Adolescent Health and Healthy China 2030: A Review

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ABSTRACT

Purpose: This article explores differences between the current health status of adolescents and the targets set in Healthy China 2030 (HC2030).

Methods: Global and domestic policies and strategies relating to adolescent health were reviewed. Data from the Global Burden of Disease Study (1990–2016) and the Chinese National Survey on Students’ Constitution and Health (1985–2014) were used to analyze time trends and geographical distributions of health indicators for adolescents aged 10–19 years in China.

Results: The Chinese government has released many health policies over the past 3 decades. In this context, there has been a major decline in all-cause mortality and stunting. However, gaps between the current health status of adolescents and the targets set in HC2030 were numerous. The prevalence of obesity and poor vision increased rapidly, and few adolescents meet the physical activity and fitness targets set in HC2030. Urban/rural differences were marked for some indicators such as obesity, whereas for other indicators (e.g., stunting), there remained notable differences across provinces.

Conclusions: Many long-standing health problems of adolescents have improved, but new problems related to noncommunicable disease risks have emerged and should be a prominent focus for policy action under HC2030.

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Adolescents aged 10–19 years have until recently been overlooked in global health and social policy. The Global Strategy for Women’s, Children’s and Adolescents’ Health (2016–2030) identified adolescents as central in achieving the Sustainable Development Goals (SDGs). Although much remains to be done in pursuit of the unfinished agendas of Millennium Development Goals 4, 5, and 6, it is time to intensify efforts so that adolescents are not left behind, as health care continues to improve for maternal and child health.
Adolescence is a crucial phase in life for achieving human potential, but one that needs specific investment [1]. Such investments bring a triple dividend of benefits for adolescents now, for their future adult lives, and for the next generation. Their health and well-being are engines of change in a drive to create healthier, more sustainable societies [1].

However, for years, the unique health issues of adolescence have been little understood or, in some cases, ignored across countries and regions [2]. Currently, research and action are needed across the life cycle to evolve beyond a narrow emphasis on the first 1,000 days to embrace the first 8,000 days [2]. The Global Burden of Disease Study has shown that adolescents are facing new health challenges, including injuries, mental health issues, obesity, and early sexual behavior and pregnancy [3].

Because many key risk factors that underlie the major non-communicable diseases usually start or are reinforced in adolescence, including tobacco and alcohol use, diet and exercise patterns, overweight, and obesity [4], policies and interventions are warranted to improve health and reduce the burden of disease in adolescents. Health risks also vary substantially by sex, age, and country [3].

Global progress on the policies and strategies improving adolescent health

Adolescent health is shaped by broader determinants, including economic development, urbanization, social norms, household income inequality, and educational opportunities [2]. Government policies have the potential to shift many of these determinants, but the most part have not focused on adolescents compared with younger children. This is likely to be one reason why adolescents have had fewer gains in health compared with other age groups [1]. This is now changing. In 2014, World Health Organization (WHO) issued the Health for the World’s Adolescents: A Second Chance in the Second Decade [5], arguing that the gains from investments in maternal and child health were in jeopardy without corresponding investments in adolescent health. They recommended the development and implementation of national health promotion and health protection policies for adolescents.

In 2015, Global Standards for Quality Health-care Services for Adolescents were developed by WHO and the United Nations Program on HIV/AIDS [6]. It presented eight Global Standards for improving the quality of health care for adolescents, with guidance on actions at multiple levels, including the review of laws, policies, and service systems.

On September 25, 2015, in collaboration with countries, the United Nations (UN) set 17 SDGs to end poverty, protect the planet, and ensure prosperity for all [7], including ensuring healthy lives and promoting well-being at all ages. In the same year, the H6 agencies (United Nations Program on HIV/AIDS, United Nations Population Fund, United Nations Children’s Fund, UN Women, WHO and the World Bank Group) initiated The Global Strategy for Women’s, Children’s and Adolescents’ Health 2016–2030 to support Every Woman Every Children Global Strategy and related SDG targets, prioritizing adolescents for the first time in a global strategy [8]. The initiative provided a set of indicators (Supplementary Table 1) to aid the development and implementation of national health-promoting policies.

Healthy China 2030

In August 2016, President Xi Jinping placed health at the center of Chinese policy-making. He called for full protection of every citizen’s health, stating “an all-around moderately prosperous society cannot be achieved without the people’s all-round health” [9]. On October 25, 2016, China’s Central Party Committee and the State Council approved the Healthy China 2030 Planning Outline, the first medium-term to long-term strategic plan for the health sector since the founding of China in 1949. It also reflected a commitment to the UN 2030 Agenda for Sustainable Development.

The Outline of the HC2030 Plan included proposals for upgrading hospital treatment and management, universal health coverage, improvements in the supply of essential medicines, revitalization of traditional Chinese medicine, enhancement of

Table 1
Health issues of Chinese adolescent health and their targets in HC2030

<table>
<thead>
<tr>
<th>Health issue</th>
<th>Current situation in Chinese adolescents aged 10–19 years</th>
<th>HC2030 target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mortality</td>
<td>Annual mortality rates were 53.6 (95%CI: 51.6–55.2) and 26.9 (95% CI: 26.2–27.8) per 100,000 for males and females in 2016, respectively</td>
<td>Average life expectancy reaches 79.0 years in 2030</td>
</tr>
<tr>
<td>Injury</td>
<td>Road injuries, drowning, leukemia, and self-harm as the leading causes of mortality, accounting for 51.5% of all deaths in adolescents</td>
<td>Reducing injuries (such as traffic injury and drowning)</td>
</tr>
<tr>
<td>Stunting</td>
<td>Prevalence of stunting were 2.6% for males and 3.0% for females in 2014, respectively</td>
<td>Continuing the programs to improve the nutrition of children and adolescents in poor areas;</td>
</tr>
<tr>
<td>Overweight/obesity</td>
<td>Prevalence of overweight/obesity were 23.3% and 13.02% in males and females in 2014, respectively</td>
<td>Solving the problem of the coexistence of undernutrition and overweight/obesity</td>
</tr>
<tr>
<td>Poor vision</td>
<td>Prevalence of poor vision were 68.7% and 76.3% in males and females in 2014, respectively</td>
<td>Strengthening the prevention of poor vision, such as myopia, in school-aged children and adolescents</td>
</tr>
<tr>
<td>Oral health</td>
<td>Prevalence of permanent dental caries was 24.3% among adolescents aged 12 years in 2014</td>
<td>Permanent dental caries should be no more than 25% in adolescents aged 12 years in 2030</td>
</tr>
<tr>
<td>Physical activity</td>
<td>24.1% of adolescents had daily physical activity for no &lt; 1 hour in 2014</td>
<td>Every student should have daily physical activity for no &lt; 1 hour in primary and secondary schools</td>
</tr>
<tr>
<td>Physical fitness</td>
<td>1.6% of adolescents aged 13–18 years reached the excellent physical fitness level in 2014</td>
<td>No less than 25% of students should reach the excellent physical fitness level defined by The National Student Physical Fitness Standard published by the Ministry of Education in 2030</td>
</tr>
</tbody>
</table>
health literacy, and stronger disease prevention, all in the context of industrialization, urbanization, and an aging population. Equitable, available, systematic, and continuous health services were promised with a focus on the entire population and the whole life cycle, including women, children, and elderly. China has adopted several goals by 2030 for young people, extracted and listed in Table 1. Many are consistent with the SDGs, addressing nutritional needs, substance abuse, and injuries from road traffic accidents.

Healthy China 2030 (HC2030) outlines 13 core indicators with targets for 2030, including those for adolescents. On March 5, 2018, Chinese Premier Li Keqiang released the Healthy China Strategy, highlighting child health care. Furthermore, the national-level promotional committee released the Healthy China Initiative (2019–2030) in July 2019, comprising 15 special actions, including improving the health of vulnerable populations, such as women, young children, and students, and preventing and controlling four major chronic diseases. Soon after, the State Council’s General Office released a plan on the implementation and evaluation of the Healthy China Initiative [10]. In implementing health promotion among primary and secondary school students, the achievement of good/excellent physical fitness and reducing myopia were included for annual monitoring and evaluation. These documents provided a blueprint and action plan for facilitating comprehensive health in adolescents. Differences between HC2030 targets and poor health situation in Chinese adolescents were recognized as the “gap,” whereas the progress of getting close to HC2030 target for specific key indicators was defined as the “achievement.” The methods of policy review and data analysis can be found in the Supplementary File.

Because patterns of inequality across gaps varied across health issues, the indicators are presented with different stratifications, including sex, urban/rural, and geographic differences.

Progress Toward HC2030: Achievements and Gaps

In the four decades before HC2030, there were Chinese policies on adolescent physical activity, common diseases, and substance abuse. Several policies were released by the Ministry of Education or jointly with the Ministry of Health, focused on achieving at least an hour physical activity in school every day, including the Notification of Ensuring One Hour of Daily Physical Activity in Primary and Secondary Schools in 1982, School Physical Education Regulation, and School Health Regulation in 1990. In 1995, Law of the People’s Republic of China on Physical Culture and Sports was adopted as the landmark policy by the Standing Committee of the National People’s Congress (the highest organ of state power), with amendments in 2009 and 2016. The legislation contained a section on school sport that stipulated that the school must offer sufficient time for physical activity, organize after-class sports activities, hold sports meetings annually, conduct annual medical examinations, and provide sufficient sports fields, facilities, and qualified physical education teachers. These requirements were also highlighted in the National Fitness Planning Outline (1995) and the Decision to Deepen Education Reform and Comprehensively Promote Quality Education (1999), both adopted by the China’s State Council.

Besides the policies aimed to promote physical activity, numerous laws and government documents were released on strategies aimed to prevent and control common diseases among students with myopia, amblyopia, trachoma, caries, parasites, malnutrition, anemia, spinal flexion, neurasthenia, and infectious diseases, specified in the 1990 School Health Regulations. In 2001, China’s State Council released the National Program for Child Development in China (2001–2010), updated in 2011 as the National Program for Child Development in China (2011–2020). Both programs specified goals of reducing mortality, injuries, infectious diseases, anemia, poor vision, obesity, malnutrition, and substance abuse (including smoking and alcohol use). These programs also addressed mental health, knowledge of sexual and reproductive health, and physical fitness. Dedicated programs targeted thinness and stunting in students living in poor rural areas, with the China School Milk Program implemented in stages by the Ministry of Agriculture, the Ministry of Education, and other five Ministries from 2000. In addition, The Guidance on Strengthening the Prevention and Control of Myopia for Children and Adolescents was issued in 2016 by the Ministries of Health, Education, and General Administration of Sport to reduce myopia and poor vision in Chinese adolescents (Table 2).

Mortality and causes of death

China’s adolescent mortality rate has halved in the past 26 years. Based on data from the Global Burden of Disease between 1990 and 2016, the annual mortality rate for males aged between 10 and 19 years decreased from 118.0 (95% confidence interval [CI]: 114.7–121.3) in 1990 to 53.6 (95% CI: 51.6–55.2) per 100,000 in 2016 (Supplementary Figure 1). The corresponding rate for females in the same age group declined from 86.0 (95% CI: 83.5–88.3) to 26.9 (95% CI: 26.2–27.8) per 100,000 people. A total of 43,664 and 19,129 deaths occurred in 2016 in males and females respectively, with road injuries, drowning, leukemia, and self-harm the leading causes, accounting for 51.9% of deaths (Table 3).

Stunting

The prevalence of adolescent stunting has decreased over the past three decades (Supplementary Figure 2). According to the data from the Chinese National Survey on Students’ Constitution and Health (CNSSCH), the prevalence of stunting (17.6% in males and 14.5% in females in 1985) decreased in both sexes to 2.6% for both sexes, with the prevalence growing from .92% to 23.34% and from 1.23% to 13.02% in males and females, respectively (Supplementary Figure 1). The corresponding rate for males increased from 0.88% to 9.52% during the same period. The prevalence of stunting in China has decreased from 1.23% to 0.53% in males and 2.68% to 0.89% in females in 1990 and 2016, respectively. The proportion of children stunted decreased from 15.1% in 1990 to 9.7% in 2000 and further to 4.9% in 2016. The corresponding rate in females decreased from 16.6% to 10.0% to 5.1% during the same period.

Desert in reducing malnutrition, the geographical disparities remain substantial. Across regions, Southwest China has a higher prevalence of stunting, particularly compared with Eastern China (Supplementary Figure 3). Provinces with the highest prevalence of stunting were Guizhou, Sichuan, and Guangxi, with prevalence between 5.7% and 11.1% for both males and females in 2014. The largest decrease occurred between 1985 and 1995 and then remained stable between 1995 and 2014.

Despite success in reducing malnutrition, the geographical disparities remain substantial. Across regions, Southwest China has a higher prevalence of stunting, particularly compared with Eastern China (Supplementary Figure 3). Provinces with the highest prevalence of stunting were Guizhou, Sichuan, and Guangxi, with prevalence between 5.7% and 11.1% for both males and females in 2014. In contrast, Tianjin and Shandong had the lowest prevalence of stunting in China (<0.5%). The prevalence of stunting in China has decreased from 1.23% to 0.53% in males and 2.68% to 0.89% in females in 1990 and 2016, respectively. The corresponding rate for males increased from 0.88% to 9.52% during the same period. The prevalence of stunting in China has decreased from 1.92% to 0.53% in males and 2.68% to 0.89% in females in 1990 and 2016, respectively. The corresponding rate for males increased from 0.88% to 9.52% during the same period.
overweight/obesity in urban setting is higher than in rural, the increase in rural areas exceeded urban areas between 2005 and 2010 (Figure 1).

**Poor vision**

Poor vision is a growing problem among children and adolescents worldwide, but China has a particularly high prevalence [11]. Based on the data of CNSSCH, the prevalence of poor vision was 47.0% in Chinese boys and 55.9% in girls aged 10–19 years in 2000. The prevalence increased by 146% and 136% in males and females, respectively, and reached 68.7% for males and 76.3% for females in 2014 (Supplementary Figure 5). In response, one of HC2030 targets is the prevention and control of poor vision, especially myopia, in school-aged children and adolescents.

**Oral health**

The prevalence of permanent dental caries is an indicator of oral health. A goal of HC2030 was 12-year-olds should have permanent dental caries no more than 25%. The CNSSCH found that the prevalence of permanent dental caries decreased gradually between 1995 and 2000 in China but increased from 2000 to 2014. Although the prevalence of permanent dental caries was 24.3% in 2014, slightly lower than the HC2030 target of 25%, the prevalence in rural areas (24.7%) exceeded urban areas (23.8%) for the first time with an increasing trend likely to continue (Supplementary Figure 6).

**Physical activity and physical fitness**

The HC2030 goal has been that every student should have no less than 1 hour of daily physical activity. However, less than one fourth (24.1%) of students aged 10–19 years old met that goal in 2014, according to CNSSCH. More boys (26.9%) than girls (21.3%) participated in physical activity for at least 1 hour daily but with a diminishing level with increasing age, ranging from 39.5% at 10 years to 14.3% at 18 years of age (Figure 2).

In line with the low level of physical activity in Chinese adolescents, a poor level of physical fitness among Chinese adolescents has been found. The *National Student Physical Fitness Standard* published by the Ministry of Education is based on six
to eight test items according to their grades and sex with elements, including height, weight, vital capacity, sit and reach, 50 m dash, 1-minute sit up, 1-minute rope skipping, endurance run, and standing long jump [12]. With a total score of 120, a student scoring > 90 has excellent physical fitness. In 2005, only .6% of adolescents aged 13–18 years reached the excellent physical fitness level. Although this increased to 1.6% in 2014, it falls well short of the 25% goal for 2030 in HC2030 (Supplementary Figure 7).

### Overcoming Obstacles to Implement HC2030

Important aspects of adolescent health in China, including mortality and stunting, have improved markedly, but not for HC2030 goals around obesity, poor vision, and poor physical fitness. Targeted policies are now needed to close the gap between reality and the goal of improving health comprehensively and equitably.

The halving of adolescent mortality over the past 26 years is a notable achievement, with China’s adolescent mortality rate now approaching that of European countries [13]. Similar to other countries [14], injuries are the leading cause of death for Chinese adolescents with road injuries, drowning, and self-harm making up about one-half and one third of all deaths for males and females, respectively. Interventions, such as limiting the speed of motor vehicles around schools and improving the health education of students, have the potential to reduce the incidence of injuries and further reduce the adolescent mortality in China [15]. Although self-harm is the fourth leading cause of death for Chinese adolescents, some studies have suggested that only the most valuable action for self-harm prevention are early detection, greater research is needed with current policy tools limited [16].

Dental caries have fallen over the past two decades with the prevalence of permanent caries in 2014 already meeting the HC2030 goal and being lower than the global average of 35% in 2010 [17]. However, the prevalence of dental caries increased from 2000 to 2014, and the level in girls in 2014 exceeded the HC2030 goal. Oral health status is closely related to personal oral

### Table 3

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Male Leading causes</th>
<th>Deaths</th>
<th>Mortality rate (1/100,000)*</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Road injuries</td>
<td>10,692</td>
<td>13.11 (12.26, 14.07)</td>
<td>24.49</td>
</tr>
<tr>
<td>2</td>
<td>Drowning</td>
<td>8,500</td>
<td>10.42 (9.15, 11.22)</td>
<td>19.47</td>
</tr>
<tr>
<td>3</td>
<td>Leukemia</td>
<td>2,513</td>
<td>3.08 (2.64, 3.58)</td>
<td>5.76</td>
</tr>
<tr>
<td>4</td>
<td>Self-harm</td>
<td>2,322</td>
<td>2.85 (2.48, 3.57)</td>
<td>5.32</td>
</tr>
<tr>
<td>5</td>
<td>Falls</td>
<td>1,842</td>
<td>2.26 (1.52, 2.62)</td>
<td>4.22</td>
</tr>
<tr>
<td>6</td>
<td>Congenital birth defects</td>
<td>1,539</td>
<td>1.89 (1.58, 2.51)</td>
<td>3.52</td>
</tr>
<tr>
<td>7</td>
<td>Exposure to mechanical forces</td>
<td>1,235</td>
<td>1.51 (0.89, 1.74)</td>
<td>2.83</td>
</tr>
<tr>
<td>8</td>
<td>Brain and nervous system cancer</td>
<td>1,041</td>
<td>1.28 (1.09, 1.61)</td>
<td>2.38</td>
</tr>
<tr>
<td>9</td>
<td>Interpersonal violence</td>
<td>1,008</td>
<td>1.24 (1.01, 1.96)</td>
<td>2.31</td>
</tr>
<tr>
<td>10</td>
<td>Cerebrovascular disease</td>
<td>1,000</td>
<td>1.23 (1.10, 1.37)</td>
<td>2.29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ranking</th>
<th>Female Leading causes</th>
<th>Deaths</th>
<th>Mortality rate (1/100,000)*</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Road injuries</td>
<td>3,449</td>
<td>4.86 (4.39, 5.38)</td>
<td>18.03</td>
</tr>
<tr>
<td>2</td>
<td>Drowning</td>
<td>1,917</td>
<td>2.70 (1.96, 3.12)</td>
<td>10.02</td>
</tr>
<tr>
<td>3</td>
<td>Leukemia</td>
<td>1,646</td>
<td>2.32 (1.68, 2.77)</td>
<td>8.61</td>
</tr>
<tr>
<td>4</td>
<td>Self-harm</td>
<td>1,544</td>
<td>2.18 (1.93, 2.49)</td>
<td>8.07</td>
</tr>
<tr>
<td>5</td>
<td>Congenital birth defects</td>
<td>1,141</td>
<td>1.61 (1.39, 2.07)</td>
<td>5.97</td>
</tr>
<tr>
<td>6</td>
<td>Brain and nervous system cancer</td>
<td>642</td>
<td>.90 (0.69, 1.08)</td>
<td>3.35</td>
</tr>
<tr>
<td>7</td>
<td>Other neoplasms</td>
<td>589</td>
<td>.83 (.71 .95)</td>
<td>3.08</td>
</tr>
<tr>
<td>8</td>
<td>Falls</td>
<td>497</td>
<td>.70 (.47, .81)</td>
<td>2.60</td>
</tr>
<tr>
<td>9</td>
<td>Poisonings</td>
<td>496</td>
<td>.70 (.39,.84)</td>
<td>2.59</td>
</tr>
<tr>
<td>10</td>
<td>Lower respiratory infections</td>
<td>436</td>
<td>.61 (.50,.79)</td>
<td>2.28</td>
</tr>
</tbody>
</table>

*Based on Global Burden of Disease datasets 2016.

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**Figure 1.** The increasing prevalence of overweight and obesity in Chinese urban and rural adolescents aged 10–19 years, 1985–2014. OW/OB, overweight and obesity.
hygiene behavior, diet, oral health literacy, and other factors [18]. In particular, a changing diet in China is likely to exacerbate dental caries in adolescents [19]. Oral health is still neglected with health education and oral health care becoming pressing for both adolescents and parents [20].

With the nutrition transition in recent years, a dual burden of stunting and obesity has been found in Chinese children and adolescents. This phenomenon also has been reported in Latin America, Africa, the and Middle East, with contributions of increases in household income, energy-dense food in the daily diet, and physical inactivity [21]. With the One-Child Policy implemented over the past three decades throughout China, it is common for a family to indulge their one child excessively, a unique Chinese risk factor [22]. Conversely, the reduction in stunting has been a substantial achievement with the prevalence in some provinces even lower than in high-income Western countries [23]. Even so, stunting is still common in Southwest China and accompanied by obesity in rural areas [24]. This complexity situation suggests a need for double-duty actions to balance the dual burden in different provinces with region-specific policies to tackle the geographic disparities.

Poor vision among children and adolescents has been increasing globally over the past 50–60 years but is particularly high in East and Southeast Asia [25]. Although policies around vision have been issued continually by the State Council, National Health Commission, Ministry of Education, and other ministries since 1990, myopia has continued to rise. The major drivers are intensive academic study from an early age and a lifestyle with limited time outdoors [26]. Policies to limit educational pressure and increase outdoor activities should be helpful, but other techniques for slowing progression, such as low-dose atropine and orthokeratology, may also be needed [26]. On August 30, 2018, the Ministry of Education, the National Health Commission, and six other ministries issued Comprehensive Program for the Prevention and Control of Short-sightedness of Children and Adolescents [27], to demonstrate that poor vision is a priority at all levels of government in China. Explicit target of controlling myopia will be set for each province, and provincial governments will sign a liability contract with the Ministry of Education with promises to meet that target.

Regular physical activity has a range of health benefits for children and adolescents, including reducing the risk of obesity and improving mental and cardiovascular health [28,29]. Current physical activity guidelines for China, WHO, and the U.S. recommend a minimum of 1 hour of moderate-to-vigorous physical activity for children and adolescents. However, physical inactivity is common across various age groups in many countries [30,31]. Only one in four students aged 10–19 years participated in a physical activity longer than 1 hour per day in 2014, far lower than the HC2030 goal. Although the Chinese State Council issued a series of policies around physical fitness since 1982, the effects have been limited. A lack of practical measures, insufficient executive strength, and continued educational pressure, contributing to a sedentary lifestyle seem likely reasons for the failure. Notably, Comprehensive Program for the Prevention and Control of Short-sightedness of Children and Adolescents, issued in August 2018, reinforced the requirement of daily outdoor physical activity for no less than 1 hour in every school, thus demonstrating that increasing physical activity is clearly on the national agenda. However, more specific interventions for schools are needed.

Other indicators around mental health and smoking are needed with HC2030 looking to strengthen interventions for common disorders, such as depression, and decreasing smoking to below 20% for people aged > 15 years by 2030. However, reliable data on the mental health of China’s adolescents are scant. One meta-analysis reviewed all studies conducted on Chinese children and adolescents and found a prevalence of depression was 15.4% (95% CI: 13.3%–17.8%), higher than that among American adolescents in 2014 (11.3%) [32]. Similar levels of adolescent depression have also been found in Hong Kong [33], with Shek et al. outlining contributory ecological risk factors [34]. A recent study reported the smoking prevalence among young people smokers aged 15–24 years increased from 8.3% in 2003 to 12.5% in 2013, with a prevalence of 23.5% among boys in 2013 [35]. Because approximately 78% of smokers start smoking in adolescence, adolescents’ access and use of cigarettes should be monitored and regulated. Without strengthened public health and regulatory action, adolescent smoking will contribute to adult use and non-communicable diseases in later life.

Under HC2030, several other initiatives have been developed. Campus Football, proposed in 2015 by the Ministry of Education and five other ministries, promotes football in Chinese primary and secondary schools to enhance participation in physical activity and drive the construction of gymnastic infrastructures in schools. The program has the potential to improve physical fitness, myopia, and obesity and make a positive contribution to adolescent mental health.

Healthy Schools adopts a holistic approach to address urban health management [36], with cities not qualifying as a Healthy City unless they have more than 30% of the local schools certified as Healthy Schools. Healthy Schools integrate health into all school-related policies and work between schools, families, and communities, with targets around school health regulation, environment, and culture, as well as health care and the health status of students and teachers.

To strengthen the implementation of national policies, provincial policies specific for the local context have been adopted. For instance, to control the increasing trend of myopia, the Shanghai government established an archive of refractive development for approximately 1.87 million children and adolescents aged 4–18 years between 2007 and 2018. More than 65 million warning messages have been sent to children, and adolescents screened as having a high risk of myopia with invitations to hospitals or health care centers for further diagnosis and treatment [37]. Global policies have also provided a framework in some areas of HC2030. One example is MPOWER, a policy package recommended by the WHO Framework Convention on
Tobacco Control building on measures proven to decrease tobacco use [38]. It has contributed to regulations issued by Chinese governments for tobacco control, including banning smoking in public places and health warning labeling, and will further play an important role in strengthening regulatory action around tobacco use in both adolescents and adults [35].

This review had several limitations. First, the gray literature and some studies not published in peer-reviewed journals were not included in this study. In some instances, the most recent data were not yet available to clarify whether gaps have recently widened or narrowed. Second, because of space limitations and the accessibility of data, only selected health indicators were analyzed, leaving important indicators, including depression and anxiety, and sexual and reproductive health, out of consideration. Some emerging adolescent behavioral health problems, such as Internet addiction, gaming issue, and pathological gambling, also need investigation. In addition, detailed descriptions of geographic disparity for each indicator would be helpful in policy-making.

Summary

Although China has made marked improvement in adolescent health, there remain many challenges in meeting the goals of HC2030, particularly around obesity, poor vision, and physical fitness. Geographic disparities remain across some health issues, such as stunting.

HC2030 provides an unprecedented opportunity for improving the health of China’s adolescents. Because main health issues facing adolescents require cross-sectoral action, any national strategy and intervention plan for adolescent health requires multisectoral cooperation, including the Ministries of Health and Education. Targeted policies and interventions with detailed and practical approaches at both national and provincial levels are warranted to bridge the gap between local reality and HC2030 goals. In addition, an integrated monitoring system covering health issues of priority should be extended to more indicators with data available quickly enough to inform policy decisions. Such a system would be essential in responding to newly emerging adolescent health problems in the future.

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Supplementary Data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jadohealth.2020.07.023.

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