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LIFESTYLE MEDICINE AND THE PREVENTION OF DEPRESSION: SOCIAL DETERMINANTS, DIGITAL INTERVENTIONS, AND PUBLIC HEALTH IMPLICATIONS

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ABSTRACT

Background: Depression is one of the leading causes of disability worldwide, with increasing prevalence and significant socioeconomic burden. While pharmacological and psychotherapeutic treatments are well established, preventive strategies remain underdeveloped.

Objective: This review aims to evaluate the role of lifestyle medicine interventions—including physical activity, diet, sleep, and stress management—in the prevention of depression, with a focus on social determinants and implementation challenges.

Methods: A narrative review of recent literature (primarily from the last 10 years) was conducted, focusing on studies examining associations between lifestyle factors and depression risk, as well as public health and socioeconomic aspects.

Results: Evidence suggests that regular physical activity, healthy dietary patterns, adequate sleep, and stress reduction strategies are associated with a lower risk of depression. However, significant barriers limit the large-scale implementation of these interventions, including socioeconomic inequalities, lack of healthcare system integration, and low patient adherence. Digital health tools and social determinants significantly influence the accessibility and effectiveness of lifestyle interventions.

Conclusions: Lifestyle medicine represents a promising, cost-effective strategy for depression prevention. Future efforts should focus on integrating these approaches into public health policies and addressing social disparities to improve accessibility and effectiveness. Integrating digital health solutions and addressing social inequalities is essential for effective prevention strategies.

KEYWORDS

Depression, Lifestyle Medicine, Public Health, Social Determinants of Health, Digital Health, Prevention

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1. Introduction

Depression is one of the leading causes of mental health-related disease burden, while anxiety remains the most prevalent mental health disorder (Singh et al., 2023). According to the World Health Organization, depressive and anxiety disorders cost the global economy approximately \$1 trillion annually in lost productivity (Lassale et al., 2019). Mental disorders affect nearly 30% of individuals across the lifespan (Flinth et al., 2020), and depression is a major contributor to global disability (Vos et al., 2020).

Despite significant advances in pharmacological and psychotherapeutic treatments, the overall burden of depression remains high, highlighting the importance of effective preventive strategies. In recent years, increasing attention has been directed toward modifiable lifestyle factors as potential tools for improving mental health outcomes.

Lifestyle medicine, which focuses on interventions such as physical activity, diet, sleep, and stress management, has emerged as a promising approach not only for the treatment but also for the prevention of chronic diseases, including mental disorders. A growing body of evidence suggests that unhealthy lifestyle behaviors are associated with a higher risk of developing depression, while positive lifestyle changes may exert protective effects.

Recent high-quality evidence further supports this relationship. A systematic review and network meta-analysis of randomized controlled trials demonstrated that exercise interventions are effective in reducing depressive symptoms across diverse populations (Noetel et al., 2024).

However, despite strong scientific support, the implementation of lifestyle-based prevention strategies remains limited. Barriers such as low adherence, lack of awareness, and socioeconomic inequalities significantly affect the accessibility and effectiveness of these interventions. Individuals from disadvantaged backgrounds are particularly vulnerable, as they face both a higher risk of depression and reduced access to health-promoting resources.

Therefore, understanding the role of lifestyle medicine in depression prevention requires not only evaluating its effectiveness but also considering broader social and systemic factors. This includes identifying barriers to implementation and exploring ways to integrate lifestyle interventions into public health strategies.

Research Objective

The aim of this study is to evaluate the effectiveness of lifestyle interventions in the prevention of depression and to identify key barriers to their implementation.

Research Problems

Can lifestyle factors reduce the risk of depression?

What are the main barriers to implementing lifestyle interventions?

How do social inequalities affect access to preventive strategies?

Research Hypotheses

Lifestyle interventions reduce the risk of depression.

Social and economic factors significantly influence the effectiveness of prevention strategies.

2. Materials and Methods

2.1 Procedure / Data sources

A narrative literature review was conducted using PubMed, Scopus, and Google Scholar databases. Articles published between 2014 and 2025 were included, with particular emphasis on systematic reviews, meta-analyses, randomized controlled trials, and large cohort studies related to lifestyle factors and depression prevention. The search strategy included combinations of the following keywords: “depression”, “lifestyle medicine”, “physical activity”, “diet”, “sleep”, “stress”, “digital health”, “prevention”, and “mental health”. Only articles published in English were included. Studies focusing primarily on pharmacological treatment without addressing lifestyle-related factors were excluded.

2.2 Data analysis

The selected studies were analyzed qualitatively. Particular attention was paid to identifying common findings regarding the association between lifestyle factors and depression risk, underlying biological and psychosocial mechanisms, and barriers to the implementation of preventive interventions.

2.3 AI

Artificial intelligence (AI) tools were used to assist in the preparation of this manuscript, primarily for language editing, grammar correction, and improving clarity of the text. All scientific content, interpretation of results, and conclusions were developed independently by the authors. AI tools were used strictly as supportive instruments and did not influence the research outcomes or data analysis.

3. Results

3.1 Physical Activity

Physical activity is a well-established protective factor in the prevention of depression, with a growing body of recent evidence supporting its role in reducing the risk of developing depressive symptoms across diverse populations.

Recent systematic reviews and meta-analyses confirm that higher levels of physical activity are associated with a significantly lower risk of depression. Pearce et al. demonstrated a clear dose-response relationship, indicating that even low levels of physical activity were associated with a reduced risk of depression, with the greatest benefits observed after switching from inactivity to moderate activity. An inverse curvilinear dose-response relationship was observed between physical activity and depression. Compared to adults who reported no activity, those accumulating half the recommended amount of physical activity (4.4 mMET-h/week) had an 18% (95% CI, 13%-23%) lower risk of depression. Adults accumulating the recommended amount of 8.8 mMET-h/week had a 25% (95% CI, 18%-32%) lower risk with diminishing

potential benefits and higher uncertainty above this level of exposure (Pearce et al., 2022). Similarly, Bizzozero-Peroni et al. found that regular physical activity, as measured by the number of steps taken per day, was associated with a reduced likelihood of developing depression over time. Compared with fewer than 5,000 steps per day, achieving 5,000 or more was associated with reduced depressive symptoms in cross-sectional studies, whereas a daily step count of 7,000 or more was associated with a lower risk of depression in prospective studies (Bizzozero-Peroni et al., 2024). More recent umbrella reviews further support these findings reported consistent evidence across multiple meta-analyses that physical activity reduces the risk of incident depression across different populations and age groups (Singh et al., 2023). These findings are reinforced by earlier and updated analyses highlighting the preventive potential of exercise at the population level. Harvey et al. conducted a cohort study of 33,908 adults, selected based on the absence of symptoms of common mental disorders or limiting physical conditions, followed prospectively for 11 years. In this study, after adjusting for confounding factors and assuming a causal relationship, 12% of future cases of depression could have been prevented if all participants engaged in at least one hour of physical activity per week (Harvey et al., 2018).

A recent meta-analysis by Xiao-Dong et al. demonstrated that exercise interventions significantly reduce the risk of depression, particularly among middle-aged and older adults, with consistent benefits observed across different types of physical activity. The aim of this study was to systematically evaluate the effectiveness of exercise interventions. Eleven articles, comprising a total of 792 participants, were selected based on pre-established inclusion criteria (Xiao-Dong et al. 2025).

Similarly, Xiaorui Huang presented a review and meta-analysis suggesting that physical activity is significantly and negatively associated with depression and plays a key role in alleviating depression in college students (Xiaorui Huang et al., 2025).

The mechanisms underlying this association are complex and involve both biological and psychosocial pathways. Biologically, physical activity influences neurotransmitter systems, including serotonin and dopamine, which are essential for mood regulation (Harvey et al., 2018). Exercise has also been associated with reduced inflammation and improved regulation of the hypothalamic–pituitary–adrenal (HPA) axis, both of which are implicated in the development of depression (Singh et al., 2023; Harvey et al., 2018).

In addition, physical activity enhances neuroplasticity through increased expression of brain-derived neurotrophic factor (BDNF), which supports neuronal resilience and cognitive function (Singh et al., 2023). From a psychosocial perspective, engagement in physical activity may improve self-efficacy, reduce perceived stress, and facilitate social interaction, all of which contribute to better mental health outcomes (Choi et al., 2019; Harvey et al., 2018).

Importantly, current evidence suggests that the protective effects of physical activity are not limited to high-intensity exercise. Moderate and even low-intensity activities, such as walking, have been shown to provide meaningful benefits in reducing depression risk (Pearce et al., 2022; Bizzozero-Peroni et al., 2024; Singh et al., 2023). This has important implications for public health, as it highlights the feasibility of implementing accessible and scalable interventions.

Despite robust evidence, global levels of physical inactivity remain high. Barriers such as lack of time, low motivation, environmental limitations, and socioeconomic factors significantly reduce participation in regular physical activity (Choi et al., 2019; Singh et al., 2023). These barriers are particularly relevant in the context of depression prevention, as high-risk populations often face the greatest obstacles.

In conclusion, physical activity represents a key component of lifestyle medicine with strong evidence supporting its role in the prevention of depression. However, effective implementation requires addressing both individual and structural barriers to ensure widespread adoption.

Table 1. Summary of studies on physical activity and depression.

Study (author, year)	Study type / population	Sample size	Main findings	Key metrics
Pearce M et al., 2022	Systematic review & meta-analysis (prospective cohorts)	>190,000 participants	Higher physical activity associated with lower risk of depression; dose–response relationship	~17% lower risk for active individuals
Choi KW et al., 2019	Longitudinal cohort study	~8,000 adults	Bidirectional relationship: physical activity reduces depression risk, and depression reduces activity levels	Significant inverse association (adjusted models)
Singh B et al., 2023	Umbrella review (meta-analyses)	Multiple meta-analyses	Physical activity significantly reduces depressive symptoms across populations	Moderate-to-large effect sizes across studies
Bizzozero-Peroni B et al., 2024	Systematic review & meta-analysis	Multiple cohorts (adults)	Higher daily step count associated with lower risk of depression	~7000+ steps/day linked with reduced risk
Xiao-Dong et al., 2025	Systematic review & meta-analysis	Multiple studies	Exercise interventions significantly reduce depressive symptoms	Strong overall effect of structured exercise
Xiaorui Huang et al., 2025	Systematic review & meta-analysis (students)	Multiple studies	Physical activity inversely correlated with depression in students	$r \approx -0.43$ (moderate negative correlation)

The evidence from multiple meta-analyses consistently demonstrates an inverse relationship between physical activity and depression across different populations and study designs, supporting the robustness of this association.

3.2 Diet

Dietary patterns play a significant role in mental health and have been increasingly recognized as an important factor in the prevention of depression. Recent research highlights the association between diet quality and the risk of developing depressive symptoms, suggesting that nutrition may serve as a modifiable target for preventive interventions.

A growing number of systematic reviews and meta-analyses indicate that adherence to healthy dietary patterns, particularly the Mediterranean diet, is associated with a lower risk of depression (Psaltopoulou et al., 2013). Lassale et al. demonstrated that individuals with higher diet quality had a significantly reduced risk of depressive outcomes compared to those with unhealthy eating patterns. Longitudinal studies and cross-sectional evidence also suggest an inverse association between healthy diet and depression (e.g., relative risk 0.65; 95% CI 0.50–0.84 for HEI/AHEI) (Lassale et al., 2019). Similarly, Firth et al. presented a meta-analysis of 16 randomized controlled trials that showed that dietary interventions such as diets rich in fruits, vegetables, whole grains, and healthy fats were inversely associated with the risk of depression (Firth et al., 2020). Clinical studies have also demonstrated the potential causal effects of refined carbohydrates and saturated fats on mood. Experimental exposure to high-glycemic diets under controlled conditions increased depressive symptoms in healthy volunteers, with a moderately large effect size. (Firth et al., 2020; Adan et al., 2019). These findings are supported by broader frameworks in nutritional psychiatry, which emphasize the role of diet quality in mental health outcomes (Adan et al., 2019; Marx et al., 2021)

Several biological mechanisms may explain the relationship between diet and mental health. One of the most widely studied pathways is inflammation. Diets high in processed foods have been associated with increased levels of pro-inflammatory markers, which are implicated in the pathophysiology of depression (Firth et al., 2020; Marx et al., 2021). Conversely, anti-inflammatory dietary patterns may exert protective effects.

Another important mechanism involves the gut–brain axis. Emerging evidence suggests that diet influences the composition and function of the gut microbiota, which in turn affects brain function and behavior (Adan et al., 2019; Marx et al., 2021; Dinan & Cryan, 2017). Nutrients such as omega-3 fatty acids, B vitamins, and minerals are also essential for neurotransmitter synthesis and brain function (Marx et al., 2021).

Recent intervention studies further support the role of diet in mental health. The SMILES randomized controlled 12-week trial, which included 166 individuals, demonstrated that structured dietary improvement can significantly reduce depressive symptoms in adults with major depressive disorder. (Jacka et al., 2017 – SMILES trial). Although primarily focused on treatment, these findings suggest potential preventive implications.

Despite promising findings, significant barriers limit the implementation of dietary interventions. Socioeconomic factors, food accessibility, cultural habits, and lack of nutritional education all influence dietary behaviors (O’Neil et al., 2014). Individuals from lower socioeconomic backgrounds are more likely to consume unhealthy diets, which has been associated with increased odds of depressive symptoms, with an estimated 44% higher risk compared to lower intake (Lane et al., 2022).

In conclusion, current evidence suggests that diet is an important and potentially modifiable factor in the prevention of depression. However, effective implementation requires addressing broader social and economic determinants that influence dietary choices.

3.3 Sleep

Sleep is a fundamental biological process that plays a crucial role in mental health and has been increasingly recognized as an important factor in the prevention of depression. A growing body of recent evidence indicates that sleep disturbances are not only a symptom of depression but also a significant risk factor for its development.

Longitudinal studies have consistently shown that individuals with poor sleep quality, insomnia, or irregular sleep patterns are at a higher risk of developing depression. A large meta-analysis by Li et al. demonstrated that insomnia is associated with a significantly increased risk of subsequent depression, suggesting a directional relationship between sleep disturbances and mental health outcomes (Li et al., 2019). Similarly, Fang et al. reported that both short and long sleep duration are linked to an elevated risk of depression, indicating a U-shaped relationship (Fang et al., 2019).

More recent systematic reviews confirm that sleep disturbances can precede the onset of depressive symptoms and may serve as an early warning sign (Baglioni et al., 2011). This highlights the potential role of sleep interventions as preventive strategies rather than solely therapeutic ones.

Sleep disturbances play a crucial role in the development and persistence of depression (Riemann et al., 2020). Several biological mechanisms may explain the relationship between sleep and depression. Disrupted sleep has been associated with dysregulation of the circadian rhythm, which affects hormonal balance, including cortisol secretion and melatonin production (Baglioni et al., 2011; Freeman et al., 2020). These alterations can impair emotional regulation and increase vulnerability to stress. In addition, sleep deprivation has been linked to increased inflammatory activity and altered brain function, particularly in regions responsible for mood regulation (Freeman et al., 2020).

From a behavioral perspective, poor sleep can lead to fatigue, reduced cognitive performance, and decreased motivation, which may contribute to the development of depressive symptoms. Sleep disturbances are also closely associated with other lifestyle factors, such as reduced physical activity and unhealthy dietary habits, creating a cycle that further increases the risk of depression (Fang et al., 2019; Baglioni et al., 2011).

Importantly, sleep is a modifiable factor, and interventions aimed at improving sleep quality may have significant preventive potential. Cognitive behavioral therapy for insomnia (CBT-I), sleep hygiene education, and digital sleep interventions have all been shown to improve sleep outcomes and may reduce the risk of depression (Fang et al., 2019; Baglioni et al., 2011).

Despite significant evidence, sleep problems remain highly prevalent and often underdiagnosed. Barriers to effective sleep management include lack of awareness, limited access to specialized care, and

lifestyle factors such as excessive screen use and irregular daily routines (Baglioni et al., 2011). These challenges highlight the need for integrating sleep-focused interventions into public health strategies.

In conclusion, sleep plays a critical role in the prevention of depression, with substantial evidence supporting its importance as a modifiable risk factor. Addressing sleep disturbances at both individual and population levels may significantly contribute to reducing the global burden of depression.

3.4 Stress and Social Factors

Chronic stress is a well-established risk factor for the development of depression and plays a central role in its pathophysiology. Increasing evidence suggests that prolonged exposure to stress not only contributes to the onset of depressive symptoms but also affects their severity and recurrence.

Recent longitudinal studies indicate that individuals exposed to chronic psychosocial stress are significantly more likely to develop depression compared to those with lower stress levels. A meta-analysis by Hammen (2018) and subsequent updates confirm that stress, particularly in the form of adverse life events and ongoing difficulties, is one of the strongest predictors of depression (Hammen, 2018; Slavich, 2020).

From a biological perspective, stress influences multiple systems involved in mood regulation. One of the key mechanisms is the dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis, leading to prolonged cortisol secretion and impaired stress response (Slavich, 2020; McEwen & Akil, 2020). Chronic stress has also been associated with increased inflammation, alterations in neurotransmitter systems, and reduced neuroplasticity, all of which are implicated in the development of depression (McEwen & Akil, 2020).

In addition to biological mechanisms, psychological and social factors play an important role. High levels of perceived stress, low coping ability, and lack of social support are associated with increased vulnerability to depression (Slavich, 2020). Occupational stress, financial instability, and social isolation further contribute to the overall burden of stress in modern societies. Dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis is considered a key biological mechanism linking chronic stress and depression (Pariente & Lightman, 2008).

Importantly, stress is a modifiable risk factor, and various interventions have been shown to reduce its negative impact on mental health. Mindfulness-based interventions, cognitive behavioral techniques, and stress management programs have demonstrated effectiveness in reducing perceived stress and lowering the risk of depressive symptoms (Goldberg et al., 2018). Regular physical activity and adequate sleep also contribute to better stress regulation, highlighting the interconnected nature of lifestyle factors.

In recent years, digital interventions have emerged as promising tools supporting stress management and depression prevention. Mobile applications, wearable devices, and telemedicine platforms enable continuous monitoring of stress levels, sleep patterns, and daily behaviors. These tools can provide accessible and scalable interventions, including guided relaxation techniques, mindfulness exercises, mood tracking, and elements of cognitive behavioral therapy (Torous et al., 2021; Huckvale et al., 2020).

Digital solutions may improve adherence to lifestyle interventions and increase access to preventive strategies, particularly among individuals with limited access to traditional healthcare services. However, their effectiveness depends on user engagement, digital literacy, and equitable access to technology. There is also a risk that such interventions may disproportionately benefit individuals from higher socioeconomic backgrounds, potentially exacerbating existing health inequalities (Lattie et al., 2019).

Despite the availability of effective strategies, stress management is often overlooked in preventive healthcare. Barriers such as lack of awareness, stigma related to mental health, and limited access to psychological support reduce the utilization of these interventions (McEwen & Akil, 2020; Goldberg et al., 2018).

In conclusion, chronic stress is a critical and modifiable factor in the prevention of depression. Effective stress management strategies should be integrated into lifestyle medicine and public health approaches to reduce the overall burden of mental disorders.

Table 2. Summarizes the key lifestyle factors, underlying mechanisms, and barriers related to depression prevention.

Lifestyle factor	Key findings	Mechanisms	Strength of evidence	Main barriers
Physical activity	Regular physical activity reduces the risk of depression; even low levels provide benefit	Neurotransmitter regulation (serotonin, dopamine), reduced inflammation, increased BDNF, improved stress response	Strong (meta-analyses, cohort studies)	Lack of time, low motivation, limited access to facilities, socioeconomic factors
Diet	Healthy diets (e.g., Mediterranean) associated with lower depression risk; unhealthy diets increase risk	Anti-inflammatory effects, gut–brain axis, nutrient support for brain function	Moderate to strong (meta-analyses, some RCTs)	Cost of healthy food, limited access, poor education, cultural habits
Sleep	Poor sleep and insomnia increase risk of depression; both short and long sleep duration are harmful	Circadian rhythm disruption, hormonal imbalance, increased inflammation	Moderate to strong (meta-analyses, longitudinal studies)	Screen overuse, irregular schedules, lack of awareness, limited access to treatment
Stress	Chronic stress significantly increases the risk of depression; effective stress management reduces this risk	HPA axis dysregulation, increased cortisol, inflammation, impaired neuroplasticity	Moderate to strong (longitudinal studies, meta-analyses)	High workload, financial stress, low social support, limited access to psychological care

The interactions between lifestyle factors, social determinants, and emerging digital interventions highlight the complexity of depression prevention in modern societies.

4. Discussion

The present review highlights the significant role of lifestyle factors—including physical activity, diet, sleep and stress—in the prevention of depression. Findings from recent studies consistently indicate that these modifiable behaviors are associated with a reduced risk of developing depressive symptoms (Pearce et al., 2022; Lassale et al., 2019; Li et al., 2019), supporting the concept of lifestyle medicine as a valuable tool in public health strategies.

One of the key observations emerging from this review is that lifestyle factors do not act in isolation but interact in a complex and synergistic manner. For example, regular physical activity has been shown to improve sleep quality, while a healthy diet may enhance both physical and mental resilience (Firth et al., 2020; Marx et al., 2021). This suggests that multi-component interventions targeting several lifestyle domains simultaneously may be more effective than single-factor approaches.

Despite strong evidence supporting the preventive potential of lifestyle interventions, their implementation in real-world settings remains limited. A major barrier is the structure of healthcare systems, which tend to prioritize pharmacological treatment over prevention (Slavich, 2020). Time constraints in clinical practice, insufficient training in lifestyle counseling, and lack of reimbursement mechanisms reduce the likelihood that healthcare professionals will address lifestyle factors in routine care.

Another important issue is patient adherence. Although lifestyle modifications are theoretically accessible, maintaining long-term behavioral changes is challenging. Factors such as low motivation, lack of social support, and competing life demands significantly reduce adherence to recommendations related to physical activity, diet, and sleep (Goldberg et al., 2018).

Social determinants of health play a critical role in shaping both the risk of depression and the feasibility of lifestyle interventions. Individuals from lower socioeconomic backgrounds are disproportionately affected

by depression and often face structural barriers to engaging in healthy behaviors (Hammen, 2018). Limited access to safe environments for physical activity, financial constraints affecting food choices, and irregular working hours impacting sleep patterns all contribute to health inequalities.

The role of digital health technologies in supporting lifestyle interventions is increasingly recognized. Mobile applications, wearable devices, and telemedicine platforms offer new opportunities for monitoring and promoting healthy behaviors. These tools have the potential to improve accessibility and scalability of preventive strategies (Torous et al., 2021; Huckvale et al., 2020). However, the effectiveness of digital interventions depends on user engagement and digital literacy. Additionally, unequal access to technology and differences in digital literacy may further exacerbate existing health disparities. Therefore, future prevention strategies should combine lifestyle medicine with socially and technologically inclusive approaches.

It is also important to acknowledge the limitations of the current evidence. Although many studies demonstrate associations between lifestyle factors and depression risk, causal relationships are not always clearly established (Choi et al., 2019). Much of the available data is based on observational studies, which may be subject to confounding factors.

Future research should focus on large-scale, long-term intervention studies to better understand the causal impact of lifestyle modifications on depression prevention. There is also a need for research exploring effective strategies for implementing lifestyle interventions in diverse populations and real-world settings.

In summary, lifestyle medicine offers a promising approach to reducing the burden of depression at the population level. However, its success depends not only on individual behaviors but also on broader social, economic, and systemic factors that influence health outcomes.

An important direction for future prevention strategies is the integration of lifestyle medicine into broader public health and healthcare systems. School-based programs, workplace interventions, and community initiatives may support the promotion of healthy behaviors at the population level. In addition, collaboration between healthcare professionals, policymakers, and public health institutions is essential for developing sustainable and accessible prevention programs. Digital health technologies may further support these efforts by improving the scalability and personalization of lifestyle interventions (Torous et al., 2021).

Digital mental health interventions may improve access to preventive strategies and enhance scalability, although their effectiveness depends on user engagement and digital literacy (Lattie et al., 2019).

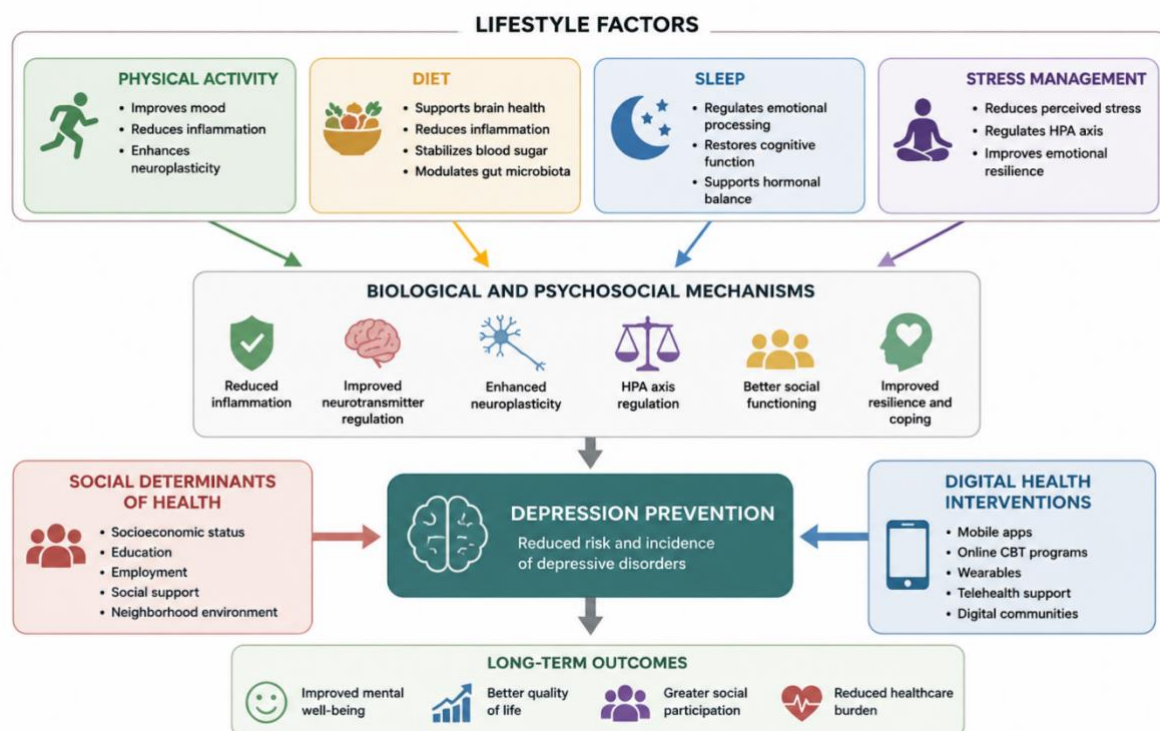


Fig. 1. Conceptual model illustrating the relationships between lifestyle factors, biological and psychosocial mechanisms, social determinants, digital interventions, and depression prevention.

5. Limitations

This review has several important limitations. First, the majority of the included studies were observational, which limits the ability to establish clear causal relationships between lifestyle factors and depression prevention. Second, the included studies differed in methodology, population characteristics, and assessment tools, which may affect the comparability and generalizability of findings. In addition, only English-language publications were included, which may have introduced language bias. As this study is a narrative review rather than a systematic review or meta-analysis, the selection of studies may also be subject to publication bias and subjective interpretation. Despite these limitations, the consistency of findings across multiple high-quality studies strengthens the overall conclusions regarding the preventive role of lifestyle factors in depression.

6. Conclusions

Lifestyle factors, including physical activity, diet, sleep and stress, play a significant role in the prevention of depression. The evidence reviewed in this study indicates that these modifiable behaviors are consistently associated with a reduced risk of developing depressive symptoms, highlighting the potential of lifestyle medicine as a preventive strategy.

However, despite strong scientific support, the implementation of lifestyle-based interventions remains limited. Barriers such as low adherence, lack of awareness, and structural constraints within healthcare systems reduce their effectiveness at the population level. In addition, social and economic inequalities significantly influence access to healthy lifestyle choices, potentially limiting the benefits of these interventions among high-risk groups.

To maximize the preventive potential of lifestyle medicine, it is essential to integrate these approaches into public health policies and routine clinical practice. Strategies should focus not only on individual behavior change but also on addressing broader social determinants of health.

Future research should prioritize large-scale intervention studies and the development of effective, accessible, and scalable programs that promote healthy lifestyle behaviors across diverse populations.

In conclusion, lifestyle medicine represents a promising and cost-effective approach to reducing the global burden of depression; however, its success depends on coordinated efforts at individual, clinical, and policy levels.

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