



Review Article

Adolescent and Youth Health in India: A Comprehensive Review of Challenges, Opportunities, and Future Directions

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A B S T R A C T

Adolescents and youth constitute nearly one-third of India's population, representing a critical demographic segment with immense potential for national development, as well as unique health challenges. This population faces multifaceted health issues, including poor nutritional status, rising prevalence of overweight and obesity, mental health disorders, early initiation of substance use, sexual and reproductive health risks, and limited health literacy. Despite the existence of national policies and programs, such as the Rashtriya Kishor Swasthya Karyakram (RKSK), significant gaps remain in the availability, accessibility, and quality of adolescent-friendly health services, particularly for marginalized and rural populations. Socioeconomic disparities, gender inequities, cultural barriers, and inadequate awareness further exacerbate health risks among young people. This review synthesizes current evidence on the epidemiology of adolescent health issues in India, examines barriers to equitable healthcare access, and evaluates the effectiveness of existing interventions, including school-based programs, community initiatives, and digital health strategies. Based on this synthesis, the review proposes evidence-based recommendations for strengthening research, policy frameworks, and programmatic approaches to optimize adolescent and youth health outcomes in India. Strengthening comprehensive care, integrating mental health services, improving nutrition, promoting healthy lifestyles, and addressing gender and social inequities are essential for realizing the demographic dividend.

Keywords: Adolescents, youth, health equity, nutrition, mental health, India, health interventions

Introduction

Adolescence (10–19 years) and youth (15–24 years) are critical developmental periods characterized by rapid physical growth, hormonal changes, cognitive maturation, and social role transitions. These years are formative for establishing health behaviors, emotional regulation, social

skills, and decision-making abilities, all of which have long-term implications for individual health trajectories and societal well-being.¹ Adolescents and youth are particularly vulnerable to a range of health risks, including nutritional deficiencies, overweight and obesity, mental health disorders, substance use, sexual and reproductive



health challenges, and exposure to violence and injury. Simultaneously, these stages represent opportunities to promote positive health behaviors, resilience, and lifelong well-being through timely interventions.

India, with one of the largest adolescent and youth populations in the world, has recognized the strategic importance of this demographic through national programs such as the Rashtriya Kishor Swasthya Karyakram (RKSK), the Adolescent Education Program, and school-based health initiatives.² These programs aim to improve health literacy, expand access to adolescent-friendly services, promote nutrition, support mental health, and provide guidance on sexual and reproductive health. Despite these efforts, implementation gaps persist due to factors such as insufficient resources, workforce limitations, social and cultural barriers, gender inequities, and regional disparities. Consequently, many adolescents continue to face challenges in accessing comprehensive health services, which undermines their potential to contribute to India's demographic dividend.

This review seeks to synthesize existing evidence on adolescent and youth health in India, highlighting the epidemiology of key health issues, identifying barriers to care, evaluating the effectiveness of current interventions, and proposing recommendations for research, policy, and practice. By examining both the challenges and opportunities in adolescent health, this review aims to provide a foundation for targeted strategies that can enhance health outcomes and support the holistic development of India's young population.

Epidemiology of Adolescent Health in India

Nutritional Disorders

Malnutrition remains a dual burden among Indian adolescents, with both under-nutrition and overnutrition documented. National surveys indicate high prevalence of anaemia, especially among girls, alongside rising obesity in some states, illustrating contrasting nutritional challenges.^{1,3}

Sexual and Reproductive Health

Early and unintended pregnancies, limited sexual health knowledge, and unmet contraceptive needs pose ongoing threats to adolescent reproductive health in India.² Compounded by sociocultural norms and limited health literacy, these issues contribute to adverse outcomes including maternal morbidity and unsafe abortions.

Mental Health and Behavioural Challenges

Mental health disorders, including depression and anxiety, contribute significantly to disease burden among Indian adolescents. Analyses highlight rising mental distress linked to academic pressures, screen use, and social stigma that inhibits help-seeking behaviour.^{4,5}

Substance Abuse and Risk Behaviours

Substance use, including tobacco and illicit drug experimentation, begins for many adolescents during this period, elevating long-term health risks. Behavioural risk factors also encompass unsafe sexual behaviour, low physical activity, and poor dietary patterns.^{1,6}

Determinants and Barriers to Adolescent Health

Socio-economic and Gender Determinants

Health outcomes for adolescents vary by socioeconomic status, gender, and location, with disadvantaged groups experiencing worse nutritional, mental, and reproductive health outcomes.⁷ Gender norms also limit access to education and health services for girls.

Health Literacy and Education

Studies reveal significant gaps in adolescent health knowledge, particularly in domains such as sexual health and mental well-being. Indian adolescents have lower health literacy than counterparts in some other countries, affecting behaviour and care-seeking.⁸

Health System Limitations

Despite national programmes like Rashtriya Kishor Swasthya Karyakram (RKSK), health systems face challenges in delivering adolescent-friendly services. Barriers include limited confidentiality, insufficient provider training, and poor compliance with service benchmarks.^{9,10}

National Strategies and Programmes

Policy Frameworks

India has recognized adolescent and youth health as a national priority and has developed multiple policy frameworks and strategic programmes to address the diverse health needs of this population. The Rashtriya Kishor Swasthya Karyakram (RKSK), launched in 2014, provides a comprehensive approach that integrates nutrition, sexual and reproductive health, mental health, substance abuse prevention, and promotion of healthy lifestyle behaviors [1]. In addition, the Adolescent Health Strategy, as part of broader national health and education initiatives, emphasizes the importance of preventive, promotive, and curative services, aiming to engage adolescents in community and school settings rather than relying solely on clinic-based care [2]. These frameworks are aligned with global priorities such as the Sustainable Development Goals (SDGs), particularly SDG 3 (good health and well-being) and SDG 5 (gender equality), underscoring the need for equitable access to services for all adolescents, including marginalized populations.

The policy frameworks also emphasize multi-sectoral collaboration, bringing together health, education, social

welfare, and youth affairs departments to provide integrated, adolescent-friendly services. School-based programs under these frameworks focus on life skills education, nutrition awareness, and mental health promotion, while community-based interventions aim to reach out-of-school adolescents and underserved populations. The frameworks also promote the engagement of peer educators, youth leaders, and community health workers to enhance outreach and behavioral change at the grassroots level.

Implementation Challenges

Despite these well-structured frameworks, programmatic reviews indicate that the implementation of adolescent health initiatives faces several persistent challenges. Studies reveal uneven coverage of services across states and districts, often linked to disparities in human resources, infrastructure, and logistical support.¹¹ Monitoring and evaluation mechanisms are sometimes weak, leading to limited accountability and inadequate data on program effectiveness and service utilization. Workforce challenges, including insufficient training of health professionals, teachers, and peer educators, further constrain the delivery of high-quality, adolescent-friendly services.

Evidence also suggests that service uptake remains suboptimal, particularly among marginalized and rural adolescents. Social and cultural barriers, including stigma surrounding sexual and reproductive health, gender norms, and lack of family support, impede adolescents from accessing available services.¹² Additionally, the integration of school and community-based interventions often suffers from poor coordination, resulting in fragmented delivery of health education and limited reinforcement of behavior change messages. These challenges highlight the gap between strategic intent and practical execution, emphasizing the need for strengthened governance, capacity-building, monitoring systems, and community engagement to improve service accessibility, quality, and utilization.

Evidenced Interventions and Best Practices

Evidence from India and other low- and middle-income countries highlights a range of interventions that effectively address adolescent and youth health challenges, particularly when programs are multi-component, contextually adapted, and inclusive of family and community engagement.

School-Based Life Skills and Mental Health Programmes

School-based programs focusing on life skills education and mental health promotion have demonstrated significant positive outcomes among adolescents. These interventions typically include structured sessions on emotional regulation, stress management, problem-solving, decision-making, and

interpersonal communication. Evaluations of such programs indicate improvements in resilience, coping strategies, and reductions in depressive and anxiety symptoms among students.¹³ By embedding these programs into the regular school curriculum, schools serve as scalable platforms that reach large populations, including adolescents who might otherwise have limited access to mental health support. Life skills programs often incorporate peer discussions, role plays, and interactive learning methods, which not only enhance engagement but also improve the transfer of skills to real-life situations.

Peer Educator Models in Community Programs

Community-based interventions leveraging peer educator models have been shown to increase health knowledge, promote positive behaviors, and facilitate access to services, particularly in marginalized or hard-to-reach populations [14]. Peer educators, typically trained adolescents or youth from the community, act as role models, mentors, and facilitators of health-related information. These programs are particularly effective for sensitive topics such as sexual and reproductive health, substance use prevention, and mental health awareness, as adolescents are more receptive to guidance from peers than from authority figures. Evidence suggests that peer-led interventions can improve knowledge retention, enhance engagement, and increase the uptake of preventive services, such as voluntary counseling and testing or adolescent health check-ups.

Integrated and Multi-Sectoral Approaches

Best practices indicate that interventions are most effective when they integrate multiple components, such as school-based education, family engagement, digital tools, and community outreach. For example, combining life skills education with digital health platforms or community campaigns with school programs creates reinforcement across settings, improving knowledge, attitudes, and behaviors simultaneously. Programs that include capacity-building for teachers, parents, and healthcare workers ensure that interventions are sustained and culturally relevant.

Digital and Mobile Health Innovations

Emerging evidence supports the use of digital and mobile health interventions to promote healthy behaviors among adolescents. Mobile applications, text messaging programs, and social media campaigns have been used to deliver tailored messages about nutrition, physical activity, mental health, and sexual and reproductive health. These tools are scalable, cost-effective, and particularly useful for reaching out-of-school youth or populations with limited access to traditional services. Early evidence suggests improvements in knowledge, self-efficacy, and, in some cases, behavior change.^{25,26}

Conclusion on Best Practices

Evidence suggests that interventions targeting adolescent health are most successful when they are multi-component, contextually adapted, peer-inclusive, and reinforced across school, community, and digital platforms. Life skills programs, mental health initiatives, peer educator models, and digital health innovations represent scalable approaches that can be adapted to local needs, ensuring maximum impact for adolescent and youth populations.

Opportunities for Improvement

Strengthening Health Literacy

Investing in comprehensive health education in schools and communities can address gaps in nutrition, sexual health, and mental well-being. Digital platforms and peer networks provide opportunities to broaden reach and engagement.

Enhancing Health Systems

Training health workers in adolescent-friendly care, ensuring confidentiality, and improving compliance with service standards can strengthen trust and utilisation of health services.

Policy Integration and Data Systems

Integrating adolescent health indicators into national data systems with disaggregated age and sex data can inform targeted interventions and policy planning.

Future Directions

To strengthen adolescent and youth health in India, future research, policy, and programmatic efforts must adopt a comprehensive and evidence-driven approach. Longitudinal studies tracking health behaviors, psychosocial outcomes, and service utilization from adolescence into adulthood are critical to understanding the long-term impacts of early interventions, identifying risk trajectories, and informing preventive strategies. Such studies can help delineate how adolescent lifestyle choices, mental health status, and exposure to risk behaviors influence adult health outcomes, including chronic disease, reproductive health, and psychosocial well-being.

In parallel, implementation science research should be prioritized to evaluate and refine the delivery of national and community-based programs. Assessing factors such as fidelity, scalability, cost-effectiveness, and contextual adaptability will ensure that interventions are not only evidence-based but also feasible in diverse settings, including rural and marginalized populations. Evaluating the effectiveness of multi-component programs—such as those integrating school-based life skills education, peer-led initiatives, family engagement, and digital tools—will provide insights into best practices and critical success factors.

Policy evaluation represents another key area for future focus. Systematic assessment of existing frameworks, such as the Rashtriya Kishor Swasthya Karyakram (RKSK), is needed to determine alignment between national strategies, implementation outputs, and measurable health outcomes. Evidence from such evaluations can inform revisions in policy, resource allocation, and monitoring systems, ensuring that programs translate strategic intent into tangible improvements in adolescent health.

Moreover, achieving holistic adolescent care requires sustained cross-sectoral collaboration across health, education, social services, and youth development sectors. Schools, community organizations, healthcare providers, and digital platforms should work synergistically to deliver coordinated interventions that address the multifaceted needs of adolescents, including mental health, nutrition, sexual and reproductive health, substance use prevention, and healthy lifestyle promotion. Engaging families, communities, and youth themselves in program design and evaluation will enhance relevance, uptake, and sustainability of interventions.

Finally, attention to equity and inclusivity is essential. Programs and policies should prioritize adolescents from marginalized, rural, and socioeconomically disadvantaged backgrounds, as well as address gender-specific barriers to accessing care. Strengthening data systems to monitor disparities, coupled with adaptive interventions that respond to local needs, will be crucial for ensuring that all adolescents can achieve optimal health outcomes. Collectively, these research, policy, and practice directions can advance evidence-based, scalable, and equitable strategies that empower India's youth and capitalize on the country's demographic dividend.

Conclusion

Adolescent and youth health in India represents a multifaceted challenge shaped by the interplay of nutritional, reproductive, behavioural, and socio-economic determinants. The nutritional status of young people remains a critical concern, with undernutrition, micronutrient deficiencies, and emerging trends of overweight and obesity coexisting, reflecting a double burden of malnutrition. Reproductive health issues, including early marriage, unintended pregnancies, and limited access to adolescent-friendly sexual and reproductive health services, continue to pose significant barriers to overall wellbeing. Behavioural factors, such as substance use, risk-taking behaviours, and mental health vulnerabilities, further complicate the health landscape for this demographic.

Socio-economic determinants, including poverty, gender inequalities, educational attainment, and social marginalisation, significantly influence access to health information

and services, creating disparities that are more pronounced among rural, tribal, and marginalized populations. While India has developed robust national policies and programmes targeting adolescent and youth health—such as the Rashtriya Kishor Swasthya Karyakram (RKSK) and various nutrition and education initiatives—challenges in effective implementation, service coverage, quality, and awareness continue to limit their impact.

Addressing these issues requires a coordinated, multisectoral approach that combines evidence-driven interventions, community engagement, and health system strengthening. Prioritising health education, expanding access to adolescent-friendly health services, addressing gender and socio-economic inequities, and promoting mental and nutritional wellbeing are essential to harness the potential of India's young population. By investing strategically in the health and development of adolescents and youth, India can ensure improved health outcomes across the lifecycle, contributing not only to individual wellbeing but also to national economic growth and social development.

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