

Relationships of Screen Time and Sugar-Sweetened Beverages Consumption with Body Fat Percentage in Female Students in Semarang

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ABSTRACT

This study aimed to determine the relationship between screen time duration and Sugar-Sweetened Beverage (SSB) consumption with body fat percentage among female students in Semarang. This cross-sectional study employed 75 female students aged 18–25 years in Islamic Boarding School KH Sahlan Rosjidi Semarang. The mean screen time duration was 8.41 ± 3.28 hours/day, SSB consumption frequency was 4.77 ± 4.31 times/week, and body fat percentage was $26.76 \pm 7.26\%$. SSB consumption was dominated by powdered drinks. The test has discovered a relationship between screen time duration ($p=0.000$, $r=0.443$) and the frequency of SSB consumption such as powdered drinks ($p=0.002$, $r=0.350$), packaged milk ($p=0.038$, $r=0.240$), yogurt ($p=0.013$, $r=0.286$), packaged coffee ($p=0.022$, $r=0.264$), and carbonated drinks ($p=0.005$, $r=0.320$) with body fat percentage.

Keywords: female teenagers, body fat percentage, screen time duration, SSB consumption

INTRODUCTION

Fat is a component that affects individual health in the long term (Teresa *et al.* 2018). The Health Research from Central Java Province reports that the prevalence of obesity in adult women in Semarang City is 34.61%. This prevalence is the second highest in Central Java Province. Several factors cause nutritional problems, such as SSB consumption, excessive screen time, low physical activities, and lack of nutritional knowledge. Some guidelines recommend screen time two hours/day (Chassiakos *et al.* 2016). High screen time is associated with increased body weight and unhealthy food and beverage consumption (Pinho *et al.* 2017). The adult population has the highest prevalence (72%) of SSB consumption. This study aimed to determine the relationship between screen time duration and SSB consumption with body fat percentage in female students.

METHODS

This research employed an observational and cross-sectional research design. This research was conducted in October 2022 at the Islamic Boarding School KH Sahlan Rosjidi

Semarang. This cross-sectional study involved 75 female students aged 18–25 years in Islamic Boarding School KH Sahlan Rosjidi Semarang. Sampling was based on probability technique. The subjects were selected using a purposive sampling method based on the inclusion criteria. The independent variables in this study were screen time duration and SSB, while the dependent variable was body fat percentage. The screen time duration was measured using a questionnaire; SSB consumption was measured using Food Frequency Questionnaire (FFQ); and body fat percentage was measured using the Bioelectrical Impedance Analysis (BIA). Screen time durations had two classifications: low and high. SSB consumption frequency had two classifications: rare and frequent. Body fat percentage had four classifications: underfat, normal, overfat, and obese. Statistical analysis was conducted using Spearman's rank test with a significance value of $p < 0.05$.

RESULTS AND DISCUSSION

The mean body fat percentage in respondents was $26.76 \pm 7.26\%$. The mean screen time duration of respondents was 8.41 ± 3.28 hours/day.

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The interview results conclude that the average duration of smartphone usage was higher than other gadgets. This condition occurred due to the respondents' habit of using their smartphones to play games and access social networks until late at night. The respondents' mean frequency of powdered drink consumption was 4.77 ± 4.31 times/week. The respondents' mean frequency of consuming unpackaged tea is 4.16 ± 4.08 times/week. The respondents' mean frequency

of consuming packaged milk is 3.35 ± 3.92 times/week. The respondents' mean frequency of consuming unpackaged coffee is 1.90 ± 3.89 times/week (Table 1).

This study has revealed a relationship between screen time duration and the percentage of body fat ($p=0.000$). The high screen time duration may contribute to the body fat percentage, especially in people with nutritional status. This condition occurred because of lack

Table 1. SSB consumption habit among female students in Semarang

SSB products	SSB consumption	n	%
Packaged fruit juice	Rare (<7 times/week)	73	97.30
	Frequent (≥ 7 times/week)	2	2.70
Powdered drink*	Rare (<7 times/week)	47	62.70
	Frequent (≥ 7 times/week)	28	37.30
Jelly drink	Rare (<7 times/week)	74	98.70
	Frequent (≥ 7 times/week)	1	1.30
Boba drink	Rare (<7 times/week)	73	97.30
	Frequent (≥ 7 times/week)	2	2.70
Unpackaged milk	Rare (<7 times/week)	72	96.00
	Frequent (≥ 7 times/week)	3	4.00
Packaged milk*	Rare (<7 times/week)	61	81.30
	Frequent (≥ 7 times/week)	14	18.70
Yogurt	Rare (<7 times/week)	71	94.70
	Frequent (≥ 7 times/week)	4	5.30
Unpackaged tea*	Rare (<7 times/week)	51	68.00
	Frequent (≥ 7 times/week)	24	32.00
Unpackaged coffee*	Rare (<7 times/week)	66	88.00
	Frequent (≥ 7 times/week)	9	12.00
Packaged tea	Rare (<7 times/week)	70	93.30
	Frequent (≥ 7 times/week)	5	6.70
Packaged coffee	Rare (<7 times/week)	70	93.30
	Frequent (≥ 7 times/week)	5	6.70
Carbonated drinks	Rare (<7 times/week)	74	98.70
	Frequent (≥ 7 times/week)	1	1.30
Syrup	Rare (<7 times/week)	75	100.00
	Frequent (≥ 7 times/week)	0	0.00
Electrolyte drinks	Rare (<7 times/week)	75	100.00
	Frequent (≥ 7 times/week)	0	0.00
Soy milk	Rare (<7 times/week)	75	100.00
	Frequent (≥ 7 times/week)	0	0.00

SSB: Sugar-Sweetened Beverages

of physical activities that would increase body mass and decrease muscle mass (Kusumawati 2020) (Figure 1).

This study has discovered that packaged fruit juices, jelly drinks, boba drinks, unpackaged milk, unpackaged tea, unpackaged coffee, packaged tea, syrup, electrolyte drinks, and soy milk have no relationship with body fat percentage because the respondents' SSB consumption frequency was rare or <7 times/week and they had normal nutritional status (Table 2). Due to

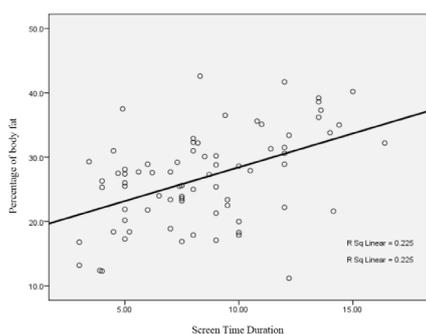


Figure 1. Relationships between screen time duration and the percentage of body fat

Table 2. Relationships between SSB consumption and body fat percentage of female students in Semarang

Sugar-Sweetened Beverages (SSB) consumption	Percentage of body fat	
	<i>p</i>	<i>r</i>
Packaged fruit juice	0.153	0.167
Powdered drink*	0.002*	0.350
Jelly drink	0.778	-0.033
Boba drink	0.273	0.128
Unpackaged milk	0.52	0.225
Packaged milk*	0.038*	0.240
Yoghurt*	0.013*	0.286
Unpackaged tea	0.122	0.180
Unpackaged coffee	0.241	0.137
Packaged tea	0.568	0.067
Packaged coffee*	0.022*	0.264
Carbonated drinks*	0.005*	0.320
Syrup	0.148	0.169
Electrolyte drinks	0.050	0.227
Soy milk	0.244	0.137

*Significant at $p < 0.05$

the low consumption of those specific types of SSB, the subjects had no excess sugar intake that would usually lead to increased body weight.

CONCLUSION

There is a relationship between screen time duration and body fat percentage. Moreover, there is a relationship between sugar-sweetened beverages consumption of powdered drinks, packaged milk, yogurt, packaged coffee, and carbonated drinks and the percentage of body fat.

DECLARATION OF CONFLICT OF INTERESTS

The authors have no conflict of interests.

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