



Patterns of Body Mass Trajectory and Impact of Lifestyle Factors among Japanese Children



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Disclosure

Author names: Chiyori Haga, Yoko Aihara

Learner objectives: Understanding the needs and methods of prevention of childhood obesity through the Japanese study

Conflict of interest statement: None

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Topics

1. What is a major health issue among Japanese? (Background 1)
2. Why does our study focus on children? (Background 2)
3. What did we carry out this study? (Objectives and Study Methods)
4. When was the onset and what were factors of “obesity”?
(Results and Discussion)
5. What should we do to prevent obesity? (Conclusion)



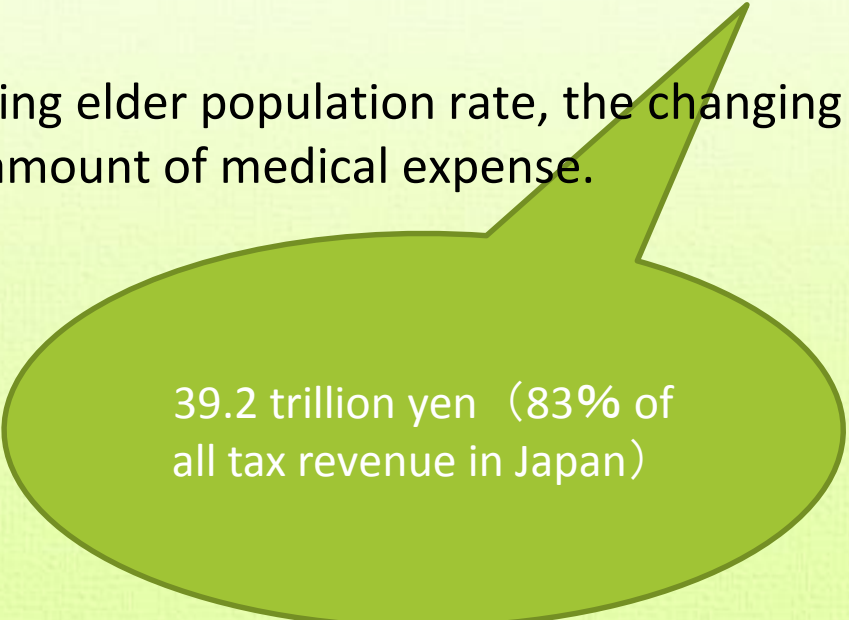
Background 1

Japanese people depend on a universal health insurance system for receiving a medical care in hospital or clinic.



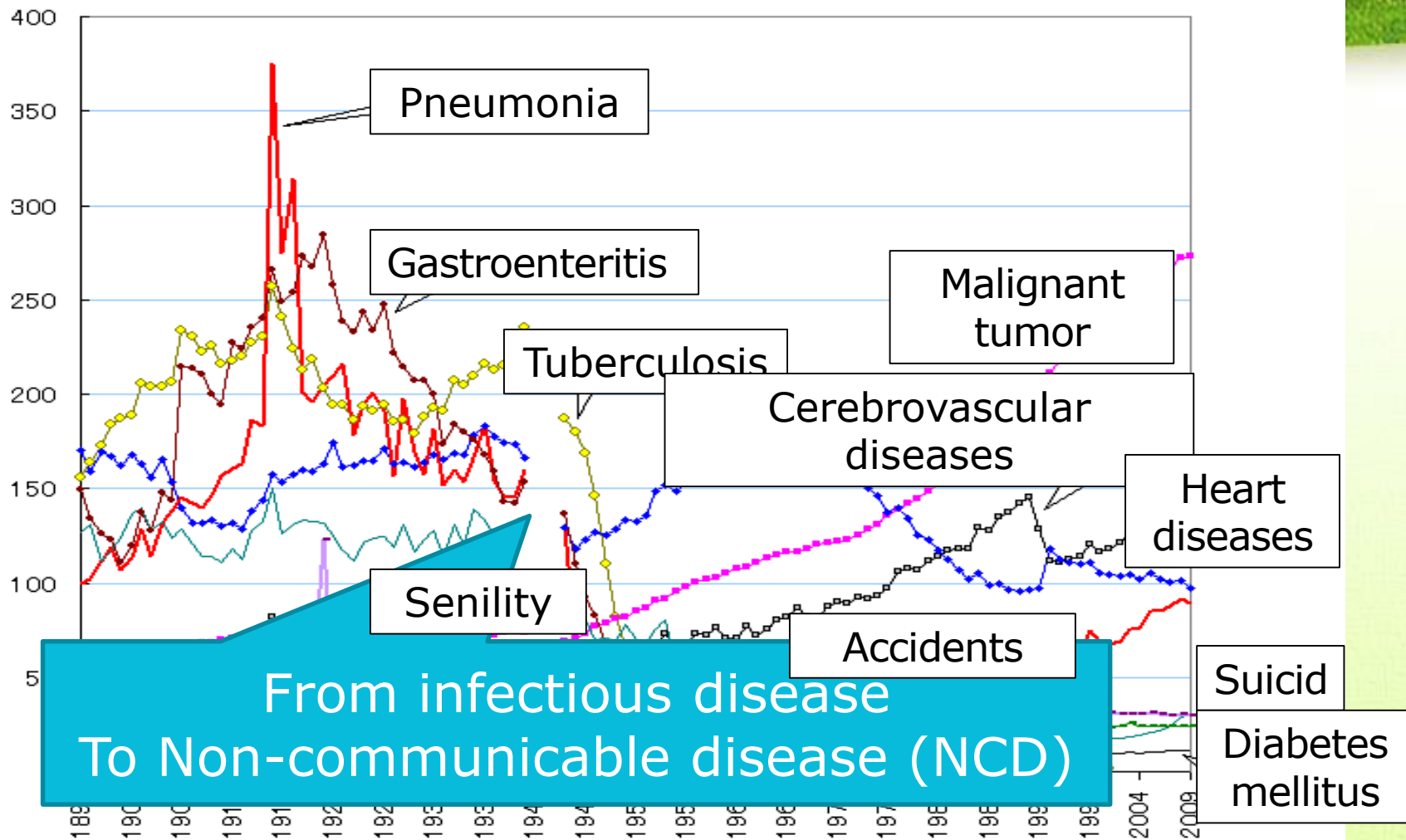
Recently, the cost for life-style diseases account for 30% of medical care expenditures

Due to the declining birth rate and raising elder population rate, the changing proportion of disease make the more amount of medical expense.



39.2 trillion yen (83% of all tax revenue in Japan)

Trajectories of the death-causes among Japanese adults for long term.



Background 2

The government (Ministry of Health, Labour and Welfare) showed the principle of improving health care system

Prevention of lifestyle diseases
by health check up and health guidance
Focused on Metabolic Syndrome

Effective health guidance for changing behavior

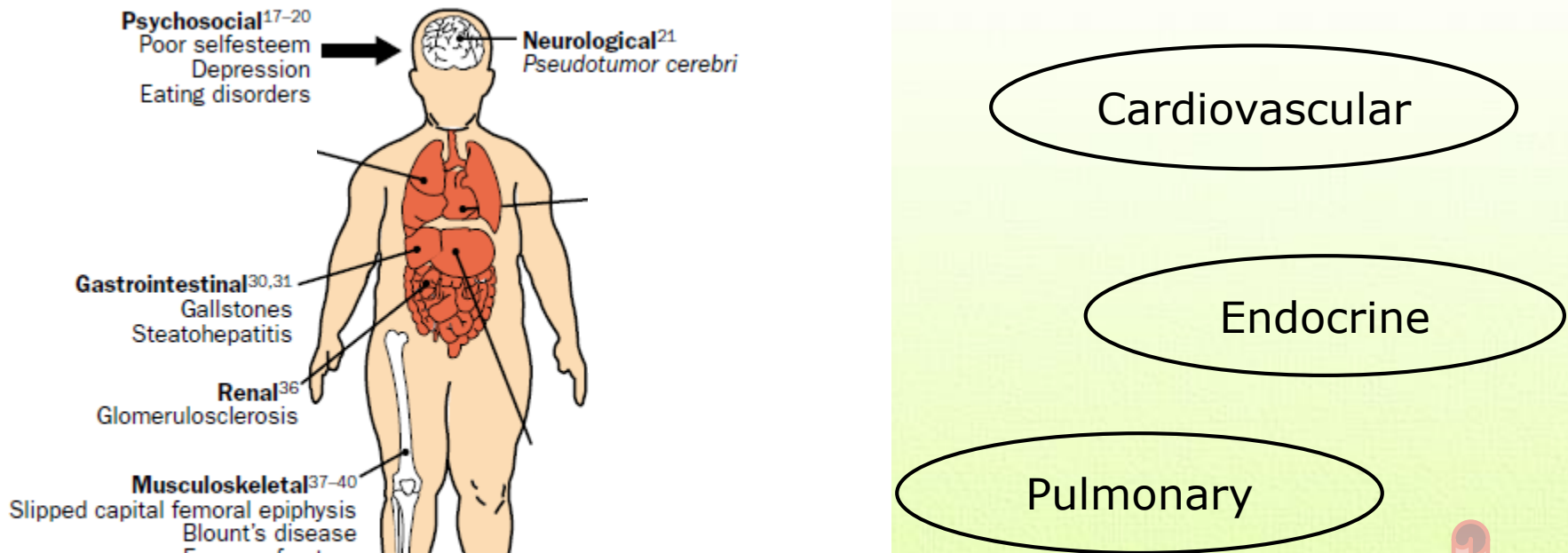


Is it easy for middle aged people to change their indurated lifestyle?

It is important to support pe toddler n they are making healthy habits!

Background 2

Why is it important to prevent childhood obesity?



Even if it is children who became obesity, they have various complications.

Objectives

Objectives: To conduct an explorative analysis for identifying variations in the developmental patterns of body size and the impact of lifestyle factors in Japanese pre-school and school children.

- 1) determine the distinct patterns of body mass index (BMI) trajectories in Japanese children, and
- 2) elucidate the maternal and child's factors, which contribute to the determination of those patterns.



Methods

Study Design: Cohort study

Participant: 155 Children born from April 2, 2005 to March 31, 2006 in Tsuru City, Japan.

Following Period: From 2005 to 2014

Methods (Continue)

Data Collection:

1. The height and weight: measured by public health nurses and school nurses during the annual health monitoring check-up
2. The life style variables: using a structured questionnaire comprises having breakfast, sports club attendance, and maternal working, asked children in 2014.

Methods (Continue)

Data Analysis:

1. The BMI trajectories: We used a discrete mixture model to explore the patterns of body mass index (BMI) trajectories. BMI was calculated as weight (kg)/height (m²) and standardized using the z-score; it was measured at birth and then annually until the age of 9 years.

Methods (Continue)

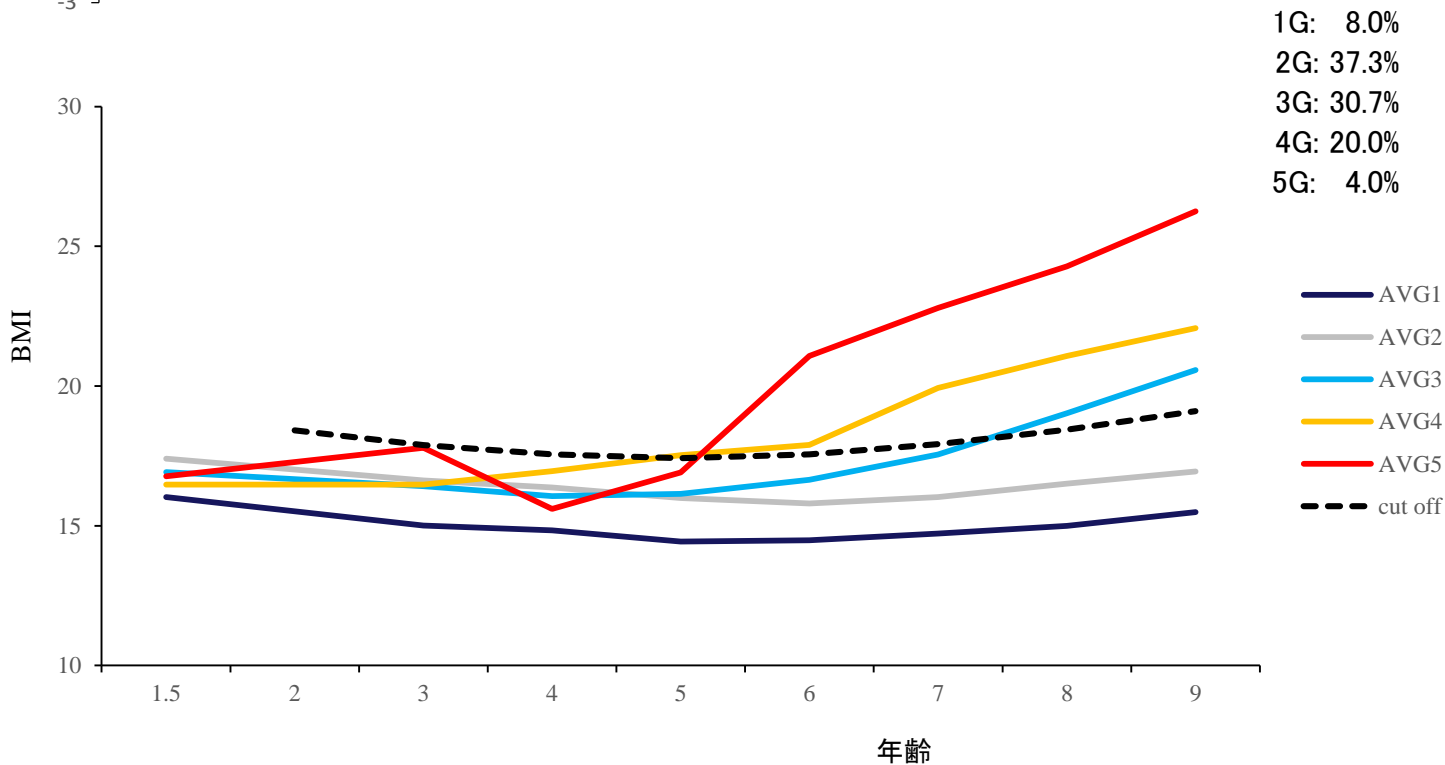
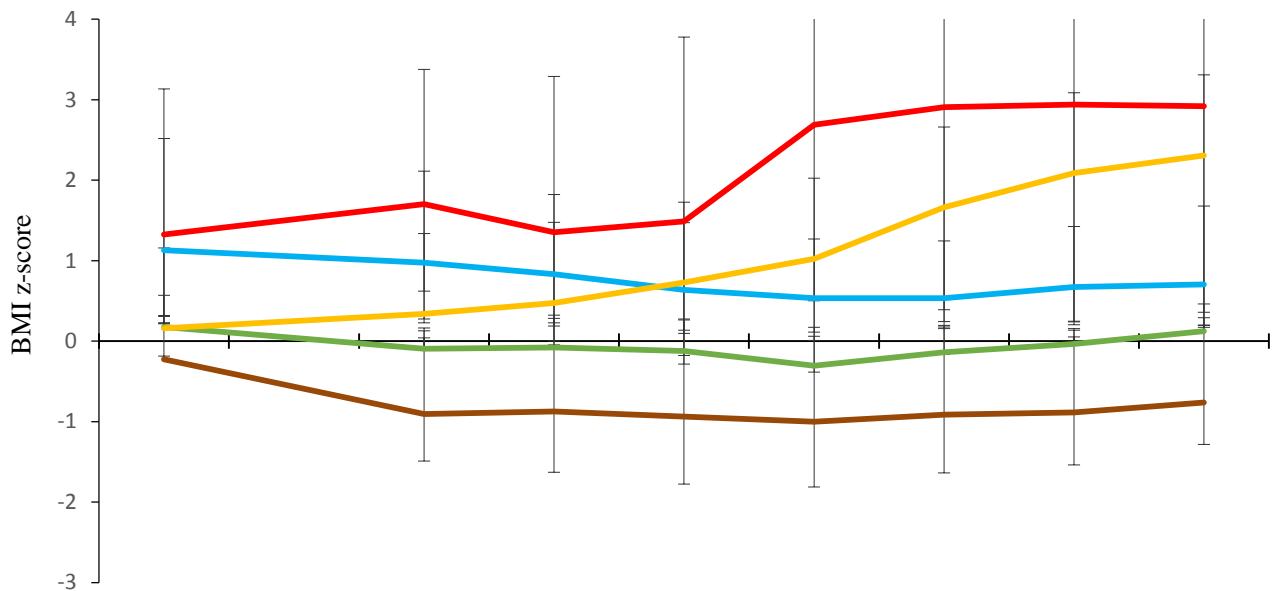
Data Analysis:

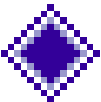
2. The life style variables: using questionnaire about having breakfast, attendance to sports club, and maternal working asking children in 2014. We also used a multinomial logistic regression to identify factors associated with overweight in children.



Results

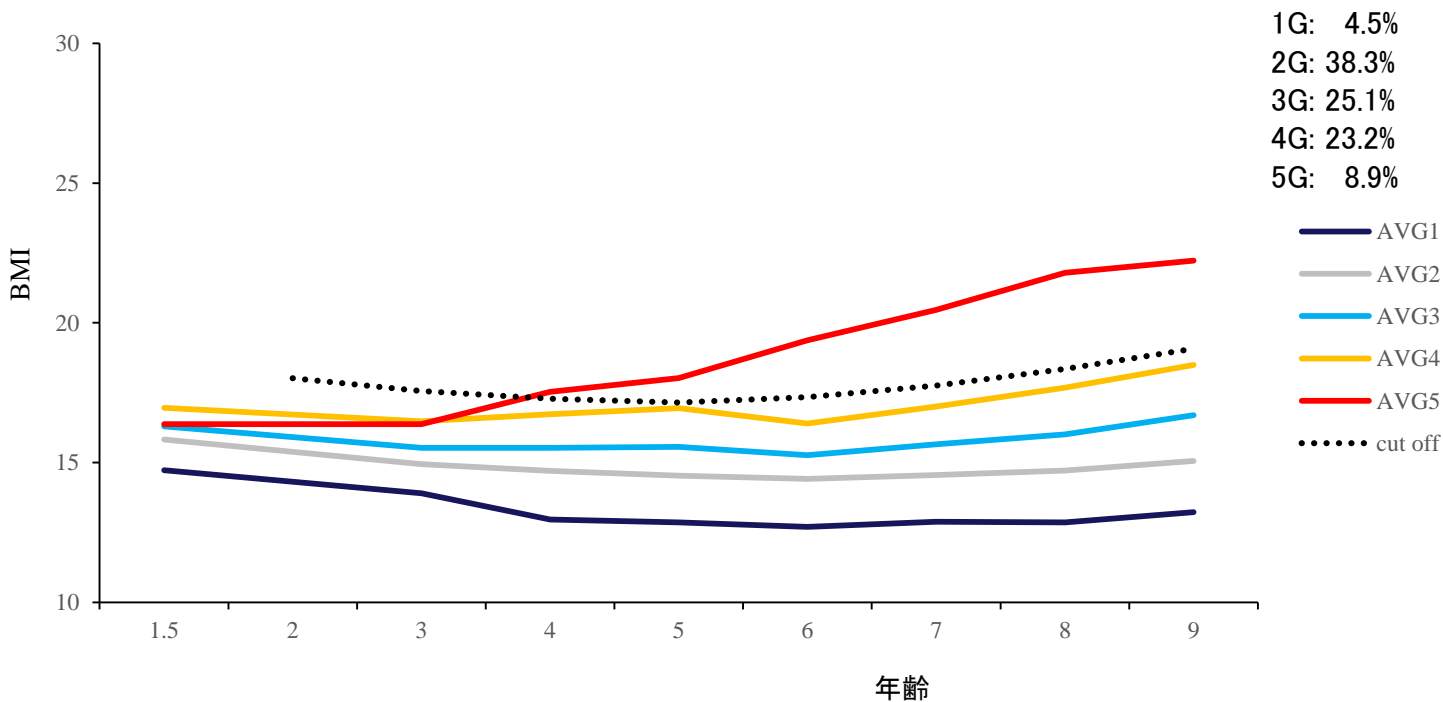
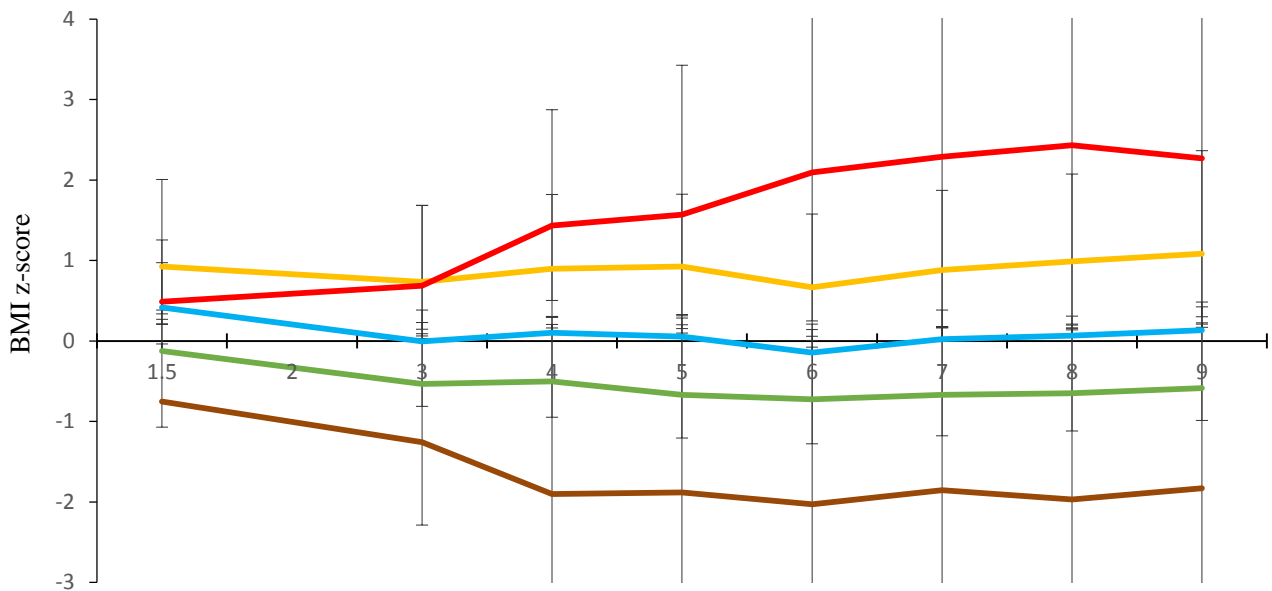
The Body Size (Body Mass Index; BMI) Trajectories of boys





Results

The Body Size (Body Mass Index; BMI) Trajectories of girls





Discussion

1. Body size trajectories

- The results show that preschool age is a crucial period for becoming overweight in childhood; thus, intervention programs should target overweight preschoolers.
- Children who are not overweight but who show a gradual increase in their BMI during preschool should also be targeted by early intervention programs because they could become overweight after reaching school age.



Results

Table. Odds ratios and confidence intervals for being categorized in the trajectory groups compared to average trajectory groups

variables	Boys			Girls		
	OR	95% CI		OR	95% CI	
Extracurricular activities						
Group1 vs. Group2	0.31	0.03	3.01	NA	–	–
Group3 vs. Group2	0.68	0.21	2.17	0.37	0.13	1.01
Group4 vs. Group2	1.35	0.38	4.80	0.18	0.03	0.98
Group5 vs. Group2	NA	–	–	NA	–	–
Maternal working status						
Group1 vs. Group2	1.67	0.14	19.48	2.55	0.15	44.37
Group3 vs. Group2	2.94	0.65	13.40	1.75	0.62	4.94
Group4 vs. Group2	5.56	1.14	27.01	NA	–	–
Group5 vs. Group2	16.67	1.14	243.72	NA	–	–

NA: Not Available



Discussion

2. Maternal and child's factors, which contribute to the determination of those patterns

The results show that maternal working status and children's extracurricular activities were associated with overweight or obesity. However, the factors may differ by sex.



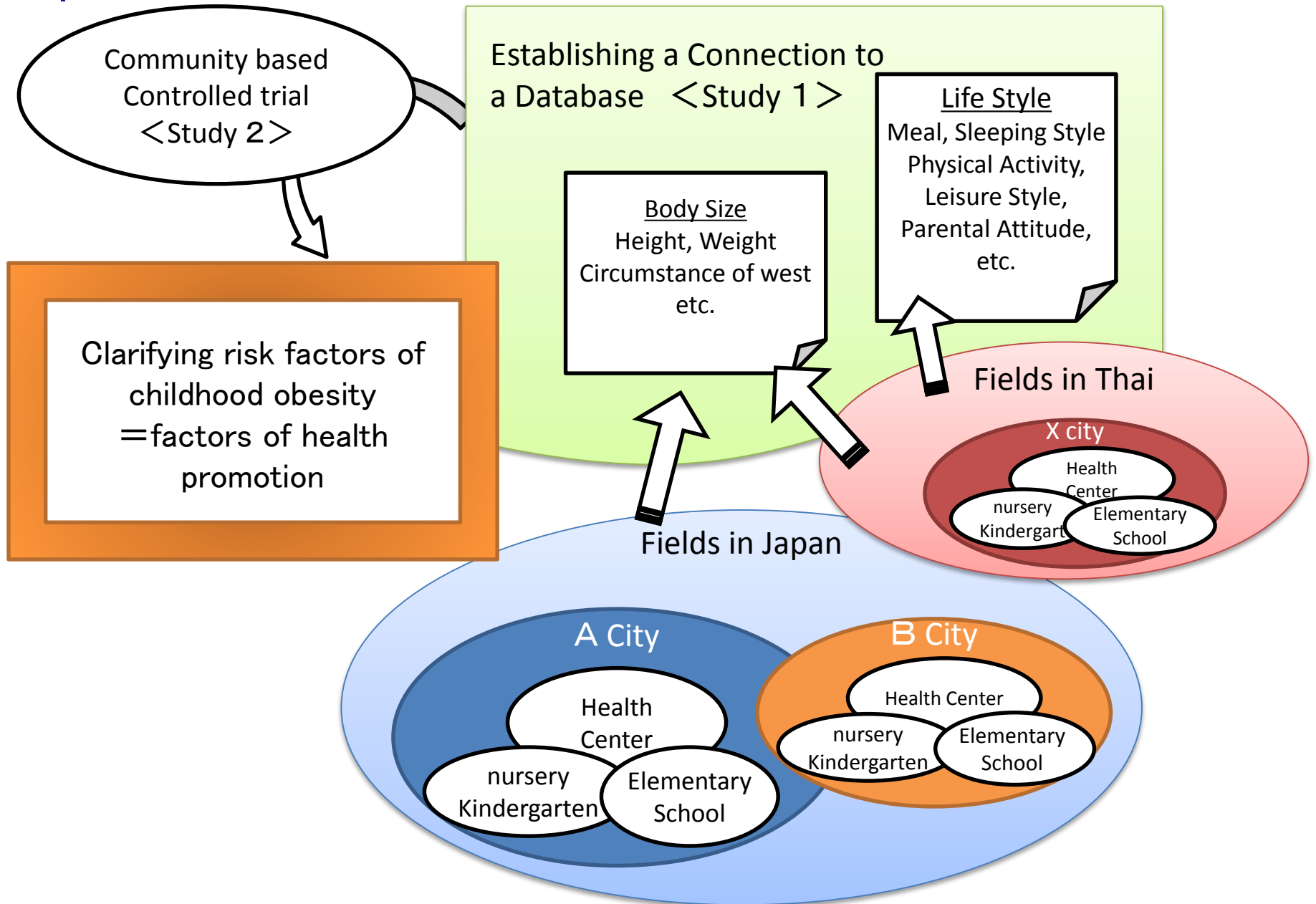
Discussion

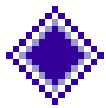
The limitation and prospects of this study

- The sample size is not enough to reduce the likelihood of type 2 error. However, our multinomial logistic regression analysis showed the high odds ratio at two variables.
- Future studies are needed to collect more samples and to clarify similarities or differences in the mechanism of obesity, which may help establish strategies for health promotion during childhood.



Future Study: Conceptual Diagram





Continue

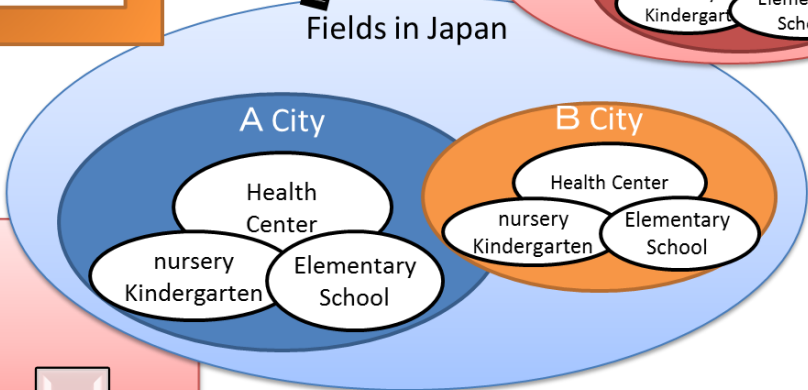
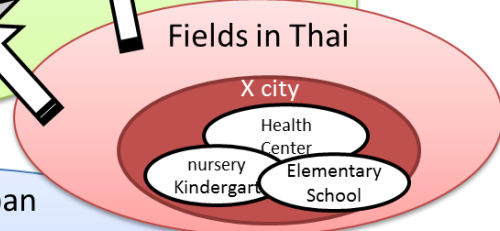
Community based
Controlled trial
<Study 2>

Clarifying risk factors of
childhood obesity
= factors of health
promotion

Establishing a Connection to
a Database <Study 1>

Body Size
Height, Weight
Circumstance of waist
etc.

Life Style
Meal, Sleeping Style
Physical Activity,
Leisure Style,
Parental Attitude,
etc.



Phase 1 : Assessments for situation of childhood obesity
(Cohort Study)
Construction for management and collection of a data about
body size trajectory during childhood

Phase 2: Definition for health problems to resolve by
data analysis
(Comparative Study of Community based
intervention)

Phase 3: Validation of the effect for the intervention
of preventing childhood obesity (Randomized Control
Trial)



Thank you very much for giving the chance to introduce my idea about collaborative study and attention of my presentation.

I hope you will feel interest in my study project and get in touch with me.

I would like to sincerely thank all of you!

