

**Module: Population Health and Digital Health
Promotion**

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Assignment Title: Group Project Presentation

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Animated AI Intervention for Childhood Obesity

- Chosen population: Obesity in children aged 6-12
- Target activity: Engage, educate and empower children to adopt healthier lifestyles using AI Pin with animated cartoon voice



(GovTech, 2022)

Goals and Content of the Digital Interventions

To reduce the incidence of obesity in children aged 6-12 through engaging digital interventions.

Key activities:

- Campaign in a community area
- AI awareness program, including nutrition, physical activity and general well-being
- Promote the benefits of AI in preventing childhood obesity

Digital Health Technology: AI Pin

What is it?

AI Pin is a wearable device that offers a range of features through artificial intelligence.

How does it work?

- No need for a screen, operated entirely by voice and gestures.
- The camera can accurately identify the grams of food and the nutritional content.
- Can help the children and their parents with real-time interpretation, with no language barriers.
- (Oladokun, 2023)



(Wired, 2023)

Introduction

According to the data, 28% of children between the ages of 2-15 were classified as overweight or obese. Specifically, 31% of boys and 27% of girls fell into this category (NHS Digital, 2019)

Two main Risk factors

- Physical activity
- Food environment

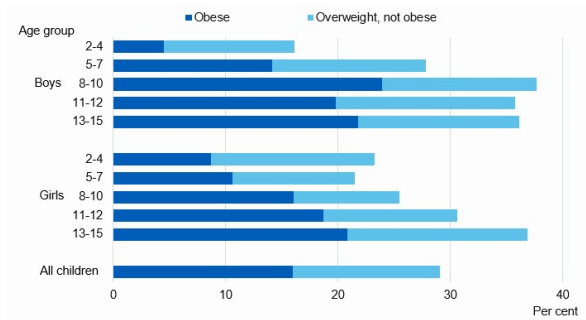
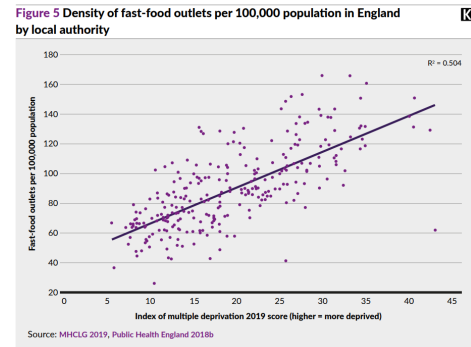


Figure 2: Prevalence of overweight and obesity in children



(Holmes, 2021)

Figure 3: Density of fast-food outlets per 100,000 population in England

National Guidelines Addressing Childhood Obesity in the UK

The Government's approach to tackling childhood obesity

- Improve the nutritional content of children's food and beverages.
- Improve the knowledge of parents about the products.
- Changing the promotion of unhealthy foods and sugary drinks.

Guidance for healthcare professionals and public health workers

- Promote healthy weight through improved diet and portion control.
- Encourage physical activity.
- Communicate evidence-based information about weight, nutrition and activity.

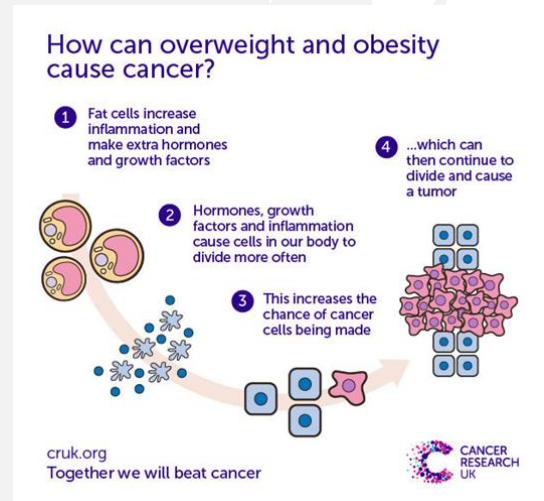
(OHID, 2022)

Consequences of Not Addressing the Issue cont.

Physical Health Risks

- Heart disease
- High blood pressure
- Diabetes
- Some cancers

(Balasundaram and Krishna, 2023)



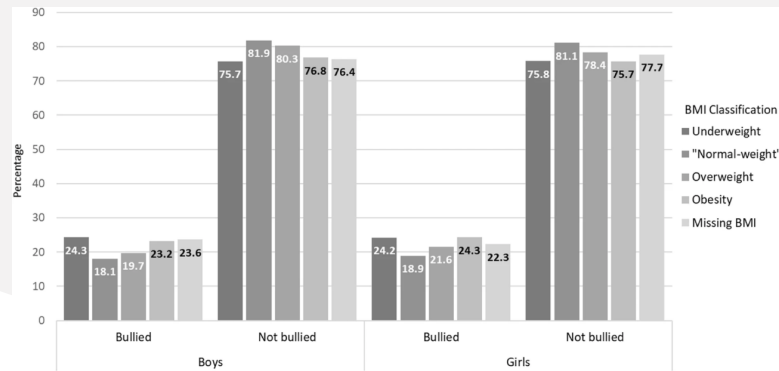
(Cancerresearchuk, 2021)

Consequences of Not Addressing the Issue

Psychological and Social Effects

- Poor Psychological and Emotional Health
- Experience of Bullying and Social Stigma

(Rankin et al., 2016)



(Patte et al., 2021)

Figure 6: Self-reported bullying by BMI classification among boys and girls in Year 7 (2018/19)

The Rationale Of the Chosen AI Pin

- **Engagement and Accessibility (Stephens et al., 2019)**

These interventions can be personalised, interactive, and easily integrated into daily routines, making health education and management more attractive to children.

- **Positive Impact on Weight-Related Outcomes (Konstantia Zarkogianni et al., 2023)**

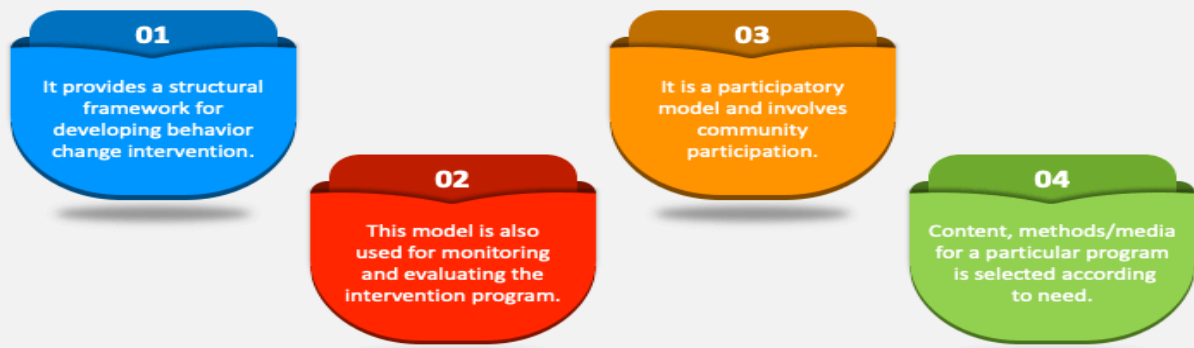
Body mass index (BMI) can be reduced through these interventions and can increase the level of physical activity in children, which is essential for controlling and preventing obesity

- **Multi-Component Approach (Maher et al., 2020)**

These multi-component interventions are more likely to be successful in combating obesity, as they provide a holistic approach to health promotion



PRECEDE-PROCEED MODEL



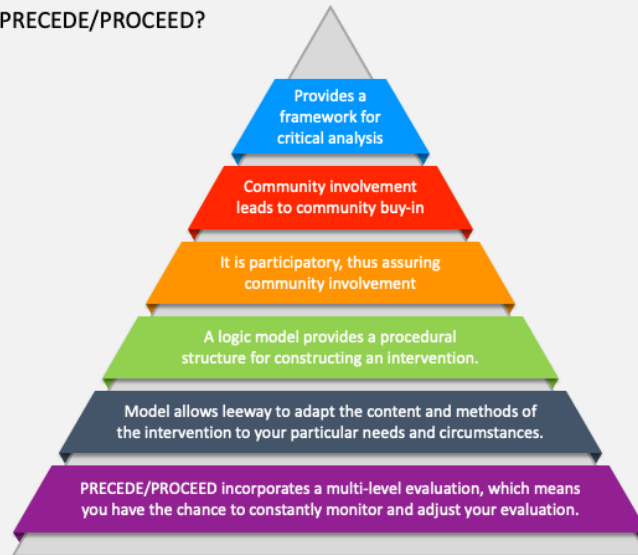
Source-publichealthnotes.com

Sketchbubble,2023

PRECEDE-PROCEED MODEL

Source-present5.com

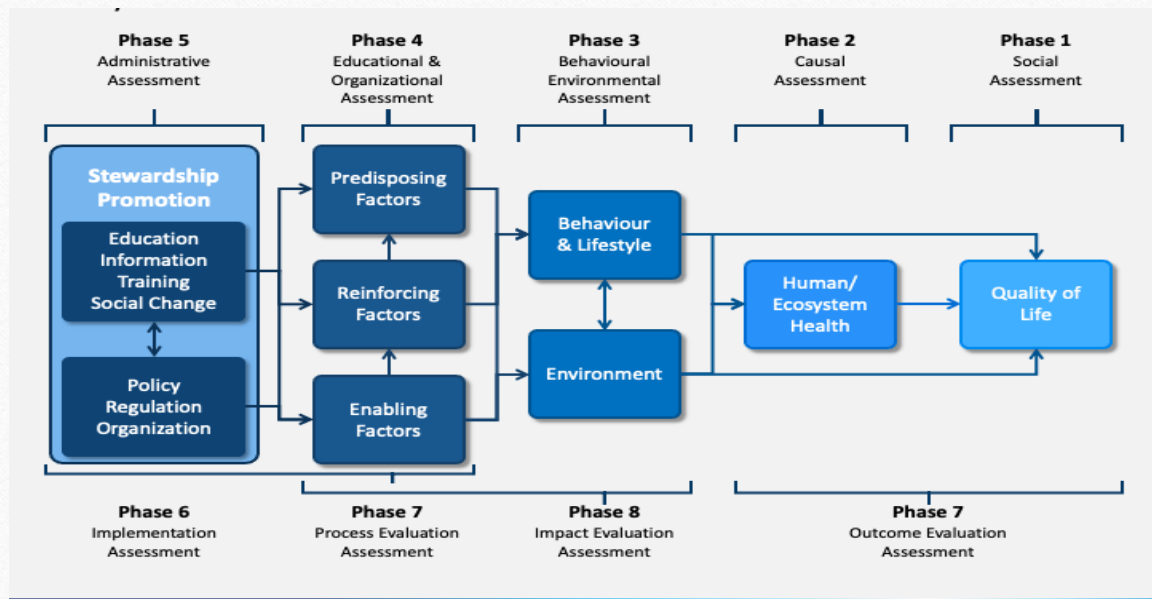
Why Use PRECEDE/PROCEED?



Sketch bubble,2023

PRECEDE-PROCEED MODEL

- ❑ The goal of this PRECEDE-PROCEED model application for childhood obesity is to effectively address the multiple natures of the problem by taking into account behavioural, social, and environmental components in addition to utilising technology for effective engagement and education (Health Behavior and Health Education 2002).
- ❑ Ongoing assessment guarantees that interventions are continuously improved based on input and results from the real world.
- ❑ In the context of addressing childhood obesity in the 6–12 age range, the model involves a systematic and comprehensive approach to understanding, planning, implementing, and evaluating interventions. Here's how each phase of the model can be applied(Health Behavior and Health Education 2002)



Sketchbubble,2023

PRECEDE Phase:

1. Social Assessment:

- Examine cultural attitudes and community perspectives on health education and childhood obesity (Green & Kreuter, 2005).
- Recognise social factors influencing children's adverse lifestyle choices. Social factors, including family dynamics, peer influences, cultural norms, and economic status, play a significant role in shaping children's adverse lifestyle choices such as unhealthy eating habits and sedentary behaviors. Recognizing and addressing these influences is essential in developing targeted interventions to promote healthier lifestyles among children aged 6–12 within the PRECEDE-PROCEED model.
- Conduct surveys and focus groups to explore parental beliefs, community norms, and cultural attitudes towards diet and physical activity (Green & Kreuter, 2005) .

2. Epidemiological Evaluation:

- Look at the incidence and patterns of childhood obesity in the age range (Glanz et al., 2008).
- Identify specific risk factors like sedentary habits and eating patterns.

- Gather data on obesity rates, sedentary behaviors, and dietary patterns among children aged 6-12 in the target community (Glanz et al., 2008) .
- This data collection aims not only to understand the prevalence of unhealthy behaviors but also to identify the specific dietary needs of children. For example, assessing the frequency of fruit and vegetable consumption, intake of sugary beverages, and access to balanced meals helps tailor interventions to address nutritional gaps and promote healthier eating habits within the community.

3. Behavioral and Environmental Assessment:

- Explore current behaviors related to food like **Snacking Habits**(Assess the frequency and types of snacks consumed, including whether they are nutrient-dense or predominantly processed) ,physical activity, and health in children aged 6 to 12 years.
- Analyze environmental factors, including access to good nutrition and opportunities for physical activity.
- Assess children's daily activities, dietary habits, and the availability of recreational spaces in the community (McLeroy et al., 1988).

PROCEED Phase:

4. Management Training and Promotion:

- Assess the availability of health-related educational resources in the community.
- Review existing organizational structures, such as schools and community centers, supporting health education programs.
- Collaborate with schools and community centers to integrate obesity prevention into the curriculum and extracurricular activities (Green & Kreuter, 2005).

- For example, science classes could explore the biological impacts of healthy eating, while physical education classes focus on enjoyable and active games promoting fitness. Additionally, partnering with community centers enables the extension of health education through extracurricular activities such as after-school programs or weekend fitness clubs, fostering a comprehensive approach to childhood obesity prevention

5. Implementation:

- Develop interactive AI-based learning interventions using interactive animation languages and AI PIN technology.
- Implementing AI-based learning interventions will take approximately 12 months.
- Conduct community activities like workshops and seminars to disseminate health education in schools and community meeting places.
- Create age-appropriate, interactive educational modules using AI technology, animated voice prompts, and personalised learning experiences to engage children in learning about nutrition and physical activity (Rosenstock, 1999).

6. Process Evaluation:

- Continuously assess the effectiveness of AI interventions through user feedback and engagement metrics.
- Use feedback mechanisms, surveys, and engagement metrics to monitor the adoption and impact of AI-based interventions. Modify interventions based on user feedback to enhance effectiveness (Steckler & Linnan, 2002)
- Modify interventions based on continuous evaluation results to enhance effectiveness (Green and Kreuter, 2005).

7. Evaluation of Results:

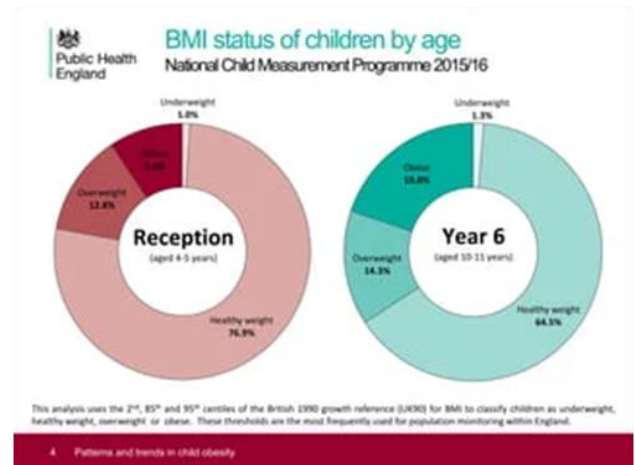
- Assess the impact of interventions on knowledge, attitudes, and behaviors related to childhood obesity.
- Measure changes in childhood obesity rates over time and link these changes to interventions (Linnan & Steckler, 2002)..

Technical Integration:

- Utilise PIN AI technology and animated voice prompts to improve educational access, application, and effectiveness.
- AI PIN provides a personalised and interactive learning experience, enhancing children's engagement.
- Cartoon voices add to the fun and make educational content more relatable and memorable. (Craig et al., 2008).

Potential Stakeholders for Childhood Obesity Trailblazer Programme

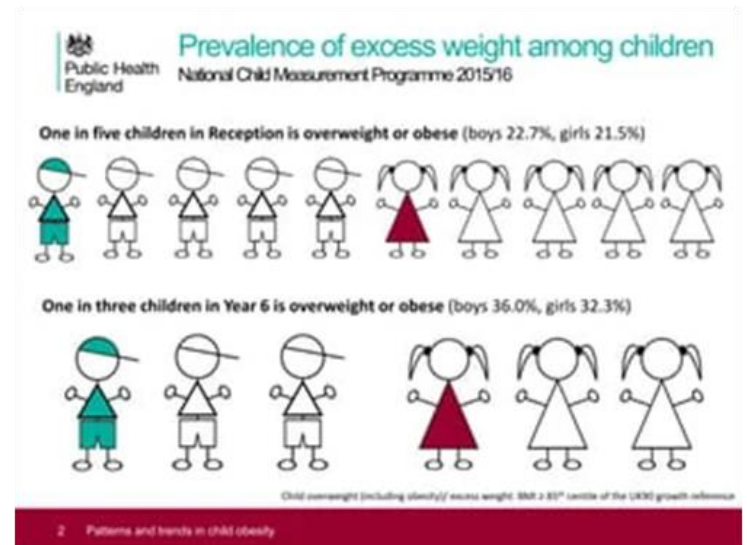
- The Childhood Obesity Trailblazer Programme includes quite a number of stakeholders quintessential for its success.
- Primary stakeholders consist of young people and their families, as they immediately ride the program's outcomes. Health professionals, such as paediatricians and nutritionists, play an indispensable function in designing and enforcing interventions.
- Educational establishments are large stakeholders, given they have an impact on kid's habits (Finlay *et al.*, 2022).



Potential Stakeholders

Childhood Obesity Trailblazer Programme (Continuation)

- Government companies make contributions through coverage improvement and funding, impacting software sustainability.
- Non-profit groups targeted at fitness and health may also collaborate to furnish sources and expertise.
- The meals industry, which includes producers and marketers, is additionally a key stakeholder, as dietary options profoundly have an effect on childhood obesity.
- Media stores can have an effect on public recognition and perception, affecting the program's attainment and impact (Russell, 2021).





Potential Barriers Childhood Obesity Trailblazer Programme

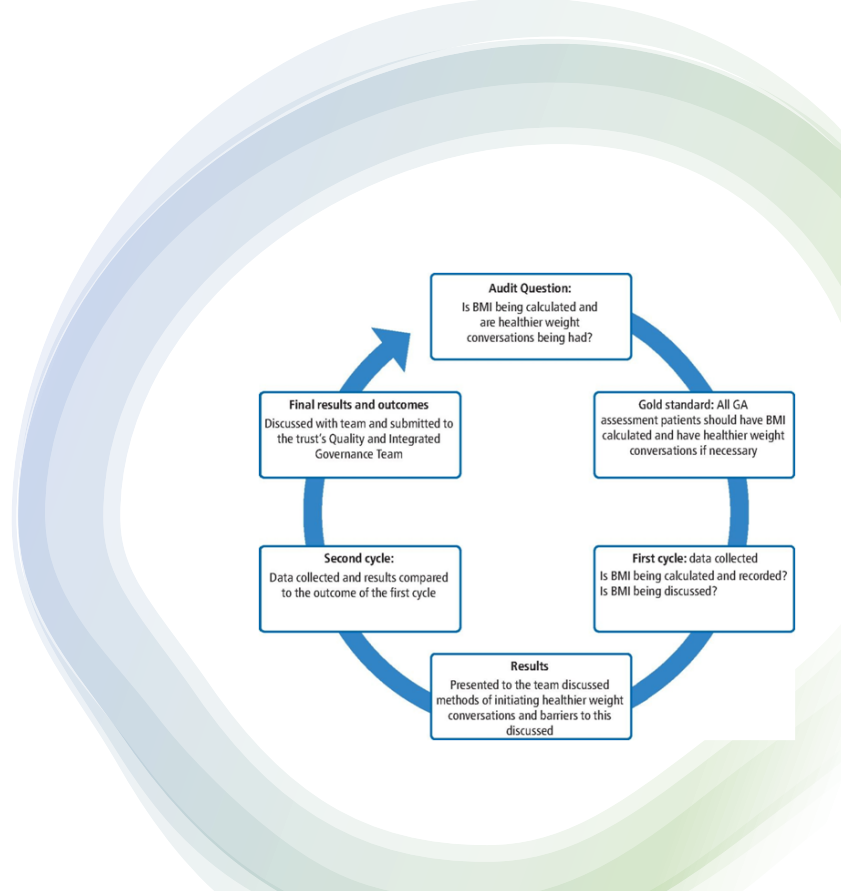
- This health promotion intervention program aims to address and prevent different childhood obesity issues through different innovative strategies.
 - There are some barriers that affect the effectiveness of the program.
 - There is a limitation in funding and resources.
 - It restricts the scope and reach of different interventions.
 - The successful implementation of this program can be hindered due to different cultural or social factors.
 - These factors can be developed by different stakeholders like parents, schools and communities (Ryan, 2023).
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Potential Barriers for Childhood Obesity Trailblazer Programme (Continuation)

- The sustenance of different long-term engagement strategies is another issue for the improvement of the program.
- The adherence to different healthy behaviours among the children can be hampered by the implementation of this program.
- The families face different difficulties because of different competing priorities and lifestyle choices.

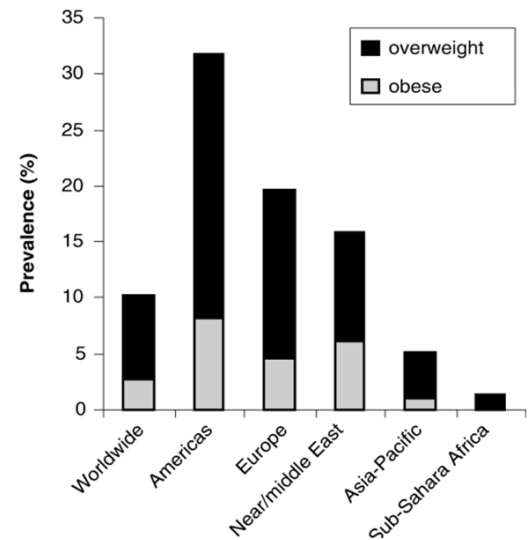
Legal issues associated with the successful implementation of the Childhood Obesity Trailblazer Programme

- Successful implementation of this program may face different legal issues.
- These issues can be related to different privacy, consent and liability factors.
- Properly ensuring the program of different data protection laws is crucial.
- It helps in the effective consideration of different sensitive health information.
- There should be proper consent from the parents which is essential.
- It might increase some legal issues as well (Griffin *et al.*, 2022).



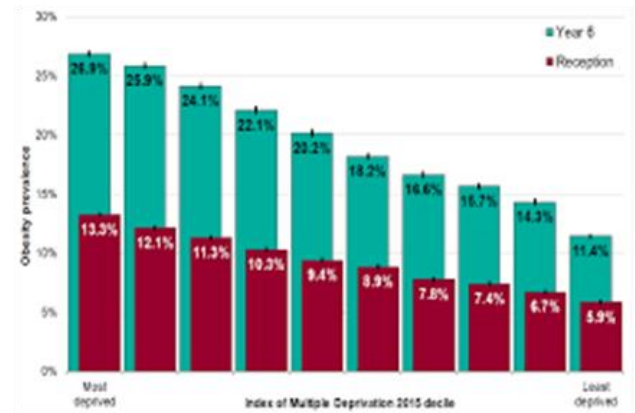
Ethical issues associated with the successful implementation of the Childhood Obesity Trailblazer Programme

- There are some ethical concerns related to this intervention program.
- One of the most noticeable issues is the Privacy issue.
- There are different actions like collecting and analyzing sensitive health data which increases privacy issues.
- There are some equity issues in the program due to the uneven distribution of different data.
- It includes issues like exacerbation of health disparities.
- There is a risk of psychological harm to the children due to the stigmatizing participation of different children (Garde and Zrilić, 2020)



Potential Benefits of Childhood Obesity Trailblazer Programme

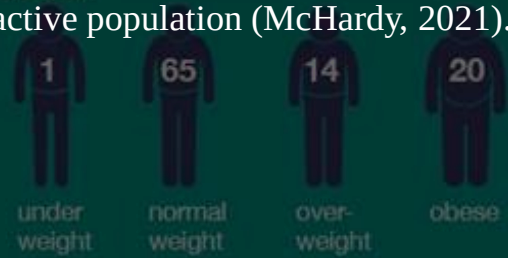
- This program represents a groundbreaking initiative.
- The aim of this program is to address multiple issues of childhood obesity.
- Early intervention and prevention strategies help to initiate different significant benefits for both the individuals and society.
- This program helps in contributing to different improvements in public health outcomes.
- It helps in mitigating different associated health issues like diabetes and cardiovascular disease.
- It helps in preventing different approaches which help in long-term cost saving (Gelius *et al.*, 2022)



Potential benefits of Childhood Obesity Trailblazer Programme (Continuation)

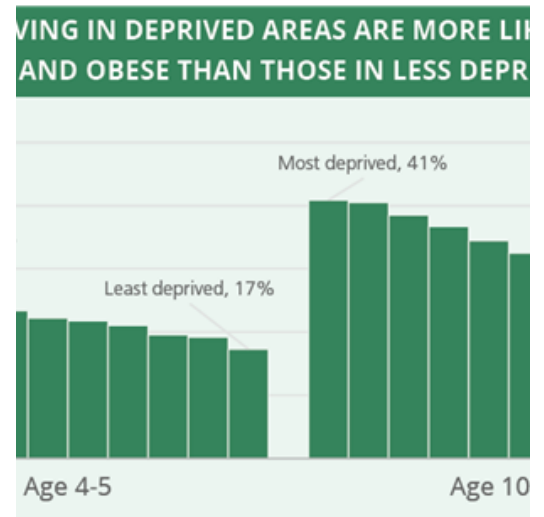
Obesity in children

- The program helps in enhancing the overall well-being.
- It helps in promoting a healthier lifestyle and fostering positive habits.
- It helps in incorporating different elements like nutritional education and physical activities.
- It helps in increasing community engagement effectively as well.
- The program helps in developing the potential to instil good habits.
- These habits help in increasing a healthier and more active population (McHardy, 2021).



Implication of Childhood Obesity Trailblazer Programme on policies, research and education

- This program helps in catalyzing some impactful changes in the policies and research.
- It helps in making essential developments in educational values as well.
- Innovative solutions and collaboration help in developing evidence-based policies.
- It helps in addressing different issues of childhood obesity.
- The program focuses on the research evidence.
- It helps in understanding the contributing factors and effective interventions.
- It helps in informing different targeted policies (Nias, 2021).



Implication of Childhood Obesity Trailblazer Programme on policies, research and education

- COTP is very crucial to handle childhood obesity in local perspectives (Lockyer and Spiro, 2019).
- As per the COTP policies, it is one of the most innovative threats to control childhood obesity.
- As per British government 2022 obesity policies, empowerment of adults and children to live healthier is much more important (Sawyer *et al.*, 2021).
- The UK government has organised and introduced legislation in order to decrease calorie intake among children by consuming home food.

Implication of Childhood Obesity Trailblazer Programme on policies, research and education

- As per COTP policies of the UK government, it is highly recommended to required large out of home food business for adding calorie intake opportunities among children.
- With proper counselling psychologically, dietary plans, COTP can be achieved within local perspectives (Lowe and Mahmood, 2023).



Conclusion

- To conclude this presentation it can be said the chosen presentation helps in developing different features and efficiencies in different sectors of social and educational structure.
- It helps in benefitting the children to practice effective health habits.
- It plays a pivotal role in developing different practices and essentialities.



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