



LANDSCAPE ANALYSIS
FOR **CHILDHOOD**
OVERWEIGHT AND OBESITY
IN CHENGDU, CHINA

LANDSCAPE ANALYSIS
FOR **CHILDHOOD**
OVERWEIGHT AND OBESITY IN
CHENGDU, CHINA

Published by UNICEF China Office
12 Sanlitun Lu
Chaoyang District 100600
Beijing, People's Republic Of China
Tel: (8610) 85312600
Fax: (8610) 65323107
Email: beijing@unicef.org

© United Nations Children's Fund (UNICEF)

October 2021

Cover photo: A girl picks up pre-packaged food in supermarket in Chengdu.

© UNICEF/China/2021/Ma Yuyuan

CONTENTS

ACKNOWLEDGEMENTS	2
LIST OF ABBREVIATIONS.....	3
GLOSSARY.....	4
EXECUTIVE SUMMARY	10
I. BACKGROUND.....	18
II. LANDSCAPE ANALYSIS.....	22
III. POLICY ANALYSIS.....	40
IV. CONCLUSIONS AND RECOMMENDATIONS	46
V. LIMITATIONS.....	54
ENDNOTES.....	56

ACKNOWLEDGEMENTS

This landscape analysis would not have been possible without the support of many colleagues, consultants, and experts who willingly provided their time, energy and expertise in the development of this document. We expressly thank Zhang Zhiqiang, Xu Jiao, Hu Xiaoqi, and Wang Zhihong of the National Health Commission; colleagues from Chengdu Health Commission, Chengdu Women's Federation, and Chengdu CDC for their invaluable contributions. Lü Xiaohua, Ren Mengshan, Wang Youfa also offered expert guidance. Roland Kupka, Fiona Watson, Tim Lobstein, Chang Suying, and Alan Bi from UNICEF EAPRO and the China Country Office provided direction and vital inputs. Overall guidance, strategic direction and editorial support for developing this publication was

provided by Anuradha Narayan, Chief of Child Health and Development, UNICEF China. We recognize the efforts of this report's analyst and writer, Tina Phillips Johnson, as well as the editorial work of Astha Dalakoti.

Finally, we would like to express our gratitude to the various government partners whose continued cooperation has allowed us to document our experiences in this publication. Much of the information, data and conclusions expressed here has been collected in collaboration with a number of government agencies in Chengdu. We gratefully acknowledge their contribution.

LIST OF ABBREVIATIONS

- 4P:** Product, price, place, promotion (retail standards)
- CAGR:** Compound Annual Growth Rate
- CDC:** Center for Disease Control and Prevention
- CFC:** Child-Friendly City
- EAPRO:** East Asia and Pacific Regional Office (UNICEF)
- HFSS:** High fat, sugar, and salt
- MCH:** Maternal and child health
- MOE:** Ministry of Education
- NHC:** National Health Commission
- SSB:** Sugar-sweetened beverages
- UNESCO:** United Nations Educational, Scientific and Cultural Organization
- UNICEF:** United Nations Children’s Fund
- WASH:** Water, sanitation and hygiene
- WHO:** World Health Organization

GLOSSARY

4P RETAIL STANDARDS: Dr. Neil Borden, who was an advertising professor at Harvard University, popularized the idea of the marketing mix—and the concepts that would later be known primarily as the 4 Ps (Product, Price, Place and Promotion)—in the 1950s.

ADOLESCENT: Any person between ages 10 and 19.

ACTIVE TRANSPORT: Transport using physical activity, including walking and cycling. It contrasts with using a car from door to door (e.g. from home to school).

BMI: Body mass index is the ratio of weight to height (squared).

BMI= weight (in kilograms) / height (in metres)².

BMI-FOR-AGE: Adjusted for age, standardized for children. See OBESITY AND OVERWEIGHT.

COMPOUND ANNUAL GROWTH RATE: A measure of the rate of change which is independent of the starting point. The CAGR between two surveys is calculated from this formula: $((\text{Prevalence in year B} / \text{Prevalence in year A})^{1/(\text{B}-\text{A})} - 1) \times 100$.

CHENGDU'S TOP TEN HAPPINESS LIFE PROJECTS: Chengdu's Top Ten Happiness Life Projects (十大幸福工程), launched by the Chengdu Municipal Government in early 2021, involves people's livelihood, development, construction, governance, and other aspects of life. Chengdu's Child-Friendly City Initiative was integrated as one key component of the 10 Happiness Projects — the All-Ages Friendly Society Project.

CHILDHOOD OBESITY and CHILDHOOD OVERWEIGHT: See OBESITY AND OVERWEIGHT

CHILDREN: Those less than 18 years of age. However, please note that the WHO definitions for overweight and obesity apply to young people up to age 19 years.

CONFLICT OF INTEREST: The potential corruption of objectivity and independence as a result of one or more parties in a decision-making process having private, often financial, interests that would be affected by the decisions being made. For example, there might be a conflict of interest if advertising agencies were helping to write a code of conduct to protect children from TV advertising of junk food.

EATING BROADCAST: A popular social media phenomenon in which influencers broadcast themselves eating, sometimes huge quantities of foods.

EXCLUSIVE BREASTFEEDING: It means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines.

FOOD-BASED DIETARY GUIDELINES: Nationally-approved recommended patterns of food consumption for promoting health and protecting against diet-related chronic diseases. These may be presented as a diagram such as a wheel or a pyramid. They usually indicate which foods should be eaten and in what proportion to ensure good health. They may also indicate which foods should be eaten in limited amounts, if at all, and this can help to define which foods might be subjected to marketing restrictions. See NUTRIENT PROFILING.

FOOD SYSTEMS: The entire range of activities involved in the production, processing, marketing, consumption and disposal of goods that originates from agriculture, forestry or fisheries, including the inputs needed and the outputs generated at each of these steps. Food systems also involve the people and institutions that initiate or inhibit change in the system as well as the social, political, economic and technological environment in which these activities take place.

Three types of food systems may be defined according to the degree of globalization that has occurred: 'traditional', 'mixed', and 'modern', and each country will be in a unique position as their populations experience a transition from one system to another. In particular, as lower-income countries become more prosperous, they acquire some of the benefits along with some of the problems of industrialized nations. The nature of the food systems changes, and dietary patterns follow these changes, usually raising the risk of obesity. People in urban areas may have a wider variety of processed, energy dense foods available at lower costs. Traditional diets featuring grains, pulses and vegetables are giving way to packaged or prepared meals, snacks and beverages high in fat or sugar.

HEALTHY FOODS: Foods that are recommended in Food-Based Dietary Guidelines as contributing to the promotion of health and prevention of diet-related disease. (See also HFSS and UNHEALTHY FOODS)

HFSS: Foods that are high in saturated fat, trans-fat, sugar, or salt, sometimes

abbreviated to High Fat, Sugar, or Salt (HFSS).

INFANTS: Children less than 12 months of age.

NUTRIENT PROFILING: A method for defining which foods contribute to a healthy diet and which foods do not, and should be limited in consumption. Nutrient profiling schemes can help to categorize products for food labelling warnings, for health claims and for restricting marketing (e.g. restricting advertising to children). Many other uses of nutrient profiling can be developed (see <https://apps.who.int/iris/handle/10665/325201>).

OBESITY AND OVERWEIGHT: The classification criteria for defining degree of excess body weight. For adults, overweight and obesity are usually defined according to threshold BMI values, above which an individual is classified as overweight or obese. Children's weight and height fluctuate as they grow and do not increase at exactly the same rate, and therefore a single threshold value (such as BMI 25 kg/m² for adult overweight and BMI 30 kg/m² for adult obesity) is not appropriate. Age-specific thresholds to define overweight and obesity are required.

Growth standards and BMI reference charts are produced by the World Health Organization (WHO), the International Obesity Task Force, the US National Centre for Health Statistics, and by national authorities. Each one uses different criteria.

Overweight in children under 5 years

UNICEF and WHO recommend the use of weight-for-height (or length) to assess both wasting and overweight. Overweight is defined as above +2 SD (standard deviation) of the WHO Child Growth Standards median. Severe overweight (above +3 SD) is referred to as obesity. For this age group, a prevalence of overweight between 0% and 2.5% is considered 'very low', between 2.5% and 5% 'low', between 5% and 10% 'medium', between 10% and 15% 'high' and over 15% 'very high'.

Overweight in children aged 5-19 years

UNICEF and WHO recommend the use of BMI-for-age to assess overweight. Overweight is defined as above 1 SD (standard deviation) of the WHO Growth Reference median. A BMI-for-age above +2 SD is referred to as obesity. A BMI-for-age above +3 SD is referred to as severe obesity.

Note that the term 'overweight' sometimes refers to children above the relevant threshold including those who are above the higher threshold for obesity, but sometimes it refers only to children above the overweight threshold but not above the obesity threshold. 'Overweight' mentioned in this report refer to the former.

OBESOGENIC ENVIRONMENT: An environment that promotes the consumption of energy-dense, nutrient-poor foods and beverages, or encourages reduced physical activity or increased sedentary behaviour (sitting down or lying down). Obesogenic environments include food environments (e.g. which foods and beverages are available, affordable, accessible and promoted), economic environments (e.g. prices and costs

of foods, household incomes and social support), social environments (e.g. norms for eating, taking exercise, screen-watching, body shape), and physical environments (opportunities for physical activity, available active transport).

Exposure to obesogenic environments is increasing in low- and middle-income countries and across all socioeconomic groups. In some cultural settings, overweight is becoming the social norm, and this in turn reinforces the obesogenic environment.

PREGNANCY: RECOMMENDED WEIGHT GAIN: The recommended weight gain which can be expected during pregnancy without raising concerns of overweight or obesity. This is set by government agencies or health professionals' organizations.

As a guide, the USA Institute of Medicine recommends the following criteria, according to the mothers' BMI at the start of pregnancy:

- BMI at start of pregnancy <18.5kg/m² then healthy weight gain is up to 18kg.
- BMI at start of pregnancy 18.5-25kg/m² then healthy weight gain is up to 16kg.
- BMI at start of pregnancy 25-30kg/m² then healthy weight gain is up to 11.5kg.
- BMI at start of pregnancy >30kg/m² then healthy weight gain is up to 9kg.

PUFFED FOOD: A food category that is widely known in China. Puffed foods are highly processed food products comprising grains, cereals, fibres, or other mixtures, to which flavorings and colours are added, that are extruded under heat or pressure and may also be deep fried in hot oils. Examples include prawn crackers, puffed cheese curls and vegetable straws.

SPICY GLUTEN: Spicy gluten is an inexpensive, energy dense/low-nutrient snack widely available and very popular among school-age children. The Chinese government is attempting to ban or restrict sales of this snack near school campuses.

THREE REDUCTIONS/THREE PROMOTIONS CAMPAIGN: A nation-wide campaign initiated by the National Health Commission to encourage the public to build up a healthy lifestyle by 'reducing oil, salt, and sugar consumption; and promoting oral, weight, and bone health' (三减三健).

ULTRA-PROCESSED FOODS: Formulations containing little or no whole food that are also extremely palatable, highly energy-dense and low in essential nutrients. It comprises snacks, drinks, ready meals and other food products formulated mostly or entirely from substances extracted from foods or derived from food constituents.

For more information on the definition of ultra-processed foods, please refer to:

Monteiro CA, Cannon G, Levy RB, et al. Ultra-processed foods: what they are and how to identify them. *Public Health Nutr.* 2019;22(5):936-941. doi:10.1017/S1368980018003762

UNHEALTHY FOODS: Foods high in saturated fats, trans-fatty acids, free sugars or salt (i.e. energy-dense, nutrient-poor foods). 'Unhealthy foods' are those which, in national Food-Based Dietary Guidelines, are usually indicated as foods to limit or eat

less of, in order to reduce the risk of diet-related disease.

YOUNG CHILDREN: Those less than 5 years of age.

EXECUTIVE SUMMARY

Introduction

Chengdu City, one of the most populated cities in China, comprises both urban districts and rural counties and is moving towards becoming a Child-Friendly City with the core objectives of protecting children's rights and improving their well-being. To help tackle the increase in childhood overweight and obesity, the National Health Commission (NHC), and UNICEF selected Chengdu as a pilot city to carry out an Urban-based Nutrition Programme (UNP) to demonstrate city-level actions that could reduce the rapid acceleration of child overweight and obesity in China. This city-based model is part of China's commitment to meeting the targets set under the National Nutrition Plan.

A landscape analysis was undertaken in early 2021 as the first step of establishing this UNP model with the objective of identifying a set of priority actions to address the existing gaps in policies and programmes. It involved two surveys,¹ a literature review, interviews with key informants and a validation workshop. The work was a joint effort by the Chengdu Health Commission, Chengdu Centre for Disease Prevention and Control (CDC) and Chengdu Women's Federation - the lead agency of Chengdu's Child Friendly City (CFC) Taskforce.

¹ One is the Chengdu Landscape Analysis Survey, which includes stratified cluster sampling surveys of 2,725 students, 2,782 caregivers, and teachers and administrators from 22 primary, junior secondary, and senior secondary schools, which collected dietary intake and physical exercise activity data on school-age children. The other one is a small sample survey of 125 new mothers in the Pengzhou district of Chengdu on exclusive breastfeeding using the standard questionnaires and methodology recommended by WHO and UNICEF.

Key findings

1. Overweight and obesity is increasing rapidly among children in Chengdu.

- As age increases, the overweight and obesity rate among children also increases.
- The percentage of children with overweight is slightly higher in urban compared to rural areas, though the gap is gradually decreasing.
- Overweight is more common in boys than girls.

5 years^{II,III}



6-17 years^{IV}



Women of reproductive age



Obese^{III} 19%

Gestational diabetes^{III} 15%

Infants and children



Babies born with low birthweight <2.5kgs^{III} 4%

Babies born with high birthweight ≥ 4kgs^{III} 4%

Breastfeeding



Babies not exclusively breastfed^V 75%

2. Poor maternal nutrition and infant feeding practices contribute to the risk of becoming overweight among younger children.

- The increasing prevalence of obesity in women of reproductive age and the high incidence of diabetes during pregnancy need attention, as they are associated with childhood overweight at early ages.
- Despite 92 per cent of children being born with normal weight, the low prevalence of exclusive breastfeeding and the use of infant formula increases the risks that babies face of becoming overweight.

^{II} Obesity rate in 2019. The rate of child overweight is not monitored or reported in the Maternal and Child Health Monitoring Data of the Chengdu Health Commission.

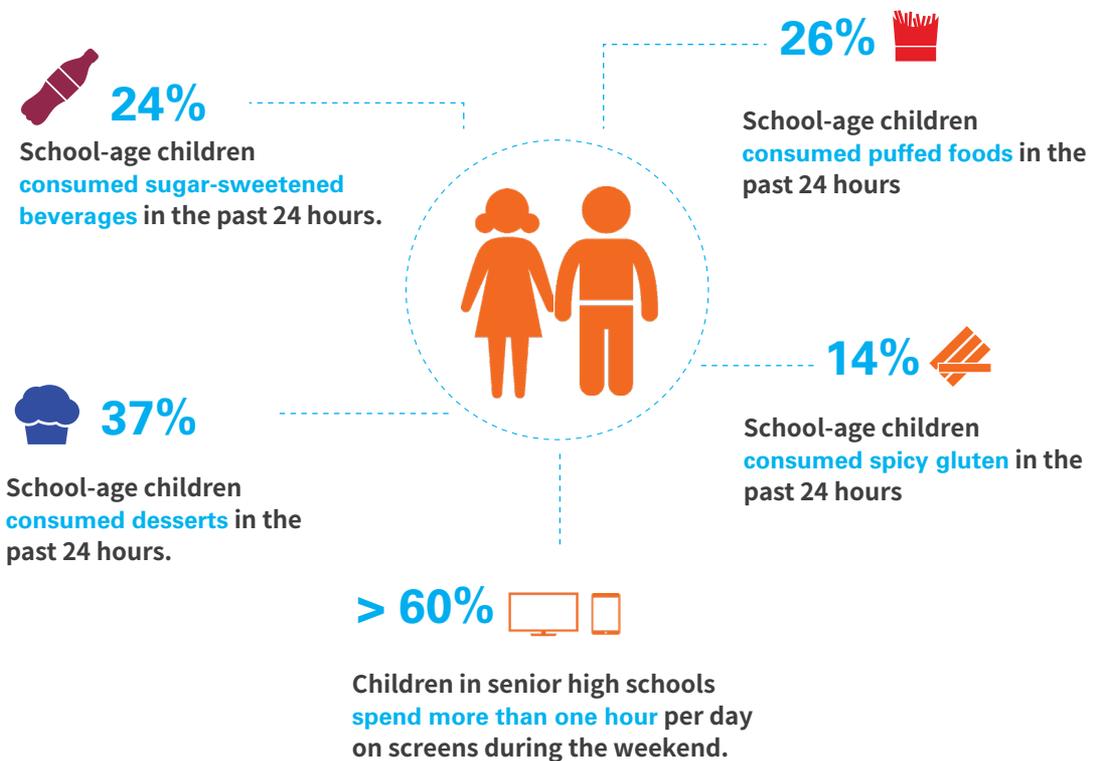
^{III} Maternal and Child Health (MCH) monitoring data in 2019, MCH department of Chengdu Health Commission.

^{IV} Overweight and obesity rate in 2020, reported through the student physical fitness monitoring data by Chengdu Centre for Disease Prevention and Control (CDC).

^V The small sample survey in the Pengzhou district of Chengdu revealed only a 25% exclusive breastfeeding rate for babies under 6 months.

3. Unhealthy diets, and long screen time exposure contribute to the increase in overweight among older children in Chengdu.

- More than half of children and adolescents eat snacks and unhealthy foods in the previous 24 hours.^{vi}
- Screen time for leisure among children and adolescents increases with age.



^{vi} According to the Chengdu Landscape Analysis Survey Jan 2021, 50.48% of children and adolescents claimed that in the past 24 hours they had eaten 1 or more of the 5 common foods asked about.

4.Children in Chengdu live in increasingly obesogenic environments.

An **obesogenic environment** is one that promotes the consumption of energy-dense, nutrient-poor foods and beverages,

or encourages reduced physical activity or increased sedentary behaviour (sitting down or lying down).



The **school environment** still allows students to consume snacks and unhealthy foods.

68%

schools have retail outlets within 200 metres selling unhealthy foods.

27%

schools have retail shops selling sugar-sweetened beverages on campus.

18%

schools have retail shops selling puffed foods on campus.



The **social environment**, especially social media and peer pressure, encourages unhealthy food consumption in children as they get older.

39%

adolescents (students in senior high schools) thought that peer opinion most influences their food choices.

26%

adolescents (students in senior high schools) thought that advertisements and 'eating broadcasts' were the biggest influence on their food choices.



The **home environment** and parents have a major influence on dietary habits.

43%

increase in desserts consumed by households between 2017-2019.^{vii}

37%

caregivers provided unhealthy food (e.g. desserts, SSBs and puffed foods) to their children in the past 24 hours.

50%

children in primary schools think that parental advice mostly influences their food choices.



The **food and lifestyle environment** in Chengdu contribute to overweight and obesity.

18%

total retail sales was in the catering industry in Chengdu, which is higher than the national average of 11%.^{vii}



Hot pot – with high levels of sodium and fat – is a common favourite for people of all ages in Chengdu and dining out is a popular activity.



Heavier babies are commonly perceived to be healthy, making it a challenge to change social norms around feeding and care of babies to be healthier.

^{vii} Chengdu Statistical Yearbook 2020.

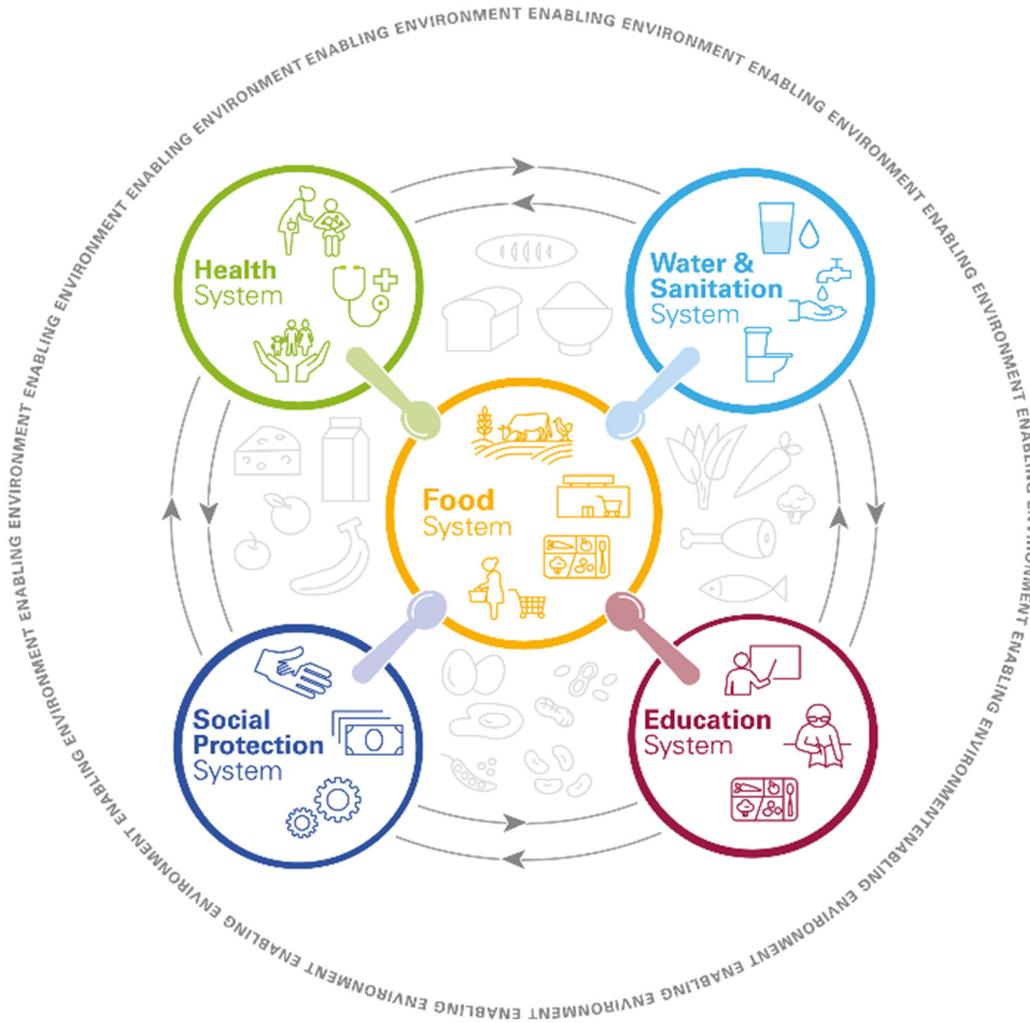
5. Policy and programme gaps on the prevention of childhood overweight remain.

Key gaps remain in the areas of governance, policies and interventions, regulations and enforcement, and monitoring and evaluation to address the increase in childhood overweight and obesity.

Policy and programme	Gaps
 <p>Governance</p>	<p>While there are many ambitious plans and strategies at the national level, regulations and enforcement guidelines are weak, and making it hard for local authorities to translate policy into realistic and actionable plans with sustainable results. At the city level, no single office or entity or member of the city council is responsible for coordinating actions related to the reduction of childhood overweight and obesity, and no multi-sectoral stakeholder cooperation mechanism has been set up.</p>
 <p>Policies and interventions</p>	<p>There are limited policies and programmes to promote healthy lifestyles or discourage producers of unhealthy food to market them to children, and a lack of concrete policies and programmes to promote and support active lifestyles and physical activity. Currently, there is no menu labelling system to inform customers with clear nutrition information in restaurants, and limited interventions to improve the nutrition literacy such as Front-of-Package labels to help families and drive changes to social norms and behaviours.</p>
 <p>Regulations and enforcement</p>	<p>There are no concrete government restrictions on fast-food stores near schools, or on unhealthy food advertisements on billboards, TV, social media, or public transportation. Regulations on the improvement of the food retail environment only focus on food retail sales in schools, but this is neither monitored nor reported. Currently, there is no implementation plan for the existing regulations on the school retail food environment.</p>
 <p>Monitoring, evaluation, and surveillance</p>	<p>There is currently no regular monitoring of the risk factors for childhood obesity, including promotion of highly processed foods and advertising that targets children and their caregivers, nor are there publicly accessible monitoring reports or data on the enforcement of related regulations.</p>

Priority actions

Chengdu can act to prevent overweight and obesity in children through adopting a multi-sectoral approach and with the leadership of the National Health Commission and UNICEF support.



Source: UNICEF (2019). *The State of the World's Children 2019. Children, Food and Nutrition: Growing well in a changing world.* UNICEF, New York.

SYSTEMS

PROPOSED RECOMMENDATIONS



Food System

- 1 Pilot healthy food retail environment interventions in selected supermarkets.
- 2 Restrict the out-of-home advertising of highly processed foods in settings where children gather.
- 3 Introduce labelling with nutrition information on menus of restaurants.
- 4 Develop incentives and fiscal structures to favor the sale of healthy foods.



Health System

- 1 Implement the infant and young child feeding counselling training package developed by the National Health Commission and UNICEF.
- 2 Introduce screening of preschool children for overweight and obesity.



Education System

- 1 Restrict and monitor the sale of high fat, sugar and salt, energy-dense, low-nutrient foods in and around school campuses.
- 2 Improve, standardize, monitor and report on school meal standards, physical activity requirements, and the student nutrition curriculum.



Social Protection System

- 1 Equip social workers with nutrition knowledge and fully utilize the Child-Friendly Space framework as a platform to educate and inform caregivers and increase their nutrition literacy.

Overarching actions

- 1 Establish a multi-sectoral taskforce on childhood obesity under the Child-Friendly City leadership framework.
- 2 Establish standard indicators and a system for monitoring and reporting on policies and regulations to address childhood overweight and obesity.
- 3 Disseminate monitoring and reporting data regularly among all relevant sectors and departments.
- 4 Improve public health communication about healthy food behaviours including through social media campaigns and media personalities where appropriate.

Supportive policies and actions at national level

- 1 Develop standard definitions for unhealthy foods.
- 2 Introduce Front-of-Package nutrition labelling on pre-packaged food and drink.
- 3 Restrict the marketing of highly processed foods to children through media platforms.



I. BACKGROUND

The rates of childhood overweight and obesity in China are rising, leading to health burdens that can affect all aspects of a child's life. Studies have found that obese children are likely to become obese adults¹ and suffer from chronic health conditions such as type-2 diabetes, hypertension and depression, with significant negative social and economic consequences. The prevention of childhood overweight and obesity is essential to ensuring that children survive, grow and develop to their full potential, and go on to lead healthy and productive lives.

Rising income, economic growth and urbanization in China have created an obesogenic environment that encourages weight gain. Thus, urban areas are disproportionately affected by childhood

overweight. Modern urban food systems allow for easy access to ultra-processed and fast foods that are inexpensive, energy-dense, and high in sugar, salt and unhealthy forms of fat, while the availability and affordability of healthy foods in cities have not necessarily improved. Ultra-processed and fast foods are quick, cheap and readily available for purchase by urban dwellers who are short on time or money. Pervasive marketing of unhealthy food to urban children exacerbates the problem, as many caregivers find it difficult to say no to their children, or they are not aware of the poor nutritional value of ultra-processed foods and their negative impacts. Furthermore, urban areas contain fewer outdoor spaces for children to exercise and play, which results in a more sedentary lifestyle. These conditions combine to create an



obesogenic environment leading to poor food habits that are hard to change as children age, so that a cycle of unhealthy eating continues through the generations.

The Chinese government has made notable efforts to address the problem of childhood overweight. At the national level, the NHC has issued the National Nutrition Plan (2017-2030) and the Healthy China Action Plan (2019-2030). Most significantly, the National Action Plan for Addressing Childhood Obesity, jointly issued by NHC, Ministry of Education (MOE), State Administration for Market Regulation, General Administration of Sport of China, Communist Youth League of China, and All-China Women's Federation, addresses childhood overweight and obesity on many levels. To date, NHC has focused

on its efforts at the individual level to encourage behaviour change, such as recommending increased physical activity and emphasizing nutrition education and personal food choice. UNICEF supports the government in examining the situation nationwide and exploring interventions that focus on improving the holistic food environment, not only those that target individual behaviours.

An Urban-based Nutrition Programme, a collaboration between NHC and UNICEF, will bring together evidence-based interventions and policies at the city level through the joint participation of all government sectors and society to create a positive food environment. Chengdu was selected by the NHC and UNICEF as a pilot city to implement this Urban-based Nutrition Programme,

through which Chengdu will demonstrate good practices under China's National Nutrition Plan. With a population of more than 20 million in southwestern China, and a robust restaurant industry, Chengdu was the first Chinese city to be designated as a City of Gastronomy by UNESCO. According to the Chengdu Statistical Yearbook 2020, the catering industry accounted for 17.7 per cent of total retail sales in 2019, much higher than the national average of 11.3 per cent. Chengdu is moving towards becoming a Child-Friendly City, which emphasizes a nourishing urban environment for children to grow and develop. Participation and cooperation are necessary to build a solid foundation for monitoring and evaluation for the prevention of childhood overweight

and obesity. Policies addressing health, education, water, sanitation and hygiene (WASH), and the food system must be harmonized across sectors and systematically consider how best to implement improvements to the food environment while avoiding harmful impacts to health. This programme will serve as a model to undertake similar initiatives in other cities in China and beyond.



©UNICEF/China/2021/Ma Yuyuan



II. LANDSCAPE ANALYSIS

A landscape analysis was the first step of the Urban-based Nutrition Programme in Chengdu to understand the status of childhood nutrition and the influencing factors that contribute to childhood overweight and obesity.

Methodology

The landscape analysis was conducted in early 2021 to identify and assess children's diets, food intake behaviour and the food environment in Chengdu. The objectives of this analysis are to:

- Identify gaps for policies and interventions through an assessment of children's diets and the food environment in the city;
- Collect data for the development of a holistic action plan to address childhood obesity for Chengdu;

- Mobilize multi-sectoral participation and cooperation; and
- Build a solid foundation for evidence documentation and monitoring and evaluation.

This landscape analysis includes stratified cluster sampling surveys of 2,725 students, 2,782 caregivers, and teachers and administrators from 22 primary, junior secondary, and senior secondary schools, which collected dietary intake and screen time data on

school-age children.² Results from the survey are utilized and incorporated into this landscape analysis. In addition, a small sample survey queried 125 new mothers in the Pengzhou district of Chengdu on breastfeeding practices. The analysis also comprises results from a three-day consultation and interview session led by the Chengdu Health Commission with 13 government departments, including Education, Sports, Water, Advertisement, Marketing Regulation, Rural Affairs, Commerce, Urban Management, Industry and Information, and Communication. This

data was supplemented by a desk review of existing studies, and data on childhood obesity from the Chengdu Center for Disease Control and Prevention. In addition, a validation workshop led by the Chengdu Health Commission and the local branch of the Women's Federation convened representatives and experts from 13 additional governmental agencies,³ civil societies, and academies to review key findings of the landscape analysis, and to discuss and prioritize potential actions.

Prevalence and Risk Factors of Childhood Overweight and Obesity⁴

The landscape analysis aims to understand the prevalence, trends, and driving factors of childhood overweight and obesity in Chengdu. Important factors that influence children's nutrition differ

by age. Therefore, the study divided children into two groups: those aged 0-5 (including infants, young children and preschoolers), and those aged 6 years and beyond (school age children). For





the 0-5 age group, the study collected data regarding maternal health, perinatal care, and infant and young child feeding practices. For the group 6 years and beyond, the landscape analysis survey considered personal eating behaviours; habits related to health such as and screen time; and broader factors like peer and family influence, retail and advertising settings, and the food environments at school and home.

1. Prevalence of Childhood Overweight and Obesity

China is home to one of the largest populations of overweight and obese children in the world, with more than 15 million obese children aged 2-19 reported in 2015.⁵ The prevalence of overweight and obesity among children aged 6-17 shows an alarming upward trend, more than doubling in five years, from 9.6 per cent in 2012 to 19 per cent in 2017.⁶ The same report showed a 10 per cent prevalence of overweight and obesity among children under 6 years in 2017. The prevalence of overweight and obese adults in China exceeds 50 per cent, and obese parents are more likely to have overweight and obese children.⁷

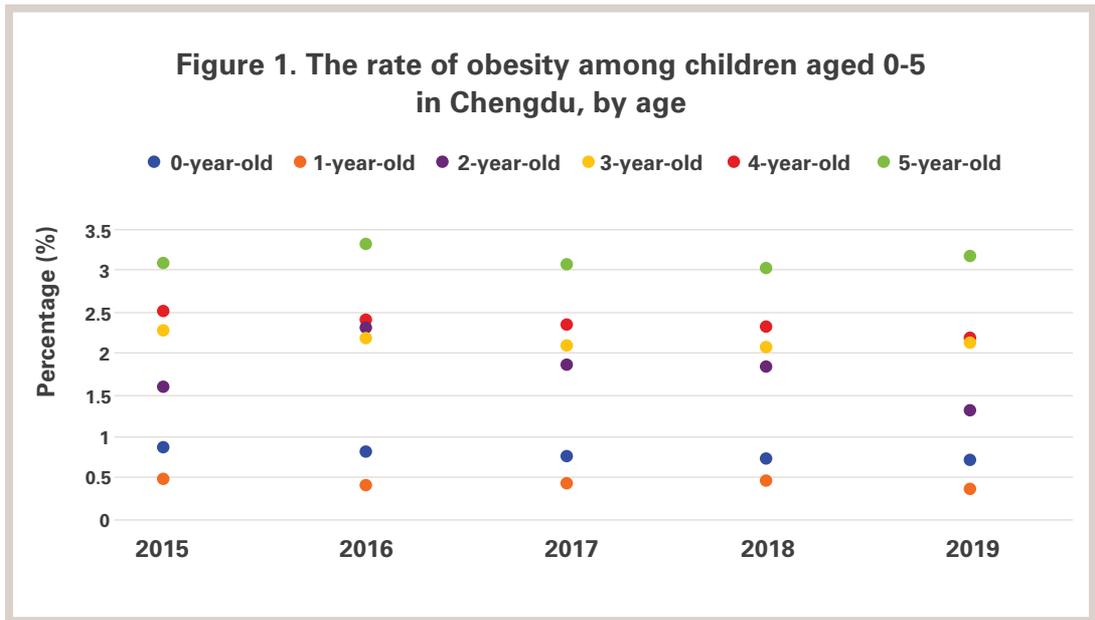
In Chengdu, as age increases, the obesity rate among children also increases (see Figure 1). There are more overweight children in urban areas than in rural areas, though the gap between rural and urban areas is gradually decreasing (see Figure 2). There is a higher prevalence of overweight among boys, as shown in Figure 3.

2. Risk factors for overweight and obesity in early childhood

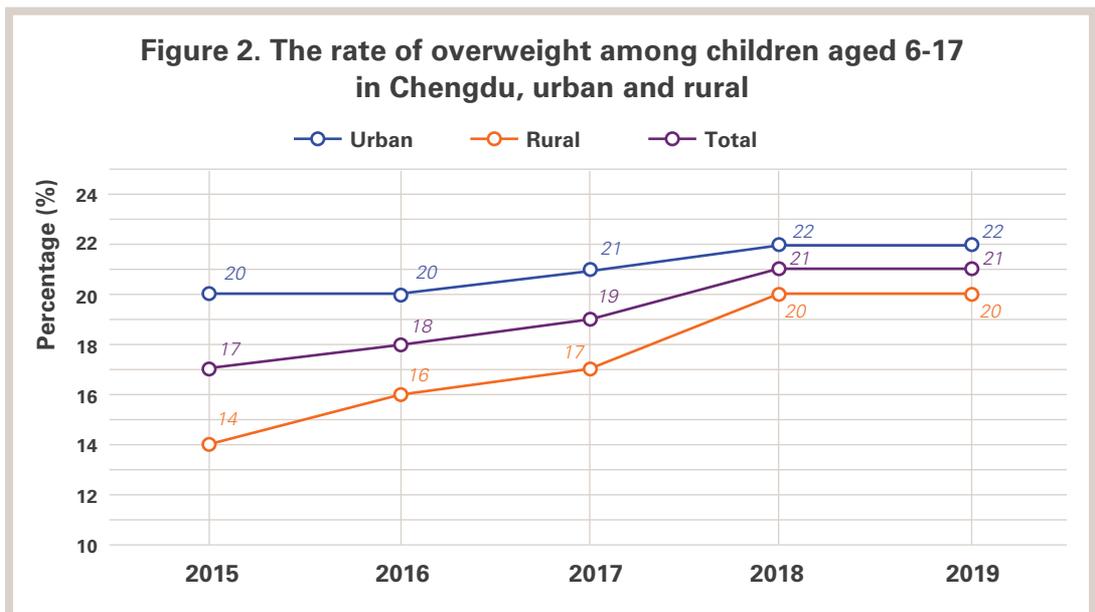
Influencing factors for childhood overweight and obesity begin even before birth and continue during infancy. These include mother's prenatal health status, infant birth weight, and infant and young child feeding practices. It is therefore important to address these concerns early on to prevent overweight later in life. Overweight women of reproductive age have higher risks of gestational diabetes and large infant size, and children of obese mothers are more likely to be overweight and obese themselves. Furthermore, maternal undernutrition and low birth weight lead to obesity and increase the risk factors of cardiovascular disease and diabetes later in life.⁸ In Chengdu, more than 18 per cent of women are overweight

or obese in their early pregnancies, and 3.79 per cent of their infants weigh over four kilograms (see Table 1).

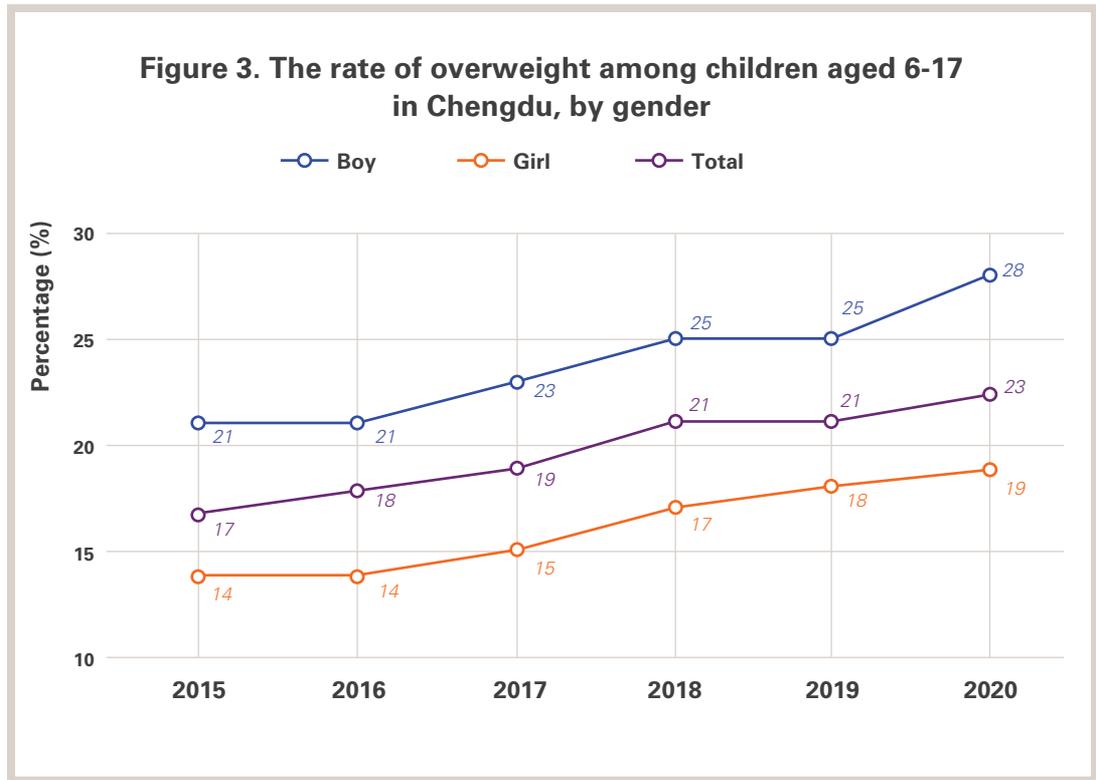
Large infant size creates additional health burdens for both the mother and the child, such as elevated risk for preeclampsia and protracted labour.



Source: Maternal and Child Health monitoring data, Chengdu MCH Hospital.



Source: Student physical fitness monitoring data, Chengdu CDC.



Source: Student physical fitness monitoring data, Chengdu CDC.

Table 1. Risk factors for overweight and obesity in children, Chengdu – prenatal and postnatal

Risk	Indicator	Data
Women of reproductive age with obesity	Detection rate of women of reproductive age with obesity	18.7% (2020)
High birth weight (≥ 4 kg)	Detection rate of high birth weight (≥ 4 kg)	3.8% (2020)
Low birth weight (< 2.5 kg)	Detection rate of low birth weight (< 2.5 kg)	3.9% (2020)
Gestational diabetes (GDM) or hyperglycaemia in pregnancy	Detection rate of GDM in pregnancy	15.2% (2020)

Source: Maternal and Child Health monitoring data, Chengdu MCH Department.

Table 2. Risk factors for overweight and obesity in children under five, Chengdu

Risk	Indicator	Data
Breastfeeding	Breastfeeding rate under six months	81.23%
Stunting in children under five	Prevalence of stunting in children under five	0.54%
Trends in stunting prevalence	CAGR of stunting prevalence	-5.12%
Minimum dietary diversity (%)	Proportion of children 6–23 months of age who receive foods from 4 or more food groups. (%)	41.5%

Source: Maternal and Child Health monitoring data, Chengdu MCH Department and Chengdu CDC.

Infant and young child feeding practices are important indicators of childhood nutrition. Exclusive breastfeeding for an infant's first six months of life correlates with lower levels of overweight and obesity. Table 2 shows that the breastfeeding rate for six months, reported by the local MCH monitoring system, is very high in Chengdu; however, this number is based on differing definitions of exclusive breastfeeding.⁹ A small sample survey in the Pengzhou district of Chengdu revealed only a 25 per cent exclusive breastfeeding rate for six months. Furthermore, the consumption of powdered milk¹⁰ is gradually increasing, potentially indicating reduced breastfeeding and contributing to negative health outcomes.¹¹ Complementary feeding is the process of providing foods other than breast milk to meet children's increasing nutritional requirements. Table 2 reveals that only 41.5 per cent of children in Chengdu had eaten at least five different categories of food within the previous 24 hours, which

means the proportion of children who received the minimum dietary diversity was low in Chengdu.

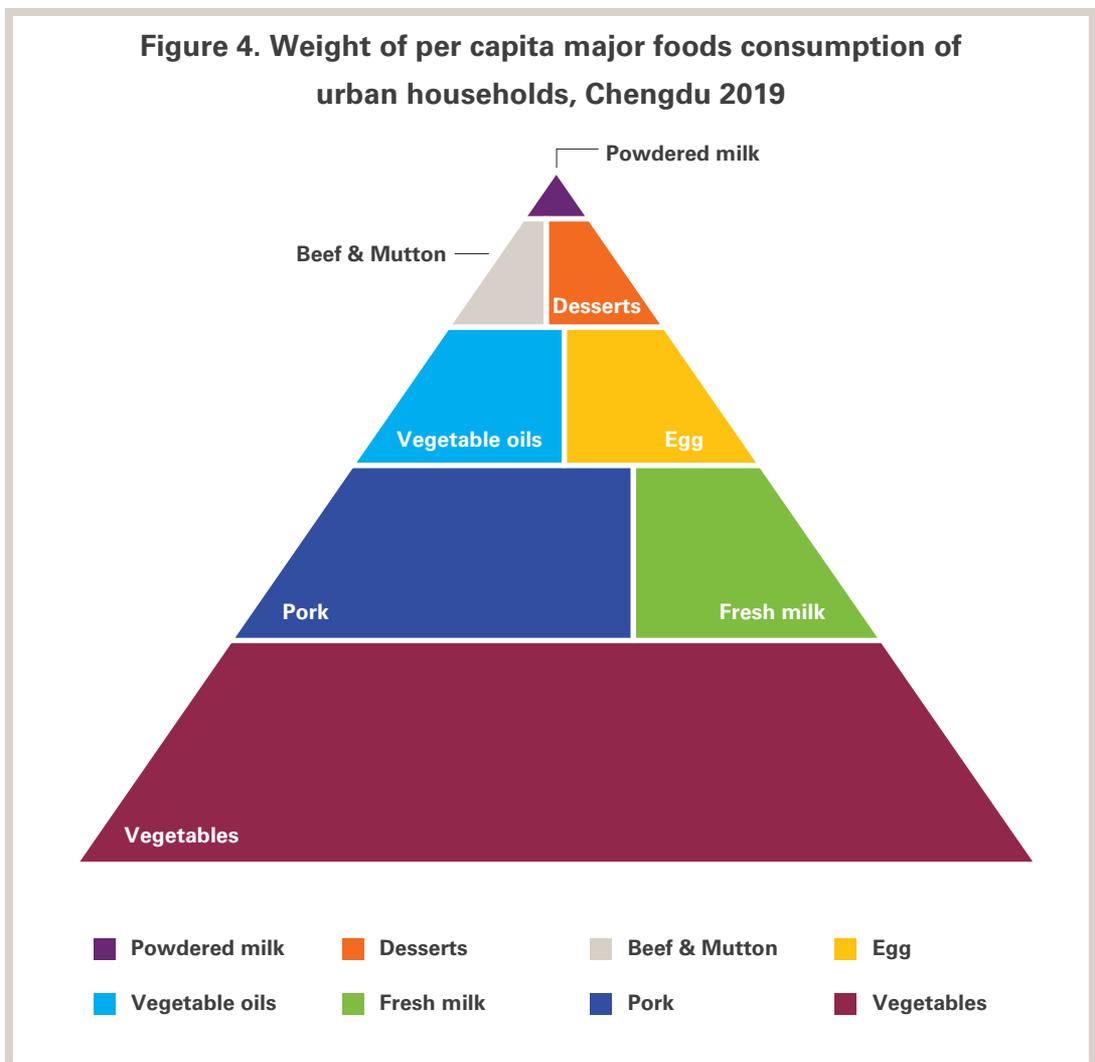
3. Risk factors for overweight and obesity among school-age children

Additional factors affect rates of overweight and obesity among school-age children, including personal food choices and preferences; food environments at school and in the family; and wider determinants such as advertising and the influence of peers, caregivers, and media personalities. Lifestyle and behavioural factors like decreased physical activity and increased screen time are partly responsible for rising rates of overweight and obesity. However, an obesogenic food landscape is largely to blame, and this includes the ready availability of inexpensive, ultra-processed, energy-dense, low-nutrient foods high in unhealthy forms of fat, sugar, and salt (HFSS).

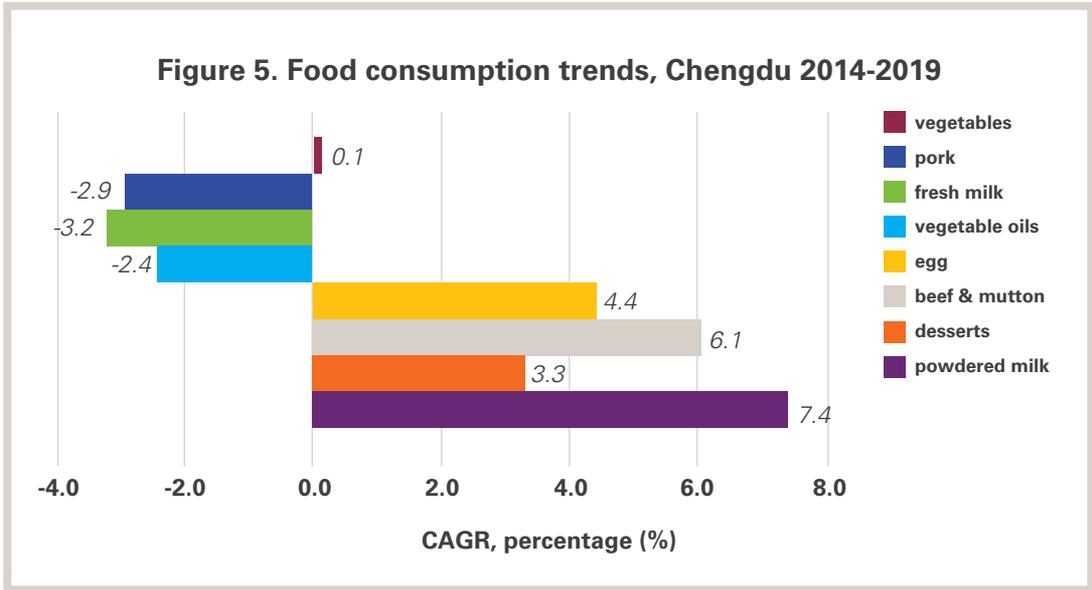
3.1 Dietary intake

Measurements of dietary intake consider the consumption patterns of major foods and unhealthy foods.¹² The main components of food intake by urban households in Chengdu are vegetables and pork (see Figure 4). There has not been much change in vegetable consumption between 2014 and 2019,

but during this period there has been an increase in the consumption of eggs, beef and mutton, powdered milk, and desserts (see Figure 5). Chengdu has also seen a drop in the consumption of fresh milk, pork, and vegetable oil. This is a mixed trend consisting of consumption of both healthy and unhealthy foods.



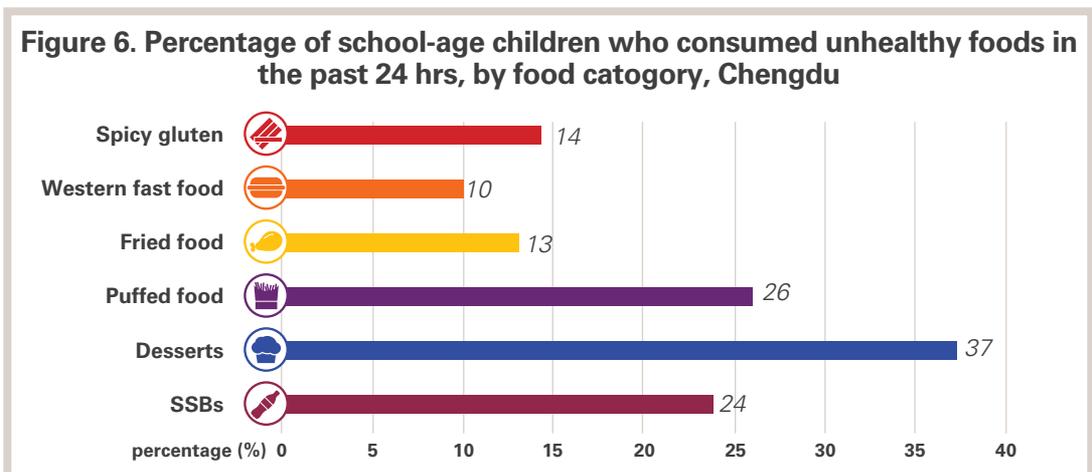
Source: Chengdu Statistical Yearbook, Chengdu Municipal Statistics Office, 2020. Please note that this data is for all residents of Chengdu. There is no data available for individual age groups. Consumption of staple foods (for example rice and wheat), fruits, legumes, and seafood is not reported in the Yearbook.



Source: Chengdu Statistical Yearbook, Chengdu Municipal Statistics Office, 2020. CAGR is compound annual growth rate. Data is for all residents of Chengdu. There is no data available for individual age groups.

In the unhealthy foods category, sugar-sweetened beverages, desserts, puffed foods, fried foods, western fast foods and spicy gluten are the most common snacks/foods consumed by children and adolescents. The Chengdu Landscape Analysis Survey asked respondents

whether they had consumed the 6 unhealthy foods in the previous 24-hour period. Survey responses showed that the most common unhealthy foods consumed were SSBs, desserts, and puffed foods(see Figure 6).



Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.

Sugar consumption, especially SSBs and desserts, is an important influencing factor for overweight and obesity, with a very clear increasing consumption trend. 24.2 per cent of school-age children indicated in the survey that they had consumed SSBs in the previous 24 hours, with older children consuming more SSBs (see Figure 7). Another notable point is that

boys consumed more SSBs than girls, particularly boys in senior high schools, while primary school girls had the lowest consumption rate. 36.6 per cent of school-age children reported eating desserts within the previous 24 hours, and girls consumed more desserts than boys (Figures 8).

Figure 7. Percentage of children and adolescents aged 6-19 who consumed SSBs in the past 24 hours, by age and gender, Chengdu

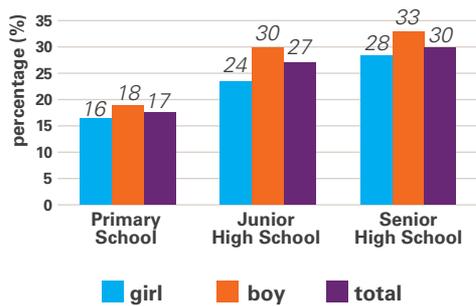


Figure 8. Percentage of children and adolescents aged 6-19 who consumed desserts in the past 24 hours, by age and gender, Chengdu

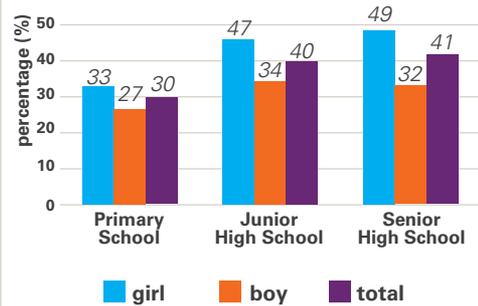


Figure 9. Percentage of children and adolescents aged 6-19 who consumed puffed food in the past 24 hours, by age and gender, Chengdu

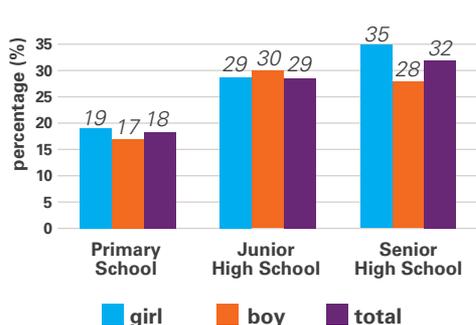


Figure 10. Percentage of children and adolescents aged 6-19 who consumed fried food in the past 24 hours, by age and gender, Chengdu

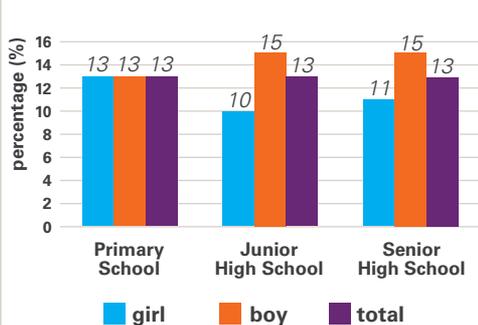


Figure 11. Percentage of children and adolescents aged 6-19 who consumed western fast food in the past 24 hours, by age and gender, Chengdu

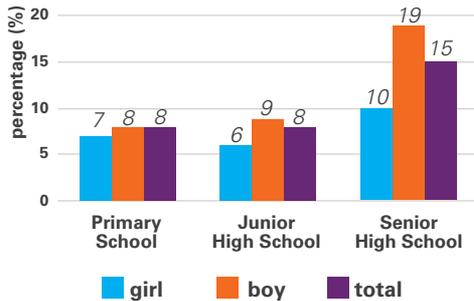
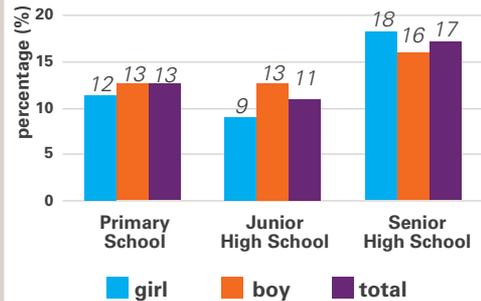


Figure 12. Percentage of children and adolescents aged 6-19 who consumed spicy gluten in the past 24 hours, by age and gender, Chengdu



Source for Figures 7-12: Chengdu Landscape Analysis Survey, Chengdu CDC, 2021.

While SSBs, desserts and puffed foods (25.7 per cent) were reported in the survey as the most commonly consumed unhealthy foods, fried foods and fast foods were also popular among children. These energy-dense, low-nutrient foods are correlated with childhood obesity and overweight.¹³ 12.8 per cent school-age children reported that they had consumed fried foods in the previous 24 hours, while 9.8 per cent of them reported eating western fast foods. Figures 10-11 reveal that boys consumed more fried foods and western fast foods than girls, except boys in primary school who consumed the same amount of fried foods as girls. The higher consumption of fried foods among boys was among those in higher grade level, while girls' fried food consumption decreases with age. A lower proportion of children in lower grade levels reported

eating western fast foods, and significant growth in consumption of western fast foods was revealed among children in higher grade levels while the proportion of boys was greater than girls. Moreover, 13.7 per cent school-age children quarter reported eating spicy gluten in the previous 24 hours. The results showed that in general, all unhealthy foods tended to increase in consumption with the age of children, but changes in consumption of fried foods were not significant.

In addition to a major drive of dietary intake, the food environments is critical for good nutrition and the prevention of childhood overweight and obesity. Children and adolescents eat most of their meals at school or at home, and thus these two settings provide the most important data on nutrition. More

Table 3. Risk factors for overweight and obesity among children aged 6-19 – Dietary intake and food environment in and around school

Risk	Indicator	Data
Accessibility of safe drinking water in school	% schools offering safe drinking water	100%
	% schools having retail shops	36.4%
School retail food environment	% schools offering SSB	27.3%
	% schools offering puffed food	18.2%
Retail food environment around schools	% schools with retails within 200 metres	68.2% (supermarket 45.5%; food store 59.1%; street kiosks 22.7%)

Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.

importantly, interventions in these two settings also provide the greatest opportunities for creating a healthy food environment for children and adolescents.

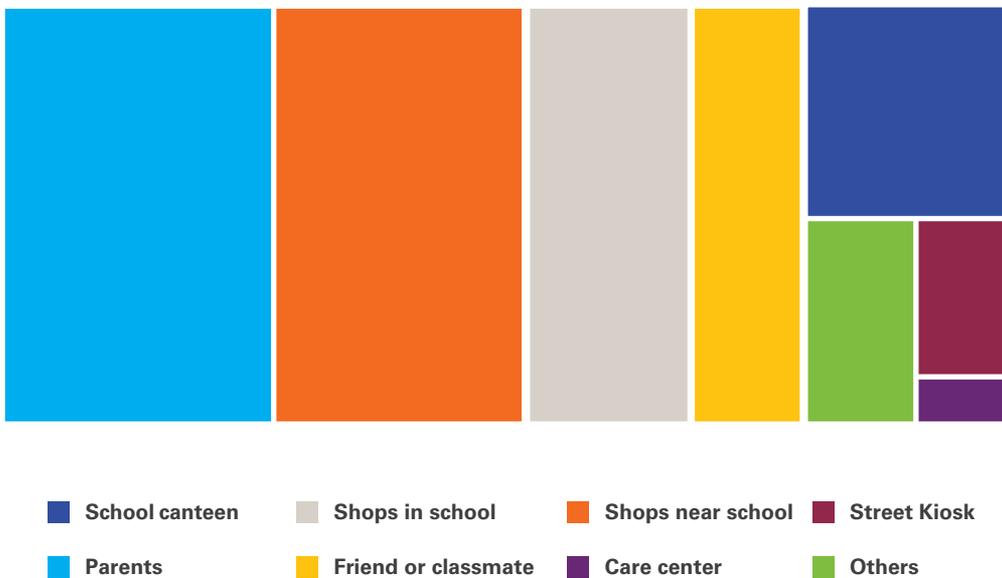
Students consume most of their snacks and unhealthy foods in and around school campuses. Nearly 70 per cent of schools have retail outlets within 200 meters of their campus, and these are a primary source of ultra-processed and fast foods. Although every school offers safe drinking water, SSBs are often available at these retail outlets. Furthermore, 36.4 per cent of schools have retail shops on campus. Among these shops, 75 per cent sell SSBs, and 50 per cent sell puffed foods, as shown in Table 3.

The home and family environment also impact dietary habits. Parents and caregivers are the main providers of snacks and SSBs, especially for younger children, as shown in Figure 13. More than one in three (36.6 per cent) caregivers provided unhealthy food to their kids in the past 24 hours. The top three popular foods they provided were desserts, SSBs, and puffed foods (see Figure 14).

While parents are influential in their children's food decisions, as children get older, they are more heavily influenced by peers, targeted marketing, and social media like eating broadcasts that contribute to poor nutrition among children and adolescents (see Figure 15).

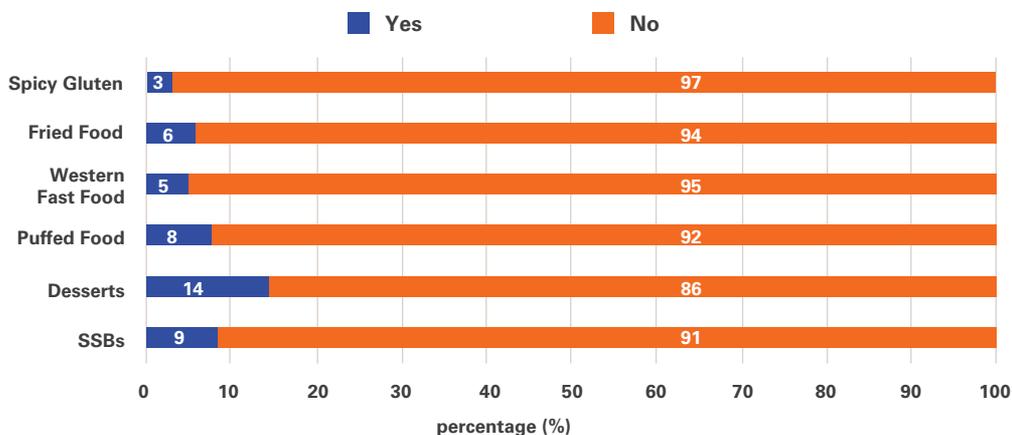


Figure 13. Source of snacks and beverages consumed by children



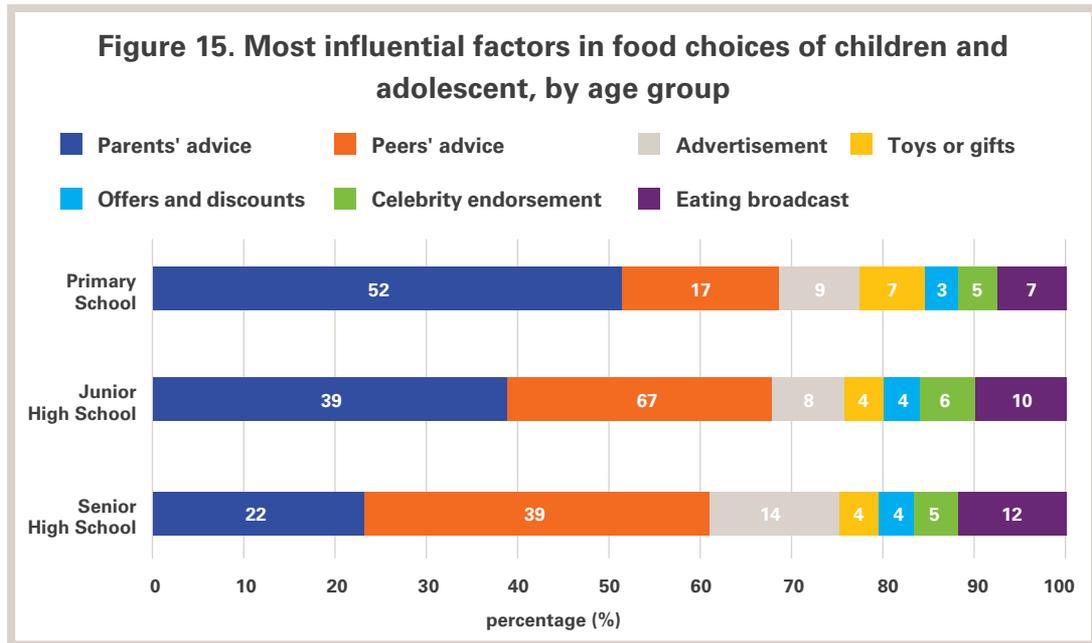
Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.

Figure 14. Percentage of parents who provided unhealthy food to their kids in the past 24 hrs



Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.





Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.

3.2 Screen time

Screen time¹⁴ is an additional risk factor for childhood overweight and obesity, as it is an indicator of a sedentary lifestyle that contributes to rates of overweight and obesity. Screen time among children and adolescents increases with age in Chengdu, but the majority of students of all ages keep screen time to a minimum (less than one hour per day) during the school week. On weekends, screen time in each age group increases significantly, and this trend becomes more significant with age. Fewer than 20 per cent of students in senior high schools spend more than one hour per day on screens during the school week, but on weekends more than half of children in junior and senior high schools spend more than one hour per day on screens (see Figures 18 and 19).

Unlike physical activity, there was no significant difference in screen time

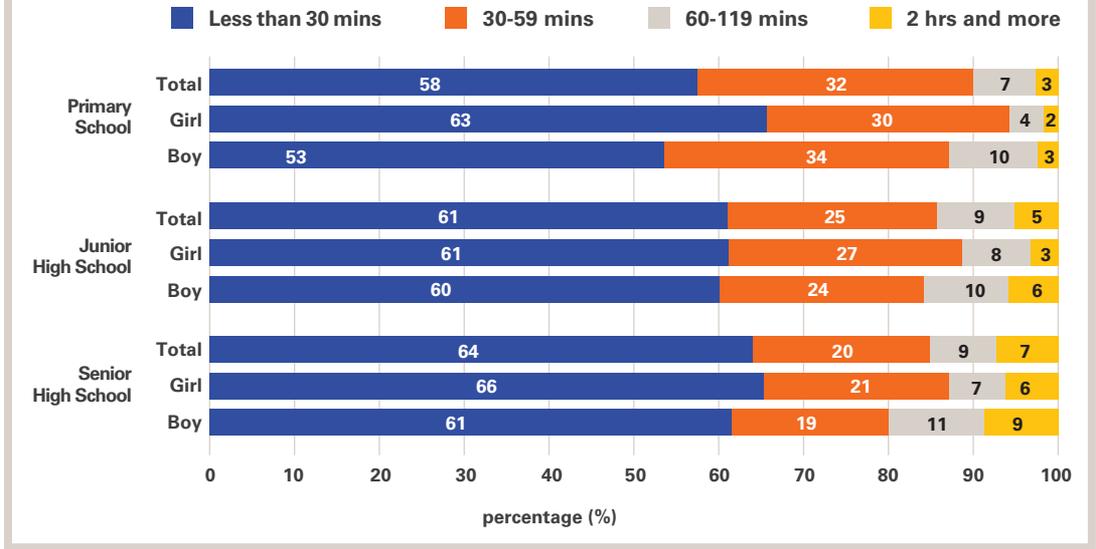
between students of different genders.

3.3 Lifestyle behaviours and social norms

Lifestyle behaviours and social norms in Chengdu may contribute to overweight and obesity. Chengdu is a famous food city known for Sichuan cuisine, which is generally spicy, oily and salty. Hot pot – with high levels of sodium and fat – is a common favourite for people of all ages, and dining out is a popular activity. The rapid growth of the food delivery industry has led people to cook even less at home. As it is difficult to control ingredients and portion size, restaurant food may be higher in sugar, salt, and unhealthy fats than home-cooked food. Furthermore, as in much of China, there is a common belief that heavier babies are healthier. This belief may encourage overfeeding of children, which leads to overweight¹⁶.

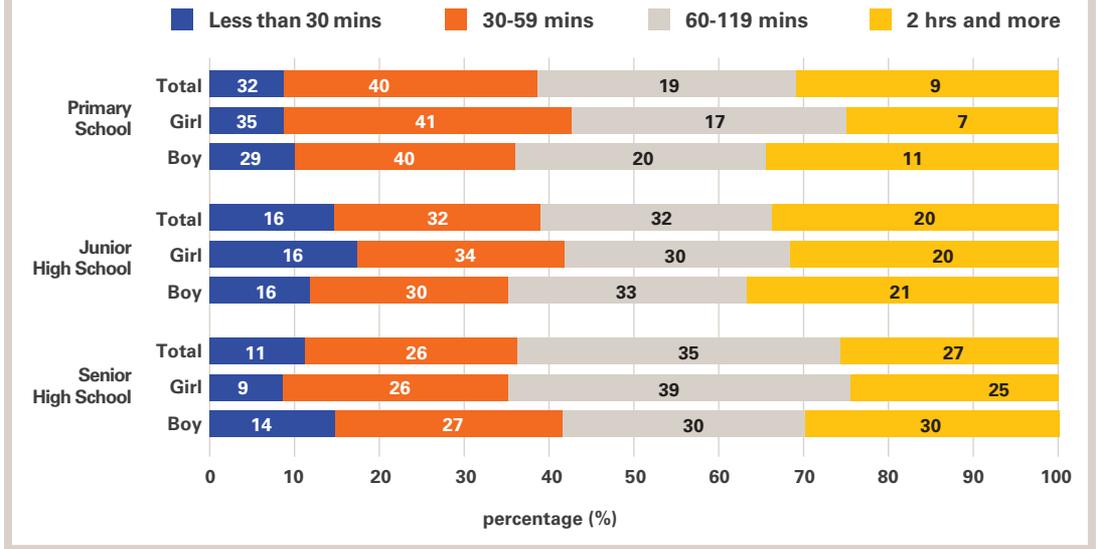


Figure 16. Percentage of different length of screen time excluding online courses, during school days, by grade



Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.

Figure 17. Percentage of different length of screen time excluding online courses, during the weekends, by grade



Source: Chengdu Landscape Analysis Survey, Chengdu CDC, Jan 2021.



Results of Key Informant Interviews

In addition to the survey data and policy analysis, interviews with representatives from several government departments were conducted to gather insights on preventing childhood overweight and obesity, including Education, Sports, Water, Advertisement, Marketing Regulation, Rural Affairs, Commerce, Urban Management, Industry and Information, and Communication. The key themes gathered from the interviews focused on four areas:

-Governance is an important facet in policy making and implementation. The government plays the most important role in crafting, implementing, and enforcing policies. If childhood obesity becomes the top priority of the local government's political agenda, they will invest significant resources and develop policies to deliver the results. An evidence-based governance model is key, with mechanisms in place to monitor and analyse policy outcomes. Multi-sectoral cooperation and data sharing are also critical because each governmental agency has an indispensable role in preventing childhood obesity. Furthermore, without enforcement of anti-obesity policies, regulations, and programmes, written policy and regulation become meaningless.

-Schools and families hold important responsibilities to improve child nutrition literacy and help children make healthy food choices. Schools and families often decide on children's main dietary choices;

thus teachers, peers, and caregivers are important influencers. Interventions should extend from schools to families, reinforcing parental involvement and family dietary behaviour and lifestyle changes. In this way, children will become key influencers for family dietary choices. Moreover, the local arms of the Women's Federation can intervene through community-based platforms that target caregivers such as grandparents.

-Marketing and industry restrictions put in place to curb childhood overweight and obesity are equally important as engaging industries to make positive changes. The food and catering industries are the main forces that shape the food environment. It is important to both regulate their malpractices through legislation and regulation, such as excessive targeted marketing, and to guide them to innovate their products to meet the nutritional needs of children.

-Social and behaviour change communication efforts are needed to create an atmosphere that promotes a healthy lifestyle and good nutrition. Behaviour change requires the collective effort of all sectors of society. Working closely with social media influencers, public health communication about healthy food behaviours can be improved.



III. POLICY ANALYSIS

Existing Policies

The government at all levels has recognized the problems associated with increasing rates of childhood overweight and obesity and has embraced efforts to mitigate rising rates. However, government actions generally focus on promoting efforts at the individual level, for example programmes to encourage balanced diets and physical exercise. There has been minimal attention to improving the obesogenic environment, especially with regard to issuing restrictions on the market behaviour of the advertising and food retail industries.

National Level. At the national level, efforts to reduce childhood overweight and obesity include broad multi-sectoral national strategies like Healthy China 2030, the National Nutrition Plan 2017-2030, the National Programme of Action for Child Development in China (2011-

2020), and the Outline for Building a Leading Sports Nation.

Several ministries have initiated relevant national policies, including the National Action Plan for Addressing Childhood Obesity 2020, which was jointly issued by NHC, MOE, State Administration for Market Regulation, General Administration of Sport, Communist Youth League, and All-China Women's Federation. To improve the school food environment, the national government issued the Regulations on the Management of School Food Safety, Nutrition and Health in 2019 (Order No. 45 of MOE, State Administration for Market Regulation, and NHC), which outlines clear restrictions on the establishment of commissaries and the sale of high-fat, high-sugar, and high-sodium foods in schools.



The national government has also promulgated national dietary and fitness guidelines, rules for nutritional labelling of packaged foods, and guidelines for healthy restaurants and menu labels.

Nationwide advocacy events have included National Nutrition Week, Student Nutrition Day, National Breastfeeding Week, and the Three Reductions/Three Promotions campaign.

Local Level – Chengdu. The prevention of childhood overweight and obesity is an important element in Chengdu’s plans for sustainable and healthy development. Several initiatives encourage the utilization of outdoor spaces and public sport facilities to create a healthy environment where it is easy and pleasant for citizens of all ages to be physically active. This includes the establishment of 16,930

km of walking paths around the city (the longest in the world), and measures to reduce automobile usage during high-pollution days, which encourage walking as part of an active lifestyle. Through UNICEF’s advocacy, efforts are underway to establish Chengdu as a Child-Friendly City, an important part of the 10 Happiness Projects included in the city’s 14th Five-Year Plan for urban development. The prevention and control of childhood overweight and obesity, especially by improving the food environment, is a key focus area of Chengdu’s Child-Friendly City Initiative.

The health system in Chengdu includes significant maternal and infant nutrition programming, such as routine prenatal and postnatal care with instruction in maternal nutrition and weight management of pregnant women, and screening for



©UNICEF/China/2021/Ma Yuyuan

gestational diabetes and other disorders. Antenatal classes are universally available in Chengdu's MCH facilities, and key messages on breastfeeding and complimentary feeding for new parents are delivered.

Chengdu is the first city to install a part-time deputy principal for school health that oversees nutrition education, advises on student canteen nutrition, and monitors student health status. In most cities, the health and education sectors work independently, but this innovative governance mechanism in Chengdu links the health and education sectors and provides an entry point for further nutrition interventions. The city of Chengdu has also adopted models to monitor students' nutritional status, developed standards for school meals and physical exercise, and created student nutrition curriculum piloted in eight schools.

Chengdu's food system has an abundance of accessible and affordable fresh ingredients, including vegetables, fruits, and meats. The municipal government provides subsidies to support the catering industry,¹⁷ and all ingredients are source traceable to ensure food safety.

Clean water is widely available, which has a positive impact on reducing the consumption of SSBs by young people, and the construction of a direct-drinking water system is in progress.

Programme and Policy Gaps

Despite these laudable efforts at the local and national levels to address childhood obesity and overweight, key gaps remain in the areas of governance, policies and interventions, regulations and enforcement, and monitoring and evaluation.

Governance. While there are many ambitious plans and strategies at the national level, regulations and enforcement guidelines are weak, making it hard for local authorities to translate policy into realistic and actionable plans with sustainable results. At the city level, no single office or entity or member of the city council is responsible for coordinating actions related to the reduction of childhood overweight and obesity, and no multi-sectoral stakeholder cooperation mechanism has been established.

Policies and interventions. Existing policies primarily focus on the individual

behavioural level, rather than on improving the food environment for children.

There are limited policies and programmes to promote healthy lifestyles or discourage producers of unhealthy food from marketing to children, and a lack of concrete policies and programmes to promote and support active lifestyles and physical activity. Currently, there are limited interventions to improve nutrition literacy, such as restaurant menu labelling or Front-of-Package labelling, to inform customers of nutrition information and drive changes to social norms and behaviours.

Regulations and enforcement. Regulations regarding the improvement of the food retail environment only focus on food sales in schools. This is neither regularly monitored nor reported, nor are there plans to enforce or monitor existing regulations regarding the school retail food environment. Beyond this, there are no concrete restrictions that limit



©UNICEF/China 2021/Ma Yuyuan



the operation of fast food outlets near schools, or efforts to limit marketing that targets children through advertisements on billboards, TV, social media, or public transportation.

Initiatives to drive behaviour change in the food industry and private sector are also lacking. While political statements recognize the relationship between the government and the private sector, robust restrictions on conflict of interest to prevent the food industry from influencing policy making are not present.

China is lagging behind global progress on regulating the marketing of breastmilk substitutes. The Administration Rule on the Marketing of Breastmilk Substitutes was abolished in 2017 and has not yet been re-legislated. The abolition of the Administration Rule means that there is

no legislation to comprehensively regulate the marketing of infant formula in China.

Monitoring, evaluation, and surveillance.

There is currently no regular monitoring of the risk factors of childhood obesity, including the promotion of highly processed foods and advertising that target children and their caregivers, nor are there publicly accessible monitoring reports or data on the enforcement of related regulations.



IV. CONCLUSIONS AND RECOMMENDATIONS

At present, Chengdu's child nutrition projects focus on school-age children with the objective to shift individual behaviours. While these initiatives can be useful, the more effective activities are those that can reduce the risk of overweight by creating an overall healthy food environment. Multi-sectoral, multi-system cooperation is needed to facilitate and monitor additional concrete policies and programmes to promote healthy diets, discourage producers of unhealthy foods from marketing to children, and support active lifestyles and physical activity.

Action Steps

Recommendations span the education, health, WASH, and food retail sectors, and include suggestions for governance structures and monitoring and evaluation frameworks. Actions at the national level are urgently needed to support and enhance the effectiveness of local policies and interventions. Any regulation at the national level, whether of unhealthy foods or breastmilk substitutes, will provide a basis for the establishment of additional innovative and operable local regulations and policies. With the leadership of the NHC and support from UNICEF, Chengdu can build its capacity to promote a healthy food environment and achieve results in reducing childhood overweight and obesity.

1. Education System

No.	Action	Immediate	Medium term	Long term
1	Improve nutrition standards by scaling up the “Healthy Canteens” pilot project and tying public procurement of food for school canteens to national dietary guidelines.	√		
2	Standardize student nutrition curriculum to improve nutrition literacy.		√	
3	Add sufficient daily physical activity to the school curriculum.	√		
4	Establish monitoring mechanisms for regular reporting of school nutrition and physical exercise standards.	√		
5	Support students to develop a personal dietary and weight management plan that is reviewed and signed by parents or caregivers where needed.		√	
6	Enforce and monitor existing restrictions on the sale of unhealthy foods on school campuses.	√		
7	Set up pilot healthy snack retail outlets within 200 metres of schools that use the 4P (product, price, place, promotion) retail standards ¹⁸ to keep unhealthy foods and SSBs out of sight, while placing healthy snacks and water at easy access points.		√	
8	Stock only healthy foods and water in vending machines on and near school campuses.		√	
9	Restrict the sale of HFSS, energy-dense, low-nutrient foods around school campuses.			√

2. Health System

No.	Action	Immediate	Medium term	Long term
1	Promote infant and young child feeding counselling to instruct parents and caregivers on exclusive breastfeeding and diversity in complementary foods.	✓		
2	Make Chengdu the pioneer in including breastfeeding and complimentary foods counselling in the basic maternal and child health care package, and in regularly monitoring the quality of counselling services.		✓	
3	Focus on capacity building for health workers and training of caregivers on healthy food choices to limit childhood overweight and obesity.	✓		
4	Carry out routine anthropometric measurement of preschool children.	✓		
5	Monitor, evaluate, and report data on breastfeeding, complimentary foods, and prenatal and postnatal care to inform related policies on system strengthening and capacity building at the city level and the national level.		✓	

3. WASH System

No.	Action	Immediate	Medium term	Long term
1	Consider accessibility to children when planning the distribution and expansion of direct-drinking water in communities.		✓	

4. Food System

No.	Action	Immediate	Medium term	Long term
1	Develop, implement, and enforce strict regulations on the out-of-home advertising and other marketing behaviour of highly processed foods in places where children congregate, such as schools, parks, bus stops, and on public transportation.		✓	

No.	Action	Immediate	Medium term	Long term
2	Pilot and scale up healthy and nutritious restaurants that include menu labelling and healthy food selections with reduced levels of salt, sugar and unhealthy fats.		√	
3	Make hotels more child-friendly by removing HFSS foods from hotel vending machines and minibars.	√		
4	Establish child-friendly supermarkets in areas that are more accessible to children and families and that regularly conduct child health impact assessments on retail items, use the 4P retail standards, reduce the sale of HFSS foods, develop clear and visible health signage and labelling, and ban the sale of SSBs.		√	
5	Provide incentives and fiscal structures, for example, implement tax rebates for retailers and manufacturers to favor healthy foods, downsize food portions, and print health tips and ingredient labels on packaging.			√
6	Enforce and monitor existing restrictions on the sale of unhealthy foods on school campuses.	√		

5. Health Communication

No.	Action	Immediate	Medium term	Long term
1	Community-based nutrition education. Improve public health communication about healthy food behaviours for caregivers, including parents and grandparents, so residents can identify HFSS foods, understand the hazards of unhealthy foods, and make healthy food choices, ultimately improving nutrition literacy.	√	√	√
2	Digital platform. Utilize social media and media personalities to disseminate key messages to adapt to the needs of adolescents and young people.	√	√	√

No.	Action	Immediate	Medium term	Long term
3	Out-of-home advertising. Broadcast public service announcements that advocate the adoption of a healthy lifestyle.	✓	✓	✓
4	Build linkages to city-wide events and sports activities. Advocate a healthy lifestyle and promote the reduction of consuming unhealthy foods	✓	✓	✓

6. Monitoring and Evaluation

No.	Action	Immediate	Medium term	Long term
1	Establish a complete system of indicators for monitoring and evaluation, with regular reporting and data sharing by all relevant sectors and departments.	✓		
2	Include standardized monitoring and reporting mechanisms in any nutrition intervention, as gaps in data prevent informed planning and implementation.		✓	
3	Regularly publish a blue book on childhood obesity for the public.			✓

7. Supportive actions at the national level

No.	Action	Immediate	Medium term	Long term
1	Develop a nutrient profiling model to draw a dividing line between healthy and unhealthy foods.	✓		
2	Formulate a Front-of-Package labelling system that follows the nutrient profile to inform children and their caregivers to make better food choices.		✓	
3	Formulate regulations on the marketing of unhealthy foods that follow the nutrient profile to reduce children's increasing exposure to unhealthy food marketing.			✓



爆款直降

盒马新疆面粉(小麦粉)
2.5kg

21.90

原木纸巾

12.00

15.00

五星米

核心产区

V. LIMITATIONS

Data quality and availability were a challenge, as most of the data in this report is from the Chengdu Landscape Analysis Survey that students completed independently. Children may embellish their behaviours or not accurately express themselves. In addition, the survey questionnaire included some lengthy questions that students of younger ages or with lower reading comprehension may have found difficult to understand, which may have led to inaccurate answers. There may be additional governmental agencies, whose roles we may have overlooked, missing from our interviews. There is not yet a good way to ensure that the data fully reflect the actual situation.

Maternal health is a good indicator of infant and child health. The lack of regular collection of data on many relevant indicators, including excessive maternal weight gain, maternal under-nutrition, diet and tobacco usage, demonstrates the importance of appropriate data collection

mechanisms. Other good indicators of infant and child health, such as data on exclusive breastfeeding under six months and duration of exclusive breastfeeding according to WHO guidelines, can also support improvements in programmes and policies. Currently, there is no existing data collection mechanism that tracks the changes in the diets and consumption patterns of children across multiple ages. For example, trend data related to the consumption of SSBs among children under five could be an early indicator for the assessing the risk of childhood overweight and obesity.

In full consideration of the concerns of certain government authorities, some of the survey data are not made public in this report and serve the purpose of internal reference only, but they did contribute to the development of the report's final policy recommendations.

ENDNOTES

1— Simmonds M, Llewellyn A, Owen CG, Woolacott N. Predicting adult obesity from childhood obesity: a systematic review and meta-analysis. *Obes Rev.* 2016 Feb;17(2):95-107. doi: 10.1111/obr.12334. Epub 2015 Dec 23. PMID: 26696565.

2— This survey utilized stratified cluster sampling. One school and one grade were selected in each of the 22 districts/counties in Chengdu (including the high-tech zone and Tianfu New District). To ensure continuity and representativeness, the schools were selected from among the city's comprehensive school hygiene monitoring sites and covered primary schools, junior high schools and senior high schools. Using the principles of cluster sampling, at least two classes in each school and grade were selected to guarantee that at least 100 people in each grade were surveyed. A total of 7 grades (4, 5, 6, 7, 8, 10, and 11) were given electronic questionnaire surveys which were uniformly carried out in the school computer room to maintain the quality of the questionnaires.

3— They are Chengdu Education Authority, Chengdu Sports Authority, Chengdu Water Authority, Chengdu Rural Affairs Authority, Chengdu Commerce Authority, Chengdu Information Technology and Industry Authority, Chengdu Marketing Regulation Authority, Chengdu Authority on Culture, broadcast and tourism, Chengdu Urban Administration Authority, Chengdu Municipal Party Committee Propaganda Department, Chengdu Big Data Center, Office of Letters & Visits, and University Games Organizing Committee. These local governmental agencies were also interviewed as key informants.

4— The data in this section is from the Landscape Analysis Survey and supplemented by data from desk review by the Chengdu Center for Disease Control and Prevention.

5— GBD Collaborative Network. Global Burden of Disease Study 2015 (GBD 2015), Obesity and Overweight Prevalence 1980–2015. Institute for Health Metrics and Evaluation (IHME); 2017.

6— Chinese Center for Disease Control and Prevention. Report on the State of the Nutrition and Noncommunicable Diseases in China. Chinese Center for Disease Control and Prevention; 2020.

7— Heidari-Beni M. Early Life Nutrition and Non Communicable Disease. In: Kelishadi R, ed. Primordial Prevention of Non Communicable Disease. Vol 1121. Advances in Experimental Medicine and Biology. Springer International Publishing; 2019:33-40. doi:10.1007/978-3-030-10616-4_4.

8— Chengdu Municipal Statistics Office. Chengdu Statistical Yearbook. Chinese Statistics Press; 2020.

9— The WHO defines exclusive breastfeeding as feeding infants no other liquids or foods except breastmilk. The data reported in Chengdu may not follow this strict definition.

10— Powdered milk refers to all powdered milk products, including but not limited to infant formula. The government does not monitor consumption of infant formula.

11— Chengdu Municipal Statistics Office. Chengdu Statistical Yearbook. China Statistics Press; 2020.

12— There is no standard definition of unhealthy food in China because a nutrient profiling system has not yet been implemented. The 2021 Chengdu Landscape Analysis Survey included 6 categories of foods which are unhealthy because they are high in salt and/or energy-dense due to high levels of sugar, and/or unhealthy fats.

13— Lobstein T, Jackson-Leach R, Moodie ML, et al. Child and adolescent obesity: part of a bigger picture. *The Lancet*. 2015;385(9986):2510-2520. doi:10.1016/S0140-6736(14)61746-3.

14— Screen time as measured here does not include the use of computers for school

work. It measures mobile phone, tablet and computer use during free time.

15— Patel SR, Hu FB. Short sleep duration and weight gain: a systematic review. *Obesity* (Silver Spring). 2008; 16:643-53.

16— Li B, Adab P, Cheng KK. The role of grandparents in childhood obesity in China - evidence from a mixed methods study. *Int J Behav Nutr Phys Act*. 2015;12(1):91. doi:10.1186/s12966-015-0251-z

17— Chengdu Municipal Commerce Commission, Chengdu Bureau of Finance. Detailed Rules for the Implementation of Chengdu City's Accelerated Service Industry Development Support Policy (Revised Draft). Commercial Affairs Document No. 150. 2017. <http://www.chengdu.gov.cn/cdswh/c130324/2019-07/12/5db6080c1bf54e42bbce3d9b04bec040/files/08ed0c08c9884c8c850da02a8fc2d0ed.pdf>

18— UNICEF advocates the retail industry to improve the retail food environment through perspectives of the 4Ps (product, price, place and promotion) by stocking more healthy products, rather than unhealthy ones; offering discounts on healthy products to lower their prices, and no discounts for unhealthy products; placing the healthy food on more visible shelves; and promoting a healthy lifestyle and diet in the retail environment.



携手为儿童