significance statement (< 70 words) that explains why this research is important and is written in plain English for a general, educated public.

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Tables should include a descriptive title and, if needed, footnotes defining abbreviations

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Figures should have legends (and if needed, notes) that succinctly describe the information being displayed. Figures should be uploaded in the highest resolution possible.

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Supporting Information is information that is supplementary and not essential to the article but provides greater depth and background. Examples include more detailed descriptions of therapeutic protocols, results related to exploratory or post-hoc analyses, and elements otherwise not suitable for inclusion in the main article, such as video clips, large sections of tabular data, program code, or large graphical files. It is not appropriate to include in the Supporting Information any text that would normally go into a Discussion section; all discussion-related material should be presented in the main article.

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