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Association between watching eating broadcast “Mukbang and Cookbang” and body mass index status in South Korean adolescents stratified by gender

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Abstract

Background It has been suggested that Mukbang and Cookbang, a type of eating broadcast originating from Korea and gaining popularity, may contribute to obesity. However, despite suggestions that Mukbang might contribute to obesity, studies investigating the impact of watching Mukbang on obesity is lacking. The goal of this study is to analyze the relationship between watching Mukbang and Cookbang and body mass index (BMI) status in Korean adolescents. All analyses were stratified by gender.

Methods This study utilized data from the 2022 Korea Youth Risk Behavior Web-based Surveys. The anonymous online survey was conducted with 56,213 students, and 51,850 students (92.2%) who participated in the survey were analyzed. Participants reported the frequency of watching Mukbang and Cookbang per week over the previous 12 months. BMI was categorized into four subgroups based on percentiles: underweight (< 5th percentile), normal (5th – 85th percentiles), overweight (85th – 95th percentiles), and obese (> 95th percentile). This study used multinomial logistic regression for analysis.

Results The likelihood of being obese was significantly higher in Mukbang-watching boys compared to those who never watched Mukbang and Cookbang (adjusted odds ratio [aOR]: 1.22, 95% confidence interval [CI]: 1.12–1.32). A dose-dependent association was found between the frequency of Mukbang and Cookbang watching and the likelihood of obesity among boys (p-for-trend < 0.0001). Subgroups that currently smoke, currently drink alcohol, frequently consume fast food, or drink sweetened beverages showed significantly higher odds of being obese in the “Ever” group than those in the “Never” group.

Conclusion This study found a relationship between watching Mukbang and Cookbang and obesity in boys. Appropriate interventions should be considered for boys watching Mukbang and Cookbang.

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Keywords Mukbang, Obesity, Korea youth risk behavior survey, Adolescent, Sex difference

Background

Mukbang, a compound word of “*Meokneun*” (eating) and “*Bangsong*” (broadcasts), is a term used to refer to an “online eating show” originating from South Korea, and Cookbang refers to “online cooking show” [1]. As its name suggests, Mukbang and Cookbang (referred to as “Mukbang” from this point forward) first began in Korea [1]. Mukbang is watched online by 38% of Koreans, thus highlighting its popularity [2]. Moreover, Mukbang has spread worldwide through various international online platforms such as YouTube [3].

According to previous research, there are several potential reasons for individuals to watch Mukbang. Mukbang has gained popularity due to higher internet and social media usage by people unsatisfied in their offline lives, who engage in online activities for instant gratification and experience a feeling of “escapism” from real life [4]. In addition, people may engage in Mukbang to avoid eating alone and experiencing loneliness, drawn by its social benefits, or to derive pleasure and/or surrogate satisfaction from its content [5]. As previously mentioned, Mukbang originated in South Korea, where dining is viewed as a social activity rather than merely the act of eating. The aversion to eating alone, particularly in public places, has contributed to the popularity of watching Mukbang [6]. Through the consumption of food-related videos, individuals who eat or cook alone can experience a sense of socialization with online Mukbang streamers, helping to alleviate their feelings of loneliness [3, 7]. Moreover, the autonomous sensory meridian response provided by Mukbang can be pleasurable [5].

There are many concerns that watching Mukbang may lead to poor dietary habits and health outcomes [8]. Watching contents related to unhealthy food such as food advertisements for nutrient-poor or high-calorie foods stimulates food intake, which strongly leads obesity [9]. Especially for Mukbang, according to a previous study on the contents of Mukbang on YouTube, 83.5% of Mukbang videos contained overeating [8]. Moreover, Mukbang videos that contained overeating, food consumption within a time limit, and consumption of spicy food were each watched significantly more than those that did not contain them [8]. On the other hand, watching healthy food photography might help managing body mass index [10, 11]. Overall, through the imitation effect, Mukbang viewers consume unhealthy food, have bad eating habits, and even have eating disorder which is one of the childhood obesity comorbidities [12]. In previous study, image-based social media usage was significantly associated with BMI. Also, the study implied that ‘food porn’ has impact on rising weight among youth [13]. Furthermore,

there are ongoing debates on whether watching Mukbang is addictive [14, 15]. Given the 57% increase in watching shows and films on streaming services during the coronavirus disease 2019 pandemic [16], the potential adverse effects of Mukbang could be exacerbated.

However, even though there are a few researches that investigated relationship between watching Mukbang and obesity, studies investigating the relationship in adolescents are still needed. Concurrently, obesity among South Korean adolescents has steadily increased from 15.4% in 2019 to 17.9% in 2022 [17–19]; therefore, identifying the impact of Mukbang on BMI status could be a potential policy intervention for the health status of adolescents. Hence, there is a need to analyze the relationship between BMI and watching Mukbang among Korean adolescents. Therefore, the goal of this study is to analyze the association between watching Mukbang, its frequency, and BMI in Korean adolescents by using representative cross-sectional data. Since gender differences in frequency of eating behaviors and BMI cannot be ignored [20, 21], all analyses were stratified by gender.

Methods

Study population and data

This study used the data acquired from the 18th Korea Youth Risk Behavior Survey (KYRBS), 2022. A question on Mukbang and Cookbang was first added in 2022. The KYRBS is a nationwide, representative, and population-based database of Korean adolescents. Based on regional characteristics, proportional stratified random sampling was carried out annually. For example, we conducted sampling based on residential circumstances and school density. An anonymous online survey was conducted with 56,213 students in approximately 400 high schools and 400 middle schools in 2022, and 51,850 students (92.2%) who participated in the survey were analyzed.

Measures

BMI

We used height and weight to calculate BMI, and the percentile cutoff for BMI was used to evaluate obesity. We classified people as underweight, normal, overweight, or obese if their BMI percentile was <5th percentile, > 5th percentile and <85th percentile, > 85th percentile and <95th percentile, and >95th percentile cutoff, respectively. The percentile is based on the latest version of “Korea Growth Charts,” which was conducted in 2017 [22]. The percentile curves in the Korean National Growth Charts depict the distribution of Korean children and adolescents’ height and weight. In addition, BMI

status was subdivided into severely underweight (<3rd percentile) and severely obese (>97th percentile).

Mukbang and cookbang

To evaluate the frequency of Mukbang and Cookbang consumption, participants answered the question: how often they watched Mukbang and Cookbang during the previous 12 months. The answer had to be chosen from one of the following seven choices: 1-none, 2-less than once a month, 3-more than once a month and less than three times a month, 4-once or twice a week, 5-three or four times a week, 6-five or six times a week, 7-every day. We divided the participants into two groups; “Never” group consisting of individuals who answered as none (1) and “Ever” group consisting of individuals who chose other options (2–7), to observe dose-responses. In order to see if there’s any linear relationship between the odds of being obese and the frequency of watching Mukbang and Cookbang, “Ever” group was additionally divided into “Rarely” (less than once a week, options 2–3), “Occasionally” (less than 4 times a week, options 4–5), and “Always” (almost every day, options 6–7) groups. Additionally, an analysis was conducted according to whether they were subjectively affected by watching Mukbang or Cookbang (including eating quickly, eating a lot, copying food on the show, eating snacks or late-night snacks other than mealtimes, and eating stimulatingly).

Covariates

All covariates were appeared to significantly effect on adolescent’s BMIs according to past case-study research. Three main types of covariates were used: sociodemographic, health-related, and habitual. Age and family structure were included as socio-demographic covariates [23]. Based on which school students attended, age was divided into two groups: middle school for ages 12,13,14,15 and high school for ages 16,17,18. Based on family structure, we divided participants as having either both parents, one parent, or none. Also, the analysis was adjusted for health-related covariates including sleep duration, smoking status, alcohol use, self-reported stress levels, and physical activity [24–26]. Sleep time was divided into three groups using 6 and 8 h cutoff [27, 28]. Self-reported stress levels were classified into three groups according to the answers to “How much stress do you feel?” For physical activity, we used two variables: overall exercise and muscle strengthening exercises. Overall exercise level was divided into two groups according to the answer to the question “How many days a week do you workout over 60 min?” Overall exercise was classified as “sufficient” if it was performed for ≥ 5 days a week and “insufficient” otherwise. Muscle strengthening exercises were divided into two groups according to the answer to the question, “How many days

a week do you workout to strengthen your muscles?” Muscle strengthening exercise was classified as “sufficient” if it was performed for ≥ 3 days a week and “insufficient” otherwise. Both overall and muscle-strengthening physical activities were classified according to the KYRBS guidelines. We also used academic achievement and frequency of eating fast food and sweetened beverages as habitual covariates [29]. The frequency of eating fast food was divided into two groups using the cutoff of two times a week. Frequency of eating sweetened beverage was classified as “none,” “one or two times a week,” “three or four times a week,” and “over five times a week.” Academic achievement was divided into three groups based on self-reporting questions.

Statistical analysis

All analyses were stratified by gender. We analyze the variables using chi-square tests. To examine the association between “watching Mukbang and Cookbang” and BMI status (underweight, overweight, and obese), we used a multinomial logistic regression analysis to adjust for all covariates. The covariates are age, family structure, sweetened beverages, fast-food, alcohol status, smoking status, academic achievement, sleep duration, perceived stress level, physical activity, and muscle strengthening exercises. We also analyzed subgroups to find the relationship between the frequency of watching Mukbang and Cookbang and BMI. In addition, obese and underweight participants were divided into two groups each: severely underweight (BMI percentile <3), underweight (3–5 percentile), obese (95–97 percentile), and severely obese (>97 percentile) to assess any correlation between severely obese and severely underweight adolescents and watching Mukbang. Odds ratios [30] and 95% confidence intervals (CI) are presented to compare the likelihood of being underweight, overweight, and obese. Variance inflation factors for the study variables were found to be smaller than 1.32; therefore, there was no evidence of multicollinearity. We used SAS software (version 9.4; SAS Institute, Cary, North Carolina, USA) for analysis, and p-values <0.05 were considered as statistically significant.

Results

The study population was stratified by sex and general characteristics are presented in Table 1. In total, 50,453 participants, including 25,749 boys (51.0%) and 24,704 girls (49.0%), were used in the analysis. Among them, 63.9% of boys and 79.2% of girls watched Mukbang and Cookbang. Among participants who watch Mukbang and Cookbang, 6.9% was underweight, 11.2% was overweight, 16.7% was obese in boys, and 9.5% was underweight, 8.0% was overweight, and 9.2% was obese in girls.

Table 1 Health-related and socioeconomic characteristics of study participants according to the body mass index status

Variables	Boys (N = 25,749)						Girls (N = 24,704)										
	Underweight		Normal		Overweight		Obese		Underweight		Normal		Overweight		Obese		p-value
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	
Mukbang and Cookbang																	
Never	789	(8.5)	6219	(67.0)	933	(10.0)	1347	(14.5)	565	(11.0)	3745	(72.9)	396	(7.7)	434	(8.4)	0.007
Ever	1139	(6.9)	10,727	(65.2)	1846	(11.2)	2749	(16.7)	1863	(9.5)	14,329	(73.2)	1570	(8.0)	1802	(9.2)	<0.001
Age																	
12–15	1076	(7.2)	10,061	(67.3)	1628	(10.9)	2191	(14.6)	1419	(9.8)	10,846	(74.7)	1134	(7.8)	1123	(7.7)	<0.001
16–18	852	(7.9)	6885	(63.8)	1151	(10.7)	1905	(17.7)	1009	(9.9)	7228	(71.0)	832	(8.2)	1113	(10.9)	<0.001
Family structure																	
Both parents	1337	(7.4)	11,799	(65.4)	1989	(11.0)	2909	(16.1)	1931	(9.7)	14,529	(73.3)	1583	(8.0)	1779	(9.0)	<0.001
Single parent	76	(7.3)	637	(61.0)	115	(11.0)	217	(20.8)	82	(7.8)	721	(68.5)	113	(10.7)	136	(12.9)	<0.001
No parent	515	(7.7)	4510	(67.6)	675	(10.1)	970	(14.5)	415	(10.8)	2824	(73.7)	270	(7.0)	321	(8.4)	<0.001
Sweetened beverages																	
Non-drinker	120	(7.8)	956	(61.9)	188	(12.2)	281	(18.2)	170	(9.7)	1282	(72.9)	144	(8.2)	163	(9.3)	<0.001
Low	487	(7.0)	4442	(64.3)	787	(11.4)	1193	(17.3)	741	(8.9)	6083	(73.3)	696	(8.4)	777	(9.4)	<0.001
Middle	627	(7.0)	5835	(65.3)	1036	(11.6)	1434	(16.1)	764	(9.2)	6067	(73.1)	696	(8.4)	769	(9.3)	<0.001
High	694	(8.3)	5713	(68.3)	768	(9.2)	1188	(14.2)	753	(11.9)	4642	(73.1)	430	(6.8)	527	(8.3)	<0.001
Fast-food																	
Low	1334	(7.2)	11,971	(64.9)	2076	(11.3)	3067	(16.6)	1779	(9.6)	13,516	(72.9)	1525	(8.2)	1724	(9.3)	0.001
High	594	(8.1)	4975	(68.1)	703	(9.6)	1029	(14.1)	649	(10.5)	4558	(74.0)	441	(7.2)	512	(8.3)	<0.001
Alcohol status																	
Non-drinker	1262	(8.0)	10,414	(65.9)	1670	(10.6)	2450	(15.5)	1791	(10.2)	13,029	(74.1)	1324	(7.5)	1440	(8.2)	<0.001
Past drinker	633	(6.6)	6270	(65.7)	1069	(11.2)	1569	(16.4)	610	(8.8)	4918	(71.1)	614	(8.9)	774	(11.2)	<0.001
Current drinker	33	(8.0)	262	(63.6)	40	(9.7)	77	(18.7)	27	(13.2)	127	(62.3)	28	(13.7)	22	(10.8)	<0.001
Smoking status																	
Non-smoker	1753	(7.7)	14,946	(65.6)	2478	(10.9)	3593	(15.8)	2274	(9.7)	17,130	(73.4)	1846	(7.9)	2075	(8.9)	0.000
Current smoker	175	(5.9)	2000	(67.1)	301	(10.1)	503	(16.9)	154	(11.2)	944	(68.5)	120	(8.7)	161	(11.7)	<0.001
Academic achievement																	
High	789	(7.7)	6975	(68.2)	1116	(10.9)	1345	(13.2)	971	(10.3)	7137	(75.9)	656	(7.0)	637	(6.8)	<0.001
Middle	541	(7.3)	4895	(65.6)	798	(10.7)	1227	(16.4)	699	(9.1)	5735	(74.5)	613	(8.0)	652	(8.5)	<0.001
Low	598	(7.4)	5076	(63.0)	865	(10.7)	1524	(18.9)	758	(10.0)	5202	(68.4)	697	(9.2)	947	(12.5)	<0.001
Sleep duration																	
More than 8 h	234	(8.0)	1968	(67.4)	290	(9.9)	429	(14.7)	155	(10.2)	1100	(72.3)	126	(8.3)	140	(9.2)	0.179
6–8 h	750	(7.4)	6694	(66.2)	1119	(11.1)	1547	(15.3)	770	(9.6)	5866	(73.3)	681	(8.5)	687	(8.6)	<0.001
Less than 6 h	944	(7.4)	8284	(65.1)	1370	(10.8)	2120	(16.7)	1503	(9.9)	11,108	(73.2)	1159	(7.6)	1409	(9.3)	<0.001
Perceived stress level																	
Low	402	(7.5)	3673	(68.6)	534	(10.0)	742	(13.9)	315	(9.8)	2384	(74.2)	230	(7.2)	286	(8.9)	<0.001
Middle	818	(7.3)	7510	(66.6)	1208	(10.7)	1734	(15.4)	967	(9.7)	7406	(74.6)	759	(7.7)	789	(8.0)	<0.001
High	708	(7.8)	5763	(63.1)	1037	(11.4)	1620	(17.7)	1146	(9.9)	8284	(71.6)	977	(8.4)	1161	(10.0)	<0.001

Table 1 (continued)

Variables	Boys (N = 25,749)						Girls (N = 24,704)						p-value					
	Underweight		Normal		Overweight		Obese		Underweight		Normal			Overweight		Obese		
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)		N	(%)	N	(%)	
Physical activity	Insufficient	1624	(8.3)	12,581	(64.5)	2122	(10.9)	3189	(16.3)	2246	(10.0)	16,406	(73.1)	1772	(7.9)	2032	(9.0)	0.025
	Sufficient	304	(4.9)	4365	(70.0)	657	(10.5)	907	(14.6)	182	(8.1)	1668	(74.2)	194	(8.6)	204	(9.1)	
Muscle strengthening exercises	Insufficient	1381	(8.7)	9912	(62.3)	1770	(11.1)	2848	(17.9)	2221	(10.0)	16,174	(72.8)	1794	(8.1)	2016	(9.1)	0.003
	Sufficient	547	(5.6)	7034	(71.5)	1009	(10.3)	1248	(12.7)	207	(8.3)	1900	(76.0)	172	(6.9)	220	(8.8)	
Total		1928	(7.5)	16,946	(65.8)	2779	(10.8)	4096	(15.9)	2428	(9.8)	18,074	(73.2)	1966	(8.0)	2236	(9.1)	

The results of the multinomial logistic regression analysis between watching Mukbang and Cookbang and BMI are shown in Table 2. The likelihood of obesity was found to be statistically significantly higher among the boys watching Mukbang and Cookbang (adjusted OR: 1.22, 95% CI: 1.13–1.32 in boys, adjusted OR: 1.09, CI: 0.96–1.24 in girls) after adjusting for covariates. In addition, the likelihood of overweight participants was statistically significantly higher among boys watching Mukbang and Cookbang (adjusted OR: 1.15, 95% CI: 1.04–1.26 in boys, adjusted OR: 1.06, CI: 0.93–1.21 in girls). Plus, the likelihood of underweight participants watching Mukbang and Cookbang was statistically significantly lower in both sexes (adjusted OR: 0.89, 95% CI: 0.79–0.99 in boys, adjusted OR: 0.88, CI: 0.78–0.99 in girls). Also, most covariates showed significant relationship with the odds ratio of being either obese or underweight. In boys group, odds ratio of being obese significantly increased by higher age, single parent, higher academic achievement, higher stress level, and decreased by no parent, higher frequency of drinking sweetened beverages, higher frequency of eating fast-food, sufficient muscle strengthening exercises. Odds ratio of being underweight significantly increased by higher age, and decreased by past drinker and current smoker. In girls group, odds ratio of being obese significantly increased by higher age, single parent, past drinker, higher academic achievement, and decreased by no parent and higher frequency of eating fast-food. Odds ratio of being underweight significantly increased by higher frequency of drinking sweetened beverages, current smoker, and decreased by past drinker and insufficient physical activity.

The results of the subgroup analyses are presented in Table 3. After dividing participants according to whether they watched Mukbang or not, the majority of subgroups showed trends similar to the main results. In particular, subgroups that currently smoke, currently drink alcohol, frequently consume fast food, or drink sweetened beverages showed significantly higher odds of being obese in the “Ever” watched Mukbang group than those in the “Never” watched Mukbang group. Among boys, students with high academic achievement or perceived stress levels were more likely to be obese when watching Mukbang.

The results of the multinomial logistic regression analysis after subgrouping those watching Mukbang and Cookbang according to their frequency and how the participants were affected is shown in Fig. 1. The current analysis indicated that even among those who watched Mukbang and Cookbang rarely, the likelihood of being underweight noticeably reduced compared to participants who never watched Mukbang in both sexes (adjusted OR: 0.87, 95% CI: 0.76–1.00 in boys, adjusted OR: 0.87, CI: 0.76–1.00 in girls). Controlling

for covariates, the odds of being overweight and obese increased gradually in boys who watched Mukbang compared to those in the “Never” group as the frequency of watching Mukbang increased (p-for-trend: < 0.0001 for obese, 0.0013 for overweight). In addition, 38.6% of students watching Mukbang and Cookbang reported they are subjectively affected by the video. Among those affected, 15.4% of boys and 5.94% of girls reported they eat a lot because of watching Mukbang and Cookbang. We used chi-square test to see if it is a significant gender difference and got p-value less than 0.001. Compared to the “Never” group, the likelihood of being obese and overweight was significantly higher in boys who said they were not subjectively affected by Mukbang (adjusted OR: 1.15, 95% CI: 1.058–1.25 for obese, adjusted OR: 1.148, 95% CI: 1.036–1.271 for overweight) and in those who said they were subjectively affected (adjusted OR: 1.415, 95% CI: 1.282–1.562 for obese, adjusted OR: 1.15, 95% CI: 1.019–1.297 for overweight). There weren’t significant differences among girls.

The results regarding the association between severe obesity or underweight and watching Mukbang are shown in Table 4. In comparison with students who never watched Mukbang, boys who engaged in viewing Mukbang exhibited significantly higher odds of being severely obese and lower odds of being severely underweight (adjusted OR: 1.192, 95% CI: 1.095–1.298 for severely obese, adjusted OR: 0.856, 95% CI: 0.747–0.981 for severely underweight). No significant associations were observed among the girls.

Discussion

In this study, we uncovered that watching Mukbang and Cookbang was associated with significantly higher odds of obesity and lower odds of being underweight among Korean adolescent boys. Furthermore, we identified a positive dose-dependent correlation between the frequency of Mukbang consumption and obesity in boys.

Our results generally agree with those of a previous study, which revealed that the more the Korean adults watch Mukbang, the more they become obese [31, 32]. Preventing obesity in adolescents is crucial because they are prone to carrying excess weight throughout their lives [33]. In addition, obesity in adolescents is associated with psychosocial issues that stem from teasing and bullying [34]. This can contribute to depression [2]. Furthermore, boys who watched Mukbang and exhibited unhealthy eating and daily living habits such as current smoking, alcohol consumption, frequent fast-food consumption, and intake of sweetened beverages were more likely to be obese (Table 3). Given that poor habits are linked to obesity [35–37], watching Mukbang could potentially worsen obesity among adolescents. Therefore, the consideration of regulations for adolescents watching Mukbang, including limitations on viewing

duration and content, is warranted. Plus, implementing nutritional education specific to Mukbang could serve as an alternative intervention. Nutritional education for children and adolescents is effective in reducing BMI [38] and facilitating a permanent change of one’s eating habit [39]. Educating the fact that overeating and consuming a lot of provocative food may cause undesirable health issues may provide significant help in blocking the casual link between watching Mukbang and Cookbang and bad eating habits.

The mechanism linking Mukbang watching to obesity remains unclear; however, we developed several hypotheses. First, we propose the possibility of obesity resulting from behaviors, such as eating quickly, consuming large quantities, mimicking foods seen on the show, snacking, having late-night snacks outside of regular mealtimes, and engaging in stimulating eating habits. Of the students who watched Mukbang, 38.6% reported being subjectively affected. In our study, boys who were subjectively affected had a significantly higher likelihood of being obese, even when compared with boys who were not subjectively affected by Mukbang. We also suggest that watching Mukbang might contribute to obesity by influencing the biochemical mechanisms in the body and promoting appetite. Individuals who watch Mukbang and Cookbang may experience an increase in blood ghrelin secretion, leading to an elevated appetite and increased food consumption [40]. Additionally, watching Mukbang could contribute to obesity by reducing engagement in other activities, including exercise and social interaction. Individuals watching Mukbang engage in more screen time and show higher tendency of being obese [41, 42].

There were noticeable gender differences in the results regarding obesity based on Mukbang watching, with the differences being more pronounced in boys than in girls. After consuming food-related content, girls experienced more stress regarding eating than boys [43]. Similarly, girls tended to have more food-related conflicts than boys and may perceive lesser need to eat [44]. Also, adolescent girls are more influenced by media, parents, and peers to be thin [45]. Meanwhile, people who try to lose their weight have lower appetite after watching Mukbang than people who don’t [46]. Therefore, when girls feel the urge to eat after watching Mukbang and Cookbang, they tend to suppress the urge more strongly than boys. This can be validated by KYRBS survey data. Among students who responded their eating habits are affected by watching Mukbang and Cookbang, 15.4% of boys and 5.94% of girls responded watching the videos made themselves eat a lot. Thus, we can conclude that boys are more vulnerable to the effect of watching Mukbang and Cookbang on obesity than girls.

It is also plausible that obese students were more inclined to watching Mukbang, as they tended to be more attracted to food and eating stimuli than their lean counterparts [47]. For instance, they may be more prone to consuming

Table 2 Association between “watching Mukbang and Cookbang” and body mass index status

Variables	Boys (N = 25,749)			Girls (N = 24,704)		
	underweight	overweight	obese	underweight	overweight	obese
	aOR 95% CI	aOR 95% CI	aOR 95% CI	aOR 95% CI	aOR 95% CI	aOR 95% CI
Mukbang and Cookbang						
Never	1.000	1.000	1.000	1.000	1.000	1.000
Ever	0.885 (0.792 - 0.990)	1.146 1.044 - 1.259	1.221 1.130 - 1.320	0.879 0.783 - 0.987	1.061 0.932 - 1.207	1.090 0.961 - 1.236
Age						
12–15	1.000	1.000	1.000	1.000	1.000	1.000
16–18	1.260 1.120 - 1.417	1.067 0.963 - 1.183	1.315 1.195 - 1.448	1.041 0.938 - 1.155	1.139 1.016 - 1.276	1.442 1.287 - 1.616
Family structure						
Both parents	1.000	1.000	1.000	1.000	1.000	1.000
Single parent	1.005 0.758 - 1.333	1.008 0.804 - 1.265	1.267 1.050 - 1.529	0.817 0.633 - 1.054	1.305 1.034 - 1.647	1.313 1.048 - 1.644
No parent	0.984 0.873 - 1.109	0.871 0.787 - 0.963	0.858 0.779 - 0.944	1.059 0.930 - 1.205	0.842 0.717 - 0.989	0.823 0.718 - 0.944
Sweetened beverages						
Non-drinker	1.000	1.000	1.000	1.000	1.000	1.000
Low	0.919 0.733 - 1.151	0.935 0.777 - 1.124	0.899 0.761 - 1.063	0.923 0.756 - 1.128	1.044 0.842 - 1.296	1.026 0.852 - 1.236
Middle	0.877 0.690 - 1.114	0.925 0.759 - 1.126	0.809 0.689 - 0.949	0.982 0.813 - 1.187	1.008 0.818 - 1.242	0.981 0.813 - 1.183
High	1.004 0.794 - 1.269	0.694 0.568 - 0.850	0.685 0.579 - 0.810	1.227 1.016 - 1.481	0.840 0.665 - 1.061	0.889 0.725 - 1.090
Fast-food						
Low	1.000	1.000	1.000	1.000	1.000	1.000
High	1.064 0.943 - 1.199	0.822 0.743 - 0.909	0.825 0.759 - 0.897	1.026 0.921 - 1.144	0.833 0.733 - 0.946	0.798 0.706 - 0.902
Alcohol status						
Non-drinker	1.000	1.000	1.000	1.000	1.000	1.000
Past drinker	0.884 0.783 - 0.999	1.098 0.995 - 1.212	1.030 0.940 - 1.128	0.866 0.767 - 0.977	1.197 1.058 - 1.353	1.200 1.074 - 1.341
Current drinker	1.153 0.747 - 1.779	0.968 0.649 - 1.445	1.121 0.853 - 1.473	1.279 0.776 - 2.110	2.363 1.476 - 3.782	1.391 0.840 - 2.303
Smoking status						
Non-smoker	1.000	1.000	1.000	1.000	1.000	1.000
Current smoker	0.800 0.653 - 0.980	0.891 0.763 - 1.042	0.967 0.858 - 1.090	1.291 1.051 - 1.585	0.954 0.761 - 1.195	1.022 0.834 - 1.251
Academic achievement						
High	1.000	1.000	1.000	1.000	1.000	1.000
Middle	0.957 0.847 - 1.081	0.991 0.885 - 1.110	1.261 1.156 - 1.376	0.901 0.798 - 1.017	1.168 1.034 - 1.320	1.220 1.069 - 1.392
Low	1.048 0.928 - 1.184	1.034 0.933 - 1.146	1.522 1.382 - 1.676	1.047 0.926 - 1.184	1.386 1.224 - 1.570	1.932 1.714 - 2.179
Sleep duration						
More than 8 h	1.000	1.000	1.000	1.000	1.000	1.000
6–8 h	0.885 0.741 - 1.058	1.110 0.942 - 1.307	0.953 0.832 - 1.092	0.865 0.708 - 1.056	1.036 0.822 - 1.305	0.870 0.697 - 1.086
Less than 6 h	0.814 0.677 - 0.979	1.097 0.926 - 1.300	1.004 0.873 - 1.155	0.881 0.722 - 1.075	0.872 0.691 - 1.100	0.843 0.679 - 1.046
Perceived stress level						
Low	1.000	1.000	1.000	1.000	1.000	1.000
Middle	0.983 0.847 - 1.140	1.191 1.051 - 1.349	1.112 1.007 - 1.228	0.983 0.843 - 1.146	1.103 0.927 - 1.312	0.892 0.765 - 1.042
High	1.113 0.956 - 1.296	1.344 1.176 - 1.537	1.343 1.204 - 1.499	1.017 0.877 - 1.179	1.217 1.029 - 1.441	1.138 0.982 - 1.318

Table 3 Subgroup analysis of the relationship between “watching Mukbang and Cookbang” and body mass index status

Variables	Never watching Mukbang or Cookbang											
	Never			Ever watching Mukbang or Cookbang			Overweight			Obese		
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
Boys (N = 25,749)												
Sweetened beverages												
Non-drinker	1.000	0.694	-	1.635	1.143	0.796	-	1.643	1.224	0.897	-	1.671
Low	1.000	0.920	0.744	1.138	1.343	1.123	-	1.608	1.136	0.975	-	1.325
Middle	1.000	0.732	0.611	0.876	1.163	0.998	-	1.355	1.235	1.080	-	1.413
High	1.000	1.003	0.826	1.219	0.943	0.787	-	1.131	1.319	1.140	-	1.525
Fast-food												
Low	1.000	0.906	0.799	1.028	1.145	1.024	-	1.281	1.190	1.085	-	1.306
High	1.000	0.833	0.686	1.012	1.148	0.933	-	1.412	1.319	1.115	-	1.560
Alcohol status												
Non-drinker	1.000	0.860	0.752	0.983	1.139	1.017	-	1.275	1.211	1.097	-	1.338
Past drinker	1.000	0.917	0.756	1.113	1.139	0.960	-	1.352	1.208	1.048	-	1.391
Current drinker	1.000	2.116	0.918	4.875	1.634	0.691	-	3.864	2.020	1.101	-	3.705
Smoking status												
Non-smoker	1.000	0.878	0.778	0.991	1.125	1.016	-	1.246	1.214	1.119	-	1.317
Current smoker	1.000	0.999	0.689	1.448	1.334	1.005	-	1.769	1.253	0.973	-	1.613
Academic achievement												
High	1.000	0.816	0.691	0.962	1.124	0.971	-	1.301	1.375	1.194	-	1.584
Middle	1.000	0.990	0.804	1.220	1.195	0.991	-	1.440	1.144	0.987	-	1.325
Low	1.000	0.912	0.744	1.118	1.139	0.963	-	1.347	1.149	1.002	-	1.317
Perceived stress level												
Low	1.000	1.070	0.850	1.347	1.124	0.907	-	1.393	1.178	0.988	-	1.404
Middle	1.000	0.831	0.701	0.985	1.126	0.975	-	1.301	1.129	1.003	-	1.270
High	1.000	0.856	0.719	1.019	1.172	0.999	-	1.374	1.362	1.202	-	1.544
Girls (N = 24,704)												
Sweetened beverages												
Non-drinker	1.000	0.956	0.640	1.429	0.670	0.447	-	1.005	0.771	0.523	-	1.138
Low	1.000	0.850	0.698	1.034	1.216	0.972	-	1.521	1.199	0.977	-	1.470
Middle	1.000	0.996	0.802	1.237	1.124	0.882	-	1.431	1.311	1.048	-	1.640
High	1.000	0.776	0.634	0.951	0.907	0.676	-	1.216	0.851	0.661	-	1.096
Fast-food												
Low	1.000	0.863	0.760	0.981	1.072	0.934	-	1.229	1.075	0.942	-	1.227
High	1.000	0.945	0.741	1.205	1.012	0.741	-	1.380	1.118	0.834	-	1.499
Alcohol status												
Non-drinker	1.000	0.940	0.826	1.070	1.073	0.917	-	1.256	1.010	0.866	-	1.177
Past drinker	1.000	0.730	0.575	0.926	0.966	0.761	-	1.226	1.292	1.000	-	1.668
Current drinker	1.000	0.596	0.186	1.906	2.909	0.785	-	10.781	1.134	0.281	-	4.574

Table 3 (continued)

Variables	Ever watching Mukbang or Cookbang												
	Never	Underweight				Overweight				Obese			
		aOR	aOR	95% CI	95% CI	aOR	95% CI	95% CI	aOR	95% CI	95% CI	aOR	95% CI
Smoking status													
Non-smoker	1.000	0.896	0.795	-	1.010	1.053	0.923	-	1.202	1.073	0.942	-	1.223
Current smoker	1.000	0.601	0.380	-	0.950	1.130	0.629	-	2.032	1.433	0.798	-	2.575
Academic achievement													
High	1.000	0.915	0.775	-	1.079	1.215	0.972	-	1.518	1.279	1.018	-	1.607
Middle	1.000	0.810	0.653	-	1.006	1.059	0.855	-	1.311	0.983	0.787	-	1.228
Low	1.000	0.894	0.731	-	1.093	0.889	0.712	-	1.111	1.004	0.824	-	1.223
Perceived stress level													
Low	1.000	0.971	0.741	-	1.273	1.114	0.787	-	1.576	0.971	0.709	-	1.330
Middle	1.000	0.853	0.721	-	1.008	0.997	0.813	-	1.224	1.141	0.931	-	1.400
High	1.000	0.877	0.740	-	1.039	1.099	0.909	-	1.328	1.086	0.901	-	1.308

Abbreviation aOR, adjusted odds ratio; CI, confidence interval

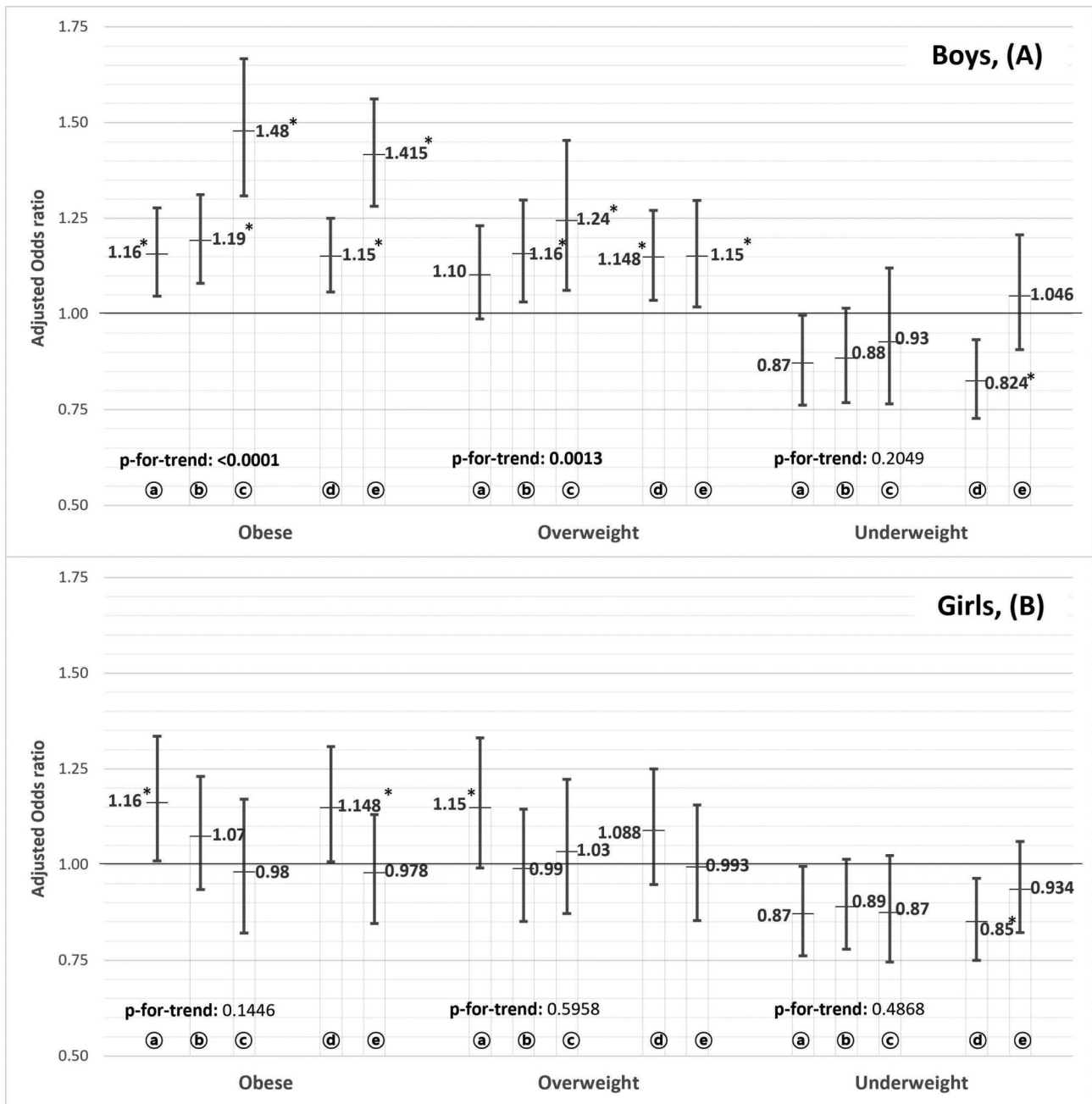


Fig. 1 Association between “watching Mukbang and Cookbang” subdivided by frequency or subjective effect and body mass index status among boys (A) and girls (B). Rarely (less than once a week); occasionally (less than 4 times a week); always (almost every day); subjectively not affected by watching Mukbang or Cookbang; affected by watching Mukbang or Cookbang

Table 4 Association between “watching Mukbang and Cookbang” and severely underweight or severely obese

Variables	Severely underweight		Underweight		Obese		Severely obese	
	aOR	95% CI	aOR	95% CI	aOR	95% CI	aOR	95% CI
Mukbang and Cookbang								
Boys	Never	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Ever	0.856	0.747 - 0.981	0.890	0.749 - 1.058	1.220	1.039 - 1.433	1.192
Mukbang and Cookbang								
Girls	Never	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Ever	0.936	0.808 - 1.084	0.780	0.656 - 0.927	1.174	0.922 - 1.495	1.056

Abbreviation aOR, adjusted odds ratio; CI, confidence interval

Abbreviations

BMI body mass index
aOR adjusted odds ratio
CI confidence interval, KYRBS Korea Youth Risk Behavior Web-based Survey

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Author contributions

Sang-yeon Park, Jeongha Eom, Sangyoun Choi: These authors contributed equally. Jinhyun Kim, Eun-Cheol Park: Co-Corresponding author. JK and ECP conceived, designed, and directed the study, critically reviewed the manuscript, and had primary responsibility for the final content (final approval). SYP, JE, and SC conceptualized the study, conducted statistical analysis, interpreted the data, wrote the initial draft of the manuscript, and revised the manuscript. All authors participated sufficiently in the work and have read and approved the final manuscript.

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Data availability

The data analyzed in this study were sourced from the publicly accessible 2022 Korea Youth Risk Behavior Web-based Survey (KYRBS). All data were retrieved from the official KYRBS website (<https://www.kdca.go.kr/yhs/>).

Declarations

Ethics approval and consent to participate

This study adhered to the principles outlined in the Declaration of Helsinki, and the procedures of involving the research study participants were approved by Statistics Korea (approval number 117058) as the National Official Statistics. All participants were informed of the study and provided consent. As the participants were younger than 18 years of age, informed parental consent was obtained from all individuals. Additional ethical review, approval, and written informed consent from the participants were deemed unnecessary for the study of human participants in alignment with local legislation and institutional requirements.

Consent for publication

Not applicable.

Competing interests

The authors declare that they have no conflict of interest.

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