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The Cultural and Historical Legacy: How the Great Famine Shapes Grandparental Feeding Practices and Pediatric Obesity in China

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Abstract. Childhood obesity is rapidly emerging as one of China's most serious public health challenges. In recent decades, the prevalence of childhood obesity has increased rapidly, now affecting approximately 19.0% of school-aged children in China. This review explores the factors underlying this trend, focusing on a unique cultural dynamic: the heavy reliance on grandparents for childcare. Specifically, it investigates how the trauma of the Great Chinese Famine (1959-1961) shaped the caregiving behaviors of the older generation. For many grandparents who survived the famine, a chubby child is perceived as a sign of health, wealth, and proper care. Consequently, they often overfeed their grandchildren and restrict their physical activity. The review finds that being raised primarily by grandparents is a major independent risk factor for childhood obesity, leading to higher rates of early-onset health issues like hypertension. The paper also examines the CHIRPY DRAGON intervention model, which shows that public health programs can succeed only if they actively engage with grandparents and directly confrot these deep-rooted beliefs.

Keywords: Pediatric Obesity, Grandparental Caregiving, Great Chinese Famine, Cultural Paradigms

1. Introduction

Over the past four decades, life in China has changed dramatically. The country transitioned from combating infectious diseases and undernutrition to confronting a distinctly modern problem: chronic diseases linked to overeating [1]. The most visible sign of this shift is the rapid rise in childhood obesity. Currently, approximately 19.0% of Chinese children and adolescents are overweight or obese. This equates to nearly one in five children exceeding a dangerous health threshold [2]. If these trends do not change, nearly 50 million children could be affected by 2030, putting a massive strain on the healthcare system [3].

The basics of weight gain —eating too many calories and insufficient physical activity—are well understood. However, in China, the drivers of this trend are deeply linked to familial structures. Specifically, they are associated with the high proportion of children raised by grandparents [4]. As a result of parents working long hours to support their families or migrating from rural areas to cities for employment, grandparents have become the primary caregivers for millions of children in both

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urban and rural settings [5]. Empirical evidence indicates that grandparental care significantly influences child weight. Li et al. [4] found that being cared for by grandparents increases a child's risk of obesity by approximately 30%, largely attributable to distinct feeding habits and lifestyle choices.

Through a literature review, this paper examines how the trauma of the Great Chinese Famine (1959-1961) still affects the way grandparents' feeding practices today. Surviving that period left a lasting mark, creating a cultural belief that a chubby child is a healthy and well-cared-for child. This paper explores how this mindset makes standard nutritional interventions particularly challenging to implement. It also reviews recent programs that have proven effective by respectfully engaging with family dynamics. By understanding these historical and cultural roots, better and more family-centered strategies to address the obesity crisis can be formulated.

2. Literature review: grandparental caregiving and the historical legacy of famine

2.1. The role of grandparents in modern Chinese families

Family structures in China today differ markedly from those of the past. In cities, the legacy of the One-Child Policy created the well-known "4-2-1" family: four grandparents, two parents, and one child (often called a "Little Emperor") [6]. With both parents usually working full-time, the grandparents naturally assume responsibility for daily childcare. In rural areas, the situation differs but remains equally reliant on grandparents. Millions of working-age adults have moved to cities for jobs, leaving around 61 million "Left-Behind Children" (LBC) in the villages with their aging grandparents [7]. Across both urban and rural areas in China, grandparents play a primary role in raising the next generation.

Studies consistently show a strong link between this kind of caregiving and heavier kids. A child raised mostly by their grandparents is more than twice as likely to become overweight or obese compared to a child raised entirely by their parents [4]. This occurs for several common reasons. Grandparents are much more likely to provide children with high-calorie, processed foods and sugary drinks, often using snacks to reward good behavior or simply as an expression of affection [8]. In addition, children raised by grandparents tend to be less active. They average approximately 76 minutes of screen time a day, and they spend significantly less time engaging in outdoor play [7]. Often, this is largely because older caregivers physically cannot keep up with active play, or they worry excessively about the child being injured outside [5].

2.2. Historical reasons

To understand why grandparents overfeed their grandchildren, it is necessary to examine their historical experiences. Today's grandparents survived the Great Chinese Famine (1959-1961), a devastating period of starvation that cost tens of millions of lives [9]. Such an experience leaves deep psychological scars. For people who survived severe food shortages, having enough to eat is a constant background worry [9].

Because of this, the older generation naturally associates food with survival and success. To them, "fat means prosperity." Grandparents see a chubby child and feel reassured that the child is healthy and safe. Conversely, they often view a thin child as a sign of neglect or future illness [10]. This leads to considerable overfeeding. Grandparents will constantly push children to eat well beyond the point of being full [4]. This mindset also distorts the family's perception of weight. Many parents and grandparents simply do not recognize when a child is clinically overweight. They will

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view a heavy child and think they look "normal," while regarding a normal-weight child as "too skinny" [6]. This makes it particularly difficult for doctors to intervene, because the family does not even agree that there is a problem to address.

2.3. Biology and epigenetics

Childhood obesity is not just about habits and mindset—there might be a biological factor at play. Epigenetics research suggests that surviving a famine can alter gene expression, and these epigenetic changes can be transmitted to subsequent generations [11]. For example, grandfathers who experienced the famine as children are more likely to have grandsons with metabolic issues [11].

Basically, surviving starvation might program the body to become highly efficient at storing fat—a "thrifty phenotype." This is an advantageous survival trait in environments with severe food scarcity. However, when this genetic programming is introduced to modern China, where cheap, high-calorie food is widely available, it becomes counterproductive[12]. Children might be biologically predisposed to gain weight easily, which makes the grandparents' habit of overfeeding them even more dangerous [11].

2.4. Regional differences

Childhood obesity is not uniformly distributed across the country. There is a clear North-South divide. In northern provinces, obesity rates are markedly higher (between 18.8% and 23.6%) than in the south (15.0% to 18.0%) [12]. This disparity is largely attributable to traditional diets. Northern food relies heavily on wheat—for example, noodles and steamed buns—which are highly calorie-dense and often cooked with more oil and salt [12]. Southern diets are more rice-based and generally include more vegetables and lean meats [12]. Furthermore, the freezing winters in the north mean children spend considerably more time indoors, which further exacerbates the problem. Table 1 illustrates the regional prevalence of overweight and obesity in China, highlighting the differences between diets and climates.

Table 1. Regional overweight and obesity prevalence in China

Region	Estimated Prevalence	Dietary Staple	Climate & Lifestyle Impact
Northern	18.8% - 23.6%	Wheat and Flour	High Restriction (Cold Winters)
Southern	15.0% - 18.0%	Rice	Low Restriction (Mild Climate)
Western	18.1% - 28.6%	Mixed	Variable; rapid nutritional transition
Central	~20.0%	Mixed	Moderate Restriction; sedentary shifts

3. Case analysis: evaluating the CHIRPY DRAGON intervention

Because cultural beliefs are so deeply ingrained, standard school-based health programs in China often prove ineffective. They teach children about nutrition at school, but ignore dietary practices within the home environment. To explore an alternative approach, researchers launched the CHIRPY DRAGON intervention across 40 primary schools in Guangzhou [10].

What made CHIRPY DRAGON different was that it actively brought grandparents into the process. Instead of criticizing them or telling them they were raising their grandchildren incorrectly, the program engaged them respectfully. Through interactive workshops, they gently challenged the

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idea that "chubby equals healthy" [10]. The facilitators explained the long-term health risks of overfeeding and taught the grandparents practical ways to cook traditional meals with less oil, salt, and sugar [10]. At the same time, the schools enhanced their efforts by serving healthier cafeteria food and ensuring that every child received one full hour of physical activity during the school day [10].

The results were encouraging. After a year, the children in the program saw a statistically significant drop in their BMI z-scores compared to the control group (p=0.041) [10]. They ate better and were more active. Equally important, the program was highly cost-effective. The trial demonstrated that when public health initiatives successfully respect and educate grandparents, a significant difference in children's health can be made in a cost-effective manner [13]. Table 2 summarizes the behavioral and anthropometric impacts of caregiver type on children.

Table 2. Behavioral and anthropometric impacts of caregiver type on children

Metric	Primary Parental Care	Primary Grandparental Care
Risk of Overweight/Obesity	Baseline	Increased by 103% (OR = 2.03)
Unhealthy Snack Consumption	Baseline	+2.13 servings per week
Television Watching Time	105 minutes/day	120 minutes/day
Nutritional Knowledge Score	8.9 / 10	8.4 / 10

4. Discussion: clinical implications and economic trajectories

Childhood obesity is not merely a cosmetic concern; it is setting up a massive health crisis for the future [14]. When children carry too much weight, it disrupts their metabolism and impairs their natural fullness cues [15]. Doctors are now seeing children with health problems that typically affect older adults. For instance, over 3% of Chinese youth now have pediatric hypertension. Obese children are exhibiting signs of stiffened blood vessels and enlarged hearts—conditions typically observed in middle-aged patients [8]. A significant increase in fatty liver disease (NAFLD) and metabolic syndrome among overweight children has also been observed due to insulin resistance and excess visceral fat [2].

Managing these health conditions in affected children will entail substantial costs. Back in 2019, the economic cost of overweight and obesity in China (including medical bills and lost productivity) was already estimated at $259 billion [14]. If these trends remain unchecked, models predict that this cost will reach $766 billion by 2030, and an unbelievable $10.1 trillion by 2092 [14]. That kind of financial burden could genuinely cripple the healthcare system and slow down the whole economy. Finding ways to stop overfeeding in the home is not just good medicine anymore; it is an economic necessity.

5. Conclusion

This review sought to understand why so many children in China are becoming obese, focusing specifically on the role of grandparents. The research shows clearly that having grandparents as primary caregivers is a significant driver of the obesity epidemic. Grandparents tend to overfeed kids and keep them indoors, largely because their own experiences during the Great Chinese Famine taught them that food is scarce and being heavy indicates safety and health. This paper contributes to existing knowledge by demonstrating that childhood obesity in China is not merely a modern

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lifestyle issue; rather, it is deeply tied to historical trauma. It also highlights the possibility that famine survival might have even changed kids' biology, making them more prone to weight gain today.

However, this study has certain limitations. It relies predominantly on cross-sectional studies, which makes it hard to prove direct, long-term causes and effects. China is also huge and diverse, and what is true in a major city might not fully align with what is happening in a remote village. Future research needs to track families over several years to see exactly how these eating habits affect children as they grow up. Looking ahead, it would also be useful to explore the feasibility of using digital tools or applications to reach and educate older caregivers in rural areas.

Ultimately, solving China's pediatric obesity crisis means looking at the family as a whole. By understanding the historical fears that still influence family dinners today, more effective and empathetic programs can be designed to help the next generation grow up healthy.

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