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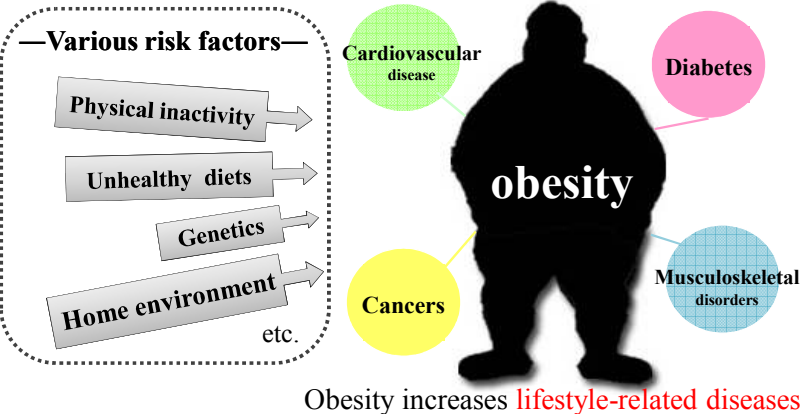
Child obesity is prevalent in developing countries !

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Background

Now, obesity is the most important public health concern around the world !



Worldwide trend

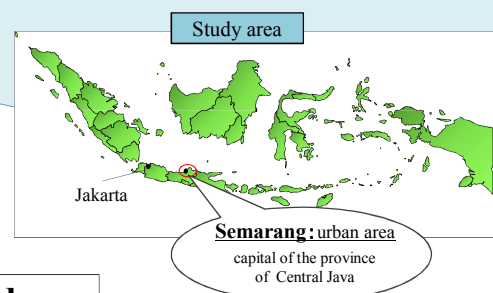
➤ **Obesity is prevalent in...**

only high-income countries ➔ **low-, middle- income countries** (particularly urban areas)
only adults ➔ **children**



Indonesia

- Economic development has been accelerated. (GDP doubled ! ※2005~2009)
- Child obesity increases in urban areas*.



➤ Why childhood obesity is serious health concern?

- It relates to adulthood obesity.
- It develops lifestyle-related diseases at a younger age.

In my study, focus on lifestyle of **obese children**.

dietary intake

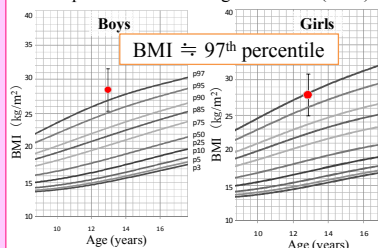
in



characteristics of subjects

	Boys (n=62)	Girls (n=31)
Age (year)	13.0±0.4	12.8±0.5
Height (cm)	156.9±7.6	153.5±6.4
Weight (kg)	70.4±10.4	66.0±9.9
BMI (kg/m ²)	28.5±3.1	27.9±3.0
%fat (%)	31.6±7.8	36.5±4.6
Fat free mass (kg)	47.9±7.4	41.8±5.2

〈Comparison to US CDC growth chart (2000)〉



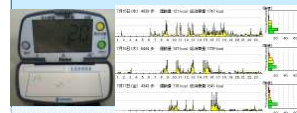
- Compared to US CDC growth charts, the mean BMI of both boys and girls almost corresponded to the 97th percentile.
- Compared data from a nationwide survey in Indonesia, the mean "weight for height" of both boys and girls exceeded the 97th percentile. (CDC: United States Centers for Disease Control.)

out

physical activity



Acceleration monitoring



▲ Accelerometer

- Attach the accelerometer for 7 consecutive days
- Calculate Total daily energy expenditure (TEE) and daily step frequency (STEP)

	Boys (n=55)	Girls (n=24)
BMR ¹⁾ (kcal/day)	1,735	1,578
TEE ²⁾ (kcal/day)	2,666	2,398
PAL ³⁾	1.58	1.52
STEP (step/day)	9,320	7,775

¹⁾ BMR: basal metabolic rate
²⁾ TEE: total energy expenditure
³⁾ PAL: physical activity level (TEE / BMR)

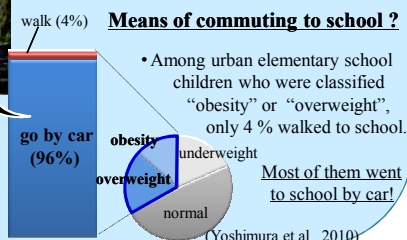
PAL: Light to Moderate

STEP < recommended level

- PAL was **light to moderate**** in both boys and girls.
- STEP was **below the recommended level** (boys 14,000/girls 11,000***) in both boys and girls.



▲ There are many cars around the school.



Food recall

Ask about both "quality" and "quantity" of what they ate and drank

▼ various food models !



▼ There are many "outside food store" around the school.



▲ Fried noodles, chicken, snacks, juice etc.

Interview

What did you eat?
When did you eat?
How many/much ~ did you eat?

2. Estimate the portion size

3. Calculate TEI (total energy intake) and nutrition intake

Energy ≈ recommended level

	Boys (n=60)	Girls (n=30)
Energy (kcal)	2,457	2,276
protein (g)	69.9	63.8
fat (g)	76.5	67.3
carbohydrate (g)	360.4	337.3

- Energy was approximately equal to RDA (recommended daily allowance) of Indonesia in both boys and girls. (※RDA: boys 2,400 / girls 2,350 kcal)

Discussion

Dietary intake was appropriate, but physical activity level was low.

Inactive lifestyle cause obesity to children !

➤ To prevent childhood obesity...?

Evaluate accurately own dietary intake



Incorporate exercise into daily life

Maintain healthy body weight and fat percentage.

Future prospects

- Reveal current status of prevalent of child obesity and examine lifestyle of them in rural area of Indonesia. ➔ Compare those data in rural to urban area.
- Examine characteristics of obese children in detail. (Ex. cardiopulmonary function, QOL, characteristics of parents)

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References

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