THE ROLE OF GENDER DIFFERENCES IN E-MEDIA USAGE, PHYSICAL ACTIVITY RATE AND NUTRITIONAL STATUS: AN INNOVATIVE SOCIAL MARKETING TOOL FOR HEALTH PROMOTION

Jacob Owusu Sarfo
Department of Psychology, Faculty of Social Studies, University of Ghana, Research Unit, Dacson and Dacson Intelligence, Ghana
Emmanuel Appah Bamfo
Department of Nutrition and Food Science, Faculty of Science, University of Ghana, Ghana
Michael Asiedu
Department of Marketing, Business School, University of Ghana, Research Unit, Dacson and Dacson Intelligence, Ghana
Daniel Adjei
Regional Institute for Population Studies, University of Ghana, Research Unit, Dacson and Dacson Intelligence, Ghana

Abstract

The aim of this study is to use the social marketing approach to define the time spent on e-media and its effect on the pattern of exercise rate and nutritional status. Using a cross-sectional survey method, 150 undergraduates were selected. Averagely, 40.74 ± 14.39 hours per week was spent using electronic media for leisure and entertainment. Results showed that males with a high e-media user rate for entertainment or leisure had a generally low BMI mean while females with a high e-media user rate for entertainment or leisure had a higher BMI mean. Although exercise rate is better in general among male high e-media users, its effect is opposite among female high e-media users. As a possible strength, the involvement of multidisciplinary innovations is recommended in the use of social marketing programmes with a blend of social capital theory for e-media products and programmes.

Keywords: E-Media, Physical Activity, Nutritional Status, Dietary Habits, Social Marketing, Gender, Body Mass Index

Introduction

Electronic media which is also called e-media had taken over the print media especially because of its effectiveness and efficiency. These media may range from computers, mobile phone to television. Studies have shown that young people consistently forming the majority of consumers of e-media overtime. For example, Television alone captures about 28 hours a week of viewing among kids aged between 6-11 years (McDonough, 2012). As a result, Internet surfing, Computer games and Television-viewing most often affect the dietary habits and subsequent nutritional status of people. For example, viewing television alone is noted to influence the present increase in cases of overweight and obesity rate (Dietz, 1993; Crespo et al., 2001).

Even though, there are some significant associations between sedentary lifestyle of people and their obesity levels, its effects differ among Television-viewing, computer use or in the case of playing electronic games (Rey-Lopez et al., 2008; Hernandez et al., 1999; Crespo et al., 2001). Notwithstanding these variations, consistent amount of time spent with these devices, may increase a person's predisposition to excess weight gain (Rey-Lopez et al., 2008). In a recent study, activity rate TV-viewing was noted to predict an increasing risk of obesity in boys but a declining risk in rather in girls. However, computer usage, video games, and other sedentary lifestyles were not able to predict risk of overweight/obesity. Interestingly, fitness was negatively associated to the overweight/obesity risk in boys and girls (Burke et al., 2006). In addition to the nutritional problems attributed to e-media, other negative psychosocial, health and economic impacts are also observed. In effect, significant relationships have been identified between e-media and negative behaviour patterns like poor educational performance, aggression, drug addiction or other deviant practices (Abell, 2001; Snyder, Milici, Slatre & Strizhakova, 2006; Hancox, Milne & Poulton, 2004).

In Ghana, there is a growing demand and usage of various electronic devices in especially among students. Observing from these trends, the significant effect of e-media and gender differences can be transformed into a more positive dimension for health promotion if a social marketing approach is used. According to reference Andreasen (1988), an intensive research in the area of social marketing will promote marketing science needed to influence a more positive behaviour and possible behaviour change. Since the main objective of social marketing is to advance individual and societal welfare (MacFadyen, Stead & Hastings, 2002), this study aims at providing a gender based analysis for drawing interventions or programmes in exercise and nutritional health promotion.

Method

Respondents

A cross-sectional study design was used to collect the data from 150 students. Undergraduate students of University of Ghana from level 100 to 400 were included in the inclusion criteria and various data collections were done following all approved ethical measures indicated for human subject studies. The convenience and purposive sapling methods were used to sample interested volunteers who were willing to participate voluntarily. Among the sample selected, 52% forming the majority were males while minority 48% were females. This unequal number of male to female ratio was solely due participant availability and willingness to participate. The researchers had no gender bias motive for this imbalance. The mean age of the respondents were 20.73 ± 1.58 years with most of them in the 20 to 24 years age range.

Measures

A structured pre-coded questionnaire was used for data collection which took an average of 15 munities. This included the following subscales as follows: Socio-Demographic Section (Examples of questions; how old are you? What is your level?), Electronic Media Habits section (Examples of questions; what type of electronic device do you use? How much time do you spend watching TV?), Physical Activity Section (Examples of questions; Do you exercise deliberately? How long do you spend in exercising?), Dietary Habits Section (Examples of questions; What number of meals do you consumed per day? What is the source of meals?) and Food Frequency Questionnaire (Examples of questions; How frequently do you take carbonated drinks in the past week?). In addition, respondents' anthropometrical measurement was done by using a weighing scale and a stadiometer which generated weight and height values respectively for Body Mass Index (BMI) computation.

Data Analysis

The researchers employed calculated the means, standard deviations and Chi-Square Test to look at the demographic differences on e-media usage levels. In addition, the researchers used an Independent t-Test to look at the categorical difference among both males and females. Students were classified as being high or low users of electronic media for leisure or entertainment if they spent at least 50 hours or less than 50 hours per week respectively. Using the respective approved World Health Organization's [WHO] (2012) classification on Body Mass Index, the respondents' Nutritional status were categorized simply as overweight/obese, normal or underweight. These transformations were done to enable further statistical analysis.

Results

General Findings

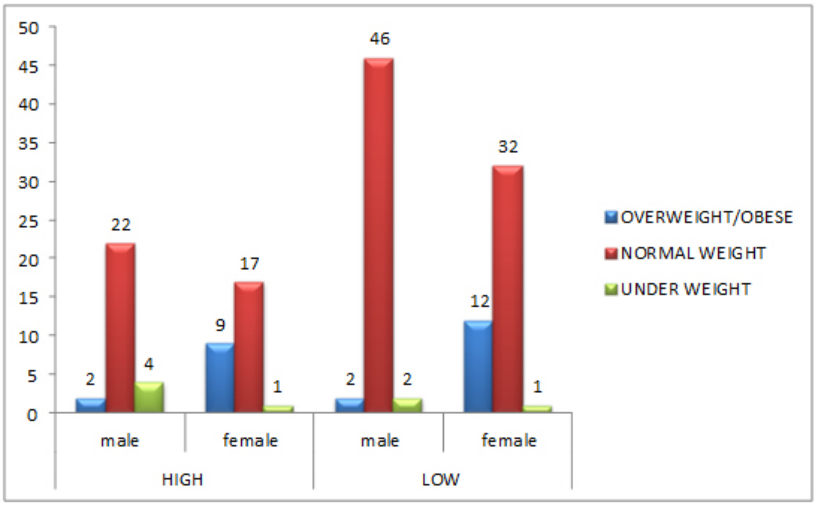
The study showed that 'baked pastries' (3.41 ± 2.34) was the most preferred form of snack among respondents and highly consumed after Grilled 'Kebab' [sausage, beef, pork and chicken barbeque] (3.22 ± 1.89). The students reported consuming an average of two meals and one snack per day although more than 60% ate less than 3 meals per day. In all, about one third of them ate 3 times a day while 13% assumed to consume 2 or more snacks per day. With respect to their choices of food, majority (75.3%) of the students said they mostly prepared all the meals they ate by themselves while the remaining (25%) purchased the meals they ate. Among the respondents, approximately 13% of the respondents were highly influenced by food advertisement on television, especially 'instant noodles', 'Coca cola drinks' and 'Pizza'. On the choice of electronic device, computers/Laptops were more frequently (63%) used than television for leisure and entertainment.

In addition, the study showed that students reported that they spent on an average, 40.74 ± 14.39 hours per week on electronic media alone for leisure and entertainment. The students had a mean Body Mass Index to be (22.71 ± 4.01) kg/m^2. The global distribution of respondents' nutritional status showed that majority were normal weight (76.8%), followed by obese/overweight (16.6%) and underweight (6.0%). In addition, a moderate number (34.0%) of the Undergraduate respondents reported a high activity rate by engaging in physical activities/exercises daily while majority 40.7% had a low physical activity level. Nonetheless, minority (24.7%) were physically inactive when as they did not engage in any activity. The most common type of physical activity was jogging and the least common was gym. Students who engaged in physical activity spent an average of (3.09 ± 1.99) hours per week in one or more different activities.

Specific Major Findings

From figure 1, the bar graph showed that there were significant differences between males and females of gender level of e-media use and respective nutritional status (Chi-Square test, $\chi 2 = 16.432$, $df = 2$, $\rho = 0.000$). Thus, the global mean BMI was significantly higher in females than in males ($23.81 \pm 4.75 > 21.70 \pm 0.32$).

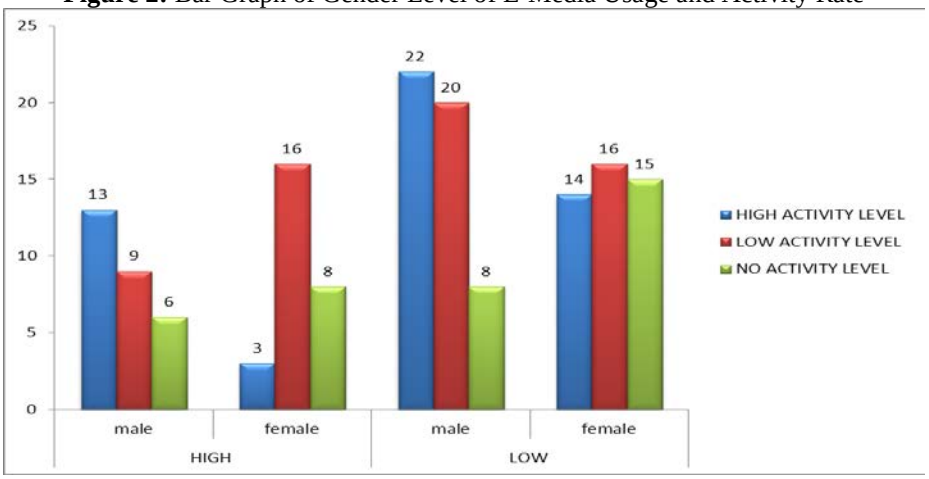
Figure 1: Bar Graph of Gender Level of E-Media Usage and Nutritional Status



Chi-Square test, χ^2 =16.432, *df* = 2, ρ = 0.000

Similarly, figure 2 also showed a bar graph depiction of gender difference between males and females in terms of e-media usage and respective activity rate (Chi-Square test, $\chi 2$ =8.341, *df* = 2, ρ = 0.015). From the results, the global mean physical activity was also significantly higher for females than males ($2.03 \pm 0.75 > 1.73 \pm 0.75$).

Figure 2: Bar Graph of Gender Level of E-Media Usage and Activity Rate



Chi-Square test, χ^2 =8.341, *df* = 2, ρ = 0.015

In order to test the specific differences among males and females in each category of e-media usage (High and Low Users), a categorical analysis using an Independent t- Test was performed. Findings showed that among individuals with a high level of e-media usage for leisure and entertainment, there was a significant difference between the nutritional statuses ($t_{(53)}$ = -

2.317, $\rho = 0.024$) and Physical activity levels ($t_{(53)} = 2.249$, $\rho = 0.033$). With these specific mean ± standard deviation comparisons, males had a lower nutritional status (BMI) mean than females (21.475 ± 2.8633 < 24.115 ± 5.2771) while males had a higher activity/exercise rate mean than females (3.36 ± 1.984 > 1.95 ± 0.723).

Table 1: Independent t-Test Showing the Effect of Gender on Body Mass Index and Activity Level of E-Media Users

E-Media Users	Category	Sex	N	Mean	Std. Dev.	*t*	*df*	Sig. (2-tailed)
HIGH	Body Mass Index	Male	28	21.475	2.8633	-2.317	53	.024*
		Female	27	24.115	5.2771			
	Activity Rate	Male	18	3.36	1.984	2.249	27	.033*
		Female	11	1.95	.723			
LOW	Body Mass Index	Male	50	21.819	2.8819	-2.362	93	.020*
		Female	45	23.618	4.4504			
	Activity Rate	Male	29	3.07	1.646	-.724	46	.473$^{n.s}$
		Female	19	3.53	2.736			

ρ < 0.05,** **not significant = n.s

On the contrary, the findings showed that among individuals with a low level of e-media usage for leisure and entertainment, there was only a significant difference between their nutritional statuses ($t_{(93)} = -2.362$, $\rho = 0.020$). Following from the specific mean ± standard deviation comparison, males had a lower nutritional status (BMI) mean than females (21.819 ± 2.8819 < 23.618 ± 4.4504). There was no significant difference between males and females level of physical activity/exercises ($t_{(46)} = 2.736$, $\rho = 0.473$).

Discussions

The findings in this study support the use of e-media as strength for promoting health in any social marketing intervention. The power of e-media on the lifestyle of humans globally is gaining much capacity as its association is currently wider (Abell, 2001; Burke et al., 2006; Crespo et al., 2001; Dietz, 1993; McDonough, 2012; Rey-Lopez et al., 2008; Snyder et al., 2006).

As indicated from the study, the scope e-media among the student users have the ability to influence both negative and positive behaviour patterns among respondents. This is evident from table 1 the mean activity/exercise rate of males in the High user group is higher than that of the Low user group. As noted from responses, behaviour pattern may be influenced through this media so some learnt about 'the need for exercise'

just as the 'high calorie or fussy drink snacks'. Although studies have indicated that consistent usage of e-media like Television-viewing is related to the intake of high caloric diets, poor exercise rate or nutritional status like overweight (Crespo et al., 2001; Hernandez et al., 1999), an innovative use of it can yield positive results.

According to Institute of Medicine (2012), majority of food-related advertisements that children and youth perceive each year by food marketers are predominantly 'high calorie, low nutrient foods and drinks which influence people's food preferences and purchase requests'. From the findings also, it showed that food adverts had a general influence on e-media users if the messages are tailored well. Noting from the gender perspective, the findings showed a variation of choices and effects of time spent on using e-devises. This indication shows the various nutritional and exercise messages needed for health promotion ought to be gender-specific among each particular category of users (High or Low).

For example, males with a high e-media user rate for entertainment or leisure had a generally low BMI mean in relation to low male users ($21.475 \pm 2.8633 < 21.819 \pm 2.8819$). On the contrary, females with a high e-media user rate for entertainment or leisure had a higher BMI in relations to the counterparts with low e-media users ($24.115 \pm 5.2771 > 23.618 \pm 4.4504$). Also, although exercise rate is better in general among male high e-media users ($3.36 \pm 1.984 > 3.07 \pm 1.646$) its effect is opposite among female high e-media users ($1.95 \pm 0.723 < 3.53 \pm 2.736$). These changes in effect may be explained by the stronger effect of e-media, although the variation of each gender needs as observed in the results is important. Thus, a question on the "Gender-Specific-Difference-Gap" ought to be used as an innovative tool for social markers to promote nutritional and exercise health effectively.

Following from the broadening of the scope of traditional "social marketing" which started in the late 60's (Kotler & Levy, 1969; Kotler & Zaltman, 1971) through "social capital theory" (Glenane-Antoniadis, Whitwell, Bell & Menguc, 2003), electronic resources can be utilised comprehensively. Thus, the idea of an improved social marketing which is gender specific can be developed for e-media users with an intricate strand of "market failure, elaborate designs of exchange, behavioural issues and social concepts" (Glenane-Antoniadis et al., 2003).

Notwithstanding these findings, the study is limited in the sampling frame and setting. The non-probability techniques used in this study may pose a possible limitation to the scope of generalizability. However, the notable gender-specific differences among e-media user categories still serve as a tool for social marketing innovation in health promotion.

Implications for Social Marketing and Health Promotion Practices

This study offers some perspective on the effectiveness to use e-media to influence the health behaviour. For researchers, institutions or individuals who are working to influence the nutritional status, dietary habits and activity/exercise especially among children and young adults, e-media products are recommended.

A critical look at developing right entertainment software programmes or products which will be "gender-sensitive" and "culturally-appropriate" is needed. As noted by Asiedu and Sarfo (2013), demographic characteristics and inclinations of consumers ought to be a prime motivation for every organisation in promoting their product or service. In addition, we also recommend the involvement of multidisciplinary innovations in the use of social marketing with a blend of social capital theory for e-media products and programmes.

Finally, a computer game or TV-programme can be built which will offer reinforcement on healthy physical activity and nutritional health of e-media users. Playing such games or viewing such programmes /advertisements will impart either passively or actively of dietary and exercise choice and priority.

Acknowledgment

We will like to take this opportunity to appreciate our colleagues and student respondents who volunteered immensely to make this study possible.

References:

Abell, E. (2001). Too much TV can have negative impact on children. *Alabama Cooperative Extension System*, 334, 844 – 4480.

Andreasen, A. R. (1998). Alternative Growth Strategies for Contraceptive Social Marketing Programs. *Journal of Health Care Marketing*, 8 (June), 38-46.

Asiedu, M. & Sarfo, J. O. (2013). A multi-dimensional service delivery among mobile network providers in Ghana: A case of customer satisfaction. *European Scientific Journal*, 9 (23), 86-101.

Burke, V. Beilin, L. J., Durkin, K., Stritzke, W. G. K., Houghton, S. & Cameron, C. A. (2006). Television, computer use, physical activity, diet and fatness in Australian adolescents", *International Journal of Pediatric Obesity*, 1, 248-255.

Crespo, C. J., Smit, E., Troiano, R. P. Bartlett, S. J., Macera, C. A. & Anderson, R. E. (2001). Television watching, energy intake and obesity in US children: results from the third National Health and Nutrition Examination Survey 1988-1994, *Arch Pediatr Adolesc Med*, 155, 360-365.

Crespo, C. J., Smit, E., Troiano, R. P., Bartlett, S. J., Macera, C. A. & Anderson, R. E. (2001). Television watching, energy intake and obesity in

US children: results from the third National Health and Nutrition Examination Survey 1988-1994. *Arch Pediatr Adolesc Med*, 155, 360-365.
Dietz, W. H. (1993). Television, obesity, and eating disorders. *Adolesc Med*, 4, 543-549.
Glenane-Antoniadis, A., Whitwell, G., Bell, S. J. & Menguc, B. (2003). Extending the vision of social marketing through social capital theory: Marketing in the context of intricate exchange and market failure. *Marketing Theory*, 3 (3), 323–343.
Hancox, R. J., Milne, B. J. & Poulton, R. (2004). Association between child and adolescent television and adult health: a longitudinal birth cohort study, *Lancet*, 364 (9430), 257-262.
Hernandez, B., Gortmaker, S. L., Colditz, G. A., Peterson, K. E., Laird, N. M. & Parra-Cabrera, S. (1999). Association of obesity with physical activity, television programs and other forms of video-viewing among children in Mexco City. *Int J Obes Relat Metab Disord*, 23, 845-54.
Institute of Medicine (2006). Food marketing to children and youth: threat opportunity. *National academy of science*, Washington, 2006.
Kotler, P & Zaltman, G. (1971). Social Marketing: An Approach to Planned Social Change. *Journal of Marketing*, 35(July), 3–12.
Kotler, P. & Levy, S. J. (1969). Broadening the concept of marketing. *Journal of Marketing*, 33 (January), 10–15.
MacFadyen, L., Stead, M. & Hastings, G. B. (2002). Social marketing, Chapter 27: In Baker, M. J. (Ed.), *The Marketing Book* (5th Ed), Butterworth-Heinneman, Oxford.
McDonough, P. (2012). *TV viewing among kids at an eight year high.* Nielsen wire. Online source: http://blog.nielsen.com/nielssenwire/media entertainment/tv-viewing-among-kids at eight-year high. Accessed date: November 12, 2012.
Rey-Lopez, J. P., Vicente-Rodriguez, G., Biosca, M. & Moreno, L. (2008). Sedentary behavior and obesity development in children and adolescents. *Nutr. Metab Cadiovasc. Disc.*, 18, 242-251.
Snyder, L. B., Milici, F. F., Slatre, M. & Strizhakova, Y. (2006). Effects of alcohol advertising exposure on drinking among youth. *Arch. Pediatric. Adolesc.Med.*, 160 (1), 18-24.
WHO (2012). Global database on Body Mass Index, online source: www.who.int/bmi/index.jsp?introPage=intro_3.htlm, Accessed date: December 13, 2012.