



Original Article

Barriers to Physical Activity Among Youth: An Ecological and Theoretical Analysis

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Abstract

Introduction: Physical activity (PA) among young people (aged 18–29) is influenced by multiple perceptual barriers across different ecological levels. This mini-review synthesizes evidence from 27 studies to identify and categorize these barriers using Bronfenbrenner's ecological model. To review and synthesize theoretical and empirical evidence on perceived barriers to PA in this age group, focusing on a multilevel analysis based on an ecological model and utilizing health theoretical frameworks, this study was conducted.

Methods: A systematic synthesis of studies from diverse geographical and socio-cultural contexts was conducted. Barriers were analyzed across five levels of Bronfenbrenner's model: microsystem (individual and social), mesosystem (interactions between settings), exosystem (external environments), macrosystem (cultural/societal norms), and chronosystem (temporal influences).

Results: Using Bronfenbrenner's ecological model as a foundation, we classified barriers into different levels: individual, social, environmental, and societal. At the microsystem level, psychological hurdles such as low motivation, fear of judgment, and poor self-confidence were prominent, alongside social factors like peer pressure and family responsibilities. The mesosystem uncovered issues like time constraints and inconsistent support networks, while the exosystem identified structural challenges, including limited access to facilities, financial barriers, and safety issues. Wider macrosystem influences involved cultural expectations, gender roles, and societal encouragement of inactive lifestyles, whereas the chronosystem pointed to time-related difficulties, such as busy schedules and evolving lifestyle patterns. Overall, psychological barriers like low motivation and structural barriers such as lack of time and limited access to facilities were the most frequently cited impediments across the reviewed studies.

Conclusion: The findings highlight the need for multilevel interventions that combine individual-level psychological support with systemic changes such as policy reforms and improved infrastructure. This review provides a theoretically grounded framework to guide targeted strategies for enhancing PA engagement among youth.

Keyword: Obesity, Overweight, Physical activity, Barriers, Youth, Mini review

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Introduction

Physical activity (PA) is one of the key health-promoting behaviors that plays an important role in preventing chronic diseases, improving quality of life, and promoting individual health.¹ Despite the numerous benefits of PA, studies indicate a significant decline in participation in PA, especially among young and overweight or obese groups.² Obesity affects individuals across all age groups and demographic backgrounds.³ According to the latest data from the World Health Organization, the global prevalence of obesity has nearly tripled since 1970. Currently, over 1 billion adults are overweight, with more than 650 million classified as obese. Furthermore, approximately 124 million children and adolescents are affected by this condition, highlighting its widespread public health impact.⁴ The decline in PA participation not only poses significant risks to individual and public health but also imposes a substantial economic burden on healthcare systems.⁵

According to the literature, people face numerous

barriers to PA that range from individual factors such as low motivation and poor self-confidence, to environmental factors such as lack of suitable space and cultural and social barriers.^{5,6} Many of these studies have analyzed barriers solely at the individual level⁷⁻⁹ and have neglected to consider environmental and cultural contexts. This is while health behaviors, such as PA, are influenced by factors at different and complex levels and should not be considered solely related to individual decisions.¹⁰ Health behavior theories, including the Health Belief Model (HBM), Social Cognitive Theory (SCT), Theory of Planned Behavior (TPB)¹⁰, and Fear-Avoidance Model (FAM),⁹ each have contributed to the analysis of barriers to PA participation by emphasizing specific aspects of the behavioral decision-making process.^{7-9,11-14} Nevertheless, many of these theories have focused more on the micro level and have overlooked interpersonal, structural, cultural, and political factors.

To bridge this gap, Bronfenbrenner's ecological model (BEM) suggests examining human behavior through the interplay of five interrelated levels: 1) the individual



level, which includes psychological, physiological, and cognitive characteristics; 2) the interpersonal level, which includes the impact of peers, family, and social networks; 3) the organizational/environmental level, which includes institutional, physical, and economic structures; 4) the macro level, which includes media, politics, culture, and values; and 5) the temporal or chronosystem level, which addresses life's changes and transitions over time.^{15,16}

This model can be used to analyze PA barriers, particularly for overweight or obese youth, in order to better understand the multifaceted nature of these barriers in a practical way and to help create comprehensive and successful interventions. Therefore, the aim of this study is to review and synthesize theoretical and empirical evidence on perceived barriers to PA in this age group, focusing on a multilevel analysis based on an ecological model and utilizing health theoretical frameworks.

Review Question

What are the theory-based barriers to PA participation among 18-29-year-olds living with overweight or obesity?

Materials and Methods

Study Design and Search Strategy

A comprehensive search was implemented across electronic databases: PubMed, Web of Science, Springer, and Scopus to access all articles that have been conducted on perceived barriers to youth PA at different behavioral levels. The search terms were developed based on the research objectives and structured using Boolean operators (AND/OR). An example of the search syntax for PubMed was as follows:

("young adults"[Title/Abstract] OR "youth"[Title/Abstract]) AND ("overweight"[Title/Abstract] OR "obesity"[Title/Abstract]) AND ("perceptual barriers"[Title/Abstract] OR "cognitive barriers"[Title/Abstract] OR "exercise engagement"[Title/Abstract] OR "physical activity"[Title/Abstract] OR "weight loss"[Title/Abstract] OR "weight control"[Title/Abstract] OR "obesity management"[Title/Abstract]).

The search was limited to English language peer-reviewed studies published between January 2004 and December 2024. Additional relevant publications were found by checking the references of the included articles. A total of 16162 records were identified, and after removing duplicates 7133 articles remained for screening. This review was conducted in parallel with a broader study currently under peer review¹⁷, in which 64 studies met the inclusion criteria for final analysis. However, given the specific focus of the present mini-review on theory-based analysis of perceived barriers to PA, only studies that explicitly employed a theoretical framework were included. Consequently, 27 studies were ultimately deemed eligible for synthesis in this review.

Eligibility Criteria and Study Selection Process

Eligibility was defined a priori using the PICO framework: youth aged 18–29 with overweight or obesity (Body

Mass Index (BMI) ≥ 25), studies examining perceptual or cognitive barriers to physical activity, any reported outcome related to PA participation, and publications from 2004 to 2024 in English, with no restrictions on setting. Only studies explicitly using a theoretical framework to explore or interpret barriers were included. Study selection involved four stages—title and abstract screening, full-text review, reference tracking—conducted independently by two reviewers (BB and SP), with disagreements resolved through discussion or consultation with a third reviewer (HA). A PRISMA flow diagram was used to summarize the identification, screening, eligibility, and inclusion process (Figure 1).

Data Extraction and Synthesis

A standardized data extraction form was developed by the research team and pilot-tested on a sample of studies. The form included fields for: authors and year of publication, country and setting of the study, study design and methodology, sample size and participant characteristics, theoretical framework used, identified barriers to PA, key findings and implications (Supplementary file 1).

Data were extracted by one reviewer (BB) and cross-checked by a second reviewer (SP). Narrative synthesis was used to integrate and summarize the findings across different types of studies (quantitative, qualitative, and mixed-methods).

Assessment of Methodological Quality

Eligible articles were critically appraised by two independent reviewers for methodological quality using standardized critical appraisal instruments from the JBI for observational, review, text and opinion pieces, qualitative, experimental, and quasi-experimental studies (Joanna Briggs Institute, 2017). Questions within each critical appraisal tool attracted a score of one (reflecting the criterion was met) or zero (reflecting either the criterion was not met, or it was unclear to the reviewers). The maximum score corresponds to the number of questions excluding those marked not applicable (N/A). Disagreement resolution followed the process explained in article selection.

Results

Study Characteristics

This review included a total of 27 studies that were published between 2004 and 2024. Studies were carried out in North America (USA), Europe (UK, Spain, Ireland, and Belgium), the Middle East (Qatar, Iran, and Saudi Arabia), Asia (China, India), Africa (Ghana, Uganda), Australia, and the Caribbean (Barbados). Sample sizes ranged from large cross-sectional studies with thousands of respondents^{14,18} to small qualitative studies with fewer than 20 participants¹⁹. The study participants were adolescents, college students, young adults, and individuals with overweight or obesity. The HBM, SCT, Self-Determination Theory (SDT), FAM, TPB, and BEM were among the theoretical frameworks used in these

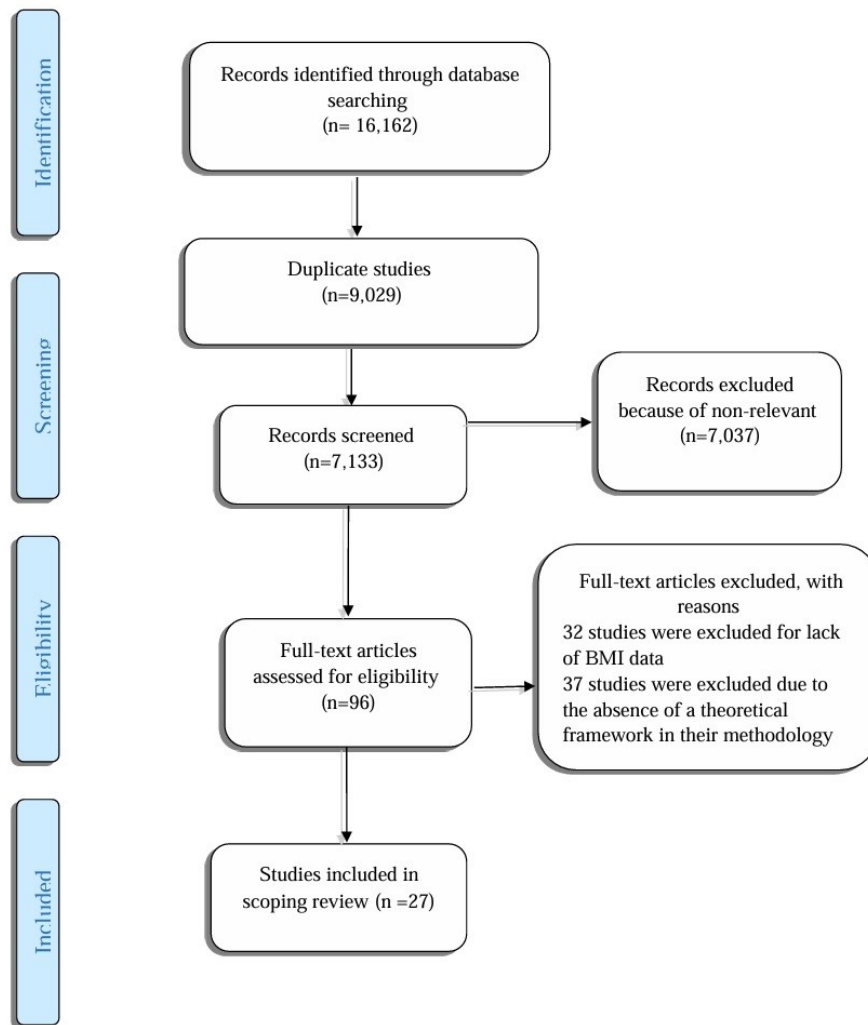


Figure 1. PRISMA flowchart of study selection and inclusion process

studies, alongside other prominent models such as the Socio-ecological Model (SEM), Capability, Opportunity, Motivation-Behavior Model, Grounded Theory, Four steps from Inactivity to activity Theory (FIT) Model, Behavioral Economics, and models focusing on behavioral initiation versus maintenance.

What are the THEORY-BASED BARRIERS to PA Participation Among 18-29-Year-Olds Living with Overweight or Obesity?

Based on a systematic review of theoretical frameworks, key barriers to PA among 18-29-year-olds with overweight or obesity were identified. These barriers were subsequently analyzed and categorized using the Ecological Model, revealing influencing factors across individual, social, environmental, and policy levels. Table 1 details the frequency of each barrier within the literature and specifies the primary theoretical framework used for its extraction in the source studies.

Ecological Model of PA Barriers

The Ecological Model posits that health behaviors are influenced by a dynamic interplay between individuals and their environment across multiple levels, from

intrapersonal to policy. This framework is pivotal for designing comprehensive public health interventions, as it moves beyond individual blame to address broader contextual determinants. Its utility in promoting healthy behaviors is well-documented in modern public health literature.^{37,38}

The ecological model categorizes barriers into five interdependent levels, supported by study findings (Table 1, Figure 2).

Narrative Synthesis: An Ecological Thematic Analysis of Barriers

Microsystem: Psychological and Individual Barriers

At the innermost level, the analysis identifies a cluster of interconnected psychological and individual barriers. Factors such as lack of motivation, fear of judgment, low self-efficacy, and fear of weight stigmatization were found to be particularly prominent. These microsystem barriers appear to be mutually reinforcing; for instance, low self-efficacy can lead to fear of negative evaluation, which in turn diminishes motivation, creating a psychological cycle that is difficult to break without targeted intervention. This cycle appears to be especially salient for young adults with overweight or obesity due to the developmental context

Table 1 Ecological themes in perceived barriers to physical activity

System	Barriers to Physical Activity	Applied Theoretical Framework
Microsystem	<i>Individual/psychological:</i>	
	• Lack of motivation ^{8,11,13,20-27}	(SCT, HBM, SDT, SCT, TPB, FIT Model, COM-B Model, Behavioral Economics)
	• Preference for sedentary activities ²⁸	(BEM)
	• Lack of knowledge ^{12,24,26}	(HBM, COM-B Model)
	• Pain or physical discomfort ^{7,9,27}	(HBT, HBM, FAM)
	• Lack of energy ²⁹	(Grounded Theory)
	• Overweight/obese ¹¹	(SCT, HBM, TPB)
	• Tiredness ¹⁸	(SCT)
	• Fear of injury ^{9,11,30}	(HBM, FAM)
	• Fear of weight stigmatization ^{14,30,31}	(SCT, FAM, Behavioral Change Model (BCM))
	• Fear of negative evaluation ³⁰	(FAM)
	• Fear of darkness ³⁰	(FAM)
	• Pain-related fears ^{9,30}	(HBM, FAM)
	• Stress ^{20,24,32}	(FIT Model, SEM, HBM)
	• Low mood/mood disturbance ^{18,24}	(HBM, SCT)
	• Lack of confidence ^{7,11,20}	(HBT, SCT, FIT Model)
	• Busy with family commitments ^{28,31,33}	(Grounded Theory, BCM, SEM)
	• Peer influence ^{23,31,33}	(Grounded Theory, BCM, TPB, SCT)
	• Social influences ³¹	(BCM)
	• Lack of social support ^{15,23,33}	(BEM, Grounded Theory,TPB, SCT)
	• Lack of Family support ^{13,34}	(SCT, Health and Environment Survey)
	• Obligations ²⁸	(SEM)
	• Family health values ¹⁹	(BEM)
	• lack of enjoyment ²⁰	(FIT Model)
	• Social enjoyment ³¹	(BCM)
Mesosystem	• Scheduling incompatibility ³¹	(BCM)
	• Lack of structured support ²⁶	(COM-B Model)
	• Busy with work ^{8,20,29}	(SCT, FIT Model, Grounded Theory)
	• Busy lifestyle ^{15,35}	(BEM, SEM)
	• Busy schedule due to school ^{8,20}	(SCT, FIT Model)
	• Busy schedule ⁸	(SCT)
Exosystem	• Lack of access to exercise facilities ^{11-13,24,27,33,34}	(SCT, HBM, TPB, Health and Environment Survey, Grounded Theory)
	• Financial constraints ^{21,28,31}	(BCM, SEM)
	• Lack of facilities ^{23,24}	(TPB, SCT, HBM)
	• Lack of place to exercise ³⁶	(Environmental theories, health risk behavior surveys)
	• Lack of resources ²⁴	(HBM)
	• Lack of safe spaces ²⁹	(Grounded Theory)
	• Lack of convenient places ³³	(Grounded Theory)
	• Unsafe neighborhoods ²⁹	(Grounded Theory)
	• Safety issues ³²	(SEM)
	• Poor weather ²³	(TPB, SCT)
	• Environmental factors ²⁸	(SEM)

Table 1. Continued.

System	Barriers to Physical Activity	Applied Theoretical Framework
Macrosystem	• Gender stereotypes ^{20,23,28,33}	(Grounded Theory, FIT Model, TPB, SCT, SEM)
	• Cultural practices and norms ¹³	(SCT)
	• Cultural prioritization of work over exercise ²⁹	(Grounded Theory)
	• Cultural misconceptions ²⁸	(SEM)
	• Cultural beliefs ²⁸	(SEM)
	• Weight stigma ³⁰	(FAM)
	• Social norms ^{13,28,33}	(SCT, Grounded Theory, SEM)
	• Pregnancy-related misconceptions ²⁸	(SEM)
	• Cultural limitations ¹⁹	(BEM)
	• Sedentary lifestyle ^{13,21,35}	(SCT, HBM, SEM)
	• Excessive computer use ^{21,34,35}	(Health and Environment Survey, HBM, SEM)
	• TV time ^{21,35}	(HBM, SEM)
	• Smoking ^{11,35}	(SCT, HBM, TPB, SEM)
Chronosystem	• Unhealthy habits during social gatherings ¹³	(SCT)
	• Financial constraints ^{21,28,31}	(BCM, SEM)
	• Lack of time ^{8,12,13,18,21-25,27-29,32,36}	(SCT, HBM, Grounded Theory, SDT, Behavioral Economics, TPB, SEM, Environmental theories, health risk behavior surveys)
	• Scheduling incompatibility ³¹	(BCM)
	• Busy lifestyle ^{15,35}	(BEM, SEM)
	• Busy schedule ⁸	(SCT)

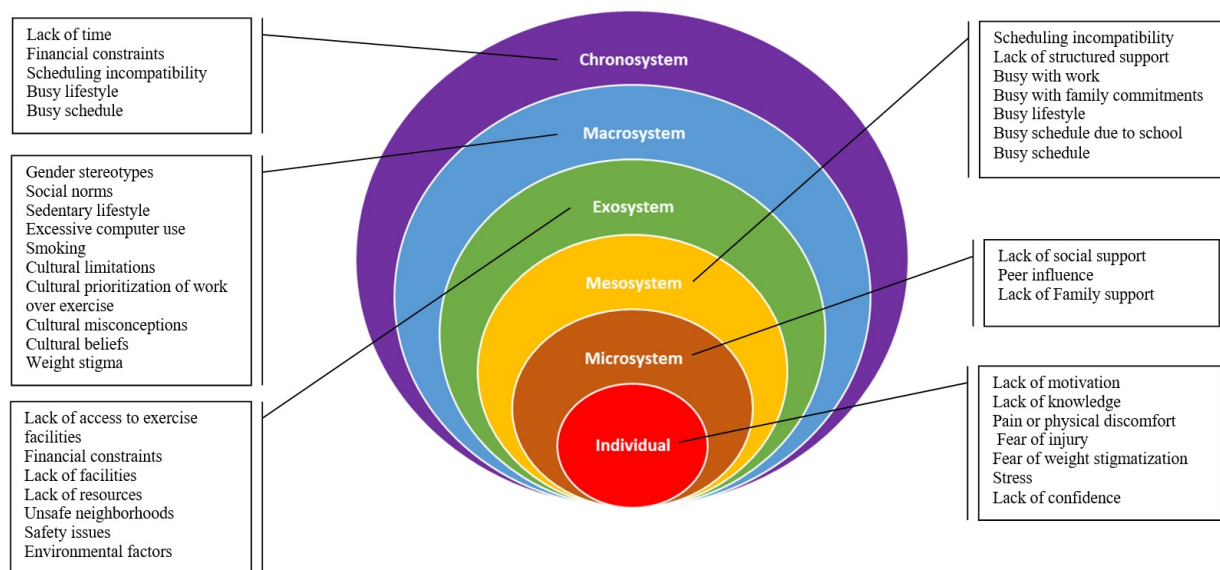


Figure 2. Ecological Model of Physical Activity Barrier

of emerging adulthood—a period marked by heightened social sensitivity and identity exploration. The specific context of being overweight or obese further amplifies this dynamic through fear of stigma, making initial engagement in PA daunting and sustained adherence particularly challenging.

Mesosystem: Systemic Conflicts between Life Environments

Moving to the interactions between settings, the analysis uncovered how barriers arise from the conflict between different life environments. The most prominent issue identified was the structural tension between academic,

work, and family spheres. The conflict between the demands of the academic environment (e.g., exams, study time) and the home environment (e.g., family responsibilities) creates a time scarcity that is not merely an individual perception but a genuine systemic barrier arising from the interaction of these settings.

Exosystem: Structural Inequities and Access to Opportunity

At the exosystem level, limited access to exercise facilities, financial constraints, and neighborhood safety concerns were consistently identified as powerful deterrents. These factors operate in settings where young people do not

actively participate—such as local government decisions or institutional policies—but are directly affected by their outcomes. Notably, these structural barriers do not affect all populations equally; they disproportionately burden marginalized groups, perpetuating and deepening existing health disparities. The lack of safe, affordable recreational spaces in low-income neighborhoods exemplifies how environmental factors can nullify individual motivation, demonstrating that personal agency is often constrained by the opportunities the environment provides.

Macrosystem: Cultural Norms as Invisible Barriers

Broadening the lens further, the macrosystem analysis illuminated how pervasive cultural norms and societal values function as invisible barriers. Gender stereotypes, cultural narratives that prioritize work over exercise, and the normalization of sedentary lifestyles were identified as significant impediments. These findings underscore that individual behaviors are embedded within a broader cultural context that shapes what is considered acceptable or possible. The point about culturally sensitive interventions is crucial. The persistence of gender norms, for example, creates distinct and unequal barriers, influencing not only participation rates but also the types of activities young people feel entitled to pursue.

Chronosystem: Temporal Vulnerabilities and Life Transitions

A deeper synthesis reveals that key life transitions act as critical junctures where barriers can emerge or intensify. The transition from living at home to living independently, or from being a student to entering the workforce, represents chronosystem shifts that can disrupt established routines and create new, unforeseen financial or time-based barriers to PA. These dynamic factors underscore the need for adaptive interventions that account for life course transitions, offering targeted support precisely when individuals are most vulnerable to disengaging from PA.

Discussion

The findings of this mini review underscore the multifaceted nature of barriers to PA among youth, as elucidated through Bronfenbrenner's ecological model. By synthesizing evidence from 27 studies across diverse geographical and socio-cultural contexts, this review highlights the interplay between individual, social, environmental, and systemic factors that collectively hinder PA engagement. The ecological framework provides a comprehensive lens through which these barriers can be categorized and understood, offering valuable insights for the development of targeted interventions. At the microsystem level, psychological and social barriers emerged as prominent impediments. Lack of motivation, fear of judgment, and low self-efficacy were recurrent themes, aligning with constructs from the HBM and SCT. These findings suggest that individual perceptions and emotional states significantly influence PA participation.

For instance, fear of weight stigmatization and negative evaluation, as reported in several studies,^{9,30,31} not only deter initial engagement but also perpetuate avoidance behaviors. Social factors, such as lack of family support and peer influence,^{13,23,33} further exacerbate these challenges, highlighting the need for interventions that address both personal and interpersonal dynamics.

The mesosystem revealed the impact of interactions between different environments, particularly time constraints and competing responsibilities. Youth often struggle to balance academic, work, and family commitments, leaving little room for PA.^{8,20,28} This systemic issue underscores the importance of creating flexible and accessible PA opportunities that accommodate the busy schedules of young adults. For example, integrating PA into daily routines or academic curricula could mitigate these barriers.³⁹

At the exosystem level, structural challenges such as limited access to facilities, financial constraints, and safety concerns were frequently cited.^{12,13,27,29} These barriers disproportionately affect marginalized groups, reinforcing health inequities. The lack of safe and affordable spaces for exercise, particularly in low-income neighborhoods, calls for policy-level interventions to improve infrastructure and ensure equitable access to recreational facilities.³⁷

The macrosystem highlighted the pervasive influence of cultural norms and societal values. Gender stereotypes, cultural prioritization of work over exercise, and sedentary lifestyles were identified as significant barriers.^{13,28,29} These findings align with socio-ecological perspectives, emphasizing the need for culturally sensitive interventions that challenge normative beliefs and promote PA as a valued behavior across diverse populations.¹⁰

Finally, the chronosystem underscored the temporal dimensions of PA barriers, such as evolving lifestyle patterns and financial instability over time.^{21,28,31} These dynamic factors necessitate adaptive interventions that account for life transitions and socio-economic fluctuations.⁴⁰

Theoretical integration emerged as a critical theme in this review. While individual-level theories like HBM and SCT provide valuable insights into psychological and behavioral barriers, their limitations in addressing broader systemic factors became evident. Combining these theories with ecological models offers a more holistic understanding of PA barriers, bridging the gap between individual agency and structural determinants.¹⁶ For instance, interventions informed by Self-Determination Theory (SDT)⁴¹ could enhance intrinsic motivation, while ecological approaches could address environmental and policy-level barriers.

Comparison with Existing Literature

The barriers identified in this review align with those reported in previous reviews examining PA among adolescents and adults. For instance, time constraints, lack of motivation, and limited access to facilities are consistently cited across age groups and populations.^{42,43}

However, the present review extends this knowledge in several important ways.

First, the focus on theory-based studies represents a unique contribution. While many previous reviews have catalogued barriers atheoretically⁴⁴, this synthesis demonstrates how different theoretical frameworks capture distinct aspects of the barrier landscape. For example, the Health Belief Model illuminates how perceived susceptibility and severity influence motivation⁴⁵, while Social Cognitive Theory highlights the role of self-efficacy and observational learning.⁴⁶ By mapping these theoretical constructs onto the ecological model, this review provides a theoretically grounded foundation for intervention design that is often missing in the literature.

Second, the specific focus on young adults with overweight or obesity reveals barriers that are particularly salient for this population. Fear of weight stigmatization, for instance, emerged as a prominent theme across multiple studies—a barrier that may be less pronounced in normal-weight populations or older adults.⁴⁷ This finding is consistent with qualitative research that has documented how fears of judgment in leisure facilities create significant psychological hurdles for individuals with obesity.³⁰ The developmental context of emerging adulthood appears to amplify these concerns, as this life stage is characterized by heightened sensitivity to peer evaluation and identity concerns.⁴⁸

Third, the ecological approach adopted in this review offers a more integrated perspective than previous work. While individual-level theories have dominated PA research,⁴⁹ the findings here underscore the importance of broader contextual factors. The mesosystem analysis, for instance, revealed that time scarcity is not merely an individual perception but a systemic barrier arising from conflicting demands across life environments. This aligns with socio-ecological perspectives that emphasize the need to examine behavior within its environmental context.¹⁶ Similarly, the chronosystem analysis highlighted how life transitions—such as moving from home or entering the workforce—can disrupt established routines, a temporal dimension often overlooked in cross-sectional studies.⁴⁰

Strengths and Limitations of the Review

A key strength is the theory-based approach, using Bronfenbrenner's ecological model to enable multi-level analysis, alongside a focused age range (18–29) that targets emerging adulthood and diverse geographical contexts that enhance generalizability. Limitations include the inclusion of studies with broader age ranges (e.g., 18–45), which may reduce precision for young adults, and the occasionally indistinct boundaries between levels of the ecological model.

Conclusion

This review demonstrates that barriers to PA among youth are rooted within a complex ecological system. These barriers were systematically identified across all

levels of the socio-ecological model. This multi-level mapping provides a crucial roadmap for developing future interventions, highlighting the necessity for integrated strategies that simultaneously address factors at the individual, social, environmental, and policy levels to effectively promote PA.

Implications for Practice

Microsystem: Use cognitive-behavioral techniques, peer/family support to boost self-efficacy and motivation.

Mesosystem: Offer flexible, accessible programs (e.g., activity breaks, integration into work/school) to address time constraints.

Exosystem: Invest in safe, affordable facilities and financial incentives to reduce structural and cost barriers.

Macrosystem: Promote culturally sensitive campaigns that counter gender norms and make PA a social priority.

Multilevel: Combine individual-level behavior change (e.g., HBM, SCT) with ecological strategies for synergistic impact.

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Competing Interests

The authors declare that they have no competing interests.

Consent for Publication

The authors consent to the publication of this manuscript.

Data Availability Statement

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Ethical Approval

This study was conducted as part of a doctoral research project and complies with the ethical guidelines approved by the Ethics Committee of Tabriz University of Medical Sciences, Tabriz, Iran (ethical approval code: IR.TBZMED.REC.1403.646), pertaining to the entire thesis.

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Supplementary Files

Supplementary file 1. Characteristics of studies.

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