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Addressing Obesity in Children and Adolescents in Putrajaya: Strategies for a Healthier Future

A Report

Galen Centre
for Health and Social Policy

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Executive summary

Obesity in children and adolescents in Putrajaya has reached alarming levels, reflecting broader national and global trends.

The prevalence of obesity among Malaysian adolescents grew from 5.4% in 2006 to 14.8% in 2019, with Putrajaya having higher rates.

This crisis is mainly driven by a dynamic interplay of factors including dietary patterns, reduced physical activity, urban environments, and socioeconomic influences.

However, as obesity increasingly garners recognition as a complex, multifactorial chronic disease, the additional confluence of genetic, epigenetic and hormonal factors should be emphasized as well.

These include dysregulated appetite and energy metabolism, early-life programming, and metabolic adaptation, in addition to the relentless exposure to obesogenic environments.

This is compounded by the fact that Malaysia's population is experiencing a "triple burden of malnutrition" where individuals experience overweight or obesity, undernutrition, and micronutrient deficiencies.

Without intervention, obesity-related conditions like Type 2 diabetes and cardiovascular diseases will place an unsustainable burden on individuals and health systems.

This paper provides evidence-based, expert-informed recommendations to address obesity in children and adolescents in Putrajaya, leveraging the location's urban planning, governance, and community structures.

Drawing from national and international best practices, the paper presents key treatment modalities and forward-looking strategies to combat the epidemic.

Situation

Putrajaya's rapid urbanisation and increasing reliance on processed and fast foods have contributed to a surge in obesity rates, particularly inflicting children and adolescents from lower income households.

High screen time, low physical activity, and cultural dietary norms exacerbate the issue. Food affordability and availability impact dietary choices, with households relying on calorie-dense, nutrient-poor foods.

Parents and caregivers play a crucial role in shaping children's health behaviours, but cultural norms and misinformation often lead to the under-recognition of obesity as a serious health concern. Stigma can deter families from seeking medical intervention.

Putrajaya's healthcare system is well-developed but lacks specialised multidisciplinary teams to manage obesity in paediatric populations.

Treatment modalities

The treatment of obesity in children and adolescents requires a structured, multi-tiered approach.

Interventions that focus on lifestyle modifications, including structured dietary changes, increased physical activity, and behavioural support, are the foundation of paediatric obesity management. However, interventions among adolescents may have been understated, as grouping them with the paediatric group may not be appropriate.

School- and community-based initiatives play a vital role in encouraging daily physical movement, fostering healthier habits, and promoting sustainable change.

Psychological interventions may be more important to support sustainable weight management by addressing the stigma, as well as the emotional and behavioural aspects of obesity.

Engaging parents and communities in understanding obesity and preparing them to manage it, is crucial to ensuring these lifestyle changes are reinforced and sustained in home environments.

Obesity management medications can also be used as an option and in support of lifestyle interventions, particularly in cases of severe obesity or obesity with related health complications.

Several medications are now approved for use in adolescents such as GLP-1 receptor agonists. These have shown effectiveness in adolescents with more serious obesity by regulating appetite and metabolic function. However, these drugs require careful monitoring due to potential side effects and their high cost can limit accessibility.

Despite the global medical consensus, obesity is not yet widely recognised as a disease in Malaysia, leading to persistent stigma, inadequate policy and financial support, including limited insurance coverage or reimbursement.

In severe cases, bariatric surgery may be considered for adolescents with a body mass index (BMI) of 35kg/m2 or higher who also have obesity-related comorbidities.

While bariatric surgery has demonstrated success in weight loss and comorbidity reduction, it requires lifelong follow-up and adherence to lifestyle modifications to ensure and sustain long-term benefits.

"I had obesity in childhood. Today, even if I can lose weight now, I have lost my childhood."

- anonymous patient

Policy gaps

In the clinical setting, children often present with severe obesity-related complications before receiving treatment.

Screening and structured follow-ups are needed to facilitate the early detection of overweight, obesity, and its associated metabolic complications in children and adolescents. Effective weight management requires multidisciplinary collaboration among healthcare professionals.

Insurance schemes currently do not cover anti-obesity medications, nor bariatric surgery, placing the financial burden for treatments on families who will need to pay out-of-pocket..

However, Malaysia lacks structured training programmes for obesity specialists, and existing healthcare teams lack appropriate coordination.

Despite numerous national strategies, limited enforcement and poor cross-ministerial coordination have led to fragmented interventions in school and community settings.

School canteen guidelines, physical activity programmes, and nutritional education efforts remain inconsistent and unmonitored.

However, local research, including trials and community-based interventions, demonstrated measurable improvements in children and adolescents' anthropomorphic measures and health outcomes with targeted, systematic, and structured interventions.

Recommendations

Integrated healthcare strategies

- Early identification of obesity and/or preclinical obesity risks in children and adolescents.
- Involvement of families in the treatment journey to address misconceptions, equip parents and caregivers with knowledge and skills to actively participate in their child's obesity management and create supportive home environments.
- Establishment and implementation of multidisciplinary team care to improve care integration, quality, comprehensiveness, and outcomes.
- Early intervention with appropriate treatment, including tailored lifestyle modifications and pharmacological treatments like GLP-1 agonists, to prevent disease progression.
- Investment in upskilling and training of family medicine specialists to diagnose and manage paediatric/ adolescent obesity in the primary care setting.
- Improvement in follow-up mechanisms for school health team referrals of at-risk youth or youths who are living with overweight/obesity.

Institutional collaborations, and partnerships

- Advocacy for a whole-of-society approach that addresses the complex contributors to obesity, engages families and communities, and promotes healthier environments.
- Multisectoral collaboration across government ministries, including Health, Education, Women, Family, and Community Development, and local authorities.
- Use of international treaties like the Convention on the Rights of the Child (CRC) to galvanise multi-stakeholder action, enhance accountability, and foster commitment.
- Investment in monitoring, evaluation, impact assessment, and cost-effectiveness studies of policies and programmes.
- Advancement of public-private partnerships to improve access, mobilise resources, facilitate community engagement, and drive the use of innovative solutions to address obesity in children and adolescents.

Community and behavioural engagement

- Exploration of novel ways to encourage behavioural change among children and adolescents, including gamification, and incentives, and learning from other initiatives.
- Development of interventions informed by local evidence, sociocultural context, and community stakeholder input.
- Incorporation of youth perspectives to craft obesity interventions that are feasible, relevant, empowering, and sustainable.

By leveraging Putrajaya's structured governance and urban infrastructure, Malaysia has a unique opportunity to pioneer effective, scalable interventions that can serve as a national model for combating obesity among children and adolescents.

Investing in the treatment of obesity among children and adolescents is critical due to its far-reaching health, social, and economic implications.

Early and effective treatment can prevent the progression of obesity-related comorbidities, including type 2 diabetes, cardiovascular disease, and psychological conditions, reducing burdens on health systems and improving individuals' quality of life, educational and social outcomes, and healthcare costs associated with managing chronic diseases in adulthood.

Introduction

The escalating prevalence of obesity among children and adolescents is an urgent public health priority demanding immediate attention and coordinated action. Obesity is a disease because it decreases the life expectancy and impairs the normal functioning of the body, has characteristic signs and symptoms, increases morbidity and can be caused by genetic factors[1,2].

According to the World Health Organization, obesity among children and adolescents has more than doubled from 8% in 1990 to 20% in 2022, affecting over 390 million individuals worldwide[3].

When obesity persists from youth into adulthood, it can lead to cascading adverse health impacts, including higher risk and earlier onset of Type 2 diabetes, hypertension, non-alcoholic fatty liver disease, obstructive sleep apnoea, and depression[4,5,6].

These issues reduce individuals' quality of life and strain health systems.

Malaysia leads Southeast Asia in obesity among children and adolescents. The national prevalence more than doubled from 5.4% in 2006 to 13.6% in 2024[7]. In 2022, approximately 14.3% of adolescents were obese and 16.2% were overweight[8].

The 2022 National Health and Morbidity Survey (NHMS) data classified 15.2% of Putrajaya's adolescent population as obese and 16% as overweight[9].

There is emerging scientific evidence that obesity established during childhood and adolescence is resilient to weight loss throughout life[20].

The implications of obesity among children and adolescents are profound and far-reaching, impacting not just immediate physical and psychological well-being, but also future health outcomes and financial burden.

As Malaysia's federal capital, a planned city and an administrative hub, Putrajaya's built environment, socioeconomic composition, and sociocultural dynamics create distinct opportunities and challenges to addressing this crisis.

The evidence-based recommendations are grounded in Putrajaya's urban context, demographic composition, and healthcare infrastructure while acknowledging the complex interplay between individual genetic architecture, hormonal profiles and behavioural patterns, with environmental factors, and systemic influences on obesity rates.

This paper hopes to catalyse effective responses to this pressing challenge, ultimately securing better health outcomes for Malaysia's future generations.

Problem statement

National health data shows a consistent upward trajectory in obesity rates.

Malaysia is on track to hit 41% of all adults with obesity, with BMI of more than 30 by the year 2035[24].

The rising tide of obesity in children and adolescents in Malaysia threatens to undermine population health, educational outcomes, and future workforce productivity.

Putrajaya exemplifies how rapid urbanisation and its challenges can shape health outcomes: changing lifestyles and dietary patterns, declining physical activity, and increased sedentary behaviour are fuelling youth obesity.

There is a looming non-communicable disease (NCD) crisis that threatens to significantly diminish the quality of life of future generations and inundate the healthcare system.

Putrajaya's obesity issue among children and adolescents presents both urgency and opportunity.

As a planned city with modern infrastructure and strong governance, it is primed to pioneer effective interventions.

Rising to this challenge will require swift and coordinated action to promote healthier lifestyle choices and tackle the social and structural drivers of obesity.

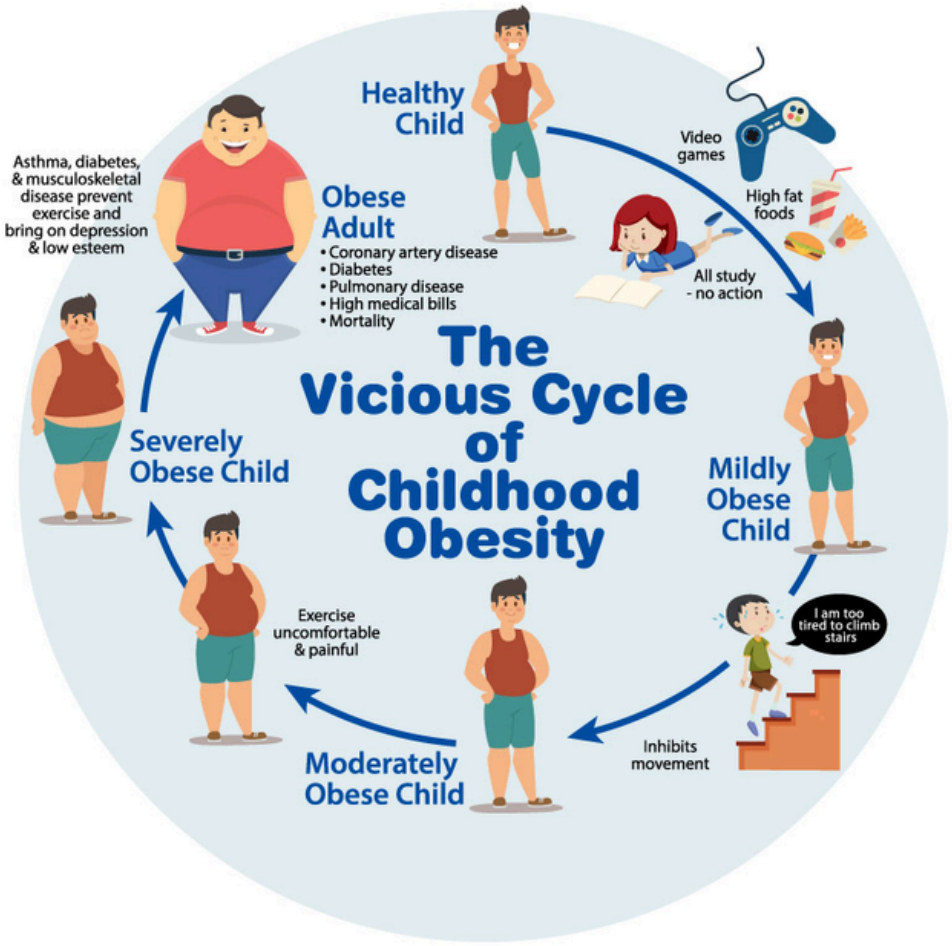


Figure 1: Obesity cycle

Source: Malaysian Paediatric Association.

The context and determinants of obesity in children and adolescents in Putrajaya

Demographic context

Since its establishment as Malaysia's federal capital in 1999, Putrajaya has experienced significant population growth.

In 2007, its population was estimated at 30,000; by 2010, this had more than doubled to 68,361. In 2020, Putrajaya had 109,202 residents, and 2023 estimates put the population at 119,200[10].

The gender distribution shows a slight female majority, with approximately 60,300 females and 58,900 males.

Putrajaya's average household size of about 3.8 people[11] is slightly lower than the national average household size, suggesting a trend towards smaller family units.

According to 2019 data, Putrajaya's media monthly gross household income was MYR 9,983 and the city's poverty rate was at a low 0.4%[12].

Although national data suggests that Malaysia will achieve aged nation status by 2040[13], Putrajaya's relatively young population goes against this trend.

The city's population is predominantly composed of families with children. Approximately 43.4% of the population is aged 19 or under, highlighting a significant presence of children and adolescents within households. This is approximately double the national population's 21.5%[14].

Reflecting its status as the nation's seat of government, a significant proportion of Putrajaya's working population comprises civil servants - of which 34.4% are overweight and 26.8% are obese[15].

Age Group	Malaysian Population (%), 2024	Putrajaya Population (%), 2023
0-9 years	3.96mil (11.6%)	26,600 (21.9%)
10-19 years	3.71mil (10.9%)	25,200 (21.2%)
20-29 years	4.59mil (13.5%)	10,400 (8.7%)
30-39 years	4.16mil (12.2%)	24,000 (20.1%)
40-49 years	4.02mil (11.8%)	22,400 (18.8%)
50-59 years	3.57mil (10.5%)	6,600 (5.5%)
60-69 years	2.45mil (7.2%)	3,000 (2.5%)
70-79 years	1.3mil (3.8%)	900 (0.7%)
80+ years	0.51mil (1.5%)	200 (0.1%)

Table 1: Comparative detailed age breakdown – Malaysia vs. Putrajaya

Epidemiological context

Overweight and obesity are rising among Putrajaya's children and adolescents.

Recent studies show that the prevalence of overweight children under five years old in Putrajaya is approximately 3.0%[16] , while the prevalences among adolescents are reported at 15.2% for obesity and 16% for overweight[17] .

This is compounded by the documented double burden of malnutrition: in 2019, 12.5% of Putrajaya's children under 5 years of age were stunted[18].

Stunting, which results from chronic undernutrition during a child's critical growth periods, is a major risk factor for overweight and obesity.

Stunted children may have altered energy metabolism, predisposing them to weight gain when exposed to energy-dense diets as they age[19], with significant health implications.

Children who are stunted or overweight are at higher risk of developing NCDs, including Type 2 diabetes and cardiovascular disease[18].

Socioeconomic determinants

Putrajaya's socioeconomic landscape reveals a complex relationship between income and food access, significantly impacting obesity among children and adolescents.

Economic factors heavily influence food choices, with nutritious foods often costing more than processed food. Lower-income households face barriers to healthy eating due to limited access to affordable fresh produce, relying instead on cheaper, calorie-dense food from convenience stores and fast-food outlets.

Socioeconomic disparities further complicate food accessibility and choices. While higher-income families can afford better nutrition, lower-income households often prioritise quantity over quality due to financial constraints[20].

The higher cost and seasonal fluctuations causing inconsistent supply and pricing of fresh produce make it difficult for these families to maintain a healthy diet.

Aggressive marketing of processed foods exacerbates the issue, targeting young consumers and promoting unhealthy eating habits that contribute to long-term weight gain and health risks.

Interestingly, **higher income doesn't always lead to better nutrition.**

In urban areas like Putrajaya, wealthier households may consume more energy-dense processed foods due to greater financial freedom and the variety of options available.

Sociocultural influences

Social and cultural dynamics, values, and family structures in Putrajaya's population significantly influence management of obesity in children and adolescents.

The local culture and its emphasis on communal dining, generous hospitality, and food as central to social gatherings and celebrations can create unique challenges.

Traditional local cuisine, which tends to be rich in coconut milk, oil, and carbohydrate-focused staples, often conflicts with contemporary nutritional guidelines.

The influence of extended family, particularly grandparents who commonly serve as primary caregivers, further complicates this issue.

In Asian society, where respect for elders is important and food is viewed as an expression of love and care, grandparents often lean into feeding as a form of affection.

Family members may not recognise obesity as a health issue, leading to a lack of motivation for lifestyle changes or seeking medical help.

This cultural practice of food-based nurturing, combined with the deep emotional bonds between grandparents and grandchildren, can create resistance to promoting and implementing healthier eating habits[21] .

More broadly, societal perceptions that normalise obesity in both adults and children create an environment where unhealthy eating and sedentary behaviours are accepted, reducing the urgency for intervention[22].

Health-seeking behaviour of parents, children, and adolescents

Health-seeking behaviour refers to the actions of either the children, adolescents, or their caregivers, particularly parents, in addressing weight-related issues, including seeking medical advice, improving diets, increasing physical activity, and reducing sedentary behaviour.

Parents play a central role in shaping children's health behaviours, controlling dietary habits, activity levels, and healthcare access, especially in early childhood. As role models, parents' health-seeking behaviours significantly influence their children.

Involving parents in children's obesity interventions can have positive ripple effects on their health and well-being while fostering healthier habits at the family level.

However, many parents struggle to recognise the severity of their child's obesity due to cultural norms, stigma, or knowledge gaps[23]. The absence of visible health problems associated with childhood obesity can also result in parents dismissing the need for treatment, perpetuating a cycle of inaction and poorer health outcomes[24].

Even when aware, barriers like time constraints, work commitments, and reliance on affordable but unhealthy food options hinder efforts to create healthier home environments[25].

In Putrajaya, where the adult overweight and obesity rate is 63.3%[26], parents often face challenges that affect their ability to model and enforce healthy behaviours.

Children's health-seeking behaviours hinge on early exposure to healthy lifestyles, including nutritious foods and high levels of physical activity.

Meanwhile, adolescents are more independent and are more motivated by appearance, peer and/or social influences to make healthier choices.

However, older children and adolescents agency and autonomy remain unharnessed in the Malaysian context, as their perspectives have not yet been integrated into the discourse on tackling youth obesity[27].

School and healthcare-based education can empower children, especially older ones, to make healthier choices.

Dietary patterns and the food environment

Children and adolescents' dietary patterns are strongly shaped by the food environment or the contexts in which people access food and decide what to eat[28].

Over the past two decades, Malaysia has seen a substantial increase in fast food establishments and convenience stores that offer a diverse array of ultra-processed, calorie-dense, and affordable food and sugar-sweetened beverages (SSBs).

The number of fast-food restaurants in Malaysia increased from 1,621 in 2010 to 2,597 in 2015[30], reflecting increased consumer demand.

Recent research suggests that up to 87% of Malaysians regularly consume fast food[31] and that urban teenagers consume fast food an average of 2.3 times per week, with higher frequencies in planned cities like Putrajaya[32].

The consumption of ultra-processed food and SSBs is directly associated with excess weight gain and increased odds of obesity .

Food and beverage prices influence children and adolescents' dietary habits and behaviours.

The NHMS 2024 provides interesting insight in unhealthy dietary habits and nutritional status[151]. Malaysian adolescents have a diet comprising predominantly carbohydrates (49.3%), followed by fat (36.2%), and protein (14.6%).

The fat intake is in excess of recommended ratio of macronutrients towards total energy intake (TEI): carbohydrates 50 – 65%, fat 25 – 30% TEI, and protein 10 – 20% TEI [152]. Even though mean energy intake were within the recommended ranges, adolescents reported very low rates of adequate fruits, vegetables and legume intake.

There are also remarkably high rates of having supper (34.7% adolescents reported at least once/week and 7.4% daily).

Putrajaya's Consumer Price Index (CPI) for food and beverages has risen from 140 in January 2020 to 175.7 in November 2024, indicating an increase in prices over time[34].

Despite this increase, fast food meals have remained relatively affordable. For instance, on average, a combo meal at a typical fast food chain costs around RM20.00, making it an option for many families. Students are also faced with cheap ultra-processed food options in school canteens.

Physical activity and sedentary behaviour

Physical activity plays a crucial role in mitigating obesity among children and adolescents.

This is especially important as research overwhelmingly points to physical activity being associated with reduced weight and adiposity[35]. However, levels among youths in Putrajaya fall significantly below global standards.

According to the 2022 National Health and Morbidity Survey (NHMS), **only 27.3% of Putrajaya's adolescents meet the World Health Organization's recommendation of 60 minutes of daily moderate-to-vigorous physical activity[8].**

Malaysian adolescents spend an average of 7.5 hours daily on screen-based activities, with rates higher in administrative regions like Putrajaya, where screen time often replaces active play[37].

These behaviours contribute to reduced energy expenditure, increased sedentariness, and increased obesity risk.

Healthcare infrastructure and workforce

Although Putrajaya has a well-established healthcare infrastructure and workforce, there remain gaps that hinder its ability to comprehensively address the clinical and treatment aspects of obesity among its young population.

Putrajaya is served by two government hospitals, including Hospital Putrajaya, a key tertiary care centre that provides specialised services, including paediatric care and obesity management programmes, to children and adolescents[68].

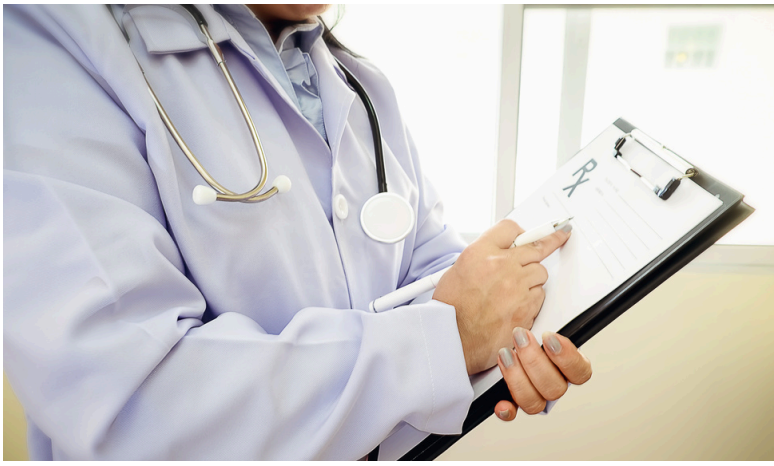
Putrajaya's four government health clinics (*klinik kesihatan*) provide primary healthcare services, including child and adolescent health[69].

These clinics are well-positioned to identify and manage obesity in children and adolescents through routine screenings and assessments[70], making them an ideal setting to implement personalised, family-centric lifestyle interventions, including dietary modifications and physical activity plans[71].

A lack of access to supportive resources and multidisciplinary teams in primary care makes it difficult for care teams to provide comprehensive treatment and support[72].

The availability of paediatricians and paediatric endocrinologists in hospitals is critical for managing obesity-related health issues among children.

Limited investment in continuing education and poor incorporation of evidence-based guidelines and standardised protocols into family medicine practices combined with a large volume of patients and subsequent workload at the *Klink Kesihatan* level hinder family medicine physicians' capacities to effectively diagnose and treat paediatric obesity[73].



School environment

The Ministry of Health has identified schools as intuitive and effective settings for obesity in children and adolescents programmes[74].

Evidence points to schools' substantial contributions to adolescents' daily caloric intake and school-based programmes' effectiveness in improving children's anthropomorphic measures, dietary behaviours, and physical activity levels[75,76,77].

As of 2020, there were 27 government schools in Putrajaya with a total enrolment of almost 30,000 students, presenting a unique opportunity to equitably and consistently deliver interventions to a large number of children[78]. However, there are several notable implementation barriers.

Limited coordination between ministries leads to fragmented policies and initiatives that are unable to comprehensively address obesity among students[79].

Schools often face limited resources and support, restricting their ability to provide healthy food options on site or develop holistic physical activity programmes, or monitor the effectiveness of such programmes. As a result, they often rely on cheaper, less nutritious food options that contribute to unhealthy dietary habits.

Cultural perceptions and stigmas surrounding obesity discourage open discussions and proactive measures among parents, educators, and students.

Obesity remains an underdiscussed topic in schools and communities, hindering early identification, supportive engagement, and the implementation of sustained, holistic strategies.

Poor alignment of priorities between the Ministries of Health and Education around obesity in children and adolescents compounds these challenges[80].

The Ministry of Education's prioritisation of children's learning, academic achievement, and adherence to its internal guidelines can be at odds with the Ministry of Health's initiatives to improve children's health and well-being within the school setting, hindering uptake.

Moreover, the Ministry of Education's limited resources and bureaucratic processes make it difficult to implement timely, efficient collaborations on health and nutrition initiatives with external organisations[81].

School health teams play a critical role in identifying children at risk of obesity through health screenings and referrals for further intervention.

Despite data being collected on a child's height, weight and BMI through the SEGAK (*Panduan Standard Kecergasan Fizikal Kebangsaan*) programme, there is a lack of inter-ministerial cooperation or referral mechanism in place to ensure that children at risk are able to be provided with care and treatment.

However, a gap exists in follow-up efforts to ensure that families act on these referrals, potentially leading to missed intervention opportunities[82].

Urban planning and built environment

Putrajaya's urban planning significantly influences the lifestyle choices of children and adolescents, particularly regarding physical activity. Its low-density, car-oriented infrastructure limits walkability and active transportation, like walking or cycling.

Poor support or utilisation of public transportation further discourages active commuting, contributing to sedentary lifestyles.

Although Putrajaya was designed as a garden city, with 38% of its land allocated to parks, lakes, and wetlands[83], these green spaces are not always accessible.

Research links exposure to green spaces with lower obesity rates, increased physical activity, and healthier weight status in children[84].

A 2017 study exploring park use in Putrajaya found that visitors were satisfied with park accessibility, safety, design, facilities, and maintenance, suggesting the potential of proactively incorporating green space-based interventions into Putrajaya's child and adolescent obesity prevention and management ecosystem[85].

Policy and partnership gaps

Entrenched policy, institutional, and partnership gaps, primarily rooted in a lack of inter-ministerial communication and collaboration, hinder the timely and effective management of Putrajaya's obesity in children and adolescents crisis.

A lack of coordination and communication between ministries leads to fragmented approaches to obesity management and prevention[86].

Insufficient resources and funding allocation hinder effective implementation of comprehensive obesity-related initiatives across sectors[88].

Robust collaboration between relevant ministries, particularly the Ministry of Health (MOH) and the Ministry of Education (MOE), is key to responding to obesity in children and adolescents.

Differing priorities and mandates among government agencies raise barriers to unified action on public health issues including obesity in children and adolescents[87].

At its best, this cooperation fosters the integration of health, education, and social welfare strategies, creating and sustaining environments that support children and families.

However, challenges remain.

Data is critical for informed policymaking and programme development, but significant barriers hinder its effective use.

The lack of data sharing between MOH and MOE creates siloed approaches to addressing obesity in children and adolescents, limiting a comprehensive understanding of and response to the issue[89].

Inconsistent data collection methods result in discrepancies, complicating research and intervention efforts[90]. Prolonged approval processes delay access to essential datasets, impeding timely research and policy development[91].

Additionally, the current reliance on interval-based surveys by MOH, while cost-effective, may fail to capture critical health changes in children and adolescents over time[92].

A whole-of-government (WOG) approach is needed

A whole-of-government (WOG) approach should involve entities including:

- **Ministry of Women, Family, and Community Development:** promoting healthy lifestyles at the community level, supporting vulnerable groups including lower-income families, and fosters collaboration across sectors
- **Ministry of Youth and Sports:** encouraging physical activity through programmes tailored to young people
- **Ministry of Finance:** allocating sufficient resources to ensure equitable access to nutrition and health programmes
- **Ministry of Housing and Local Government, including city councils:** addresses urban planning and accessibility to green/recreational spaces and healthy food options
- **Ministry of Federal Territories:** working alongside *Perbadanan Putrajaya* to ensure that obesity in children and adolescents is prioritised as a policy issue

Successful WOG strategies in other countries point to the potential impacts of adopting a similar approach in Malaysia.

Some models to explore include the United Kingdom's 'Childhood Obesity Plan', which combines health, education, and environmental measures, including sugar reduction initiatives[93], Finland's 'Schools on the Move' initiative, which incorporates health education and school-based physical activity into curricula[94], and Thailand's 'Healthy School' initiative, which yielded measurable improvements in children's nutritional knowledge and behaviours[95].

International agreements such as the Convention on the Rights of the Child (CRC), which Malaysia has been a party to since 1995, can provide a useful starting point for WOG collaboration.

It recognises childhood obesity as a violation of children's rights and emphasises governments' responsibilities to prevent and treat it.

The CRC also advocates for a comprehensive approach to tackling the issue, encompassing education, healthcare, community support, the food environment, and systemic factors including socioeconomic disparities and marketing practices that target children.

However, the CRC has not yet been leveraged in the Malaysian context to catalyse coordinated intersectoral action and resource allocation to tackle obesity in children and adolescents[96].

Public-private partnerships (PPPs) can amplify government-led obesity prevention and management efforts by leveraging expertise and resources from both sectors, driving innovative and community-targeted solutions.

PPPs are pivotal in funding initiatives, raising awareness, and providing access to effective treatment.

Treating obesity

Diagnosis

Body mass index (BMI) is the accepted standard for determining overweight and obesity prevalence in children and adolescents[38].

In children, as the BMI changes with age, the BMI-for-age percentiles are more useful. BMI in children increases from birth until 1 year of age and subsequently decreases until ages 5-9 years old. An early BMI rebound before 5 years of age carries a risk for adult obesity and could help identify which children are most likely to become overweight or obese in adulthood

The diagnosis of overweight or obesity in children and adolescents should be based on the BMI and the World Health Organization (WHO) 2007 reference system as seen in Table 2 using Figures 2 and 3.

Table 2: Diagnosis of overweight and obesity in children and adolescents

Age (Years)	Overweight	Obese
5-19	BMI >1 SD above the WHO Growth Reference median	BMI >2 SD above the WHO Growth Reference median
Under 5	BMI >2 SD above the WHO Child Growth Standards median	BMI >3 SD above the WHO Child Growth Standards median

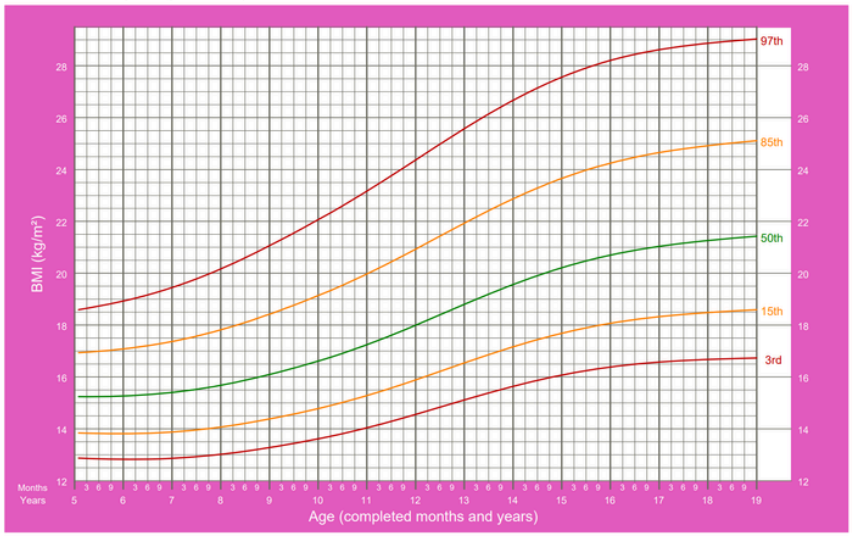


Figure 2: BMI-for-age (GIRLS)
5 to 19 years (percentiles)

Source: World Health Organisation

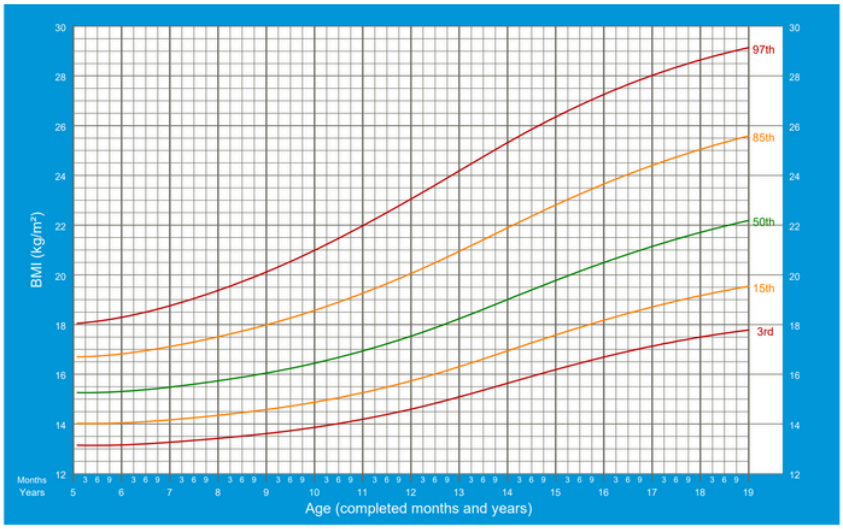


Figure 3: BMI-for-age (BOYS)
5 to 19 years (percentiles)

Source: World Health Organisation

Treatment modalities

Obesity interventions should approach the life-span approach and begin from perinatal care up until adulthood primary and secondary prevention. Interventions such as prevention of maternal obesity and encouraging breastfeeding may have generational and long-lasting effects in obesity prevention. The clinical practice guidelines recommend structured, family-focused lifestyle interventions as part of prevention and management of childhood obesity.

The management of paediatric obesity requires careful consideration of the patient's paediatric obesity category and metabolic health. Treatment should be patient-centric and may involve an individual approach or a combination of lifestyle interventions, pharmacological treatments, and surgical options[39].

While lifestyle modifications form the foundation of obesity management, new pharmacological interventions are emerging as promising pillars of treatment for children with moderate to severe obesity[40,41].

Family Medicine Specialists (FMS) are best positioned to provide these multi-generational comprehensive care. Importantly, on top of training, the specialists should be equipped with adequate resources to implement the health strategies.

Lifestyle modifications

Lifestyle modification is the foundational approach for treating obesity in children and adolescents. It focuses on sustainable changes in diet, physical activity, and behaviour, rather than rapid weight loss[42].

Key strategies include promoting healthy eating habits such as reducing intake of sugary drinks and processed foods, increasing fruits and vegetables, and encouraging balanced, age-appropriate meals.

Physical activity recommendations emphasize at least 60 minutes of moderate to vigorous exercise daily, while also reducing sedentary behaviours like screen time[43].

Behavioural interventions play a critical role in reinforcing these changes. Techniques such as goal-setting, self-monitoring, and positive reinforcement are used to help children and adolescents develop healthier habits.

Involving parents and family members increases the effectiveness of these interventions, as it ensures that healthy behaviours are practiced consistently at home.

Family-based programmes that target the entire household tend to yield better and longer-lasting results than those focused solely on the child.

Despite its effectiveness, lifestyle modification faces challenges including limited access to structured programmes, varying levels of family support, and social or environmental barriers such as food insecurity or lack of safe spaces for physical activity[44].

Nevertheless, when implemented early and supported by multidisciplinary teams in clinical, school, or community settings, lifestyle changes can lead to meaningful improvements in weight status, metabolic health, and overall well-being.

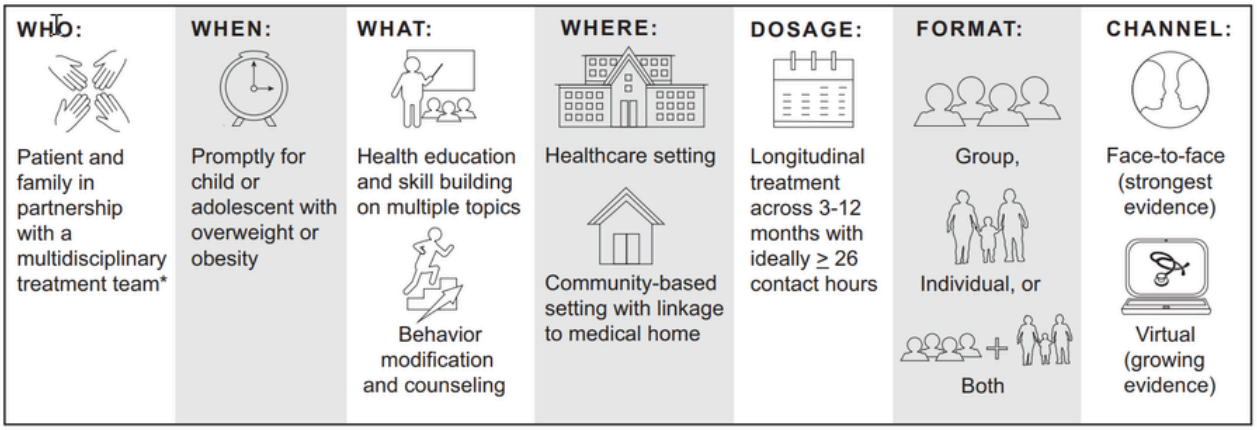


Figure 4: Intensive Health Behaviour and Lifestyle Treatment (IHBLT)
Source: Hampi SE et al (2023)

Intensive Health Behaviour and Lifestyle Treatment (IHBLT) incorporates these elements and is a structured, evidence-based intervention used in managing obesity among children and adolescents[153].

It focuses on modifying behaviours through comprehensive, family-centered programmes that target nutrition, physical activity, and psychological well-being.

These programmes typically involve at least 26 hours of face-to-face contact over 3 to 12 months, delivered by a multidisciplinary team that may include pediatricians, dietitians, behavioural therapists, and exercise specialists[153].

Studies show that IHBLT can lead to clinically meaningful reductions in BMI z-scores, improvements in cardiometabolic health, and better long-term weight outcomes, especially when started early and maintained over time.

Obesity management medications

Obesity management medications for children and adolescents are used when lifestyle interventions alone are insufficient, particularly in cases of severe obesity or obesity with related health complications.

These medications are typically considered for adolescents aged 12 years and above and must be used alongside continued lifestyle modification.

The goal is to support weight reduction, improve metabolic health, and prevent long-term complications.

Pharmacotherapy is typically reserved for adolescents aged 12 years and older, and always used as an adjunct to intensive lifestyle therapy, not as a replacement.

The decision to initiate medication is based on a comprehensive clinical evaluation and involves a multidisciplinary care team, including pediatricians and, when possible and available, obesity specialists.

Obesity medications for children and adolescents can result in clinically meaningful improvements in weight and cardiometabolic health when used appropriately.

However, they are not a cure and require long-term follow-up, behaviour change, and family support to sustain benefits.

Table 3: Obesity Management Medications (OMMs) for Children & Adolescents (Global)

Medication	US FDA Paediatric Approval	Mechanism/ Class
Orlistat	Yes (≥12yo)	Lipase inhibitor
Phentermine	Yes (short-term, ≥16yo)	Appetite suppressant (sympathomimetic)
Phentermine/ Topiramate	Yes (≥12yo)	Appetite suppressant + anticonvulsant
Liraglutide	Yes (≥12yo)	GLP-1 receptor agonist
Semaglutide	Yes (≥12yo)	GLP-1 receptor agonist

Source: Torbahn, G. Et al (2024)

Table 4: Example of OMMs for Children & Adolescents in Malaysia (≤ 18 yo)

Medication	Paediatric indication	NPRA Status
Orlistat	Obesity ≥12 yo	Registered
Liraglutide	Obesity ≥12 yo	Registered
Semaglutide	Not currently approved for paediatric use	Registered
Phentermine	Obesity ≥12 yo	Registered

Source: Ministry of Health; National Pharmaceutical Regulatory Agency (NPRA)

Pharmacotherapy should be prescribed by providers with:

- Training in pediatric obesity management, or
- Supervision from a pediatric endocrinologist, obesity medicine specialist, or pediatric weight management multidisciplinary team.

Prior to initiation:

- The healthcare professional should discuss expected benefits, risks, side effects, and treatment goals with the patient and their legal guardians.
- Document informed assent (child) and informed consent (guardian).
- Emphasize that medication is adjunctive to lifestyle therapy.

Bariatric surgery

Bariatric surgery is a safe and effective treatment for severe obesity in adolescents when conducted within a structured, multidisciplinary programme involving clinical psychologists and surgeons.

The use of metabolic and bariatric surgery (MBS) in adolescents is supported by the American Society for Metabolic and Bariatric Surgery (ASMBS) for those who meet specific clinical criteria and have not achieved sufficient weight loss or improvement in obesity-related comorbidities through behavioural and medical interventions.

Bariatric surgery for adolescents is **recommended for those with a BMI ≥ 40 kg/m², or ≥ 35 kg/m² with at least one serious obesity-related condition** such as type 2 diabetes, severe obstructive sleep apnea, fatty liver disease, or hypertension.

Surgery should only be considered if the adolescent has reached or nearly reached physiological maturity, demonstrates emotional readiness, and has strong family and psychological support.

Adolescent bariatric surgery leads to substantial durable weight loss and significant improvements or resolution of obesity-related diseases.

It is an important therapeutic option for carefully selected adolescents with severe obesity. **MBS should not be regarded as a one-time stand-alone solution.**

Policy gaps

Obesity is not yet widely recognised as a disease in Malaysia, leading to persistent stigma, inadequate policy and financial support, including limited insurance coverage or any form of alternative reimbursement. Insurance schemes do not currently cover anti-obesity medications, nor bariatric surgery, placing the financial burden for such treatments on families.

In the clinical setting, children often present with severe obesity-related complications before receiving treatment.

Screening and structured follow-ups are needed to facilitate the early detection of overweight, obesity, and its associated metabolic complications in children and adolescents.

Additionally, effective weight management requires multidisciplinary collaboration among healthcare professionals.

However, Malaysia lacks structured training programmes for obesity specialists, and existing healthcare teams lack coordination[22].

Despite numerous national strategies, limited enforcement and poor cross-ministerial coordination have led to fragmented interventions in school and community settings. School canteen guidelines, physical activity programmes, and nutritional education efforts remain inconsistent and unmonitored.

However, local research, including trials and community-based interventions, demonstrated measurable improvements in children and adolescents' anthropomorphic measures and health outcomes with targeted, systematic, and structured interventions.

Challenges

There are key challenges in managing obesity in children and adolescents in Malaysia, including limited recognition of obesity as a disease. Despite national efforts, structural barriers and under-resourced systems continue to hinder effective intervention.

Limited recognition of obesity as a disease

A broader systemic issue is the insufficient recognition of obesity as a disease[49]. Although the World Obesity Federation supports the definition of obesity as a "chronic, relapsing disease" and the 2023 Ministry of Health Clinical Practice Guidelines for the Management of Obesity explicitly recognises obesity as a disease[50], this recognition is currently limited in the Malaysian context[51].

This lack of acknowledgement perpetuates stigma and discrimination, negatively affecting patients' mental health and reducing the urgency for funding and policy support.

Without formal recognition of obesity as a disease from the medical community and authorities, obesity management programmes may remain underfunded and lack political support from policymakers [52.] Without adequate recognition from the public, awareness, early detection and diagnosis, and timely treatment of obesity may remain curtailed.

Without formal recognition of obesity as a disease from the medical community and authorities, obesity management programmes may remain underfunded and lack political support from policymakers [52] - and without adequate recognition from the public, awareness, early detection and diagnosis, and timely treatment of obesity may remain curtailed.

"I had obesity in childhood. Today, even if I can lose weight now, I have lost my childhood."

- anonymous patient[24]

Insurance coverage limitations

The lack of recognition of obesity as a disease has resulted in inadequate insurance coverage for obesity treatments . The extent of treatment coverage and availability varies between the public and private sectors, but behavioural modification is covered in both[54].

As of 2023, all three classes of anti-obesity agents - phentermine, orlistat, and liraglutide - are not included in the Ministry of Health (MOH) Medicines Formulary, which means that these drugs are not available for use in healthcare facilities under the MOH[55] and as such may not be covered under public healthcare insurance schemes.

Early detection and delayed presentation

Despite growing evidence linking early intervention in obesity among children and adolescents to better outcomes[56] , there are barriers to the early detection of the condition in Putrajaya that hinder timely diagnosis and intervention. Clinical practitioners in Putrajaya's healthcare institutions note that children often present late with obesity-related comorbidities like prediabetes, hypertension, and fatty liver disease[57].

The delayed presentation may be driven by factors including low parental awareness and understanding of the seriousness of obesity as a disease and stigmatisation or negative societal attitudes towards obesity, both of which may discourage families from seeking help or openly discussing weight-related issues[58].

This is compounded by current obesity in children and adolescents healthcare protocols that predominantly focus on treatment rather than secondary prevention, with limited resources allocated to early detection and intervention[59] .

Multidisciplinary team care

Multidisciplinary care for weight management in paediatric populations, which integrates medical, nutritional, and psychological support, has been linked to sustained positive outcomes in other countries[60, 61, 62, 63] .

It is also recommended as a critical component of a structured approach to obesity in children and adolescents management in the 2023 Ministry of Health Clinical Practice Guidelines for the Management of Obesity[64] . Nevertheless, implementation remains a challenge.

A lack of clear communication and collaboration among healthcare professionals across disciplines can lead to fragmented care and inconsistent treatment plans[65]. Limited resources and funding for multidisciplinary teams hinder the establishment and sustainability of effective collaborative care models, and resistance to change from established healthcare practices may prevent the integration of multidisciplinary approaches[66] .

At the time of writing, there is no specialist obesity training in Malaysia , which heightens this challenge. The availability of paediatric endocrinologists is also critical for the management of obesity-related health issues among children. Unfortunately, there are currently only 32 paediatric endocrinologists in Malaysia.

Policy landscape: Current policies and interventions

Malaysia has implemented numerous initiatives to directly and indirectly address obesity in children and adolescents and its determinants. These include national strategies, action plans, school-based programmes, primary care-based programmes, voluntary industry commitments, and regulatory guidelines.

Their abundance points to widespread recognition and understanding of the root causes of obesity in the population, the urgency and importance of tackling it at scale, and the need for a holistic intersectoral approach.

However, these efforts have limitations, including overlap, fragmentation, a lack of apparent synergy across initiatives, unclear continuity, implementation challenges, and a lack of publicly accessible information on their outcome and/or impact assessments and follow-up plans.

Table 5: Example of existing national level policy initiatives which include children and adolescent health

Initiative	Focus area	Description	Achievements/ measurable outcomes or impacts to date	Gaps
National Strategic Plan for Non-Communicable Diseases 2015-2025	NCDs – general	A national strategy to prevent childhood obesity as part of a broader initiative to combat non-communicable diseases (NCDs); emphasises early intervention and promotes healthy eating and physical activity among children[97]	The existence of a robust monitoring system for NCD surveillance nationally for indicators that are monitored by the WHO NCD Global Monitoring Framework[98]	Limited resources and poor integration into existing health systems impacting sustainability[99] Lack of data for surveillance of health system indicators[100] Perception of NCD patients as "burdensome" to the health system, suggesting issues with public communication and patient engagement[101]
National Plan of Action for Nutrition of Malaysia (NPANM III), 2016-2025[102]	Nutrition – general	A national policy action plan to address various nutrition-related issues, including obesity, using a multisectoral approach; includes the voluntary Healthier Choice Logo scheme, which aims to help consumers make more informed food purchasing choices	NPANM III: not available Healthier Choice Logo[103, 104]: ○ Food industries had high acceptance of the processes and requirements involved in implementation ○ HCL was highly effective in encouraging product reformulation ○ About 53% of food industries surveyed have successfully obtained the logo for any of their products (2017-2022)	NPANM III: • Implementation gaps due to escalating burden[105] • Limited resources impacting sustainability • Poorly enforced School Canteen Guideline (under the Nutrition Division, MOH) and Guidelines on the Prohibition of Sales of Foods Outside of School Perimeters (policy under NCD section, enforcement by local authorities)[106] • No nutritionists assigned to schools to implement the activities, as there are currently none in the entire Ministry of Education[107] • No collaboration with other stakeholders, e.g. Ministry of Agriculture (MOA) • Limited implementation of activities under the MOH Nutrition Division's[108] aegis • Although advocacy to regulate unhealthy food marketing was observed, no reported impact on policy outcomes due to implementation gaps[109] Healthier Choice Logo[110, 111]: • Product reformulation issues included product suitability, consumer acceptability, difficulties maintaining taste and shelf life, and limited budget

				• No data on relationship between HCL implementation and improvements in population health indicators • Potential self-report bias, as the data relied solely on self-reported information from food industry representatives
National Strategic Plan to Combat the Double Burden of Malnutrition 2022-2030[112]	Nutrition – children	A comprehensive framework aimed at addressing both undernutrition and obesity among Malaysian children Includes the Reviewed Nutrition Policy Options to Combat Obesity in Malaysia 2022-2030	Not available	Unaddressed systemic economic factors like affordability, inflation, and low wages may undermine the effectiveness of the plan[113]
Policy Options to Combat Obesity in Malaysia, by MOH[114]	Obesity – general	A comprehensive strategy developed by MOH and various stakeholders to address the obesity epidemic, emphasising the urgent need for coordinated action; comprises 48 policy options across 3 key areas – food, physical activity, and overarching	Not available	Lack of guidance on building cross-ministerial collaboration to achieve goals[115] Absence of robust monitoring and implementation framework[116] Focus on 'hard policies' (e.g. regulations, taxation) without detailed implementation plans[117] Insufficiently explores behaviour change strategies as complementary to policy action[118]
National Strategic Action Plan for Active Living 2016-2025[119]	Physical activity – general	Action plan of a broader strategy to combat the rising prevalence of NCDs in alignment with WHO goals; aims to increase physical activity, multisectoral collaboration, NCD reduction, and community engagement	Integration of physical activity guidelines into sectors including education and workplaces[120] Provision of physical activity programme grants to NGOs[121]	Participation disparities across different geographics and demographics[122] Absence of robust monitoring and implementation framework[123]
National Adolescent Health Programme[124]	Adolescent health	Available via all government clinics in Malaysia, focuses on the health of adolescents, including mental health components and promoting physical activity and nutrition[125]	Not available	Information last updated online in 2014; unclear what updates/changes have been implemented since then, if any
National School Health Programme	School health	Implemented in schools, this programme includes regular monitoring of students' body mass index (BMI) and promotes healthy lifestyle choices	Not available	BMI data is collected, but insufficient follow-up actions for children identified as overweight or obese[126]
Malaysian Dietary Guidelines for Children and Adolescents[127], 2023 – present	Child and adolescent nutrition	Guidelines to provide updated, evidence-based nutritional guidance for individuals from birth to 18 years of age, focused on promoting optimal growth, development, and overall health	Not available	Poor adherence to guidelines, especially concerning fruit, vegetable, and dairy intake among primary schoolchildren[128]
Agenda Nasional Malaysia Sihat (ANMS), 2021 – 2030	Public health	Comprehensive initiative launched by the Ministry of Health to enhance public health across the nation based on 4 key pillars: promotion of healthy living, enhance health literacy, create supportive environments, and strengthen health services	Under the 2024 Budget, ANMS 2.0 introduced the *Sihat Sepanjang Hayat* package, managed by MOH, that aims to provide continuous health benefits to individuals	Lacks a clear focus on health financing reform, which may hinder effectiveness and sustainability[129] Implementation inconsistencies across states and communities Limited publicly available information on specific metrics and outcomes used to assess progress
Responsible Advertising to Children Initiative[130], 2012 – present	Regulation and marketing	A self-regulatory framework involving food and beverage companies that commit to responsible marketing practices aimed at children aged 12 and under, reducing their exposure to unhealthy food marketing and fostering a healthier food environment	By 2013, ten companies, including Coca-Cola, Nestlé, and Unilever, had signed the pledge, demonstrating a collective commitment to responsible advertising practices[131]	Limited overall impact due to self-regulatory, voluntary nature; lack of standardised criteria. Insufficient monitoring and compliance mechanisms[132]
Grading system for sugar sweetened beverages (SSBs)[133], announced in mid-2024	Regulation and marketing	An SSB grading system based on sugar content, modelled after Singapore's mandatory Nutri-Grade labelling system that regulates pre-packaged, non-customisable, and freshly prepared beverages in specific settings (e.g. bubble teas)[134]	Not applicable	No specified implementation plan or timeline

Promising community-level and research initiatives

A body of local research has highlighted the promising impact of targeted programmatic interventions in addressing obesity in children and adolescents in Malaysia. These interventions, including trials and community-based initiatives, demonstrate that programmes focusing on nutrition education, physical activity promotion, and behavioural modifications, especially those involving parents/families, can yield measurable improvements in children's health outcomes.

This underscores the potential of evidence-based, locally adapted strategies to curb Malaysia's rising paediatric obesity rate. Selected community-level interventions are summarised in tables below:

Table 6: Example of existing community level initiatives to address child health

Initiative	Intervention setting and design	Description	Promising results
MyBFF@school programme[135]	Primary school-based cluster randomised controlled trial	Physical activity (small-sided games), nutrition, and psychology education to combat obesity among children aged 9-11 years	Positive trends in cardiorespiratory fitness levels after 6 months of intervention, although statistical significance was not achieved
The Interactive Malaysian Childhood Healthy Lifestyle programme (i-MaCHeL)[136137]	Single-arm pilot study of preschool age child-parent dyads	Web-based programme focused on healthy eating, physical activity, and sedentary behaviour of preschool children delivered over 13 modules	High participant retention rate, acceptability score, feasibility, and appropriateness of web content, programme duration, intervention dose, WhatsApp group, and intervention delivery mode
Juara Sihat[138]	Multi-component, quasi-experimental primary school-based interventional study	Nutritional education programme focused on healthy eating, active lifestyle, physical activity, and active involvement of parents and teachers	Sustained reduction in BMI-for-age z-score and physical activity levels at 18 months post-intervention completion
REorganise Diet, Unnecessary sCreen time and Exercise (REDUCE) Programme[139]	Randomised controlled field trial of primary school age child-parent dyads	Family-based intervention using social media in combination with face-to-face sessions to reduce adiposity of Malay children aged 8-11 years	At 6 months post-intervention: BMI z-scores significantly reduced in the intervention group compared to the wait-list group for overweight children, obese children, and within the obese subgroup Waist circumference percentile and body fat percentage significantly reduced in the intervention group compared to the wait-list group, within the obese subgroup and within the overweight subgroup
Malaysia Childhood Obesity Treatment Trial (MASCOT)[140]	Assessor-blinded good practice-based randomised controlled trial	Behaviour change counselling to change sedentary behaviour, physical activity, and diet among children aged 7-11 years	Significantly reduced weight gain in intervention group compared to control group at 6 months Changes in health-related quality of life, physical activity levels, and sedentary behaviour favoured intervention group

Table 7: Example of existing Putrajaya health initiatives

Initiative	Intervention level and approach	Description
Pelan Strategik Putrajaya Sihat Sejahtera (PSS) 2024-2030[141]	Individual + Workplace "Whole-of-nation" strategy	• Part of the Agenda Nasional Malaysia Sihat (ANMS) • To reduce health risk factors among civil servants by enhancing physical and mental health literacy, promoting healthy lifestyle practices, fostering sustainable health-supportive environments, and empowering ownership of health and well-being among civil servants • Currently in pilot phase to test and refine strategies; effectiveness assessments to be conducted at the end of 2025, with national health surveys and national post-implementation evaluation studies by 2030 • Initiatives include >84 nutrition and obesity prevention events
Trim and Fit Weight Management Programme[142]	Individual + Workplace Multidisciplinary	• Launched in 2012, focused on comprehensive interventions dietary change, increased physical activity, and behavioural modification interventions to promote weight loss among civil servants • As of 2022, 58 government departments and agencies have implemented the programme
Calorie labelling pilot programme	Workplace Environmental modification	• Rollout of calorie-labelled menus at selected cafeterias and restaurants in Putrajaya • If successful, to be expanded nationwide to help consumers make more informed dietary choices when eating out

Key recommendations for action

Obesity among children and adolescents in Malaysia, and specifically in Putrajaya, is well-documented and widely recognised. Among policymakers, clinicians, and other key stakeholders, there is a thorough understanding of the challenges at hand and potential solutions that span policy, healthcare systems, and programmatic interventions, grounded in international and local research and clinical experience[143].

This body of knowledge is reflected not only in this paper but also in recent authoritative publications including the White Paper on Obesity Care in Malaysia from the Malaysian Obesity Society (MYOS)[144] and the expert reviews and recommendations for obesity prevention strategies from the Malaysian Association for the Study of Obesity (MASO)[145].

Despite this extensive knowledge base, the key barriers remain systemic and entrenched across three critical, interrelated areas: healthcare, policy, and community and behaviour. As such, a comprehensive and coordinated approach is essential.

Putrajaya is an ideal setting for piloting such interventions.

Given its growing urbanisation and evolving demographic and socio-economic trends, the city's obesity burden could be a bellwether for how the epidemic might unfold on a national scale.

Putrajaya's well-structured governance, strong institutional support, and political spotlight as the seat of the federal government make it a prime candidate for testing intersectoral and multisectoral interventions.

If successful, these approaches could be scaled up and adapted to other regions of Malaysia.

The following recommendations outline a path forward, drawing on evidence, expertise, lessons learned from local and global experiences, and feasibility considerations.

Integrated healthcare strategies

Identify and intervene early with appropriate treatment

- Early detection of obesity or preclinical obesity risks in children and adolescents can prevent progression to debilitating chronic conditions like hypertension, type 2 diabetes, hyperlipidaemia, and cardiovascular disease.
- Develop tailored primary treatment plans that comprehensively include diet, physical activity, and behaviour modification strategies grounded in family involvement
- Harness the potential of pharmacological treatments
- Implement detection methods sensitively to avoid stigmatisation and address social determinants of health, including food insecurity and healthcare access, to ensure equity in care and reduce barriers to effective management[147]

Involve families in the treatment journey

- Address parental misconceptions about obesity and its long-term complications to improve early clinical presentations and treatment uptake
- Develop family-centred care and management plans that equip parents with the knowledge and skills needed to actively participate in their child's obesity management, increasing the likelihood of successful long-term outcomes
- Foster family engagement to create supportive home environments conducive to sustainable lifestyle changes, including educating parents and caregivers (e.g. grandparents) on the importance of their role in enabling and sustaining children's healthy behaviours

Implement multidisciplinary team-based care

- Establish multidisciplinary teams in both primary and tertiary healthcare settings to integrate expertise from medicine, nutrition, psychology, and physical therapy to address the multifactorial nature of obesity and its comorbidities
- Establish multidisciplinary teams in the community to provide support in areas such as nutrition and behavioural change.
- Cultivate collaboration among healthcare providers, educators, and community organisations to create enabling environments, ensure access to care, and deliver personalised treatment plans
- Prioritise the integration of multidisciplinary approaches in Putrajaya's clinical settings, where such systems remain underdeveloped[148], to improve the quality of care and outcomes for affected children and adolescents

Invest in upskilling primary care doctors, inclusive of medical officers, general practitioners, and family medicine specialists

- Strengthen the primary care system by equipping family medicine specialists with the skills and knowledge to diagnose and manage paediatric obesity
- Develop and implement comprehensive training programmes focused on holistic childhood obesity management, including evidence-based guidelines and standardised protocols
- Invest in continuous professional development to enable family medicine practitioners to stay updated with emerging research and treatments, ensuring high-quality care delivery in primary care settings

Improve follow-up mechanisms for school health team referrals

- Establish a tracking system to monitor referrals from school health teams to ensure that students identified as at risk of obesity and/or are classified as obese/overweight receive appropriate follow-up care
- Implement regular communication between schools, healthcare providers, and families to reinforce the importance of attending referrals and to provide support for accessing other health service
- Provide training for school health teams on effective referral processes and the importance of follow-up, including strategies to engage and increase awareness among families

Policy gaps, institutional collaborations, and partnerships

Advocate for a multidimensional whole-of-society approach

- Integrate multiple disciplines such as nutrition, psychology, and physical therapy to address the complex contributors to obesity
- Engage families and communities to foster sustainable lifestyle changes and support for affected individuals
- Promote policies for healthy environments that enhance access to nutritious foods and opportunities for physical activity, laying the foundation for obesity prevention from an early age

Actively collaborate across government ministries and agencies

- Strengthen collaboration between the Ministry of Health (MOH) and the Ministry of Education (MOE) by highlighting obesity's impact on academic performance
- Leverage the Ministry of Women, Family, and Community Development's broad mandate and neutral position to act as a coordinating body for a multidimensional, society-wide approach to tackling obesity in children and adolescents
- Engage and include local authorities, such as the *Perbadanan Putrajaya* and Ministry of Federal Territories., to ensure that implemented initiatives are contextually relevant, impactful and supported.

Augment intersectoral action using international treaties

- Use international treaties like the Convention on the Rights of the Child (CRC) to address obesity in children and adolescents and galvanise comprehensive intersectoral and multisectoral action.

  Such treaties recognise obesity as a violation of children's rights, emphasising the urgency of comprehensive action and encouraging collaboration among governments, NGOs, and other actors in the health and social spaces to design and implement policies and programmes aimed at preventing and treating obesity in children.

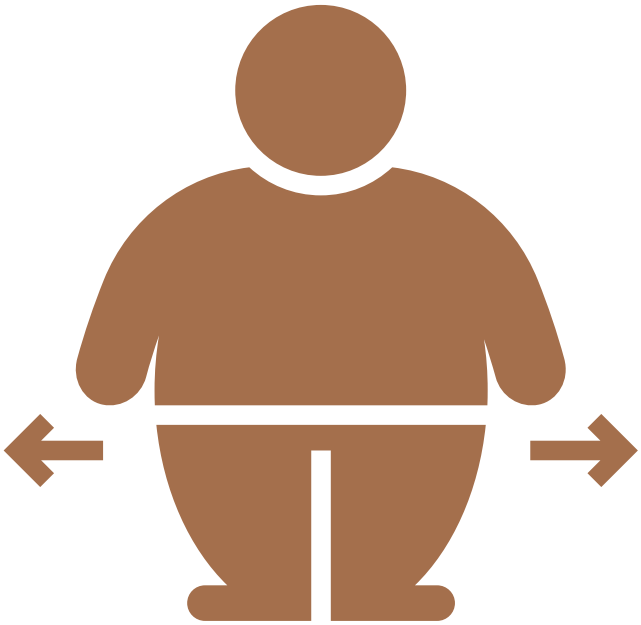
  Using CRC principles enhances accountability and fosters commitment across sectors, ensuring that children's health and well-being are prioritised in national and local agendas

Advance public-private partnerships

- Collaborate with private entities to improve access to nutritious food, treatment options, and lifestyle modification programmes
- Address compliance requirements, regulatory constraints, and potential conflicts of interest to ensure effective partnerships
- Engage NGOs and civil society organisations to raise awareness, mobilise resources, and facilitate community engagement
- Provide targeted support to address capacity challenges in implementing, monitoring and evaluating interventions
- Encourage the development of tech-based solutions, such as mobile apps, to promote healthy behaviours through public-private innovation

Address data and monitoring and evaluation (M&E) gaps that impede evidence-based decision-making

- Prioritise and invest resources in developing robust monitoring, evaluation, and impact assessment into existing and future policies to inform evidence-based decision-making. Current efforts at the national level lack data to evaluate what works and why, limiting scalability, appropriate resource allocation, and adaptability to evolving contexts.
- Promote cost-effectiveness studies to guide investments in interventions that provide the greatest health benefits, as evidence-based resource allocation can drive better long-term outcomes



Community and behavioural engagement

Conceive novel ways to encourage behaviour change among children and adolescents

- Leverage gamification to engage children and adolescents, using rewards for healthy behaviours and game-like elements in health education and physical activity programmes
- Consider the potential and lessons learned from international models like Singapore's Healthier SG initiative, which rewards participation in health programmes, or the UK's Healthy Start programme, which supports nutrition for low-income families through vouchers

Craft culturally acceptable and appropriate interventions

- Design interventions informed by local evidence and sociocultural norms, particularly relevant in Putrajaya's predominantly Malay context
- Involve community stakeholders in developing and delivering programmes to ensure that strategies are culturally acceptable, appropriate, and effective
- Align health messages and interventions with cultural values to improve adherence and sustainability

Consider children and adolescents' perspectives in shaping their care

- Engage children and adolescents directly in shaping obesity management interventions to ensure feasibility and relevance
- Promote a sense of ownership, agency, and empowerment among youth to foster sustainable behaviour changes
- Combine youth insights with parental involvement for a more holistic approach to managing obesity in children and adolescents

Conclusion

Given the escalating prevalence and multifactorial nature of obesity among children and adolescents in Putrajaya, there is an urgent need to develop a comprehensive policy paper as a strategic response.

Such a document should synthesise current evidence, identify systemic gaps, and propose actionable, multi-sectoral interventions grounded in the recognition of obesity as a chronic disease.

A well-articulated policy framework will not only guide stakeholders across health, education, and community sectors but also mobilise resources and political commitment necessary to implement sustainable, outcomes-driven solutions.

Immediate action is essential to protect the health and future of the next generation and to prevent an unsustainable burden on healthcare systems.

Considering this gigantic task, the best place to start would be Putrajaya.

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References

1. Janssen I, Katzmarzyk PT, Boyce WF, et al. ; Health Behaviour in School-Aged Children Obesity Working Group . Comparison of overweight and obesity prevalence in school-aged youth from 34 countries and their relationships with physical activity and dietary patterns. Obes Rev. 2005;6(2):123-132. doi: 10.1111/j.1467-789X.2005.00176.x
2. Noubiap JJ, Nansseu JR, Lontchi-Yimagou E, et al. Global, regional, and country estimates of metabolic syndrome burden in children and adolescents in 2020: a systematic review and modelling analysis. Lancet Child Adolesc Health. 2022;6(3):158-170. doi: 10.1016/S2352-4642(21)00374-6
3. World Health Organization (2022). Obesity and overweight. Available at https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight
4. Baker JL, Olsen LW, Sørensen TI. Childhood body-mass index and the risk of coronary heart disease in adulthood. N Engl J Med. 2007;357(23):2329-2337. doi: 10.1056/NEJMoa072515
5. Park MH, Falconer C, Viner RM, Kinra S. The impact of childhood obesity on morbidity and mortality in adulthood: a systematic review. Obes Rev. 2012;13(11):985-1000. doi: 10.1111/j.1467-789X.2012.01015.x
6. Zhang, X., Liu, J., Ni, Y., Yi, C., Fang, Y., Ning, Q., Shen, B., Zhang, K., Liu, Y., Yang, L., Li, K., Liu, Y., Huang, R., & Li, Z. (2024). Global Prevalence of Overweight and Obesity in Children and Adolescents: A Systematic Review and Meta-Analysis. JAMA pediatrics, 178(8), 800–813. https://doi.org/10.1001/jamapediatrics.2024.1576
7. Institute for Public Health (IPH) 2024. National Health and Morbidity Survey (NHMS) 2024: Nutrition. Available at https://iku.nih.gov.my/images/nhms2024/fact_sheet_nhms2024.pdf
8. Institute for Public Health (IPH) 2022. Technical Report National Health and Morbidity Survey (NHMS) 2022: Adolescent Health Survey, Malaysia. Available at https://iku.gov.my/images/nhms-2022/Report_Malaysia_nhms_ahs_2022.pdf
9. Institute for Public Health (IPH) 2022. Technical Report National Health and Morbidity Survey (NHMS) 2022: Adolescent Health Survey, WP Putrajaya. Available at https://iku.gov.my/images/nhms-2022/16_report_wp-putrajaya_nhms_ahs_2022.pdf
10. City Population: Putrajaya. (2024). Accessible at https://www.citypopulation.de/en/malaysia/admin/putrajaya/1601__putrajaya/
11. ibid.
12. Department of Statistics Malaysia (2022). P.125 Putrajaya. Statistik Subnasional Parlimen dan DUN. Accessible at https://www.parlimen.gov.my/resources/files/rsaindex/pdf/Statistik%20Subnasional%20W.P.%20Putrajaya.pdf
13. Department of Statistics Malaysia (2020). “Population Projection.” Department of Statistics Malaysia, n.d. Accessible at https://www.dosm.gov.my/portal-main/release-content/population-projection-revised-malaysia-2010-2040
14. Department of Statistics Malaysia. Population and Housing Census of Malaysia (2020) Accessible at https://www.dosm.gov.my/uploads/publications/20221020150523.pdf
15. Codeblue (2024). 61% Of Civil Servants Overweight Or Obese, Health Screening Shows. 12 December. Accessible at https://codeblue.galencentre.org/2024/12/61-of-civil-servants-overweight-or-obese-health-screening-shows/#:~:text=The%2026.8%20per%20cent%20obesity,Morbidity%20Survey%20(NHMS)%202019
16. Baharudin, A. et al. (2021). Childhood Overweight Among Under Five in Putrajaya, Malaysia: The Contributing Factors. Journal of Healthcare in Developing Countries. 1 (4), 72-78. http://doi.org/10.26480/jhcdc.04.2021.72.78
17. Institute for Public Health (IPH) 2022. Technical Report National Health and Morbidity Survey (NHMS) 2022: Adolescent Health Survey, WP Putrajaya. Available at https://iku.gov.my/images/nhms-2022/16_report_wp-putrajaya_nhms_ahs_2022.pdf
18. Institute for Public Health (2019). National Health and Morbidity Survey 2019. Available at https://iku.gov.my/
19. Henriques, A., Teixeira, V., Cardoso, H. F., & Azevedo, A. (2018). The influence of stunting on obesity in adulthood: results from the EPIPorto cohort. Public health nutrition, 21(10), 1819–1826. https://doi.org/10.1017/S1368980018000460
19. Poh, B.K., Lee, S.T., Yeo, G.S., Tang, K.C., Afifah, A.R., Hanisa, A.S., Parikh, P., Wong, J.E., Ng, A.L., 2019. Low socioeconomic status and severe obesity are linked to poor cognitive performance in Malaysian children. BMC public health, 19 (4), Pp. 1-0. https://doi.org/10.1186/s12889-0196856-4
20 Palacios-Marin I, Serra D, Jiménez-Chillarón JC, Herrero L, Todorčević M. Childhood obesity: Implications on adipose tissue dynamics and metabolic health. Obesity Reviews. 2023; 24(12):e13627. doi:10.1111/obr.13627

21. Expert interview, 13 February 2025
22. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
23. Expert interview, 13 February 2025
24. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
25. Codeblue (2022). Nearly Half of Putrajaya Residents are Obese. 12 October. Accessible at https://codeblue.galencentre.org/2022/10/nearly-half-of-putrajaya-adult-residents-are-obese/
26. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
27. Teoh, AN (2024). Unhealthy but not by Choice: Food Environment and Nutrition Inequalities. KRI Discussion Paper. Kuala Lumpur: Khazanah Research Institute. Accessible at https://www.krinstitute.org/
28. ibid.
29. Department of Statistics Malaysia (2017). Economic Census in 2016. Putrajaya.
30. Raman D, Sree N, Mariappan L (2023). Investigating the Factors Affecting Malaysian's Consuming Fast Food Frequently and It's Impacts. International Journal of Research Publication and Reviews, Vol 4, no 10, pp 299-307 October. Accessible at https://ijrpr.com/uploads/V4ISSUE10/IJRPR18048.pdf
31. Foo, L. H., et al. (2021). "Fast Food Consumption Patterns Among Urban Malaysian Adolescents." Asia Pacific Journal of Clinical Nutrition, 30(2), 321-330.
32. Malaysian Association for the Study of Obesity (2024). Strategies for the Prevention of Obesity in Malaysia: Expert Reviews and Recommendations (2nd Ed.). Noor MI and Appannah G (eds.) on behalf of SPOM Technical Committee.
33. CEIC Data (2024). Malaysia Consumer Price Index (CPI): Putrajaya: Food and Beverages. Accessible at https://www.ceicdata.com/en/malaysia/consumer-price-index-peninsular-malaysia-2010100/cpi-putrajaya-food-and-beverages
35. Malaysian Association for the Study of Obesity (2024). Strategies for the Prevention of Obesity in Malaysia: Expert Reviews and Recommendations (2nd Ed.). Noor MI and Appannah G (eds.) on behalf of SPOM Technical Committee.
36. Institute for Public Health (IPH) 2022. Technical Report National Health and Morbidity Survey (NHMS) 2022: Adolescent Health Survey, WP Putrajaya. Available at https://iku.gov.my/images/nhms-2022/16_report_wp-putrajaya_nhms_ahs_2022.pdf
37. Lee, S. T., et al. (2021). "Screen Time and Physical Activity Patterns Among Malaysian Adolescents." Journal of Physical Activity and Health, 18(4), 432-441.
38. Expert interview, 13 February 2025
39. ibid.
40. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
41. Expert interview, 13 February 2025
42. ibid.
43. ibid.
44. ibid.
45. Katole, N. T., Salankar, H. V., Khade, A. M., Kale, J. S., Bankar, N. J., Gosavi, P., Dudhe, B., Mankar, N., & Noman, O. (2024). The Antiobesity Effect and Safety of GLP-1 Receptor Agonist in Overweight/Obese Adolescents Without Diabetes Mellitus: A Systematic Review and Meta-Analysis. Cureus, 16(8), e66280. https://doi.org/10.7759/cureus.66280
46. Fox CK, Barrientos-Pérez M, Bomberg EM, Dcruz J, Gies I, Harder-Lauridsen NM, Jalaludin MY, Sahu K, Weimers P, Zueger T, Arslanian S; SCALE Kids Trial Group. Liraglutide for Children 6 to <12 Years of Age with Obesity - A Randomized Trial. N Engl J Med. 2025 Feb 6;392(6):555-565. doi: 10.1056/NEJMoa2407379. Epub 2024 Sep 10. PMID: 39258838.
47. Expert interview, 13 February 2025
48. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
49. ibid.
50. Ministry of Health Malaysia (2023). Clinical Practice Guidelines – Management of Obesity, 2nd Edition. Accessible at https://www.moh.gov.my/moh/resources/Penerbitan/CPG/Endocrine/CPG_Management_of_Obesity_(Second_Edition)_2023.pdf
51 Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
52. ibid.
53. ibid.
54. World Obesity (2023). Malaysia: Health Systems. Accessible at https://data.worldobesity.org/country/malaysia-130/health-systems.pdf

55. Wan, K. S., Mustapha, F., Chandran, A., Ganapathy, S. S., Zakariah, N., Ramasamy, S., Subbarao, G. R., & Mohd Yusoff, M. F. (2023). Baseline treatments and metabolic control of 288,913 type 2 diabetes patients in a 10-year retrospective cohort in Malaysia. Scientific reports, 13(1), 17338. https://doi.org/10.1038/s41598-023-44564-y
56. Wen, L. M., Rissel, C., & He, G. (2017). The Effect of Early Life Factors and Early Interventions on Childhood Overweight and Obesity 2016. Journal of obesity, 2017, 3642818. https://doi.org/10.1155/2017/3642818
57. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
58. ibid.
59. ibid.
60. Wyse, C et al (2022). Evaluating 12 Years of Implementing a Multidisciplinary Specialist Child and Adolescent Obesity Treatment Service: Patient-Level Outcomes. Frontiers in Nutrition. 9 (22). https://www.frontiersin.org/journals/nutrition/articles/10.3389/fnut.2022.895091
61. Marten, K et al (2023). A Multidisciplinary Approach to Pediatric Obesity Shows Improvement Postintervention. Academic Pediatrics. 23 (5). 947-951. https://www.academicpedsjnl.net/article/S1876-2859(22)00556-3/abstract
62. Hampl, S et al (2016). Effectiveness of a Hospital-Based Multidisciplinary Pediatric Weight Management Program: Two-Year Outcomes of PHIT Kids. Childhood Obesity. 12 (1). https://www.liebertpub.com/doi/10.1089/chi.2014.0119
63. Bocca G, Corpeleijn E, Stolk RP, Sauer PJJ (2012) Results of a Multidisciplinary Treatment Program in 3-Year-Old to 5-Year-Old Overweight or Obese Children: A Randomized Controlled Clinical Trial. Arch Pediatr Adolesc Med. 166(12):1109–1115. doi:10.1001/archpediatrics.2012.1638
64. Ministry of Health Malaysia (2023). Clinical Practice Guidelines – Management of Obesity, 2nd Edition. Accessible at https://www.moh.gov.my/moh/resources/Penerbitan/CPG/Endocrine/CPG_Management_of_Obesity_(Second_Edition)_2023.pdf
65. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
66. ibid.
67. World Obesity (2023). Malaysia: Health Systems. Accessible at https://data.worldobesity.org/country/malaysia-130/health-systems.pdf
68. Department of Statistics Malaysia (2022). P.125 Putrajaya. Statistik Subnasional Parlimen dan DUN. Accessible at https://www.parlimen.gov.my/
69. Department of Statistics Malaysia (2022). P.125 Putrajaya. Statistik Subnasional Parlimen dan DUN. Accessible at https://www.parlimen.gov.my/
70. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
71. ibid.
72. ibid.
73. ibid.
74. Sabramani, V. A. L., Idris, I. B., Sutan, R., Isa, Z. M., Buang, S. N., & Ghazi, H. F. (2015). Managing obesity in malaysian schools: Are we doing the right strategies? Malaysian Journal of Public Health Medicine, 15(2), 75–83.
75. Vieira, M, Carvalho, GS, (2019) Costs and benefits of a school-based health intervention in Portugal, Health Promotion International, Volume 34, Issue 6, Pages 1141–1148, https://doi.org/10.1093/heapro/day085
76. Lai, WK et al (2023). Effectiveness of a school-based intervention to manage overweight and obesity among adolescents in Seremban, Malaysia: A cluster randomized controlled trial, Human Nutrition & Metabolism, Volume 34, 2023, 200-229, https://doi.org/10.1016/j.hnm.2023.200229
77. Abdul Ghaffar, S, Abdul Talib, R, and Karim NA (2019). Food Choices and Diet Quality in the School Food Environment: A Qualitative Insight from the Perspective of Adolescents. Malaysian Journal of Medicine and Health Sciences. 15(SP1): 16-24, April. Accessible at https://medic.upm.edu.my/upload/dokumen/2019041008170103_MJMHS_Vol_15_SP1.pdf
78. Department of Statistics Malaysia (2022). P.125 Putrajaya. Statistik Subnasional Parlimen dan DUN. Accessible at https://www.parlimen.gov.my
79. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
80. ibid.
81. ibid.
82. Expert interview, 13 February 2025
83. De La Cruz, L. (2024). The Sustainable Garden City : Putrajaya, Malaysia - Determining Land Consumption with Population Growth Rate. Available at https://storymaps.arcgis.com/stories/25586ec665014b2c819a23bdfc5887d4
84. Jia, P., Cao, X., Yang, H., Dai, S., He, P., Huang, G., Wu, T., & Wang, Y. (2021). Green space access in the neighbourhood and childhood obesity. Obesity reviews : an official journal of the International Association for the Study of Obesity, 22 Suppl 1(Suppl 1), e13100. https://doi.org/10.1111/obr.13100

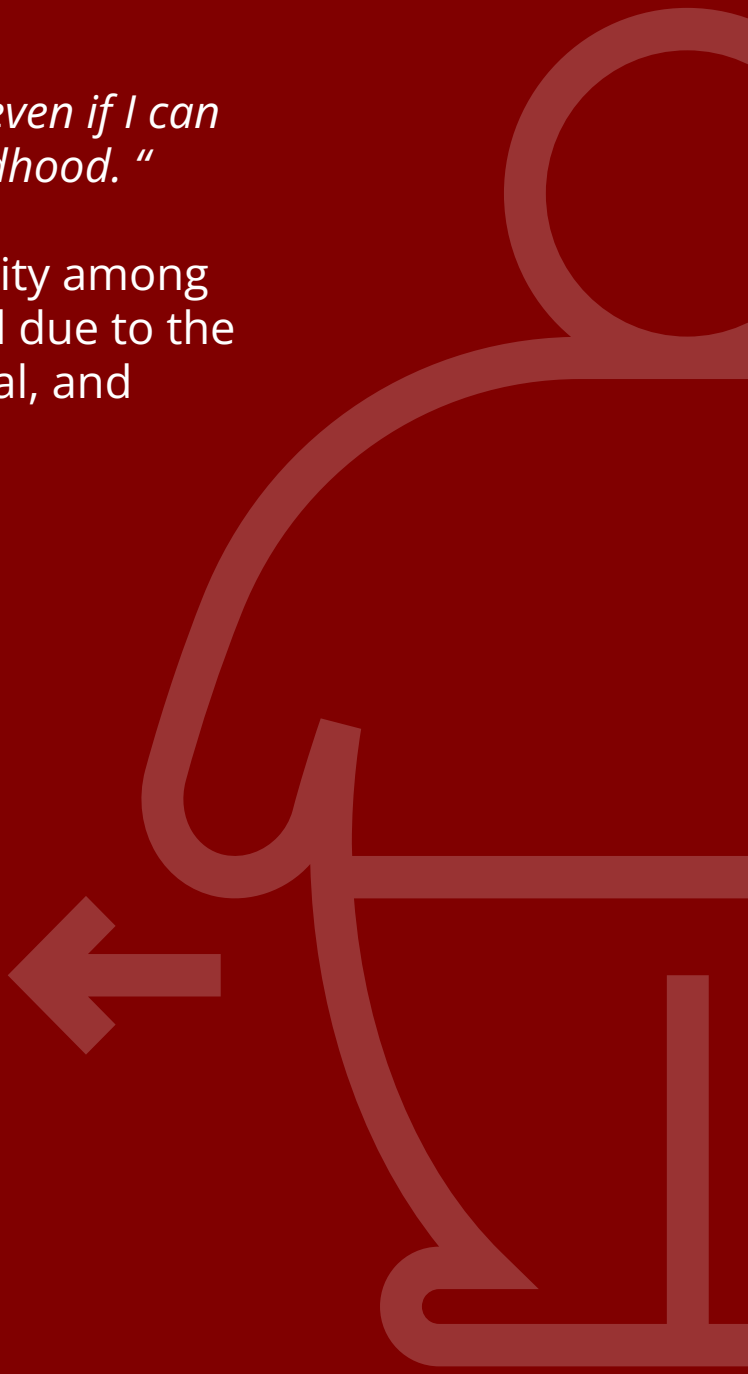
85. Talib, NA (2017) Users' satisfaction with usability of Putrajaya parks in relation to post-occupancy evaluation. Master's thesis, Universiti Putra Malaysia. Accessible at http://psasir.upm.edu.my/id/eprint/70789
86. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
87. ibid.
88. ibid.
89. ibid.
90. ibid.
91. ibid.
92. ibid.
93. Griffin, N., Phillips, S. M., Hillier-Brown, F., Wistow, J., Fairbrother, H., Holding, E., Powell, K., & Summerbell, C. (2021). A critique of the English national policy from a social determinants of health perspective using a realist and problem representation approach: the 'Childhood Obesity: a plan for action' (2016, 2018, 2019). BMC public health, 21(1), 2284. https://doi.org/10.1186/s12889-021-12364-6
94. Schools on the Move (2025). Concept. Accessible at https://schoolsonthemove.fi/concept/
95. Uijtdewilligen, L., Waters, C. N., Müller-Riemenschneider, F., & Lim, Y. W. (2016). Preventing childhood obesity in Asia: an overview of intervention programmes. Obesity reviews : an official journal of the International Association for the Study of Obesity, 17(11), 1103–1115. https://doi.org/10.1111/obr.12435
96. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
97. Mok, W. K. H., Hairi, N. N., Chan, C. M. H., Mustapha, F. I., Saminathan, T. A., & Low, W. Y. (2021). The Implementation of Childhood Obesity Related Policy Interventions in Malaysia-A Non Communicable Diseases Scorecard Project. International journal of environmental research and public health, 18(11), 5950. https://doi.org/10.3390/ijerph18115950
98. Chandran, A., Selva Kumar, S., Hairi, N. N., Low, W. Y., & Mustapha, F. I. (2021). Non-communicable Disease Surveillance in Malaysia: An Overview of Existing Systems and Priorities Going Forward. Frontiers in public health, 9, 698741. https://doi.org/10.3389/fpubh.2021.698741
99. Shanmuganathan, S, Mustapha, F & Wilson, A. (2020). Evaluation of sustainability of non-communicable diseases risk factor program in Malaysia. European Journal of Public Health. 30. 10.1093/eurpub/ckaa166.1142
100. Chandran, A., Selva Kumar, S., Hairi, N. N., Low, W. Y., & Mustapha, F. I. (2021). Non-communicable Disease Surveillance in Malaysia: An Overview of Existing Systems and Priorities Going Forward. Frontiers in public health, 9, 698741. https://doi.org/10.3389/fpubh.2021.698741
101. Lee, LK and Rajandran, K (2024). Representation of non-communicable diseases in the Malaysian national strategic plan and medical brochures: a discourse-historical approach. GEMA Online Journal of Language Studies. 24(1). February. https://journalarticle.ukm.my/23584/1/Gema%20Online_24_1_8.pdf
102. Ministry of Health (2016). National Plan of Action for Nutrition of Malaysia III (2016-2023) https://www.moh.gov.my/moh/resources/Pemakanan/Buku_National_Plan_of_Action_for_Nutrition_of_Malaysia_III_2016-20251.pdf
103. Sulong F et al (2023). Acceptance and effectiveness of the Healthier Choice Logo (HCL) among food industries in Malaysia. Mal J Nutr 29(2): 355-366. https://nutriweb.org.my/mjn/publication/29-2/Vol%2029%282%29%2012.mjn.2022.0137%20Md%20Nor.pdf
104. ibid.
105. Ministry of Health (2022). Handbook: Mid-term review of the National Plan of Action for Nutrition of Malaysia (NPANM) III, 2016-2025. Accessible https://hq.moh.gov.my/nutrition/wp-content/uploads/2023/12/HANDBOOK-OF-MID-TERM-REVIEW-OF-NPANM-III-_-2-NOV-2022_2nd-MOCK-2.pdf
106. Mok, W. K. H., Hairi, N. N., Chan, C. M. H., Mustapha, F. I., Saminathan, T. A., & Low, W. Y. (2021). The Implementation of Childhood Obesity Related Policy Interventions in Malaysia-A Non Communicable Diseases Scorecard Project. International journal of environmental research and public health, 18(11), 5950. https://doi.org/10.3390/ijerph18115950
107. ibid.
108. ibid.
109. Ng, S., Kelly, B., Yeatman, H., Swinburn, B., Karupaiah T., Policy Inertia on Regulating Food Marketing to Children: A Case Study of Malaysia. Int J Environ Res Public Health. 2021 Sep 12;18(18):9607. doi: 10.3390/ijerph18189607. PMID: 34574531; PMCID: PMC8472389
110. Sulong F et al (2023). Acceptance and effectiveness of the Healthier Choice Logo (HCL) among food industries in Malaysia. Mal J Nutr 29(2): 355-366. https://nutriweb.org.my/mjn/publication/29-2/Vol%2029%282%29%2012.mjn.2022.0137%20Md%20Nor.pdf
111. ibid.

112. The Sun (2024). National Strategic Plan addresses child malnutrition with comprehensive approach. 15 October. Accessible at https://thesun.my/malaysia-news/national-strategic-plan-addresses-child-malnutrition-with-comprehensive-approach-AA13134073
113. Harakah Daily (2022). Strategic plan to prevent stunting in children approved. 27 June. Accessible https://harakahdaily.net/index.php/2022/06/27/strategic-plan-to-prevent-stunting-in-children-approved/
114. Ministry of Health (2018). Policy Options To Combat Obesity in Malaysia. https://extranet.who.int/ncdccs/Data/MYS_B11_Policy%20Options%20to%20Combat%20Obesity%20in%20Malaysia.pdf
115. Academy of Sciences Malaysia (2017). Addressing the global health challenge of obesity in Malaysia. Workshop Report. October. Accessible at https://acmedsci.ac.uk/file-download/18861164
116. ibid.
117. ibid.
118. Academy of Sciences Malaysia (2013). Prioritising food policy options to reduce obesity in Malaysia. ASM Advisory Report 4/2013. Accessible at https://www.moh.gov.my/moh/resources/Penerbitan/Garis%20Panduan/Pengurusan%20KEsihatan%20&%20kawalan%20pykit/Prioritizing_Food_Policy_Options_to_Reduce_Obesity_in_Malaysia.pdf
119. Ministry of Health (2015). National Action Plan for Active Living. Accessible at https://extranet.who.int/ncdccs/Data/MYS_B12_NASPAL%202016-2015%20(1).pdf
120. Khoo, S., Poh, B. K., Suhaimi, S. A., Chong, K. H., & Ramirez Varela, A. (2020). Physical Activity Promotion in Malaysia: Challenges and Opportunities. Frontiers in public health, 8, 536239. https://pmc.ncbi.nlm.nih.gov/articles/PMC7652762
121. ibid.
122. Ministry of Health (2015). National Action Plan for Active Living. Accessible at https://extranet.who.int/ncdccs/Data/MYS_B12_NASPAL%202016-2015%20(1).pdf
123. Khoo, S., Poh, B. K., Suhaimi, S. A., Chong, K. H., & Ramirez Varela, A. (2020). Physical Activity Promotion in Malaysia: Challenges and Opportunities. Frontiers in public health, 8, 536239. https://pmc.ncbi.nlm.nih.gov/articles/PMC7652762
124. Ministry of Health. Health services for adolescents. Available from http://www.myhealth.gov.my/en/health-service-for-adolescent/
125. Mok, W. K. H., Hairi, N. N., Chan, C. M. H., Mustapha, F. I., Saminathan, T. A., & Low, W. Y. (2021). The Implementation of Childhood Obesity Related Policy Interventions in Malaysia-A Non Communicable Diseases Scorecard Project. International journal of environmental research and public health, 18(11), 5950. https://doi.org/10.3390/ijerph18115950
125. ibid.
127. Mat Jusoh H et al (2023) Malaysian Dietary Guidelines for Children and Adolescents 2023. Policy Paper. National Coordinating Committee on Food and Nutrition (NCCFN), Ministry of Health Malaysia, Putrajaya, Malaysia.
128. Yeo GS et al (2024). Poor adherence to Malaysian dietary guidelines among primary schoolchildren in Peninsular Malaysia. Poster presentation at 39th Scientific Conference of the Nutrition Society of Malaysia. July. Accessible at https://www.frieslandcampinainstitute.com/uploads/sites/19/2024/08/SEANUTS-II-MY-NSM-2024-Poster-Poor-adherance-to-MY-Dietary-Guidelines.pdf
129. Codelue (2020). Perikatan reveals 'new deal' for health. 24 July. Accessible at https://codeblue.galencentre.org/2020/07/perikatan-reveals-new-deal-for-health/
130. International Food and Beverage Alliance (2014). Malaysian Food and Beverage Industry's "Responsible Advertising to Children" Initiative. Accessible at https://ifballiance.org/wp-content/uploads/2020/10/MALAYSIA_PLEDGE_FINAL_.pdf
131. Campaign Asia (2013). Brands sign pledge to stop targeting young children in Malaysia. 7 August. Accessible at https://www.campaignasia.com/article/brands-sign-pledge-to-stop-targeting-young-children-in-malaysia/352648
132. Ng, S., Kelly, B., Yeatman, H., Swinburn, B., & Karupaiah, T. (2021). Policy Inertia on Regulating Food Marketing to Children: A Case Study of Malaysia. International journal of environmental research and public health, 18(18), 9607. https://doi.org/10.3390/ijerph18189607
133. The Sun (2024). MOH to introduce beverage grading system to reduce nation's sugar intake. 20 May. Accessible at https://thesun.my/malaysia-news/moh-to-introduce-beverage-grading-system-to-reduce-nation-s-sugar-intake-CA12470561
134. Health Promotion Board (2024). Measures for Nutri-Grade Beverages. Accessible at https://www.hpb.gov.sg/healthy-living/food-beverage/nutri-grade
135. Mokhtar, A.H., Kamarudin, M.A., Choong, A. et al. The effect of the MyBFF@school program on cardiorespiratory fitness in overweight and obese primary schoolchildren: a cluster randomized controlled trial. BMC Public Health 24 (Suppl 1), 3623 (2025). https://doi.org/10.1186/s12889-024-20723-2

136. Rashid, A. F., Wafa, S. W., Abd Talib, R., & Abu Bakar, N. M. (2022). An interactive Malaysian Childhood Healthy Lifestyle (i-MaCHeL) intervention programme to change weight-related behaviour in preschool child-parent dyads: Study protocol of a cluster randomised controlled trial. PloS one, 17(10), e0276843. https://doi.org/10.1371/journal.pone.0276843
137. Rashid, A.F.A., Syed Saadun Tarek Wafa, S.W.W., Talib, R.A. et al. Interactive Malaysian Childhood Healthy Lifestyle (i-MaCHeL) programme: a single-arm pilot study. Pilot Feasibility Stud 10, 80 (2024). https://doi.org/10.1186/s40814-024-01483-7
138. Mok, W. K. H., Poh, B. K., Wee, L. H., Devanthini, D. G., & Ruzita, A. T. (2018). Juara Sihat: assessing the sustained impact of a school-based obesity intervention. The Medical journal of Malaysia, 73(2), 100–105.
139. Ahmad, N., Shariff, Z. M., Mukhtar, F., & Lye, M. S. (2018). Family-based intervention using face-to-face sessions and social media to improve Malay primary school children's adiposity: a randomized controlled field trial of the Malaysian REDUCE programme. Nutrition journal, 17(1), 74. https://doi.org/10.1186/s12937-018-0379-1
140. Wafa, S. W., Talib, R. A., Hamzaid, N. H., McColl, J. H., Rajikan, R., Ng, L. O., Ramli, A. H., & Reilly, J. J. (2011). Randomized controlled trial of a good practice approach to treatment of childhood obesity in Malaysia: Malaysian Childhood Obesity Treatment Trial (MASCOT). International journal of pediatric obesity : IJPO : an official journal of the International Association for the Study of Obesity, 6(2-2), e62–e69. https://doi.org/10.3109/17477166.2011.566340
141. BERNAMA (2024). Pelan strategik Putrajaya Sihat Sejahtera sebagai inisiatif ANMS diluluskan. 24 September. Accessible at https://www.bernama.com/bm/news.php?id=2343849&
142. Codeblue (2022). Nearly Half of Putrajaya Residents are Obese. 12 October. Accessible at https://codeblue.galencentre.org/2022/10/nearly-half-of-putrajaya-adult-residents-are-obese/
143. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
144. Malaysian Obesity Society (2024). Closing the gaps in obesity: the need for a strategic, system-wide approach to obesity care. White paper.
145. Malaysian Association for the Study of Obesity (2024). Strategies for the Prevention of Obesity in Malaysia: Expert Reviews and Recommendations (2nd Ed.). Noor MI and Appannah G (eds.) on behalf of SPOM Technical Committee
146. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
147. Rubino, F et al (2024). Definition and diagnostic criteria of clinical obesity. 14 January. The Lancet Diabetes and Endocrinology. Online first. https://www.thelancet.com/journals/landia/article/PIIS2213-8587(24)00316-4/abstract
148. Galen Centre (2024). RTD on Childhood Obesity in Putrajaya. Event Report. 12 December 2024
149. Torbahn G, et al. Anti-Obesity Medication in the Management of Children and Adolescents With Obesity: Recent Developments and Research Gaps. Clin Endocrinol (Oxf). 2025 Jan;102(1):51-61. doi: 10.1111/cen.15133. Epub 2024 Sep 11. PMID: 39257303; PMCID: PMC11612549.
150. Malaysian Paediatric Association. Fighting Childhood Obesity – a Clarion Call. Dr. Adele Tan. 23 November 2016. Available at https://mypositiveparenting.org/2016/11/23/fighting-childhood-obesity-a-clarion-call/
151. Institute for Public Health (2024). National Health and Morbidity Survey 2024 - Nutrition. Available at https://iku.nih.gov.my/images/nhms2024/fact_sheet_nhms2024.pdf
152. Ministry of Health (2017). Recommended Nutrient Intakes for Malaysia. National Coordinating Committee on Food and Nutrition. Available at https://hq.moh.gov.my/nutrition/wp-content/uploads/2023/12/FA-Buku-RNI.pdf
153. Hampl SE, et al. Clinical Practice Guideline for the Evaluation and Treatment of Children and Adolescents With Obesity. Pediatrics. 2023;151(2): e2022060640

"I had obesity in childhood. Today, even if I can lose weight now, I have lost my childhood. "

Investing in the treatment of obesity among children and adolescents is critical due to the disease's far-reaching health, social, and economic implications.



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