

UNIVERSIDADE FEDERAL DE CIÊNCIAS DA SAÚDE DE PORTO ALEGRE
PROGRAMA DE PÓS-GRADUAÇÃO EM CIÊNCIAS DA NUTRIÇÃO
ÁREA DE CONCENTRAÇÃO EM SAÚDE, NUTRIÇÃO E ALIMENTAÇÃO
LINHA DE PESQUISA EPIDEMIOLOGIA E NUTRIÇÃO
NÍVEL MESTRADO

YLANA ELIAS RODRIGUES

DISCRIMINAÇÃO RACIAL AUTOPERCEBIDA E HÁBITOS ALIMENTARES:
REVISÃO SISTEMÁTICA E MODELO CONCEITUAL

PORTO ALEGRE

2020

YLANA ELIAS RODRIGUES

**DISCRIMINAÇÃO RACIAL AUTOPERCEBIDA E HÁBITOS ALIMENTARES:
REVISÃO SISTEMÁTICA E MODELO CONCEITUAL**

Dissertação apresentada como requisito parcial
para a obtenção do título de Mestre em Ciências
da Nutrição pela Universidade Federal de
Ciências da Saúde de Porto Alegre – UFCSPA.

Orientadora: Profa. Dra. Raquel Canuto

Co-orientador: Prof. Dr. Marcos Fanton

PORTO ALEGRE

2020

Dados Internacionais de Catalogação na Publicação (CIP)

Rodrigues, Ylana Elias

Discriminação racial autopercebida e hábitos alimentares : revisão sistemática e modelo conceitual / Ylana Elias Rodrigues. - 2020.

65 p. : il.

Dissertação (mestrado) - Universidade Federal de Ciências da Saúde de Porto Alegre, Programa de Ciências da Nutrição, 2020.

Orientadora: Raquel Canuto.

Coorientador: Marcos Fanton.

1. Racismo. 2. Comportamento alimentar. 3. Revisão sistemática. 4. Modelo conceitual. 5. Epidemiologia social. I. Canuto, Raquel. II. Fanton, Marcos. III. Título.

UFCSPA - Biblioteca Paulo Lacerda de Azevedo

AGRADECIMENTOS

À minha mãe Rogéria, que me apoia incondicionalmente, por acreditar em mim e enxergar tanto valor em tudo que eu faço. Ao meu irmão Yuri, meu maior modelo de cientista e cidadão do mundo, pelo afeto, cuidado e apoio, e por ler meu artigo e fazer boas sugestões. À minha tia Vera que abriu as portas do mundo acadêmico para a minha geração, que construiu um chão firme para que eu pudesse sonhar. Assim, estendo meus agradecimentos para toda a minha família. À minha orientadora Raquel, por ter desenvolvido esse trabalho JUNTO comigo, por me ensinar tanto e me inspirar a construir a nutrição em saúde pública que eu acredito, de forma crítica, e baseada em evidências. Agradeço pela paciência e respeito com minhas transformações ao longo desses anos, com meu novo ritmo de trabalho imposto pela pandemia e pelo isolamento social e, principalmente, por seguir acreditando no meu potencial mesmo quando eu duvidei. E por ter incluído o Marcos como nosso parceiro, que figurou como co-orientador nesse último ano, por também escrever esse trabalho JUNTO, com serenidade, e contribuições teóricas tão relevantes! Ao Ricardo, aluno de Iniciação Científica, amigo e futuro colega de profissão, por dividir comigo as buscas desta revisão sistemática e estar sempre à disposição com muita energia e carinho para contribuir com esse trabalho, que é nosso. Com isso, estendo meus agradecimentos aos colegas do Grupo de Estudos sobre Determinantes Sociais da Alimentação e Nutrição (DESAN) Raquel, Ricardo, Caroline, e Cláudio pelos acolhedores encontros matinais, leituras e discussões que contribuíram significativamente para o conteúdo desse trabalho. À minha querida colega Lisandréa, que é minha grande dupla nessa empreitada do mestrado por dividir os momentos difíceis comigo, me dando força e por ser parceira em sala de aula e, principalmente, fora dela. Com isso, estendo meus agradecimentos às demais colegas de mestrado, Gicele, Larissa, Bianca, Carina, Camila, Karen, Bruna, Fernanda, Márjory, Juliane e Ana pelas trocas diárias e pelos momentos relaxantes pós aula. Eu aprendi um pouco com cada uma de vocês nesses dois anos e meio. A todas as minhas amigas, com quem posso contar diariamente, que caminham ao meu lado e me deram tanto suporte emocional para que eu pudesse vencer o mestrado. Especialmente, às lobas pelo acolhimento, e por sermos juntas essa potência feminina coletiva que impulsiona conquistas como essa. Ao TeleRS, meus queridos colegas de trabalho e à coordenação, por serem flexíveis e permitir que eu pudesse desenvolver meu trabalho nesse espaço.

Inequality hurts. Discrimination harms health.

Nancy Krieger

SUMÁRIO

RESUMO.....	7
ABSTRACT.....	8
1. REFERENCIAL TEÓRICO.....	9
1.1. CENÁRIO EPIDEMIOLÓGICO E OS DETERMINANTES SOCIAIS DA SAÚDE.....	9
1.2 AS INIQUIDADES E OS MECANISMOS QUE AS PRODUZEM.....	11
1.3. O RACISMO E SUAS DEFINIÇÕES TEÓRICAS.....	14
1.4 O RACISMO FAZ MAL À SAÚDE.....	15
1.5 DISPARIDADES ÉTNICO-RACIAIS E ALIMENTAÇÃO.....	17
1.6 RACISMO ESTRUTURAL E ALIMENTAÇÃO.....	18
1.7 DISCRIMINAÇÃO RACIAL INTERPESSOAL E HÁBITOS ALIMENTARES.....	20
2. JUSTIFICATIVA.....	24
3. OBJETIVOS.....	25
3.1 OBJETIVO GERAL.....	25
3.2. OBJETIVOS ESPECÍFICOS.....	25
4. LISTA DE REFERÊNCIAS.....	26
5. ARTIGO.....	32
6. CONSIDERAÇÕES FINAIS.....	63
APÊNDICE A – CARACTERÍSTICAS DOS ESTUDOS.....	64
APÊNDICE B – AVALIAÇÃO DA QUALIDADE METODOLÓGICA DOS ESTUDOS....	65

LISTA DE ABREVIATURAS

BES - Binge Eating Scale

BMI - Body Mass Index

CFV - Consumo de Frutas e Vegetais

DCNT - Doenças Crônicas Não Transmissíveis

DRA - Discriminação Racial Autopercebida

DSS - Determinantes Sociais da Saúde

EDS - Everyday Discrimination Scale

FFQ - Food Frequency Questionnaire

HPA - Hypothalamic–pituitary–adrenal

IDQ - Índice de Qualidade da Dieta

IMC - Índice de Massa Corporal

MeSH - Medical Subject Headings

NCD - Non-communicable chronic diseases

NOS - Newcastle-Ottawa Quality Assessment Scale

NPY - Neuropeptide Y

PICO - Population, Intervention, Comparison and Outcome

PRD - Perceived Racial Discrimination

PRISMA - Preferred Reporting Items for Systematic Reviews and Meta-Analyses

QFA - Questionário de Frequência Alimentar

SRE - Schedule of Racist Events

RESUMO

Introdução: Vários estudos demonstraram uma associação entre experiências de discriminação racial ao longo da vida e hábitos alimentares inadequados. Apesar do crescente corpo de evidências sobre essa questão, não há uma organização sistemática das evidências disponíveis sobre a relação entre discriminação racial e hábitos alimentares. Além disso, não há consenso sobre seu mecanismo causal. **Objetivos:** Uma revisão sistemática foi realizada para sintetizar evidências sobre a associação entre a discriminação racial percebida e hábitos alimentares (comportamento alimentar e consumo alimentar). Um modelo conceitual foi desenvolvido para descrever os mecanismos mais comuns usados para explicar essa associação. **Metodologia:** Artigos e dissertações foram recuperados das bases de dados PubMed, EMBASE, Lilacs e PsycINFO desde o início até setembro de 2020. **Resultados:** Dezenove estudos foram incluídos. A avaliação da qualidade metodológica foi realizada por meio da Escala de Newcastle-Ottawa. Em média, os estudos mostraram uma qualidade metodológica de 66%. Foram avaliadas 46 associações. Houve 38 associações entre percepção de discriminação racial e hábitos alimentares negativos, 29 em relação ao comportamento alimentar e 17 em relação ao consumo alimentar. **Conclusões:** Esta revisão sistemática sugere que a percepção da discriminação racial afeta negativamente os hábitos alimentares. Além disso, um arcabouço conceitual mais amplo baseado na teoria ecossocial é sugerido para orientar pesquisas futuras que desejam incluir dimensões mais amplas das discriminações raciais, como as discriminações internalizadas e estruturais.

Palavras-chave: Racismo, hábitos alimentares, revisão sistemática, modelo conceitual, epidemiologia social

ABSTRACT

Introduction: Several studies have demonstrated an association between racial discrimination experiences throughout life and poor eating habits. Despite the growing body of evidence on this issue, there is no systematic organization of the available evidence about the relationship between racial discrimination and eating habits. Also, there is no consensus about its causal mechanism.

Objectives: A systematic review was conducted to synthesize evidence on the association between perceived racial discrimination and eating habits (eating behavior and food consumption). A conceptual model was developed to depict the most common mechanisms used to explain this association.

Methods: Articles and dissertations were retrieved from the PubMed, EMBASE, Lilacs, and PsycINFO databases from inception to September 2020. Nineteen studies were included. The assessment of methodological quality was conducted using the Newcastle-Ottawa Scale.

Results: On average, the studies showed a methodological quality of 66%. Forty-six associations were evaluated. There were 38 associations between perceived racial discrimination and negative eating habits, 29 concerning to eating behavior, and 17 regarding food consumption.

Conclusion: This systematic review suggests that perceived racial discrimination negatively affects eating habits. Also, a broader conceptual framework based on ecosocial theory is suggested to guide future researches that want to include broader dimensions of racial discriminations, such as internalized and structural discriminations.

Keywords: Racism, eating habits, systematic review, conceptual model, social epidemiology

1. REFERENCIAL TEÓRICO

1.1.CENÁRIO EPIDEMIOLÓGICO E OS DETERMINANTES SOCIAIS DA SAÚDE

As doenças crônicas não transmissíveis, como a obesidade, o diabetes e a hipertensão representam uma preocupação de saúde pública globalmente. Essas doenças costumam ser associadas a comportamentos chamados fatores de risco modificáveis pela epidemiologia clássica. Esses comportamentos englobam tabagismo, o uso abusivo de álcool, o sedentarismo e, foco do presente trabalho, a alimentação inadequada (1). Esses fatores de risco individuais são importantes para identificar quais indivíduos no interior de um grupo estão submetidos a maior risco. No entanto, eles falham ao explicar padrões de adoecimentos entre diferentes grupos populacionais. Nesse sentido, sabe-se que o desenvolvimento dessas condições crônicas e até mesmo a adoção ou não de determinados comportamentos é influenciada por fatores sociais, econômicos, culturais, étnicos/raciais, psicológicos e comportamentais. Esse conjunto de elementos que incide sobre a ocorrência de problemas de saúde na população é chamado de Determinantes Sociais da Saúde (DSS) (2).

Na figura 1 está representado um dos modelos mais conhecidos de DSS - Dahlgren e Whitehead, adotado pela Comissão dos DSS no Brasil, que demonstra de forma simples os determinantes dispostos em camadas proximais e distais dos indivíduos. Na base, estão as características dos indivíduos, como idade, sexo e fatores genéticos que, evidentemente, exercem influência a saúde. Na camada mais distante encontram-se os macrodeterminantes, que são as condições socioeconômicas, culturais e ambientais gerais (3). Nesse modelo não se explica a mediação, nem detalhes das relações, nem como as iniquidades se dão. Os comportamentos e o estilo de vida dos indivíduos estão na camada limítrofe entre os fatores individuais e todos os outros determinantes, demonstrando que esses comportamentos entendidos como responsabilidade individual, dependentes de opções feitas pelo livre arbítrio das pessoas, na realidade podem também ser considerados parte dos DSS, já que essas opções estão fortemente condicionadas por

determinantes sociais - como informações, propaganda, pressão dos pares, possibilidades de acesso a alimentos saudáveis e espaços de lazer etc. Assim, é fundamental examinar a influência desses fatores na produção de saúde-doença entre a população para criar intervenções baseadas nelas (4).

Figura 1. Modelo de Determinantes Sociais em Saúde de Dahlgren & Whitehead

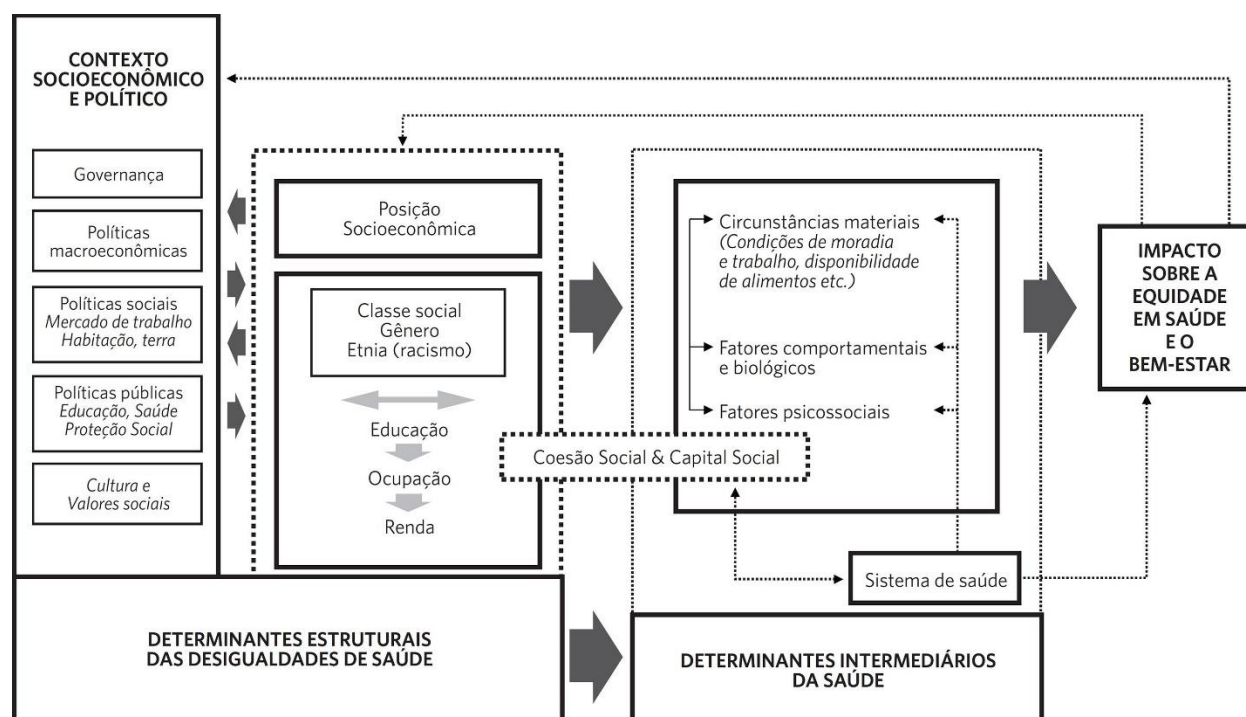


Fonte: Dahlgren G, Whitehead M. 1991 (3).

Na figura 2 está representado o modelo de DSS proposto por Solar & Irwin, atualmente adotado pela Organização Mundial da Saúde, que ainda sinaliza diferentes níveis e contextos de determinação. No entanto, não denomina como proximais ou distais, mas sim estruturais e intermediários, o que traz a ideia de o quanto a dimensão estrutural está próxima da vida das pessoas e tem influência direta no cotidiano. Os elementos estão mais detalhados, com setas que demonstram como esses determinantes interagem entre si. Um dos grandes diferenciais desse

modelo é a posição de destaque que os determinantes estruturais assumem, como as barreiras de acesso. Rompendo com a perspectiva reducionista e fragmentada da realidade social (5).

Figura 2. Modelo de Determinantes Sociais em Saúde de Solar & Irwin



Fonte: Solar, O.; Irwin, A 2010 (6).

1.2. AS INIQUIDADES E OS MECANISMOS QUE AS PRODUZEM

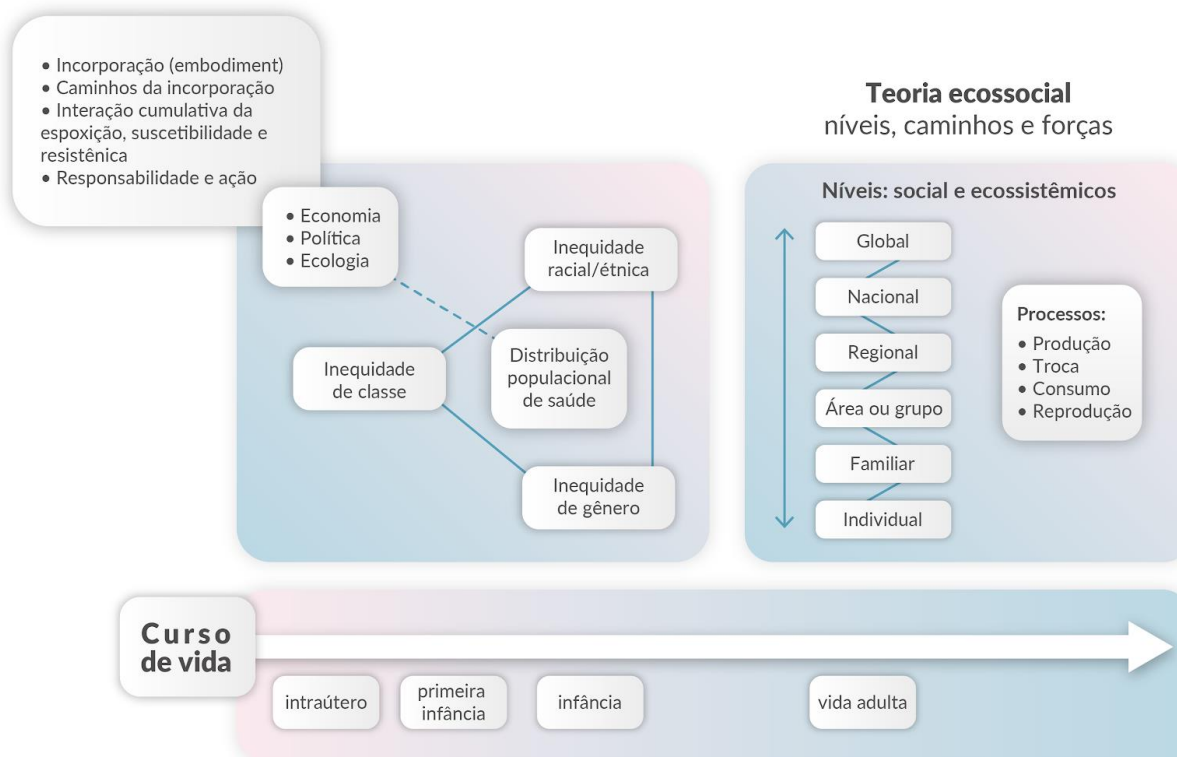
As condições de saúde estão distribuídas de forma desigual entre os grupos populacionais, revelando iniquidades em saúde. Elas podem ser definidas como diferenças evitáveis, sistemáticas, relevantes que persistem injustamente e, por isso, podem ser consideradas desnecessárias (7). No campo científico, já se estuda os determinantes sociais há algum tempo, e esse estudo passou por diferentes fases e enfoques até chegarmos na mais atual que é: qual o mecanismo que produz as iniquidades? Como a estratificação econômica e social é incorporada no organismo biológico? Os

enfoques ecossociais e os enfoques multiníveis buscam integrar as abordagens individuais e grupais, sociais e biológicas numa perspectiva dinâmica, histórica e ecológica. Isso porque as medidas clássicas de escolaridade, ocupação e renda que são utilizadas nos estudos epidemiológicos, apesar de sua contribuição robusta para o campo científico, não têm sido suficientes para expressar o impacto das iniquidades sociais em saúde (2,8).

A epidemiologia social ao longo dos anos vem construindo propostas teóricas e analíticas baseadas nesse olhar amplo para os determinantes sociais. Permitindo entender os mecanismos pelos quais eles afetam a saúde e os comportamentos e escolhas, como a alimentação. Quanto mais variáveis incluídas e análises estatísticas robustas os estudos apresentarem, maiores as chances de se obter um repertório amplo para interpretar como os determinantes se relacionam (2).

Em consonância com a construção dos pesquisadores da epidemiologia social, a epidemiologista norte-americana Nancy Krieger enfatiza que precisamos aplicar a teoria na epidemiologia, para que possamos explicar associações e testar hipóteses (9). Um exemplo de abordagem epidemiológica para explicar as iniquidades é a teoria ecossocial proposta em 1994 pela mesma pesquisadora. Ela vai além das medidas socioeconômicas clássicas, levando em consideração a posição socioeconômica, empregando medidas baseadas em recursos (bens materiais e sociais) e medidas baseadas no prestígio (status do indivíduo numa hierarquia social). Dessa forma, estuda-se, por exemplo, variáveis relacionadas com gênero e raça, como a discriminação (10).

Figura 3. Modelo da teoria ecossocial



Fonte: Adaptado de Krieger (2011) cedido pelo TelessaúdeRS-UFRGS (11,12)

A teoria ecossocial postula que experiências sociais e ambientais podem ser incorporadas no organismo biológico e propõe modelos complexos para investigar as iniquidades sociais em saúde. A tese central dessa teoria é o *embodiment*, incorporação biológica de exposições sociais e ecológicas e de relações históricas entre classes sociais e econômicas. O emprego dessa abordagem nas investigações dos problemas decorrentes do racismo e da discriminação de grupos étnico-raciais minoritários e sua relação com desfechos de saúde vem crescendo, especialmente nos Estados Unidos (10).

1.3.O RACISMO E SUAS DEFINIÇÕES TEÓRICAS

A ênfase das pesquisas centradas na raça como fator que predispõe o risco para algumas doenças é insuficiente para entender as associações e intervir em ações que minimizem o impacto na saúde. Isso porque muitas vezes a raça é erroneamente entendida como uma questão meramente genética, por vezes não explicando a produção das iniquidades em saúde. Nesse contexto, o foco da discriminação racial nas pesquisas pode trazer respostas mais amplas (13,14).

O racismo tem papel central na estruturação das desvantagens socioeconômicas dos grupos oprimidos (15,16). Existem várias definições e conceitos sobre racismo e discriminação racial. Em geral, a discriminação refere-se a um tratamento diferencial que também é injusto. Isso acontece apenas baseado no pertencimento de uma pessoa a um grupo. Segundo Paradies (2006), a discriminação racial é uma expressão do racismo (17). Jones (2002), define racismo como um sistema de estruturação de oportunidade e atribuição de valor com base na raça, que injustamente prejudica alguns indivíduos e comunidades, dando vantagens à outros indivíduos e comunidades; e prejudica a realização do potencial de toda a sociedade por meio do desperdício de recursos humanos (18).

Já Nancy Krieger (2013) se refere ao racismo como um construto da sociologia, que está relacionado à exploração e opressão vinda de relações sociais. A raça e a etnia são construtos sociais baseados em dominação, herança cultural e por último, traços físicos arbitrários (expressões raciais da biologia, como a cor de pele). Quem exerce o racismo são os grupos sociais dominantes. Quem sofre o racismo são os grupos sociais sujeitos a discriminação. De modo geral, a discriminação racial ou racismo diz respeito a todos os meios de expressão e institucionalização das relações sociais de dominação e opressão (9).

O tratamento diferencial é um conceito mais amplo do que a discriminação. Indivíduos que percebem que foram tratados de maneira diferente podem atribuir esses maus-tratos a uma série de traços e características individuais ou simplesmente ao azar. Mesmo em casos de maus-tratos

graves, as vítimas podem ver suas experiências como eventos isolados ou decorrentes de deficiências pessoais, e não de desigualdades estruturais mais amplas (19).

O racismo pode ocorrer em diferentes níveis: interpessoal, institucional e estrutural. O primeiro diz respeito às práticas racistas que ocorrem em encontros entre indivíduos ou grupos que expressam crenças, atitudes, estereótipos e preconceitos baseados no tratamento diferencial injusto. O institucional diz respeito ao racismo manifestado através das instituições, por meio de sistemas formais, como a justiça criminal, o sistema educacional e de saúde, o mercado de trabalho, a habitação, e as políticas de tratamento diferencial injusto. O nível estrutural é o mais abrangente, é possível considerá-lo o cenário onde todas as formas de discriminação ocorrem. O racismo estrutural é sustentado por uma cultura racialmente hierárquica de valores, crenças, normas e sistemas injustos interconectados (como instituições legais, culturais e sociais) que permitem e/ou encorajam a opressão sistemática e o tratamento desigual a certos grupos (20,21).

1.4. O RACISMO FAZ MAL À SAÚDE

Em 1999, em um dos primeiros artigos de revisão publicados sobre discriminação e saúde, Nancy Krieger afirma “A desigualdade dói. A discriminação faz mal à saúde. Essas afirmações parecem diretas, até mesmo evidentes. São proposições que os epidemiologistas podem testar, assim como qualquer outra proposição sobre saúde que investiguemos.” (14).

O racismo é considerado um determinante social em saúde (14,20,21). Diversos estudos já estabeleceram associações entre racismo e inúmeros desfechos negativos de saúde mental - depressão, ansiedade, baixa autoestima - e saúde física, como hipertensão, excesso de peso, problemas cardiovasculares, e diabetes. As possíveis explicações para essas associações são (a) acesso reduzido a emprego, moradia e educação e/ou maior exposição a fatores de risco (por exemplo, contato evitável com a polícia) (b) processos cognitivos/emocionais adversos e psicopatologia associada (c) carga alostática e processos fisiopatológicos concomitantes; (d) diminuição da adesão a comportamentos saudáveis e/ou aumento do envolvimento em

comportamentos não saudáveis, seja diretamente como enfrentamento do estresse, ou indiretamente, por meio de autorregulação reduzida (e) lesão física como resultado de violência com motivação racial (21,22).

O nível interpessoal de discriminação é um dos mais estudados na área da saúde. Poucas pesquisas investigam os impactos do nível estrutural de discriminação na saúde, uma lacuna consoante com a limitada pesquisa epidemiológica sobre sistemas políticos e saúde da população. É possível avaliar a discriminação racial através de instrumentos objetivos que investigam situações ao longo da vida e a frequência em que ações discriminatórias ocorrem em cada contexto. Restaurantes, lojas, polícia e escola são alguns cenários encontrados nos instrumentos validados para medir o autorrelato da percepção de discriminação racial. É o caso da Everyday Discrimination Scale (EDS) ou Schedule of Racist Events (SRE) (14).

O universo científico precisa avaliar até que ponto os relatos de discriminação e os estados emocionais negativos criados por eles podem levar a comportamentos de saúde, como padrões de sono prejudicados, diminuição da atividade física, aumento do uso de substâncias e alimentação excessiva, que podem afetar o risco de doenças. Uso de tabaco e álcool e alimentação de baixa qualidade nutricional foram estabelecidos como fatores de risco para várias doenças crônicas (23).

Os efeitos da discriminação racial na saúde física ainda estão sendo elucidados. Um estudo publicado em 2016 examina entre outras exposições, a discriminação racial autopercebida na definição do risco de obesidade a longo prazo. Revisões sistemáticas anteriores encontraram o mesmo resultado (24,25). Associações independentes foram encontradas discriminação autopercebida e adiposidade central. Além disso, moradores de bairros com altas concentrações de pobreza eram mais propensos a apresentar aumentos na adiposidade central em comparação com os de bairros com baixas concentrações de pobreza (26).

1.5. DISPARIDADES ÉTNICO-RACIAIS E ALIMENTAÇÃO

Diferenças étnico-raciais também parecem estar relacionadas a alimentação. Uma revisão crítica com publicações referentes aos grandes inquéritos alimentares realizados no Brasil revelou que de 24 estudos, apenas três investigaram a influência da raça/cor de pele no acesso e consumo de alimentos. Neste estudo, parece que o consumo de frutas e verduras é maior entre os brancos, enquanto alimentos que compõem padrões alimentares de risco para doenças crônicas não transmissíveis era maior entre as pessoas de raça/cor de pele preta ou parda (27).

Os efeitos das disparidades relativas à cor da pele podem ocorrer em diferentes fases dos ciclos da vida. Um estudo com crianças e adolescentes matriculados em escolas que aderiram a um programa governamental de distribuição de refeições nos Estados Unidos, buscou identificar disparidades étnico-raciais e de status de peso corporal no padrão de consumo de bebidas. Não houve relação com o status de peso corporal, mas o estudo mostra associação entre o padrão de bebidas consumidas em casa e as disparidades étnico-raciais. Crianças negras entre 6 e 12 anos consumiram outras bebidas açucaradas mais frequentemente e leite desnatado menos frequentemente que as crianças brancas (28).

Um estudo realizado em 2017 com mulheres idosas brancas e negras residentes de bairros urbanos de Washington DC, nos Estados Unidos, examinou as diferenças nos padrões alimentares e no comportamento de compra de alimentos entre esses dois grupos. As mulheres negras apresentaram Índices de Qualidade da Dieta (IDQ) substancialmente menores que as mulheres brancas e compravam mantimentos com menos frequência (29).

Claramente, existem disparidades étnico-raciais no consumo alimentar. No entanto, a raça ou cor de pele não é suficiente para explicar todas as associações. Por isso, estudar o impacto da discriminação racial nos comportamentos e desfechos de saúde se faz importante.

1.6. RACISMO ESTRUTURAL E ALIMENTAÇÃO

Como citado anteriormente, o racismo estrutural é muito mais abrangente e sustentado por uma cultura racialmente hierárquica de valores, crenças, práticas sociais, normas e sistemas injustos interconectados (como instituições legais, culturais e sociais) que permitem e/ou encorajam a opressão sistemática e o tratamento desigual a grupos específicos. Esse nível de racismo configura um cenário de barreiras de acesso àqueles que têm menor posição socioeconômica, o que define escolhas e hábitos alimentares (14,20,21).

Os hábitos alimentares são os principais fatores envolvidos na etiologia das DCNT, e seu complexo conceito pode ser avaliado de diversas formas, incluindo o consumo alimentar e o comportamento alimentar. O consumo alimentar representa a ingestão de alimentos e nutrientes per se, e o comportamento alimentar envolve os aspectos psicológicos e culturais da alimentação e suas práticas (30). Na última década, diversos estudos demonstraram associação entre experiências de discriminação racial ao longo da vida e hábitos alimentares inadequados (31–34). Em 2020, uma revisão sistemática do impacto de fatores psicológicos (estresse, ansiedade, depressão e discriminação) sobre a alimentação emocional e o peso entre mulheres negras americanas sugeriu que o estresse percebido negativamente pode ser preditivo de alimentação emocional entre essas mulheres (34).

Os bairros e conglomerados de pessoas nos centros urbanos são determinados a partir de fenômenos históricos, que determinam migrações, a composição das regiões geográficas e como ocorre a estratificação em classes e níveis socioeconômicos. Dessa forma, outros fenômenos são produzidos a partir dessas configurações, como a violência urbana, a segurança pública, e a degradação ambiental. As vizinhanças são definidas a partir do compartilhamento de vivências entre indivíduos, famílias e grupos. A vida transcorre nesse ambiente construído e também no subjetivo, que são as diferentes percepções sobre os espaços compartilhados. Os comportamentos de saúde são também determinados a partir desse cenário. Por exemplo, a prática de atividade física

é favorecida pela presença de árvores que dão sombra nos bairros, bem como espaços seguros. E a alimentação é determinada a partir do ambiente alimentar (35).

O ambiente alimentar pode ser definido de acordo com quatro diferentes dimensões (a) a física, que diz respeito à densidade e à localização de estabelecimentos de comercialização de alimentos, a proximidade com os locais de vida das pessoas, bem como a qualidade dos alimentos disponíveis (b) a econômica que diz respeito aos preços dos alimentos que definem o acesso financeiro (c) a política, que são as regulamentações e normatizações (d) e a sociocultural que são as normas representações e significados (36).

Um estudo realizado na Califórnia avaliou a diminuição da adesão a comportamentos de promoção de saúde, como o consumo de cinco porções de frutas e/ou vegetais (5+CFV) ao dia, entre as pessoas que relatam sofrer discriminação racial. Não houve associação. Os autores discutem que a educação e a renda também não tiveram relação com 5+CFV ao dia, como encontrado em diversos trabalhos anteriores (37). Em geral, a associação entre menor posição socioeconômica e desfechos negativos de saúde está bem consolidada na literatura (38). Por isso, eles explicam que outras variáveis como a moradia e a vizinhança parecem ser importantes na produção das iniquidades no consumo alimentar (37,39) Um estudo realizado em bairros segregados racialmente, que são formados predominantemente por negros revelou um baixo acesso a frutas e vegetais frescos. O que pode ser um resultado produzido, em parte, pelas diferenças desproporcionais de disponibilidade supermercados de qualidade bem abastecidos nas vizinhanças com maior concentração de negros (40,41).

Outros estudos também não encontram associação entre a discriminação racial autopercebida e hábitos alimentares (32,37,42). Demonstrando que talvez exista uma contribuição importante do racismo estrutural no consumo alimentar que não é revelada nas medidas de racismo interpessoal. Cuevas (2014) examinou se o estresse ou os sintomas depressivos mediavam a associação entre discriminação autopercebida e múltiplos fatores de risco comportamentais para câncer entre negros, como a alimentação inadequada. Também não houve associação com o consumo de frutas e vegetais (32). Nadimpalli (2017), realizado com sul asiáticos também não

encontrou associação com o consumo de frutas e verduras (42). Uma das explicações possíveis é que isso pode ser atribuído ao fato de que os grupos discriminados pela raça/etnia não necessariamente comem menos alimentos saudáveis, mas comem mais alimentos não saudáveis. Ou, ainda, que a discriminação racial interpessoal pode ser responsável pelo maior consumo de *comfort food* pra lidar com as experiências estressantes enquanto a discriminação estrutural está mais relacionada com o baixo consumo de alimentos *in natura* e minimamente processados, por uma questão de acesso físico e financeiro a alimentos de qualidade em quantidade suficiente. Revelando o efeito do racismo em seus diferentes níveis na alimentação.

1.7. DISCRIMINAÇÃO RACIAL INTERPESSOAL E HÁBITOS ALIMENTARES

A discriminação racial interpessoal é definida como a experiência de receber tratamento diferencial injusto baseado na raça ou cor da pele, geralmente com expressões de crenças, estereótipos e preconceitos nesses encontros interpessoais (14). Um estudo da área da psicologia, com mulheres negras entre 18 e 22 anos, investigou os efeitos do ostracismo atribuído à discriminação racial no comportamento alimentar através de um jogo online de arremesso de bola criado para simular situações que possam induzir sentimentos de inclusão/exclusão social, de acordo com o paradigma de Williams (1997). As participantes foram alocadas em diferentes grupos, que diferem entre si pela cor da pele dos avatares das demais jogadoras e pela inclusão ou exclusão como parte do jogo. Após o jogo, as participantes recebiam chocolates e batatas fritas, antecedendo a aplicação de questionários para avaliar fome, estresse e humor. O estudo constatou maior consumo de batatas fritas entre as mulheres negras, após serem excluídas por mulheres brancas. No entanto, as mulheres negras que foram excluídas por outras mulheres negras reportaram maior estresse emocional quando comparado ao grupo excluído por mulheres brancas (43).

Apesar de não revelar associação com o consumo de frutas e verduras, o trabalho de Nadimpalli e colaboradores (2017) examinou a associação entre discriminação racial autopercebida e consumo alimentar usando The Everyday Discrimination Scale (EDS) e um

Questionário de Frequência Alimentar (QFA) adaptado culturalmente e encontrou resultados que mostram que o alto consumo de alimentos doces está associado à discriminação racial autopercebida, o que pode ser entendido como um mecanismo utilizado para lidar com as experiências estressantes de discriminação. Os autores atribuem essa associação à teoria do comer emocional, que sugere que algumas pessoas aumentam seu consumo de alimentos hipercalóricos para lidar com experiências estressantes (42).

No quadro abaixo estão os estudos sobre discriminação racial interpessoal, medido através da Discriminação Racial Autopercebida (DRA) que investigam desfechos relacionados com alimentação.

Quadro 1. Discriminação Racial Autopercebida e alimentação

ID	Exposição	Resultado	Associação com resultados negativos relacionados a alimentos
Corral I. & Landrine H., 2012	DRA (ano passado)	Consumo de frutas e legumes	-
Cuevas A., et al 2014	DRA (ao longo da vida)	Consumo de frutas e legumes	-
Sims M, et al 2016	DRA (ao longo da vida)	Consumo de gordura	DRA associada à ingestão de gordura (em homens e mulheres). Discriminação ao longo da vida associada à ingestão de gordura (em homens)
Nadimpalli S, et al 2017	DRA (ano passado)	Consumo de frutas/vegetais e doces	DRA associado ao consumo total de doces, doces americanos e do sul da Ásia
Brodish A, et al 2011	DRA (ao longo da vida)	Dieta	DRA cumulativo no trabalho ou faculdade associado à alimentação insalubre aos 30 anos de idade.
Forsyth J, et al 2014	DRA (ao longo da vida) DRA (ano passado) DRA (estresse)	Dieta	DRA no baseline associada a uma dieta não saudável
Dawson A, et al 2015	DRA (ano passado)	Dieta	DRA associada a uma dieta não saudável (dieta geral e específica)
Simons R, et al 2020	DRA (ano passado)	Dieta	DRA associado a uma dieta não saudável
Kohlmaier J. 2004	DRA (estresse)	Comer compulsivo	DRA associado ao comer compulsivo mediado por angústia (em homens e mulheres)
Harrington E, et al 2006	DRA (estresse)	Comer compulsivo	DRA associado a pontuações mais altas dos scores de comer compulsivo (em mulheres afro-americanas)
Clark J & Winterowd C, 2012	DRA (ao longo da vida) DRA (estresse)	Comer compulsivo	DRA associado a maior pontuação de comer compulsivo
Johnson P, et al 2012	DRA (ao longo da vida)	Alimentação emocional	DRA associado à alimentação quando deprimido ou triste e para administrar o estresse
Hoggard L, et 2019	DRA (ano anterior)	Alimentação emocional	DRA associado à alimentação emocional (zangado, deprimido e ansioso)
Longmire-Avital B & McQueen C, 2019	DRA (estresse)	Alimentação emocional	DRA associado à alimentação emocional

Connolly M, 2011	DRA (ano anterior)	Padrões de comer em excesso	DRA associado com beliscar frequentemente e comer compulsivo
Hayman L, 2012	DRA (ano anterior) DRA (ao longo da vida)	Alimentação restritiva e emocional	DRA associado à alimentação emocional e à alimentação restritiva
Kelly N, et al 2018	DRA (ano anterior) DRA (pós-eleição)	Perda de controle ao comer	DRA associado à perda de controle alimentar e à perda de controle alimentar pós-eleitoral (afro-americano; hispânico/latino; Asiático/Asiático-Americano)
Kelly N, et al 2020	DRA (ano anterior)	Perda de controle comendo	DRA associado à perda do controle alimentar (em hispânicos/latinos)
Hagiwara N, et al 2020	DRA (ao longo da vida)	Sintomas de distúrbios alimentares	DRA associado a sintomas de distúrbios alimentares

A maior parte dos estudos é conduzida com pessoas negras, mas alguns estudos dão enfoque aos efeitos da discriminação racial em latinos que vivem nos Estados Unidos. Por exemplo, um estudo sugeriu que migrantes latinos e trabalhadores agrícolas sazonais consomem *junk food* como mecanismos de enfrentamento para o estresse decorrente de situações familiares, ambiente de trabalho, situação de documentação e falta de recursos (44).

Hagiwara 2020 também realizou um estudos com 198 latinos, nesse caso universitários, com o objetivo de avaliar os sintomas de transtornos alimentares como mediadores da associação entre discriminação racial e IMC no nível individual, além de mediadores culturais. Foram avaliados comportamentos alimentares prejudiciais à saúde como restrição, preocupação ao comer, com a imagem corporal e o peso. Os participantes que relataram maiores experiências de discriminação racial, em oposição a menos, relataram mais sintomas de transtorno alimentar, o que, por sua vez, foi associado ao aumento do IMC (45).

Em comum, os estudos apresentados no quadro 1 referem que o estresse crônico e as adversidades sociais determinam a saúde precária, inclusive a alimentação inadequada. No entanto, existe uma discussão de que talvez seja a saúde precária que determina condições socioeconômicas adversas. Isso porque boa parte dos estudos são observacionais e isso não nos dá subsídio para fazer uma inferência causal. Nem sempre os estudos encontram associação, talvez porque não se sabe exatamente o tempo de exposição para alterar o risco biológico (46).

O principal mecanismo que explica essa associação é o estresse. Experiências sociais injustas desencadeiam respostas de estresse fisiológico e levam principalmente à busca de alimentos hiperpalatáveis. Além disso, os doces podem ser considerados *comfort food*, que podem ser utilizados como uma estratégia de enfrentamento para o estresse relacionado à discriminação. Em outros estudos, o estresse foi similarmente relacionado à alimentação não saudável (42,47,48). Na figura 4, está apresentado os principais mecanismos da associação entre DRA e hábitos alimentares.

No Brasil, os movimentos sociais organizados para denunciar o racismo, e o arcabouço literário e científico que tratam da relação à saúde da população negra vêm de longa data. Assim como a Política Nacional de Saúde Integral da População Negra que há vários anos pauta a melhoria das condições de saúde desse segmento da população (49). No entanto, as metodologias mais comumente empregadas para avaliar a relação das questões raciais com a alimentação no Brasil são qualitativas e com foco nos aspectos culturais. Esse tipo de delineamento de pesquisa é indispensável para o campo científico. Além disso, ele fornece dados capazes de gerar hipóteses para serem testadas pela epidemiologia. É comum que os estudos epidemiológicos usem a raça como exposição ao invés do fenômeno da discriminação. Medir a autopercepção da discriminação racial interpessoal nas pesquisas epidemiológicas no Brasil ainda é novo e marcado pela ausência de estudos que a associem à alimentação.

2. JUSTIFICATIVA

Dado o rápido aumento nas taxas de obesidade e doenças relacionadas no mundo, particularmente entre as pessoas de menor posição socioeconômica passou a ser necessário compreender os mecanismos dessas associações. Quais os fatores que levam esse grupo étnico racial a ter uma alimentação inadequada? Existem poucos estudos que investigam o impacto da discriminação racial nos desfechos relacionados com alimentação e nutrição, como consumo alimentar e estado nutricional. Em geral, os estudos que apresentam associação entre discriminação racial e alimentação o fazem de maneira coadjuvante, e não como associação principal do estudo, colocando a alimentação entre os comportamentos de promoção de saúde ou de risco para doenças.

3. OBJETIVOS

3.1. OBJETIVO GERAL

Examinar a associação entre discriminação racial autopercebida e hábitos alimentares (consumo e comportamento alimentar) através de uma revisão sistemática.

3.2. OBJETIVOS ESPECÍFICOS

- Coletar os estudos primários que estabelecem associação entre discriminação racial autopercebida e hábitos alimentares;
- Investigar os elementos utilizados para formular hipóteses e os mecanismos causais discutidos pelos autores dos estudos primários;
- Propor um modelo conceitual integrando os mecanismos causais mais comuns apresentados nos estudos primários;
- Discutir as variáveis e construtos das teorias disponíveis nos estudos primários.

4. LISTA DE REFERÊNCIAS

1. WHO. WHO | Noncommunicable diseases country profiles 2018. WHO. 2018;
2. Buss PM, Pellegrini Filho A. A saúde e seus determinantes sociais. *Physis Rev Saúde Coletiva* [Internet]. 2007 Apr [cited 2020 Nov 19];17(1):77–93. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-73312007000100006&lng=en&nrm=iso&tlng=pt
3. Dahlgren G, Whitehead M. Policies and strategies to promote social equity in health.
4. Gunning-Schepers LJ. Models: Instruments for evidence based policy [Internet]. Vol. 53, *Journal of Epidemiology and Community Health*. BMJ Publishing Group; 1999 [cited 2020 Nov 26]. p. 263. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1756873/>
5. Garbois JA, Sodré F, Dalbello-Araujo M. Da noção de determinação social à de determinantes sociais da saúde. *Saúde em Debate* [Internet]. 2017 Mar [cited 2020 Nov 26];41(112):63–76. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0103-11042017000100063&lng=en&nrm=iso&tlng=pt
6. Solar O IA. A conceptual framework for action on the social determinants of health. *Social Determinants of Health Discussion Paper 2 (Policy and Practice)*. . World Health Organization Geneva. 2010.
7. Whitehead M. The concepts and principles of equity and health.
8. Adler N. Behavioral and social sciences. *NIH Conf Underst Educ Disparities Heal*. 2006 Oct;
9. Krieger N. Got Theory? On the 21st c. CE Rise of Explicit use of Epidemiologic Theories of Disease Distribution: A Review and Ecosocial Analysis. *Curr Epidemiol Reports* [Internet]. 2014 Mar 13 [cited 2020 Nov 24];1(1):45–56. Available from: <https://link.springer.com/article/10.1007/s40471-013-0001-1>
10. Krieger N, Williams DR, Moss NE. Measuring social class in us public health research: Concepts, methodologies, and guidelines [Internet]. Vol. 18, *Annual Review of Public*

- Health. Annual Reviews Inc.; 1997 [cited 2020 Nov 26]. p. 341–78. Available from: <https://pubmed.ncbi.nlm.nih.gov/9143723/>
11. Krieger N. Epidemiology and the People's Health: Theory and Context [Internet]. 2011 [cited 2020 Nov 24]. Available from: <https://www.amazon.com.br/Epidemiology-Peoples-Health-Theory-Context/dp/0199348421>
 12. TelessaúdeRS-UFRGS. Glossário de Saúde Planetária. Curso EAD de Saúde Planetária [Internet]. 2ª edição. Porto Alegre; 2020 [cited 2020 Nov 27]. Available from: <https://moodle.telessauders.ufrgs.br/course/view.php?id=65>
 13. Gravlee CC. How race becomes biology: Embodiment of social inequality. *Am J Phys Anthropol* [Internet]. 2009 May 1 [cited 2020 Nov 26];139(1):47–57. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1002/ajpa.20983>
 14. Krieger N. Discrimination and health inequities. *Int J Heal Serv*. 2014 Oct 1;44(4):643–710.
 15. Krieger N. Does racism harm health? Did child abuse exist before 1962? On explicit questions, critical science, and current controversies: An ecosocial perspective [Internet]. Vol. 93, *American Journal of Public Health*. American Public Health Association Inc.; 2003 [cited 2020 Nov 19]. p. 194–9. Available from: </pmc/articles/PMC1447716/?report=abstract>
 16. Nazroo JY. The structuring of ethnic inequalities in health: Economic position, racial discrimination, and racism [Internet]. Vol. 93, *American Journal of Public Health*. American Public Health Association Inc.; 2003 [cited 2020 Nov 19]. p. 277–84. Available from: </pmc/articles/PMC1447729/?report=abstract>
 17. Paradies YC. Defining, conceptualizing and characterizing racism in health research. *Crit Public Health* [Internet]. 2006 Jun [cited 2020 Nov 19];16(2):143–57. Available from: <https://www.tandfonline.com/doi/abs/10.1080/09581590600828881>
 18. Phyllis Jones C. Confronting Institutionalized Racism.
 19. Luiz Bastos J, Keller Celeste R, Faerstein E, Barros AJD. Racial discrimination and health: A systematic review of scales with a focus on their psychometric properties. 2010;
 20. Hicken MT, Kravitz-Wirtz N, Durkee M, Jackson JS. Racial inequalities in health: Framing future research. *Soc Sci Med*. 2018 Feb 1;199:11–8.

21. Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions [Internet]. Vol. 389, *The Lancet*. Lancet Publishing Group; 2017 [cited 2020 Nov 11]. p. 1453–63. Available from: <https://pubmed.ncbi.nlm.nih.gov/28402827/>
22. Paradies Y, Ben J, Denson N, Elias A, Priest N, Pieterse A, et al. Racism as a determinant of health: A systematic review and meta-analysis. *PLoS One*. 2015 Sep 23;10(9):e0138511.
23. Williams DR, Neighbors HW, Jackson JS. Racial/ethnic discrimination and health: Findings from community studies. Vol. 93, *American Journal of Public Health*. American Public Health Association Inc.; 2003. p. 200–8.
24. Nadimpalli SB, Hutchinson MK. An Integrative Review of Relationships Between Discrimination and Asian American Health. *J Nurs Scholarsh* [Internet]. 2012 Jun [cited 2020 Feb 11];44(2):127–35. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22551064>
25. Pascoe EA, Richman LS. Perceived Discrimination and Health: A Meta-Analytic Review. *Psychol Bull*. 2009 Jul;135(4):531–54.
26. Kwarteng JL, Schulz AJ, Mentz GB, Israel BA, Shanks TR, Perkins DW. Neighbourhood poverty, perceived discrimination and central adiposity in the USA: Independent associations in a repeated measures analysis. *J Biosoc Sci*. 2016;48(6):709–22.
27. Canuto R, Fanton M, de Lira PIC. Social inequities in food consumption in Brazil: A critical review of the national surveys. *Cienc e Saude Coletiva* [Internet]. 2019 Sep 1 [cited 2020 Nov 26];24(9):3193–212. Available from: <https://orcid.org/0000-0001-5360-3647>
28. Dodd AH, Briefel R, Cabili C, Wilson A, Crepinsek MK. Disparities in consumption of sugar-sweetened and other beverages by race/ethnicity and obesity status among United States schoolchildren. *J Nutr Educ Behav*. 2013;45(3):240–9.
29. Li W, Youssef G, Procter-Gray E, Olendzki B, Cornish T, Hayes R, et al. Racial differences in eating patterns and food purchasing behaviors among urban older women. *J Nutr Heal Aging* [Internet]. 2017 Dec 1 [cited 2020 Nov 26];21(10):1190–9. Available from: [/pmc/articles/PMC5726305/?report=abstract](https://pubmed.ncbi.nlm.nih.gov/305726305/)
30. Meule A, Vögele C. The Psychology of Eating. *Front Psychol* [Internet]. 2013 Apr 25

- [cited 2020 Jul 14];4:215. Available from:
<http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00215/abstract>
31. Hayman Jr. LW. The effects of racially-motivated emotional arousal on the eating behaviors of African American women. Vol. 72. [US]: ProQuest Information & Learning; 2012.
 32. Cuevas AG, Reitzel LR, Adams CE, Cao Y, Nguyen N, Wetter DW, et al. Discrimination, affect, and cancer risk factors among African Americans. Vol. 38, American Journal of Health Behavior. Reitzel, Lorraine R.: Lrreitze@mdanderson.org: American Journal of Health Behavior; 2014. p. 31–41.
 33. Johnson P, Risica PM, Gans KM, Kirtania U, Kumanyika SK. Association of perceived racial discrimination with eating behaviors and obesity among participants of the SisterTalk study. *J Natl Black Nurses Assoc.* 2012 Jul;23(1):34–40.
 34. Pickett S, Burchenal CA, Haber L, Batten K, Phillips E. Understanding and effectively addressing disparities in obesity: A systematic review of the psychological determinants of emotional eating behaviours among Black women. *Obes Rev* [Internet]. 2020 Jun 17 [cited 2020 Nov 10];21(6). Available from:
<https://onlinelibrary.wiley.com/doi/abs/10.1111/obr.13010>
 35. Popkin BM, Duffey K, Gordon-Larsen P. Environmental influences on food choice, physical activity and energy balance. In: *Physiology and Behavior* [Internet]. Elsevier Inc.; 2005 [cited 2020 Nov 26]. p. 603–13. Available from:
<https://pubmed.ncbi.nlm.nih.gov/16246381/>
 36. Swinburn B, Sacks G, Vandevijvere S, Kumanyika S, Lobstein T, Neal B, et al. INFORMAS (International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support): Overview and key principles [Internet]. Vol. 14, Obesity Reviews. *Obes Rev*; 2013 [cited 2020 Nov 26]. p. 1–12. Available from:
<https://pubmed.ncbi.nlm.nih.gov/24074206/>
 37. Corral I, Landrine H. Racial discrimination and health-promoting vs damaging behaviors among African-American adults. *J Health Psychol.* 2012 Nov;17(8):1176–82.
 38. Centers for Disease Control (2006) Summary Health Statistics for US Adults: National Health Interview Survey, 2006. Washington, DC: US Department of Health and Human

Services, National Center for Health Statistics, Vital and Health Statistics Series 10, No. 25. .

39. Zenk SN, Schulz AJ, Hollis-Neely T, Campbell RT, Holmes N, Watkins G, et al. Fruit and vegetable intake in African Americans: Income and store characteristics. *Am J Prev Med* [Internet]. 2005 Jul [cited 2020 Nov 26];29(1):1–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/15958245/>
40. Morland K, Filomena S. Disparities in the availability of fruits and vegetables between racially segregated urban neighbourhoods. *Public Health Nutr* [Internet]. 2007 Dec [cited 2020 Nov 26];10(12):1481–9. Available from: <https://pubmed.ncbi.nlm.nih.gov/17582241/>
41. Morland K, Wing S, Roux AD. The contextual effect of the local food environment on residents' diets: The atherosclerosis risk in communities study. *Am J Public Health* [Internet]. 2002 Nov 1 [cited 2020 Nov 26];92(11):1761–7. Available from: </pmc/articles/PMC1447325/?report=abstract>
42. Nadimpalli S, Keita A, Wang J, Kanaya A, Kandula N, Gans KM, et al. Are Experiences of Discrimination Related to Poorer Dietary Intakes Among South Asians in the MASALA Study? *J Nutr Educ Behav*. 2017 Nov;49(10):872-876.e1.
43. Hayman Jr. LW, McIntyre RB, Abbey A, Hayman LWJ, McIntyre RB, Abbey A. The bad taste of social ostracism: The effects of exclusion on the eating behaviors of African-American women. *Psychol Health*. 2015;30(5):518–33.
44. Burke Winkelman S, Chaney EH, Bethel JW. Stress, depression and coping among latino migrant and seasonal farmworkers. *Int J Environ Res Public Health* [Internet]. 2013 [cited 2020 Nov 26];10(5):1815–30. Available from: </pmc/articles/PMC3709350/?report=abstract>
45. Hagiwara N, Green TL, Moreno O, Smith D, Corona R. Ethnic Discrimination and Weight Outcomes Among Latinx Emerging Adults: Examinations of an Individual-Level Mediator and Cultural Moderators. *Cult Divers Ethn Minor Psychol* [Internet]. 2020 [cited 2020 Nov 11]; Available from: <https://pubmed.ncbi.nlm.nih.gov/32212740/>
46. Berkman LF, Kawachi I, Glymour MM, editors. *Social Epidemiology*. Oxford University Press; 2014.
47. Dawson AZ, Walker RJ, Campbell JA, Egede LE. Effect of perceived racial discrimination

on self-care behaviors, glycemic control, and quality of life in adults with type 2 diabetes. *Endocrine*. 2015 Jun;49(2):422–8.

48. Sims M, Diez-Roux A V., Gebreab SY, Brenner A, Dubbert P, Wyatt S, et al. Perceived discrimination is associated with health behaviours among African-Americans in the Jackson Heart Study. *J Epidemiol Community Health* [Internet]. 2016 Feb [cited 2019 Jul 8];70(2):187–94. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26417003>
49. Ministério da Saúde. Política Nacional de Saúde Integral da População Negra: uma política do SUS [Internet]. Brasília; [cited 2021 Jan 29]. Available from: <http://www.saude.gov.br/editora>

5. ARTIGO

Revista a ser submetido: *Advances in Nutrition*

Perceived racial discrimination and eating habits: Systematic review and conceptual models

Ylana Elias Rodrigues - Universidade Federal de Ciências da Saúde de Porto Alegre (UFCSPA)

Marcos Fanton - Universidade Federal de Santa Maria (UFSM)

Ricardo Novossat – Universidade Federal do Rio Grande do Sul (UFRGS)

Raquel Canuto - Universidade Federal do Rio Grande do Sul (UFRGS)

Abstract

Several studies have demonstrated an association between racial discrimination experiences throughout life and poor eating habits. Despite the growing body of evidence on this issue, there is no systematic organization of the available evidence about the relationship between racial discrimination and eating habits. Also, there is no consensus about its causal mechanism. A systematic review was conducted to synthesize evidence on the association between perceived racial discrimination and eating habits (eating behavior and food consumption). A conceptual model was developed to depict the most common mechanisms used to explain this association. Articles and dissertations were retrieved from the PubMed, EMBASE, Lilacs, and PsycINFO databases from inception to September 2020. Nineteen studies were included. The assessment of methodological quality was conducted using the Newcastle-Ottawa Scale. On average, the studies showed a methodological quality of 66%. Forty-six associations were evaluated. There were 38 associations between perceived racial discrimination and negative eating habits, 29 concerning to eating behavior, and 17 regarding food consumption. This systematic review suggests that perceived racial discrimination negatively affects eating habits. Also, a broader conceptual framework based on ecosocial theory is suggested to guide future researches that want to include broader dimensions of racial discriminations, such as internalized and structural discriminations.

Keywords: Racism, eating habits, systematic review, conceptual model, social epidemiology

Introduction

Previous epidemiological studies have shown the association between racial discrimination and health outcomes in specific populations and groups, such as Black, Asian, and Indigenous individuals (1,2). Most of these studies have a focus on interpersonal racial discrimination. Generally, this phenomenon is investigated by perceived racial discrimination (PRD) and aims to evaluate chronic stress due to unfair treatment experiences over the lifetime by victims (3,4).

As a chronic stressor, racial discrimination harms mental health in the short term, leading to depression, anxiety, or psychological stress and affects health behaviors, such as eating behaviors, physical activity, alcohol consumption, and smoking (1,5). Thus, experiences accumulated over the lifetime harming physical health ultimately lead to non-communicable chronic diseases (NCD), such as hypertension (6,7), heart conditions and illnesses (2), diabetes (8), obesity and overweight-related measures (9–11). Causal mechanisms used to explain these associations are based on different stress pathways, such as physiological, psychological, and behavioral (5).

Eating habits are the main factors involved in NCD etiology, and its complex concept can be evaluated in different ways, including food consumption and eating behavior. Food consumption represents food and nutrients intake per se, and eating behavior involves the psychological and cultural aspects of eating and its practices (12). In the last decade, several studies have demonstrated an association between racial discrimination experiences throughout life and poor eating habits (4,13–15). In 2020, a systematic review of the impact of psychological factors (stress, anxiety, depression, and discrimination) upon emotional eating and weight among American Black women suggested that negatively perceived stress may be predictive of emotional eating among these women (15).

Despite the growing body of evidence on this issue, there is no systematization of the available evidence about the relationship between racial discrimination and eating habits, including food consumption and eating behaviors, from worldwide studies. Also, no consensus is established about its causal mechanism, remaining unclear how the several hypotheses and pathways developed by the primary studies can be integrated. Thus, we conducted a systematic review to examine the association between PRD and eating habits and analyzed the association's pathways presented in the primary studies. Also, we synthesized the main

pathways through a conceptual model and proposed a new and more complex one, with variables and constructs from social epidemiological theories.

Methods

Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) was used to perform this study, which was registered in PROSPERO (CRD42019142605). The PICO (Population, Intervention/Exposure, Comparison, and Outcome) strategy was used to construct the research question. Thus, the studies retrieved from the literature met the following inclusion criteria: (i) the study design was observational; (ii) the article derived from original research; (iii) population study consisted of adolescents, adults, and elderly from any racial group (iv) the exposure measurement included any quantitative measure of self-reported perception of racial discrimination, within all time frames; (v) comparison group (not exposed) included the groups presenting lower levels of perceived racial discrimination than the exposure group or those not exposed to racial discrimination; (vi) the outcome was eating habits, including food and beverage consumption, dietary patterns, dietary quality, and eating behavior (overeating, emotional eating, and dietary restraint). Studies that measured eating disorder pathologies were not included.

Search strategy

The search was based on articles, dissertations, and theses retrieved from the PubMed, EMBASE, Lilacs, and PsycINFO databases from inception to September 2020. The terms were defined according to the Medical Subject Headings (MeSH) Terms and the keywords used in similar studies. The search strategy was (Racism OR Interpersonal discrimination OR Perceived discrimination OR Perceived racial discrimination OR Perceived racism OR Racial/ethnic disparities OR Self-reported discrimination OR Self-reported racism OR Unfair treatment) AND (Diet Western OR Fast Foods OR Eating OR Fruit OR Healthy Diet OR Vegetables OR Dietary Fats OR Feeding Behavior OR Diet Surveys OR Diet quality OR Diet OR Dietary behavior OR Food consumption OR Food pattern OR Sweets OR hyperphagia OR Food Addiction OR Food Fussiness OR Emotional eating OR Dietary restraint OR Binge eating OR Loss of control eating) NOT (Feeding and Eating Disorders). No filters were used in the

searches. Also, reference lists of the selected articles and publications of the research groups on discrimination and health were screened.

Study selection

Two reviewers (YR and RN) independently conducted the review process. Initially, search results were imported into Mendeley and duplicate deleted. The reviewers read all titles and abstracts in order to assess eligibility for inclusion. Even studies with titles with broad outcomes, such as health and well-being, were included since eating habits could be a covariate that appears only in the full text. Afterward, the reviewers read the full text of each study remaining to assist screening for final inclusion.

Data extraction and risk-of-bias assessment

Data were extracted into an Excel spreadsheet independently by the two reviewers, including (i) study design (ii) authors and year of publication (iii) population (iv) sample characteristics (v) age (vi) a description of the exposure measure (vii) description of tools/instruments to measure the exposure, number of items and exposure time frame (viii) a description of the outcome measure (ix) description of the tools/instruments to measure the outcome, number of items and exposure time frame (x) explanatory variables (xi) results (measures of association between exposure and outcome). In case of discrepancies between reviewers, a third reviewer (RC) was called upon to decide.

Newcastle-Ottawa Quality Assessment Scale (NOS) was used to assess each study's risk of bias and quality. This scale was created initially to evaluate cohort and case-control studies using a star system (16). We adopted a modified version used in previous studies to assess studies' methodological quality (17). This instrument consists of three broad constructs: selection, comparability, and outcome (or exposure in cross-sectional studies). The maximum score is 8 for the cohort study and 10 for the cross-sectional study design. Higher scores indicate a higher study's quality. In the present study, the number of stars was transformed into a quality percentage to compare studies regardless of design. This instrument allows the evaluation of the methodological quality of observational studies and is easily applicable. Two reviewers

independently conducted the quality assessment process. After that, results were compared, and a consensus was reached.

Qualitative analysis

The results were interpreted by their different characteristics and association measures, which vary between studies, using the narrative synthesis method. The results will be presented according to the outcome group (food consumption or eating behavior). The associations of perceived racial discrimination and eating habits were examined according to the study's characteristics. Meta-analysis was not performed due to the heterogeneity of outcomes in the primary studies.

We also analyzed the theoretical approaches and causal mechanisms presented in the studies to explain the associations between exposure and outcomes. As Nancy Krieger has convincingly argued, along with different works, theory matters (18–20). Epidemiological frameworks are theories of disease distributions and, explicit or implicit, shape how we generate useful scientific knowledge and what kind of concepts and causal determinants we judge as testable and relevant. They integrate data gathering, scientific constructs, causal mechanisms, and biological and social pathways. They also help us understand who is accountable for the different and inequitable disease patterns in our societies. Thus, to make these epidemiological frameworks more explicit, we developed conceptual models to organize and synthesize the main mechanisms the studies used to test their hypothesis (21,22). Finally, we discuss and propose a new and more complex conceptual model based on the ecosocial framework to guide future researches on this topic.

Results

Study selection

The flowchart of the article selection procedure is presented in Figure 1. The initial search resulted in 3576 articles. After excluding duplicates, 2453 articles were screened through titles and abstracts; at this stage, 2933 were excluded. The full text of 3 potential studies was not available. We tried to reach the authors, but these theses did not present contact information,

or after contact attempted, they did not answer. We expected the answer for six months. Remained 54 articles to read thoroughly and assess eligibility. After reading, 35 studies were removed, as they did not meet the inclusion criteria. Ultimately, 19 studies were included in this review. Reference lists of each study were screened, but any new studies meeting inclusion criteria were identified.

Study characteristics

Table 1 presents the general characteristics of the studies included in the review. All studies used a US-based population dataset. The year of publication ranged from 2004 to 2020, with 58% published between 2014 and 2020. Of the 19 studies included, only 4 were prospective cohorts (13,23–25). The sample size ranged from 149 to 4925 subjects; 53% included less than 499 subjects.

Participants' race/ethnicity in the majority of the studies (63%) focused on the Black or African-American population only (4,13,14,23–31). The majority (63%) of the studies included female and male gender (8,13,23–25,27–33). Some studies (32%) included the elderly (14,27–29,32,33).

Risk of bias within studies

Of the 19 studies, 8 scored between 30-60% (8,13,14,24,25,30,31,34); 8 presented 70-80% (4,27,29,32,33,35–37) and only 3 scored above 85% (23,26,28) (Table 1). The average percentage was 66%. The 4 cohorts reached 44% (13), 50% (24), 87,5% (23) and 50% (25).

Detailed information on the risk of bias is available in the supplementary material (S1). Since eating habits evaluation requires self-report information, it does not allow objective measurement of the study's outcome, such as an independent blind assessment or record linkage. The NOS scores self-report assessment less than others, affecting the overall quality rating. Also, in cohorts, the NOS does not score for self-reported evaluation of the outcomes, decreasing the quality score.

Perceived Racial Discrimination

Table 2 presents characteristics related to the exposure and outcomes of the studies included in this review. Among the studies that used validated instruments to measure PRD (4,8,13,14,24–28,30–37), 26% used The Schedule of Racist Events (24,25,31,32,34) and 21% used Everyday Discrimination Scale (EDS) (28,33,35,37). The others (42%) used a variety of validated scales (4,8,13,14,26,27,30,35). Two studies used non-validated questionnaires (23,29). Regarding the time frame, 42% of the studies focused on PRD experienced in the past year (8,25,28–30,33,35,37). Other studies (32%) used lifetime discrimination only (13,14,23,27,32,36). Only 2 studies combined past year and lifetime discrimination (4,24). Most of them measured the frequency of racial discrimination experienced in a variety of settings. Only 2 studies (23,35) focused on specific settings (workplace or college and PRD following post-presidential elections).

Eating habits

Eight studies investigated food consumption as the outcome (8,13,23–25,27,29,33). Four studies observed the intake of specific food groups or nutrients as a proxy of healthy or unhealthy food consumption (13,27,29,33) like fruit and vegetables (13,29,33), fats (27), and sweets (33). In these studies, the frequency of consumption of unhealthy or healthy foods indicated the quality of diet. Moreover, four studies focused on diet quality (8,23–25) applying a food frequency questionnaire (FFQ) for specific food items, like vegetables, fruits, whole grains, fast foods, sweets, and snacks. From these instruments, they created healthy or unhealthy eating indexes. The authors used validated (8,13,24,33) and non-validated (23,25,29) instruments to measure food consumption (Table 2).

The majority of the studies (n=10) investigated eating behaviors (4,14,26,28,30–32,34–37). Emotional eating was assessed in 4 studies (4,14,26,30) and binge eating appeared in 3 studies (31,32,34). Other eating behavior outcomes, like overeating, restraint, eating, and body concern, were assessed less frequently. Emotional eating was measured by validated instruments (4,26,30) and one non validated emotional eating survey (14). While some researchers investigated the desire to eat while experiencing specific emotions as a whole, some studies evaluated and sorted particular emotions to understand the motivations to eat. Some examples are emotional distress (31), depression (14,30), anxiety or anger (30), sadness (14),

and the frequency of eating to manage stress (14). Loss of control eating appeared in two studies (35,37).

PRD vs eating habits

Table 3 presents the main results of the association between PRD and eating habits. Of the 19 studies included in this review, 46 associations were established. Of these, 38 associations revealed that PRD is associated with negative eating habits. Seven associations were null (13,28,29,33,34,37). Only 1 study found that PRD is associated with positive eating habits (24).

Summing up the main findings of PRD and food consumption outcomes, there were 17 associations in total. Thirteen of them show a relationship between PRD and unhealthy eating (8,23–25,27,33), 3 of them were null (13,29,33), and only one is related to a healthy diet (24). One study included both Black/African-American and White people, demonstrating that a worse diet among Whites is associated with PRD (8). All cohort studies belonged to the food consumption outcome group. One of them presents divergent data: a change in diet from baseline to 12 months that was significantly greater for those with high PRD exposure than those with low PRD. It means that greater exposure was associated with more remarkable improvement in the diet throughout the study (24).

Regarding eating behavior outcomes, 29 associations were established. There were 8 positive associations with emotional eating (4,14,26,30), 6 with binge eating (28,31,32,34), 6 with loss of control eating (35,37), two with restrained eating (4), two with oversnacking and disinhibition (28), 1 with health-compromising eating behaviors and attitudes (restraint, eating concern, shape concern, weight concern) (36). Four associations were null (13,29,33,37). One study included both Black/African-American and White women, demonstrating that binge eating among Black women is affected by PRD. In contrast, the Binge Eating Scale (BES) scores among Whites did not seem to be associated with PRD. Four studies include both genders, and the results were similar for both (34).

Demographic (age, sex, gender, birthplace, study site, live in the USA, generation), socioeconomic (race/ethnicity, income, employment status, education level, parental education, marital status, household composition), psychological (thoughts, emotions, stress, beliefs), related to nutritional status (BMI and weight change) and acculturation variables were included

in analyses as confounders or mediators. The majority of the studies performed a multivariate analysis (42%). Five studies performed path analysis (13,23,30,31,36).

Conceptual causal diagrams of associations between PRD and food habits

The primary studies formulate two main possible conceptual models of the association between racial discrimination and health outcomes, as shown in Figure 2. The first model establishes that chronic stress due to everyday perceived racial discrimination predicts alterations in food consumption and eating behavior. These alterations in food habits, in the long run, clearly lead to poor health outcomes (8,24,35). The second model includes the previous pathway and suggests that stress can directly affect health outcomes (the dashed line represents it in Figure 2) (25,26,30).

Two additional observations must be made to the model. All the authors are prone to claim that race and ethnicity are highly correlated with different group experiences in societies; racial discrimination has been one of these experiences. Also, many studies suggest that racial discrimination experience intersects with the socioeconomic position of individuals (gender, age, education, income, ethnic identity) and other cultural and historical factors (racial socialization, social and parental support, cultural constructs and stereotypes, social norms, and historical traumas) (23,32,35,36).

Discussion

Summary of evidences

The present study aimed to examine the available evidence about the relationship between PRD experiences and eating habits. The majority of the studies included showed that PRD was associated with poor food habits, including unhealthy food consumption (consumption of sweets and fats and lower consumption of fruit and vegetables), emotional eating, binge, loss of control, dietary restraint, over-snacking, eating disorders symptoms, and disinhibition.

Providing possible explanations for the association between PRD and food habits

Racism and racial discrimination can be defined and measured at different levels, such as internalized, interpersonal, institutional, and structural. Internalized discrimination can be defined as the, consciously or unconsciously, incorporation and acceptance of a racist and denigrated image of herself from a dominant and privileged group. Interpersonal racial discrimination is defined as the experience of receiving unfair treatment, usually with expressions of beliefs, stereotypes, and prejudices, in interpersonal encounters. Institutional racism is the manifestation of racial discrimination through formal systems, usually legal and social institutions, such as criminal justice, the distribution and disparities of educational and health opportunities or labor and housing markets, or more explicit discriminatory policies (1,5). Finally, structural racism is a much more comprehensive framework that encompasses different dimensions of racism, from the interpersonal to the cultural and formal, state-levels of racial discrimination. It is sustained by a racially-hierarchical culture of values, beliefs, social practices, norms and interconnected inequitable systems (such as legal, cultural, and social institutions) that allow and/or encourage systematic oppression and unequal treatment to specific groups (5,38,39).

Although most studies assumed the need to study all these racism levels is essential to provide insights into the association of racism and health outcomes, all of them focused on questions and measurement instruments for interpersonal racial discrimination. Few studies, nonetheless, included structural and cultural constructs in their analysis with broader conceptual models to explain their results (23,30–32,36).

Perceived racial discrimination is the central scientific construct to measure racial discrimination. Therefore, the chronic stress due to racial discrimination is based only on perceived discriminations in interpersonal encounters, during the individuals' lifetime, or in a specific time frame or setting. Self-reports of perceived discrimination are the most common discrimination measures used in psychology and epidemiological fields. They aim to capture an individual's appraisal of discriminatory treatment. This appraisal process determines whether the treatment is evaluated as stressful or as a threat that taxes or exceeds an individual's available coping resources. Thus, perceived discrimination is considered a psychosocial stressor for the targeted individual (40).

In order to explain the association between perceived racial discrimination and health and behavior outcomes, all studies included in this review share one main argument: chronic

stress affects health behaviors and health outcomes. Everyday exposure to racial discrimination thought life is a specific cause of chronic stress. Thus, racial discrimination affects health behaviors and health outcomes. To fully understand the presuppositions and implications of this conclusion, we need to unpack its central concepts and the underlying mechanisms.

Discriminatory events can trigger interplayed stress responses, usually centered on physical, psychological, social, and cultural issues. The physiological mechanism is explained through the neuroendocrine stress response. Chronic stress leads to activation of the hypothalamus-pituitary-adrenal axis that affects both health outcomes and health behaviors. In one way, activation of the hypothalamus-pituitary-adrenal axis causes an inflammatory process mediated by glucocorticoid hormones (cortisol and corticosterone). Abnormal cortisol secretion can promote obesity in two ways. First, excess cortisol concentrations have been associated with visceral fat accumulation. One explanation for this may be increased glucocorticoid metabolism due to increased glucocorticoid receptor density in intra-abdominal adipose tissue compared to other regions. Glucocorticoids also affect visceral fat via their effect on lipid metabolism. Acutely, physiological cortisol concentrations stimulate whole-body lipolysis. In the presence of insulin, increased cortisol concentrations inhibit lipid mobilization and favor lipid accumulation either directly by stimulation of lipoprotein lipase or indirectly by inhibiting the lipolytic effects of growth hormone (41). This can affect weight gain without necessarily changing food consumption/or eating behavior. Second, chronic activation of the HPA axis alters glucose metabolism, promotes insulin resistance, with changes in several appetites related hormones (e.g. leptin, ghrelin) and feeding neuropeptides (e.g. NPY). This causes changes in the mechanisms of hunger and satiety. Thus, elevated cortisol secretion can lead to chronically stimulated eating behavior, enhancing the propensity to eat high-calorie palatable food. This relationship is modulated by a reward system, as well. Reward circuitry could interact with the HPA axis, meaning eating high-palatable foods leads to a partial suppression of the HPA axis and cortisol secretion. A bidirectional relationship between cortisol levels and behavioral eating would constitute a feedback loop when these foods' consumption signals a decrease in stress upon reaching satiety (42).

In this sense, despite none of the studies included in this review had evaluated cortisol levels, several studies in adults have been described the association between perceived discrimination, including PRD, and a flatter diurnal cortisol slope, i.e., less sleep decline throughout the day, with lower morning levels and higher evening levels. (43,44) Such as a

prospective study that reported that greater PRD measured over 20 years predicts flatter diurnal cortisol slopes later in life (45).

Regarding the psychological mechanisms addressed by the articles, the authors mention the stress and coping framework, especially. Individuals may appeal to coping strategies to alleviate stress. The psychological response to stress due to discrimination events can result in different adverse emotions, such as anxiety, depression, guilt, anger, sadness, loneliness, low self-esteem, and helplessness. (46) Coping strategies can be adaptive when the individual uses healthy ways to deal with these experiences, such as searching for family and community support, rest, and physical activity. Maladaptive coping occurs when, to manage stress and negative emotions, the discriminated person engages in negative health behaviors or decreases the ability to promote health promotion behaviors. The resulting changes in health behaviors are ultimately related to poor health outcomes. It is important to highlight that in the latter case, the feeling of relief is transitory and may be accompanied by emotions such as guilt and frustration afterward. Maladaptive coping, thus, may improve mental health in the short term, but it can be problematic and harmful in a long time to psychological and physical health. (47)

It is important to underline that these behavioral-coping strategies can be influenced by differences in the person's social role and the cultural and social norms embedded in it (35). In Connolly's study, positive racial socialization protects young Black women from developing an eating disorder by correcting a false, incomplete and misunderstood interpretation of what it means to be Black in the United States. Positive racial socialization alleviates the harms of interpersonal and cultural racial discrimination and/or lead to adaptive health behaviors, such as physical activities and healthy diets (28). It might be one of the possible explanations for the only article that found an association between racial discrimination and healthier consumption over the study time. It seems that the African Americans when participating in a study that aims to improve the health of the Black population feel more belonging and this can help them to develop resources to face racism, which may be associated with the adoption of healthy behaviors such as eating (24). On the other hand, racial socialization and/or ethnic self-identification do not protect from maladaptive behaviors in all cases. Clark et al study showed that ethnic self-identification and acculturation of Native American/American Indian women may be a predictor for binge-eating behaviors, due to feelings of historical trauma or historical loss that has been passed from generations (32).

There are individual and collective factors that can contribute to the impact of racial discrimination on health behaviors to be different among individuals. This is what the Theory of Cognitive Appraisal addresses, for example, which postulates that the negative consequences of discrimination depend firstly on whether the stressor is relevant and dangerous and secondly on whether the victim does not have sufficient resources to contain the stressor. The perception of social support is a resource that can prevent or hinder maladaptive coping (48). As well as emotional self-regulation and cognitive resources (49).

On a broader level, social class may influence the intensity of exposure and the kind of interpersonal racial discrimination people of color face during their lifetime and, consequently, their health outcomes. Social class can be understood as a relational concept, expressing the interdependent economic and legal relationship between groups of people (Krieger, 1997). This structural location of the individuals within the economy may influence the distributions of resource-based goods (such as income, wealth, education, and neighborhood) and prestige-based good (such as social status, access to goods, services, knowledge, prestige, income, and educational level). Several studies explicitly acknowledge that class is a social determinant for their results, but it is restricted to discussing the limitations of their results (8,13,23,30,33). The socioeconomic context of individuals, for example, plays an important role in structural and cultural dimensions, such as nutrition policies, food environment, and food supply, and health care access, and acculturation of food practices (43,44).

Taking these into account, we can think of weight gain and the development of NCD as something that do not depend exclusively on individual behaviors or food choices. The degradation of biological systems through the aforementioned physiological mechanisms is called the allostatic charge (50). As in this model, epigenetic indexes have been developed to assess the cumulative effect of discrimination, considering all levels of discrimination (51). This leads us to argue that perhaps we are placing excessive importance on behaviours as risk or protection factors for chronic non-communicable diseases as the main cause of social inequities in health. Assigning the responsibility to adopt healthy eating behaviors in the victims of racial discrimination, overestimating the agency of these population groups to promote this type of change. The food environment is a fundamental component to understand how racial discrimination affects the consumption and eating behavior of individuals. Food deserts are characterized by neighborhoods that do not have establishments that sell fresh or minimally processed food in sufficient quantity and/or adequate quality. Food deserts are usually located

in poor neighbourhoods, where the population with the lowest socioeconomic status is concentrated (52).

Not only the food environment, but the neighborhood as a whole can favor or prevent the adoption of healthy behaviors such as safety, paved streets, trees that provide shade. Even when the food environment consists of establishments that sell quality food, financial access to these products is characterized as a barrier to the consumption of fresh or minimally processed foods. The same occurs in neighborhoods where there are gyms and clubs for physical activity, which are usually expensive and inaccessible to a large part of the population. The emphasis on healthy lifestyle ignores the importance of adverse health determinants. These social conditions can only be addressed through social policies and programs that target institutional racism and promote economic equality (53).

Some studies have found no association between self-perceived racial discrimination and eating habits (13,29,33). Demonstrating that there may be an important contribution of structural racism to food consumption that is not revealed in measures of interpersonal racism. Cuevas (2014) examined whether stress or depressive symptoms mediated the association between self-perceived discrimination and multiple behavioral risk factors for cancer among blacks, such as inadequate diet. There was also no association with the consumption of fruits and vegetables (13). Nadimpalli (2017), conducted with South Asians, also found no association with the consumption of fruits and vegetables (33). One possible explanation is that this can be attributed to the fact that groups discriminated by race/ethnicity do not necessarily eat less healthy food, but eat more unhealthy food. Or, yet, that interpersonal racial discrimination may be responsible for the greater consumption of comfort food to deal with stressful experiences while structural discrimination is more related to the low consumption of fresh and minimally processed foods, due to barriers of physical access, lack of sufficient and high quality food.

Proposing further elements to develop an integrated conceptual model

Most of the studies claim that investigating all racial discrimination levels should provide new insights into the association of discrimination and health outcomes. However, taking all these levels into account can be hard to unite into a theoretical and explanatory framework, not to mention their measurement. Based on the ecosocial theory formulated by

Nancy Krieger (2011), we propose a new and more complex conceptual model (Figure 3) to guide future researches. Whereas the studies under review are based fundamentally on biopsychosocial theories, the ecosocial theory allows us to incorporate different, broader levels of phenomena in a single framework. It takes the multilevel notion of embodiment as a central scientific construct to understand social, material, and ecological contexts that we live. Thus, as we can see in the model, the main focus is to discriminate the multiple pathways that racial discriminations are biologically incorporated in individuals' bodies and affect the patterns of health outcomes and health behaviors.

Along with interpersonal discriminations, we can have institutional and structural racism. The model synthesizes the discussions made above. The main deficit in the studies under review is the assessment and measurement of historical and contextual dimensions, which should be better investigated to establish how specific determinants can influence different groups.

Strengths and limitations

We conducted this systematic review using the main guidelines. This work represents an innovative and socially relevant addition to the field of food and nutrition. To the best of the authors knowledge, is the first systematic review on the topic. The primary studies are relatively recent, with no time frame or language limitations. This study brought together primary studies that investigated this association mainly in African Americans but also including other ethnicities such as Latinos and Native Americans, taking into account gender or different stages of the life cycle. We not only bring the associations, but we also apply the available social epidemiology and psychology theory to explain these associations.

As pointed out in previous publications, there are methodological limitations inherent in studies that assess food habits. Regarding food consumption, some studies used methods such as FFQ or food diaries, and may be more accurate than others, such as simple questions about food group consumption. Also, different methods were used for data collection of eating behavior. However, studying food habits is difficult but necessary, since it is one of the main factors that contribute to the risk or protection of several important public health issues. An expanded look at understanding the complexity of factors and mechanisms that determine food habits is essential. Concerning the exposure, most studies used validated instruments to measure

perceived racial discrimination, resulting in an accurate measurement of it. In addition, there is a risk of bias inherent in the observational design of the studies because interventions are not feasible given the nature of the exposure, which cannot be observed isolated from its social context. Finally, while longitudinal studies are well known for being a better study design to investigate the association's direction, most of the studies selected for this review had a cross-sectional design, limiting the temporality evidence of the results presented in this review.

It is important to highlight that discrimination based on race and ethnicity has complex cultural, historical and intersectional aspects. The experience of discrimination is lived in different ways for different racial groups. It must be considered that the racism experienced by black people is different from the discrimination or differential treatment that occurs with Asians or Latinos living in the United States, for example. Even so, this review has the role of exploring the relationship of discrimination with food in a broad way, giving visibility to the topic and inviting others to observe these relationships in depth.

Conclusions

Racial discrimination appears to be associated with unhealthy eating habits. The articles retrieved in this systematic review revealed that their victims exhibit poor eating behavior and food consumption. This can be represented by the consumption of sweets and fats and lower consumption of fruits and vegetables, emotional eating, binge eating, loss of control when eating, food restriction, overeating, disinhibition and other symptoms of eating disorders.

Everyday exposure to racial discrimination throughout life is a specific cause of chronic stress that is biologically and psychologically incorporated in our bodies. In addition to presenting the results, we discussed the main theoretical frameworks and their correspondent conceptual models used to formulate the main hypothesis of the studies. We can see that the dominant theoretical approach used is the biopsychosocial framework.

We developed a new conceptual model based on ecosocial framework to guide future researches on the future. Frameworks and conceptual models are important tools in scientific research, as long as they are a guide to the formulation of questions and hypothesis, the construction of concepts and the explanation of causal pathways of disease distribution. The domain of the ecosocial framework allows us to integrate different domains of exposures and the interactions between the social and the biological processes. Thus, different levels of

determination of food habits should be taken into account to promote the Black population's health, and to support changes in public practices and policies that minimize health inequalities. Finally, the research agenda on this issue needs more longitudinal studies in order to confirm the association demonstrated by this review. Also, it is urgent that studies on this issue be conducted abroad of the U.S.A. to understand how racial discrimination in food behavior affects people of different ethnic, cultural and social contexts.

Funding: Conselho Nacional de Desenvolvimento Científico e Tecnológico. Grant number: 420342/2018.

References

1. Paradies Y, Ben J, Denson N, Elias A, Priest N, Pieterse A, Gupta A, Kelaher M, Gee G. Racism as a determinant of health: A systematic review and meta-analysis. *PLoS One*. Public Library of Science; 2015;10:e0138511.
2. Wyatt SB, Williams DR, Calvin R, Henderson FC, Walker ER, Winters K. Racism and cardiovascular disease in African Americans. *American Journal of the Medical Sciences*. Lippincott Williams and Wilkins; 2003. p. 315–31.
3. Goosby BJ, Cheadle JE, Mitchell C. Stress-Related Biosocial Mechanisms of Discrimination and African American Health Inequities. *Annu Rev Sociol. Annual Reviews*; 2018;44:319–40.
4. Hayman Jr. LW. The effects of racially-motivated emotional arousal on the eating behaviors of African American women. [US]: ProQuest Information & Learning; 2012.
5. Bailey ZD, Krieger N, Agénor M, Graves J, Linos N, Bassett MT. Structural racism and health inequities in the USA: evidence and interventions [Internet]. *The Lancet*. Lancet Publishing Group; 2017 [cited 2020 Nov 11]. p. 1453–63. Available from: <https://pubmed.ncbi.nlm.nih.gov/28402827/>
6. Brondolo E, Love EE, Pencille M, Schoenthaler A, Ogedegbe G. Racism and hypertension: A review of the empirical evidence and implications for clinical practice [Internet]. *American Journal of Hypertension*. 2011 [cited 2020 Feb 11]. p. 518–29. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/21331054>
7. Cuffee YL, Hargraves JL, Allison J. Exploring the association between reported discrimination and hypertension among African Americans: a systematic review. *Ethn*

- Dis [Internet]. 2012 [cited 2020 Feb 11];22:422–31. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/23140072>
8. Dawson AZ, Walker RJ, Campbell JA, Egede LE. Effect of perceived racial discrimination on self-care behaviors, glycemic control, and quality of life in adults with type 2 diabetes. *Endocrine*. United States; 2015;49:422–8.
 9. Bernardo C de O, Bastos JL, González-Chica DA, Peres MA, Paradies YC. Interpersonal discrimination and markers of adiposity in longitudinal studies: a systematic review. *Obesity Reviews*. Blackwell Publishing Ltd; 2017. p. 1040–9.
 10. Nadimpalli SB, Hutchinson MK. An Integrative Review of Relationships Between Discrimination and Asian American Health. *J Nurs Scholarsh* [Internet]. 2012 [cited 2020 Feb 11];44:127–35. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22551064>
 11. Pascoe EA, Richman LS. Perceived Discrimination and Health: A Meta-Analytic Review. *Psychol Bull*. 2009;135:531–54.
 12. Meule A, Vögele C. The Psychology of Eating. *Front Psychol* [Internet]. Frontiers; 2013 [cited 2020 Jul 14];4:215. Available from: <http://journal.frontiersin.org/article/10.3389/fpsyg.2013.00215/abstract>
 13. Cuevas AG, Reitzel LR, Adams CE, Cao Y, Nguyen N, Wetter DW, Watkins KL, Regan SD, McNeill LH. Discrimination, affect, and cancer risk factors among African Americans. *American Journal of Health Behavior*. Reitzel, Lorraine R.: Lrreitze@mdanderson.org; American Journal of Health Behavior; 2014. p. 31–41.
 14. Johnson P, Risica PM, Gans KM, Kirtania U, Kumanyika SK. Association of perceived racial discrimination with eating behaviors and obesity among participants of the SisterTalk study. *J Natl Black Nurses Assoc*. United States; 2012;23:34–40.
 15. Pickett S, Burchenal CA, Haber L, Batten K, Phillips E. Understanding and effectively addressing disparities in obesity: A systematic review of the psychological determinants of emotional eating behaviours among Black women. *Obes Rev* [Internet]. Blackwell Publishing Ltd; 2020 [cited 2020 Nov 10];21. Available from: <https://onlinelibrary.wiley.com/doi/abs/10.1111/obr.13010>
 16. Wells G, Shea B, O’Connell D, Peterson J. The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Ottawa, ON: Ottawa Hospital Research Institute. 2000.

17. Herzog R, Álvarez-Pasquin MJ, Díaz C, Del Barrio JL, Estrada JM, Gil Á. Are healthcare workers' intentions to vaccinate related to their knowledge, beliefs and attitudes? a systematic review. *BMC Public Health* [Internet]. 2013 [cited 2019 Dec 18];13:154. Available from: <http://bmcpublihealth.biomedcentral.com/articles/10.1186/1471-2458-13-154>
18. Krieger N. Theories for social epidemiology in the 21st century: An ecosocial perspective [Internet]. *International Journal of Epidemiology*. Oxford University Press; 2001 [cited 2020 Nov 24]. p. 668–77. Available from: <https://academic.oup.com/ije/article/30/4/668/705885>
19. Krieger N. *Epidemiology and the People's Health: Theory and Context* [Internet]. 2011 [cited 2020 Nov 24]. Available from: <https://www.amazon.com.br/Epidemiology-Peoples-Health-Theory-Context/dp/0199348421>
20. Krieger N. Got Theory? On the 21st c. CE Rise of Explicit use of Epidemiologic Theories of Disease Distribution: A Review and Ecosocial Analysis. *Curr Epidemiol Reports* [Internet]. Springer Science and Business Media LLC; 2014 [cited 2020 Nov 24];1:45–56. Available from: <https://link.springer.com/article/10.1007/s40471-013-0001-1>
21. Paradies Y, Stevens M. Conceptual diagrams in public health research [Internet]. *Journal of Epidemiology and Community Health*. BMJ Publishing Group; 2005 [cited 2020 Nov 24]. p. 1012–3. Available from: www.jech.com
22. Brady SS, Brubaker L, Fok CS, Gahagan S, Lewis CE, Lewis J, Lowder JL, Nodora J, Stapleton A, Palmer MH, et al. Development of Conceptual Models to Guide Public Health Research, Practice, and Policy: Synthesizing Traditional and Contemporary Paradigms. *Health Promot Pract* [Internet]. SAGE Publications Inc.; 2020 [cited 2020 Nov 24];21:510–24. Available from: <https://pubmed.ncbi.nlm.nih.gov/31910039/>
23. Brodish AB, Cogburn CD, Fuller-Rowell TE, Peck S, Malanchuk O, Eccles JS. Perceived Racial Discrimination as a Predictor of Health Behaviors: the Moderating Role of Gender. *Race Soc Probl*. United States; 2011;3:160–9.
24. Forsyth JM, Schoenthaler A, Ogedegbe G, Ravenell J. Perceived racial discrimination and adoption of health behaviors in hypertensive Black Americans: the CAATCH trial. *J Health Care Poor Underserved* [Internet]. 2014 [cited 2019 Jul 8];25:276–91. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/24509026>

25. Simons RL, Lei MK, Klopach E, Beach SRH, Gibbons FX, Philibert RA. The effects of social adversity, discrimination, and health risk behaviors on the accelerated aging of African Americans: Further support for the weathering hypothesis. *Soc Sci Med.* Elsevier Ltd; 2020;
26. Longmire-Avital B, McQueen C. Exploring a relationship between race-related stress and emotional eating for collegiate Black American women. *Women Health.* United States; 2019;59:240–51.
27. Sims M, Diez-Roux A V., Gebreab SY, Brenner A, Dubbert P, Wyatt S, Bruce M, Hickson DM, Payne T, Taylor H. Perceived discrimination is associated with health behaviours among African-Americans in the Jackson Heart Study. *J Epidemiol Community Health* [Internet]. 2016 [cited 2019 Jul 8];70:187–94. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/26417003>
28. Connolly MK. Overeating among Black American women: The role of racism, racial socialization, and stress. [US]: ProQuest Information & Learning; 2011.
29. Corral I, Landrine H. Racial discrimination and health-promoting vs damaging behaviors among African-American adults. *J Health Psychol.* England; 2012;17:1176–82.
30. Hoggard LS, Volpe V, Thomas A, Wallace E, Ellis K. The role of emotional eating in the links between racial discrimination and physical and mental health. *J Behav Med.* United States; 2019;
31. Kohlmaier JR. A path analysis of binge eating and obesity in African-Americans: Acculturation, racism, emotional distress, binge eating, body dissatisfaction, attitudes towards obesity, dietary restraint, dietary fat intake, and physical activity. [US]: ProQuest Information & Learning; 2004.
32. Clark JD, Winterowd C. Correlates and predictors of binge eating among native American women. *J Multicult Couns Devel.* Clark, Julie Dorton: School of Applied Health and Educational Psychology, Oklahoma State University, 421 Willard Hall, Stillwater, OK, US, 74078, julz.dorton@okstate.edu; Wiley-Blackwell Publishing Ltd.; 2012;40:117–27.
33. Nadimpalli S, Keita A, Wang J, Kanaya A, Kandula N, Gans KM, Talegawkar S. Are Experiences of Discrimination Related to Poorer Dietary Intakes Among South Asians in the MASALA Study? *J Nutr Educ Behav.* United States; 2017;49:872-876.e1.

34. Harrington EF, Crowther JH, Payne Henrickson HC, Mickelson KD. The relationships among trauma, stress, ethnicity, and binge eating. *Cultural Diversity and Ethnic Minority Psychology*. US: Educational Publishing Foundation; 2006. p. 212–29.
35. Kelly NR, Smith TM, Hall GCN, Guidinger C, Williamson G, Budd EL, Giuliani NR. Perceptions of general and postpresidential election discrimination are associated with loss of control eating among racially/ethnically diverse young men. *Int J Eat Disord* [Internet]. United States; 2018 [cited 2019 Jul 8];51:28–38. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/29149497>
36. Hagiwara N, Green TL, Moreno O, Smith D, Corona R. Ethnic Discrimination and Weight Outcomes Among Latinx Emerging Adults: Examinations of an Individual-Level Mediator and Cultural Moderators. *Cult Divers Ethn Minor Psychol* [Internet]. American Psychological Association Inc.; 2020 [cited 2020 Nov 11]; Available from: <https://pubmed.ncbi.nlm.nih.gov/32212740/>
37. Kelly NR, Cotter EW, Guidinger C, Williamson G. Perceived discrimination, emotion dysregulation and loss of control eating in young men. *Eat Behav*. Elsevier Ltd; 2020;37.
38. Hicken MT, Kravitz-Wirtz N, Durkee M, Jackson JS. Racial inequalities in health: Framing future research. *Soc Sci Med*. Elsevier Ltd; 2018;199:11–8.
39. Krieger N. Discrimination and health inequities. *Int J Heal Serv*. Baywood Publishing Co. Inc.; 2014;44:643–710.
40. Lockwood KG, Marsland AL, Matthews KA, Gianaros PJ. Perceived discrimination and cardiovascular health disparities: a multisystem review and health neuroscience perspective. *Ann N Y Acad Sci* [Internet]. Blackwell Publishing Inc.; 2018 [cited 2020 Nov 11];1428:170–207. Available from: <http://doi.wiley.com/10.1111/nyas.13939>
41. Adam TC, Epel ES. Stress, eating and the reward system. *Physiol Behav* [Internet]. Elsevier Inc.; 2007 [cited 2020 Nov 11];91:449–58. Available from: <https://pubmed.ncbi.nlm.nih.gov/17543357/>
42. Sominsky L, Spencer SJ. Eating behavior and stress: A pathway to obesity [Internet]. *Frontiers in Psychology*. Frontiers Research Foundation; 2014 [cited 2020 Nov 11]. Available from: [/pmc/articles/PMC4026680/?report=abstract](https://pubmed.ncbi.nlm.nih.gov/26680/)
43. Zeiders KH, Hoyt LT, Adam EK. Associations between self-reported discrimination and diurnal cortisol rhythms among young adults: The moderating role of racial-ethnic

- minority status. *Psychoneuroendocrinology* [Internet]. Elsevier Ltd; 2014 [cited 2020 Nov 11];50:280–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/25262035/>
44. Berger M, Sarnyai Z. “More than skin deep”: Stress neurobiology and mental health consequences of racial discrimination [Internet]. *Stress*. Informa Healthcare; 2015 [cited 2020 Nov 11]. p. 1–10. Available from: <https://www.tandfonline.com/doi/abs/10.3109/10253890.2014.989204>
 45. Adam EK, Heissel JA, Zeiders KH, Richeson JA, Ross EC, Ehrlich KB, Levy DJ, Kemeny M, Brodish AB, Malanchuk O, et al. Developmental histories of perceived racial discrimination and diurnal cortisol profiles in adulthood: A 20-year prospective study. *Psychoneuroendocrinology* [Internet]. Elsevier Ltd; 2015 [cited 2020 Nov 11];62:279–91. Available from: [/record/2015-50637-033](https://pubmed.ncbi.nlm.nih.gov/record/2015-50637-033)
 46. Zautra AJ. *Emotions, Stress, and Health*. New York: Oxford University Press; 2006.
 47. Jackson JS, Knight KM, Rafferty JA. Race and unhealthy behaviors: Chronic stress, the HPA Axis, and physical and mental health disparities over the life course. *Am J Public Health* [Internet]. American Public Health Association; 2010 [cited 2020 Nov 11];100:933–9. Available from: [/pmc/articles/PMC2853611/?report=abstract](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC2853611/?report=abstract)
 48. Folkman S. Stress: Appraisal and Coping. *Encyclopedia of Behavioral Medicine* [Internet]. Springer New York; 2013 [cited 2020 Nov 12]. p. 1913–5. Available from: https://link.springer.com/referenceworkentry/10.1007/978-1-4419-1005-9_215
 49. Baumeister RF. Ego Depletion and Self-Control Failure: An Energy Model of the Self’s Executive Function. *Self Identity* [Internet]. Informa UK Limited; 2002 [cited 2020 Nov 12];1:129–36. Available from: <http://www.tandfonline.com/doi/abs/10.1080/152988602317319302>
 50. Kubzansky LD, Kawachi I, Sparrow D. Socioeconomic status, hostility, and risk factor clustering in the normative aging study: Any help from the concept of allostatic load? *Ann Behav Med* [Internet]. Society of Behavioral Medicine; 1999 [cited 2020 Nov 12];21:330–8. Available from: <https://pubmed.ncbi.nlm.nih.gov/10721441/>
 51. Lu AT, Quach A, Wilson JG, Reiner AP, Aviv A, Raj K, Hou L, Baccarelli AA, Li Y, Stewart JD, et al. DNA methylation GrimAge strongly predicts lifespan and healthspan. *Aging (Albany NY)* [Internet]. Impact Journals LLC; 2019 [cited 2020 Nov 12];11:303–27. Available from: www.aging-us.com
 52. Walker RE, Keane CR, Burke JG. Disparities and access to healthy food in the United

- States: A review of food deserts literature. Heal Place. Elsevier Ltd; 2010;16:876–84.
53. Gee GC, Ford CL. Structural racism and health inequities: Old Issues, New Directions. Du Bois Rev [Internet]. NIH Public Access; 2011 [cited 2020 Nov 12];8:115–32. Available from: [/pmc/articles/PMC4306458/?report=abstract](https://pubmed.ncbi.nlm.nih.gov/21484448/)

Tables and Figures

Figure 1. Flowchart of the systematic review on the association between Perceived Racial Discrimination (PRD) and eating habits.

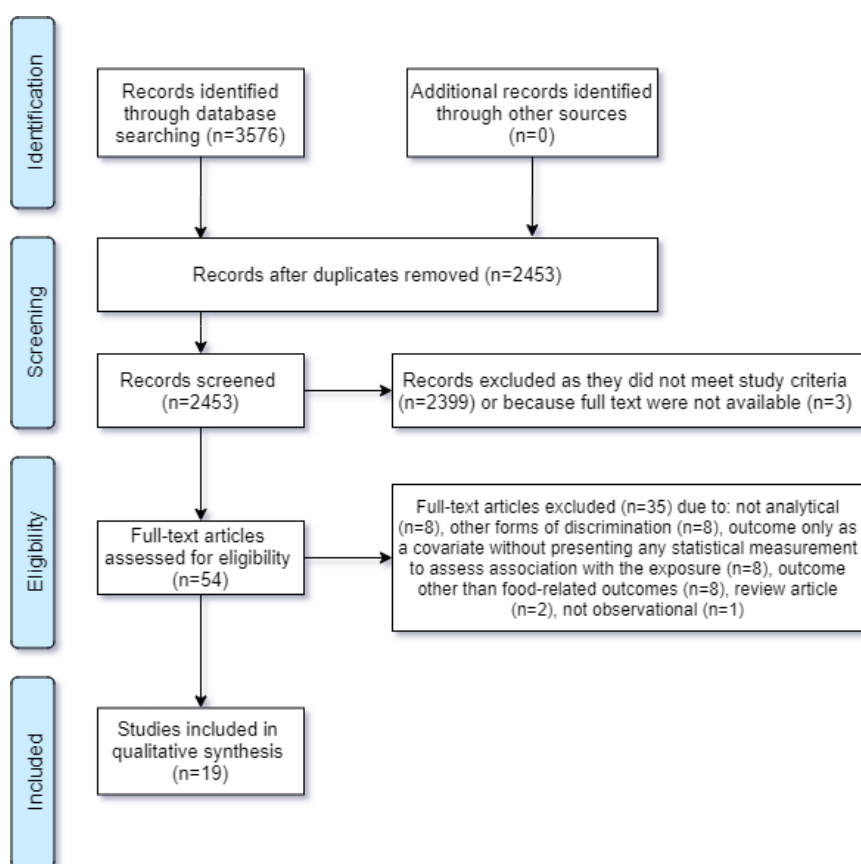


Figure 2. Main conceptual models of the association between Perceived Racial Discrimination (PRD) and health outcomes

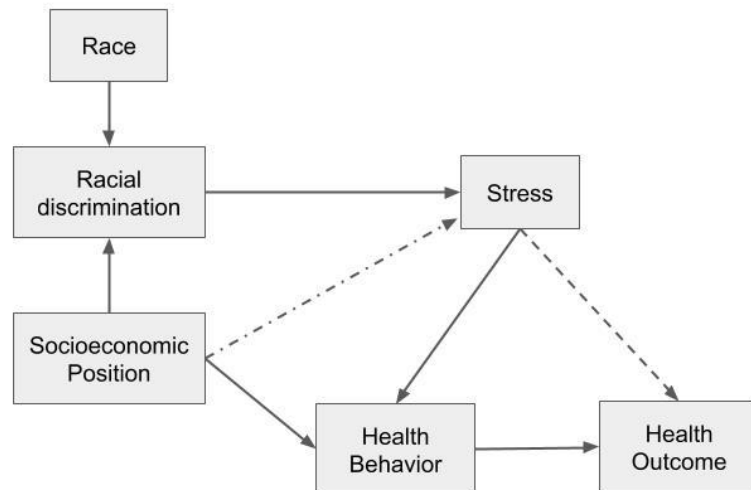


Figure 3. Conceptual model based on association between Perceived Racial Discrimination (PRD) and eating habits

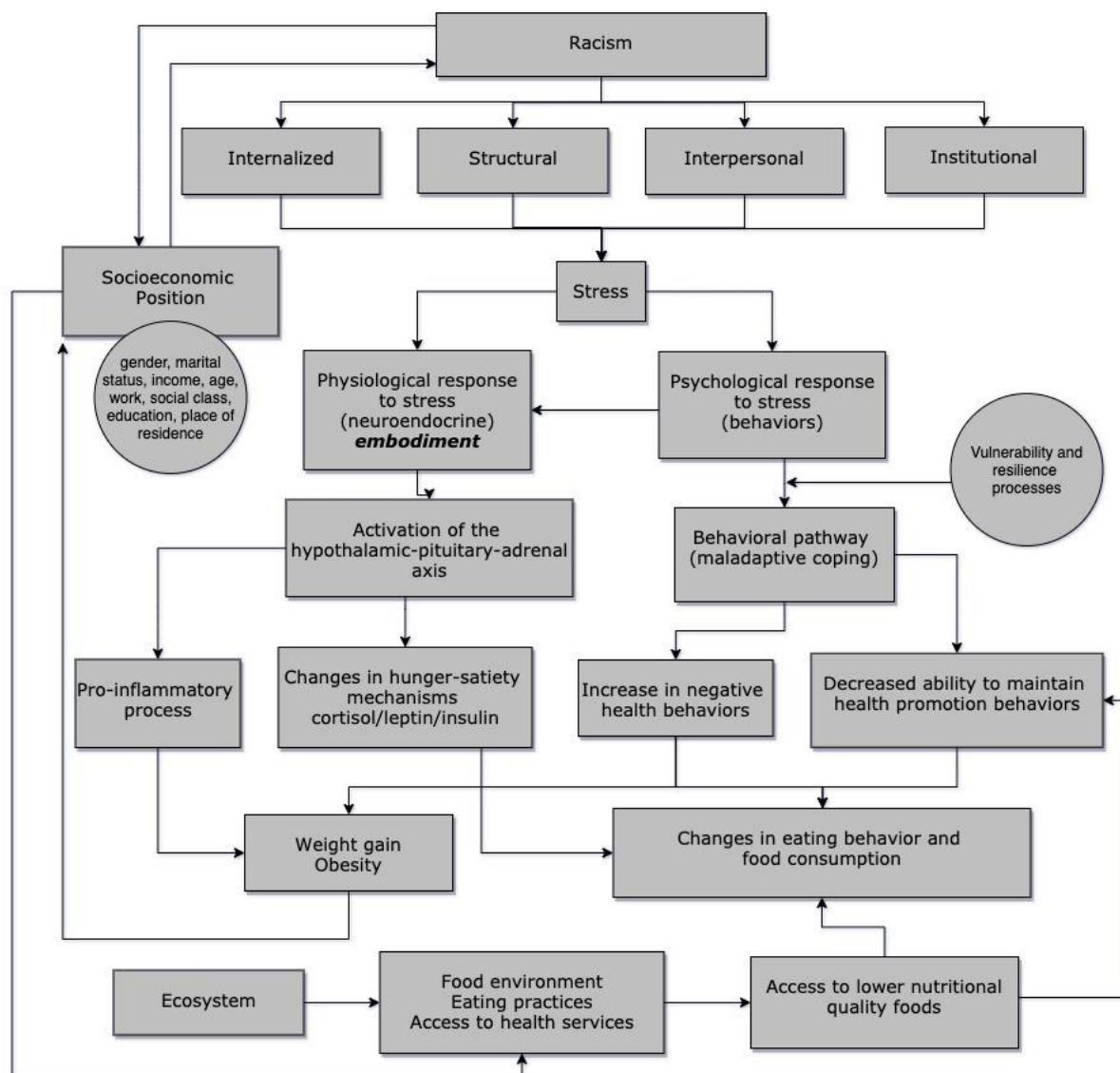


Table 1.
General characteristics of studies included in the review (N=19).

Variables	N	%
Country		
United States	19	100
Study design		
Cross-sectional	15	79
Prospective	4	21
Date of publication		
2004-2008	2	11
2009-2013	6	32
2014-2020	11	58
Sample size		
149-499	10	53
500-999	6	32
1000-4925	3	16
Race/ethnicity		
Black or African-American only	12	63
Black and White	2	11
Ethnic minorities	2	11
Native Americans only	1	5
South Asians only	1	5
Latinxs only	1	5
Gender		
Both	12	63
Female only	4	21
Male only	2	11
All	1	5
Lifecycle*		
Adults	19	100
Elderly	6	32
Undergraduate students	5	26
Children	1	5
Methodological Quality Assessment (%)		
30-60%	8	42
70-80%	8	42
85%<	3	16

*Some articles had more than one category within the sample

Table 2. Characteristics of exposure and outcome measurement according to type of outcome (n= 19).

Exposure (perceived racial discrimination)				Outcome (eating habits)		
ID - setting	Instrument	Assessment	Exposure	Instrument	Assessment	Outcome
<i>Food consumption – nutrient/food group consumption</i>						
Corral I. & Landrine H., 2012 - Black/African-American, 18-95 years (29)	Non validated questionnaire	Amount of PRD experienced recently	PRD (past year) Dichotomous: low or high	Non validated 5-a-day fruit and vegetable survey	Weekly consumption of juice, fruit, salad, and beans	Fruit and vegetable intake Dichotomous: ≥ 5 or < 5 servings of fruits and vegetables a day).
Cuevas A., et al 2014 - Black/African-American, 18 years or more (13)	Day-to-Day Unfair Treatment Scale	Frequency of discrimination experienced daily in different settings based on race/ethnicity or skin color.	PRD (lifetime) Higher scores were indicative of greater PRD	NCI 5-A-Day fruit and vegetable questionnaire	Fruits and vegetables consumption	Fruit and vegetable intake Dichotomous: ≥ 5 or < 5 servings of fruits and vegetables a day).
Sims M, et al 2016 - Black/African-American, 35-84 years (27)	JHS Discrimination Instrument	Frequency of racial discrimination experienced daily (everyday discrimination) and occurrence of unfair treatment over the lifetime (lifetime discrimination) in different settings	PRD (lifetime) Scored such that higher values indicate more everyday and lifetime PRD	NA (not available)	Percent daily calories from fat - men	Fat consumption NA
Nadimpalli S, et al 2017 - South Asians, 40-79 years (33)	Everyday Discrimination Scale	Frequency of experiences of interpersonal discrimination, unfair treatment, and discrimination-related hassles.	PRD (past year) The scale ranges from 9 to 54 with higher values indicating more discrimination.	Food Frequency Questionnaire (FFQ)	Frequency of fruit/vegetable, American and south Asian sweets consumption over the past year	Fruit/vegetable and sweets intake Higher scores indicating higher frequencies of fruit/vegetable, American and South Asian sweets consumption
<i>Food consumption – diet quality</i>						
Brodish A, et al 2011 - Black/African-American, 18-95 years (23)	Non validated questionnaire	Amount of PRD at work or in college (age 19 and 21)	PRD (lifetime) Higher scores were indicative of greater PRD	Non validated diet quality survey	Frequency of vegetables, fast food, sweets and snacks consumed at age 30.	Healthy diet Higher values indicate a more healthy diet.
Forsyth J, et al 2014 - Black/African-American, hypertension, 18 years or more (24)	The Schedule of Racist Events (SRE)	Frequency of discrimination experienced in different settings in the past year; over the lifetime; and the appraisal of the experiences as stressful	PRD (lifetime) PRD (past year) PRD (stress) Scored from 18 to 108. Higher scores indicating more frequent exposure to PRD	Rapid Eating and Activity Assessment for Patients (REAP)	Baseline and study time intake of fruits and vegetables, whole grains, sodium, fat, saturated fat, cholesterol, calcium-rich foods, and sugary foods and drinks.	Unhealthy diet Three-point Likert format (1=often to 3=rarely/ never) and higher scores indicating less healthy eating habits.
Dawson A, et al 2015 - Black and White people, adults, diabetes, 18 years or more (8)	DISTANCE survey	Frequency people were treated poorly or made feel inferior because of race/ethnicity within the past year.	PRD (past year) Rated from never to often	Diabetes Self-Care Activities (SDSCA) scale	Frequency of self-care activity in the last 7 days for general diet (follow healthy diet) and specific diet (i.e. fruits and fats)	Healthy diet Not informed
Simons R, et al 2020 - African American, men and women , 40-60 years (25)	The Schedule of Racist Events (SRE)	Frequency of discrimination experienced in different settings in the past year	PRD (past year) Higher scores were indicative of higher frequency of PRD	Non validated healthy diet scale	Frequency of fruits, vegetables, fatty and fast foods consumption in the past seven days	Healthy diet Higher scores indicating a more healthy diet

Eating behavior - binge eating

Kohlmaier J. 2004 - Black/African-American, 18 - 60 years (31)	The Schedule of Racist Events (SRE)	The degree to which racist discrimination is evaluated or appraised as stressful	PRD (stress) Higher scores are indicative of more experience with racism.	Binge Eating Scale (BES)	Behavioral aspects of binge eating	Binge eating Higher scores indicate more binge eating
Harrington E, et al 2006 - Black and White people, women, undergraduate students, 21 years (mean age) (34)	The Schedule of Racist Events (SRE)	Frequency of discrimination experienced in different settings in the past year; over the lifetime; and the appraisal of the experiences as stressful	PRD (stress) Higher scores were indicative of greater PRD	Binge Eating Scale (BES)	Binge Eating Symptomatology	Binge eating Scores range from 0 to 46, with higher scores indicating greater severity of binge eating symptomatology
Clark J & Winterowd C, 2012 - Native Americans, 19 - 70 years (32)	The Schedule of Racist Events (SRE)	Frequency of discrimination experienced in different settings in the past year; over the lifetime; and the appraisal of the experiences as stressful	PRD (lifetime) PRD (stress) Higher scores were indicative of greater PRD	Binge Eating Scale	Presence of binge eating behaviors, feelings and cognitions associated with binge eating	Binge eating Rated from 0 (no binge eating problem) to 3 (severe binge eating problems).

Eating behavior - emotional eating

Johnson P, et al 2012 - Black/African-American, women, weight control, 18-71 years (14)	The Perceived Discrimination Questionnaire	Frequency of discrimination experienced in different settings based on race/ethnicity or skin color.	PRD (lifetime) Higher scores were indicative of greater PRD	Non validated emotional eating survey	Frequency of eating motivated by depression or sadness and frequency of eating motivated to manage stress	Emotional eating Rated from (1) never to (7) refused to answer question
Hoggard L, et 2019 - Black/African-American, undergraduate students, 18 - 27 years (30)	Racism and Life Experience scale (The Daily Life Experiences subscale)	Frequency with which the participants experienced 18 racial hassles in the past year	PRD (past year) Higher scores were indicative of greater PRD	The Emotional Eating Scale (EES) - Angry, Worried and Sad subscales	The urge to cope with negative affect by eating	Emotional eating Higher scores indicating a greater urge to cope with negative affect through eating.
Longmire-Avital B & McQueen C, 2019 - Black/African-American, women, undergraduate students, 18-25 years (26)	Index of Race Related Stress adapted	The amount of chronic stress experiences as a result of racist acts	PRD (stress) Not informed	Eating Behavior Patterns Questionnaire (eating habits subscale)	Eating habits	Emotional eating Rated on a Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Eating behavior - patterns of overeating

Connolly M, 2011 - Black/African-American, 18-73 years (28)	Everyday Discrimination Scale	Frequency of racist events experienced in the past year	PRD (past year) Higher scores were indicative of greater PRD	Yale Eating Pattern Questionnaire (YEPQ)	Inhibition around food, which may lead to overeating (Uninhibited scale) Restraint around food and overeating (Oversnacking and Binging scale) Inhibition and restraint around food, leading to overeating (Total scale)	Patterns of overeating Higher scores indicate lower levels of inhibition and restraint around food, which may lead to overeating. Total scores are obtained by reversing scores on two items within the Uninhibited scale, and then summing scores across all scale items.
---	-------------------------------	---	---	--	--	---

Eating behavior - restrained and emotional eating

Hayman L, 2012 - Black/African-American, women, undergraduate students, 18 years or more (4)	The General Ethnic Discrimination Scale	Frequency and the appraisal of reports of discriminatory events.	PRD (past year) PRD (lifetime) Higher scores were indicative of greater PRD	Dutch Eating Behavior Questionnaire (restrained and emotional eating subscales)	Frequency of dieting behaviors enacted in efforts to either maintain or lose weight (Restraint eating subscale) Frequency of desire to eat while experiencing specific emotions, such as when feeling bored, lonely, or depressed (Emotional eating subscale)	Restrained and emotional eating High scores on the restraint measure indicate that participants often try to restrain their food intake. High scores on the emotional eating measure indicate that participants often feel the urge to eat when feeling strong emotions.
---	---	--	---	---	--	---

Eating behavior - loss of control eating

Kelly N, et al 2018 - African-American, asian and hispanic, men, 18-30 years (35)	Everyday Discrimination Scale Asian American Racism-Related Stress Inventory Discrimination Stress subscale of the Hispanic Stress Inventory Non validated questionnaire to assess post-election PRD	Frequency of discrimination experienced in different settings based on race/ethnicity or skin color, usually and post presidential elections	PRD (past year) PRD (post-election) Higher scores were indicative of greater PRD	Eating Disorder Examination Questionnaire	Frequency of loss of control eating	Loss of control eating Not informed
Kelly N, et al 2020 - African-American, asian and hispanic, men, 18-30 years (37)	Everyday Discrimination Scale, Asian American Racism-Related Stress Inventory, Hispanic Stress Inventory-2 Assessment	Frequency of discrimination experienced in different settings based on race/ethnicity or skin color	PRD (past year) Higher scores were indicative of greater PRD	Eating Disorder Examination Questionnaire	Frequency of loss of control eating	Loss of control eating Not informed

Eating behavior - eating disorder symptoms

Hagiwara N, et al 2020 - Latinx, all genders, college students (36)	Brief Perceived Ethnic Discrimination Questionnaire–Community Version	Frequency of the experience of ethnic discrimination	PRD (lifetime) Rated from never to very often. A composite score was the average of all items	Eating Disorder Examination Questionnaire	Health-compromising eating behaviors and attitudes (restraint, eating concern, shape concern, weight concern) in the past 28 days	Eating disorder symptoms A global score was the average of all 28 items
--	---	--	--	---	---	--

Table 3. Main results of the association between perceived racial discrimination and eating habits (n=19)

ID	Statistical analysis	Confounders	Results	Association with negative food-related outcomes	Association with positive food-related outcomes
Corral I & Landrine H, 2012	Logistic regression	Age; gender; education level; income	Last year PRD vs fruit and vegetable intake $b=0.21$ ($p>0.05$)	-	-
Cuevas A., et al 2014	Indirect effect (mediation analyses)	Age; sex; education; annual household income; partner status; employment status	PRD vs fruit and vegetable intake $pc=0.0054$	-	-
Sims M, et al 2016	Mean difference	Age; socioeconomic status	Everyday discrimination vs fat intake (in men) $md=0.37$ ($p<0.05$) Everyday discrimination vs fat intake (in women) $md=0.43$ ($p<0.01$) Lifetime discrimination vs fat intake (in men) $md=0.46$ ($p<0.01$)	Yes Yes Yes	- - -
Nadimpalli S, et al 2017	Bivariate correlation Multiple linear regression	Age; sex; income; education level; marital status; years living in USA; study site; traditional cultural beliefs	PRD vs fruit/vegetables intake $p>0.5$ PRD vs total sweet intake $b=0.17$ ($p<0.001$) PRD vs american sweet intake $b=0.188$ ($p<0.001$) PRD vs south asian sweet intake $b=0.123$ ($p<0.001$)	- Yes Yes Yes	- - - -
Brodish A., et al 2011	Structural equation model	Gender; socioeconomic status	Cumulative PRD at work or college vs healthy eating at age 30 $pc=-0.59$ ($p<0.001$)	Yes	-
Forsyth J, et al 2014	Mixed effects regressions	Age; comorbidity; education; gender; income; marital status	Baseline PRD vs unhealthy diet $Est=1.897$ ($p=0.000$) Study time PRD vs unhealthy diet $Est=-0.189$ ($p=0.007$)	Yes -	- Yes
Dawson A, et al 2015	Multiple linear regression	Age; duration of diabetes; number of comorbidities; race; marital status; education; employment; household income	PRD vs general diet $b=-0.37$ ($p=0.012$) PRD vs specific diet $b=-0.25$ ($p=0.025$) PRD vs general diet (in Whites) $b=-0.40$ ($p=0.009$) PRD vs specific diet (in Whites) $b=-0.25$ ($p=0.024$)	Yes Yes Yes Yes	- - - -
Simons R, et al 2020	Bivariate correlation	-	PRD vs healthy diet $r=0.1$ ($p<0.05$)	Yes	-
Kohlmaier J. 2004	Path analysis	Gender; BMI	PRD vs binge eating mediated by emotional distress (in women) $pc=0.4;0.3$ ($p<0.05$) PRD vs binge eating mediated by emotional distress (in men) $pc=0.4;0.28$ ($p<0.05$)	Yes Yes	- -
Harrington E, et al 2006	Bivariate correlation	-	PRD vs BES scores $r=11$ ($p>0.10$) PRD vs BES scores (african-american women) $r=22$ ($p<0.05$) PRD vs BES scores (White women) $r=17$ ($p>0.10$)	- Yes -	- - -
Clark J & Winterowd C, 2012	Multiple regression analysis	Historical loss (thoughts and feelings) and emotional distress	PRD (stress) vs binge eating scores 13% of the variance of the score ($p<0.05$) PRD (lifetime) binge eating scores 12% of the variance of the score ($p<0.05$)	Yes Yes	- -
Johnson P, et al 2012	Multivariate models	Age; birthplace; ethnicity; education level; household composition; employment status; and household income	PRD vs eating when depressed or sad $p=0.0147$ PRD vs eating to manage stress $p=0.0055$	Yes Yes	- -
Hoggard L, et 2019	Path analysis	-	PRD vs emotional eating (angry) $b=0.18$ ($p=0.019$) PRD vs emotional eating (depressed) $b=0.22$ ($p=0.003$) PRD vs emotional eating (anxious) $b=0.21$ ($p=0.006$)	Yes Yes Yes	- - -
Longmire-Avital B & McQueen C, 2019	Multiple linear regression	Weight range; general perceived stress	PRD vs emotional eating $b=0.21$ ($p<0.01$)	Yes	-
Connolly M, 2011	Pearson correlation	Age; BMI; socioeconomic status; birthplace; ethnicity; race; perceived stress	PRD vs oversnacking $r=0.24$ ($p<0.01$) PRD vs bingeing $r=0.18$ ($p<0.05$) PRD vs disinhibition $p>0.5$ PRD vs total YEPQ score $r=0.23$ ($p<0.01$)	Yes Yes - Yes	- - - -
Hayman L, 2012	Bivariate correlation	-	Recent racism vs emotional eating $r=0.24$ ($p<0.01$) Recent racism vs restrained eating $r=0.18$ ($p<0.05$) Lifetime racism vs restrained eating $r=0.28$ ($p<0.01$) Lifetime racism vs emotional eating $r=0.24$ ($p<0.01$)	Yes Yes Yes Yes	- - - -

Kelly N, et al 2018	Multinomial logistic regression	Income, education, generational status and body mass index	PRD vs loss of control eating (in African American) $b=1.4$ ($p<0.01$)	Yes	-
			PRD vs loss of control eating (in Hispanic/Latinos) $b=1.42$ ($p<0.01$)	Yes	-
			PRD vs loss of control eating (low ethnic identity Asian/Asian American) $b=0.65$ ($p<0.001$)	Yes	-
			PRD post-election vs loss of control eating (Asian/Asian American not born in the US or whose parents were not born in the US) $b=1.28$ ($p<0.01$)		
Kelly N, et al 2020	Multinomial logistic regression	Income, education, generational status and body mass index	PRD vs loss of control eating (in Hispanic/Latinos) $b=1.52$ ($p<0.001$)	Yes	-
			PRD vs loss of control eating $b=1.39$ ($p<0.001$)	Yes	-
			PRD vs loss of control eating ($p = 0.43$)	-	-
Hagiwara N, et al 2020	Mediation analysis	Biological sex, parental education, household income, and acculturation	PRD vs eating disorder symptoms $b=0.19$ ($p<0.016$)	Yes	-

pc - path coefficient; *b* - regression coefficient; *est* - estimate; *md* - mean difference; *r* - correlation coefficient

6. CONSIDERAÇÕES FINAIS

A ênfase excessiva no estilo de vida saudável ignora a importância dos determinantes adversos da saúde. Em todos os âmbitos de cuidado, seja no nível assistencial ou de formulação de políticas públicas, na clínica privada ou nos equipamentos de saúde pública, e até mesmo nas ações de comunicação em saúde é necessário considerar os determinantes sociais em saúde muito mais fortemente do que está sendo feito no momento atual. Não se trata de engessar as transformações individuais, mas sim potencializá-las através da compreensão profunda das redes de influência nos nossos comportamentos, escolhas e até mesmo no organismo biológico.

Estudar discriminação racial autopercebida no campo da alimentação e nutrição permite identificar onde e como devem ser feitas as intervenções, com o objetivo de reduzir as iniquidades de saúde, ou seja, os pontos mais sensíveis onde tais intervenções podem provocar maior impacto. O racismo é um dos maiores problemas sociais que as sociedades em diversos contextos globais vivenciam, afetando o modo de viver dos indivíduos e grupos de forma integral, em todos os âmbitos da vida. Com a saúde não é diferente. Mudar a perspectiva para avançar no cuidado em saúde é urgente.

Nancy Krieger reforça que é essencial levar em consideração o componente histórico que influencia no racismo. Nesse sentido, é detrimental falar de contexto, portanto indissociável falar do contexto histórico do Brasil em relação a discriminação. A maior parte da literatura científica acerca sobre discriminação racial e saúde aponta para o cenário dos Estados Unidos: fácil categorização de raça e cor de pele, pautado em biologia e ancestralidade. Diferente dos Estados Unidos, o Brasil sofreu um processo de colorismo que determinou o fenômeno da discriminação racial no Brasil.

Espera-se que esse trabalho possa contribuir não só pra os avanços do campo científico, mas que esses achados possam ser direcionados para o fazer prático, podendo contribuir para melhorar a saúde das pessoas e reduzir as iniquidades tão presentes no acesso a alimentação e nos hábitos alimentares.

APÊNDICE A – CARACTERÍSTICAS DOS ESTUDOS

S1 Supplementary file: characteristics of the studies

ID	Study design	Data collection timeframe	Population	Sample size	Age
<i>Food consumption</i>					
Brodish A., et al 2011	Prospective cohort	1991-2009	Black/African-American	815	12-30 years
Corral I & Landrine H, 2012	Cross-sectional	Not available	Black/African-American	2190	18-95 years
Cuevas A., et al 2014	Prospective cohort	2008-2009	Black/African-American	1365	18 years or more
Forsyth J, et al 2014	Prospective cohort	Not available	Black/African-American, hypertension	930	18 years or more
Dawson A, et al 2015	Cross-sectional	2014	Black and White people, adults, diabetes	602	18 years or more
Sims M, et al 2016	Cross-sectional	2000-2004	Black/African-American	4925	35-84 years
Nadimpalli S, et al 2017	Cross-sectional	2010-2013	South Asians	906	40-79 years
Simons R, et al 2020	Prospective cohort	2005-2008	Black/African-American	494	40-60 years
<i>Eating behavior</i>					
Kohlmaier J. 2004	Cross-sectional	Not available	Black/African-American	385	18 - 60 years
Harrington E, et al 2006	Cross-sectional	Not available	Black and White people, women, undergraduate students	178	21 years (mean age)
Connolly M, 2011	Cross-sectional	2009	Black/African-American	201	18-73 years
Clark J & Winterowd C, 2012	Cross-sectional	2007	Native Americans	269	19 - 70 years
Hayman L, 2012	Cross-sectional	2010	Black/African-American, women, undergraduate students	319	18 years or more
Johnson P, et al 2012	Cross-sectional	2003	Black/African-American, women, weight control	350	18-71 years
Kelly N, et al 2018	Cross-sectional	2017	African-American, asian and hispanic, men	780	18-30 years
Hoggard L., et al 2019	Cross-sectional	2014-2017	Black/African-American, undergraduate students	150	18 - 27 years
Longmire-Avital B & McQueen C, 2019	Cross-sectional	2014	Black/African-American, women, undergraduate students	149	18-25 years
Kelly N, et al 2020	Cross-sectional	2017	African-American, asian and hispanic, men	798	18-30 years
Hagiwara N, et al 2020	Cross-sectional	-	Latinx	198	18-25 years

