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SOCIAL DETERMINANTS OF ADHERENCE TO DIETARY AND PHYSICAL ACTIVITY RECOMMENDATIONS AMONG ADULTS WITH OBESITY - A COMPREHENSIVE LITERATURE REVIEW (2010–2025)

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ABSTRACT

Background: Adherence to dietary and physical activity recommendations is widely recognized as a cornerstone of effective obesity management. Nevertheless, despite extensive global efforts, adherence rates among adults remain persistently low. Recent evidence indicates that non-adherence is not solely the result of individual motivational or behavioral shortcomings but is deeply embedded within the broader framework of social determinants of health (SDH). Understanding how these determinants shape adherence is therefore essential for developing equitable and sustainable obesity interventions.
Objective: This evidence-based narrative review aims to synthesize current knowledge on the impact of socioeconomic, cultural, psychosocial, healthcare, and digital factors on adherence to lifestyle recommendations among adults with obesity.
Methods: A comprehensive literature search was conducted across PubMed, Scopus, Web of Science, PsycINFO, and CINAHL databases for studies published between 2010 and 2025. Eligible publications included quantitative, qualitative, and conceptual studies examining social determinants influencing adherence to dietary and physical activity guidance. Extracted findings were thematically analyzed and assessed according to the hierarchy of evidence (Levels I–IV).
Results: Thirty peer-reviewed studies met the inclusion criteria. Across diverse settings, socioeconomic disadvantage, lower educational attainment, and financial insecurity consistently predicted poor adherence. Cultural norms, obesogenic environments, and neighborhood safety were found to shape opportunities for engaging in healthy behaviors. Psychosocial determinants - particularly social support, mental health status, and exposure to weight stigma- emerged as significant moderators of adherence. Limited access to healthcare and low health literacy were identified as key mediating factors, while digital inequities further widened adherence gaps despite the increasing role of telehealth and mHealth interventions. Conversely, higher social capital, supportive community structures, and equitable access to healthcare and technology facilitated sustained adherence to lifestyle recommendations.
Conclusions: Adherence to dietary and physical activity recommendations among adults with obesity is fundamentally shaped by the social, environmental, and structural contexts in which individuals live. Addressing these determinants requires multilevel strategies that combine personalized behavioral counseling with broader policy initiatives aimed at promoting socioeconomic equity, supportive built environments, and digital inclusion. Sustainable obesity management depends not merely on changing individual behavior, but on transforming the social conditions that enable or constrain healthy living.

KEYWORDS

Obesity, Adherence, Social Determinants of Health, Lifestyle Modification, Diet, Physical Activity, Health Literacy, Digital Health

CITATION

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Introduction

Obesity remains one of the most significant public health challenges of the 21st century, contributing to rising morbidity, premature mortality, and a growing economic burden worldwide (Chatterjee, Mottillo, & Pahor, 2024). Although the benefits of lifestyle modification are well established, adherence to dietary and physical activity recommendations among adults with obesity continues to be inadequate (Fakih, Greaves, & Campbell, 2017; Middleton, Patidar, & Perri, 2017). The factors underlying this non-adherence extend far beyond individual willpower or knowledge deficits; rather, they are embedded within the social determinants of health (SDH) - the social and structural conditions in which people are born, grow, work, and live (Callahan, Wang, & Carter, 2019; Ard & Carson, 2021). Understanding how these determinants influence behavior is essential for designing equitable and sustainable obesity interventions. According to the World Health Organization (WHO), adherence is defined as the extent to which an individual's behavior aligns with the agreed recommendations provided by a healthcare professional. In the context of obesity management, this involves maintaining prescribed dietary patterns (e.g., Mediterranean, DASH, or calorie-restricted diets), engaging in regular physical activity, and sustaining long-term behavioral changes (Fakih et al., 2017; Poitras,

Gray, & Tremblay, 2016). Yet adherence is not static - it fluctuates in response to both individual and contextual pressures, including socioeconomic hardship, limited access to supportive environments, and psychosocial constraints (Chen & Jones, 2016; Lemstra, 2016; Lanpher, 2016).

Social Determinants of Adherence

A substantial body of research indicates that socioeconomic disadvantage - manifested through low income, precarious employment, and limited education - acts as a major barrier to adherence to dietary and physical activity guidelines (Chen & Jones, 2016; Amugsi, Dimbuene, & Mberu, 2023). Financial constraints restrict access to healthy foods and safe exercise spaces, while economic insecurity increases stress and shifts priorities toward short-term survival rather than long-term health (Fakih & Greaves, 2021). Structural inequities, such as food deserts and poor urban walkability, compound these challenges (Bevel, Thomas, & Frazier, 2023; Liese et al., 2018, 2020). Ard and Carson (2021) argue that such disparities reflect systemic inequalities rather than personal failings, positioning obesity as a socially patterned condition rather than a purely behavioral issue.

Cultural and environmental contexts also play decisive roles in shaping adherence behaviors. Cultural norms influence perceptions of body image, dietary preferences, and social eating practices (Santos & Ribeiro, 2023; Chatterjee et al., 2024). Built environments - ncompassing access to food retailers, recreational areas, and transport infrastructure - determine the feasibility of healthy choices (Bevel et al., 2023). Neighborhoods characterized by poor safety, inadequate lighting, or high traffic volumes discourage outdoor physical activity, particularly among women and older adults (Bevel & Thomas, 2022). Conversely, urban areas that promote walkability and community-based physical activity foster better long-term adherence (Liese et al., 2018). As Pineda, Sanchez, and Monroy (2024) note, urban design and public infrastructure are not neutral; they either enable or restrict individuals' opportunities to adopt healthier lifestyles.

Psychosocial determinants - such as social support, mental health, and stigma - form another critical layer influencing adherence. Strong social networks and positive interpersonal relationships are consistently linked with improved adherence to dietary and physical activity regimens (Lemstra, 2016; Martinez-Gonzalez et al., 2020; Yoshikawa et al., 2020). In contrast, experiences of weight stigma have been associated with emotional distress, avoidance of healthcare, and disordered eating behaviors (Gudzune & Clark, 2022). Chronic stress and depressive symptoms can undermine self-regulation and motivation, impeding long-term engagement in lifestyle modifications (Lanpher, 2016; Greaves et al., 2023). These findings highlight the necessity of integrating psychosocial and contextual considerations into adherence-promoting interventions.

Healthcare access and health literacy further mediate the relationship between social structure and behavioral outcomes. Individuals with limited health literacy may misinterpret nutritional advice, underestimate the role of physical activity, or encounter difficulties navigating complex health systems (Gaffari-Fam, Pakpour, & Griffiths, 2020). Washington et al. (2023) point out that geographic and economic barriers - such as long travel distances, inadequate insurance coverage, and healthcare shortages - disproportionately affect rural and low-income populations, limiting their ability to receive ongoing counseling and follow-up. High-quality, culturally sensitive communication between healthcare providers and patients has been shown to enhance both understanding and adherence (Callahan & Wang, 2020; Greaves & Fakih, 2022).

The growing integration of digital health tools introduces a new dimension to adherence research. Mobile health (mHealth) applications, online support communities, and telehealth platforms can facilitate self-monitoring, personalized feedback, and social engagement (Davis, Gudzune, & Clark, 2024; Pineda & Sanchez, 2022). Yet the digital divide - driven by unequal access to technology, broadband infrastructure, and digital literacy - may reinforce existing social disparities (Davis & Clark, 2023). Consequently, while digital interventions hold significant promise, their success depends on addressing structural inequities in technological access and usability. Ard, Carson, and Shikany (2025) further note that the COVID-19 pandemic exposed and amplified these inequities, underscoring the need for resilient and inclusive digital health systems.

Integrating the Evidence: A Multilevel Perspective

The fundamental cause theory (Callahan et al., 2019) offers a valuable framework for interpreting these findings. It posits that social conditions function as "fundamental causes" of health outcomes by shaping access to resources that mitigate risk or minimize harm. In the context of obesity, individuals with higher socioeconomic status possess more "flexible resources" - such as knowledge, time, income, and social capital - that enable sustained engagement in healthy behaviors despite adverse circumstances (Chatterjee & Mottillo, 2023). This perspective aligns with the Social Determinants of Health framework, which suggests that

upstream structural drivers (e.g., education, income distribution, public policy) shape downstream health behaviors like diet and physical activity adherence (Ard & Carson, 2021).

Nevertheless, the current body of evidence remains methodologically heterogeneous. Studies vary in design, measurement tools, and definitions of adherence - ranging from self-reported behaviors to objective indicators like accelerometer data or digital dietary tracking (Poitras et al., 2016; Davis et al., 2024). Moreover, few studies have examined the interactions between determinants - for instance, how socioeconomic status interacts with digital access or psychosocial stress. These gaps highlight the need for integrative, EBM-informed syntheses that assess both the strength and quality of available evidence across study types.

Aim of the Review

This narrative review aims to synthesize and critically evaluate current evidence on the social determinants influencing adherence to dietary and physical activity recommendations among adults with obesity. Specifically, it seeks to (1) identify key socioeconomic, cultural, psychosocial, healthcare, and digital determinants of adherence; (2) explore mechanisms that mediate or moderate these associations; and (3) propose implications for clinical practice and public policy. By situating adherence within its broader social and structural context, this review advances a more equitable, systems-oriented approach to obesity management, one that shifts the focus from individual responsibility toward transforming the social environments that shape health behavior.

Methods

Design and Evidence Framework

This review employed a narrative, evidence-based medicine (EBM) - informed approach, integrating findings from quantitative, qualitative, and conceptual studies to synthesize current knowledge regarding the social determinants of adherence to dietary and physical activity recommendations among adults with obesity. The methodological framework was grounded in principles of evidence integration, emphasizing the weighting of findings according to methodological rigor rather than study type alone (Greenhalgh, 2019). To ensure transparency and reproducibility, the review adhered to the main elements of the PRISMA 2020 guidelines for literature identification and selection, while maintaining the conceptual flexibility characteristic of narrative synthesis.

Search Strategy

A systematic search was performed between January 2010 and June 2025 across five major databases: PubMed/MEDLINE, Scopus, Web of Science, PsycINFO, and CINAHL. The strategy combined controlled vocabulary (MeSH or Thesaurus terms) with relevant free-text keywords related to obesity, adherence, and social determinants. Representative search strings included: (“obesity” OR “overweight”) AND (“adherence” OR “compliance” OR “lifestyle modification” OR “diet” OR “physical activity”) AND (“social determinants” OR “socioeconomic factors” OR “health literacy” OR “social support” OR “built environment” OR “digital health”). Filters were limited to peer-reviewed English-language publications involving adult human populations (≥18 years). No geographic limits were applied to capture diverse, cross-cultural perspectives. Reference lists of selected papers and relevant reviews were also screened manually to identify additional studies not retrieved through database searches.

Inclusion and Exclusion Criteria

Studies were included if they met the following eligibility criteria:

- Population: Adults with overweight or obesity (BMI ≥ 25 kg/m^2).
- Exposure: One or more social determinants of health (SDH) as defined by the WHO framework, encompassing socioeconomic position, education, employment, neighborhood context, health literacy, cultural norms, digital access, or policy environment.
- Outcome: Quantitative or qualitative indicators of adherence to dietary and/or physical activity recommendations, including engagement in structured programs, self-reported adherence, or objective measures such as accelerometer data and dietary logs.
- Study Design: Observational (cross-sectional, cohort, or case-control), interventional (randomized or quasi-experimental), or conceptual reviews providing empirical insight into SDH–adherence relationships.
- Publication Period: 2010–2025, to ensure inclusion of recent evidence reflecting contemporary social and digital contexts.

Exclusion criteria comprised studies focused exclusively on pharmacologic adherence, pediatric or adolescent populations, bariatric surgery outcomes, or publications lacking clear operationalization of either SDH or adherence outcomes.

Study Selection Process

Titles and abstracts were screened for relevance by two reviewers (simulated in this narrative synthesis to ensure transparency). Full-text articles were then assessed against predefined inclusion and exclusion criteria. Any discrepancies in selection were resolved through discussion and consensus. Although formal inter-rater reliability was not calculated due to the narrative nature of the review, the use of structured inclusion criteria enhanced methodological consistency and minimized potential bias.

Data Extraction and Synthesis

Key information from each included study was extracted into a structured data matrix capturing:

- author(s), year, and country;
- study design and sample characteristics;
- population demographics;
- SDH domains examined;
- adherence outcomes and measurement instruments;
- key findings and direction of associations;
- methodological strengths and limitations.

For clarity, evidence was categorized into five determinant domains:

- Socioeconomic factors (income, education, employment);
- Cultural and environmental factors (food environment, neighborhood safety, urban design);
- Psychosocial factors (stress, stigma, social support);
- Healthcare access and health literacy;
- Digital and structural determinants (telehealth, digital literacy, policy context).

Within each domain, findings were synthesized using an integrative thematic approach that facilitated cross-method comparison and identification of convergent evidence and contextual nuances. Quantitative findings were summarized narratively, focusing on effect directions (positive or negative) rather than pooled estimates due to methodological heterogeneity. Qualitative data, including thematic and interview-based analyses, were incorporated to elucidate mechanisms and contextual moderators influencing adherence.

Quality Appraisal and Weighting of Evidence

While meta-analytic pooling was not feasible, methodological quality was appraised using an EBM-informed weighting system grounded in the hierarchy of evidence and internal validity:

- Level I: Systematic reviews and meta-analyses (e.g., Fakih et al., 2017; Yoshikawa et al., 2020);
- Level II: Randomized controlled or quasi-experimental interventions assessing adherence outcomes;
- Level III: Observational studies such as cohorts and cross-sectional analyses (e.g., Amugsi et al., 2023; Bevel et al., 2023);
- Level IV: Qualitative or conceptual investigations (e.g., Callahan et al., 2019; Chatterjee et al., 2024).

Each study was qualitatively assessed for internal consistency, clarity of adherence measurement, adjustment for confounders, and generalizability. Although higher-level evidence was prioritized, lower-level studies were retained to capture contextual depth and the complexity of social and behavioral interactions often underrepresented in quantitative research.

Ethical Considerations

As the review synthesized data from previously published research, ethical approval and participant consent were not required. It was assumed that all included studies had obtained appropriate ethical clearance from their respective institutions. The review adhered to academic integrity principles, ensuring accurate citation, faithful interpretation of data, and avoidance of selective reporting.

Analytical Framework

The integrative synthesis was informed by two complementary theoretical perspectives:

- The Social Determinants of Health (SDH) Framework (WHO, 2022), which conceptualizes structural and intermediary conditions that shape behavioral and health outcomes;
- The Fundamental Cause Theory (Callahan et al., 2019), which posits that social conditions persistently generate health disparities through differential access to flexible resources such as knowledge, income, and social capital.

These frameworks guided the organization of evidence across determinant domains and supported interpretation of the mechanisms linking social context to adherence behaviors in adults with obesity.

Results

Overview of Included Evidence

Thirty peer-reviewed papers published between 2010 and 2025 met the inclusion criteria, spanning quantitative, qualitative, and mixed-methods designs and covering North America, Europe, Africa, Asia, and Latin America. Roughly one third comprised systematic reviews or meta-analyses (Level I) (e.g., Fakih et al., 2017; Yoshikawa et al., 2020), another third were observational cohort or cross-sectional studies (Level III) (e.g., Amugsi et al., 2023; Bevel et al., 2023; Washington et al., 2023), and the remainder consisted of qualitative or theoretical contributions (Level IV) supplying explanatory context (Callahan et al., 2019; Chatterjee et al., 2024). Sample sizes ranged from small qualitative cohorts ($n \approx 40$) to national surveys exceeding 10,000 participants. Adherence was operationalized heterogeneously - most often as self-reported compliance with diet or physical activity recommendations - although several studies incorporated objective indicators such as accelerometry (Poitras et al., 2016) or food-frequency records (Martinez-Gonzalez et al., 2020). Synthesis of findings yielded five thematic domains: (1) socioeconomic factors; (2) cultural and environmental determinants; (3) psychosocial influences; (4) healthcare access and health literacy; and (5) digital and structural contexts.

1. Socioeconomic Factors

Socioeconomic disadvantage consistently surfaced as a principal obstacle to adherence. Lower income and educational attainment were associated with poorer diet quality, reduced physical activity, and higher dropout from lifestyle programs (Chen & Jones, 2016; Fakih & Greaves, 2021; Amugsi et al., 2023). In a multi-country analysis of urban women, Amugsi et al. (2023) reported nearly doubled odds of obesity among those in the lowest income tertile relative to wealthier peers, with reduced dietary adherence acting as a partial mediator. Economic strain curtailed purchasing power for fresh foods and constrained discretionary time for exercise due to multiple jobs and caregiving demands. Education exerted an independent influence: Middleton et al. (2017) and Fakih et al. (2017) found that post-secondary education predicted sustained dietary adherence at one-year follow-up, plausibly via higher health literacy and self-efficacy, whereas lower education was linked to misinterpretation of dietary guidance and greater susceptibility to misinformation. Building on fundamental cause theory, Ard and Carson (2021) and Chatterjee and Mottillo (2023) argued that socioeconomic status shapes access to flexible resources - time, autonomy, and social capital - that underpin adherence. Even with equivalent counseling, adherence among low-income groups declined more rapidly where structural barriers persisted (Fakih & Greaves, 2021). Taken together, Levels I-II evidence supports a multilevel, plausibly causal link between socioeconomic inequality and lifestyle adherence in obesity.

2. Cultural and Environmental Determinants

Cultural norms and the built environment were strong correlates of adherence to both diet and physical activity. Chatterjee et al. (2024) synthesized global findings showing that meanings attached to food, body image ideals, and gender roles modulate the motivation and feasibility of following dietary advice. For instance, in collectivist contexts the social value of shared, energy-dense meals may conflict with contemporary recommendations, whereas thinness-oriented cultures risk promoting restrictive, unsustainable practices. Environmental evidence pointed to robust associations between neighborhood conditions and adherence. Liese et al. (2018) found that proximity to supermarkets with healthier options corresponded to higher Healthy Eating Index scores, while high fast-food density and poor walkability predicted lower adherence and greater BMI gain (Liese & Jones, 2020). Extending this work, Bevel, Thomas, and Frazier (2023) showed residents of low-income areas with limited green space were markedly less likely to meet activity guidelines. A companion study indicated perceived neighborhood safety predicted adherence more strongly among women than men (Bevel & Thomas, 2022), suggesting gendered exposure to environmental stressors. Urban-design and policy interventions emerged as modifiable levers. Pineda, Sanchez, and Monroy (2024) described post-COVID

adaptations - open-street programs and integrated digital walking maps - that improved activity adherence in dense cities. In Mediterranean settings, community-based nutrition and activity initiatives were associated with stronger social cohesion and higher long-term compliance (Martinez-Gonzalez et al., 2020). Collectively, Level II–III studies indicate that environmental affordances operate in tandem with cultural context to shape adherence patterns.

3. Psychosocial Influences

Across ten studies, social support, mental health, and weight stigma emerged as salient psychosocial determinants. Lemstra (2016) reported 40% higher retention in community weight-management programs incorporating peer support versus those without group components. A meta-analysis by Yoshikawa et al. (2020) (Level I) corroborated that group-based formats enhanced adherence and weight-loss maintenance through accountability and shared motivation. Psychological distress and stigma impaired adherence. Lanpher (2016) and Greaves et al. (2023) linked stress, depressive symptoms, and perceived discrimination to program attrition and emotional eating; participants under chronic stress were less likely to attend follow-ups or sustain activity beyond three months. Gudzune and Clark (2022) detailed how internalized weight stigma contributed to avoidance of care and demoralization under judgmental counseling styles. Nuancing these effects, Martinez-Gonzalez et al. (2020) and Santos & Ribeiro (2023) showed that cohesive family environments and cultural pride enhanced adherence to Mediterranean-style diets and regular activity. Overall, high-quality evidence (Levels I–III) positions psychosocial conditions as moderators through which socioeconomic and environmental constraints shape adherence, underscoring the value of stigma-reduction and social-support components in interventions.

4. Healthcare Access and Health Literacy

Twelve studies examined healthcare system factors and health literacy as mediators of adherence. Gaffari-Fam et al. (2020) found health literacy significantly mediated the education–adherence relationship, accounting for up to 35% of variance in lifestyle compliance; higher literacy was associated with better comprehension of nutrition labels and exercise prescriptions. A scoping review by Washington et al. (2023) highlighted geographic inequities: rural residents encountered fewer programs, longer travel distances, and weaker continuity of care. Disparities persisted even in universal systems due to provider shortages and implicit bias. Callahan and Wang (2020) similarly observed that insurance gaps, fragmented pathways, and brief consultations impeded translation of advice into sustained behavior. Interpersonal communication mattered. Greaves and Fakih (2022) argued that clinician empathy and tailored counseling improved adherence, particularly when acknowledging structural barriers rather than moralizing behavior. Ard and Carson (2021) proposed multilevel strategies - integrating social-risk screening, referrals to community resources, and embedding dietitians in multidisciplinary teams. Overall, Level II–III evidence suggests patient-centered, accessible, and literacy-sensitive care promotes adherence, while fragmented systems perpetuate non-adherence. Few studies, however, cleanly isolated health literacy from other social exposures, indicating a need for causal pathway analyses.

5. Digital and Structural Determinants

Recent work positions the digital ecosystem and broader policy context as emerging determinants. Davis and Clark (2023) noted that telehealth and mHealth can mitigate geographic barriers yet introduce inequities tied to income, age, and education; lacking broadband or digital skills reduced engagement with tracking tools and remote counseling. In related work, Davis, Gudzune, and Clark (2024) found mHealth improved short-term adherence but long-term engagement waned without training or social reinforcement. Pineda and Sanchez (2022) observed that online fitness communities during the COVID-19 pandemic fostered accountability and resilience, while Ard, Carson, and Shikany (2025) reported that pandemic-related socioeconomic stress and caregiving loads counteracted digital gains, widening disparities between high- and low-resource groups. At the structural level, policy and planning intersect with technology. Pineda et al. (2024) documented municipal programs that coupled bike lanes and green corridors with digital tracking platforms, yielding measurable increases in community activity adherence. Evidence across Levels II–IV indicates digital strategies enhance adherence only when nested within equitable systems that address affordability, literacy, and access; otherwise, technology risks reproducing social gradients.

Cross-Domain Interactions

Several studies identified interactions across domains. Socioeconomic deprivation intensified the adverse effects of environmental and psychosocial stressors (Bevel et al., 2023; Greaves et al., 2023). Conversely, strong social support or higher health literacy attenuated the impact of low income on adherence (Lemstra, 2016; Gaffari-Fam et al., 2020). Digital literacy functioned as both mediator and moderator - facilitating access to remote interventions but closely tied to educational attainment (Davis & Clark, 3). Chatterjee et al. (2024) and Callahan et al. (2019) advanced a multilevel model in which structural inequities configure material and psychosocial environments that, in turn, shape motivation and capability. This is consonant with the WHO SDH framework and the COM-B model (Capability- Opportunity-Motivation-Behavior), implying that effective adherence requires simultaneous optimization of all three components.

Summary of Evidence Quality

Applying the EBM hierarchy used in this review, approximately 40% of included studies offered high-level evidence (Levels I–II), 50% moderate (Level III), and 10% conceptual (Level IV). Strengths included large samples, validated adherence measures, and cross-cultural breadth. Common limitations were reliance on self-report, heterogeneity in adherence definitions, and limited adjustment for confounders such as depression or medication use. Despite these constraints, the direction of association was highly consistent:

- higher socioeconomic position, supportive environments, social cohesion, adequate health literacy, and equitable digital access - greater adherence;
- poverty, food insecurity, unsafe neighborhoods, stigma, poor mental health, limited literacy, and digital exclusion - lower adherence.

This convergence across methodologies reinforces the centrality of social determinants as predictors of lifestyle adherence among adults with obesity.

Discussion

Principal Findings

The synthesis indicates that adherence to dietary and physical-activity recommendations is shaped predominantly by social context rather than individual motivation alone. Across socioeconomic, cultural/environmental, psychosocial, healthcare/health-literacy, and digital/structural domains, evidence converged on a consistent pattern: enabling conditions foster adherence; deprivation, stigma, and exclusion impede it. These results affirm the SDH framework and fundamental cause theory, demonstrating that the capacity to enact health behaviors is contingent on the resources embedded in social position (Callahan, Wang, & Carter, 2019; Ard & Carson, 2021). High-level evidence (Levels I–II) underscores the decisive role of education and income (Chen & Jones, 2016; Fakih & Greaves, 2021; Amugsi et al., 2023), while environmental and cultural forces shape the availability and social desirability of healthy options (Liese et al., 2018; Bevel et al., 2023; Chatterjee et al., 2024). Psychosocial factors buffer or amplify structural constraints (Lemstra, 2016; Gudzune & Clark, 2022; Greaves et al., 2023). Healthcare access and literacy guide how advice is understood and applied (Gaffari-Fam et al., 2020; Washington et al., 2023), and digital/policy infrastructures increasingly condition behavioral opportunities (Davis & Clark, 2023; Pineda & Sanchez, 2022).

Integrating the Evidence: A Multilevel Perspective

Findings support a multilevel model in which structural determinants delimit proximal psychosocial and behavioral mechanisms. Socioeconomic disadvantage reduces capability (knowledge, skills) and opportunity (material access, supportive settings), thereby dampening motivation - the core elements of the COM-B framework (Michie et al., 2011). Macro-level inequities (income distribution, urban segregation, food-marketing policy) create obesogenic contexts; meso-level settings (neighborhoods, workplaces, peer networks) transmit norms; micro-level processes (stress, stigma, self-efficacy) translate context into adherence outcomes. This helps explain why counseling alone often produces modest, short-lived effects.

Comparison With Previous Reviews

Earlier syntheses emphasized psychological and behavioral predictors (Middleton et al., 2017; Poitras et al., 2016). The present review extends that work by positioning social position and environment as upstream drivers of those psychological factors. Economic insecurity undermines perceived control and encourages stress-related eating (Fakih & Greaves, 2021; Lanpher, 2016); neighborhood disadvantage constrains physical-activity options, generating learned helplessness that can be misread as “low motivation.” Our review also integrates digital and post-pandemic evidence, showing technology can both mitigate and reproduce disparities (Davis & Clark, 2023; Ard, Carson, & Shikany, 2025).

Mechanisms and Pathways

Socioeconomic pathways. Lower socioeconomic position restricts resources, time, and autonomy, promoting chronic stress that disrupts appetite regulation; it also narrows dietary options toward inexpensive, energy-dense foods and limits access to safe exercise spaces. Education acts through cognitive pathways, enhancing nutritional literacy and problem-solving (Chen & Jones, 2016; Gaffari-Fam et al., 2020). Cultural and environmental pathways. Built environments interact with cultural norms to set default behaviors. Walkable, green, and food-secure neighborhoods reinforce healthy routines; obesogenic settings normalize sedentariness (Liese & Jones, 2020). Cultural narratives around body image and food celebration influence motivation, necessitating culturally competent interventions (Santos & Ribeiro, 2023). Psychosocial pathways. Social ties provide emotional scaffolding and behavioral regulation; peer/family support enhances accountability (Yoshikawa et al., 2020). Stigma and discrimination erode self-efficacy and encourage avoidance of care (Gudzune & Clark, 2022). Chronic stress activates HPA-axis responses that complicate weight regulation (Lanpher, 2016). Healthcare and literacy pathways. Health literacy translates professional advice into actionable steps; fragmented systems and weak continuity undermine trust and follow-up (Gaffari-Fam et al., 2020; Washington et al., 2023). Empathy and shared decision-making align recommendations with lived realities (Greaves & Fakih, 2022). Digital and structural pathways. Digital tools extend reach but depend on devices, connectivity, and skills (Davis & Clark, 2023); without addressing these prerequisites, technology can widen gaps. Policy instruments and urban-planning reforms create enabling conditions for digital interventions to succeed (Pineda et al., 2024).

A Conceptual Model of Interaction

A systems model is supported. At the core is adherence behavior, enclosed by three concentric layers:

- Individual: self-efficacy, motivation, and literacy;
- Social/community: support, stigma, neighborhood context, cultural norms;
- Structural: socioeconomic position, policy environment, digital access.

Bidirectional arrows indicate feedback loops (e.g., digital access - literacy - engagement with services). Multicomponent interventions targeting several layers simultaneously - community programs augmented by digital tools within supportive policy frameworks - show the strongest empirical support (Lemstra, 2016; Pineda et al., 2024).

Clinical and Public-Health Implications

Clinical practice. Reframe “non-adherence” as an indicator of contextual barriers. Incorporate brief social-risk screening (food, housing, literacy) into consultations (Ard & Carson, 2021). Use motivational interviewing to surface social constraints. Build multidisciplinary teams (dietitians, psychologists, social workers) and ensure mHealth tools are accessible to patients with limited digital literacy (Davis & Clark, 2023). Public health and policy. Structural interventions outlast educational campaigns. Investment in sidewalks, parks, and healthy-food retail correlates with community-level adherence (Liese et al., 2018; Bevel et al., 2023). Fiscal measures (produce subsidies, sugary-drink taxes) shift affordability and norms. Equity-focused planning should prioritize under-resourced neighborhoods. Digital inclusion policies (public broadband, community Wi-Fi, literacy training) reduce gaps exposed during COVID-19 (Ard, Carson, & Shikany, 2025). Behavioral-intervention design. Theories implemented without environmental support underperform. Multicomponent designs—CBT elements plus peer support and environmental modification - enhance impact. Example: community walking groups paired with smartphone tracking and municipal investment in safe paths (Pineda et al., 2024). Incorporate stigma-reduction to reframe obesity as a chronic, socially influenced condition (Gudzune & Clark, 2022).

Strengths and Limitations of the Evidence

Strengths include cross-disciplinary scope, international coverage, and integration within an EBM hierarchy, with convergent findings across designs. Limitations include heterogeneity in adherence metrics, reliance on self-report, predominance of cross-sectional designs, underrepresentation of low- and middle-income settings (Amugsi et al., 2023), and lack of standardized frameworks for digital determinants.

Research Gaps and Future Directions

Longitudinal studies to clarify bidirectional relationships between determinants and adherence; Mixed-methods designs to illuminate mechanisms behind quantitative associations; Trials explicitly testing multilevel strategies and their additive/synergistic effects; Development of validated adherence indices sensitive to social context; Equity-focused digital research on algorithmic bias and data privacy in marginalized groups. Advancing these agendas will strengthen an EBM-informed, socially grounded science of obesity management.

Broader Conceptual Implications

The findings challenge individualistic narratives of adherence. Adherence appears as a socially distributed capability, reliant on collective resources, institutions, and cultural meanings - aligning with health capability and structural competency perspectives. Reframing adherence in this way shifts obesity care from exhorting personal willpower to cultivating enabling environments, paralleling broader public-health movements toward equity-oriented practice.

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