

POLICY BRIEF

Investing in Adolescence: A Critical Window for Health, Human Potential and Development in Singapore

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Dr Rhea Tan (rhea_tan@a-star.edu.sg), Scientist, A*STAR Institute for Human Development and Potential (A*STAR IHDP)

Professor Johan Eriksson, Executive Director, A*STAR IHDP

Key points

- Adolescence (10 to 24 years) is a critical developmental window that shapes lifelong health, mental well-being and productivity. Supporting adolescents is therefore an investment in the future resilience of society.
- Important evidence gaps in the understanding of adolescent development remain, particularly how early life experiences and social changes influence developmental trajectories over time.
- Much of the existing research is based on Western populations, limiting relevance to Asian societies where cultural norms shape adolescent experiences in distinctive ways. Singapore provides a unique opportunity to study adolescent development with its diverse population, strong family networks and highly digitalised environment influencing how children and adolescents grow and interact.
- A new interdisciplinary research initiative will integrate multiple longitudinal cohorts to generate evidence on adolescent development and well-being, and to develop scalable interventions and inform policies across education, families and communities.

Why Adolescence Matters

The first 1,000 days of life is recognised as a critical developmental window for the body, brain and immune system. Adolescence (10-24 years)¹ has been identified as the crucial second window of opportunity. Spanning the onset of puberty to adult maturation when the individual is acknowledged as an adult by society, it is marked by rapid biological growth, psychological, cognitive and emotional development, as well as social role transitions such as identity formation, building of resilience, psychosexual maturity and the formation of non-familial emotional relationships.*

Adolescence lays the foundation for a productive adult life, shaping health trajectories and transitions into key adult roles including employment and parenthood. In Singapore, where human capital is a critical resource, supporting the health and well-being of adolescents is an investment in the resilience and productivity of the future workforce.

Adolescence starts earlier and is now more prolonged than in the past. A decline in the age at onset of puberty has been documented, with this being attributed to nutrition and other environmental influences². Emerging neuroscience evidence also suggests maturation of brain networks continues well into adulthood, even to the age of 32³. This extended developmental period – particularly evident in developed societies⁴ – creates a range of social and biological challenges.

(i) Adolescent Obesity

Obesity is a growing global issue: the prevalence of overweight and obesity in those aged 5 to 19 rose from 8% in 1990 to 20% in 2022.⁵ In Singapore, the proportion of 6 to 18 year olds who were overweight rose from 11% in 2013, to 16% in 2021⁶. Obesity-associated healthcare costs and loss to productivity in Singapore was \$261M in 2022⁷.

Adolescent obesity is more likely than childhood obesity to track into adulthood⁸⁻¹⁰, and is associated with chronic diseases such as type 2 diabetes, cardiovascular disease and certain cancers⁸⁻¹⁰. Beyond physical health, adolescent obesity impairs cognition¹¹ and contributes to depression, anxiety, sleep problems and poor self-esteem¹². At the same

*While in less-developed contexts the end of puberty (marked by the completion of physical growth) traditionally signals the transition to adulthood, in developed societies this is followed by a further phase of cognitive and behavioural maturation extending into the third decade of life. This post-pubertal period is increasingly recognised in the literature as a distinct 'young adulthood' phase. Given its relevance in shaping health, behavioural and life-course outcomes, the term 'adolescence' in this paper also incorporates this young adult phase.

time, the age at onset of puberty in girls has also steadily decreased¹³, although a similar decline is unconfirmed in boys¹⁴. Earlier onset of puberty is a risk factor for metabolic disease and several cancers¹⁵⁻¹⁷, as well as adverse mental health outcomes such as depression¹⁸.

(ii) Adolescent Mental Health

One in seven 10 to 19 year olds worldwide experience mental health conditions¹⁹, with the majority of mental health conditions emerging by the age of 24²⁰. Singapore is no exception, or perhaps shows even higher rates of mental health conditions: 28% of youths aged 11 to 18 met clinical criteria for at least one mental health disorder. In another study of youths aged 15 to 35, severe and extremely severe levels of depression and anxiety were highest among those aged 20 to 24²¹.

In addition, a significant proportion of youth report elevated symptoms of depression and anxiety that fall below diagnostic thresholds²². Sub-threshold symptoms increase risks for poor academic performance, substance abuse, mood disorders and suicide^{23,24}. Adolescent mental health challenges affect education through absenteeism²⁵ and contribute to rising healthcare costs²⁶, estimated at \$1.2 billion²⁵ annually.

Key Evidence Gaps in Adolescent Health Research

Despite growing recognition of adolescence as a critical window for development, significant gaps remain in the evidence needed to guide effective policies and interventions.

(a) Understanding Developmental Trajectories

Much of our current understanding of adolescent health is based on cross-sectional studies which do not capture developmental trajectories. Longitudinal studies are crucial to understand how early life determinants – including prenatal factors, family environments and societal influences – influence developmental outcomes. Such insights are essential for identifying risk and protective factors, and for designing interventions that promote resilience and prevent health problems across the life course.

(b) Evidence from Asian Populations

Many of the major international cohort studies on adolescent development are based in Western populations, which do not fully capture the cultural and social contexts of Asian

societies. In Singapore and across Asia, family structures, intergenerational relationships and strong expectations around academic achievement shape adolescent experiences in distinctive ways. Research in Asian populations is therefore integral to policy and intervention development.

(c) Measures of Well-being

Adolescent mental well-being is often defined narrowly in terms of mental illness, particularly depression and anxiety. However, well-being encompasses far more than the absence of illness; it includes factors such as resilience, self-esteem, social connectedness and a sense of purpose²⁷. A major challenge is the lack of comprehensive measures that capture these broader dimensions of well-being alongside contextual factors such as family relationships and academic pressures²⁸. Developing culturally relevant measures of adolescent well-being will enable more effective understanding of adolescent outcomes and better evaluation of policies and interventions.

Why Singapore is Uniquely Positioned

Singapore provides a unique setting to study adolescent health in Asia. While much of the existing understanding of adolescence is based on Western populations, Singapore's social structures, cultural diversity and rapid societal change offer important opportunities to understand how development unfolds in Asian contexts.

(a) Family Structures and Caregiving

Families in Singapore are generally close-knit, with strong inter-generational ties and high levels of financial, emotional and physical support between family members²⁹. While such networks can be protective, they may also create pressures related to caregiving responsibilities and expectations of academic performance. Childrearing in Singapore often involves multiple caregivers, including grandparents and domestic helpers, with non-parent caregivers supporting around 63% of families in the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort – influencing parenting styles and child mental health³⁰. Children in Singapore also spend more time in centre-based childcare than their peers in other developed nations, and a complex link between childcare hours and cognitive and emotional development has been demonstrated³¹.

(b) Diverse Social Backgrounds

Singapore's population also reflects increasing social and demographic diversity. The proportion of transnational marriages among citizen marriages has risen from 15.1% in 1984 to 36.6% in 2024³², with 1 in 4 families in Singapore being cross-national. The Singapore Longitudinal Early Development Study (SG-LEADS) showed that these families face lower socioeconomic status, and foreign-born mothers are less involved in financial and childcare decisions³³. Their parenting practices differ from that of Singapore-born mothers, and their children show lower academic performance and more behaviour problems^{33,34}. Research has also highlighted ethnic disparities in preschoolers' test scores and social-emotional well-being, which can widen over time³⁵. Understanding how family background and socioeconomic factors influence development is therefore critical to designing policies that support all children and adolescents. Insights from Singapore's multi-ethnic population may also inform understanding of adolescent development in ethnicities representing more than half the world's population.

(c) Digital Environments

Singapore is also one of the most digitally connected societies in the world³⁶. One in four 13- to 14-year-olds reported nearly 10 hours of daily screen use, while 10% reported at least 4 hours on social media alone. Evidence suggests that the nature and context of interactions matter: parent-child engagement during media use mitigates negative outcomes for preschoolers, influencing pro-social-emotional competence, attention, impulse control, and academic achievement^{37,38}. On the other hand, passive social media consumption³⁹ and online harms such as cyberbullying – reported by 1 in 5 of those aged 15 to 35 – are associated with poorer mental health outcomes⁴⁰.

Together, these social, cultural and technological factors position Singapore as a valuable platform for understanding adolescent development, and generating evidence to guide policies supporting adolescent health in contemporary Asian societies.

Initiatives and what these will enable

The Agency for Science, Technology and Research (A*STAR) has secured S\$150 million in funding from Singapore's National Research Foundation for large-scale, longitudinal and translational research over 5 years from 2026 to identify drivers of adolescent well-being. The initiative will integrate multiple longitudinal cohorts to study approximately 5,000 adolescents, creating one of the most comprehensive research platforms for adolescent health in Asia. By combining biological, psychological and social data, the programme will generate insights to guide policy and interventions across multiple domains:

(a) Brain, body and lifestyle

The programme will examine how physical health, cognitive development and lifestyle – including sleep, physical activity, nutrition and digital behaviours – interact during adolescence. Findings will inform preventive health strategies including approaches to obesity and metabolic health.

(b) Social and psychological development

The programme will investigate how individuals, families, peers, communities, the environment and policies shape resilience, mental health and academic outcomes, and identify adolescents who may benefit from early, targeted support.

(c) Digital environments and well-being

Digital behaviours in adolescence can shape health, academic outcomes and relationships. The programme will examine how different patterns of digital media use influence well-being, identity formation and social relationships, while identifying factors that promote resilience and mitigate harm.

(d) Urban environments and adolescent health

As their independence increases, adolescents interact with the urban environment in distinctive ways. This programme will explore how green spaces, urban design, climate exposures and environmental quality influence both physical and mental well-being.

(e) Early life influences on adolescent outcomes

By integrating both adolescent and pre-adolescent cohorts, the programme will also examine how changing early childhood experiences and family environments shape health and developmental trajectories into adolescence.

(f) From Research to Action

The initiative will move beyond observation to develop and test interventions that reflect the complex environments in which children and adolescents are growing up. These programmes will operate across multiple levels, from individuals and families to schools, communities and the digital environment, addressing multi-level outcomes such as mental well-being and family relationships. The programme aims to identify scalable strategies that can be implemented across schools and communities.

These efforts will translate multi-disciplinary research into scalable interventions to support adolescents to thrive. By investing in this critical developmental window, Singapore can strengthen the foundations for a healthier, more resilient and productive future population.

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