

DIGITAL FOOD MARKETING: WHAT WE KNOW, WHAT WE SHOULD KNOW?

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ABSTRACT: *Today's adolescents are growing up at the center of an exploding digital media culture and are primary targets for digital food marketing. A combination of factors has made them particularly valuable to interactive marketers, including their role as "early adopters" of new media practices and their steadily rising spending power. A trend has been observed towards increasing investment in food marketing on new media such as the Internet, social media and video games. The aim is to engage youth in emotional, entertaining experiences and to encourage them to share these experiences with their environments. There is unequivocal evidence that marketing of unhealthy food influences youth health. Therefore, there is a need: 1) to address the growing health threat facing youth in the digital marketplace, 2) to design new smart technologies to support credible nutrition communication and e-health. A formative exploratory study in Lebanon, based on social marketing approach, showed that food marketing and nutrition communication influence the knowledge, food preferences and dietary patterns of youth. Comprehensive nutrition communication on multiple media increases the power of persuasive messages that encourage healthy lifestyles. Research on digital food marketing impact on health remains underdeveloped and should be of concern to policy makers.*

KEYWORDS: Food Marketing, Nutrition Communication, Media, E-Health, Youth.

INTRODUCTION

Global food production and consumption patterns have evolved over the past decades. This development is largely attributed to urbanization, higher income, as well as improved consumer perception over food quality and safety, especially within emerging economies and developing countries (Baker and Friel, 2016). Such global dietary changes, driven by giant transnational food and beverage corporations, are consistent with the theory of "nutrition transition" (Alexander et al., 2011; Baker and Friel, 2016). Nutrition transition is likely to become increasingly significant in the middle-income countries, such as Lebanon and associated with rising rates of obesity and diet-related diseases (Baker and Friel, 2016; Hamadeh and ElZein, 2011).

The rise of youth obesity has been drastic over the past decades and is one of the most serious public health challenges of the 21st century, especially in the Middle East and Gulf regions (Hamadeh and ElZein, 2011). Obesity is mainly related to unhealthy diet and sedentary lifestyle resulting from a range of sociocultural, economic, market and policy factors that influence dietary and lifestyle patterns (Hamadeh and ElZein, 2011; Naja et al., 2015). Youth obesity is associated with both immediate and longer-term health implications including type 2 diabetes, cardiovascular diseases, psychological disturbances and certain types of cancer (Naja et al., 2015).

Although numerous internal and external factors influence youth' dietary patterns and lifestyles (Iop et al., 2006; Ozimek and Zakowsky-Biemans, 2011), one that has received increasing

attention is food marketing (Culp J et al., 2010; Iop et al., 2006; Renko and Bucar, 2014). Many studies indicate that food marketing and advertising influences youth' dietary patterns, preferences, health and lifestyles (Batada et al., 2008; Culp et al, 2011; Folta et al., 2006), The most commonly advertised food and beverage categories were high in fat, sodium, added sugars or/and low in nutrients (Batada et al., 2008; Henry and Story, 2009). However, to our knowledge, the association between physical activity and food advertising has ever been quantified (Folta et al., 2006). Indeed, nutrition experts, health professionals and others including food marketers can advocate, both personally and within their professional capacities, for more responsible food marketing and nutrition communication to improve youth' food choices and lifestyles (Batada et al., 2008; Folta et al., 2006).

The exponential development of social media technologies has changed the landscape of food marketing, and public communication and education, which poses a range of challenges to food and health institutes (Shan et al. 2015; WHO, 2016). Still, these contemporary technological forums can be useful tools for responsible online food marketing (Alvy and Calvert, 2008) and nutrition communication (Barth F, 2015; Shan et al. 2015).

There is unequivocal evidence that traditional and new digital marketing of unhealthy food influence youth health (Chandon and Wanswink, 2012; Freeman et al., 2015). Therefore, there is a need: 1) to address the growing health threat facing youth in the digital marketplace, 2) to design new smart technologies to support credible nutrition communication and e-health.

Digital Food Marketing and youth health

Information and Communication Technologies use in food marketing

The International Telecommunication Union annual report of 2015 represented a global overview of the latest developments in Information and Communication Technologies (ICTs) and reflected the continuous evolvement of the global information society in developed and developing countries. The report also reveals that, globally, 46% of men and 41% of women are Internet users (TDB report, 2015).

More specifically, a preeminent study of media use in 6 Arab countries (Egypt, Lebanon, Qatar, Saudi Arabia, Tunisia, and the United Arab Emirates) contributed to a portrait of regional differences and changes of media use of all kinds, from so-called legacy or traditional media to digital and social media and direct messaging (Dennis et al. 2016).

This study showed that television remains an important source of entertainment in the region, but is losing ground to the internet. Internet penetration rose in all 6 countries surveyed from 2013 to 2016, but most dramatically in Egypt, as well as Lebanon. In Tunisia, Internet penetration is the lowest among countries surveyed and stagnated over the past few years (Dennis et al. 2016).

Thirty-six percent in the region play video games with a 13% nationals reported playing every day. Emiratis spend more time than other nationals playing video games each week, with a median of 14 hours compared to only 7 hours for other nationals. Sixty-two percent of males play games on their phone, nearly as many women play as well (56%).

According to adult respondents, 45% of children aged 0 to 6 play phone games in their households at least once a week. Most respondents support greater governmental Internet content regulations to protect children in their household (Dennis et al. 2016).

The utilization and influence of online social networking in the last decade has given rise to the capacity of individuals to discover and share content with like-minded communities around the world (Chandon and Wanswink, 2012; Fassnacht et al., 2015; Pila et al., 2017). Social media is a central feature within our society and has radically changed individuals' social interactions, choices of entertainment and learning strategies (Barth F, 2015; Dennis et al. 2016; Shan et al. 2015). In particular, Internet, cellphones and a wide and growing range of social media including Facebook, Instagram, Twitter are part of youth life who cannot imagine a world without this communication technology (Barth F, 2015; Shan et al., 2015). Therefore, texting, blogging, posting, tweeting, chatting and more are taken for granted as part of normal life by these young people (Barth F, 2015; Shan et al., 2015).

Of the emerging trends on social media, health-related content on food, diet and physical activity has garnered widespread popularity (Chandon and Wanswink, 2012; Pila et al., 2017). Digital food marketers' influence consumers by appealing to their psychological needs, which reinforce daily behaviors (WHO, 2016). These include interacting needs including the needs for social recognition, maximization of pleasure and enhancement of self-esteem. For instance, soft drinks advertising portrayed social success and interaction. (DeJong et al., 2017; WHO, 2016)

Food marketing: between traditional and new digital techniques

Marketing is a business principle, which uses market research, sales trend and other methods to promote products and services (DeMooij, 2014). In present times, food marketing has gained momentum with increasing globalization, food industry revolution, influence of media and breaking up of joint family system (Bhatnagar et al., 2014; WHO, 2016). Advertising helps in promoting food and beverages among likely consumers and is a component of the entire process of food marketing by placing food/beverage product within the reach of consumer creating a felt need simultaneously (Bhatnagar et al., 2014; Dixon et al., 2007).

Food and beverages marketing directed to youth is an issue of concern in the present day society (Freeman et al., 2015; WHO, 2016). Children and adolescents are a highly desirable target population for energy-dense and nutrient-poor food digital marketing (Bhatnagar et al., 2014; Freeman et al., 2015; WHO, 2016). However, food digital marketing directed at youth is not well monitored nor evaluated for its impact on dietary patterns or weight status, and has escaped public health scrutiny (Bhatnagar et al., 2014; Freeman et al., 2015).

The contribution of these multinational food and beverages companies to youth' diet is critical, as they often drive food marketing and advertising (Alexander et al., 2011). These food companies have targeted youth, especially children, as a naïve audience to boost their sales (Alexander et al., 2011; Bhatnagar et al., 2014). Hence, without full participation of food and beverage industry in addressing food reformulation, consumer information, responsible food marketing, promotion of healthy lifestyles and public private partnerships, improving population health will remain limited (Alexander et al., 2011; Bhatnagar et al., 2014).

Targeted food marketing and its impact

Aggressive marketing strategies are adopted to attract target consumers (Bhatnagar et al., 2014; Powell et al., 2007). Consistent with other studies, a systematic review by World Health organization highlighted prioritization of children in marketing strategies of food companies (Hastings et al., 2008).

Children and adolescents today are potential consumers and digital food marketing strategies and techniques are designed to appeal them directly (Bhatnagar et al., 2014; Pila et al., 2016) through youth-oriented media and venues (Batada et al., 2008; Chandon and Wansink, 2012). Therefore, marketing practices include promotions and incentive programs designed so that youth will prefer, remember and select specific brands (Henry and Story, 2009; Montgomery and Chester, 2009).

Marketing strategies and techniques commonly used in youth-oriented food and beverages marketing include but are not limited to (Henry and Story, 2009):

- Characters licensing and cross-promotions: using another companies' character, product, brand, trade name or related intellectual property in the advertising of a food/beverage product. Use includes cross promotions with a character, television show, toy, game or other product to promote a food product or brand (Batada and Wootan, 2007; Lawrence, 2003).

Example: Characters from Disney's "Frozen at Subway", from Dream Works Animation "Shrek at Burger King".

- Premiums: toys and other items distributed with any of the company's food/beverages product or meals sale whether sold separately, distributed in food packages, provided automatically with food or restaurants meals, or redeemed through coupons or codes.

Example: Toys or games provided in a restaurant meal or cereal box. Contest to win a trip. Collection of a certain number of proofs of purchase to win a prize.

- Celebrity endorsement: promotional messages made by a public figure (actor, athlete, musician or other well-recognized person) including signature, likeness, demonstrations, appearances in advertisements, verbal statements or other identifying personal characteristics endorsing consumption of a company's food products (Lawrence, 2003).

Example: Pepsi created an ad showing one of their athlete spokesman, David Beckham "football player" executing some amazing soccer shots on the beach.

- Product placement: solicited product placements permitting and promoting the integration of any food or beverage product, logo, character, package or trade name into audiovisual entertainment vehicle such as magazine, TV or radio show, motion picture, music recording, game or other media channels (Alvy and Calvert, 2008; Henry and Story, 2009).

Example: Energy drinks placement into radio program.

- Sponsorship: a business arrangement that involves any form of monetary or in-kind payment or contribution to support an event, activity, organization or venue that directly or indirectly promotes company's name, logos, products, brands, characters or services.

Example: the "Gatorade" company owned by PepsiCo sponsors sports teams.

- Cause marketing and philanthropy: food and beverage marketing in conjunction with a donation to an institution, organization, event or program.

Example: "Gatorade" funds a multi-faceted cause program called "Play It Forward" launched in 2016 to offer opportunities for youth athletes to participate in athletics so they may earn the benefits of sports.

- Merchandising: the use of food or beverage companies' brand names, logos, characters or other images on items, including but not limited to, games, toys, accessories, dishware or youth' clothing (Lawrence, 2003).

Examples: M&M monopoly family board game. Tony the Tiger spoons or Miley Cyrus plates.

Marketing qualitative characteristics

Qualitative characteristics established definitions for youth-targeted advertising and marketing activities (Alvy and Calvert, 2008; Henry and Story, 2009; Lawrence, 2003). The following list recognizes the emerging and growing qualitative characteristics that marketers use to appeal to youth including, but not limited to marketing that:

- Features anthropometric objects or animals and animation appealing to target population

Examples: food that sings or talks are appealing to children.

- Contains animated and/or anthropometric characters, either licensed from an entertainment or media company or a mascot associated with a specific food/beverage or restaurant company brand. For instance, if a character is available as for children, the character is by definition child-directed

Example 1 (Brand mascots): Ferris and friends for adolescents; Ronald McDonald for children.

Example 2 (Licensed characters): Harry Potter for adolescents (Warner Brother Entertainment, Inc.); Marvel Superheroes for children (The Walt Disney Company).

- Contains interactive content and internet-based applications (apps) that are appealing to youth such as games, digital art creation, virtual pets and/or worlds

Example: Sour Patch kids Sour Fling apps for children.

- Prominently features celebrities, famous fictional or other characters, musical performers, models or athletes, any of who are popular with youth

Examples (Celebrities/characters Musical performers): Miranda Cosgrove in iCarly; Twilight characters/actors; Fresh Beat Band; Justin Bieber; Taylor Swift.

Examples (Famous fictional characters): Santa Claus; Easter bunny.

- Contains language directly addressing youth or that is a direct appeal to youth.

Examples: "hey teens! Listen up!"

- Uses themes appealing to youth, such as fun, cool, excitement, adventure, magic or fantasy

Examples: Riding scooters with friends for children; daredevil stunts with a bunch of teenage guys saying "Do the dew" (Mountain Dew commercial)

- Uses youth-appealing packaging or product characteristics

Examples: Football packaging; Green Ketchup.

- Uses youth-oriented sounds, voices, music or images, such as jingles, special effects sounds, products used as animations or playthings

Example: Gatorade created a catchy jingle that urged millions of youth TV viewers to “Be like Mike” in order to be inspired by Michael Jordan.

- Contains features or is in locations appealing to youth, such as games, playgrounds, rides or mascots

Examples: person dressed as character at an amusement park (for children); Youth surfing waves and drinking Coca Cola “Taste the Feeling” (for adolescents).

Media platforms in food marketing

Various media platforms (figure 1) are used for food and beverages marketing in order to establish product in the minds of viewer (Bhatnagar et al., 2014). Modern media channels and captivating repetitive advertisements make digital food marketing more effective than traditional media techniques such as printed media, TV and radio (Alvy and Calvert, 2008; Borzekowsky and Robinson, 2001).

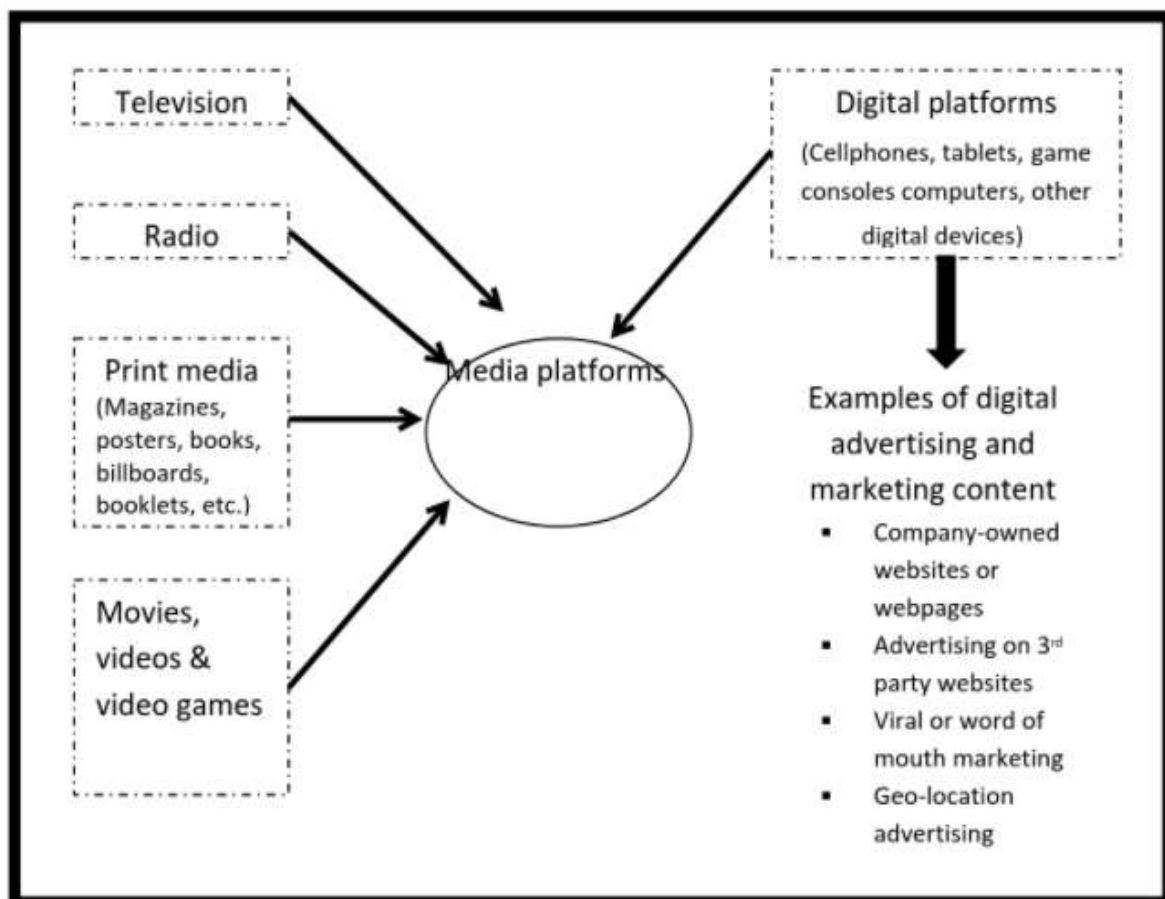


Figure 1. Various Media platforms used in food marketing.

The following list describes the diverse digital media platforms used for food and beverages marketing directed towards youth. Examples of advertising and marketing content include, but not limited to (DeMooij, 2014; Henry and Story, 2009):

- Company-owned websites or webpages, including company-sponsored advergames.
- Advertising on third-party websites, including sponsored hyperlinks, display advertising, banner or pop-up advertisements, and in-page audio or video advertisements.
- Geo-location advertising: defined as location-based advertisement delivering relevant and contextualized ads or promotions in proximity to a person's surroundings in real-time.
- Viral or word of mouth marketing including promotional messages intended to encourage consumers to discuss or promote branded content, messages or product samples to their friends (by passing along or sharing a promotional message) and/or providing financial or other incentives, product samples, or other support to individuals/groups (Vries et al., 2012):
 - Company-sponsored blogs or social networking site
 - Content developed for video, audio or image file-sharing
 - Content posted on the internet about a food product or brand that is intended to be sent from a person to another (example; a promotional or "send to a friend" message sent through email/text/other social media-based sharing)
- Other forms of advertising and marketing, which may appear on company-owned or 3rd party sites, or are directed to youth via mobile devices including, but not limited to:
 - Email messages
 - Text or Short Message service (SMS) messaging, or instant messaging (IM)
 - Picture or other multimedia messaging
 - Mobile broadcasts
 - Podcasts
 - Games and apps (example; OREO: Twist, Lick, Dunk App)
 - Downloads such as ringtones, wallpapers and videos
 - Social media posts and blogs

Together with these media platforms, youth encounter food marketing on a daily basis in different venues where they live, learn and play including school environments (school buildings, athletic fields, school buses or other facilities), retail environments (such as in-store and/or restaurants marketing and promotions), and other youth-oriented settings, activities and events (such as youth clubs, sports leagues, recreation centers, parks, entertainment events and education settings) (Baker and Friel, 2016; DeMooij, 2014).

Food Marketing and nutrition communication perceptions by Lebanese youth

Based on the results of a formative explorative research, using social marketing approach, and aiming to study perceptions of Lebanese youth to an eventual school nutrition policy development, food marketing and nutrition communication perceptions were analyzed (Hamadeh and Marquis, 2017-a). A total of 48 youth (20 boys and 28 girls) aged between 10 and 14 years participated in this study coming from different socioeconomic levels (school profile based: private and public schools) and social contexts (urban and semi-rural regions). Data from this research have been submitted to a thematic qualitative analysis. All interviews were audiotaped, transcribed verbatim, reviewed and coded by researchers (Hamadeh and Marquis, 2017-a). This study was approved by the Ethics Committee of faculty of Medicine of University of Montreal.

The questionnaire included 25 questions, but only results from questions relevant to this digital food marketing study and related to “sources of nutrition information”, “trust in sources of nutrition information”, “perceptions of healthy food and healthy lifestyles” will be presented below.

Lebanese Youth reported that food marketing strategies and combination of nutrition communication channels influence the knowledge, food preferences and dietary patterns of all youth. Likewise, they reported the impact of the body image advertised in all media channels on their lifestyle choices. Other factors including peer acceptance and seeking social identity have greater influence resulting in less healthy food choices and sedentary lifestyle (Hamadeh and Marquis, 2017-a).

Another area of influence is advertising (TV, magazines, billboards, groceries, etc.) and it is evident that youth are influenced by different advertising methods including "images" such as the use of characters on packaging, the television food advertisements, the advertisements done by the popular local and international artists, etc. (Hamadeh and Marquis, 2017-a). One young boy stated "*I will do whatever Justin Bieber will tell me to do*".

Results from Hamadeh and Marquis study (2017-a) showed that a tailored approach is important to use information elicited from youth to create a health message based on their current beliefs, habits, attitudes, knowledge and social structure. These findings confirm that Lebanese youth should be segmented into groups with respect to age, gender, socioeconomic status, beliefs and regional belonging in order to receive efficient tailored nutrition and health messages (Hamadeh and Marquis, 2017-a).

Consistent with other studies (Chandon and Wanswink, 2012), social marketing approach proved an important and powerful tool for designing public health and nutrition communication programs. Social marketing help to understand how youth health attitudes and behaviors may be affected by beliefs about what is normal, socially acceptable, and by their self-efficacy to control their own health (Hamadeh and Marquis, 2017-a; Hamadeh and Marquis, 2017-b). Therefore, using appropriate theories and models is necessary to explain interrelationships among attitude, knowledge, communication, and other factors related to human behavior and life habits (Hamadeh and Marquis, 2017-b).

Finally, Hamadeh and Marquis (2017-a) revealed that there is a call for a broader, more interdisciplinary approach that addresses both youth and contemporary interactive food marketing strategies.

DISCUSSION

Rationale for developing policy agenda for responsible food marketing to youth

Food and beverage marketing is a dynamic field that adapts rapidly to changing market opportunities, technology, and the regulatory environment (Bhatnagar et al., 2014; TDB report, 2015). The global rapid spread of “ICTs” infrastructure and devices is accelerating the progress of the *Internet of Things* which, expected to significantly impact almost every social and economic sector including education, healthcare, agriculture and food, transportation and manufacturing (Alvy and Calvert, 2008; Henry and Story, 2009; TDB report, 2015).

The Internet, one of the emerging venues available for food marketing to children and adolescents, has extended the reach of food digital advertising to this particular young population, which has a great deal of spending power and purchasing influence (Bhatnagar et al., 2014; Montgomery and Chester, 2009; Story and French, 2004). Given the potential of the Internet to employ innovative marketing techniques, it was predicted that newer kinds of food digital marketing would emerge such as, product placements, integrated marketing pages and “advergemes” (Alvy and Calvert, 2008; Henry and Story, 2009).

Several studies highlight many old and new approaches used to advertise and market food to youth (Alvy and Calvert, 2008; Chandon and Wanswink, 2012; Montgomery and Chester, 2009). All these approaches used by industry sources offer food and nutrition information that often competes with information provided by health public and private organizations, nutrition professionals, families and friends, making it difficult for consumers to know which source to trust (DeJong et al., 2017; Shan et al. 2015)

Findings showed how Internet of things and big data analytics of food marketing can help address major nutrition-health problems challenges such as those related to dietary behaviors, obesity, pro-eating disorder, pro-muscularity, chronic diseases, health management (Montgomery and Chester, 2009; Pila et al., 2017) and psychological health in adolescents (Barth F, 2015). However, differences in individual ages and needs, family dynamics as well as personality must be taken into account when using the digital food marketing to communicate healthy food and lifestyles (Barth F, 2015; Bhatnagar et al., 2014).

Health educators, including food and nutrition professionals, can use persuasive communication and marketing techniques to formulate message for nutritious foods, active lifestyles and health patterns targeted to youth to balance food marketing messages with emotional appeals (Batada and Wootan, 2007; Dixon et al., 2007; Freeman et al., 2015). Educators can also help in designing media and marketing literacy trainings for youth to critically evaluate the food associations. For example, food is often associated with fun and happiness in order to make it seem more desirable (Folta et al., 2006; Henry and Story, 2009).

There is a continuing need to regularly monitor and evaluate the impact of attitudes, media use and industry marketing practices on youth as media and marketing practices evolve (DeJong et al., 2017; Doub et al., 2015; Montgomery and Chester, 2009). In close collaboration with other partners, continued attention to the great potential of ICTs will help support a healthier food marketing landscape for youth and areas that need further improvement (Henry and Story, 2009; TDB report, 2015). Therefore, nutrition professionals need to be advocates of responsible food marketing to youth, promoting the use of fun and interactive marketing and advertising techniques to encourage youth to adopt healthy food and lifestyles choices (DeJong et al., 2017;

Bhatnagar et al., 2014; Henry and Story, 2009). This counter-advertising approach can be an effective strategy for promoting healthy behavior among young consumers (Dixon et al., 2007).

Recommendations for responsible food marketing to youth

Youth grow up surrounded by unhealthy food and beverages marketing strategies and tactics used by food, advertising and entertainment industries (Henry and Story, 2009). In addition to traditional food advertising on television, companies reach youth with newer digital media through websites, social media and mobile devices (Henry and Story, 2009; WHO, 2016). Therefore, youth are exposed on a daily basis in schools, households, restaurants, stores and other community venues they frequent (Baker and Friel, 2016).

Application of the marketing strategies, techniques and qualitative characteristics (mentioned in the section 2.2) will vary depending on the media venue and the context of the media environment in which they appear and should meet nutrition criteria in order to formulate recommendations for responsible food and beverage marketing to youth (WHO, 2016).

Hence, there is a need to enforce regulations in food marketing and advertising, specifically in digital food marketing for youth, along with measures like educating parents, teachers and youth to make them able to criticize marketing content (Barth, 2016; WHO, 2016), and made them aware of the need of responsible food marketing (DeJong et al., 2017; Dixon et al., 2007). Civic bodies should assume regulatory stand against food marketing in communities and different settings such as restaurants, schools and communities. In some countries, advertising industry has her own self-regulatory advertising guidelines but till date the code is vague, compliance is voluntary and enforcement not actively pursued (Bhatnagar et al., 2014).

Governments should establish well framed regulations, enforced in the society and supplemented with policy level measures (DeVogli et al., 2014; Freeman et al., 2016). Health professional and academics should prevent sponsorship from food industry that manufactures unhealthy products for youth. Besides, self-regulation guidelines for broadcasting service providers should take reasonable steps to control unhealthy food and beverages ads (Bhatnagar et al., 2014; DeJong et al., 2017). Finally, regulations should address also the complex challenges of supra-national regulation of global media (WHO, 2016).

Traditionally, the process of communicating health-related food messages to the public is a 1-way top-down flow of information in which experts and public authorities convey scientific information to the lay public (Montgomery and Chester, 2009; Shan et al. 2015). However, this 1-way process of communication gives little consideration to public perceptions and interpretations of health scientific messages, which are influenced by a multitude of sociocultural and individual factors (Fassnacht et al, 2015; Shan et al. 2015). Thus, a 2-way interactive communication process between the public, and food and health organizations has been widely encouraged by academics and food regulators (Shan et al. 2015; Vries et al., 2012).

Social media is considered as a valuable tool, in the 2-way interactive communication process, to better understand the target public and social content (Lohse, 2013; Rutsaert et al., 2013). Social media channels encourage engagement of target public in food communication, nutrition education and health promotion owing to their interactive features (Burrows et al., 2015; Fassnacht et al, 2015). Nevertheless, to achieve this potential, the health message content should be redesigned to match each medium's informal, social and entertaining characteristics such as keeping the messages short, personalized and easy to understand in order to engage the public (Dejong et al, 2017; Shan et al. 2015). Additionally, the message should incorporate

visual information and applications such as animated videos, images, info-graphics, interactive calendars with food-related tips (Dixon et al., 2007; Shan et al. 2015), and challenging the target public with frequently asked questions (Shan et al. 2015):

Example: You can eat it with free guilt (snack bar) but then it says on the box that it is high in sodium. We just put the question up on Facebook to get them thinking about it. They are more likely to be very interested in the answer and then maybe to share it here and there as well.

As social media (such as Facebook, twitter, etc.) offer increased opportunities regarding interactivity compared with traditional communication channels (such as TV, telephone, emails, etc.), they have better potential to transform the public from passive information recipients to more active and interactive process of food- and health-related education and intervention (Doub et al., 2015; Shan et al. 2015). Thus, social media practices should be considered alongside long-established patterns of food marketing, communication and interaction (Fassnacht et al., 2015; Shan et al. 2015; Tobey and Manore, 2014).

Therefore, a multidisciplinary approach is needed to urgently curb youth directed food and beverages marketing (Bhatnagar et al., 2014; WHO, 2016). Inter-sectoral and multi-stakeholder intervention should be established to ensure adherence with norms and regulations (Montgomery and Chester, 2009). Policy level changes and legislations should focus on food industry, telecommunication industry and all venues where youth can be encountered (Bhatnagar et al., 2014; WHO, 2016).

These recommendations shed light on the better use of the exponential development of social media technologies, which changed the landscape of public health communication and education (Lohse, 2013; Rutsaert et al., 2013; Shan et al. 2015). Besides, these recommendations are intended to provide comprehensive guidance to a broad range of multidisciplinary stakeholders including, food and beverages industry, retailers, restaurant companies, media and entertainments industry, advertisers and marketers, industry trade associations, governmental agencies, regulators and policy makers, researchers and other advocates. Indeed, tailored recommendations to individual countries and cultures may be called for (Bhatnagar et al., 2014; Kara et al., 1995). Continued attention to food and beverages marketing issues, when paired with sound nutrition criteria, will help support a healthier digital food marketing landscape for young generations (Doub et al., 2015; Tobey and Manore, 2014).

Limitations and Implications for research and practice

The present findings should be interpreted in light of the following limitation. First, due to the results presented in this study didn't include any specific spot marketing or advertising.

Further, the sample of youth perceptions studied is not necessarily representative of all Lebanese youth. Lastly, the current study restricts an understanding of factors shaping youth attitudes and perceptions of food marketing.

Future research, in addition to improving upon these limitations, may explore potential gender differences in the impact of digital food marketing and diverse use of marketing techniques.

Nevertheless, as the first study of food marketing to youth in the Arab world, the present findings set the groundwork for further scientific inquiry to delineate the psychological, cultural and environmental factors associated with the attitudes and perceptions of digital food

marketing. These findings also serve to alert health professionals and nutrition policy makers to online engagement as maintenance of healthy lifestyle behaviors. Further research could elaborate on specific types of interactions that social media can enable for the purpose of responsible food marketing, nutrition education and health intervention.

Finally, due to the rising trend of online social networking, research on digital food marketing impact on health remains underdeveloped, especially in Arab countries, and should be of concern to policy makers.

CONCLUSION

Youth health care continues to evolve in the Middle East countries (Naja et al., 2015) and the Gulf Cooperation Council (GCC) nations (Chouhane, 2014). These countries have committed to combating the widespread prevalence of weight problems, chronic care diseases and the morbidity associated with them (chouhane 2014; Naja et al., 2015).

Health promotion and intervention programs for youth obesity prevention are keys to support and facilitate an increase in healthier diet and physical activity.

This study revealed that comprehensive nutrition communication on multiple media platforms increases the power of persuasive messages that encourage healthy lifestyles. Besides, food and broadcasting companies should change their marketing practices and promote healthier dietary and lifestyle options to youth.

REFERENCES

- Alexander, E. Yach, D. and Mensah, G. (2011) 'Major multinational food and beverage companies and informal sector contributions to global food consumption: implications for nutrition policy', *Globalization and Health*, Vol.7, pp.1-8.
- Alvy, L and Calvert, S. (2008) 'Food Marketing on Popular children's Websites: A content analysis', *Journal of the American Dietetic Association*, Vol. 108, pp.710-713.
- Baker, P. and Friel, S. (2016) 'Food systems transformations, ultra-processed food markets and the nutrition transition in Asia', *Globalization and Health*, Vol. 12, pp.1-15.
- Barth, F. (2015) 'Social media and adolescent development: hazards, pitfalls and opportunities for growth', *Clinical Social Work Journal*, Vol. 43, pp.201-208.
- Batada, A and Wootan, M. (2007) 'Nickelodeon markets nutrition-poor foods to children', *American Journal of Preventive Medicine*, Vol. 33(1), pp.48-50.
- Batada, A., Seitz, M., Wootan, M. and Story, M. (2008) 'Nine out of 10 food advertisements shown during Saturday morning children's television programming are for foods high in fat, sodium or added sugars, or low in nutrients', *Journal of the American Dietetic Association*, Vol. 108, pp.673-678.
- Bhatnagar, N., Kaur, R. and Dudeja, P. (2014) 'Food marketing to Children in India: Comparative review of regulatory strategies across the world', *Indian Journal of Pediatrics*, Vol. 81 (11), pp.1187-1192.
- Borzekowski, D. and Robinson, T. (2001) 'The 30 seconds effect: an experiment revealing the impact of television commercials on food preferences of preschoolers', *Journal of the American Dietetic Association*, Vol. 101, pp.42-46.

- Burrows, t., Hutcheson, M., Chai, L., Rollo, M., Skinner, G and Collins, C. (2015) 'Nutrition interventions for prevention and management of childhood obesity: What do parents want from an eHealth program', *Nutrients*, Vol. 7, pp.10469-10479.
- Chandon, P. and Wansink, B. (2012) 'Does food marketing need to make us fat? A review and solutions', *Nutrition Reviews*, Vol.70 (10), pp.571-593.
- Chouhane, L., Mamtani, R., Al-Thani, M., Al-Thani, A., Ameduri, M and Sheikh, J. (2011) 'Medical education and research environment in Qatar: a new epoch for translational research in the Middle East', *Journal of Translational Medicine*, Vol. 9(16), pp.1-8.
- Culp, J., Bell, R. and Cassady, D. (2010) 'Characteristics of food industry Web Sites and "Advergaming" targeting children', *Journal of Nutrition Education and Behavior*, Vol. 42 (3), pp.197-201.
- DeJong, B., Worsley, A., Wang, W., Sarmugam, R., Pham, Q., Februhartanty, J. and Ridley, S. (2017) 'Personal values, marketing attitudes and nutrition trust are associated with patronage of convenience food outlets in the Asia-Pacific region: a cross-sectional study', *Journal of Health, Population and Nutrition*, Vol. 36(1), pp.1-8.
- DeMooij, M. (2014) *Global Marketing and advertising: Understanding cultural Paradoxes*, 4th ed., Sage Publications, Inc, LA.
- Dennis, E., Martin, J. and Wood, R. (2016) *Media use in the Middle East 2016: A six -nation survey*, Northwestern University in Qatar Report.
- DeVogli, R. Kouvonon, A. and Gimeno, D. (2014) 'The influence of market deregulation on fast food consumption and body mass index: a cross-national time series analysis', *Bulletin of World Health Organization*, Vol.107A, pp.92-99.
- Dixon, H. Scully, M., Wakefield, M., White, V. and Crawford, D. (2007) 'The effect of television advertisements for junk food versus nutritious food on children's food attitudes and preferences', *Social Science and Medicine Journal*, Vol.65, pp.1311-1323.
- Doub, E., Small, M. and Birch, L. (2016) 'An exploratory analysis of child feedings beliefs and behaviors included in food blogs written by mothers of preschool-aged children', *Journal of Nutrition Education and Behavior*, Vol. 48(2), pp.93-103.
- Fassnacht, D., Ali, K., Silva, C., Goncalves, S. and Machado, P. (2015) 'Use of text messaging services to promote health behaviors in Children', *Journal of Nutrition Education and Behavior*, Vol. 47 (1), pp.75-80.
- Folta, S., Goldberg, J., Economos, Ch., Bell, R. and Meltzer, R. (2006) 'Food advertising targeted at School-age children: A content analysis', *Journal of Nutrition Education and Behavior*, Vol. 38, pp.244-248.
- Freeman, B., Kelly, B., Vandevijvere, S. and Baur, L. (2016) 'Young adults: beloved by food and drink marketers and forgotten by public health?', *Health Promotion International*, Vol. 31, pp.954-961.
- Hamadeh, S and Marquis, M. (2017-a) 'Impact of socioeconomic and social contexts on youth perceptions of school nutrition policy development in Lebanon', *Journal of Nutrition and Health Sciences*, Vol. 4 (1), pp.1-9.
- Hamadeh, S and Marquis, M. (2017-b) 'Linked models and theories: A tool for school nutrition policies deployment', *International Journal for Nutrition and Food Management for children*, InPress.
- Hamadeh, S. and ElZein, H. (2011) 'Epidemiology of Obesity in Children and Adolescents. Prevalence and Aetiology: Middle East and North Africa (MENA) Countries', in Moreno, L. et al (Eds.), *Epidemiology of Obesity in Children and Adolescents (Book I of II) - Prevalence and Aetiology*. Springer, New York, pp.127-152.

- Hastings, G., Laura, McD., Angus, K., Stead, M. and Thomson, S. (2007) *The extent nature and effects of food promotion to children: A review of the evidence*, Technical paper prepared for the World Health organization.
- Henry, A and Story, M. (2009) 'Food and beverage brands that market to children and adolescents on the internet: A content analysis of branded websites', *Journal of Nutrition Education and Behavior*, Vol. 41(5), pp.353-359.
- Iop, S., Teixeira, E. and Deliza, R. (2006) 'Consumer research: extrinsic variables in food studies', *British Food Journal*, Vol. 108 (11), pp.894-903.
- Kara, A., Kaynak, E. and Kucukemiroglu, O. (1995) 'Medical education and research environment in Qatar: a new epoch for translational research in the Middle East', *International Journal of Contemporary Hospitality Management*, Vol. 7(4), pp.16-22.
- Lawrence, L. (2003) 'The role of characters in kids marketing', *Young Consumers*, Vol. 4(3), pp.43-48.
- Lohse, B. (2013) 'Facebook is an effective strategy to recruit low-income women to online nutrition education', *Journal of Nutrition Education and Behavior*, Vol. 45, pp.69-76.
- Montgomery, K and Chester, J. (2009) 'Food and beverage marketing: targeting adolescents in the Digital Age', *Journal of Adolescent Health*, Vol. 45, pp.S18-S29.
- Naja, F., Hwalla, N., Itani, L., Karam, S., Sibai, A and Nasreddine, L. (2015) 'A western dietary pattern is associated with overweight and obesity in a national sample of Lebanese adolescents (13-19years): a cross sectional study', *British Journal of Nutrition*, Vol.114, pp.1909-1919.
- Ozimek, I and Zakowska-Biemans, S. (2011) 'Determinants of Polish consumers' food choices and their implication for the national food industry', *British Food Journal*, Vol. 113 (1), pp.138-154.
- Pila, E., Mond, J., Griffiths, S. and Mitchison, D. (2017) 'A thematic content analysis of #cheatmeal images on social media: characterizing an emerging dietary trend', *International Journal of Eating Disorders*, DOI:10.1002/eat.22671, pp.1-9.
- Powel, L., Szczypka, G., and Chaloupka, F. (2007) 'Adolescent Exposure to food advertising on television', *American Journal of Preventive Medicine*, Vol. 33, pp.S251-S256.
- Renko, S and Bucar, K. (2014) 'Sensing nostalgia through traditional food: an insight from Croatia', *British Food Journal*, Vol. 116 (11), pp.1672-1691.
- Rutsaert, P., Regan, A., Pieniak, Z., McConnon, A., Moss, A., Wall, P. and Verbeke, W. (2013) 'The use of social media in food risk and benefit communication', *Trends Food science technology*, Vol. 30, pp.84-91.
- Shan, L., Panagiotopoulos, P., Regan, A., DeBrun, A., Barnett, J., Patrick, W. and McConnon, A. (2015) 'Intercative communication with the public: Qualitative exploration of the use of social media by food and health organizations', *Journal of Nutrition Education and Behavior*, Vol. 47 (1), pp.104-108.
- Story, M and French, S. (2004) 'Food advertising and marketing directed at children and adolescents in the US', *International Journal of Behavioral Nutrition and Physical Activity*, pp.1-3.
- Telecommunication Development Bureau-TDB. (2015) *Measuring the information society report*, International telecommunication Unit, ISBN978-92-61-15791-3/REP.
- Tobey, L. and Manore, M. (2014) 'Social Media and nutrition education: the food hero experience', *Journal of Nutrition Education and Behavior*, Vol. 46(2), pp.128-133.
- Vries, L., Gensler, S. and LeeFlang, P. (2012) 'Popularity of brand posts on brand fan pages: an investigation of the effects of social media marketing', *Journal of Interactive Marketing*, Vol. 26, pp.83-91.

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World Health Organization. (2016) *Tackling food marketing to children in a digital world: trans-disciplinary perspectives*, Regional Office for Europe, ISBN978289052177/REP.