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Article *in* Malaysian Journal of Nutrition · January 2019

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Mal J Nutr 25 (Supplement): 47-62, 2019

Exposure and approval of food marketing strategies: a mixed methods study among household food providers in Jakarta

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ABSTRACT

Introduction: Food marketing influences consumers' food choices leading to unplanned food purchasing. **Methods:** This study used a mixed methods approach to investigate the association between food marketing exposure and approval of food marketing strategies among household food providers in Jakarta. Responses from 279 survey participants to questions on exposure and their approval of marketing strategies were analysed. An additional 16 informants who fulfilled the inclusion criteria were recruited for the in-depth interview. Logistic regression was conducted to assess the relationship between the categorical predictor variable ("exposure to active or passive marketing") and the categorical outcome variable ("approval response to food marketing strategies"). **Results:** Almost half of the respondents reported not having exposure to active marketing in the past month, whereas approximately one-third had experienced such exposure 1-2 times. Most of the respondents disapproved the marketing of fast foods and sugar-sweetened foods. The highest disapproval was for the placement of vending machines carrying such foods in schools (69.9%). Respondents who were exposed to active marketing at least once in the previous month were 1.99 times more likely (AOR; 95% CI: 1.07-3.73) to approve the marketing of unhealthy foods. **Conclusion:** Exposure to food marketing promotion appeared to influence approval of marketing strategies among household food providers in Jakarta. In-depth interviews provided supportive evidence for the quantitative results. A mixed methods approach is suggested for larger studies to confirm these findings.

Keywords: Food marketing exposure, approval of food marketing, household food providers, Indonesia

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INTRODUCTION

The concept of nutrition transition with implications for health, developed by Popkin (2002), described the shifts in diet and lifestyle that paralleled urbanisation and industrialisation. One of the major dietary shifts is the increased consumption of energy-dense, nutrient-poor food, especially in developing country (Hawkes, 2007). This phenomenon is associated with the increased availability and accessibility of processed food, which are accompanied by sophisticated marketing systems (Swinburn *et al.*, 2004). The media is used in many sectors, including the marketing of food products, to create brand awareness and induce purchasing (Nielsen, 2010).

Food marketing uses multiple channels to reach consumers. They may be broadcast and non-broadcast channels, online games and social media, to make consumers aware of a product and persuade them to try it (WHO, 2013, Colby *et al.*, 2010). Food marketing is known to influence a consumer's food preference (Kirkpatrick, Reedy & McKinnon 2010) leading to unplanned food purchases (Scully *et al.*, 2012).

Indonesia is a rapidly developing nation that is undergoing the nutrition transition. According to an international survey, Indonesia has the highest rate of unhealthy food marketing exposure in the Asia-Pacific region. A reason for this is the lack of government regulations (Harris, Bargh & Brownell, 2009; Susyanty *et al.*, 2013). The situation indicates a highly unfavourable food environment and could be an important driver of the rising prevalence of obesity in Indonesia, from 15.4% in 2010 to 19.7% in 2013 (Center for Health Research and Development, 2010; Center for Health Research and Development, 2013). The prevalence of obesity was comparatively higher in urban than in the rural areas, and among those with higher educational attainment, and higher expenditures (Center for Health Research and Development, 2010).

Jakarta is also known to be the city most connected to the internet, in Indonesia (PusKaKom & APJII, 2014), exposing its residents a sophisticated integrated food marketing system. Evidence that active food marketing is associated with promoting obesity indicates the need for measures to regulate it (Umberger *et al.*, 2014, Gustafson *et al.*, 2014; Moodie *et al.*, 2013).

At the household level, decisions on food purchasing are commonly made by the housewife, in her role as the household food provider. Her reasons for selection of food for the family are important (International Chamber of Commerce, 2012). Studies that examine how food marketing influences household food providers are lacking (Institute of Medicine, 2006). According to the Stimulus Response Theory, the link between food marketing exposure and food shopping, in an individual, could be explored by understanding the approval in the decision-making process (Sobur, 2003).

This study investigated the association between exposure and approval for marketing strategies among household food providers. Its findings could be useful in addressing the issue of obesity among adults in Indonesia.

MATERIALS AND METHODS

The study used a mixed methods approach, where a qualitative study was conducted to further explore findings obtained from a quantitative analysis. The quantitative study was the International Study of the Families and Food Survey, an online survey conducted by Deakin University in several countries including Indonesia in 2014. The survey

determined the association between food marketing exposure experienced by household food providers and their response to the marketing strategies. The qualitative study comprised an in-depth interview of informants in Jakarta, to understand their perceptions of food marketing exposure and their response to food marketing strategies, as well as to understand the reasons for their decisions.

Quantitative online survey

The 2014 International Study of the Families and Food Survey was an online survey conducted by Deakin University simultaneously in Indonesia, Melbourne, Shanghai, Singapore and Vietnam. This study used only the data collected from the Indonesian respondents. The eligible respondents were women aged 19–49 years, married and were the primary household food providers. A total of 279 respondents who fulfilled the inclusion criteria was included in this analysis. This sample size was estimated to be sufficient, based on the minimum sample calculation to estimate exposure to food marketing with anticipated prevalence of 50%, an estimated deviation of 5% and an alpha of 95%.

Questionnaire point scale

The respondents were requested to provide information on their socio-demographic characteristics including age, educational attainment, marital status[1], and wealth status. They were also asked to complete a ten-item questionnaire on food marketing exposure, and a twelve-item questionnaire on approval/disapproval for food marketing strategies. For the food marketing exposure questionnaire, the respondents were asked to rate the frequency of exposure in the past one month of each item on a 5-point scale. The lowest point (which was a score of 1) referred to zero exposure, while the highest score of 5 referred to ≥ 3 times exposure. For the questionnaire on approval of food marketing practices, participants were asked to rate their opinion of each item on a 5-point scale. The scores ranged from 1 to 5, where lowest score (1) meant "strongly disapprove" and highest (5) "strongly approve".

Quantitative survey data analysis

All responses to the questionnaires were grouped using the exploratory factor analysis. Factor analysis was conducted using the principal component analysis with varimax rotation. Assumptions for the factor analysis were fulfilled with the Kaiser-Mayer-Olkin (KMO) > 0.5 and the significant result of Bartlet's test of sphericity (p<0.01) (Pett, Lackey & Sullivan, 2003).

Descriptive data were presented as frequencies and percentages. Logistic regression was conducted to assess the relationship between the categorical predictor variable ("exposure to active or passive marketing") and the categorical outcome variable ("approval response to food marketing strategies"). Adjusted odds ratio (AOR) was computed after adjusting for the socio-demographic factors of the respondents. All statistical analyses were conducted using IBM Statistical Package for Social Sciences (SPSS) software version 20.0.0.

Qualitative study: in-depth interview

Selection of informants

The principal investigator assisted by a research assistant, conducted the interviews with 16 informants enrolled

[1] number of electronic communication (e.g., smartphones, tablets, and computers) and entertainment devices (e.g., TVs, DVD players, games, etc.) in their households as indicator of wealth (Worsley *et al.,* 2017)

in the study. The informants were the main household food providers. The first informant was selected based on the inclusion criteria, while the remaining ones were selected via the snowball sampling technique.

The number of informants was defined by the study objectives, the variation of information that was essential, and the saturation of answers given by the informants. The important variables for the selection of the subjects considered to yield maximum variation of responses in this study were their working status (working vs housewife), the number of children (no children, or having children aged less than 5 years or older) and marketing exposure (low, medium and high) (Scully *et al.*, 2012; Sharma & Sonwaney, 2014; Devine *et al.*, 2009; Bianchi & Raley, 2005; Wang *et al.*, 2014). Marketing exposure was screened using the same questionnaire on food marketing exposure that was used in the on-line survey. Their answers were categorised as low exposure (not exposed to any channel of marketing media in the past one month), medium exposure (on 2-3 times exposure) and high exposure (> 4 times).

In-depth interview guide

The questions addressed perceptions about food marketing exposure and the responses were approval/disapproval. Prior to usage, the interview guide was pre-tested with two purposively chosen women in the area having characteristics that were similar to the informants recruited for the interview. The pre-testing was done to clarify issues that related to the flow of the questions, the approach to take in posing certain questions, to know whether the questions could gather the data we wanted to address, and to ascertain the tools that were needed to stimulate the help of informants in data collection. The questions of the in-depth interview allowed informants to relate their experiences and perceptions pertaining to the topics in question. Two informants were interviewed each day and each interview lasted 60–90 mins. The research assistant audio recorded and transcribed the answers verbatim for analysis. Overall quality assurance was conducted by (1) ensuring questionnaire understanding by pre-testing, (2) having standardised data collection using guidelines and pictures to stimulate the informant's answers, (3) ensuring that all informants were interviewed by the same researcher assisted by the same research assistant, (4) making field notes and on-field analysis immediately after each interview.

In-depth interview analysis

At the end of the interviews, the responses were transcribed verbatim, and themes were extracted. The informants were differentiated based on the variations to provide a clear pattern. Finally, the findings of the quantitative study were compared with those of the qualitative study (Thomas *et al.*, 2015). All of the processes were documented using Micorsoft Word and Microsoft Excel.

Ethical approval and letter of permission

Permission was obtained from the principal investigator of the 2014 International Study of the Families and Food Survey online survey. The ethical committee of the Faculty of Medicine, University of Indonesia gave approval for the present study (approval no. 068/UN2.F1/ETIK/2015), which was conducted from 7 December 2015 to 7 December 2016. Additional approvals were given by the Provincial government of Daerah Khusus Ibukota (DKI) Jakarta and the Ministry of Internal Affairs for the conduct of the study in Jakarta and its surrounding areas.

RESULTS

Socio-demographic characteristics

Quantitative online survey respondents

The main inclusion criteria for the online quantitative survey was that the respondents had to be the main decision makers who were responsible for planning and procuring food provisions for the family. Out of 279 respondents from Indonesia, the majority were married (90.7%) aged 30-49 years (74.2%) and with university education (93.5%) (Table 1). Among those with children, about half (54.5%) had children < 5 years old, while about half (50.5%) had children aged ≥ 5 years old. Most of the respondents (83.9%) were responsible for preparing the main meals for the family. As for household economic status, 26.2% were in the low category, while 39.1% and 34.8% were in the medium and high categories, respectively.

In-depth interview informants

The informants (*n*=16) were demographically similar to the on-line survey respondents. Like the latter, the informants were recruited because they were the main household food providers

Table 1. Socioeconomic characteristic of the online participants (*N*=279)

Characteristics	*n (%)*
Age (years)	
19-29	72 (25.8)
30-49	207 (74.2)
Marital Status	
Not married (separated/divorced/widowed)	26 (9.3)
Married	253 (90.7)
Educational Background	
High school or lower	18 (6.5)
University	261 (93.5)
Have children	
Yes	226 (81)
No	53 (19)
Have children aged below 5 years	
Yes	152 (54.5)
No	127 (45.5)
Have children aged 5 years and above	
Yes	141 (50.5)
No	138 (49.5)
Economic status†	
Low	73 (26.2)
Medium	109 (39.1)
High	97 (34.8)
Person who prepares the main meals in household	
Respondent	234 (83.9)
Respondent's partner/spouse	20 (7.2)
Servant/cook	15 (5.4)
Others	10 (3.6)

†Number of electronic communication (e.g., smartphones, tablets, and computers) and entertainment devices (e.g., TVs, DVD players, games, etc.) in their households as indicator of wealth (Worsley *et al.*, 2017)

Table 2. Distribution of the online respondents (%) according to frequency of active and passive marketing exposure in the past one month (*N*=279)

Marketing exposure†	*None*	*1-2 times*	*> 3 times*	*Cronbach's alpha*
		%		
Exposure to active marketing				
Exposure to media				0.805
On public transport (e.g. bus, train)	47.3	34.4	18.3	
In school (e.g. canteen, sports event)	53.0	33.7	13.3	
Magazines and other print materials	34.8	45.9	19.4	
Messages received via SMS	46.6	36.2	17.2	
Messages received via e-mail	46.6	26.9	26.5	
Exposure to passive marketing				
Exposure to supermarket-related promotion				0.701
Joining competition that was promoted on food or drinking packaging	68.1	27.6	4.3	
Playing game on the internet that was associated with a food or drink product	65.9	28.3	5.7	
Buying food/drinks from vending machines	63.1	32.3	4.7	
Buying extra food/drink products on display at the supermarket check-out counter	29.0	52.0	19.0	
Receiving free samples of a food/drink product at train station/shopping centre/supermarket	49.1	42.3	8.6	

†Factor analysis of the quantitative online survey response generated two factors, namely exposure to active marketing and exposure to passive marketing

and aged 19-49 years. All the informants had university education. Out of 12 informants with children, five of them had children < 5 years old, while seven had children aged ≥ 5 years old. All the informants had experienced marketing promotion/advertisements in the past one month, with the majority (75.0%) reporting medium exposure (2-3 times exposure to food product advertisements in the past month).

Factor analysis of quantitative survey response

Food marketing exposure

Results of the factor analysis generated two factors on food marketing exposure. These factors were labelled based on their components, namely (i) exposure to active marketing, consisting of exposure to marketing media from public transport, at school, in a magazine, messages received via short messaging services (SMS) and via electronic mail (e-mail), and (ii) exposure to passive marketing, e.g. competitions promoting food or drinks, internet games associated with food or drink products, food/ drink vending machines, supermarket displays at check-out counters and free samples of food/drink products at train stations/shopping centres. Reliability of these indices were good, with Cronbach's alpha ranging from 0.70-0.81.

In general, almost half of the respondents reported not having exposure to active marketing in the past month, whereas approximately one-third experienced such exposure 1-2 times, particularly in magazines and other print materials (Table 2). Receiving food advertising information via e-mails > 3 times in the past month ranked highest (26.5%) among the active marketing items that the respondents were frequently exposed to.

As for exposure to passive marketing, Table 2 shows that, in general, more than half of the respondents were not exposed to such marketing practices in the past month. It is noted that "buying additional food or drink product at the check-out counter" was reported 1-2 times and > 3 times in the past month by 52.0% and 19.0% of the respondents, respectively. Exposure to competitions and games promoted on food products and the internet was not widely reported by the respondents.

Marketing strategies

Two factors were revealed in the factor analysis on food marketing strategies. These were: (i) the marketing of fast foods and foods high in sugar. These consisted of advertising of foods and drinks with high sugar on television/ radio, the promotion of confectioneries/ soft drinks in supermarkets, and two-for-one pricing/upsizing of fast foods and drinks; (ii) the marketing of healthy foods, consisting of marketing of fresh meat, promotion of water to children, and the marketing of fruit and vegetables. The responses to all the questions in each category were then made into an index by averaging the response scales. Reliability of the indices was good with Cronbach's alpha ranging from 0.69-0.84.

Table 3 shows that most of the respondents disapproved the marketing of fast foods and foods with high sugar content. The highest disapproval was for placing vending machines that carried such foods in schools (69.9%), followed by advertising foods and drinks containing high sugar on television/ radio (66.3%). Nutrition education in schools or on television provided by soft drinks/fast food companies was not as widely disapproved (13.6%); in fact they were given approval by more than half of the respondents (64.5%). The majority of the respondents approved the marketing of healthy foods, especially promotion of

Table 3. Distribution of the online respondents (%) according to respondent approval/disapproval of marketing strategies (*N*=279)

Marketing strategies[†]	*Disapprove*	*Neither approve nor disapprove*	*Approve*	*Cronbach's alpha*
		%		
Marketing of fast food and foods with high sugar content (unhealthy foods)				0.839
Advertising of foods and drinks that contain high sugar on TV/ radio	66.3	26.2	7.5	
Promotion of confectionery/soft drinks in supermarkets	19.0	47.0	34.1	
Two-for-one pricing/upsizing of fast foods and drinks	36.9	38.4	24.7	
Vending machines (with sugar sweetened beverages/confectionery) in schools	69.9	22.2	7.9	
Soft drink advertising that targets children	63.1	22.6	14.3	
Positioning of fast food outlets near schools	52.3	31.2	16.5	
Fast food companies' sponsorship of children's websites	53.0	32.3	14.7	
Fast food companies' sponsorship of children's sports/educational programmes	39.1	37.3	23.7	
Nutrition education in schools or on TV provided by soft drink/ fast food companies	13.6	21.9	64.5	
Marketing of healthy foods				0.693
Marketing of fresh meat	1.4	12.9	85.7	
Promotion of water to children	0.4	3.6	96.1	
Marketing of fruit and vegetables	0.7	5.0	94.3	

[†]Factor analysis of the quantitative online survey response generated two factors, namely marketing of unhealthy foods and marketing of healthy foods

drinking water to children (96.1%) and the marketing of fruits and vegetables (94.3%).

In-depth interviews

Food marketing exposure

In general, several of the interview informants experienced exposure to active marketing, especially via social media including SMS blasts and e-mails. They felt disturbed by the intensive marketing exposures.

> *"I got a lot…I thought they were emergency messages. In fact, they were just promotions. The pop-up advertisements on internet were also disturbing when I browse for something"* (Working mother with < 5 years old child, frequent exposure)

The informants mentioned that ironically, exposure to passive marketing stimulated a greater desire to buy than exposure to active marketing, because they were directly faced with the products. Half of the informants (*n*=8) mentioned that products displayed near the cashier increased their desire to make purchases. Passive marketing exposure that involved competitions and free food samples also encouraged purchasing.

> *"Giving a tester (also known as received free-food-sample) and promotion in a competition is a direct promotion for reaching consumers. It was good because I could directly try it. The tester sells the taste not merely the image"* (Housewife with no children, low exposure)

Marketing strategies

The most common reason for disapproving marketing strategies was when they affected health, the social life of children, and the school environment. The 'Health' theme emerged particularly among informants with children aged < 5 years old, housewives, and those whose husband suffered from a disease. Informants with older children (> 5 years old) expressed more concerns about the negative effects brought about by marketing efforts in the school environment.

> *"I am afraid that all the unhealthy food drink marketing could easily brainwash children, and people with low education will be easily influenced without considering health effects"* (Housewife with child > 5 years old, medium exposure)

> "*Environment has a big influence and we can't control what the children consume outside the home. This kind of unhealthy outlets will make our children over-consume, especially foods high in fat, leading to obesity and heart attack. Schools should provide a healthy image, and permit the selling of only healthy products*" (Housewife with child > 5 years old, medium exposure)

Meat and fruit were perceived as healthy but expensive foods.

> *"Prices of fruit and meat are quite expensive. If there are promotions for fruit and meat promotion, of course, it would stimulate people to buy. Since my husband got a heart attack, we prefer to eat home-cooked food, rather than eat outside. I make fresh mixed fruit-vegetables juice for him"* (Housewife with child < 5 years old, husband suffered from heart attack)

The informants expressed concern for the freshness and quality of perishable foods such as meat and fruit.

"*We have to be careful in choosing promotional meat or fruit. We need to be aware of meat's quality and the freshness of the fruits and vegetables. Those which are on promotion tend to have low quality*" (Housewife with child > 5 years old).

Most of the informants said that they realised the lure of marketing promotions but usually they kept to their purchasing to the needs of the family, which was also the most common reason for approving marketing strategies.

"I'd like to buy at the supermarket because there are so many promotions. However, it doesn't mean that I buy all the products promoted. I buy because I need them, not because of the promotion. But if there is a promotion on things listed on my shopping list, then I buy" (Working mother with child < 5 years old, high exposure)

"I have had experience with promotions. If there was a promotion which said, "Buy 500 g and get 500 g free", I will buy the item, even though I only needed 300 g. But I bought 500 g so that I could keep the rest of it for future use" (Housewife with < 5 years-old child, medium exposure)

Informants generally approved nutrition education provided by soft drinks or fast foods companies as they felt consumers benefited from the nutrition information, and as long as the companies were not promoting their products.

"It was a really brilliant idea of marketing through education. People take the benefit of the information. However, there would be a misunderstanding especially if the company also gave out samples of the products. The education itself was good, but the food provided by promoter was not" (Housewife with < 5 years-old child, high exposure)

The preferences of the family, especially that of the children, were the driving factor for making purchases of the family food provisions. Informants with children > 5 years old, mentioned that their children's preferences were influenced by social media, SMS blasts, and friends.

"She (informant's daughter) usually has many messages from SMS blasts, offering items such as buy six donuts get six more for free. I usually ignore the messages because it's quite disturbing. Anyway, I sometimes follow what she wants when we go out, but not too often because buying items such as donuts will make her fat" (Housewife with > 5 years-old child, medium exposure)

The informants also realised that advanced technology is emerging in Indonesia and that it could influence family preferences.

"Go Food® which charges only 10.000 for each delivery, helps us when there is no food at home or no time to buy. There are also many recommended restaurants that use their delivery service. This facility is the best option for food purchases, in situations such as traffic jam, on a rainy days and if we are too lazy to go out" (Working mother with no children)

Logistic regression of quantitative survey response

Results from the logistic regression analysis of the online survey data showed that exposure to marketing, whether active or passive, had an influence on the respondents' approval of the marketing strategies. Respondents who were

Table 4. Logistic regression analysis of the online respondent approval for marketing strategies according to exposure to active or passive marketing (*N*=279)

Dependent variable	*n (%)*	*Approval for marketing of unhealthy foods*		*Approval for marketing of healthy foods*		*Approval of industry-sponsored children education activities*	
		p	*AOR*[†]*(95% CI)*	*p*	*AOR (95% CI)*	*p*	*AOR (95% CI)*
Exposure from passive marketing							
Not in last month	137 (49.1)		1		1		1
At least once in last month	142 (50.9)	0.375	1.32 (0.72-2.43)	0.152	0.52 (0.21-1.28)	0.963	1.01 (0.58-1.75)
Exposure from active marketing							
Not I the last month	183 (65.6)		1		1		1
At least once in last month	96 (34.4)	0.030	1.99 (1.07-3.73)	0.322	1.62 (0.62-4.21)	0.021	2.02 (1.11-3.69)

[†]AOR (95% confidential interval): Adjusted odds ratio computed after adjusting for socio-demographic characteristics of the respondents, namely age, marital status, educational background, having children, having children below 5 years, having children above 5 years and wealth status

exposed to active marketing at least once in the month prior to the survey, were 1.99 times more likely (AOR; 95% CI: 1.07-3.73) to approve marketing of unhealthy foods (Table 4). This category of respondents was also more likely to approve marketing of healthy foods (AOR: 1.62; 95% CI: 0.62-4.21) and industry-sponsored children nutrition education (AOR: 2.02; 95% CI: 1.11-3.69). In contrast, the respondents who were exposed to passive marketing were unlikely to approve the marketing of healthy foods or nutrition education for children by industry, compared to those who had no exposure at all.

DISCUSSION

The majority of respondents to the online survey were from Jakarta, had university education, and were categorised as having middle to high economic status. Rising income in Indonesia has been shown to be associated with changing dietary habits towards the increasing consumption of processed food products (Dyck, Woolverton & Rangkuti, 2012), especially in urban populations (Hawkes, 2007; Dyck *et al.*, 2012; Umberger *et al.*, 2014), owing to the need to save time, or because of convenience, variety, and pleasure (Agriculture & Agri-Food Canada, 2014).

The quantitative survey showed that active food marketing exposure was significantly associated with the approval of unhealthy food (p=0.030), as well as for the approval of industry-sponsored educational activities for children (p=0.021). Marketing increases the appeal of products to consumers, and processed food are among the most actively marketed products (Umberger *et al.*, 2014; Phipps *et al.*, 2014; Scully *et al.*, 2012; Bernhardt *et al.*, 2013; Lesser, Zimmerman & Cohen, 2013; Boyland *et al.*, 2011; Harris *et al.*, 2009). The informants of the in-depth interview said that they bought additional promotional food products only when they thought that the family needed it.

While the online survey respondents received a high number of marketing exposures from emails, the qualitative study informants stated that they were exposed to marketing via the social media and SMS blasts. The exposure to online marketing depends on the degree of intensity of internet usage. In Indonesia, the number of internet users increased from 5.9 million in 2014 to 7.4 million in 2015 (PusKaKom & APJII, 2014), indicating the rapidly rising marketing opportunities for businesses. Companies are able to communicate directly with consumers with little time or location barriers (Haghirian, Madlberger & Tanuskova, 2005). Both the online survey and qualitative study participants approved the marketing of healthy food including fruit and vegetables. Studies have shown that supermarkets and grocery stores that had advertisements of healthy foods did manage to influence customers towards making more purchases of such foods (Escaron *et al.*, 2013; Glanz, Bader & Iyer, 2012). Likewise, the informants in this study considered freshness and quality of perishable foods to be important.

Disapproval of the marketing of unhealthy foods, i.e. fast foods and high sugar content foods, was shown to be high among the survey respondents and the subjects of the interviews. The latter group with school-going children expressed concerns on the marketing of unhealthy foods nearby the school compound. Food companies are known to increasingly use integrated marketing campaigns to target children and youth since they are easily influenced, do not have enough knowledge to choose healthy foods, and because of their influence over family spending (WHO,

2013; Boyland *et al.*, 2011; Sharma & Sonwaney, 2014). Children in developing countries may be more vulnerable to food promotions as they are potentially less critical than children in developed countries (Hastings *et al.*, 2006). In Indonesia, students purchase food and drinks in and around the schools. This creates an unhealthy food environment that has implications for obesity (Handayani *et al.*, 2015).

Children's educational activities that are sponsored by the industry received approval from more than half of the respondents (64.5%), even when the activity was sponsored by soft drinks/ fast foods companies. The informants assumed nutrition education would benefit children "as long as the soft drinks or fast foods company did not promote their products". This point to a low awareness about subtle unhealthy food marketing among Indonesian consumers. Sponsorships provided by food industry include the provision of research grants, support for the publication of paper, travel grants for the attendance of conferences and support of various educational activities (Nestle, 2001; Nestle, 2006; Ludwig & Nestle, 2008). However, the benefits of such support remain debatable. A very strong opinion in an article in the Lancet from Moodie *et al.* (2013), stated that any support by suppliers of unhealthy foods for research, education and other programs should not be accepted. Nonetheless, given that sponsorships by food company is not going to disappear, the challenge lies in trying to control them rather than act to prevent them. It will be crucial to recognise potential conflicts of interest that may arise, take steps to minimize them, and keep public health at the forefront of professional activities (Nestle, 2001). However, in Indonesia, there are as yet no clear regulations, authoritative bodies or restrictions that deal with the marketing and advertising practices, especially of food and beverages (Susyanty *et al.*, 2013). Given the findings of this study, public health authorities are urged to regulate food-marketing ethics, especially for foods that are targeted directly at children.

When addressing the influence of food marketing promotions, all interview informants emphasised the lure of promotion on their daily needs, especially promotion in the form of discounted products. Urban shoppers were interested in price reductions of healthy foods (Vukmirovic, 2015; Cohen & Babey, 2012; Glanz *et al.*, 2012). They took advantage of sales to stock up on essential items (Phipps *et al.*, 2014), and mentioned health considerations as the main factor for their decision for buying additional foods on promotion. This may indicate that price might not be a sensitive issue among highly educated people living urban areas. One explanation might be that consumers with higher education were more likely to have better knowledge of nutrition. Some studies have shown that in developed countries, the highly-educated were more likely to buy fruit and vegetables, while those with lower education attainment mentioned that price was more important than health and nutrition benefits (MacFarlane *et al.*, 2007; Ward *et al.*, 2012). Children with educated mothers had more healthy diets while children of the least educated consumed more foods that were convenient (Campbell *et al.*, 2002).

The strength of this study was the use of mixed methods that showed the association between exposure and approval of food marketing promotion among household food providers. Among the limitations is the reliance on self-reported questionnaires, that could have been affected by memory recalls. The findings of the online survey cannot be

generalised to the broader Indonesian population since the selected sample comprised respondents with university education and middle-high income.

CONCLUSION

The present study showed that, among university educated people living in an urban area, exposure to food marketing did influence their approval for marketing strategies including marketing of unhealthy foods. This has serious implications especially in regard to marketing efforts that are aimed at children and household food providers without knowledge of health and nutrition. There is an urgent need for efforts to regulate unhealthy food marketing. In addition, industry should act responsibly in their marketing efforts to consumers. The government should independently and objectively monitor these efforts. While this study was conducted in a highly educated urban population, future studies should be undertaken among consumers with lower socio-economic status, to gain insight on the impact of food marketing exposure in that segment of the population.

Acknowledgements

This project was supported by a grant from Centre for Physical Activity and Nutrition Research, Deakin University, Melbourne, Australia. Data from online survey were obtained from AW.

Authors' contributions

SA, designed the current study and carried out qualitative data collection, analysed and interpreted the data, and developed the first draft of the manuscript; HK, designed the current study, interpreted the data, conduct re-nalysis of the data, critically reviewed the first draft manuscript and drafting the subsequent draft of the manuscript until the current version; SB, designed the current study, interpreted the data, and critically reviewed the first draft manuscript; JF, involved in the online study of marketing exposures conducted by Centre for Physical Activity and Nutrition Research (Deakin University, Melbourne, Australia); AW lead the online study of marketing exposures conducted by Centre for Physical Activity and Nutrition Research (Deakin University, Melbourne, Australia), and critically reviewed the manuscript. All authors have seen and approved the final manuscript.

Conflict of interest

The authors declare no conflict of interest.

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