

Original Article

Media exposure and parental mediation on fast-food consumption among children in metropolitan and suburban Indonesian

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Background and Objectives: Fast-food companies have been reproached for rising obesity levels due to aggressive marketing tactics targeted at children. They have countered that parents should be held responsible considering their critical role as nutritional gatekeepers. This study examined the comparative effects of media exposure and parental mediation on Indonesian children's fast food consumption and how the effects compare in the metropolitan versus suburban areas. **Methods and Study Design:** The sample consisted of 394 child-mother pairs comprising grade three and four children and their mothers from two schools each in Jakarta and Bogor representing 40.9% metropolitan sample and 59.1% suburban sample, respectively. The children completed a guided in-class survey, while the mothers completed a paper-and-pen survey at home. Measures comprised children's weekly media exposure to broadcast media, computer and mobile games, print media, and online and social media, active and restrictive parental mediation strategies, children's fast food consumption and nutrition knowledge. The relationship of media exposure and parental mediation with children's fast food consumption was analyzed using Structural Equation Modelling. **Results:** Fast food consumption was positively influenced by exposure to broadcast media among metropolitan children, and by exposure to online and social media among suburban children. Active parental mediation was related to lower fast food consumption, but only for suburban children. **Conclusions:** Active parental mediation is critical in preventing fast food consumption. The media play a key role in influencing fast food consumption, and hence, literacy education is important to alleviate the adverse effects of exposure to junk food marketing.

Key Words: children, fast food, parental mediation, media exposure, Indonesia

INTRODUCTION

The incidence of obesity is increasing in many parts of the world, including low- and middle-income countries, and particularly among urban dwellers.¹ Indonesia, too, is facing an upward trend in childhood obesity,² both in urban and rural areas, where the prevalence of childhood obesity has reached 10% and 8%, respectively. Fast food companies have often been blamed for contributing to childhood obesity by targeting children aggressively in promoting foods containing low nutritional contents.^{3,4}

Children are vulnerable to the promotion of food and beverages that contain high levels of saturated fat, sugar, or sodium, as they are not yet able to understand the persuasive intent of advertisements⁵ nor able to differentiate between foods with high versus low levels of nutrients.⁶ This problem is compounded because food advertisements commonly provide inaccurate or misleading information about the product's nutritional content.⁷ As a result, television viewing, particularly during childhood and teenage years, has been associated with unhealthy food preferences and diet in early adulthood.⁸ The marketing efforts of food companies have also expanded to non-traditional types of media, such as company-sponsored

websites, third-party websites, social media, video games, product placements, in-store displays, packaging in-school promotions,³ and even Islamic prayer meetings in the case of Indonesia.⁹ This is alarming considering that marketing through these channels is harder to regulate³ and often consists of both overt (e.g., banners) and covert means, such as offering advergames (video games merged with advertising), which makes it even harder for children especially to deconstruct the hidden messages.¹⁰ Social media has also been embraced by major fast-food restaurants, including those in Indonesia,⁹ to encourage young consumers to share their companies' marketing messages with friends.³

In turn, food companies have claimed that parents are responsible for their children's unhealthy diets consider-

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ing parents' critical role as nutritional gatekeepers.¹¹ As the major caregiver of children, parents can influence their food preferences through a variety of means, such as parents' modelling, parents' feeding styles, food availability and accessibility in the household.^{12,13} The present study attempts to examine the effect of parental communication style in food consumption on children's eating behavior, an area that has not been much explored, by applying the parental mediation theoretical framework.¹⁴ Through parental mediation, parents attempt to manage the effects of television advertising and programs on children, including their requests for advertised products, materialism, aggression and so on,¹⁵⁻¹⁷ through either Active or Restrictive mediation.^{18,19} In Active mediation, parents frequently explain and hold discussions with their children, for instance about television contents and advertisements.^{18,20} Restrictive mediation refers to parents setting rules for their children.¹⁸ Both parental mediation strategies appear to have favorable impacts on children's attitudes toward television food advertising and food consumption.²¹⁻²³ Buijzen found stronger support for the role of active mediation in lessening the impact of food advertising on consumption of energy-dense food among children aged 4 to 12 years-old compared with restrictive mediation effect which was found only among young children below 8 years old.²¹ A Singapore study among children revealed that both parental mediation strategies were effective in influencing favorable attitude towards healthy food, with active mediation posing a stronger impact than restrictive mediation.²³ On the other hand, when attitude towards unhealthy food is concerned, both parental mediation strategies on food consumption had no significant effect.

Most studies that have investigated the effects of parents and media on fast food consumption have been conducted in high-income countries,²⁴ but few studies have been conducted in developing countries. Thus, the present study seeks to examine the effects of media exposure and parental mediation on fast food consumption of children in Indonesia, where the childhood obesity rate is quickly rising, as it is in a number of other developing nations in Asia.² We also examined the extent to which the effects vary among metropolitan and suburban communities in Indonesia, which are the major geographical locales of weight gain problems in the country, and where different geographic settings may translate into different media landscapes, lifestyles, as well as access to fast food outlets, with people living in urban areas generally experiencing greater exposure to fast food restaurants than those living in rural and suburban areas.²⁵ As a secondary aim, this study looked into the effect that children's nutrition knowledge had on fast food consumption and how both media exposure and parental mediation strategies affected children's nutrition knowledge.

METHODS

Participants

A total of 597 mother-child pairs were invited to participate in the study to which 524 children and 412 mothers responded. Of these, responses from 394 pairs of mother and child respondents were used as the final sample for analysis mainly due to non-response from the mother

sample or missing data on some questions, representing a response rate of 75.2%. The sample comprised grade three and four children and their mothers from two elementary schools each in Jakarta and in Bogor. Jakarta is the capital of and the most densely populated city in Indonesia and "one of the most populous urban agglomerations in the world".²⁶ While Bogor is a large city on its own, the two elementary schools in which the survey was administered were located in the outskirts of Bogor surrounded by agricultural lands, and hence, the area better represents a suburban rather than an urban area. The children completed in-class survey with guidance from research assistants, while the mothers completed the paper-and-pen survey at home. Both surveys were administered in Indonesian language. Prior to implementing the surveys, the children's questionnaire was pre-tested by 30 respondents while the mothers' questionnaire was piloted by 25 respondents for comprehensibility and length. Minor adjustments were made following the pilot survey to improve comprehension. An Institutional Review Board (IRB) approval was not obtained from the host university in Indonesia as at the time of the study, the university only required IRB approval for studies involving biomarker assessment, which is not applicable for this study. However, the research team followed the principles of the Declaration of Helsinki to ensure the ethical conduct of the study. Instead, approval from Indonesia's Ministry of Education and Culture was obtained prior to data collection to ensure that the study meets the ethical standard for conduct relating to human subjects. In addition, consents from school principals and respondents were obtained before the surveys were administered.

Measures

Media exposure

Children's media exposure scale was adapted from previous studies.^{27,28} Respondents were asked to indicate the number of hours spent for each of the following activities on a typical school day and weekend day: (a) watching television/DVDs/film (broadcast media), (b) playing computer/video/mobile phone games (computer and mobile games), (c) reading magazines/books/comic books (print media), and (d) chatting online or accessing the Internet (online and social media).

Parental mediation

The mother's parental mediation scale was measured using three items each from the Active mediation subscale and the Restrictive mediation subscale²⁹⁻³¹ on a 5-point scale ("1"=Not at all, "5"=All the time), which were adapted for healthy eating context. For the Active mediation subscale, mother respondents were asked to indicate how frequently they explained to their children the importance of eating healthily, the reason for healthy eating, and the effect from unhealthy eating. As for the Restrictive mediation subscale, the mother respondents were asked how frequently they tell their children when to eat healthily, what to eat without telling them why, and limit the amount of snacks that their child eats.

Outcome variables

The children's nutrition knowledge index was measured

Table 1. Demographic profiles of metropolitan versus suburban respondents

	Metropolitan (n=161)	Suburban (n=233)
Child's gender		
Men	41.0%	50.6%
Women	59.0%	49.4%
Child's age (years-old)	9.5	9.3
Mother's age (years-old)	37.5	37.4
Mother's education		
Did not graduate high school	11.2%	31.7%
High school graduate	57.1%	26.2%
Some tertiary education	31.8%	42.1%
Mother's occupation		
Housewives	73.9%	70.0%
Civil servant / Private sector	17.4%	26.2%
Others	8.7%	3.9%

using 15 true-and-false items which were self-created based on feedback from nutrition professionals. The children's fast food consumption was measured using four items adapted from a previous study.³² The respondents were asked to indicate the number of portions of French fries, burger, ice cream, and fried chicken that they usually consumed every week.

Statistical analysis

Data were entered using Statistical Package for Social Sciences (version 20.0, SPSS, Inc, Somers, NY, 2009). Factor analysis was performed with Maximum Likelihood extraction and Promax rotation method for parental mediation scale items. The factor analysis revealed a three-factor solution, with three items from active mediation subscale forming one factor, while restrictive mediation items were divided into two factors with two and one item each, respectively. The three items of active mediation scale were averaged, with higher scores representing higher level of active mediation (Cronbach's $\alpha_{\text{metropolitan}}=0.78$, Cronbach's $\alpha_{\text{suburban}}=0.83$). The first two items of the restrictive mediation scale were highly correlated ($r_{\text{metropolitan}}=0.69$, $p<0.001$; $r_{\text{suburban}}=0.76$, $p<0.001$) and were averaged, with higher scores indicating higher level of restrictive mediation (Cronbach's $\alpha_{\text{metropolitan}}=0.81$, Cronbach's $\alpha_{\text{suburban}}=0.86$). The third item of the restrictive mediation scale which was found to be on a separate factor was subsequently excluded. To estimate the children's weekly media exposure for each media category, responses for the number of hours on a weekday were multiplied by five while the weekend use was multiplied by two, and subsequently these numbers were summed. The children's knowledge score was derived from the summation of correct answers. The children's fast food consumption was calculated by averaging the number of portion for the four food items (Cronbach's $\alpha_{\text{metropolitan}}=0.74$, Cronbach's $\alpha_{\text{suburban}}=0.72$).

Preliminary data analyses, including descriptive statistics, such as frequency for the demographics profile, and independent t-test to compare the metropolitan and suburban respondents, were performed using SPSS. The relationships among the variables were examined simultaneously by Structural Equation Modeling (SEM) using AMOS version 19.0. The measures for the model fit suggest a good fit ($\chi^2(378)=471.5$, $p<0.001$; GFI=0.96; PGFI=0.49; CFI=0.98; NFI=0.92; TLI=0.97;

RMSEA=0.01). Statistical significance for assessing the relationship among the variables was determined at $p<0.05$.

RESULTS

Basic characteristics of respondents

Of the 394 mother-child pairs, 40.9% lived in the metropolitan areas, while 59.1% lived in the suburbs. The mean age of the children was 9.4 years, with 46.7% and 53.3% of them in grade three and four, respectively. Boys made up 46.7% of the child respondents, while 53.3% were girls. The mean age of the mothers was 37.4 years. With regard to mothers' education level, 23.4% did not graduate from high school, while 38.8% were high school graduates and 37.8% had some tertiary education. Most mothers (71.6%) were housewives. A comparison of the demographic profiles of the children and their mothers living in the metropolitan versus suburban areas is shown in Table 1.

A comparison between the metropolitan and suburban sample on children's media exposure patterns, nutrition knowledge, and fast food consumption, as well as mother's parental mediation strategies revealed few variances, as shown in Table 2. A significant difference was found for children's fast food consumption, with children in the metropolitan area more likely to consume a higher amount of fast food compared with suburban children.

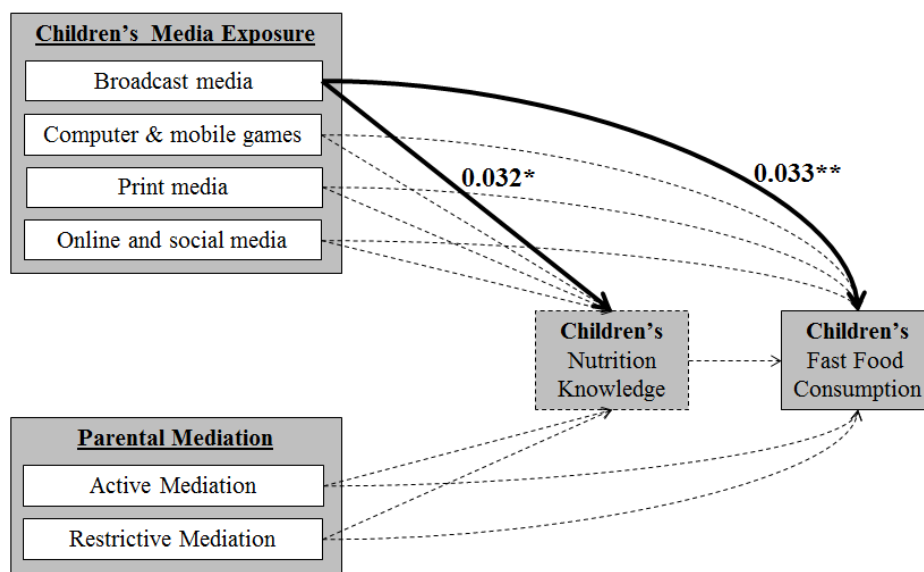
The effects of media exposure versus parental mediation on food consumption of children in metropolitan area

In order to examine the effects of fast food marketing via media exposure versus parental mediation strategies on metropolitan children's fast food consumption and nutrition knowledge, we looked at the results of the SEM analysis for the metropolitan sample, as shown in Figure 1. The results revealed a significant relationship between broadcast media with both nutrition knowledge and fast food consumption. Greater exposure to broadcast media led to greater nutrition knowledge, but also greater fast food consumption. On the other hand, exposure to other media as well as both parental mediation strategies and children's nutrition knowledge did not have any significant effect on metropolitan children's fast food consumption.

Table 2. Mean, standard deviation, and independent *t* test testing differences among metropolitan and suburban sample

	Metropolitan (n=161)		Suburban (n=233)		<i>T</i>	<i>df</i>
	M	SD	M	SD		
Media exposure						
Broadcast media	25.6	12.3	27.5	13.9	-1.4	392
Computer and mobile gaming	10.8	6.4	9.8	7.0	1.4	392
Print media	10.5	7.2	9.6	6.7	1.4	392
Online and social media	8.1	6.1	7.7	6.9	0.6	392
Nutrition knowledge	9.1	1.9	9.0	2.4	0.4	383
Fast food consumption	2.2	1.5	1.9	1.1	2.1*	392
Parental mediation strategies						
Active mediation	4.5	0.6	4.4	0.7	1.5	392
Restrictive mediation	3.0	1.1	3.1	1.2	-0.7	392

**p*<0.05



Note: B (unstandardized) score. Solid line shows significant (** *p* < 0.001; * *p* < 0.01; * *p* < 0.05), and dotted line shows non-significant associations. SEM analysis is performed in AMOS

Figure 1. The effect of children’s media exposure and parental mediation on children’s nutrition knowledge and fast food consumption in metropolitan area.

The effects of media exposure versus parental mediation on food consumption children in suburban area

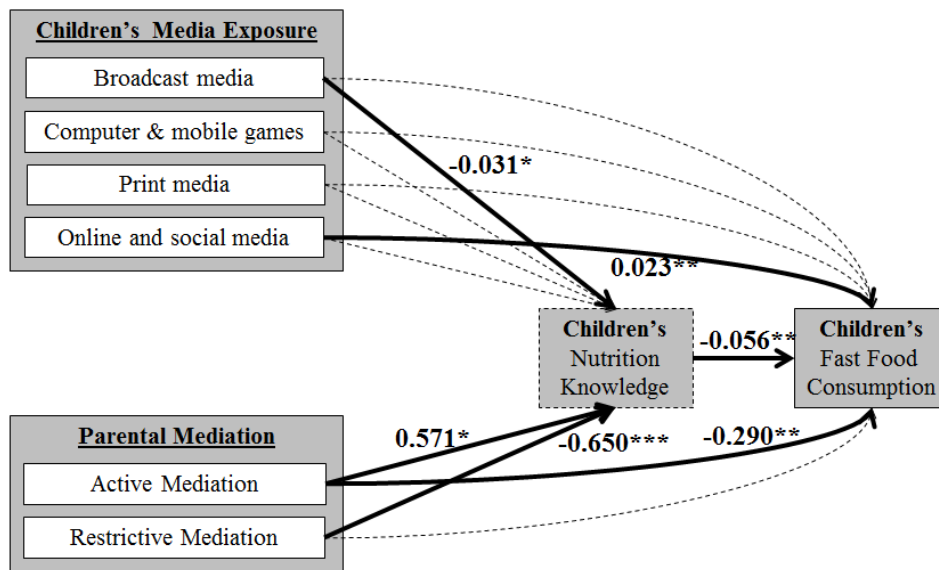
For the suburban sample, the results (see Figure 2) revealed that children’s exposure to online and social media was positively related to fast food consumption. In other words, the more children in the suburban area browsed and chatted on the Internet, the greater their fast food consumption. Conversely, children’s nutrition knowledge and parent’s active mediation strategy negatively influenced fast food consumption. Both parental mediation strategies were significantly associated with children’s nutrition knowledge, but in opposing directions. Higher levels of active mediation resulted in higher level of children’s nutrition knowledge, while the reverse was true for restrictive mediation. As opposed to children in metropolitan area, greater exposure to broadcast media led to lower level of suburban children’s nutrition knowledge.

DISCUSSION

This study aimed to investigate the effects of media expo-

sure and parental mediation in influencing Indonesian children’s fast food consumption, and to learn whether these effects differed for families in the metropolitan versus suburban areas. The findings reveal that in the metropolitan area, fast food consumption of children was positively influenced by exposure to broadcast media. Amongst families in suburban area, however, media exposure affected children differently, as exposure to broadcast media had no significant effects on fast food consumption. Instead, exposure to online and social media showed a major effect. In addition, active parental mediation was found to significantly affect fast food consumption and nutrition knowledge for the suburban children, but not for children in the metropolitan area.

Media exposure influenced fast food consumption differently in a way that greater exposure to broadcast media resulted in more fast food consumption by children in the metropolitan area, but not in the suburban area. This result may be attributed to the differing media environments, where in addition to the national television stations,



Note: B (unstandardized) score. Solid line shows significant (** $p < 0.001$; * $p < 0.01$; * $p < 0.05$), and dotted line shows non-significant associations. SEM analysis is performed in AMOS

Figure 2. The effect of children's media exposure and parental mediation on children's nutrition knowledge and fast food consumption in suburban area.

there are local broadcasters who operate only in either Jakarta or Bogor.³³ More importantly, much of the advertising, potentially including fast food, tends to be concentrated in television stations operating from Jakarta.³⁴ Additionally, better access to fast food outlets in urban areas may make it more convenient for metropolitan children to consume the fast foods advertised on television, even if they have been informed that fast foods are generally unhealthy, in line with the positive association between density of fast food outlets with fast food consumption.^{25,35}

As for suburban children, exposure to online and social media (rather than exposure to broadcast media) was a significant predictor of fast food consumption. Indeed, Indonesians have recently ranked as the world's fourth largest national community of Facebook users. According to a recent report, 65 million Indonesian users opened their Facebook accounts at least once per month, and 33 million accessed Facebook daily.³⁶ Indonesian businesses, including food and beverage operators, have taken advantage of the popularity of social media, which they consider as an inexpensive marketing channel. Many of these companies have increasingly used Facebook and Twitter to connect with customers and provide detailed information on their menus and promotions.³⁷ Unlike television advertising (which reach may be limited to the areas where the television stations broadcast), the reach of social media is not limited by geographic location. This factor could have magnified the impact of fast food marketing when promotions are shared on social media, thus enabling more children to be influenced by such advertisements.

Our findings indicate that parental mediation strategies were effective in influencing the suburban children's fast food consumption and nutrition knowledge, but no such effect was observed among metropolitan children. More specifically, active parental mediation had a favorable

effect in influencing suburban children's fast food consumption and nutrition knowledge, but restrictive parental mediation had an adverse effect on nutrition knowledge. These findings are largely consistent with previous studies that support the efficacy of active parental mediation.²⁹ The results indicate the need for parents to discuss healthy eating with their children and explain the dangers of frequent fast food consumption, rather than merely prohibiting children from eating fast food without explaining the reason. The results of our study are quite surprising in showing that parental mediation did not have a significant effect among metropolitan children. This finding may suggest differences in lifestyle between the two areas. For instance, in the case of getting health care information, people in metropolitan areas may prefer to rely on formal channels such as medical practitioners, whereas people in rural areas tend to depend on informal channels.³⁸ It is therefore possible that metropolitan area dwellers are more likely to feel that the media is an authoritative channel and a reliable source of nutrition information. In turn, suburban dwellers may have closer familial and societal ties which render parental influence to have a higher impact in influencing children's food consumption.

In conclusion, our study points out the differing roles of media and parental influence in affecting children's fast food consumption in a metropolitan versus a suburban area, particularly in the context of a developing country like Indonesia. The findings provide support for the use of active parental mediation to reduce fast food consumption and enhance nutrition knowledge, albeit only among suburban children. Nevertheless, this finding does not negate the need for parents in general to educate themselves about healthy eating and the ill effects of frequent fast food consumption. In an effort to retaliate against the aggressiveness of fast food marketers, parents

should be encouraged to discuss the reasons for avoiding fast food, rather than simply restricting their children from eating such foods. In fact, as children grow older, the more important it becomes that parents apply an active mediation strategy rather than a restrictive mediation, as active mediation encourages obedience, but restrictive mediation may cause rebellion.²⁹

This study has highlighted the potentially negative effects that media exposure (particularly broadcast media and online or social media) can have on children's eating patterns. Presumably, fast food advertisements in these media can have an unfavorable effect in promoting unhealthy levels of fast food consumption. Thus, media literacy programs for children are necessary to help them identify which types of content count as advertisements or sponsored articles, lest they blindly believe the messages that these media provide. In addition, nutrition education programs need to be conducted at schools, especially in the suburbs, considering the potential effect of nutrition knowledge to lowering fast food consumption among children from this area. These programs need to use child-appropriate media such as interactive games where game results can be shared with friends online in line with their fascination with social media. Such learning-through-play programs can make it enjoyable to learn about healthy eating. Social media can also be used to educate parents with regards to healthy eating, as such media have been proven effective in delivering online nutrition programs to users from diverse educational levels, geographical locations and income levels, including people from low income groups.³⁹ Health education targeted at parents can provide them with suitable materials to actively mediate discussions on healthy eating habits. From the point of view of policymakers, it is commendable that the authorities have tried to restrict the rapid expansion of fast food outlets by limiting the number of branches that fast food chains can open in Indonesia,⁹ considering the potential link between access to fast food outlets with consumption.³⁵ However, more can be done, for instance, by limiting or even restricting fast food advertisements during children's television programs.

Future studies can improve on this study in a number of ways. First, we acknowledge the limitation of using media exposure as a surrogate for assessing the effects of fast food advertisements on fast food consumption. Future studies could investigate this aspect in a more thorough manner, such as via content analysis of fast food advertisements. A study could also be conducted to examine children's awareness and recall concerning fast food advertisements, and to learn how these messages affect children's consumption patterns. Moreover, when examining what children see when they browse the Internet, subjects could use eye trackers to ascertain the types of contents viewed and how much time the subjects spend looking at those contents. Second, a greater diversity of Indonesian communities needs to be included in this research. Indonesia is a large country with diverse ethnic groups and dietary habits. Fast food companies have also made it their goal to expand into Indonesia's smaller cities.⁹ Hence, this study could be replicated in other urban and suburban areas of the country, and even extended to rural areas.

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AUTHOR DISCLOSURES

The authors declare that they have no competing interest.

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