Title: Preventing obesity in school aged children (between the ages of 5 and 13) in NYC
Setting: NYC 5 boroughs
Significance of topic: We learned that obesity is linked to a lot of different diseases such as cardiovascular diseases, diabetes, and behavioral problems. We know that habits that formed early on in life can significantly impact their health later on.

Table on Significance of Health Issue: Why is [health issue] a significant public health issue? You need to provide evidence your issue is a significant public health issue using these criteria:
1. Does the health issue contribute a large or major burden in terms of mortality, cost, or quality of life? Can you find evidence that improving the problem will contribute to a major improvement in quality of life in terms of things like productivity or hospitalizations?
2. Has the burden recently increased or emerged? Look for evidence of rapidly increasing burden based on either mortality, cost or quality of life.
3. Has the issue been established as a threat by a public health organization using an established and systematic process?

Evidence Table A: Significance of Health Issue

- Why is obesity a significant public health issue?

Author, Year	Methods of Research	Findings relevance to deciding health issue
Bendor et al., 2020	● A systematic search was conducted using PubMed, to identify relevant articles published through October 20, 2019 ● Using PubMed filters, the search was limited to studies conducted on human ● In addition to PubMed search results, 11 articles cited by leading studies and reviews were added to study. ● Manual screening by the author was conducted and excluded non- relevant articles ● Finally, 60 studies were included in this review, of which 10 were longitudinal	● Substantial data have accumulated in recent years on the cross-sectional association of childhood severe obesity with immediate cardiometabolic risk factor ● Prevalences of well-defined hypertension among children with severe obesity were fairly consistent between studies, and ranged from 9 to 17% ● Data shows that children with severe obesity are at greater risk of dyslipidemia and type 2 diabetes .

Day et al., 2014	• Height and weight measurements were used of 947,765 NYC public school students aged 5 to 14 years in kindergarten through 8th grade (K–8), from school years 2006–07 through 2010–11. • Age and sex specific body mass index (BMI) percentiles were used according to Centers for Disease Control and Prevention growth charts to define childhood obesity (BMI ≥ 95th percentile) and severe childhood obesity (BMI ≥120% of 95th percentile) and to identify biologically implausible values (BIV). • Multivariable logistic models tested for trends in obesity and severe obesity prevalence. • To evaluate misclassification, we recalculated prevalence estimates for the most recent school year (2010– 11) including the student records identified as BIV who were also declared severely obese (BMI ≥ 120% of 95th percentile). We refer to this subgroup of BIVs as “high BIV.”	• For the 2010–11 school year, including high BIVs, severe obesity prevalence from 5.7% to 6.6% and increased obesity prevalence from 20.7% to 21.5%. • Poor health outcomes are more prevalent among minority, poor, and male children due to an increased rate of obesity. • Severe obesity prevalence increased with age, and obesity prevalence peaked among those aged 7 to 10 years.
Makri et al., 2022	A nationally representative sample of 11, 13, and 15-year-old students was selected using a multistage stratified random cluster sampling procedure, based on the HBSC study protocol, with the school class as the primary sampling unit. Questionnaires were administered in class by trained assistants during two consecutive regular class periods. Data were collected from 238 schools. Bodyweight (in kilograms) and height (in centimeters) without clothes and shoes, were based on self-reports.	Over the years, excess body weight during childhood and adolescence has emerged as one of the most serious public health problems globally. According to the World Health Organization (WHO), overweight and obesity have important short and long-term adverse consequences on physical, mental, and emotional health of the child and future adult. In this representative sample of 11, 13, and 15-years-old

	Information related to diet-related behaviors and consumption of selected food groups and beverages were collected through standardized questionnaires. Students were asked to report their gender, month, and year of birth. Age groups, age in months, and in years were computed.	adolescents —almost 1 in 4 adolescents (24.7%)—were overweight/obese.
The Relationship between Obesity and Quality Of Life in School Children Khodaverdi, F., Alhani, F., Kazemnejad, A., & Khodaverdi, Z. (2011).	- This cross sectional study was conducted on 240 children 9–11 year olds who were selected via multi stage cluster sampling design from primary schools. - Pediatric Quality of Life inventory was completed by child self report with measured height and weight used to determine body mass index percentile/weight classification. Obesity was defined as body mass index (BMI) ≥95th percentile for age and gender and one way analyses of variance (ANOVA) was used for data analyses.	- Obese children had impaired physical functioning; BMI was inversely correlated with physical functioning. This supports the idea that the diminished ability to move with increasing weight leads to a decrease in caloric expenditure, leading to additional weight. - Obese children were more likely to report impaired school functioning. It is consistent with a study in Thailand, which reported that overweight children in grades 7-9 were twice as likely to have low grades in math and language as healthy children.

- *Emmanuel*

Table on Specific Priority Group: Which segment is a priority when it comes to [health issue]? We can't afford to develop programs for everyone. While ultimately, we want everyone to enjoy good health, some segments of the population are more at risk and/or have less access to programs or other resources. You need to provide evidence using these criteria.
1. Does this segment of the population show a high level of the disease or health problem?
2. Do the members of this priority group show a low rate of practice of the specific health behavior?
3. Is the issue increasing or decreasing at a higher rate in this segment?
4. Is the level of health behavior decreasing in this segment?

Evidence Table B: Specific Priority Group

- Which at-risk groups need to be addressed to reduce obesity?

Author, Year	Research Method	Findings Relevant to Deciding Health Issue
Keeyoon Noh1 and Jihyun Jane Min, 2020 Noh, K., & Min, J. J. (2020). Understanding School-Aged Childhood Obesity of Body Mass Index: Application of the Social-Ecological Framework. *Children (Basel, Switzerland)*, *7*(9), 134. https://doi.org/10.3390/children7090134	- Summarize previous studies of an independent element that affected child obesity/overweight within the social ecology ecological framework in the literature review. -This study used the public-use dataset from the 5th wave of the Fragile Families and Child Wellbeing Study. The data were collected from 20 large cities, 9 year old of children in the United States - Creates a survey study with dependent variable (**measured BMI**) and association to social ecological factors -The survey components were administered by the primary caregiver (PCG) survey with computer-assisted telephone interviewing (CATI) followed by the core biological parent interviews.	-Obesity levels among adolescents between 12 and 19 years and school-aged children between six and 11 years are 20.6% and 18.4%, respectively, which is higher than among preschool children between two and five years (13.9%). - Between 1971 and 2000, obesity rates increased more than 100% with an obesity rate in 2000 at 10.4%. These numbers have continued to grow exponentially as one-third of American children are considered obese/overweight, and this has remained unchanged in the past decade - Black and Hispanic children are more likely to be obese than White children. Children from low income households, especially black households. - Other than the importance of a better diet and exercise, the author emphasizes social determinants keep children from becoming healthier. Race/ethnicity, child's physical activity and the environment at school, mothers' age, and the family structure were most significantly associated with a child's BMI.
Baniissa, Radwan, Rossiter, Fakhry, Al-Yateem, Al-Shujairi, Hasan, Macridis, Farghaly, Naing, Awad, 2020	- Self-report questionnaires were used to assess adolescents' sociodemographic factors, fruit/vegetable (F/V) intake and physical activity. - Participants' weight, height, waist circumference (WC), hip circumference and body fat percentage (%BF) were measured - Waist-to-height ratio (WHtR), waist-to-hip ratio (WHR) and body mass index (BMI) were calculated - Overweight/obesity was determined with BMI ≥85th percentile for age, abdominal obesity (based on WC, WHR,	- The prevalence of overweight/obesity among participants was 34.7%. - 40.6% of participants had a high percentage of body fat (%BF). - Abdominal obesity (AO) was observed in 47.3%, 22.7%, and 27.1% of participants, based on waist circumference (WC), waist-to-hip ratio (WHR), and waist-to-height ratio (WHtR), respectively.

	WHtR), and percentage of body fat	- Participants from public schools had a significantly higher prevalence of overweight/obesity (37.8% vs. 31.1%) and a greater occurrence of AO compared to those from private schools. - Predictors of obesity, based on BMI, included consuming less than five servings of fruits and vegetables and being physically inactive.
Ashlesha Datar, PhD,a Victoria Shier, MPA,b and Roland Sturm, PhD, 2011 https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3387897/pdf/zpee1411.pdf	- The Early Childhood Longitudinal Study-Kindergarten Class monitored a nationally representative cohort of kindergarten students over 9 years (1998–2007). - Height and weight measurements were available for 4240 white, 640 black, and 1070 Hispanic children in kindergarten and 1st, 3rd, 5th, and 8th grades. - To analyze changes in BMI, according to gender and race/ ethnicity, in a nationally representative cohort of children in the U.S. during their elementary and middle school years to identify critical periods of excess BMI gains	- The article states that the early school years might be a critical time for excess BMI gains, even among children with normal BMI values at kindergarten entry - 40% of children started kindergarten with a BMI in the top quartile of the growth charts (BMI 75th percentile). - This proportion increased significantly during the elementary school years, and the largest gains were between 1st and 3rd grades (5.8 percentage points. There was no increase in middle school.

Hannah & Anannya

Table on Specific Health Behavior: Which behavior needs to be addressed to alleviate [obesity in school aged children]? For this course, we are focusing on behavioral interventions rather than medical or other interventions. Behavior can be changed and behavioral factors are responsible for a significant proportion of morbidity and mortality. You must provide that the behavior is the one to address using these criteria:

1. Is the behavior statistically associated with the health issue?
2. Does an intervention that improves the behavior lead to an improvement in the health issue?
3. Is there a published guideline document by a national or global organization that identifies the behavior as a needed improvement?

Evidence Table C: Specific Health Behavior

- What behavior(s) need to be addressed to decrease obesity in school aged children?

Author, Year	Research Method	Findings Relevant to Deciding Health Issue
Answers Q1: *Increased screen time is statistically associated with childhood obesity* Haghjoo, P., Siri, G., Soleimani, E., Farhangi, M. A., & Alesaeidi, S. (2022)	- They used a systematic search in electronic databases, up to September 2021. These studies all evaluated the relationship between screen time and risk of obesity among school aged children. 44 eligible studies were included in the meta-analysis.	- The results of the two-class meta-analysis showed that school aged children at the highest level of screen time were 1.27 times more likely to develop obesity. - Sedentary behaviors, such as high screen time, decreases lipoprotein lipase activity and leads to reduced HDL levels, lower plasma triglyceride absorption by skeletal muscles, and postprandial increase in serum lipids. This consequently results in the deposition of fat in adipose tissues or vessels.
Answers Q2: *Decreasing screen time leads to a decrease in obesity in school aged children* Robinson N. T. (1999)	- A randomized controlled school-based trial conducted on public elementary schools in San Jose, California. - The study included 198 third and fourth grade students. Children in one elementary school received an 18-lesson, 6-month classroom curriculum to reduce television, videotape, and video game use (in other words, reduced screen time).	- Compared with controls, children in the intervention group had statistically significant relative decreases in body mass index, triceps skinfold thickness, waist circumference and waist-to-hip ratio. - Thus reducing screen time may be a promising approach to prevent childhood obesity.
Answers Q3: Unicef Programming Guidance: Prevention of Overweight and Obesity in Children and Adolescents *Prevention of Overweight and Obesity in Children and Adolescents NUTRITION GUIDANCE SERIES UNICEF PROGRAMMING GUIDANCE Acknowledgements*. (n.d.). https://www.unicef.org/media/92	- This guidance document provides a step-by-step framework to guide national intervention, working in coordination with the government and other partners. It is broken into two parts. The first part provides an overview of obesity in children, and the second part outlines UNICEF's role in efforts to prevent obesity in children and adolescents. - The document refers to research and data compiled by	- The document's listed priority interventions include: - Improving the enabling environment: policies, regulatory frameworks, strategies, - Implementing interventions across the life cycle beginning from preconception and pregnancy. - Interventions can be carried out through policies, in the food system, health system, water

336/file/Programming-Guidance-Overweight-Prevention.pdf	UNICEF and the World Health Organization, among many others.	and sanitation system, education system, social protection system, communities, and the private sector.

Khizra & Isra

Links for evidence table A:

Prevalence of Overweight and Obesity and Associated Diet-Related Behaviors and Habits in a Representative Sample of Adolescents in Greece

https://www.mdpi.com/2227-9067/9/1/119

Severe obesity among children in New York City public elementary and middle schools, school years 2006-07 through 2010-11

nboundmedicine.com/medline/citation/25011000/Severe_obesity_among_children_in_New_York_City_public_elementary_and_middle_schools_school_years_2006_07_through_2010_11_

Cardiovascular morbidity, diabetes and cancer risk among children and adolescents with severe obesity

https://cardiab.biomedcentral.com/articles/10.1186/s12933-020-01052-1#Sec2

Khodaverdi, F., Alhani, F., Kazemnejad, A., & Khodaverdi, Z. (2011). The Relationship between Obesity and Quality Of Life in School Children. *Iranian journal of public health*, *40*(2), 96–101.

Links for evidence table B:

Datar, A., Shier, V., & Sturm, R. (2011). Changes in body mass during elementary and middle school in a national cohort of kindergarteners. Pediatrics, 128(6), e1411–e1417. https://doi.org/10.1542/peds.2011-0114

Baniissa, W., Radwan, H., Rossiter, R., Fakhry, R., Al-Yateem, N., Al-Shujairi, A., Hasan, S., Macridis, S., Farghaly, A. A., Naing, L., & Awad, M. A. (2020). Prevalence and determinants of overweight/obesity among school-aged adolescents in the United Arab Emirates: a cross-sectional study of private and public schools. *BMJ open*, *10*(12), e038667. https://doi.org/10.1136/bmjopen-2020-038667

Noh, K., & Min, J. J. (2020). Understanding School-Aged Childhood Obesity of Body Mass Index: Application of the Social-Ecological Framework. Children (Basel, Switzerland), 7(9), 134. https://doi.org/10.3390/children7090134

Links for evidence table C:

- *Prevention of Overweight and Obesity in Children and Adolescents NUTRITION GUIDANCE SERIES UNICEF PROGRAMMING GUIDANCE Acknowledgements*. (n.d.). https://www.unicef.org/media/92336/file/Programming-Guidance-Overweight-Prevention.pdf