
Association between TV viewing and vegetable consumption among Filipino adolescents¹

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This study seeks to provide empirical evidence for the association between television exposure and vegetable consumption of Filipino adolescents. Anchored on George Gerbner's Cultivation Theory, the study is explanatory in nature and employs quantitative research methods. A survey was undertaken among randomly selected 1,029 high school students from Immaculate Heart of Mary College-Parañaque and Upper Bicutan National High School, Taguig City, a private and a public school, respectively.

The findings of the study revealed that television exposure was significantly associated with teenagers' vegetable-consumption practices. Television exposure was measured in terms of frequency of watching TV and amount of time devoted to watching it. TV viewing on school days and holidays was positively associated with eating vegetables. The amount of time devoted to watching TV during school week and weekends was likewise found to be positively associated with vegetable intake.

The study recommends developing innovative nutrition communication approaches geared toward the adoption of positive behavioral changes, particularly an increase in vegetable consumption among adolescents. Television, as a promotion platform, should be tapped by food and nutrition organizations, and collaborative efforts should highlight the increase in exposure of healthy eating information, particularly messages and images about vegetable intake.

Keywords: Television exposure, vegetable consumption, Cultivation Theory, adolescents

Introduction

Nutrition communication takes place in a variety of contexts and through different channels. Messages are developed and produced based on target audiences' nutritional needs and lifestyles; and messages about the benefits of proper nutrition are essential to overall human development. This is particularly important since malnutrition continues to plague the



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Philippines with the double burden of undernutrition and overnutrition occurring side by side. According to the National Nutrition Council or NNC (2005), “diet-related noncommunicable diseases such as cardiovascular diseases (CVDs), hypertension, cancers, and diabetes, known previously as diseases of the rich” now exist alongside other forms of malnutrition like micronutrient deficiencies and protein-energy malnutrition (p. 4).

Programs are being undertaken to address the malnutrition problem. One of which is through communication programs promoting healthy eating, with a particular focus on fostering behavior change. According to the latest Medium-Term Philippine Plan of Action for Nutrition (MTPPAN) 2005-2010, nutrition information, communication, and education (or NICE) is geared toward the “adoption of desirable food, health, nutrition, and lifestyle behaviors to ensure nutritional well-being” (NNC, 2005, p.71). Media channels, like television, are utilized and explored by food and nutrition organizations as behavior-change platforms for nutrition communication.

The literature on media effects illustrates that exposure to television can affect the behavior of its viewers, and the strength or weakness of the effect, whether positive or negative, has been examined and tested by experimental studies (e.g., Bryant & Zillmann, 2002; Sparks, 2010). Exposure to television, including advertisements, public service announcements (PSAs) or messages incorporated in regular programs, has been proved to influence people’s actions in different ways. The youth, who comprise a relatively large portion of TV’s audience, has

been the subject of numerous television-effects studies. Links between TV and violence, sexuality, drugs, smoking, alcohol drinking, and obesity among children and adolescents are some of the media-effects research that have been explored (e.g., Jordan, Kunkel, Manganello & Fishbein, 2009; Strasburger, Wilson & Jordan, 2009).

The effects of television exposure on Filipino audiences’ behaviors, such as health and nutrition-related messages, and its influences on the viewers’ behavior have been examined with evidence from these studies suggesting that television affects the health and nutrition choices and behaviors of its audience (e.g., Alminanza, 2008; Casiño & Flores, 2005). More specific (and changeable) nutrition concerns, like low vegetable consumption of Filipinos, have received lesser media attention even if these have important nutritive contributions to overall health and well-being. While vegetables’ nutritive value is acknowledged by mothers and children (Narciso, Galang, & Pagaspas, 2006), it is ironic that a decline in its intake has been noted in nutrition surveys (Food and Nutrition Research Institute [FNRI], 2010). The results of the 7th National Nutrition Survey (NNS) conducted by FNRI in 2008 revealed that “vegetables and fruits contributed less than 10% to the daily intake” of adolescents (FNRI, 2010, p. 170). This reported lack of vegetables in the Filipino adolescent diet is a cause for concern since other health and nutritional problems may occur correspondingly.

This situation is supported by the findings of a local study on the consumption pattern for fruits and vegetables among Filipino adolescents in selected public schools

in Manila. The results revealed that the students were eating only a small amount of vegetables (Gonzales, Raaji, Narciso, & Alfonso, 2004). Other studies also show that adolescents consume less of the recommended amount for vegetables (e.g., Rasmussen, et al., 2006). Furthermore, Capanzana (2008) noted, “an average Filipino child’s diet is low in fruits and vegetables and consists mostly of convenient and junk foods that are high in salt, sugar, and fat” (as cited in Alave, 2008, para 15).

The reported change in the eating habits of Filipinos, particularly teenagers, including the decrease in vegetable consumption, is caused by a number of factors. In a study conducted by Pedro, Benavides, and Barba (2006), it was found that among other things, such decrease is influenced by mass media.

Taking all these into account, this study examines how television exposure is associated with the vegetable intake behavior of Filipino adolescents. Specifically, the study aims to:

1. describe the vegetable eating behavior of Filipino adolescents; and
2. test the effects of TV viewing on Filipino adolescents’ vegetable eating behavior.

Review of Related Literature

Gerbner’s Cultivation Theory (Littlejohn, 2002) deals with the influence of media exposure on a user’s attitudes and behavior. Several studies on media exposure done concluded that TV viewing affects audiences in various ways. The studies of Signorielli and Lears (1992) and Signorielli

and Staples (1997) on TV exposure in relation to children’s eating habits and nutrition knowledge revealed that, “The more television children viewed per day, the more likely they were to have incorrect views of which foods were healthy and to choose non-nutritious foods to eat ...” (as cited in L. Anderson & J. Anderson, 2010, p. 1324). Another research on TV exposure done by Vaughan and Fouts (2003) showed that girls aged 9 to 14 years old who lessened their TV viewing exhibited increased signs of eating disorders (as cited in Cohen, 2006, p. 65). Other foreign studies revealed that unhealthy eating practices, like consumption of high fat, salty, and sweet foods, and the rising incidence of obesity is partly due to television viewing (e.g., Harris, Bargh, & Brownell, 2009).

The multicountry survey conducted by the Consumers International Asia-Pacific Office among parents and children in six (6) Asia-Pacific countries – India, Indonesia, Malaysia, Pakistan, Philippines, and South Korea – examined the influence of television, particularly advertisements, on the emerging problem of obesity among populations of developing countries and its effects on children’s knowledge about nutrition, among others. The results showed that food advertisements in the Philippines comprised 50 to 70 percent of the total advertisements during TV programs intended for children. One of the findings concerning the Philippines that illustrates the negative influence of TV advertisements on the nutrition selection behavior of parents and children revealed that “40 per cent of parents and 63 per cent of children ... believe fast food to be fit for frequent consumption” (Escalante de Cruz, et al., 2004, p. 7). The study also reported that

and television viewing and the students' body mass index or BMI (an individual's body weight and height associated with body fat). The results showed that Filipino adolescents who spent more time watching television had "significantly higher BMI than those who watched less television" (Page & Zarco, 2000-2001, Abstract section, para 1).

Likewise, a local study undertaken by San Joaquin (2005) investigated "the role of children's television exposure in their conceptions, attitudes, and preferences as regards food and nutrition" (p. 23). It used secondary data from a survey among 196 children, 8 to 13 years old who belonged to middle- and lower-class (CD) families. Several concepts of Gerbner's Cultivation Theory (Littlejohn, 2002) guided the analysis, which included the television use of the respondents, exposure to food advertisements, understanding of food and nutrition, preferences and attitudes toward food and nutrition, and the children's food and nutrition information sources. TV viewing among the subjects ranged from as short as 30 minutes to as long as 12 hours, with a median of 2 hours. Based on television use, the children were grouped into light (39.8%), moderate (41.8%), and heavy viewers (18.4%). Differences in food perceptions were noted among the three groups in which heavy viewers tended to have negative nutritional value assessments of their favorite food.

In sum, it appears that there is a considerable negative effect of television exposure on the health and nutritional well-being of the youth. Obesity, preference for less nutritious food, and fast-food chains were associated with television exposure as revealed in the aforementioned foreign and local studies.

The next section discusses the study framework and the results of association tests between television viewing and vegetable intake of Filipino teenagers.

Study Framework

Anchored on George Gerbner's Cultivation Theory (Bryant & Zillmann [Eds.], 2002), which states that a person's attitudes and behavior can be influenced by the amount of time spent watching television, the study attempted to determine how TV viewing habits interact with vegetable consumption. As Gerbner and his colleagues (1979, 1980) explain, "We have found considerable support for the proposition that heavy exposure to the world of television cultivates exaggerated perceptions of the number of people involved in violence in any given week" (as cited in Bryant & Zillmann [Eds.], 2002, p. 29). The television exposure section of the conceptual model was guided by the theory's segmentation of TV audience into light, moderate, and heavy viewers. The behavior aspect in this study took the form of vegetable consumption of adolescents. The frequency of vegetable consumption was determined through self-report. Figure 1 represents the consolidation of the abovementioned constructs.

Method

The study was explanatory in nature and employed quantitative research methods. A survey among high school students from Immaculate Heart of Mary College- Parañaque (IHMC-P) and Upper Bicutan National High School, Taguig City, a private and a public school, respectively, were purposely selected for logistic feasibility and convenience. The high level of cooperation among school officials was also a factor in the site selection. The units

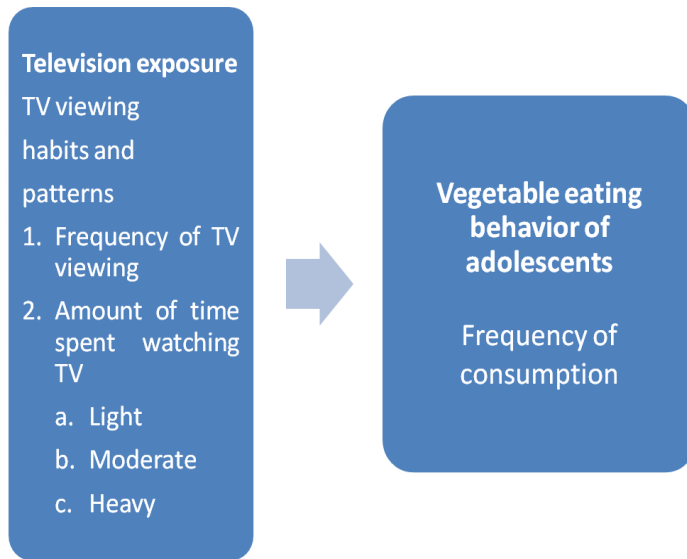


Figure. 1

Integrated conceptual framework of the study

of analysis were individuals – the high school students of the two schools. Stratified random sampling was employed in which sections were first grouped according to year level. From each year level, sections were randomly selected, and all students of the selected sections were included in the survey. The total number of respondents was 1,029, with 504 from IHMC-P and 525 from Upper Bicutan National High School, Taguig City. The survey measured the respondents' TV viewing habits and patterns and vegetable eating practices.

TV Viewing Habits and Patterns

Self-reported TV viewing habits and patterns two weeks prior to the conduct of the survey were established through a series of questions. The respondents were asked to indicate the frequency of TV viewing using a verbal frequency scale (e.g., How often do you watch television during school week?). The response options ranged from “everyday” to

“never.” They were also asked about the amount of time they spent watching television (e.g., How many hours do you spend watching TV during school week?). The response options ranged from “59 minutes or less” to “3 hours or more.”

Vegetable Eating Behavior

Self-reported vegetable consumption was ascertained (e.g., Over the past two weeks, how many days did you eat vegetables?), with responses measured in terms of numbers and percentages. The adolescents' typical eating habits was also assessed (e.g., Do you pay attention to eating some vegetables every day?), with response options of “yes,” “sometimes,” and “no.”

Data Analysis

Descriptive statistics were used to analyze the study variables. Frequency distributions were applied to show the numbers and percentages of a variable's values. The Chi-square test of association at $p < .05$ level was used to ascertain if there was a relationship between television exposure and adolescents' vegetable consumption. The statistical software used for the analysis was SPSS version 16.

Scope and Limitations

The study was conducted to test the effect of television exposure on adolescents' vegetable consumption. A survey among high school students from Upper Bicutan National High School, Taguig City and Immaculate Heart of Mary College-Parañaque was done from July to October 2011. The survey did not cover other areas in Metro Manila or other provinces of the country. It was limited only to the said schools for logistic and convenience

reasons. The findings of the study have limited generalizability to a broader population, for its value is on examining the relationship between the variables measured.

College students, who belonged to the adolescent age group, were not included in the study. Other population groups, like children, pregnant and lactating women, and the elderly, were not covered by the survey.

The vegetable eating behavior of the respondents was determined through frequency of consumption and not in terms of variety in vegetable intake.

Results and Discussion

Survey Descriptive Results

A total of 1,029 first- to fourth-year high school students participated in the survey. The demographic profile of the respondents is summarized in Table 1. The ages of the respondents ranged from 11 to 23 years old, with a mean age of 14.1. There was an almost equal number of male (502 or 48.8%) and female students (527 or 51.2%) from private and public high schools, 504 (49.0%) and 525 (51.0%), respectively.

Vegetable Consumption

The vegetable eating behavior of the respondents was measured by means of self-report. The students were asked to recall the number of days they ate specific food items over the past two weeks prior to the conduct of the survey. Grouping their answers by those who ate vegetables and those who did not, most of the respondents (93.8%) ate

Characteristic	Frequency (n)	Percentage (%)
Age		
11	4	0.4
12	122	11.9
13	248	24.1
14	273	26.5
15	251	24.4
16	84	8.2
17	30	2.9
18	10	1.0
19	3	0.3
20	3	0.3
23	1	0.1
Sex		
Male	502	48.8
Female	527	51.2
School Type		
Public	525	51.0
Private	504	49.0
Year Level		
First	196	19.0
Second	273	26.5
Third	276	26.8
Fourth	284	27.6

Table. 1
Demographic profile of the respondents
(N=1,029)

vegetables. Likewise, most of them (91.3%) said they ate adequate amount of vegetables.

Disaggregating the data in terms of number of days, Table 2 shows that adolescents occasionally ate vegetables as confirmed by a greater number of students who reported that for the past two weeks before the survey was conducted, they ate vegetables from 2 to 5 days only. The same was true for eating adequate amount of vegetables. A further decrease in number of days, 1 to 3 days, was reported by more teenagers who ate street food or chips, fast food and those who ate in large quantities.

The adolescents' usual vegetable eating habits were also determined by two-item

questions. The most number of responses belonged to the “sometimes” category for “paying attention to eating vegetables daily” (58.3%). These responses reinforce earlier data that report infrequent vegetable consumption of teenagers. The findings support past Philippine studies (e.g., FNRI, 2010; Gonzales, et al., 2004), which found that the typical one-day intake of adolescents includes only a little serving of either fruits or vegetables.

TV Viewing Patterns and Habits of Adolescents

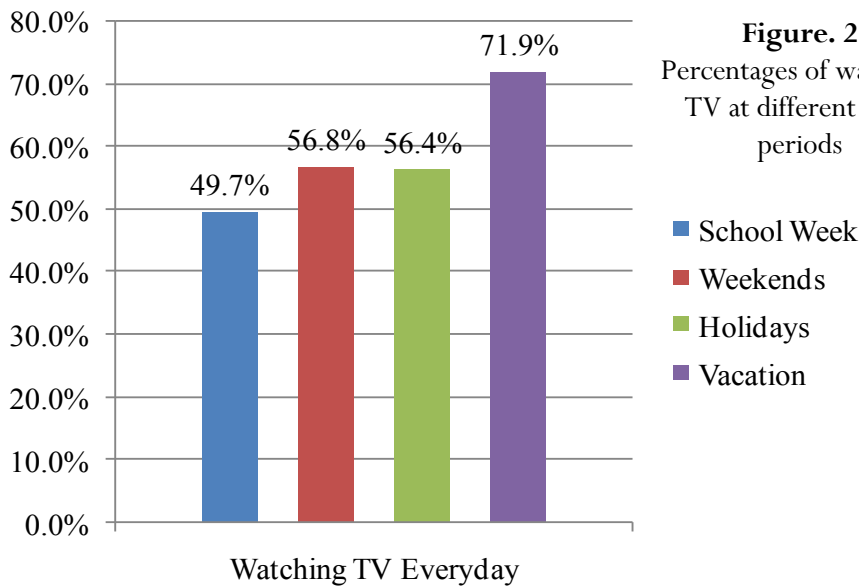
The television viewing patterns and habits of adolescents were measured in terms of frequency and amount of time spent watching TV. Almost one-half (49.7%) of the study population watched television every day on schooldays. During weekends and holidays, a slight increase was evident in which a majority (56.8% and 56.4%, respectively) watched TV every day. There was a further increase in the proportion of adolescents

Number of Days	Ate vegetables		Ate enough vegetables		Ate street food		Ate too much		Ate fast food	
	n	%	n	%	n	%	n	%	n	%
0	64	6.2	90	8.7	97	9.4	99	9.6	182	17.7
1	70	6.8	119	11.6	173	16.8	177	17.2	223	21.7
2	141	13.7	189	18.4	192	18.7	222	21.6	258	25.1
3	196	19.0	188	18.3	160	15.5	148	14.4	134	13.0
4	150	14.6	108	10.5	83	8.1	87	8.5	84	8.2
5	158	15.4	125	12.1	114	11.1	87	8.5	71	6.9
6	34	3.3	34	3.3	36	3.5	32	3.1	24	2.3
7	57	5.5	59	5.7	44	4.3	50	4.9	24	2.3
8	26	2.5	19	1.8	19	1.8	19	1.8	2	0.2
9	16	1.6	10	1.0	10	1.0	7	0.7	5	0.5
10	42	4.1	24	2.3	30	2.9	25	2.4	11	1.1
11	5	0.5	4	0.4	2	0.2	3	0.3	0	0.0
12	9	0.9	12	1.2	15	1.5	7	0.7	1	0.1
13	2	0.2	2	0.2	5	0.5	1	0.1	1	0.1
14	59	5.7	46	4.5	49	4.8	65	6.3	9	0.9

Table. 2
Distribution of the respondents' vegetable consumption on a daily basis (N=1,029)

watching TV daily during vacation (71.9%). The increase in TV viewership during weekends, holidays, and vacation can be related to the corresponding increase in available time to do non-school activities. Presented in Figure 2 below are the percentages of adolescents who watched television daily during the four-time periods.

were heavy TV viewers. The percentage of heavy viewers further increased during the summer break when a majority of the respondents (60.2%) watched TV for 3 hours or more. Similar to the results on frequency of TV watching, the amount of time spent watching TV steadily increased as teenagers had more free time to do other activities not related to schoolwork. Figure 3 shows the



A majority of the respondents (58.1%) were light TV viewers during the school week. This could be attributed to either school requirements, parental limits, or the presence of other media like the Internet. A local survey conducted among elementary and high school students by the Asian Institute of Journalism and Communication (n.d.) state a high internet usage (74%) in four areas (i.e., Metro Manila, Luzon, Visayas, and Mindanao) in the Philippines.

During weekends, 39.8% belonged to the heavy-viewers group. On holidays, 43.7%

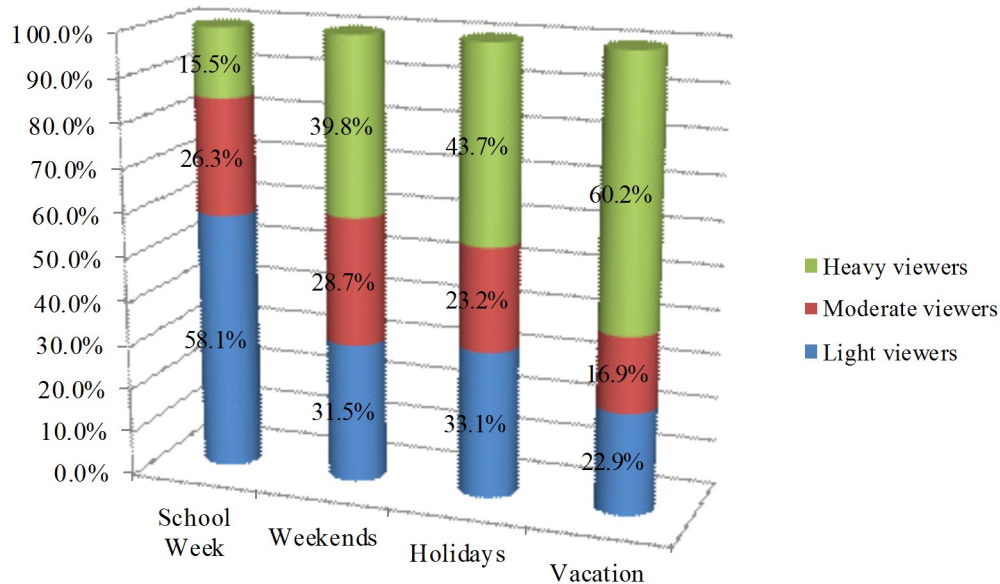
distribution of Filipino adolescents as categorized into light, moderate, and heavy viewers at different time periods.

TV Exposure and Vegetable Consumption of Filipino Adolescents

The Chi-square test of association at $p < .05$ level was conducted to test the relationship between exposure to television and vegetable consumption. TV exposure was operationalized as frequency of watching television and amount of time spent watching TV. Vegetable eating behavior was categorized

into eating vegetables and not eating vegetables. Eating vegetables meant at least one (1) day of vegetable consumption.

Figure. 3
Light, moderate, and heavy TV viewers at different time periods



Vegetable intake was associated with (1) watching TV during the school week and (2) during holidays (Table 3). Of all the time periods, the school week comprised the most number of days; therefore, the regularity of viewing more TV messages and images of healthy eating during this period could encourage teenagers to eat vegetables. Holidays, which are treated as special rest days, can be opportunities to watch television. If more TV messages favoring vegetable consumption are seen by adolescents during these days, then vegetable eating may be high.

The amount of time spent watching television during the school week and weekends was associated with vegetable eating behavior as shown in Table 4. The time devoted to watching television in most days of the year is related to the adolescents' vegetable

eating behavior. Thus, it seems that watching program segments and advertisements carrying more healthy messages can encourage teenagers to consume healthy food items like vegetables.

Summary and Conclusion

Summary

The survey data showed that the TV viewing patterns of Filipino teenagers varied on specific time periods. Almost one-half of the study population watched television every day on schooldays, with larger portions watching during weekends, holidays, and vacation. During vacation, almost 75% of the respondents watched television daily.

The amount of time spent watching television also increased on periods when there

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TV Viewing Frequency	Vegetable Consumption ("Yes" Category)		Vegetable Consumption ("No" Category)	
	n	%	n	%
School week*				
Never	24	2.3	0	0.0
Once a week	144	14.0	8	0.8
2-3 times a week	152	14.8	4	0.4
At least 4 times a week	175	17.0	10	1.0
Every day	469	45.6	42	4.1
Weekends				
Never	16	1.6	1	0.1
Once a week	158	15.4	6	0.6
2-3 times a week	142	13.8	8	0.8
At least 4 times a week	109	10.6	4	0.4
Every day	539	52.4	45	4.4
Holidays*				
Never	13	1.3	1	0.1
Once a week	118	11.5	6	0.6
2-3 times a week	141	13.7	3	0.3
At least 4 times a week	163	15.8	4	0.4
Every day	530	51.5	50	4.9
Vacation				
Never	14	1.4	1	0.1
Once a week	57	5.5	2	0.2
2-3 times a week	62	6.0	2	0.2
At least 4 times a week	145	14.1	6	0.6
Every day	740	66.8	53	5.2

Time Spent Watching Television	Vegetable Consumption ("Yes" Category)		Vegetable Consumption ("No" Category)	
	n	%	n	%
School week*				
Light	573	55.7	25	2.4
Moderate	249	24.2	22	2.1
Heavy	143	13.9	17	1.7
Weekends*				
Light	309	30.0	15	1.5
Moderate	283	27.5	12	1.2
Heavy	373	36.2	37	3.6
Holidays				
Light	324	31.5	16	1.6
Moderate	228	22.2	11	1.1
Heavy	412	40.1	37	3.6
Vacation				
Light	222	21.6	14	1.4
Moderate	166	16.1	8	0.8
Heavy	577	56.1	42	4.1

were no classes, particularly during vacation. Based on Gerbner's Cultivation Theory (Littlejohn, 2002), teenagers can be classified as light, moderate, and heavy viewers. A vast majority of them were light TV viewers during the school week.

This can be attributed to school requirements adolescents need to finish and school activities they need to participate in. Other reasons may include parental limits to TV viewing and the presence of other media, like the Internet, that teenagers use.

Table. 3
Chi-square test of association for amount of time spent watching TV and vegetable consumption

* The association is significant at the 0.05 level.

A local survey reported a high internet usage (74%) among elementary and high school students in Metro Manila, Luzon, Visayas, and Mindanao (Asian Institute of Journalism and Communication, n.d.).

On weekends, holidays, and summer break, TV viewership shifted from light to heavy, with 60.2% of respondents watching television for 3 hours or more during vacation. Similar to the results on frequency of TV watching, the amount of time spent watching TV steadily increased as teenagers had more free time to do other activities not related to schoolwork. It can be inferred that the additional free time they had during these periods provided them with more opportunities to watch television.

Almost all of the respondents reportedly ate vegetables. The frequency of vegetable consumption, however, was low as confirmed by a greater number of students who reported that for the past two weeks prior to the conduct of the survey, they ate vegetables from 2 to 5 days only. This is in consonance with past data that revealed infrequent vegetable consumption of teenagers. Earlier Philippine studies (e.g., FNRI, 2010; Gonzales, et al., 2004) showed that the typical one-day intake of adolescents includes only a small serving of either fruits or vegetables. Further, the 7th National Nutrition Survey conducted by FNRI in 2008 reported that teenagers, on the average, only eat 69 grams of vegetables daily, which is below the recommended daily requirement of 135 grams.

Conclusion

Television is part of the Filipino adolescent's life; however, a decrease in its use

was recorded among the study population of public and private high school students, which may signify a rise in popularity of the Internet and other forms of mobile communication. Different ICT platforms, like tablets and smart phones which offer greater interactivity and accessibility, appeal more among the youth than the traditional television. Conversely, Filipino adolescents seldom ate vegetables as evident in the study results and past nutrition surveys undertaken.

This scenario presents a current depiction of the leanness of television use among private and public high school students on the one hand and the scarcity in their vegetable consumption on the other. The study, nevertheless, showed that television exposure was significantly associated with teenagers' vegetable consumption.

The regular presence of vegetable eating messages in both TV advertisements and program segments, particularly during school days when most adolescents were light viewers, can provide encouragement for vegetable intake. During weekends, holidays, and vacation, when frequency of TV watching increased and a considerable shift from light to heavy viewership was evident, the continued placement of healthy eating messages with particular emphasis on vegetable consumption can further reinforce the teenagers' predisposition to eat vegetables.

Recommendations

A fresh look at how television can provide the effective persuasion platform for healthy messages should be taken into account by organizations advocating for nutritional improvement and healthy living. Moreover,

the challenge for nutrition advocates is to develop innovative communication programs that will strategically put emphasis on the importance of eating vegetables. Collaborative undertaking with television networks should be established by food and nutrition offices in such a manner that financial considerations by these media offices will not be jeopardized and at the same time, ensure that these initiatives will maximize television's capability as an information source and more importantly, as a provider of public service among the youth. Youth- and family-oriented programs are ideal venues through which this may be made possible. Vegetable eating messages can be incorporated in program segments, particularly during scenes where the family is seen eating together. Public-service announcements on the nutritive value of vegetable consumption can also reinforce this undertaking. Nutrition tips, especially on vegetable consumption and its nutritive value and latest nutrition survey data on vegetable intake among Filipinos, can be regularly supplied to TV programs. In this way, the increase in TV exposure of vegetable eating messages, especially during school days, can elicit favorable tendencies among young people to consume vegetables. Weekends, holidays, and vacation when increases in TV watching frequency and heavy viewership are evident can also provide an ideal vehicle for more vegetable eating messages on television.

Future communication and promotion initiatives to improve the vegetable eating behavior of Filipino adolescents can consider the empirical evidence forwarded by the present study. Television is an ideal partner in this worthwhile endeavor, and showcasing the nutritive value and health benefits of vegetables is a challenging prospect that television should

take on and nutrition-communication advocates should espouse.

Endnote

1 This paper is part of the dissertation "TV viewing and healthy eating: Moderators of the relationship between television exposure and daily vegetable intake."

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