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Social/Electronic Media Use of Children and Adolescents Who Attend the Pediatric Weight Management Programs of the COMPASS Network

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Abstract

Background: Obesity is a major healthcare problem in youth and their social/electronic media (SEM) use has been described as a risk factor. Though much is known about the newer technologies youth use to communicate, little is known about what is used by those in weight management programs. The aim of this study was to determine what types of SEM, including sedentary and active video games, youth in weight management programs use and which they prefer for communicating with healthcare providers.

Methods/Design: This was a multisite study using a 24-question online SurveyMonkey® questionnaire. Youth, 12–17 years old, attending pediatric weight management programs at seven participating centers in the Childhood Obesity Multi Program Analysis and Study System network were eligible.

Results: There were 292 responders with a mean age of 14.2 years. Fifty-four percent were female, 36% Caucasian, 35% African American, and 33% were Hispanic. Ninety-four percent had access to a computer, 71% had Internet access, and 63% had smartphones. Whereas 87% had at least one gaming system at home, 50% reported they never played sedentary video games (71% of females vs. 25% males; $p < 0.0001$) and 63% never played exercise video games during the week. The preferred method of communication with a heathcare provider was face to face (60%), with few indicating a preference for communication by texting (13%), phone (12%), or social media (6%).

Conclusions: Face-to-face communication with healthcare providers is the preferred method for youth in pediatric weight management programs. They self-reported video game use less than previously described.

Introduction

Childhood obesity continues to be a major health problem, with 16.9% of children ages 2–19 years being obese.[1] Whereas the etiology of this epidemic is complex, it is widely believed that children's use and exposure to social/electronic media (SEM), such as the Internet, gaming consoles, and cell phones, plays a significant role.[2–5] Systematic reviews by the Pew Research Center show a rapidly rising acceptance of SEM in teens, with over 70% using cell phones, MP3 players, game consoles, and social networking sites.[6–8] The effects of SEM on children's obesity risk appear to be a double-edged sword; for example, traditional video games can lead to

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increased sedentary behavior, whereas active/exercise video games may lead to increased physical activity (PA). SEM may have associated risks, such as sedentary behavior, social isolation, cyber bullying, sexual victimization, and lower self-esteem.[9–13] The use of SEM, however, has the potential to have positive effects on health behavior if used correctly and could lead to more-effective interventions in this population that is historically difficult to treat.[14–17]

Health interventions using SEM have been used in a variety of pediatric settings, such as promoting PA and peer support, reducing risk-taking behavior, and improving outcomes with concussions.[18–21] Social networks have successfully been used in studies to support mental health conditions in teenagers and for recruiting adolescents to research studies.[22,23] Texting also has the potential to augment health interventions.[24,25] Informational and reminder text messages have been successfully used in adult studies for reducing alcohol abuse, smoking cessation, diabetes management, and asthma control prevention.[26–30] Text messages have been used with children and families to promote PA and improve vaccination rates.[18,31,32] Gaming consoles with active games have been used in interventions to promote PA in children.[33–35]

SEM for weight management in adolescents with obesity is an attractive concept given that it is inexpensive and can reach a large number of affected individuals.[36] Whether SEM can be used in children and adolescents with obesity to reduce BMI is still uncertain. Adult studies show that text messaging can be used to improve outcomes in treating adults who are obese.[37] Woolford and colleagues, using a focus group of 24 adolescents in a pediatric weight management program, showed that adolescents favor using text messaging for feedback, recipes, and weight loss strategies.[38] However, it is not clear whether these results are generalizable to a larger population or other forms of SEM. The aim of this study is to survey a large population of adolescents who are overweight or obese from several pediatric weight management programs on their attitudes and use of SEM.

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Methods

An anonymous 24-question survey was developed to inquire on the availability of, and use by, adolescents of computers/tablets, cellphone/smartphones, gaming systems, Internet access, and MP3 players. The survey asked what types of devices were used for specific activities, such as e-mail, texting, and entertainment, how use differed during the school week versus weekends, and how the youth preferred to communicate with healthcare providers. The survey was completed on SurveyMonkey® (www.surverymonkey.com) using a computer or tablet with Internet access. Children and adolescents, 12–17 years old, attending pediatric weight management programs at any of the participating sites in the Childhood Obesity Multi Program Analysis and Study System (COMPASS) practice-based research network of the Children's Hospital Association, were eligible to participate in this study. The study was done at seven sites (enrollment: Table 1): Center for Better Health and Nutrition (Cincinnati, OH); Center for Child and Family Wellness (Orlando, FL); Healthy Kids, Healthy Weight program (Cleveland, OH); Healthy Kids U (Peoria, IL); Obesity Institute IDEAL Clinic (Washington, DC); Pediatric Healthy Weight Center (Grand Rapids, MI); The Weight Management Program; and A.I. duPont Hospital for Children (Wilmington, DE). Parents/guardians of children and adolescents ages 12–17 were mailed a letter of invitation to participate in the survey at home or any other location with Internet access. A unique personal identification number (PIN) required to log on to the survey was given to ensure that the survey could only be taken once only by a participant. A reminder letter also containing the same PIN was sent to the parent/guardian 4 weeks later. Within the 3 months after study initiation, youth 12–17 years of age who were observed in the weight management clinics were approached to complete the survey in the clinic if they had not previously completed the survey at home. New patients receiving care in any of the seven pediatric weight management clinics were also eligible. Youth were excluded if they were unable to read or understand English. Consent was obtained electronically from participants' guardians, and electronic assent was obtained from participants. The study was approved by the institutional review boards of all the participating centers.

Table 1. Enrollment by Site

Site	At home (%)	At clinic (%)	Total
01	20 (37)	34 (63)	54
02	1 (14)	6 (86)	7
03	13 (12)	92 (88)	105
04	3 (100)	0 (0)	3
05	19 (100)	0 (0)	19
06	9 (100)	0 (0)	9
07	3 (3)	92 (97)	95

Statistical Analysis

All analyses were performed using SAS software (version 9.3; SAS Institute Inc., Cary, NC). Descriptive statistics were summarized as frequency and percentage for categorical variables; mean and standard deviation were computed for continuous variables. The chi-square test was used to test the differences of responses between groups.

Results

There were 292 responders. Fifty-four percent were female, 36% Caucasian, 35% African American, and 33% were Hispanic. Mean age was 14.2 years, with an average

self-reported weight of 212.5 lbs and a calculated BMI of 34.4 kg/m^2 (height was self-reported as well). Three sites of seven tracked the patient response rate, which included the majority of the data collected. Of 298 families who received two mailings, only 21 completed the survey, for a response rate of 7%. Of the 178 eligible patients observed in the clinic, 128 completed the survey, for a response rate of 72%. The overall response rate was 58%.

Table 1 describes the breakdown of response by the seven sites. Table 2 shows the responses by gender. Ninety-four percent had access to a computer and 71% had Internet access at home, with 57% using their computer >2 times per week. Sixty-three percent had smartphones and 24% had a personal cellphone (note, some respondents could have both) with 72% using their phone >2 times per week. Eighty-seven percent had at least one gaming system at home, with only 29% using a system >2 times per week. Fifty percent reported that they never played sedentary video games (71% of females vs. 25% males; $p < 0.0001$) and 63% never played exercise video games during the week.

Table 2. Survey Results Overall and by Gender

Variable	Overall (%) (*N* = 292)	Girls (%) (*N* = 159)	Boys (%) (*N* = 133)	*p* value (girls vs. boys)
Has access to computer	274 (94)	150 (94)	124 (93)	0.70
Has Internet access at home	207 (71)	108 (68)	99 (74)	0.22
Has a regular cellphone	71 (24)	37 (23)	34 (26)	0.65
Has a smartphone	184 (63)	106 (67)	78 (59)	0.16
Has at least one gaming system	254 (87)	136 (86)	118 (89)	0.42
Uses cellphone >2 times per week[a]	202 (72)	117 (75)	85 (67)	0.35
Never uses cellphone[a]	31 (11)	16 (10)	15 (12)	
Uses computer/tablet >2 times per week[a]	163 (57)	89 (57)	74 (57)	0.60
Never uses computer/tablet[a]	20 (7)	9 (6)	11 (9)	
Uses video game system >2 times per week[a]	82 (29)	23 (15)	59 (46)	<0.0001
Never use video game system[a]	83 (30)	66 (44)	17 (13)	
Plays regular video games ≥2 hours per school day[a]	49 (17)	9 (6)	40 (31)	<0.0001
Never plays regular video games school days[a]	143 (50)	111 (71)	32 (25)	
Plays active/exercise video games ≥1 hour school days[a]	33 (12)	17 (11)	16 (13)	0.48
Never plays active/exercise videos school days[a]	175 (63)	96 (62)	79 (65)	
Plays regular video games ≥2 hours per weekend day[a]	76 (27)	10 (6)	66 (50)	<0.0001
Never plays regular video games weekend days[a]	111 (39)	93 (60)	18 (14)	
Plays active/exercise video games ≥1 hour weekend[a]	59 (21)	30 (19)	29 (23)	0.41
Never plays active/exercise video games weekend[a]	165 (59)	90 (58)	75 (60)	
Preferred ways to communicate				
Face to face	174 (60)	96 (60)	78 (59)	0.39
Telephone	34 (12)	14 (9)	20 (15)	
E-mail	23 (8)	14 (9)	9 (7)	
Text messaging	37 (13)	24 (15)	13 (10)	
Regular mail	7 (2)	3 (2)	4 (3)	
Facebook or other social media	17 (6)	8 (5)	9 (7)	
Use of text message				
Reminder for appointment	191 (65)	113 (71)	78 (59)	0.03
Reminder for exercise	159 (54)	94 (59)	65 (49)	0.08
Reminder for medication	90 (31)	48 (30)	42 (32)	0.80

[a]Missing values were excluded from summary.

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Table 3. Preferred Modes of Communication with Healthcare Providers

Communication mode	Frequency (*N* = 292)	Percent
Face to face	174	60
Text message	37	13
Telephone	34	12
E-mail	23	8
Facebook or other social media	17	6
Regular mail	7	2

Table 3 summarizes preferred modalities of communication with healthcare providers. Sixty percent of respondents preferred face-to-face communication with medical providers and only 13% had a preference for text messaging. A majority of the respondents, however, liked the idea of using messaging for reminders, with 65% wanting reminders for appointments, 54% for exercise, and 31% for medication.

The most notable differences were in how boys and girls use video games. A larger number of girls (44%) reported that they never used video games, compared to boys (13%; $p < 0.0001$, and a larger number of boys than girls played regular video games greater than 2 hours on school days (31% vs. 6%; $p < 0.0001$) or on weekends (50% vs. 6%; $p < 0.0001$). The majority of both girls and boys never played exercise or active video games. Both boys and girls favored face-to-face communication with healthcare providers, and only 15% of girls and 10% of boys preferred text messaging. Neither boys nor girls preferred using social media sites to communicate given that only 6% favored this form of communication.

Survey answers differed significantly based on reported race/ethnicity (Table 4). Youth who self-identified themselves as white were more likely to have Internet access, own regular cellphones, have at least one gaming system, and use computers/tablets more than twice a week. Youth who self-identified as black were more likely play exercise video games ($p = 0.004$) and preferred test message reminders to exercise ($p = 0.02$)

Discussion

This study characterizes the use of SEM by adolescents who are obese in pediatric weight management programs based on self-report. Whereas the majority of adolescents in our weight management programs have access to cellphones and home Internet access, face-to-face communication with healthcare providers is the preferred method. In keeping with Woolford and colleagues' findings, youth in this multisite survey indicated that text messages could be helpful as lifestyle reminders and were open to electronic messaging for reminders to exercise and appointments. However, the findings from the current study indicate that when asked more generally about communication with their providers, the majority of youth expressed a preference for face-to-face communication.[38] However, our study participants responded similarly to Woolford's focus group, expressing that text messages could be helpful as lifestyle reminders. Overall, youth from COMPASS sites report video game use less than has been previously described.[8] However, our data suggest that adolescent boys are far more likely play video games than girls and that the majority of boys and girls never play exercise video games. Moreover, white study participants were more likely to have regular access to home Internet and tablet devices.

This study has several limitations. Although the majority of those asked to take the survey completed it, the response rate of those who were mailed the survey request was much lower than those who were approached in the clinic. Those responding may represent a more motivated population, and this could skew the results. Unfortunately, the responses of those who completed the survey in the clinic and home could not be analyzed separately and compared for differences. Further, because the data were based on self-report, participants may have over-reported healthy and under-reported unhealthy behavior owing to social acceptability

Table 4. Significant Survey Differences by Race/Ethnicity

Variable	White (%) (*N* = 104)	Black (%) (*N* = 103)	Other[b] (%) (*N* = 85)	*p* value
Has Internet access at home	84 (81)	66 (64)	57 (67)	0.02
Has a regular cellphone	37 (36)	22 (21)	12 (14)	0.002
Has at least one gaming system	98 (94)	87 (84)	69 (81)	0.02
Uses computer/tablet >2 times per week[a]	68 (67)	55 (55)	40 (48)	0.02
Plays active/exercise video games ≥1 hour school days[a]	5 (5)	19 (20)	9 (11)	0.004
Text message for reminder for exercise	46 (44)	65 (63)	48 (56)	0.02

[a]Missing values are excluded from summary.

[b]Includes self-identified Hispanic and multiracial.

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bias.[39] Also, even though one third of respondents were Hispanic, those who could not read English were excluded and future studies should include those that are Spanish speaking. Still, a strength of this study is its generalizability. The sample size was fairly large with very strong minority representation and broad geographical distribution from seven practice sites across the nation.

Conclusions

This survey of adolescents in pediatric weight management programs demonstrates that video game use is not as high as described previously, but that higher utilization occurs in boys. Given that video game use contributes to sedentary behavior, practitioners treating adolescents with obesity should routinely inquire on its use. Also, exercise/active video game use is much lower in this population and may be a modality to increase active behavior. Understanding how youth in this type of program use SEM can help target treatment for those at risk for excessive use of certain types of SEM, such as sedentary video games or excessive smartphone or tablet use. Use of SEM for communication and treatment may be more accepted by certain ethnic/racial groups of youth who desire use of this modality. Thus, recognizing and addressing high-risk SEM use and using SEM in ways that children and adolescents find desirable could lead to better outcomes. Finally, youth participating in weight management programs prefer face-to-face communication with medical providers over using electronic media to communicate regarding their medical management, but would like electronic communication for lifestyle reminders, which are important to weight management.

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